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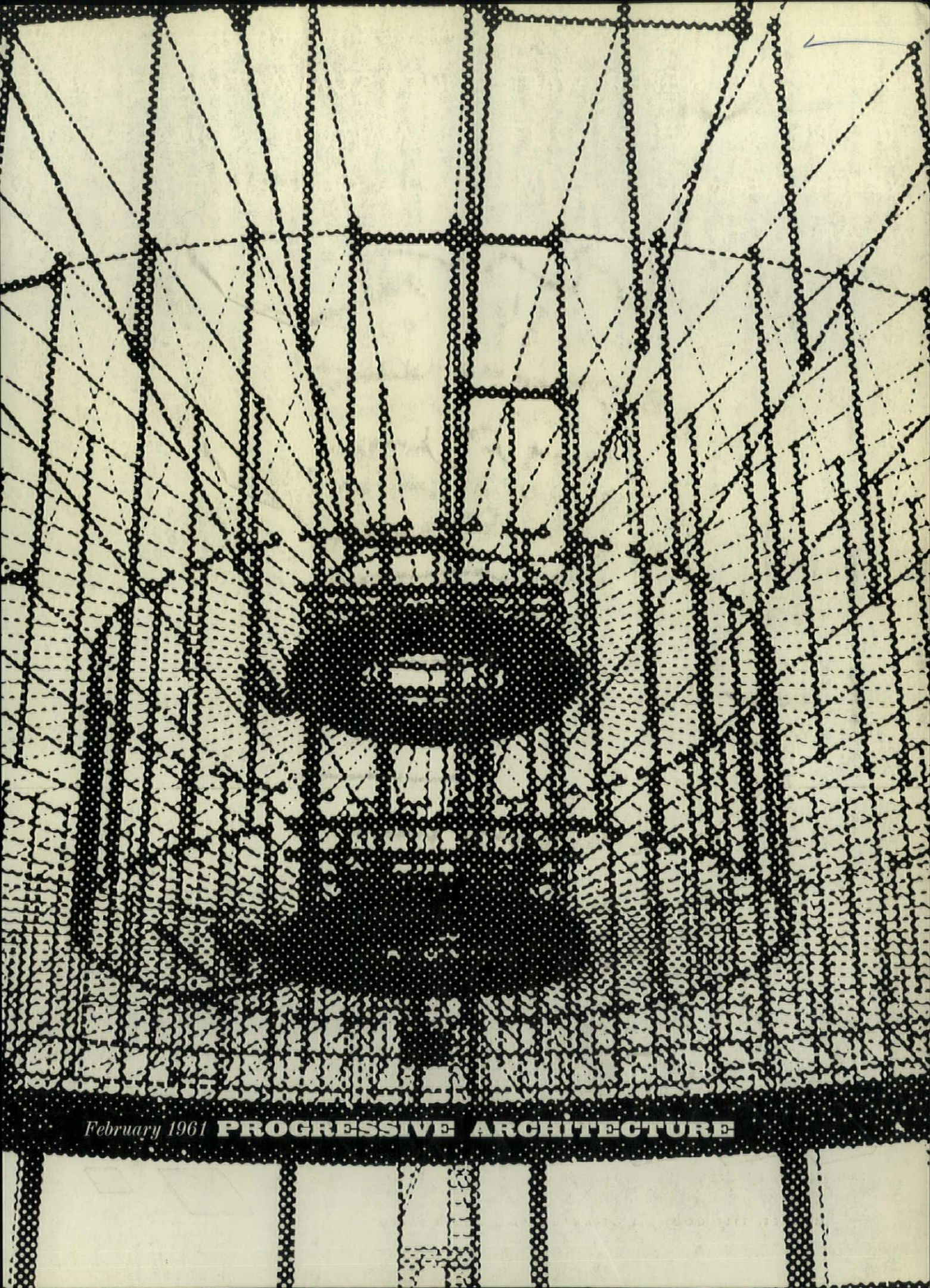

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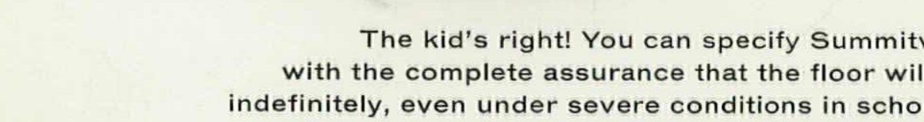

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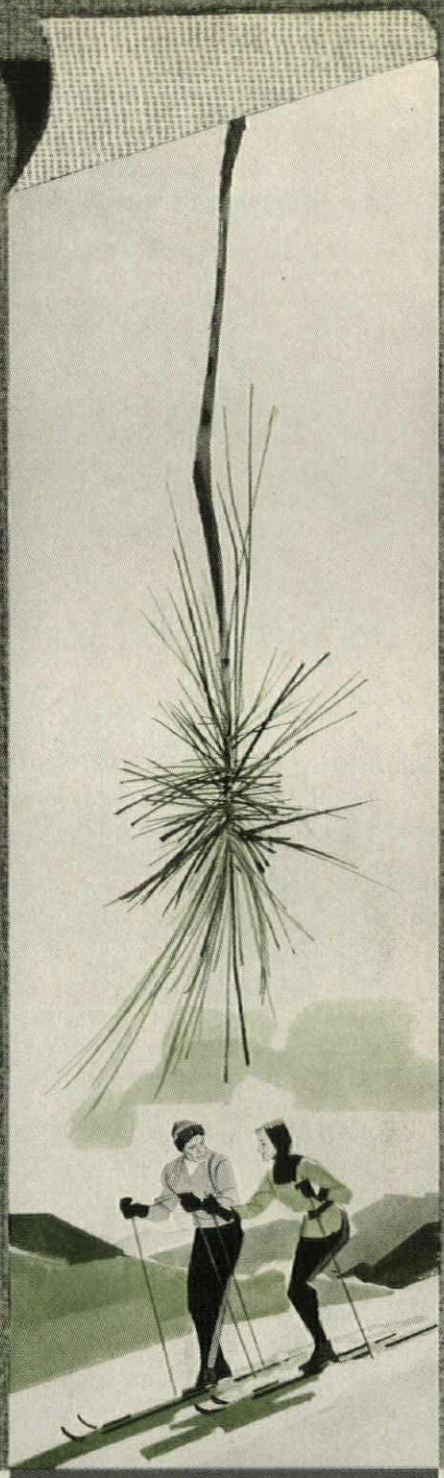

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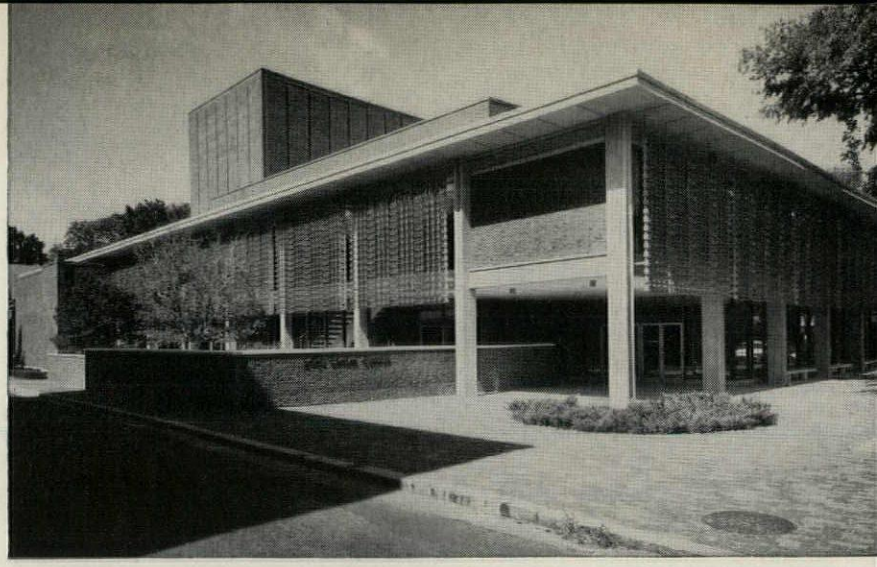

LOEB DRAMA CENTER,
HARVARD UNIVERSITY

Architects: Hugh Stubbins and Associates, Cambridge, Mass.

Theater lighting, stage equipment and electro-mechanicals: George C. Izenour.

Rotary Rising Stages installed by Stanley Elevator Company, Nashua, N. H.

Hydraulic Stage Lifts built by Rotary

FOUR massive stage sections which travel vertically on smooth, quiet hydraulic plungers are the key to the most flexible theater yet built.

Harvard's new Loeb Drama Center, the product of the imaginative design of Architect Hugh Stubbins, is three theaters in one. Engineered by George C. Izenour, theatrical design engineer, the four stages can be raised and lowered by pushbutton control to produce three different seating arrangements and a number of different stage effects, as desired for various performances.

BUILT BY ROTARY—The Rising Stages were designed and built by Rotary Lift to the architects' and engineers' specifications. In the revolutionary plan for the Loeb Drama Center they are used in combination with movable seat sections and pre-set lighting and rigging systems.

Operating like hydraulic elevators, the Rotary Rising Stages move quietly, safely, without vibration. Two powerful hydraulic plungers assure ample support for the tremendous weight of each section. A unique equalizing system keeps each pair of jacks level at all times. Rotary's Oildraulic Controller, developed for elevator service, insures smooth transmission of fluid power from the efficient pumping units, and complete control over vertical travel.

STAGE LIFT EXPERIENCE—Rotary Lift was chosen for this challenging job because of its leadership in the manufacture of hydraulic lifting devices . . . modern passenger and freight elevators, industrial lifting equipment and Rising Stages for many entertainment centers throughout the country. Among Rotary's other Rising Stage installations are those at the Stardust Hotel in Las Vegas, Dallas Memorial Auditorium, McCormick Place Exposition Center in Chicago, Charlotte, N. C., Auditorium-Coliseum and the University of California.

The experience of Rotary engineers in this type of work is unequaled in this country, and can be most helpful to you on similar projects. See our catalog on Rising Stages in Sweet's Architectural File 23g/Ro or mail coupon below for more information.

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Dover Corporation
Rotary Lift Division
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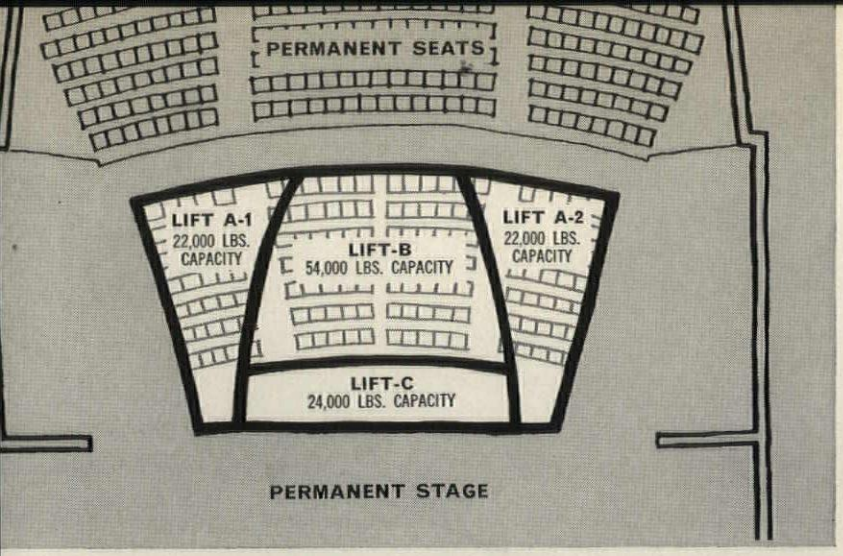
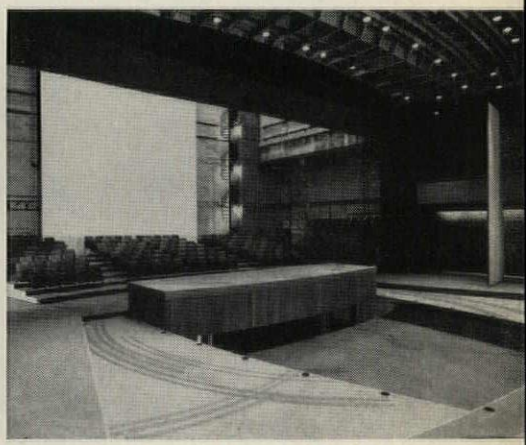


This diagram shows arrangement of the four Rotary Rising Stages in the Loeb Drama Center with pivoting seat sections in position. "A" and "B" Lifts have travel of 7′ each. The "C" Lift travels 14′–7″ and serves basement as well as intermediate landing and ground floor.

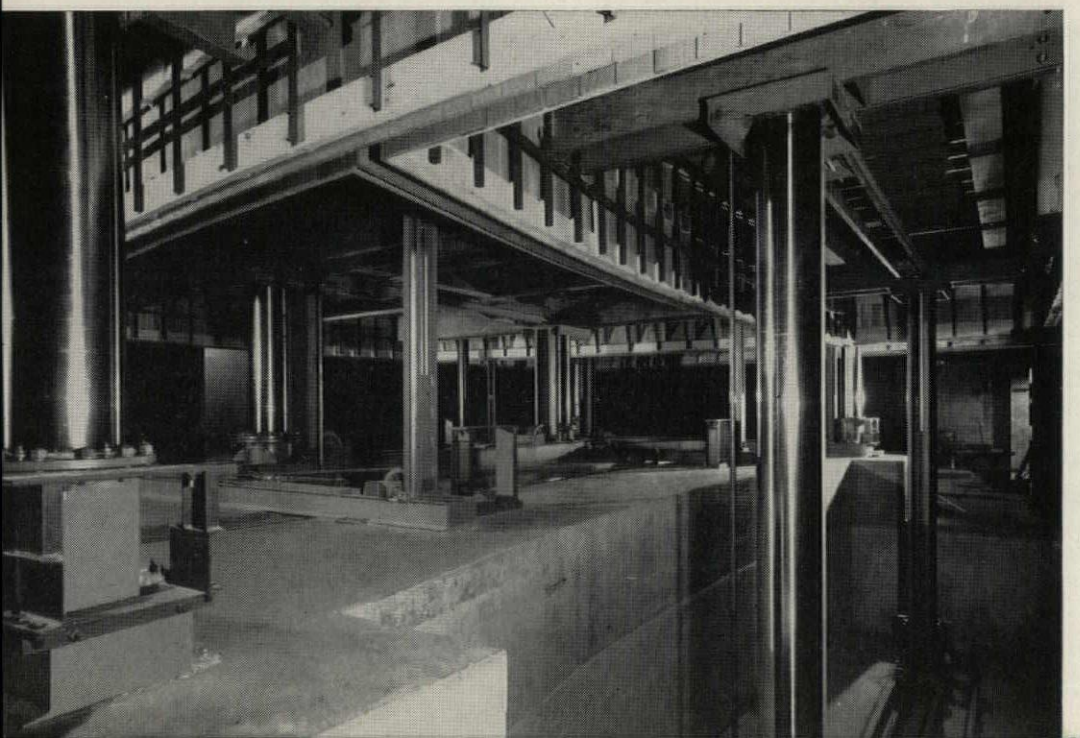
ıelp create Harvard's "Automatic Theater"

In conventional proscenium type auditorium, seven rows of seats nearest stage rest on "A" and "B" Lifts. These seats are mounted on platforms which move on aviation type wheels.

For Elizabethan staging, front seat sections split in middle and are pivoted 90° (note wheel tracks) so that "B" and "C" Lifts can be raised to create apron stage projecting into audience area.

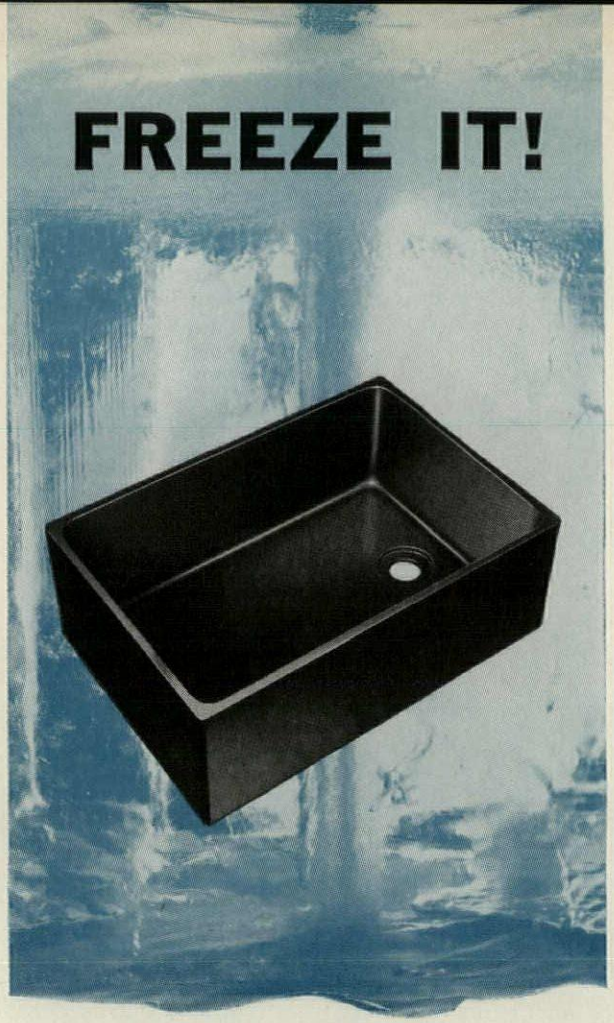


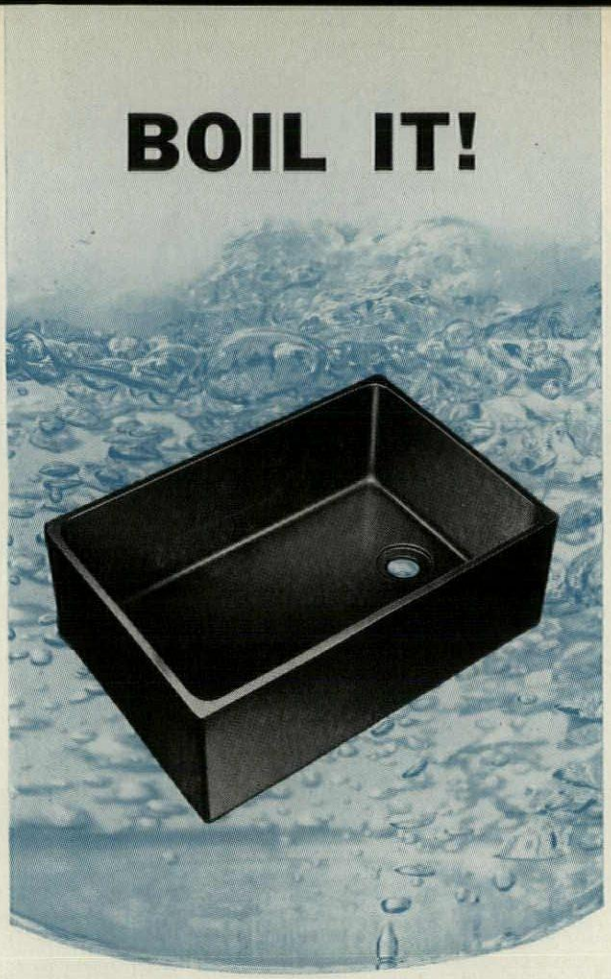
Theater-in-the-round brings into use all four lifts (shown here at different levels to demonstrate flexibility) and front seat sections are swiveled 180° from their original position.



Hydraulic jacks which move and support the stage sections are shown here. There are two jacks per section, equalized by a cable-and-strut system which insures perfectly level surface at any point of travel. Each lift has its own Rotary Oildraulic electric pumping unit, controlled through Mr. Izenour's analogue console to permit interlocking and operational flexibility.

Photos by Clemens Kalischer





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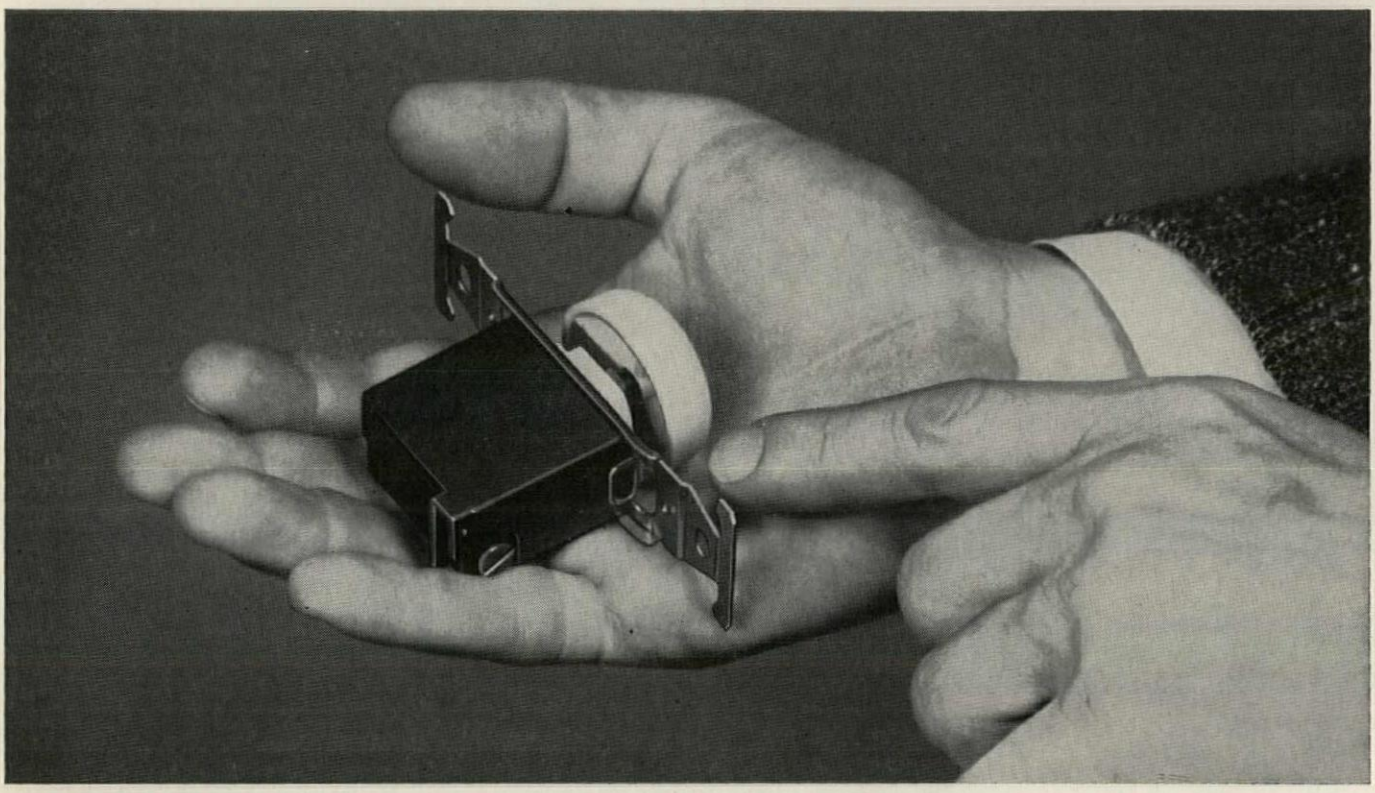

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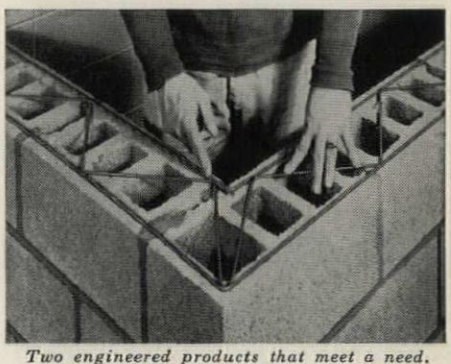

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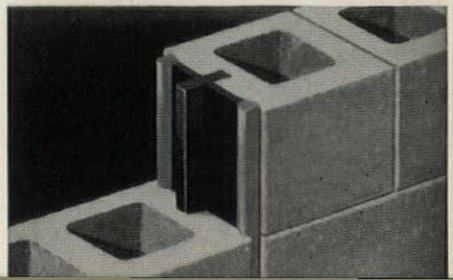

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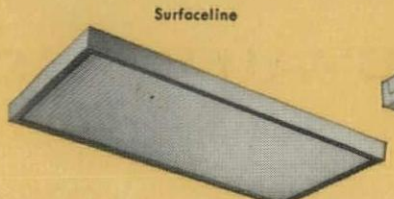

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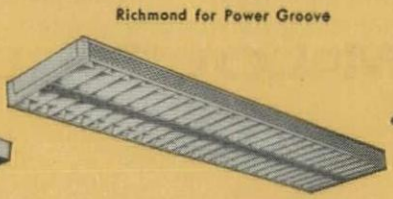

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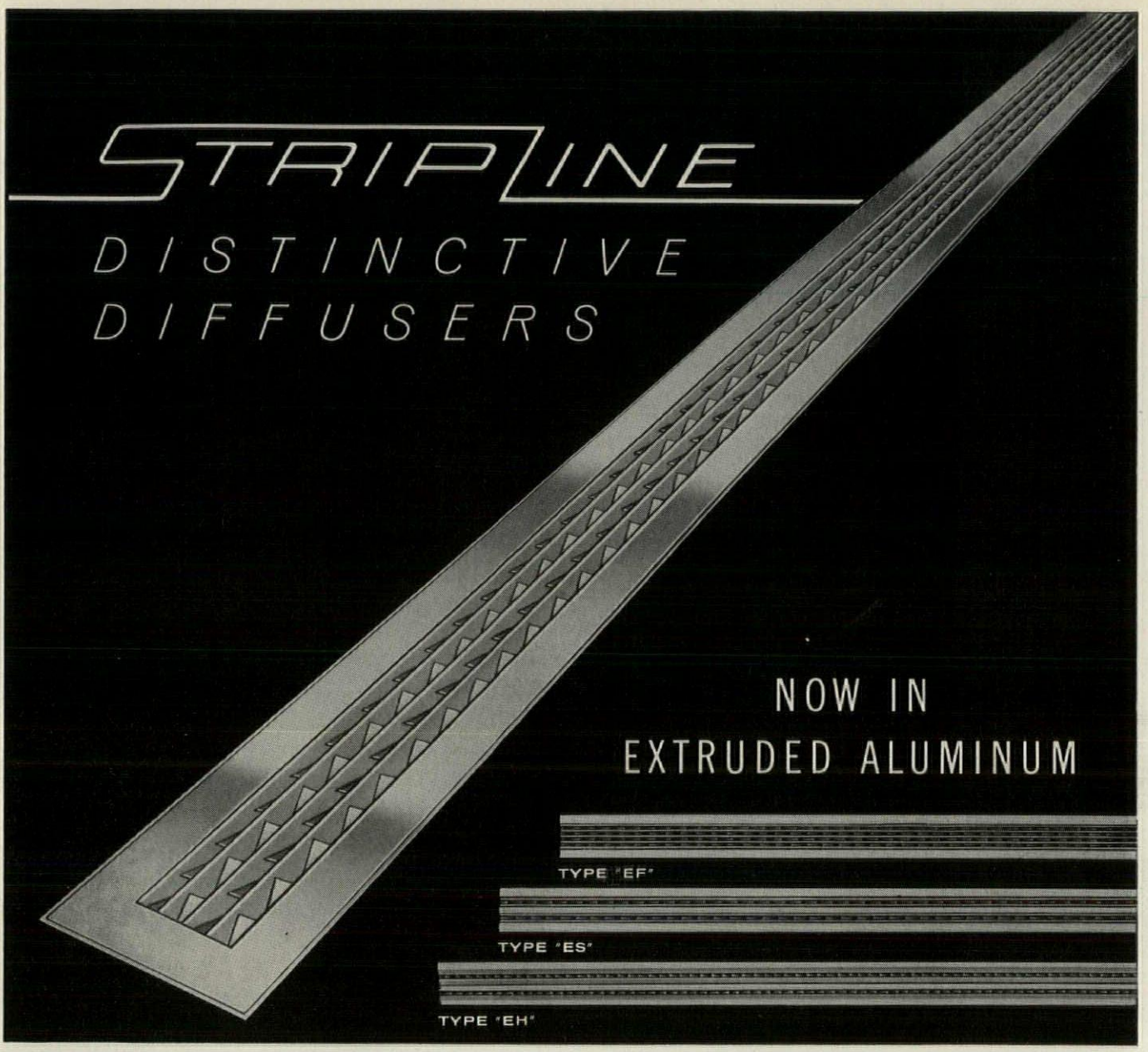

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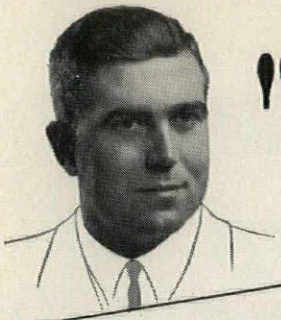
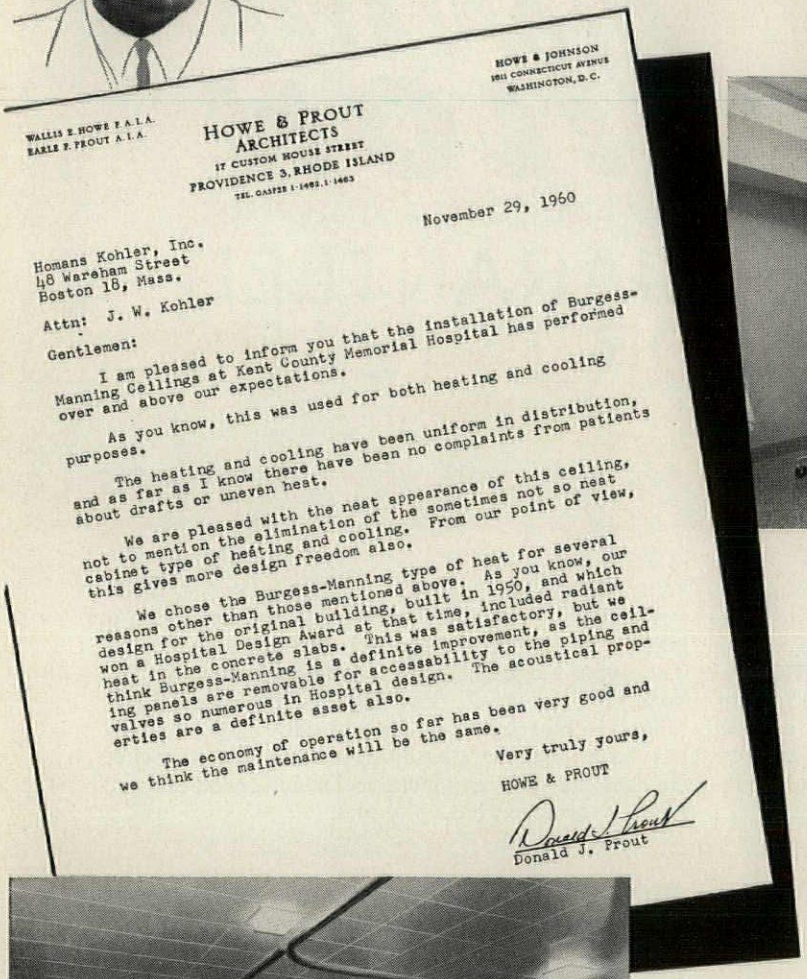


"From our point of view. . . . the Burgess-Manning Radiant Ceiling gives more design freedom"

. . . Donald J. Prout, Architect



WALLIS F. HOWE F.A.I.A.
EARLE P. PROUT A.I.A.

HOWE & PROUT
ARCHITECTS
17 CUSTOM HOUSE STREET
PROVIDENCE 3, RHODE ISLAND
TEL. GASPEE 1-1462, 1-1463

HOWE & JOHNSON
1611 CONNECTICUT AVENUE
WASHINGTON, D.C.

November 29, 1960

Homans Kohler, Inc.
48 Wareham Street
Boston 18, Mass.

Attn: J. W. Kohler

Gentlemen:

I am pleased to inform you that the installation of Burgess-Manning Ceilings at Kent County Memorial Hospital has performed over and above our expectations.

As you know, this was used for both heating and cooling purposes.

The heating and cooling have been uniform in distribution, and as far as I know there have been no complaints from patients about drafts or uneven heat.

We are pleased with the neat appearance of this ceiling, not to mention the elimination of the sometimes not so neat cabinet type of heating and cooling. From our point of view, this gives more design freedom also.

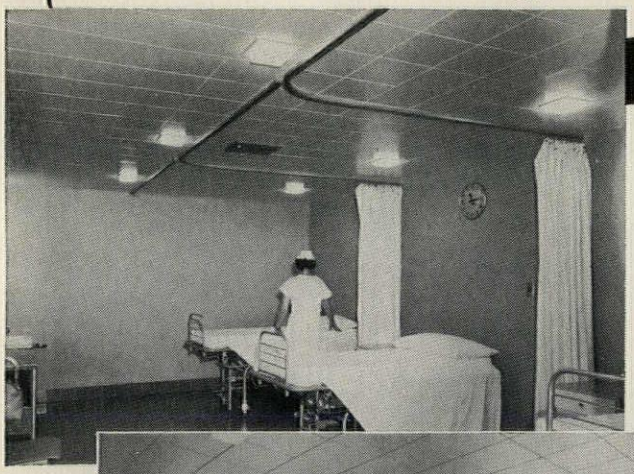
We chose the Burgess-Manning type of heat for several reasons other than those mentioned above. As you know, our design for the original building, built in 1950, and which won a Hospital Design Award at that time, included radiant heat in the concrete slabs. This was satisfactory, but we think Burgess-Manning is a definite improvement, as the ceiling panels are removable for accessability to the piping and valves so numerous in Hospital design. The acoustical properties are a definite asset also.

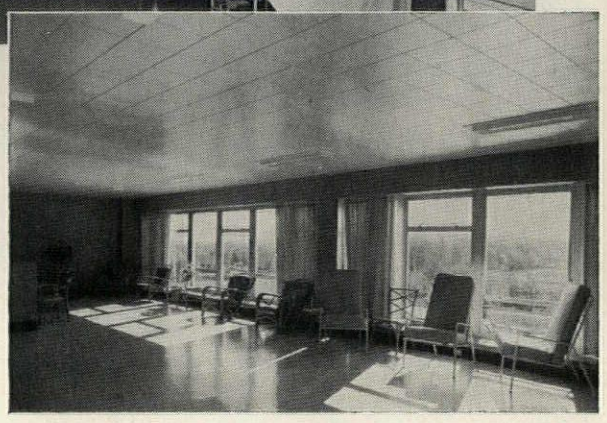
The economy of operation so far has been very good and we think the maintenance will be the same.

Very truly yours,

HOWE & PROUT

Donald J. Prout





Mr. Prout's letter confirms the fact that no other radiant acoustical ceiling has the structural flexibility possible with the Burgess-Manning Radiant Heating, Cooling and Acoustic Ceiling. It is this unusual design flexibility—unhampered by compromises in radiant, mechanical or structural design—which permits suitable ceiling layout to any module.

Of extreme interest, also, is the performance of the Burgess-Manning Radiant Acoustical Ceiling in buildings where there is a considerable amount of glass area—as at the Kent County Memorial Hospital, particularly in the solariums and lobby. Even with the front of the hospital having a southern exposure presenting difficult air conditioning as well as zoning problems, the Burgess-Manning Radiant Acoustical Ceiling, Mr. Prout points out, "performed over and above our expectations."

While the original design included floor-by-floor cooling . . . today, just the first and third floors (operating suite) are completely cooled by Burgess-Manning Radiant Cooling. Only chilled water equipment will be required for cooling the other floors at a later date.

Hospitals and institutions across the country report complete and lasting satisfaction with the Burgess-Manning Radiant Acoustical Ceiling. You, too, can secure the many distinct and profitable design advances . . . with *your budget no bigger* . . . offered by the Burgess-Manning Radiant Acoustical Ceiling for hospitals. Send for the complete story—Bulletin 138-3P.

Burgess-Manning Ceiling Area—40,600 sq. ft.
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(formerly Howe & Prout)
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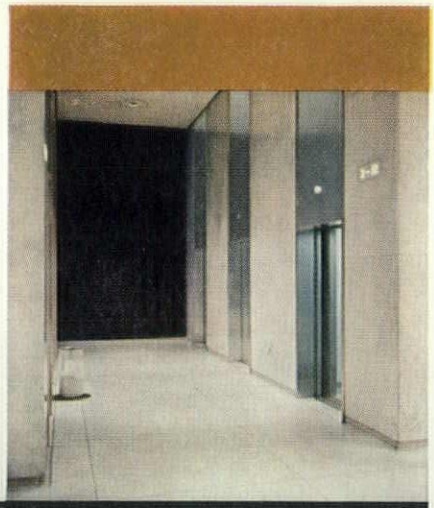

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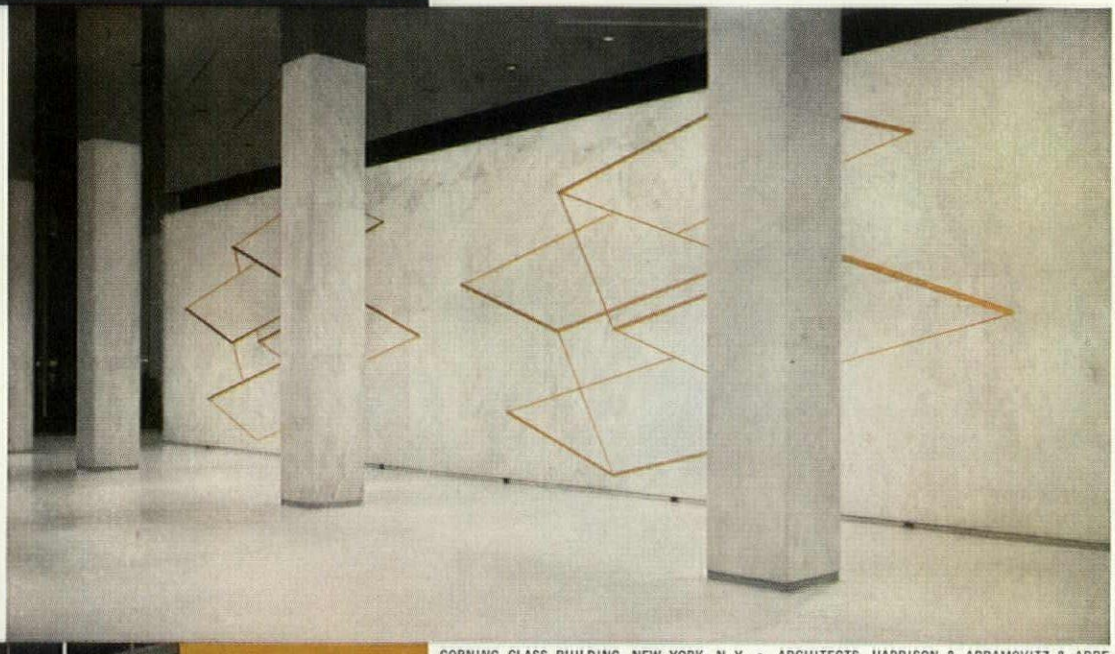

CORNING GLASS BUILDING, NEW YORK, N. Y. • ARCHITECTS: HARRISON & ABRAMOVITZ & ABBE

In New York's new Corning Glass Building, architects Harrison & Abramovitz & Abbe sheathed the lobby columns, walls and elevator areas with the classic beauty of domestic white marble. For the exterior areas above a reflecting pool, they framed diamond-matched sections of dark green marble behind glass panels set in stainless steel frames. The marble will require little maintenance . . . remain an economical and beautiful choice through the years. Significantly, marble is being specified for large and small installations by architects of note throughout the country.

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A floor of Armstrong Tessera Corlon on and under a staircase at American Society for Metals

The picture at left shows a stairway in the new American Society for Metals building at Metals Park, Ohio—architect John Terence Kelly, A.I.A. Armstrong Tessera Corlon (Style 86532) is wrapped completely around the stair treads and is installed on the tops and undersides of the landings. This installation, which is as practical as it is dramatic, takes unusual advantage of the exceptional good looks, toughness, and flexibility of Tessera Corlon. Tessera's interesting random-chip design and functional versatility made it the logical choice for offices, hallways, cafeteria, and other areas throughout the building.

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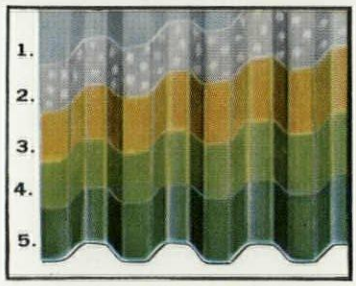

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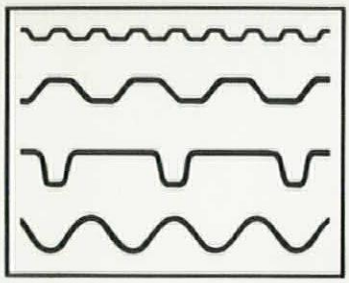

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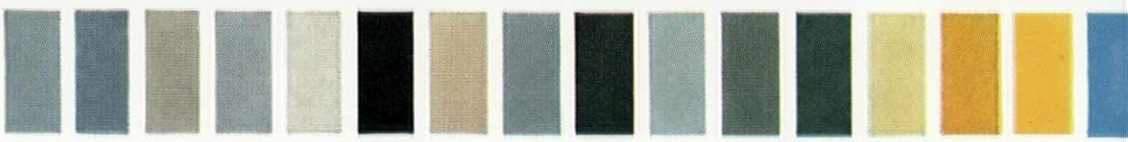

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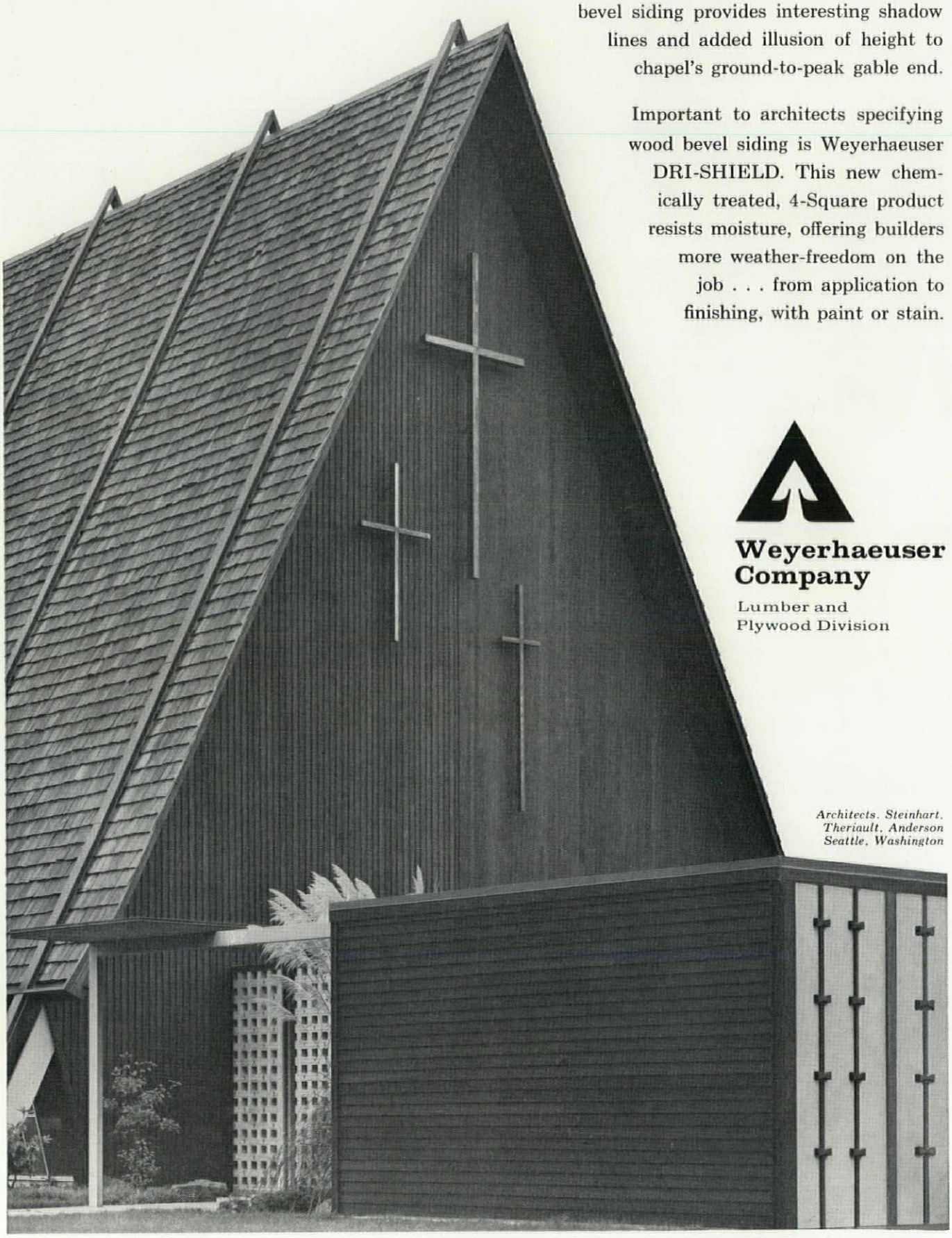

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Architects: **RALPH R. CALDER & ASSOCIATES**
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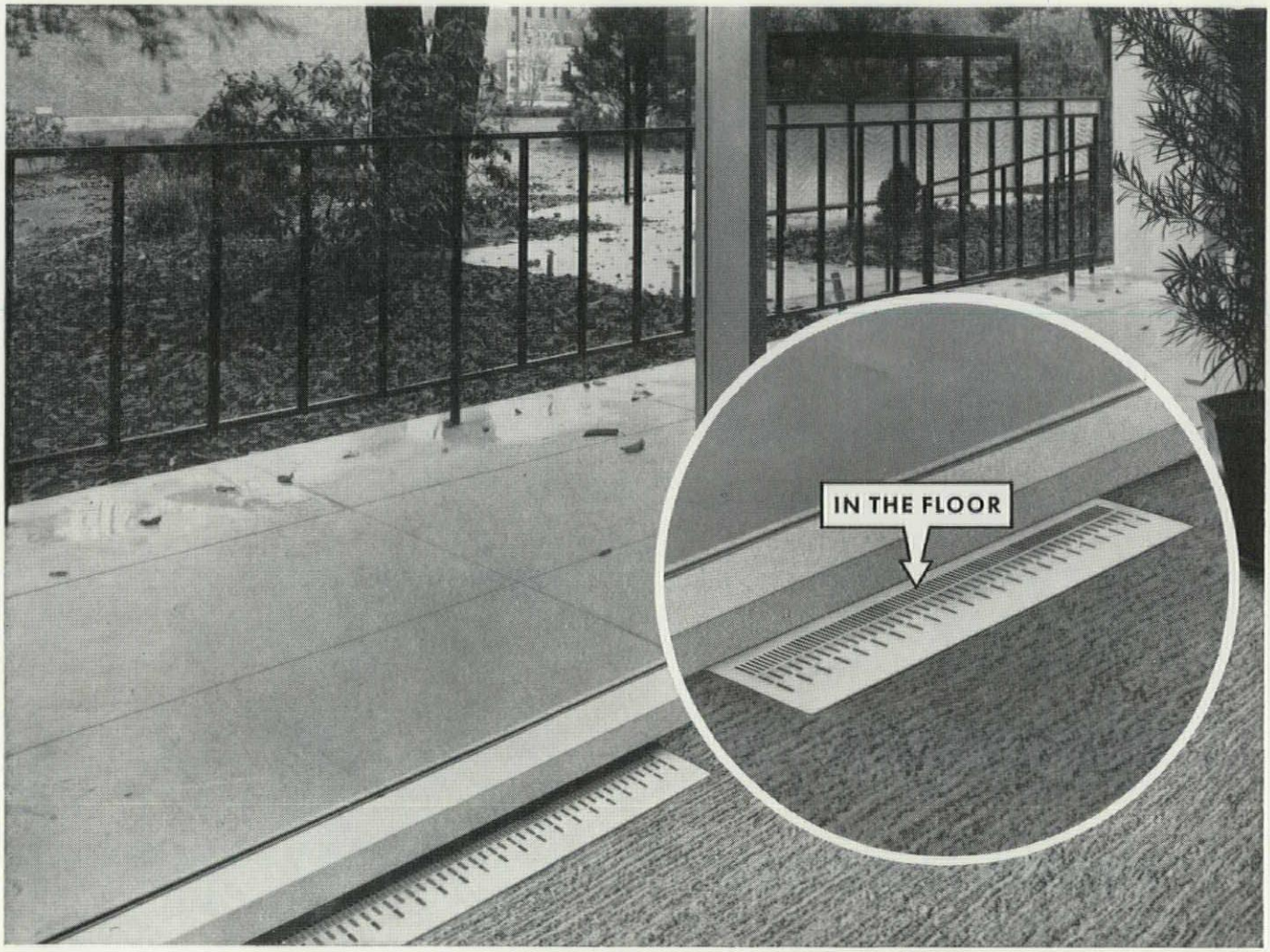
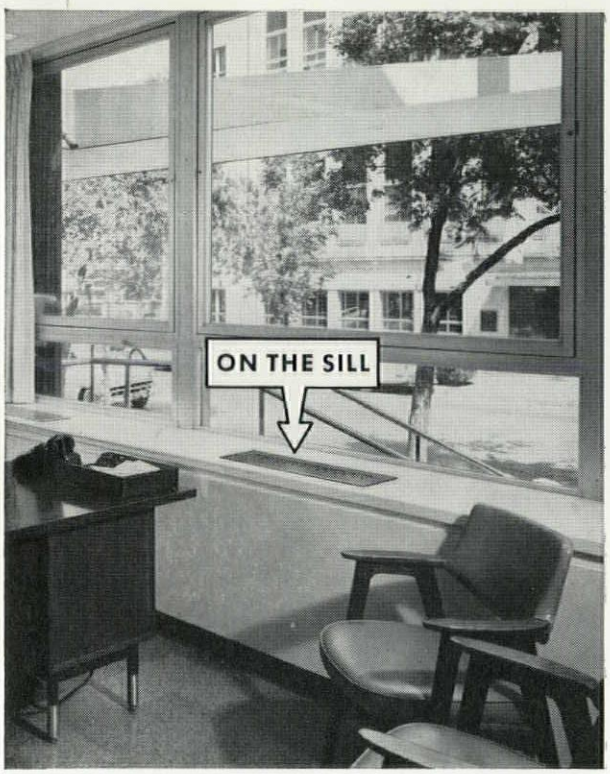


New Anemostat Stainless Steel Diffus-A-Plate



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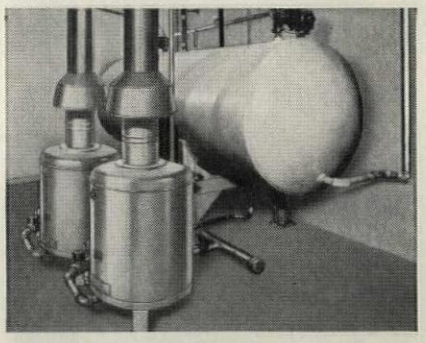

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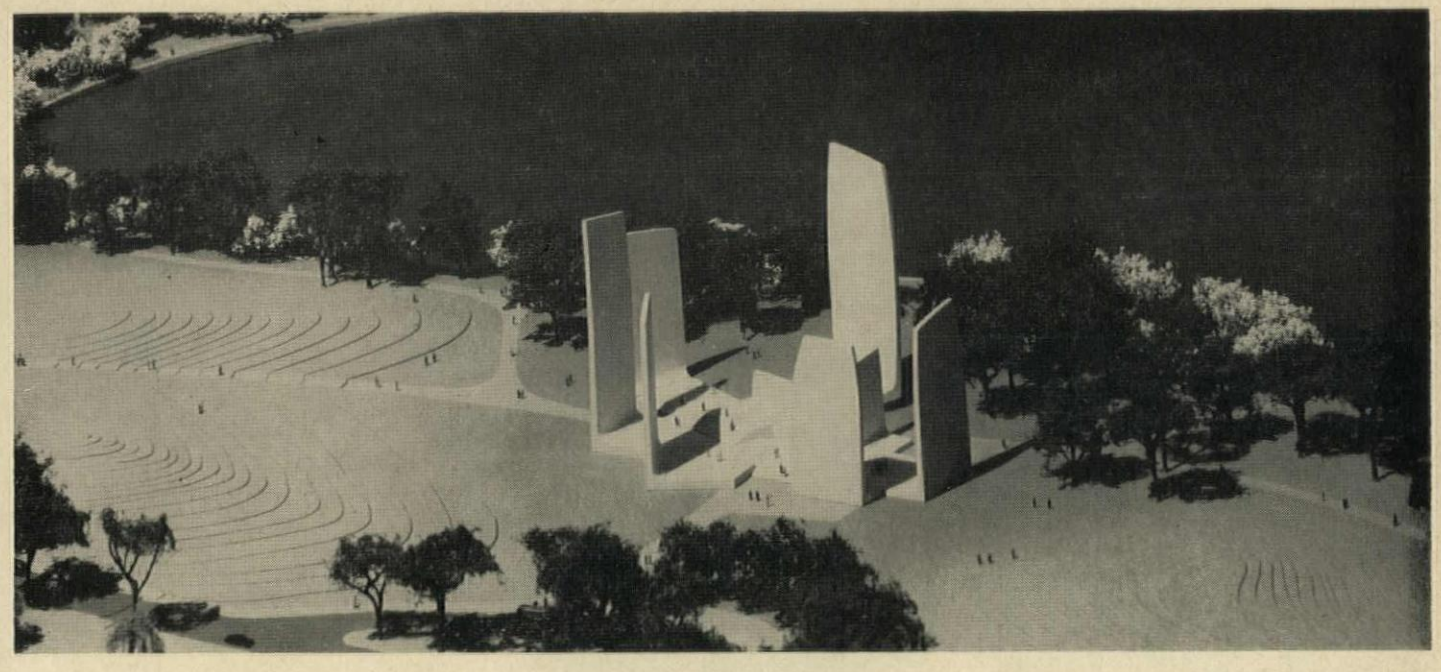
NEWS REPORT

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

Photo: Louis Checkman

Massive concrete slabs bearing the late President's words mark the winning project in the FDR Memorial Competition.



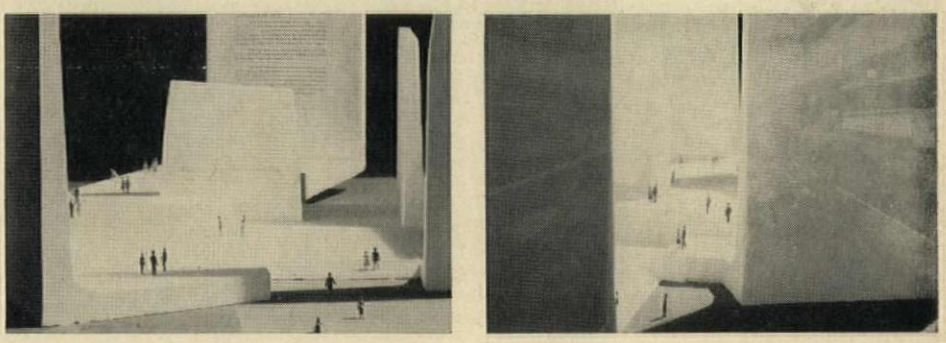
FDR MEMORIAL WINNER: AN OCTET OF STELES

WASHINGTON, D.C. A deceptively simple but forceful design of eight concrete steles bearing passages from the speeches and writings of the late President has been named winner of the competition for the Franklin Delano Roosevelt Memorial. Authors of the proposal are New York architects William F. Pedersen and Bradford S. Tilney and sculptor Norman Hoberman. Joseph Wasserman and David Beer are associates, and Ammann & Whitney are consulting engineers.

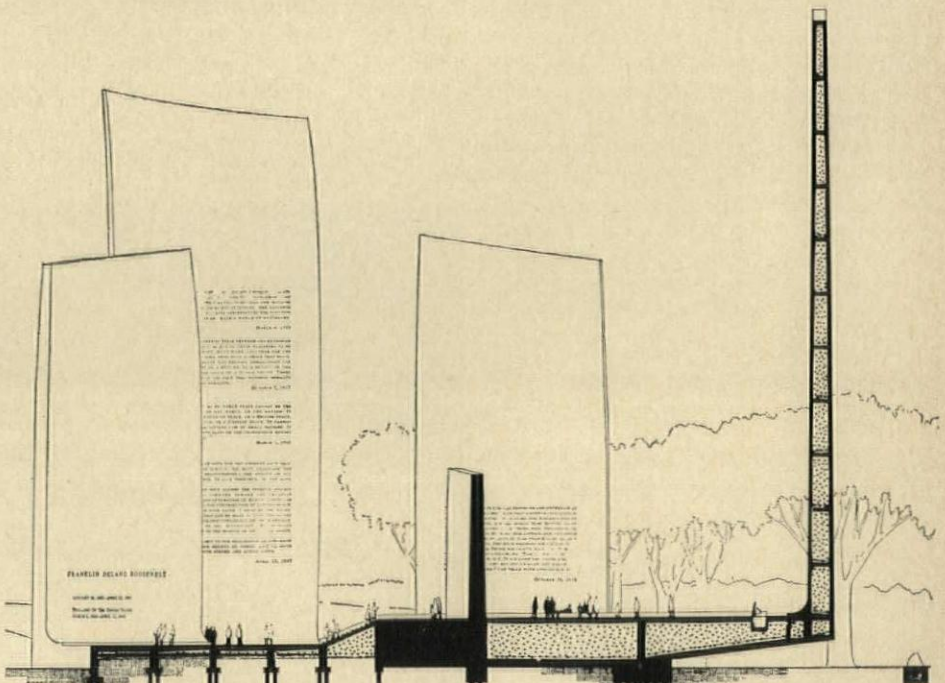
Structure of the memorial will be bush-hammered, reinforced concrete with special white marble aggregate, white fines and white portland cement. The seven tall elements will be of cellular construction, with walls from eight to twelve inches thick, depending on load conditions. The low, central slab will be poured monolithically and will furnish the weight necessary to stabilize and balance the 165-ft-high cantilever unit (*see section*). The floor system will be composed of terrazzo-finished slabs supported by diaphragm walls tying the steles together and stabilizing them. The shafts will be illuminated at night. Careful attention has been given to the approaches to the memorial; visitors will glimpse it through trees, and then, approaching over rises in the landscape, will perceive the total composition.

The following three pages show the other finalists and a selection of competition entries.

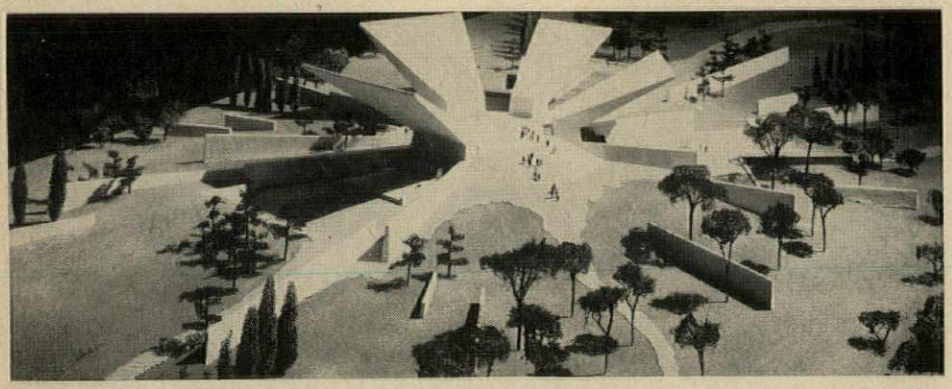
See T. H. Creighton's "P.S." on page 236 for a personal evaluation of the competition and its winner.

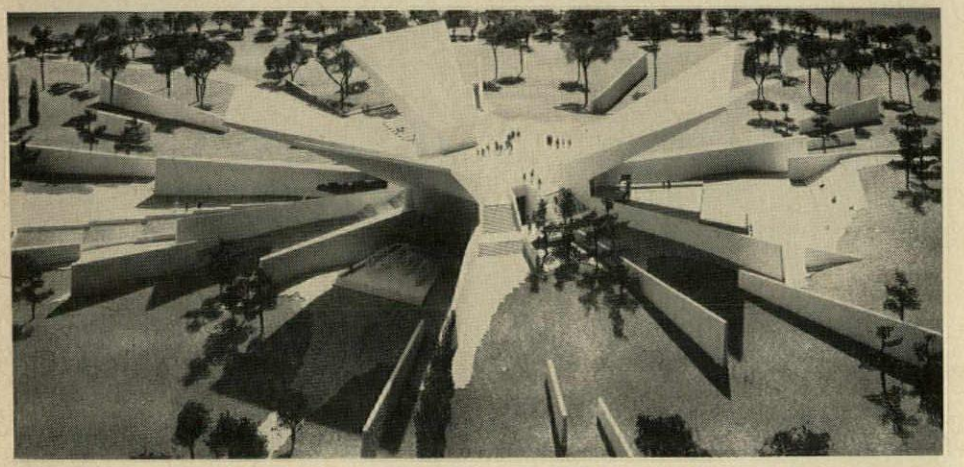


Visitor will have varying spatial experiences as he moves among the steles.

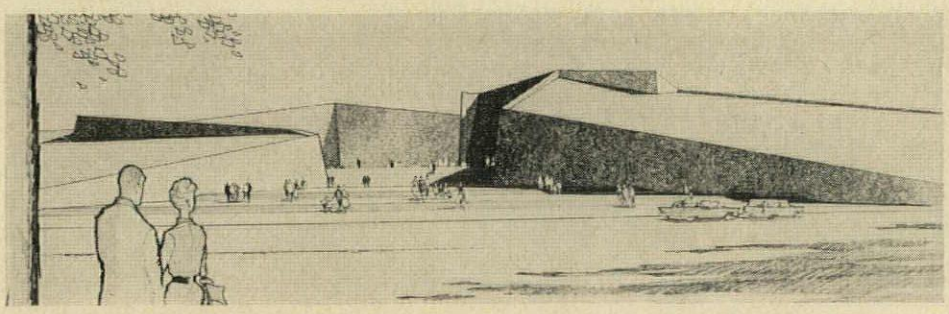


Section shows tallest shaft cantilevered from monolithically poured slab.

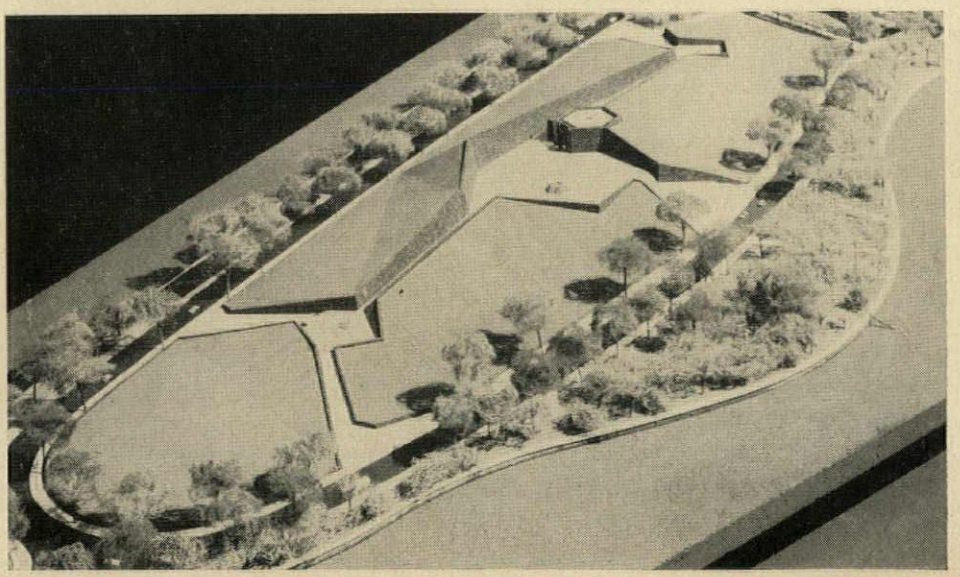


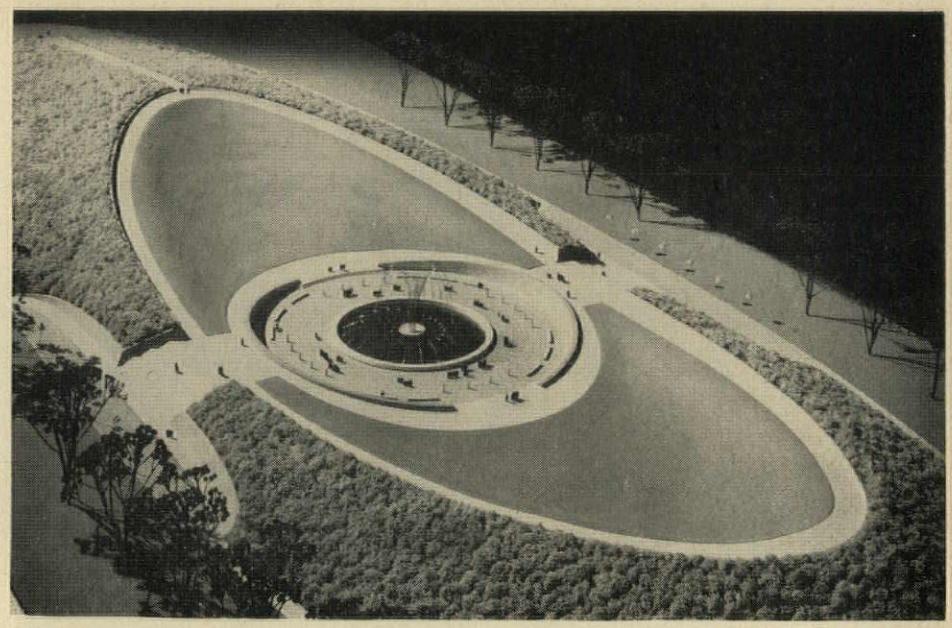


A circular scheme featuring a granite-based plaza surrounded by four courts representing the Four Freedoms—each with a distinguishing sculptural symbol (a choir and pulpit for Freedom of Worship, for example). Courts would be sheltered by cantilevered, reinforced-concrete "wings." Architect: Abraham W. Geller, associated with Douglas Gordon, Diana Kirsch, Claude Samton, and Peter Samton; Landscape Architect Associate: Richard Haag; Structural Engineering Consultant: Salvadori & Weidlinger; Lighting Consultant: Joel Rubin; Acoustical Consultant: Bolt, Beranek & Newman.

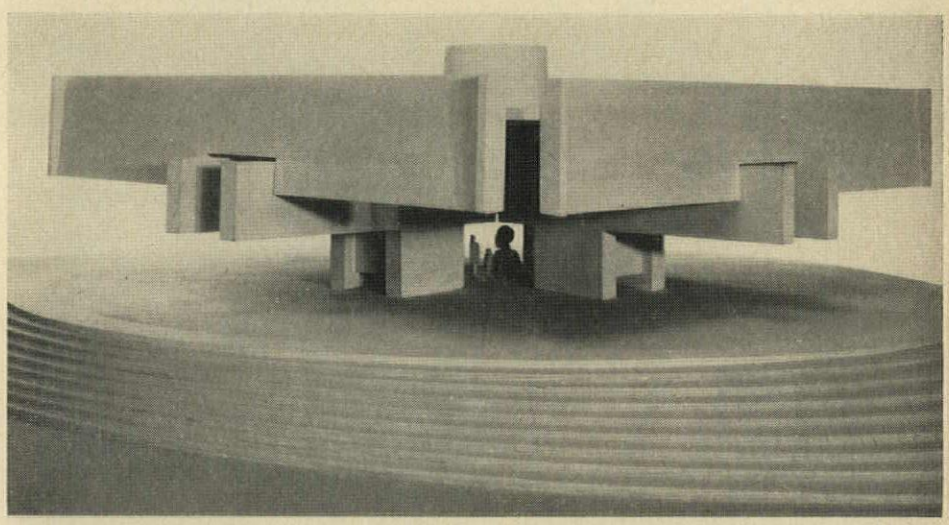


A proposal based around a Presentation Court and Gallery. Designers proposed institution of annual Franklin D. Roosevelt Award to be presented in court, winners to be memorialized in gallery. Memorial would be in form of grass mound incised with court and its approaches, which would have walls of concrete with heavy exposed aggregate of granite, and granite paving. Sculpture and fountains would be used appropriately. Architects: Joseph J. Wehrer and Harold J. Borkin; Landscape Architect: William Johnson; Sculptor: Thomas McClure.

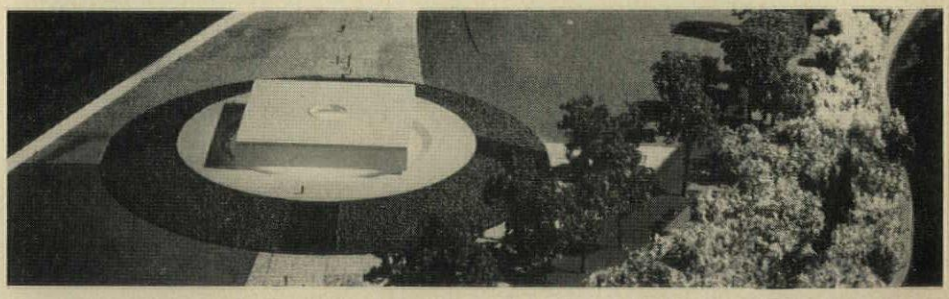


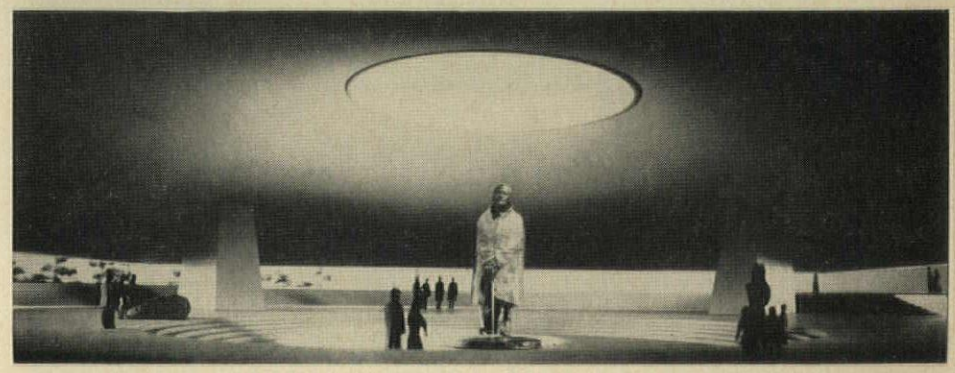


An earth mound enclosing a circular fountain court. The designers felt that the memorial "must not compete with the other monuments [Washington, Lincoln, Jefferson]; yet it must have an expressive form which is strong enough to hold its own." The court would be walled with both cut and polished granite. Particular attention was given, of course, to landscape planning. Landscape Architects: Sasaki, Walker & Associates; Architects: Luders & Associates; Consultants: Svend Bruun and T. Lewis Buser.



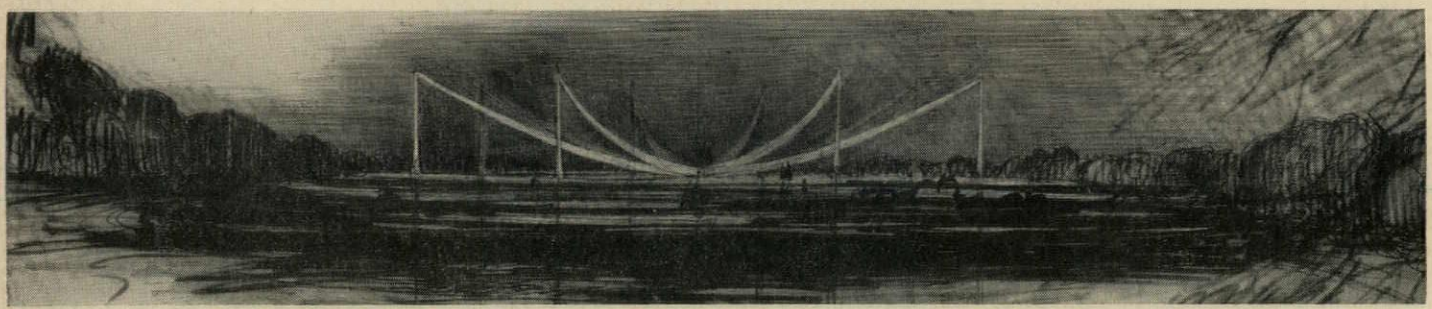
A reinforced-concrete pavilion within a ring of trees and atop a man-made hillock. Eight beams and column elements cantilever in two directions to create a feeling of strength and tension. A precast concrete "lens" is supported at roof center over a larger-than-life-size bust of Roosevelt. Beam separations act as viewing slits toward the other three memorials. Architect: Tasso Katselas; Structural Engineer: Gensert, Williams & Associates.





A heroic statue of the late President would stand beneath an oculus in this templelike structure. Visitors would ascend steps to enter, then, once inside, step down into a shallow amphitheater around the statue. Appearance of the shrine at night was considered quite important by the designers. Architect-Sculptor: Rolf Myller; Structural Consultant: Lev Zetlin; Landscape Consultant: Robert S. Malkin; Mechanical Consultant: Ian Grad Associates; Artist-Painter: David Chapin; Lighting Consultant: Leslie Larson; Alternate Sculptor: Luis Sanguino.

A Sampling of Competition Entries...



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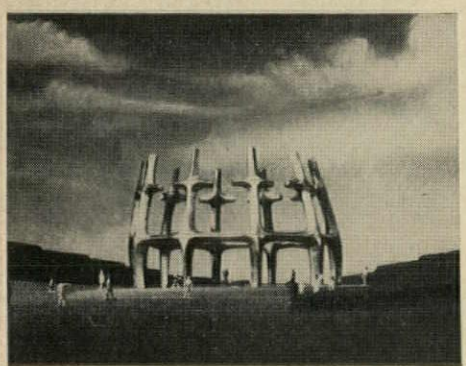

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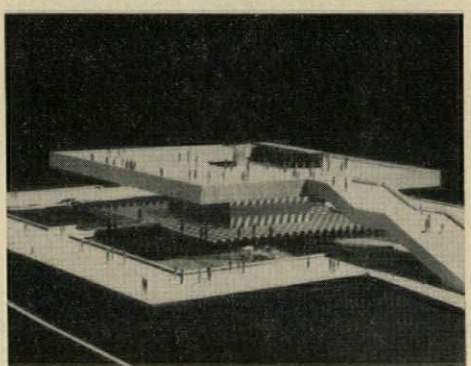

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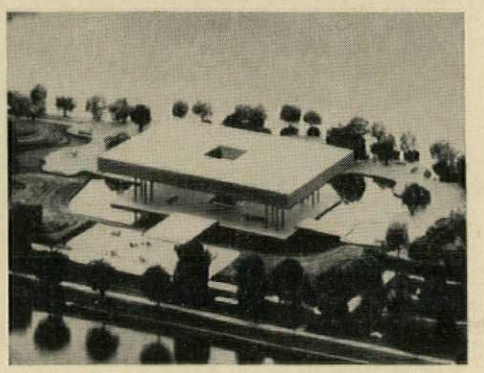
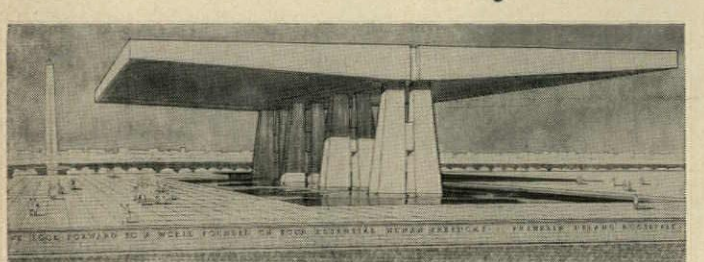


4

1 *Victor A. Lundy.* 2 *Davis, Brody & Wisniewski (Team: Albert Bergmann, Carl Meinhardt, Ralph Steinglass, Ikuyo Tagawa, Edith Wong, Julius Twyne, Jr.); Honorable Mention.* 3 *Stonorov & Haws; Associates: Otto Reichert-Facilides, Richard E. Martin, Peter Nicholson, Alfred Clauss, Jane West Clauss; Honorable Mention.* 4 *Perry, Shaw, Hepburn & Dean; Landscape Architect: Richard K. Webel; Honorable Mention.* 5 *Minoru Yamasaki & Associates.* 6 *The Architects Collaborative.* 7 *Philip Johnson Associates.* 8 *Edward Larrabee Barnes; Associates: Giovanni O. Pasanella, Jaquelin T. Robertson; Honorable Mention.*

5 Baltazar Korab



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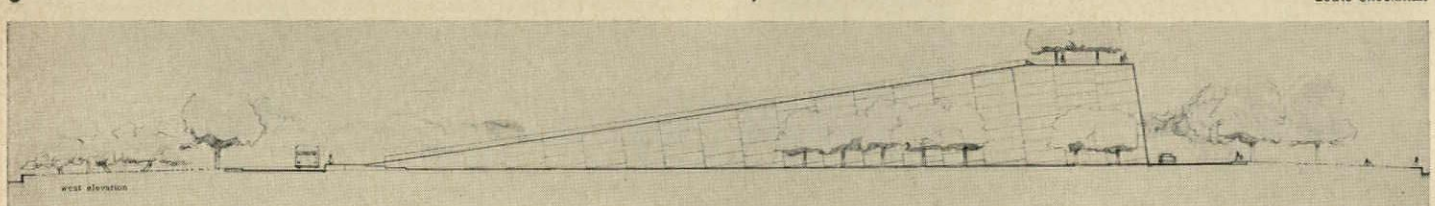
7 Louis Checkman



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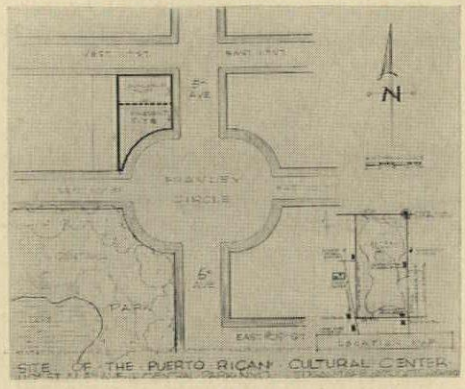
Puerto Rican Cultural Center on Central Park

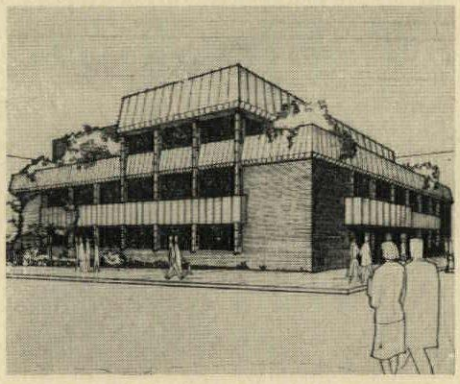
NEW YORK, N.Y. In 1956, Architect Edgar Tafel was commissioned by La Hermosa congregation of the Disciples of Christ in New York to design a new church. The group had been operating from a "store-front" church in a predominantly Spanish-speaking section of the city, and had grown large and prosperous enough to have its own building.

Shortly after receiving the commission, Tafel found a prime site on Frawley Circle, at the northwest corner of Fifth Avenue and West 110th Street. As plans progressed, interest developed in having a community center as part of the project. Pretty soon, the church and center became separated, and Tafel is now remodeling a former catering-banquet hall next door to accommodate La Hermosa. Currently, the project has grown into a full-fledged Puerto Rican Cultural Center with the enthusiastic backing of Mayor Robert F. Wagner and such dignitaries as Mrs. Eleanor Roosevelt, Puerto Rico's Governor Luis Muñoz Marin, Angier Biddle Duke, Harry Emerson Fosdick, and José Ferrer.

The center will be a three-story structure with lobby, offices, meeting room, and 125-capacity auditorium on the ground floor; craft and music rooms and 10 meeting rooms on the second floor; and 225-person auditorium, kitchen, and terraces on the top floor. Exterior will be brick with horizontals of oxidized copper and columns faced with yellow terra cotta.

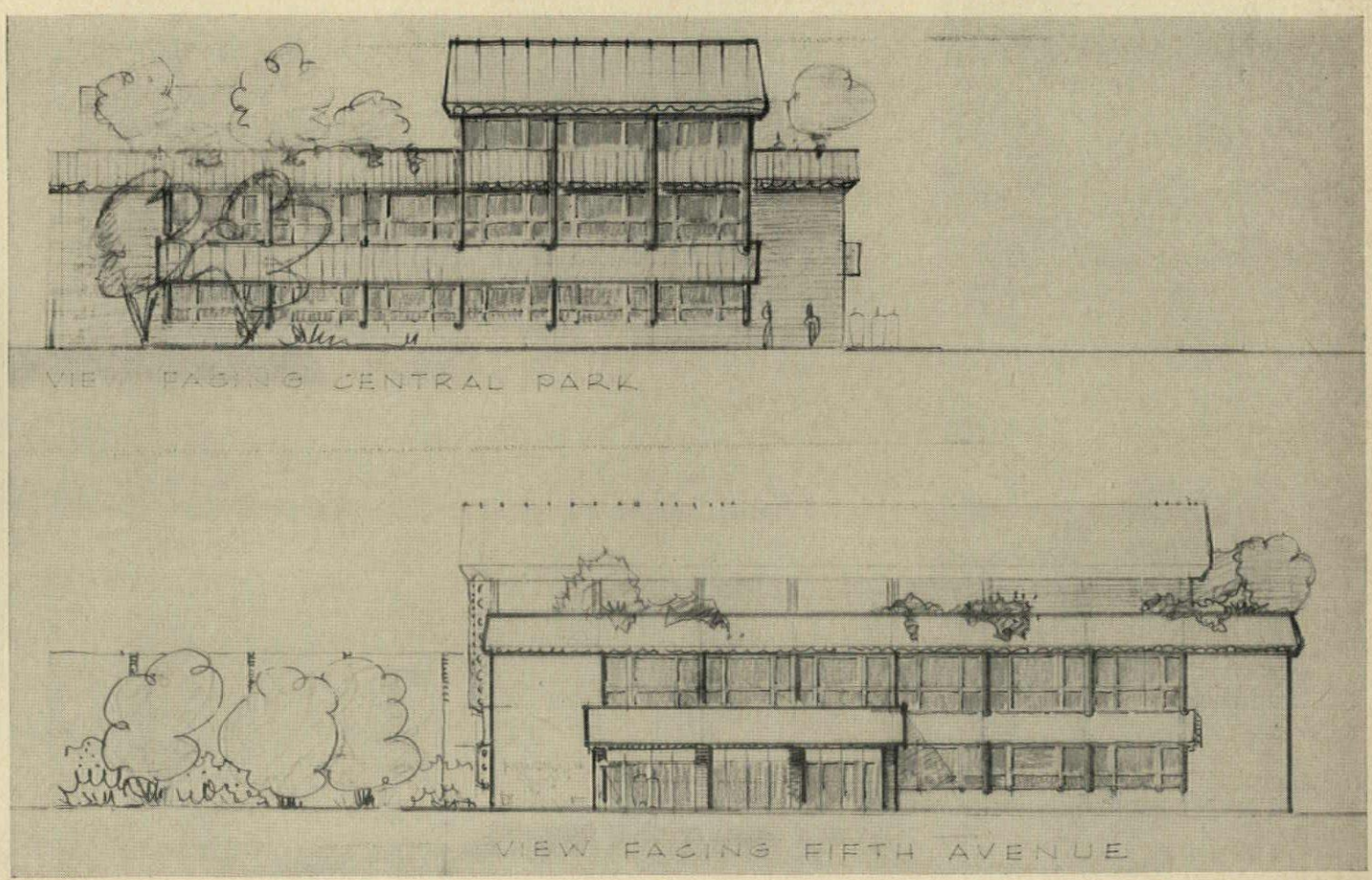


SITE OF THE PUERTO RICAN CULTURAL CENTER

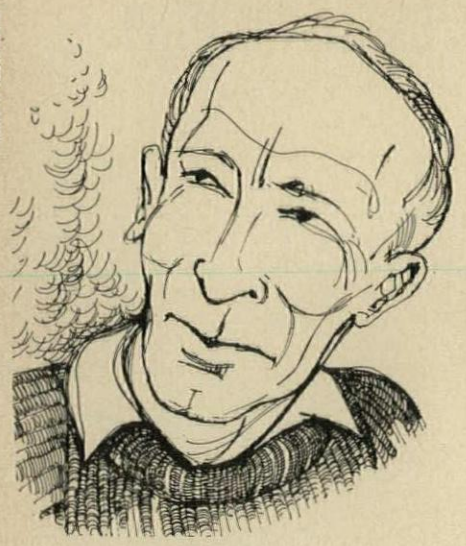


Tafel noted to P/A that fund-raising experiences with the project have been interesting. It was rather difficult to raise money for the combined church-community center, but when they were separated and the emphasis was mainly on the Puerto Rican Cultural Center, sponsors appeared and funds became considerably easier to procure!

Many concerned in the project are hopeful that it will provide the impetus to spark a redevelopment of the entire Frawley Circle area. New public housing exists to the north of the site, and redevelopment housing is scheduled to rise just to the east. Proponents of the center think that this indicates the possibility of creating a many-faceted Spanish cultural and community center.


VIEW FACING CENTRAL PARK

VIEW FACING FIFTH AVENUE


Raniero Corbellettl

PERSONALITY

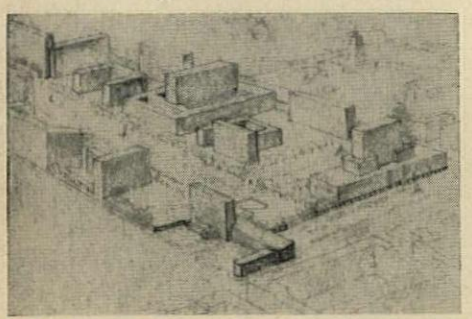
Many times, what befalls a person occurs without his own plan or invention. The person who triumphs over adversity and achieves contentment with equanimity can be said to be a man. But to say "sweet are the uses of adversity" about the adventures of Hermann H. Field would be to treat cavalierly one of the most horrifying, and at the same time one of the most inspiring, personal ordeals in the annals of architecture.

Most architects are familiar with Architect Field's incredible experience —how, after a CIAM meeting in 1949, he visited Poland to search for his brother Noel, who had vanished behind the Iron Curtain; how he was taken to the Warsaw airport and bade farewell by Polish architect friends; how he was not heard from again until one day in 1954 when a Pole fleeing to the West brought word that he was alive, albeit imprisoned. The story has been told in P/A (p. 228, JANUARY 1956) how Field, in a supreme example of mental and physical courage, kept his life and sanity intact during those harrowing years in a cellar on the outskirts of Warsaw. As an architect-planner, he had been offended by the Sovietized plan for the ruined center of that city, with its autocratic focal point, the "Palace of Culture and Science." He proceeded to replan the city's center *in his head*, later devising an ingenious modular graphic system with the straw in his cell. (Only a month before his release, Field was given pencil and paper, and made the drawings you see for the first time on these pages.)

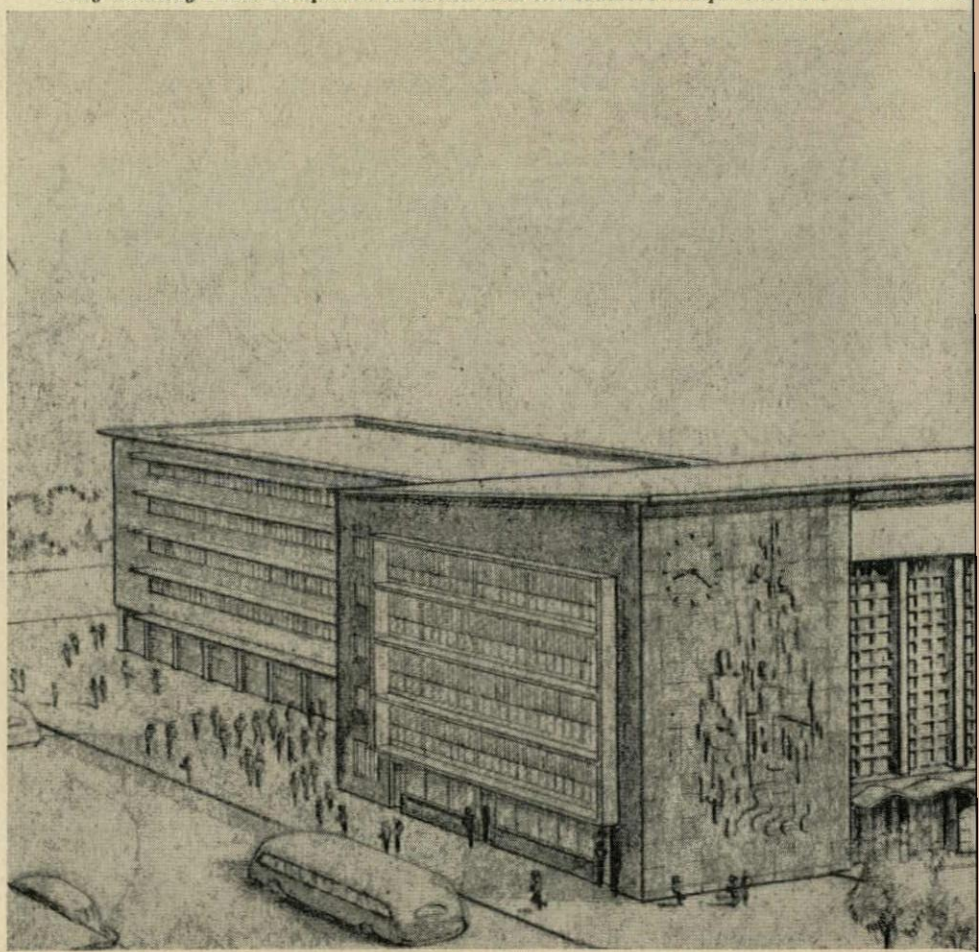
Four months after his imprisonment on trumped-up espionage charges, Field was given a cellmate, the Polish journalist Stanislaw Mierzenski. Conversing softly in German, the two took flight from their deadly surroundings to a life of the mind. Their fantasy-preoccupation was, as Field describes it, "with the complexities as well as the cussedness (which we were observing at close range) of human behavior." After their release, this mental exercise bore fruit in the 1958 novel *Angry Harvest* and will continue to do so in the forthcoming publication (October) of *Duck Lane*, a story of the wartime vicissitudes of the inhabitants of an imaginary dead-end lane outside Field's cellar window.

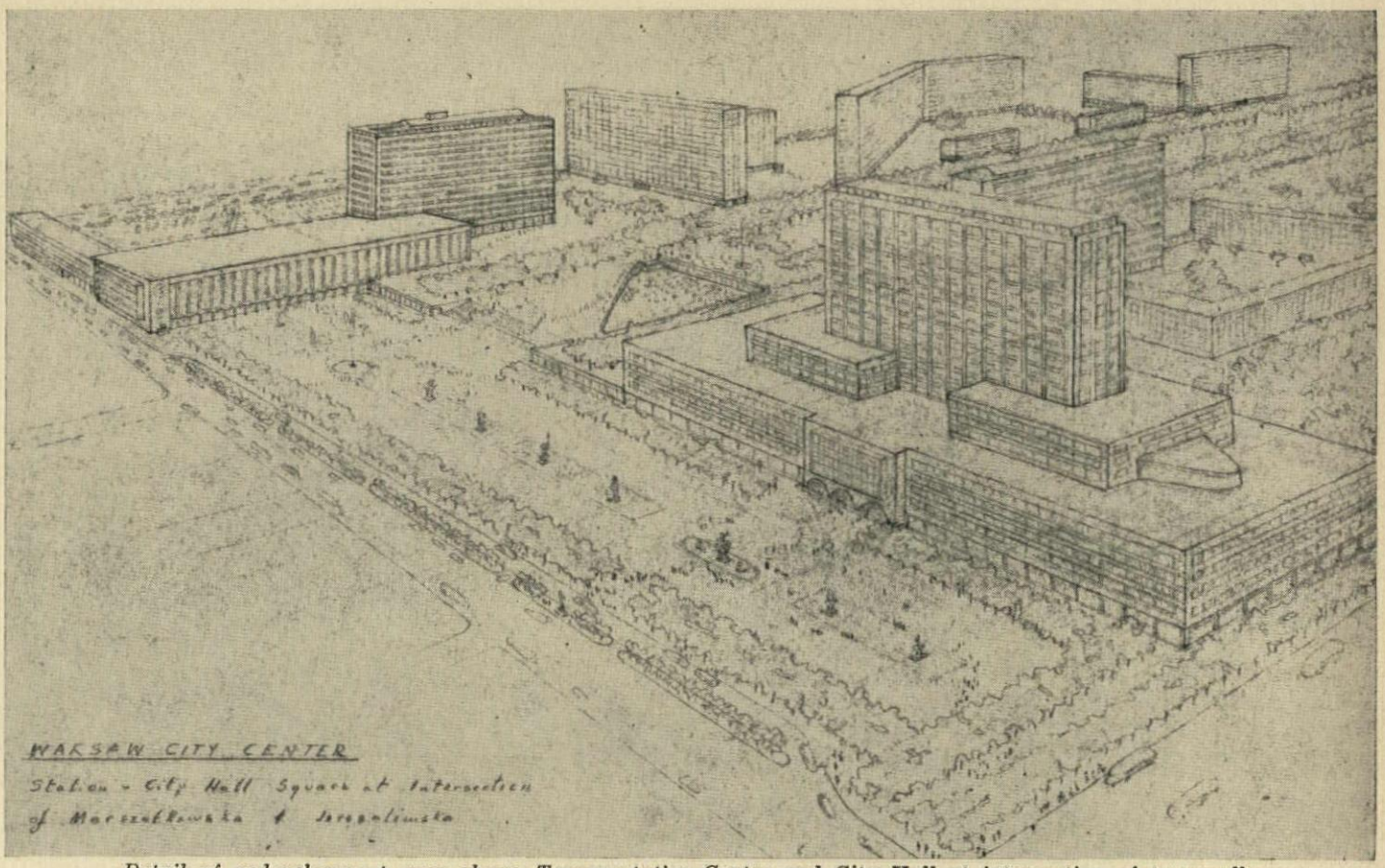
Today, Hermann Field is at home with his family in Boston, where, after five years writing the two novels which helped see him through the dark years, he has recently been appointed Director of the Planning Office of the proposed Tufts-New England Medical Center. This job, he says, "involves the close co-ordination of the development needs of a medical grouping with long traditions in the Boston scene with Boston's impending renewal efforts in a . . . blighted downtown area."


Actual Warsaw plan centers Soviet gift, "Palace of Culture & Science."


Field's solution creates a mall with civic buildings terminating in park.

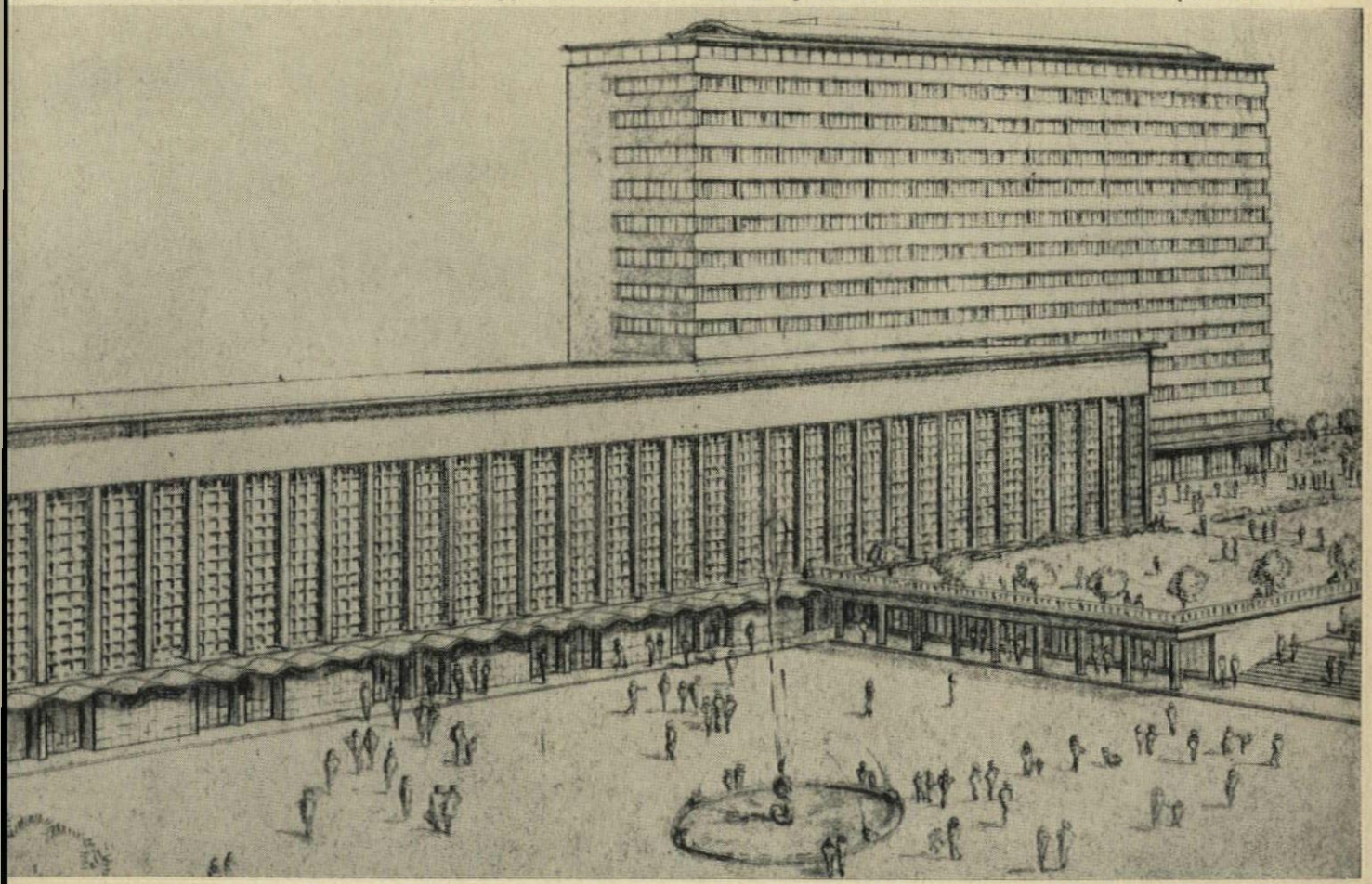
Only building Field completed in detail was the Hotel-Transportation Center. Visiti





Detail of redevelopment area shows Transportation Center and City Hall at intersection of two malls.

ish architects have said they feel his plan approach was valid and along the line which should have been followed.



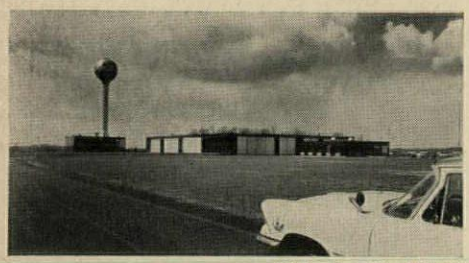


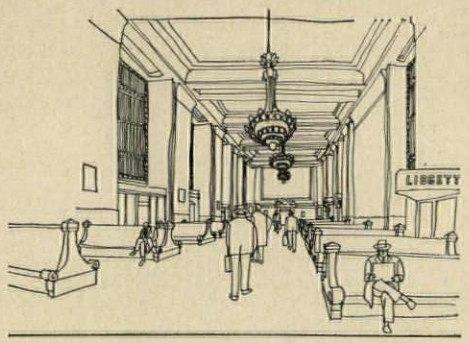
Photo: Joseph W. Molitor

Three Awards in Two Weeks for Nice Plant

The Nice Ball Bearing Company plant, Kulpsville, Pa., evidently lives up to its name, since recently, within the space of two weeks, it earned no less than three awards for its architect, Carroll, Grisdale & Van Alen of Philadelphia. In that short span, the building was awarded the Honor Award of the Pennsylvania Society of Architects for the best industrial building of the year; the Honor Award of Philadelphia Chapter AIA, for the same reason; and the Benjamin Franklin Gold Medal of the Producers' Council chapter for "the most imaginative use of modern building materials."

BOWLING BLACKBALLED

New York's Board of Standards and Appeals, which has been known to turn its head when an architectural felony was being committed in the city, emerged on the side of the angels at the public hearing on a zoning variance that would have permitted the construction of a three-level bowling alley in the waiting room of Grand Central Terminal (pp. 50, 164, JANUARY 1961 P/A). The board turned down the application by a vote of 4-0. Unfortunately, the terminal space is still in jeopardy, since it is zoned for "restricted retail" activity, and one of the leaders of the bowling alley crowd stated that they still might jam in restaurants, bars, and assorted concessions.



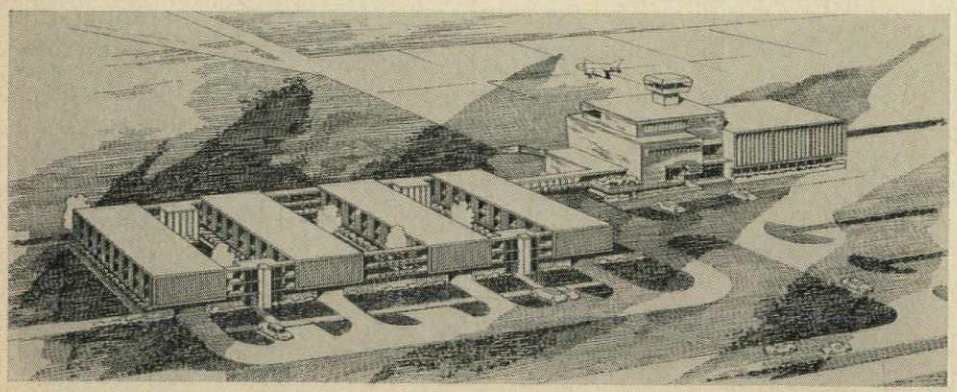
New York architects as a whole decried the bowling alley project, even though a group called the Architectural Bowling League—numbering among its members many who protested the plan—had applied for reservations in the completed alleys!

Sketch prepared by New York Chapter AIA to accompany a letter of protest to Mayor Wagner shows the waiting room as it is and as it would look with the ceiling lowered 45 ft.

AIA CONVENTION

Theme of the April 24-28 AIA Convention in Philadelphia will be "Redesigning Urban America." Author-economist John Kenneth Galbraith will be convention keynoter, and Lewis Mumford and Bruno Zevi will conduct a discussion on the esthetic, cultural, and sociological aspects of the city. Willo von Moltke, Roy Larson, Oskar Stonorov, Vincent Kling, Robert Geddes, and I. M. Pei will participate in a panel discussion of the renewal plan for downtown Philadelphia, with Edmund Bacon, executive director of the Philadelphia Planning Commission, in the chair.

Jury for the R.S. Reynolds Memorial Award, which is to be presented at the convention, consists of Paul Thiry, Minoru Yamasaki, Samuel T. Hurst, Hugh A. Stubbins, Jr., and Henrique E. Mindlin.



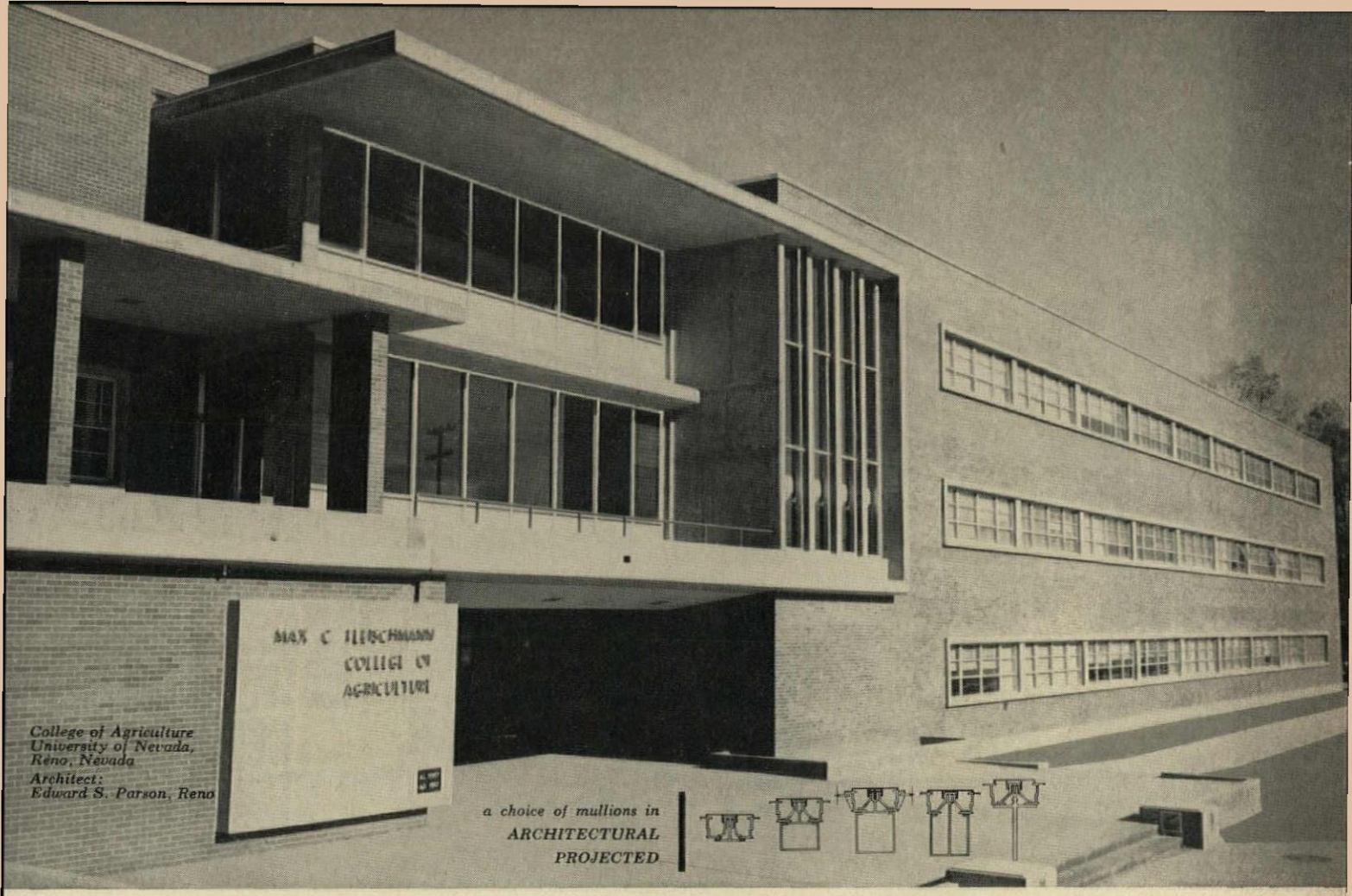
PRIVATE AIRPORT PLANNED FOR FORT WORTH

What probably will be the nation's most completely equipped private executive airport is under construction on U.S. 81 eight miles south of Fort Worth. Expected to be in operation by October 1961, it will provide hangar and storage space for 240 aircraft, and will have one 6000-ft and two 3000-ft runways. Designed "to serve the flying businessmen in the Southwest," the four-story terminal building will contain a barber shop, rent-a-car service, executive suites and office space, convention facilities, a ballroom, a conference room, and a private club in the penthouse. The project, designed by Harkrider, Clark & Jones for Sphere, Inc., will include a 128-unit motor hotel (with swimming pool) connected to the terminal building by a covered walkway. The four motel blocks will be raised a story to provide parking space on the ground floor. The 26 prefabricated hangars will be made by Inland Steel Products Company.

Austin Company Designs New Headquarters

The Austin Company has transferred the headquarters of its international engineering and construction organization to a 2½-story building at 3650 Mayfield Road, Cleveland Heights, Ohio. The 32,500 sq ft general office is the second Austin building on the company's 151-acre site on the perimeter of the projected Severance Shopping Center. Executives overlook a small lake from the second-floor wing, while the Research Division occupies its own wing, which spans a stream. General office space, a large exhibit lounge, and a 104-seat auditorium are on the

Continued on page 58



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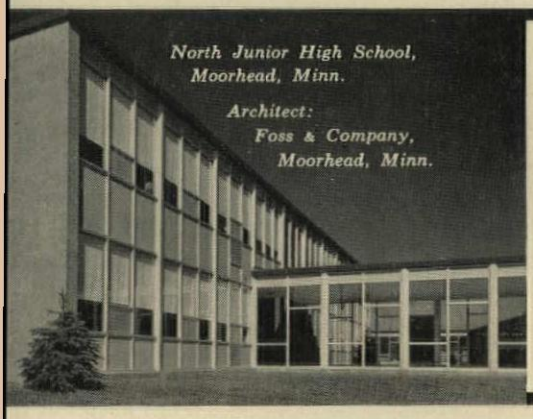

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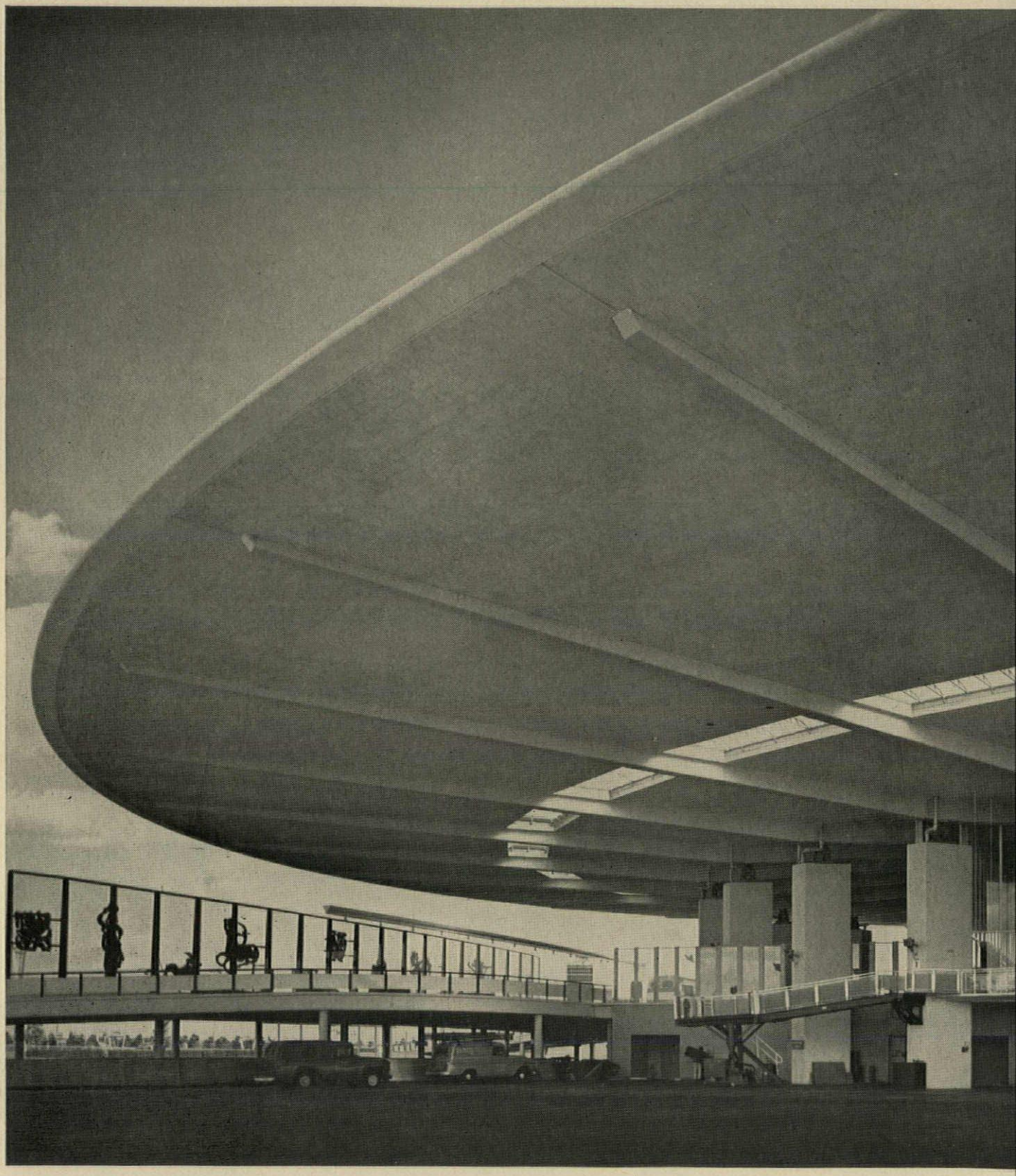
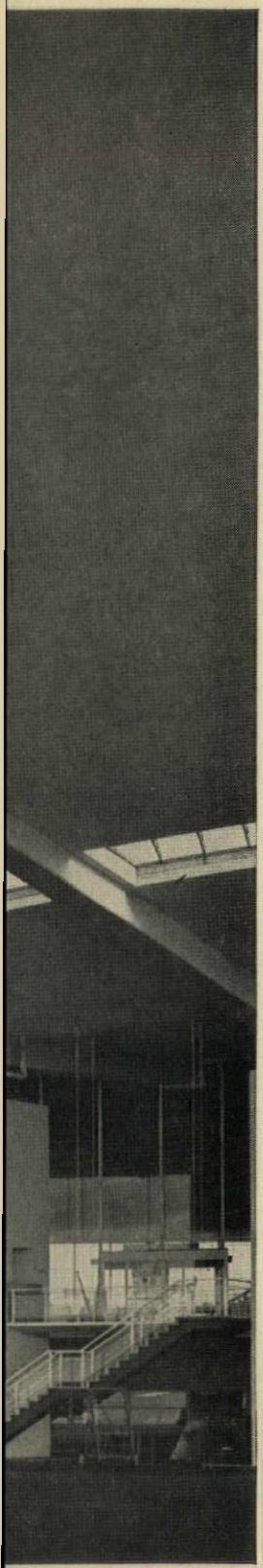


New Pan American World Airways Passenger Terminal, New York International Airport.



Architects and Engineers: Tippetts-Abbett-McCarthy-Stratton, New York.

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frees design from conventional flashing limitations, cuts flashing labor costs 25% for new air terminal

45,000 square feet of Saraloy 400 roof flashing provide hundreds of *permanent* moisture seals for this ultra-modern air terminal. Among the many critical flashing problems solved by Saraloy 400 were: sealing 875 acute and obtuse angles created by almost inaccessible junctures of structural steel beams and purlins; flashing steel-to-concrete joints and lining scupper holes.

The design of the terminal's elliptical cantilevered roof produced 144 different odd shapes and angles where beams, purlins and equipment housing shells meet. Flashing with conventional materials would require that each seal be specially cut and custom-fitted, often to match curved contours. The labor costs for installing metal flashing would have been prohibitive. Because Saraloy 400 could be quickly and easily cut and formed on the job, labor costs were about 25% less than the cost of installing conventional flashing materials. And each seal is permanent.

Saraloy 400 is Dow's brand of flexible roof flashing. It can be bonded to almost any construction material, such as concrete, wood, metal, ceramic, and it can be painted. It provides a permanent watertight seal which won't check, peel or crack . . . and which moves with building contraction and expansion. For more information write to THE DOW CHEMICAL COMPANY, Midland, Michigan, Plastics Sales Dept. 1501EB2.

Saraloy accomplishes difficult flashing of bolted girder-purlin intersection

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THE DOW CHEMICAL COMPANY DOW Midland, Michigan

Continued from page 54
ground floor. A separate one-story structure supporting the outer end of the Research Division wing contains air conditioning and other equipment and part of the staff. The façade is light gray Georgia marble, black Norwegian granite, plate glass, and stainless steel. Interior materials include English oak and Brazilian rosewood paneling, teak floors, and special stainless steel hardware from Denmark.

Motor Hotel for Chicago's North Shore

Ground was broken last December for the Hyatt-Lincolnwood Hotel in Lincolnwood, Illinois, between Evanston and Chicago. The five-story, 160-room hotel, and the low restaurant building to which it is connected, will be of reinforced concrete construction with brick and glass exterior and tan-brick trim. The project will be located at the northwest corner of Lincoln and Touhy Avenues, and will include an outdoor swimming pool, terraces, and parking for 500 cars. It will be air conditioned and fireproof, will have two dining rooms, a coffee shop, a cocktail lounge, banquet areas capable of seating 750, and four private dining rooms. Architects: Hausner & Macsai and Friedman, Alschuler & Sincere.

Contest, Fellowship, Scholarship

The architect (or contractor) who comes up with what is in the jury's opinion the best and most original use of Sculptured Tile, a product of Stark Ceramics, Inc., will receive a trip to Paris and Rome for two. Deadline is March 31; entries will be judged by two architects and a contractor in Cleveland. . . . Details on University of Illinois's Kate Neal Kinley Memorial Fellowship for study in America or abroad may be obtained from Dean Allen S. Weller, College of Fine and Applied Arts, Room 110, Architecture Building, University of Illinois, Urbana, Ill. Applications must be made not later than May 22. . . . Candidates for the Rotch Traveling Scholarship must have a record of study or practice in Massachusetts. Requirements can be obtained from William G. Perry, Secretary, Rotch Traveling Scholarship Committee, 955 Park Square Building, Boston 16, Mass. Applications due March 20.

White House Conference on Aging

The present "population explosion" among the elderly of the nation has drawn increased attention to the problem of housing them. People over 65 now constitute more than nine percent of the population of the country, and this percentage is expected to be maintained—or even increased—in the next few decades. Most persons in this age group will face the problem of finding housing to meet their special physical and social needs within drastically curtailed incomes.

Activity in the field of special housing for the elderly is now expanding rapidly as a result of 1956 revisions to the U.S. Housing Act. The first effects of this legislation, in terms of completed projects, are just now being seen. (Next month's P/A will present a special feature on Public Housing for the Elderly).

Last month, 227 people from all over the country met in Washington to discuss housing for the aging and make recommendations to the Government. The group constituted one of the 20 sections of the White House Conference on Aging.

Although only about 20 of the delegates were architects, they took a prominent part in the program. Walter K. Vivrett, Professor of Architecture at the University of Minnesota, was the Technical Director of the Housing Section, in charge of assembling background information and organizing the delegates into working groups.

Among other architects participating were William Keck of Chicago, Edward Noakes of Bethesda, Preston Stevens of Atlanta, George Kassabaum of St. Louis, and Oskar Stonorov of Philadelphia. Without doubt, the best-known among the nonprofessional delegates was Miss Mary Pickford of Beverly Hills, California.

The most significant project in a display at the National Housing Center was Victoria Plaza, a public project in San Antonio, which will be presented in detail in next month's P/A. A full-scale apartment unit from the project gave the delegates some idea of the innovations included in the design, and a model allowed them to visualize its contribution to the city. Architect Thomas B. Thompson of San Antonio and Mrs. Marie McGuire, director of the city housing authority and keynote speaker for the Housing Section, were on hand to explain the program of the center.

Most of the conferees represented housing authorities, welfare agencies, and civic, professional and religious organizations. (The AIA was not represented). They all took their task seriously, discussing bitterly the problems and obstacles they faced and stoutly defending their proposed solutions.

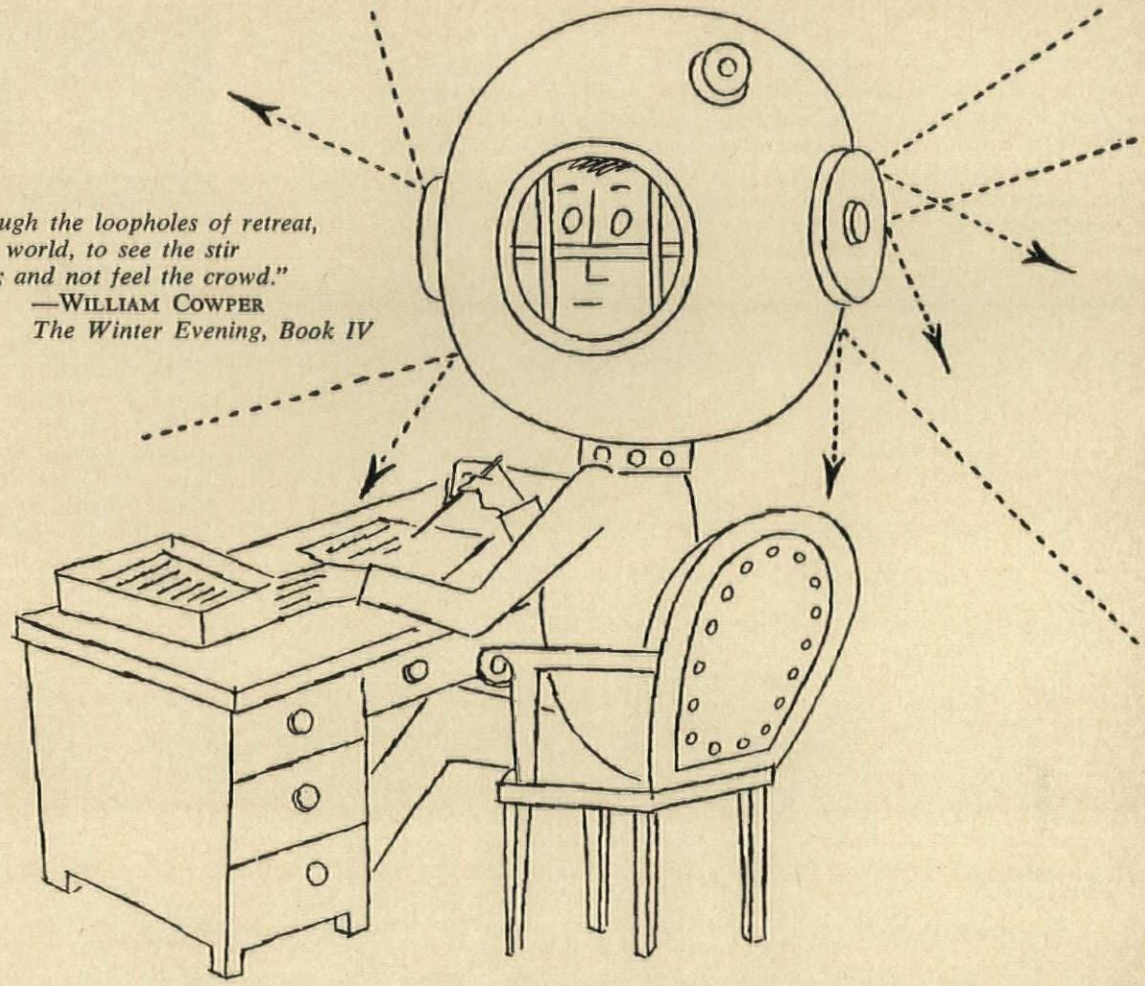
These delegates were concerned principally with legal and economic means for making available more housing of suitable types and quality. They did not presume to make recommendations of design, but did discuss the relation of such housing to the community, a question on which the architects were able to speak with authority. It *was* agreed that the elderly must not be moved any farther than necessary from their previous neighborhoods, or from the facilities of the city core.

The importance of adequate housing for independent living, in order to reduce dependence on institutional facilities, was stressed repeatedly. The inadequacies of present institutions and inconsistencies in their regulation were criticized.

The question that generated the most heat was that of private versus public sponsorship. All proposals that called for increased Government subsidies were attacked as unfair to private enterprise. One such recommendation survived a floor fight when it was emphasized that public housing was endorsed only for those with inadequate means to obtain decent private housing. Experience has shown that this group makes up a large portion of the over-65 population, and that it is housed for the most part at public expense, even if not in public projects.

The problems of those who are ineligible for public housing, yet who are often inadequately housed, led to recommendations on the administration of FHA. Several delegates protested the unrealistic requirements

Continued on page 60



"Tis pleasant, through the loopholes of retreat,
To peep at such a world, to see the stir
Of the great Babel; and not feel the crowd."
—WILLIAM COWPER
The Winter Evening, Book IV

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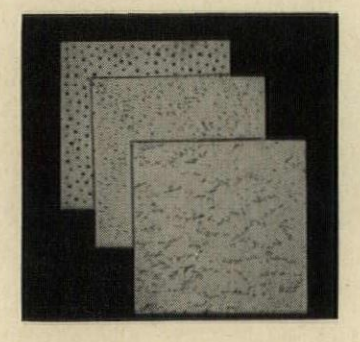

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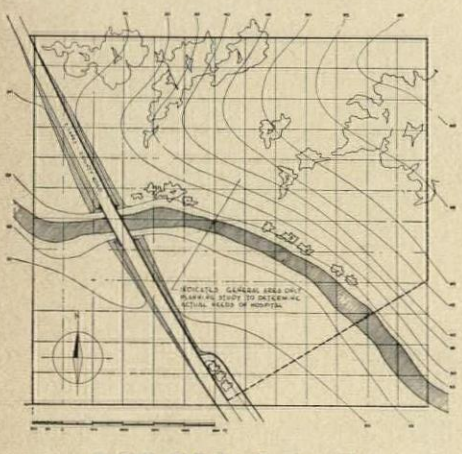
and excessive red tape of the present program.

Although the recommendations of the conference are unlikely to affect the design of housing for the elderly directly, they will have many indirect effects on the quantity and type of projects constructed. Submitted to a new Administration that seems to favor an increase in public spending, these recommendations should stimulate further the already phenomenal growth of special housing for the elderly. J.M.D.

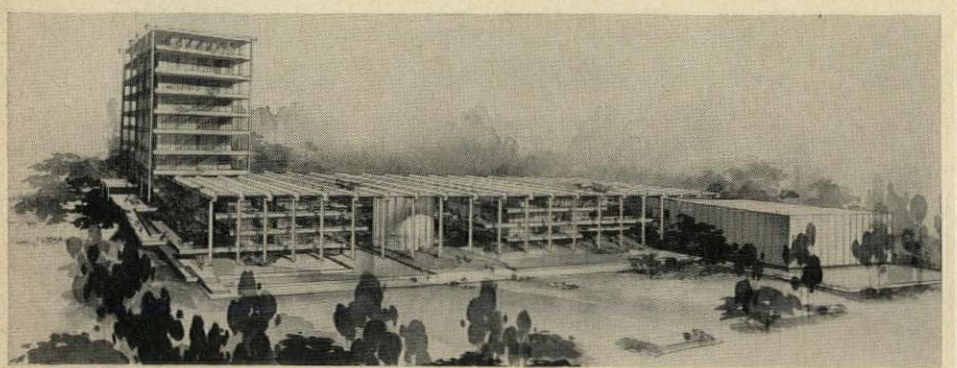


$25,000 Awards Program Set

Theme of the third annual architectural competition sponsored by Mastic Tile Division, The Ruberoid Company, is development of medical facilities to complement the residential, educational, and recreational areas that have been designed in the two previous programs. Hypothetical site shown would adjoin the education-recreation site of last year's competition (pp. 54-55, SEPTEMBER 1960 P/A). Jury is headed by E. Todd Wheeler, chairman of AIA's Committee on Hospitals and Health, and includes Donald S. Nelson, Broad & Nelson, Dallas; Donald E. Neptune, Neptune & Thomas & Associates, Pasadena; James J. Souder, Kiff, Colean, Voss & Souder, New York; and Ray E. Brown, director of the graduate program in hospital administration at the University of Chicago. A. Gordon Lorimer, New York, is professional advisor. Details and registration forms are available directly from Ruberoid or from its field representatives. Deadline for receipt of entries is June 30.

Hilltop Research Center for Electronics Firm

Hoffman Electronics Corporation's U-shaped Science Center is on a 10-acre site on top of one of the highest hills in Santa Barbara, Calif. Offices for the staff of 50 scientists and engineers are along the two end walls of the long, raised structure, giving views of the city below and the Santa Ynez mountains to the northeast. Laboratory space adjoins the offices and opens onto the interior, landscaped



Concrete Frame to Hold Movie-TV Museum

Hollywood's Motion Picture and Television Museum, to rise on a 3½-acre site opposite Hollywood Bowl, will be, in effect, a series of large platforms suspended in a structural "cage" of prestressed concrete. The opaque building in the rendering will house a completely equipped sound stage and television studio, where visitors will be able to watch production of films and television shows. Major portion of the museum will be devoted to exhibits telling the history and explaining the technical aspects of both media. Special areas will contain a projection theater, a hall of fame and wax museum, rooms dedicated to winners of film and TV awards, and a restaurant whose various rooms will recreate sets of famous motion pictures. An adjoining office tower will be added in increments as the need develops. Architects: William L. Pereira & Associates.

court. Interior corridors are not provided because covered walkways surround the building. The base of the U contains the entrance lobby, research library, and visiting director's suite. Construction is of laminated beams with glass and plaster panels. The landscaped central court provides a place for informal seminars, and there is a raised swimming pool for the staff to use. Entrance to the building (*right*) is by a flight of stairs suspended over a reflecting pool. The center is planned for eventual expansion to six times this size. Architects: William L. Pereira & Associates; Gin Wong, partner in charge.

CALENDAR

Annual meeting of The Aluminum Association in Cleveland this month (14th, 15th, 16th, and 17th) will be highlighted by a trip to Oberlin College to mark the 75th anniversary of the discovery, by Charles Martin Hall, of the electrolytic process that set aluminum on the road to becoming the second most widely used metal in U. S. industry.

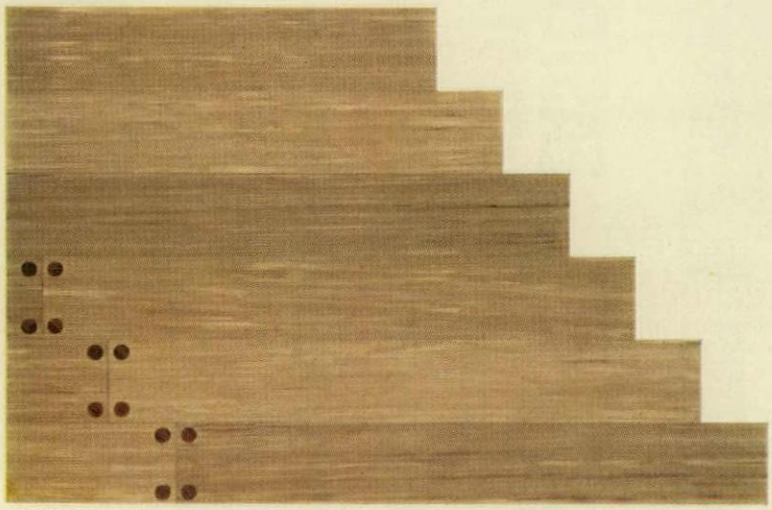
Architectural Tour Sponsorship

Sponsors of the Creighton-Lux-led tour of eastern Europe and Scandinavia, announced on page 54 of last month's issue, are Le Compagnie Mondial des Voyages, McGinniss Travel Service, and Air France.

OBITUARIES

William C. Mann, Mann & Harrover, Memphis, Tennessee, died December 31 after a short illness. His young firm won a number of awards, including several from P/A. . . . Frederick H. Brooke died in Washington, D.C., at the age of 82. He was the American architect on the British Embassy there, and designed the District of Columbia War Memorial in West Potomac Park.

For more information, turn to Reader Service card, circle No. 308



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APPOINTING NEW FRONTIERSMEN

By E. E. Halmos, Jr.

Appointments of men to the Government's "second-echelon" jobs—the 500 or more heads of independent agencies and important bureaus within the Federal departments—are the matters of key importance to anyone who does business (or wants to) with the Federal Government.

With the major Cabinet appointments already made, these below-Cabinet-level jobs were beginning to be filled as Congress opened for business again January 3, and Washington began to recover from its unnatural political vacuum.

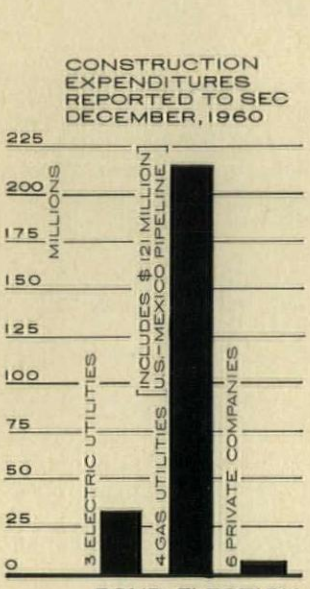
As most architects know, Washington operates what is probably the world's biggest "rumor mill"—and it has been running at full speed on a 24-hour basis for months, while the new Administration struggles with its job of taking over. The rumor mill operates best, of course, when it is fed as few facts—but as much unfounded conjecture—as possible. The principal product has been hundreds of names of men who will—or won't—be appointed to the policy-making, contract-administering posts.

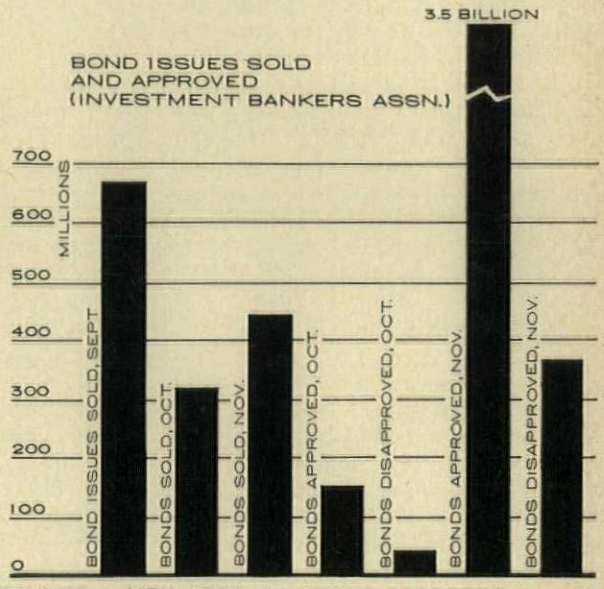
For architects, the key second-level jobs can be listed handily: Commissioner of the General Services Administration; Administrator of the Housing and Home Finance Agency; Commissioner of the Federal Housing Agency; Commissioner of the Public Housing Administration; Administrator of the Veterans Administration; chiefs of the engineering branches of the armed services; Commissioner of the Bureau of Reclamation; Commissioner of Indian Affairs; and administrator of the Federal highway program.

Of these, GSA, HHFA, FHA, PHA, VA, and the highway post are subject to Presidential appointment. Subject to Cabinet appointment or assignment by the head of the particular agency involved are heads of the HHFA's Urban Renewal Administration and the Community Facilities Administration; the subchiefs of GSA—principally Public Buildings Service; VA subposts; and BuRec and other such agencies. The military service chiefs—of the Corps of Engineers, the Navy's Bureau of Yards and Docks, the Air Force Civil Engineers—are appointed for regular "tours," and all three present chiefs have several years to go yet before their terms expire.

Some of these key appointments had already been made before Congress got under way—principally those of New Yorker Robert C. Weaver as head of HHFA, and Missourian Rex Whitton as administrator of the Federal highway program.

(Incidentally, the presession furor over the so-called regulatory agencies should have little effect on architects or the construction industry, even if something is done to bring them under closer Presidential or Congressional control. Although some of these agencies—such as the Federal Power Commission—do have an effect on





BOND ELECTION RESULTS – NOV. 1960 BY USE OF PROCEEDS

USE OF PROCEEDS	APPROVED		DISAPPROVED	
	AMOUNT	NO	AMOUNT	NO
EDUCATION:				
ELEM. & SEC.	403,578,000	172	75,196,000	40
OTHER	268,240,000	14	9,874,000	9
ROADS & BRIDGES	145,900,000	25	58,194,000	22
WATER & SEWER	2,005,256,000	70	39,498,000	43
OTHER UTILITIES	21,950,000	6	450,000	1
HEALTH & WELFARE	178,959,000	24	15,913,000	13
RECREATION	18,879,000	16	38,556,000	26
PORTS & AIRPORTS	64,615,000	6	21,642,000	6
INDUSTRIAL	1,161,000	3	1,852,000	2
REFUNDING	—	0	—	0
FLOOD CONTROL	4,337,000	3	1,300,000	2
PUBLIC HOUSING	10,500,000	3	500,000	1
VETERANS AID	135,000,000	1	500,000	1
ADMIN. & OFFICE BLDG.	12,683,000	6	15,173,000	15
UNCLASSIFIED	183,469,000	58	85,780,000	31
TOTALS	$ 3,454,527,000	407	$ 364,428,000	212

BOND ELECTIONS SCHEDULED AS OF DEC. 1, 1960

MONTH	AMOUNT
DECEMBER 1960	94,146,000
JANUARY 1961	66,665,000
FEBRUARY "	79,721,000
MARCH "	74,650,000
APRIL "	23,800,000
MAY "	2,060,000
JUNE "	7,000
NOVEMBER "	915,986,000
NO DATE SET	31,100,000
TOTAL	$ 1,288,135,000

USE OF PROCEEDS	AMOUNT
EDUCATION:	
ELEM. & SEC.	125,083,000
OTHER	5,410,000
ROADS & BRIDGES	79,400,000
WATER & SEWER	102,482,000
OTHER UTILITIES	915,986,000
HEALTH & WELFARE	1,900,000
RECREATION	1,379,000
PORTS & AIRPORTS	9,850,000
INDUSTRIAL	3,335,000
REFUNDING	20,000
FLOOD CONTROL	—
PUBLIC HOUSING	—
VETERANS AID	—
ADMIN. & OFFICE BLDG.	—
UNCLASSIFIED	43,290,000
TOTAL	$ 1,288,135,000

construction work, it is quite remote from actual field operations.)

One other point, before leaving discussion of the make-up of the new Administration: Watch for action on legislation that would renew the President's authority to reorganize agencies. The pertinent law expired a year and a half ago, despite President Eisenhower's request for renewal. The Kennedy Administration is certain to seek the same authority—and Congress' action will be the tip-off on how far it will go along this line.

Satellite Cities?

Regional planning agencies, wrestling with the growing transportation headache around Washington (and all other major metropolitan areas), continue to push for the idea of satellite towns as a solution. (Architects will recall that Great Britain embarked on just such an idea right after World War II—an idea which, for various reasons, has had no success to date.)

Latest proposal—advanced by the National Capital Regional Planning Council and the Baltimore Regional Planning Council after a 13-month study—calls for 50 cities with populations of from 75,000 to 150,000 ranged about Washington and Baltimore (about 40 miles apart).

Idea would be that each satellite would have a "substantial" employment center of its own, its own business and entertainment districts, but would be connected to others and to the two big cities by a transit system. Satellites would be separated from each other by publicly owned lands used as parks or sites for connecting freeway loops.

Problem would be the enormous untangling of legislation and local governmental units that would be necessary before such a system of satellites could be built according to any plan, and the certainty that local governments would fight hard against any loss of their present powers.

But the task of providing some sensible means of transportation in the sprawling areas around the nation's big cities is one of increasing importance, particularly as more people begin to realize that highways alone simply cannot solve the problem.

In the Washington area, for instance, the Maryland State Roads Commission is asking the legislature for power to condemn lands for use for rapid transit systems, as well as highways. Such action has been opposed, so far, by the Federal Bureau of Public Roads, on the ground that Federal funds may not be used for transit purposes. However, it is expected that the new Administration will seek a broader interpretation.

Labor Pains

Housing—and all other areas of construction—will be vitally concerned with the offensive the building-trades unions are already mounting to get legal permission for "common situs" picketing (striking a whole job, even if a dispute is with a single one of many contractors).

As Congress began its session, such a change in the basic labor act still didn't seem likely to get through, but labor was pledged to push for it—and hard.

On another labor front, though, there seemed to be some hope of a solution to the jurisdictional disputes that have plagued the missile-base construction program:

The AFL-CIO was reported to be reviewing its "no stoppage" agreements of World War II vintage. Implication is that if the construction unions renew such pledges, they'll want some assurances from the Defense Department of employment of their members.

Behind the unions' concern is the very real threat that Congress might step into the matter with more restrictive legislation; criticism of the building trades on this score has been growing in Washington.

Classical Madison —Controversial FDR

Two proposed monuments—in monument-studded Washington—got into the news during the month.

One of these, for the moment at least, was noncontroversial: a monument to President James Madison, for which no site or design has been selected. Senator Willard Robertson of Virginia said the Madison memorial might utilize the 24 sandstone columns, left over from recent remodeling of the Capitol, as its central theme (though the columns would have to be protected from the weather).

The controversy arose—not unexpectedly—over the selection of a prize-winning design for a monument to Franklin D. Roosevelt (pp. 47—50).

Reaction to the design selection ranged from guarded newspaper comment on the originality of the idea to the *Washington Post's* headline characterization of "Book Ends Out of the Deep Freeze."

Reaction of the Roosevelt family was in general equally guarded—but certainly not approving.

As you know, the selection of the winner of the design contest is far from the end of the story. Various public bodies must now approve, as must Congress, and the estimated $4.3-millions cost must be raised both by public subscription and from Congress. It is estimated that at the very least it will be five years before anything is actually built on the site fronting the Potomac River.

Parking Problems

Washington's apparently ever-growing acreage of spaces devoted to parking automobiles — spaces that have now encroached on park areas surrounding Government buildings, as well as vacant lots — came in for criticism and a solution shocking to many a Government employe:

The Bureau of the Budget and the General Services Administration completed a study which recommended that Government employes be charged for parking space, with the money to be used to finance construction of garages. Such a move, figured the two agencies, would (1) force more carpooling, thus resulting in fewer cars on the streets; (2) force greater use of available public transportation.

It is estimated that the city will have a "deficit" of 11,500 parking spaces by 1968.

FINANCIAL

As the new year got under way, business prospects for the construction industry continued to look good to many forecasters.

Latest forecast came from the traditionally optimistic Associated General Contractors, which foresaw a total of $57.3 billions of new construction (plus $19.5 billions for maintenance and repair work) for 1961.

That prediction is exactly in line with the outlook released a month ago by the Department of Commerce (JANUARY 1961 P/A), and it relies on the same elements: some recovery in housing; a substantial upsurge in privately financed work, plus gains in public works; and the hope that no major stoppage or catastrophe will interfere.

Again, these predictions were being bolstered by other factors that continue to attest to the strength of the construction sector of the economy.

For example, there was evidence that money has eased somewhat over the past several months: The FHA reported interest rates (average) on conventional first mortgages for both new and older homes were down about 0.05 percent near the end of the year (from July).

Another example: The Department of Commerce Business and Defense

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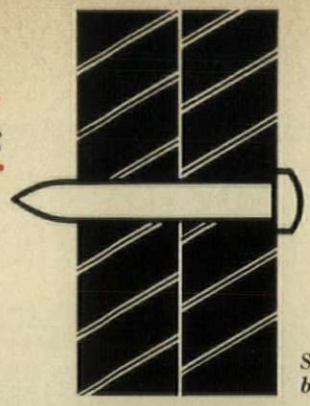
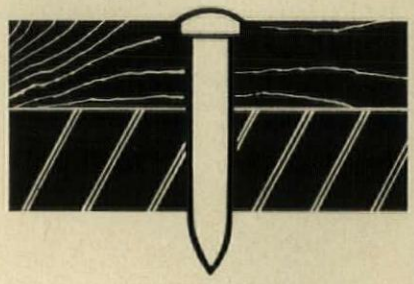
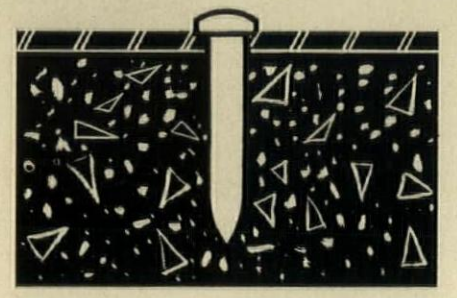


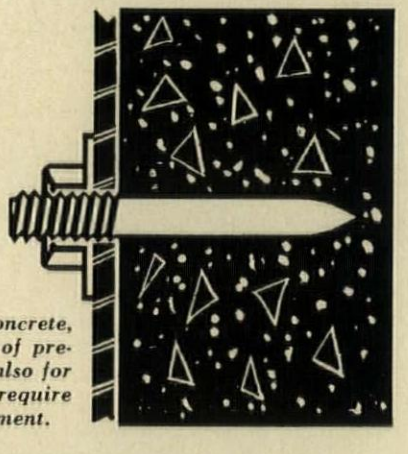
Steel to steel, such as angles and brackets to beams.

Wood to steel, wherever such application is required.



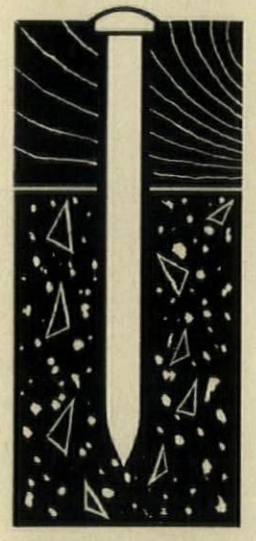


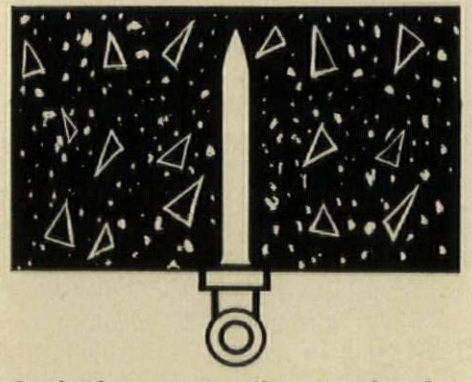
Steel to concrete, such as conduit and pipe clips; duct straps, angles, brackets and braces.



Threaded studs to concrete, such as attachment of predrilled materials — also for materials that may require removal or replacement.

Wood to concrete, such as furring strips, sill plates, partition plates.





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Services Administration said that sales of electrical construction materials (including wiring, lighting fixtures, etc.) will increase about 4 percent this year over 1960. Since 1960 sales will be up about 7 per cent over 1959, this is a substantial jump.

Still another: The "Value Line" survey also expects new construction outlays to go up this year, powered by a sizable expansion of Government spending on highways and public works. This in turn will mean better business in another year for building supply manufacturers: the full effect probably won't be felt until early in 1962.

This same upturn in highways and heavy construction, incidentally, is expected to help construction machinery manufacturers, who have been hard hit (operating at less than 55 percent of capacity) over the past year or so.

Contributing to this optimism, of course, is the certainty (as noted here last month) that Congress will pump some new money into several areas with reasonable speed: aid for school construction, for depressed areas, and housing for the elderly, for instance.

And then there is the continuing evidence of taxpayer support for bond issues that will support construction work (p. 63).

One interesting factor, though, for any observer familiar with construction operations, is the speed with which planners decide on construction as a solution for problems of unemployment and business stimulation.

Undeniably, construction work will do just that—but most people outside the business simply do not realize the time that must be consumed in planning and other activities before actual construction work can begin. That's one reason, incidentally, why the huge Federal-aid highway program was such a disappointment to many people in its early years—even though highway engineers, architects, and others consistently pointed out that it takes an average of 20 months from the time the money is available until the time that construction contracts are ready for letting.

Building projects often don't take that long. But, as many architects know, GSA figures up to three years from authorization to actual construction of Government buildings.

Members of the profession should sound this sort of a warning while legislation is in progress, in order to prevent a black mark against them later, in the mind of the public, when the appropriations don't produce jobs and a new flow of money the day after they are made. Pass this advice to your consultants on government jobs.

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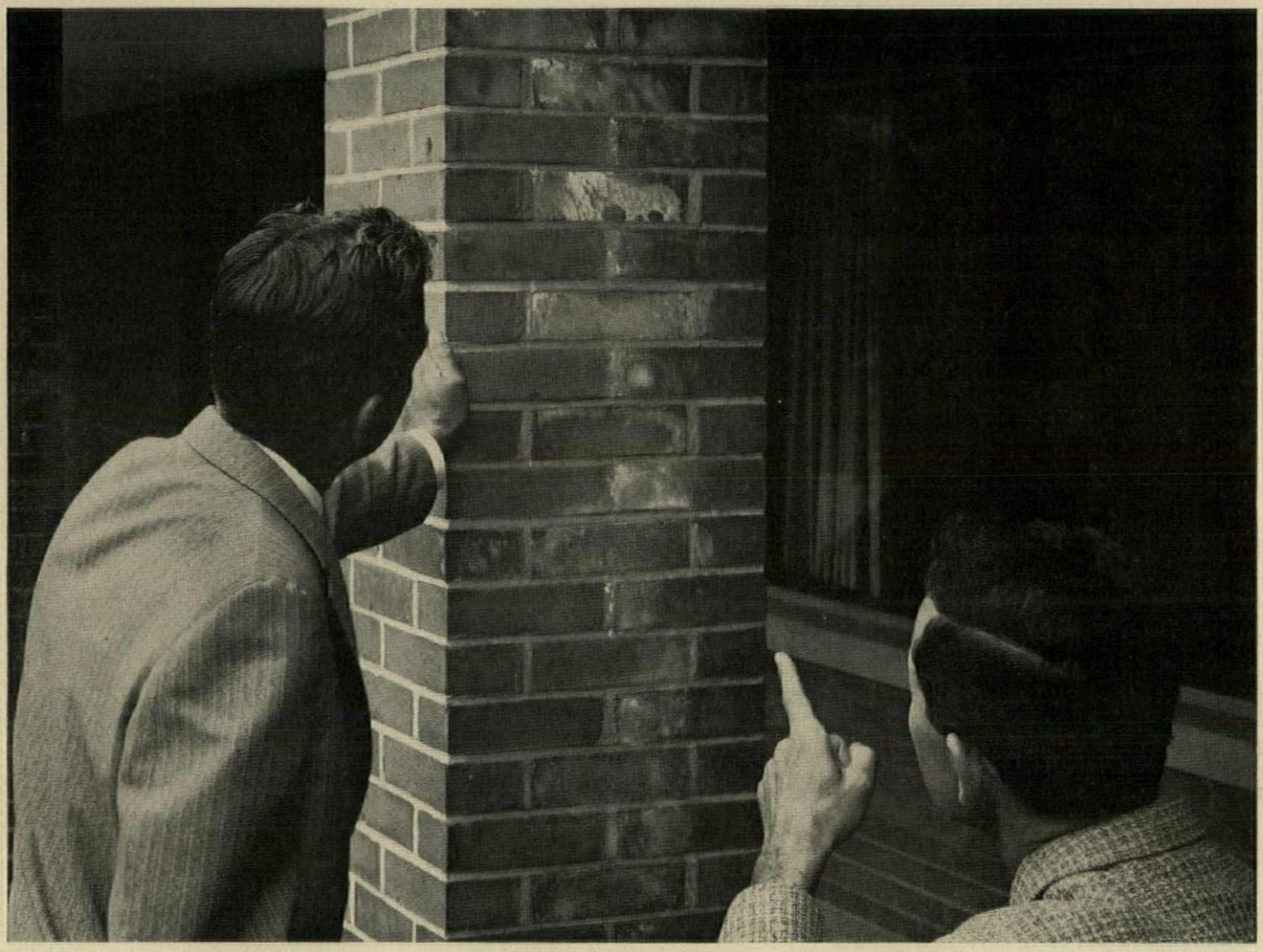

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Address Dept. 7314.

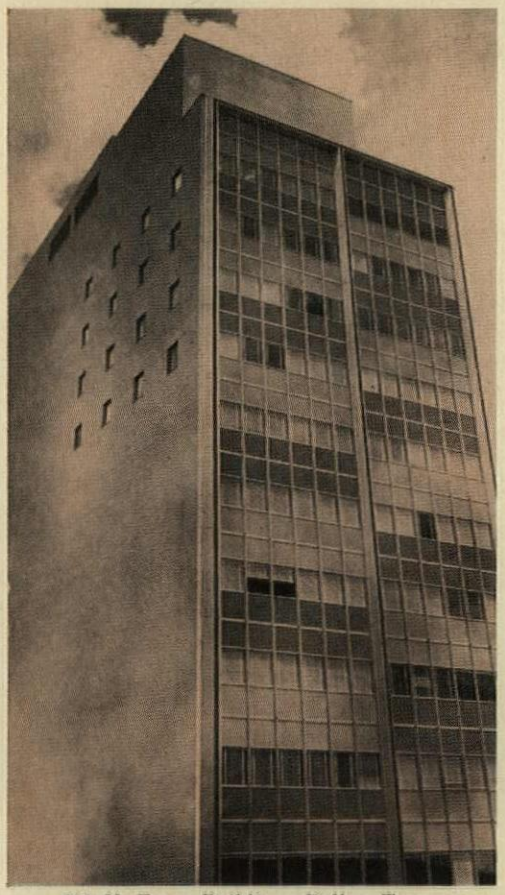
Specify

SILANEAL®
keeps brick clean

Dow Corning

...keeps these buildings beautiful!

Bruning Building: Mt. Prospect, Illinois.



211 N. Ervay Building: Dallas, Texas.

Carlton Motel: Dallas, Texas

Residence: Saginaw, Michigan.

Suggested Specification for Silaneal

From Dow Corning Bulletin AIA File No. 3F.

"Brick having suction above 20 grams per minute (per 30 sq. in. of bedding surface) shall be treated at the brick plant with Silaneal® (manufactured by Dow Corning Corporation). The Silaneal concentration shall be adjusted until the brick pass the following test:

Allow bricks to air-dry 24 hours after treatment. Weigh the brick and place bedding-side-down in 1/8-inch of water. Remove after 60 seconds and weigh again. The average increase in weight shall lie between 1/3 and 2/3 gram per square inch of surface tested (between 10 and 20 grams for a nominal 4 x 8 brick having a bedding surface of 30 square inches).

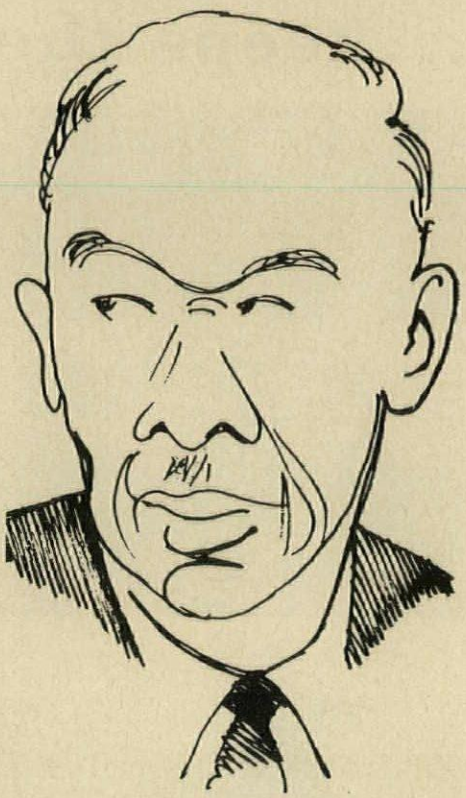
Brick having suction below 20 grams, but which may have a tendency toward efflorescence or other staining, shall be sprayed with Silaneal® on the face and two ends only. Treatment concentration shall be of sufficient strength to control efflorescence and staining."

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 in 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.

CORPORATION MIDLAND, MICHIGAN

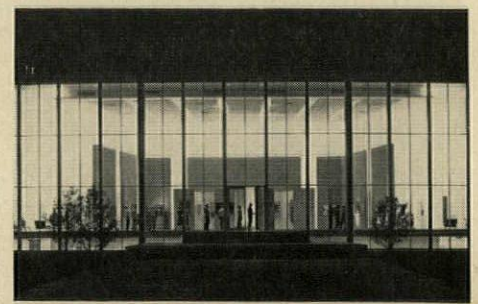
branches: ATLANTA BOSTON CHICAGO CLEVELAND DALLAS LOS ANGELES NEW YORK WASHINGTON, D. C.

SWEENEY SQUARES THE CIRCLE

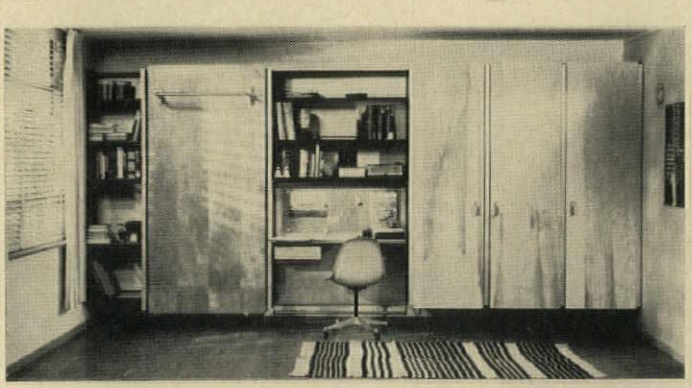


HOUSTON, TEXAS The pendulum has swung from one extreme to the other for James Johnson Sweeney. Having resigned in August from the Frank Lloyd Wright-designed Guggenheim Museum (p. 58, SEPTEMBER 1960 P/A), he has just been appointed director of the Museum of Fine Arts of Houston, latest addition to which was designed by Mies van der Rohe (*below*).

Sweeney, whose *métier* has long been the creation of a museum of art rather than the administration of a popular-education type program (emphasis on which led him to leave the Guggenheim), has as his goal in Houston the establishment of the Museum of Fine Arts as "an art center of world reputation." He states that it should be "a Texas museum, not merely a Houston museum. But it should not be merely a Texas museum. It should take its place as one of the significant museums of the United States and of the world."



Eames Designs Contract Line for Dorms



ZEELAND, MICH. Charles Eames has designed a system of storage, sleeping, and study units for institutional use—particularly college dormitories—that permits maximum conservation of space and exceptionally easy room maintenance.

Many such built-in systems available today have the disadvantage of being static: it is difficult to add to or alter them. "Eames Contract Storage" eliminates this drawback by standardizing the basic units and making them attachable and detachable, thereby permitting variation in individual groups of units. The Eames system incorporates into the basic structure not only typical storage units, but also other amenities and necessities usually found in residence halls: beds, desks, general storage and lighting fixtures. Conceivably, the only additional furniture needed to complete the furnishing of a room utilizing the storage system would be chairs, and perhaps a table for extra personal equipment such as radios and phonographs.

Study center has built-in lighting, drawers, desk, and bulletin board.

A major space saver is the fold-down bed, which is stored behind a large panel and lowered at night by means of a counterbalanced spring assembly to the steel-supporting brackets. Ease of room maintenance is provided by having the units touch neither ceiling nor floor, being mounted to the wall on steel brackets bolted to Unistrut. Herman Miller Furniture Co., Zeeland, Mich.

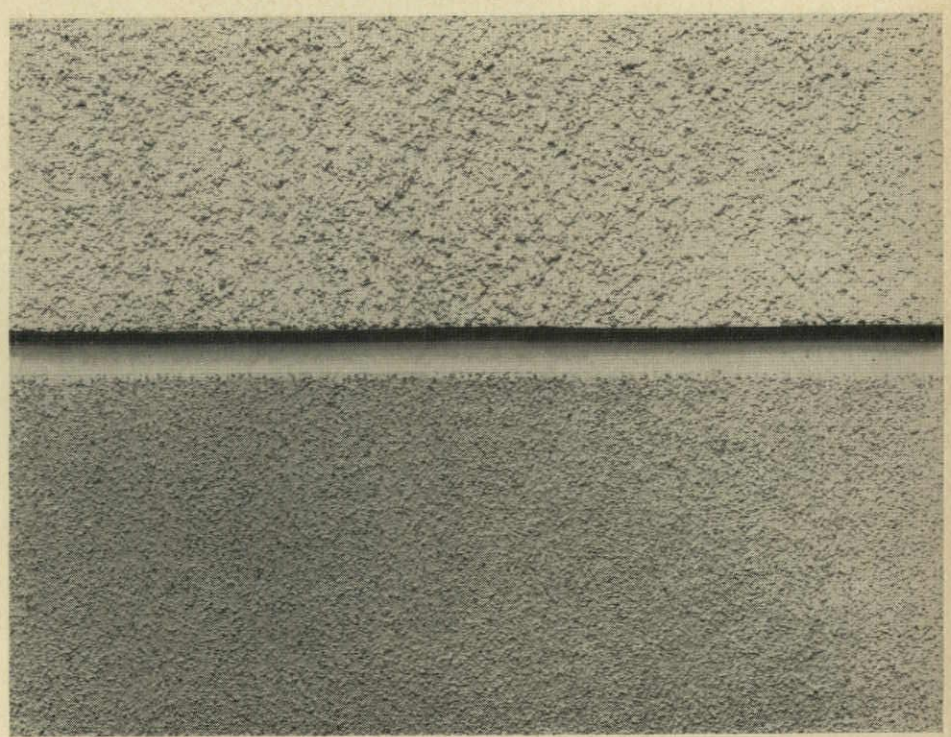
On Free Data Card, Circle **100**

Spray-On Coating Has Sound-Absorbing Properties

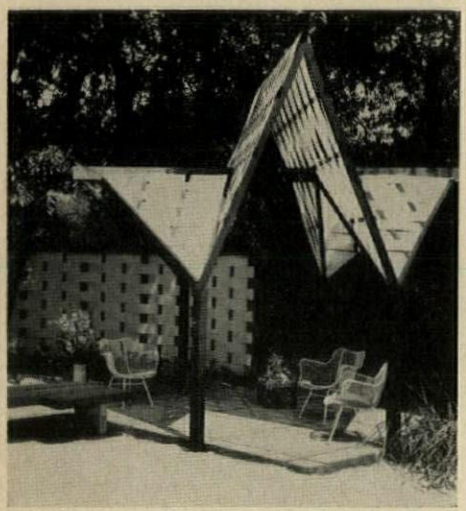
NEW YORK, N.Y. "Acoustex" is a spray-on coating for walls and ceilings that provides a surface finish and at the same time has sufficient porosity to cause a good quality of sound absorbtion throughout the area treated. The added advantage of equal spread of absorbtion results from the fact that Acoustex covers the entire surface, rather than having to be applied to specific areas like most standard acoustical products. In addition to its noise-reducing powers within a given enclosure, the surfacing, by sealing minute holes and cracks, will tend to eliminate sound that emits from other rooms.

Acoustex may be used instead of two coats of plaster and a paint finish on relatively rough reinforced concrete ceilings and slabs, and on precast, cast-in-place, and poured concrete, gypsum block partitions, hollow tile and cinder block. Cost reductions over established finishing methods are obvious. Acoustic Chemical Corp., 22 E. 17 St., New York, 3, N. Y.

On Free Data Card, Circle **101**



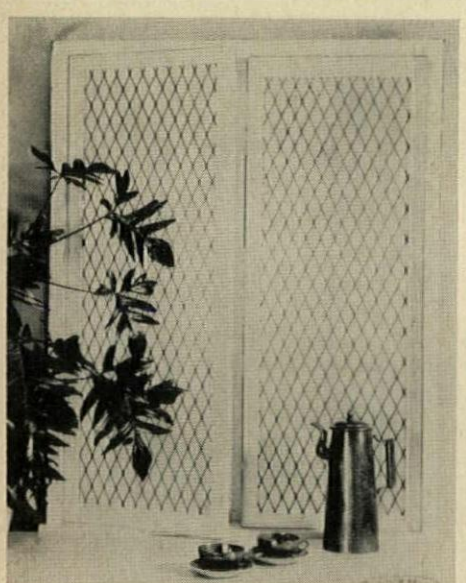
Ceiling and wall textures of Acoustex come in 10 standard colors.



Privacy Achieved with Plastic Webbing

This piquant gazebo and the fence protecting the terrace from the prying eye of the milkman are constructed of "Weblite" fencing, a woven plastic webbing and redwood. The fencing is woven of a saran yarn extruded by Firestone Synthetic Fibers Company from a resin made by Dow Chemical Company. The webbing is nonabsorbent and impervious to moisture, has a high tensile and impact strength, and does not deteriorate from exposure to sunlight and mildew. Present colors available: white, turquoise, and green. Weblite, Inc., 24 Jericho Turnpike, Mineola, N. Y.

On Free Data Card, Circle **102**



Glass-Fiber Panels Now Leaded

Flat glass-fiber panels embedded with steel strips in diamond (shown) or scallop designs can be used for a number of partitioning purposes both inside and outside. Translucent panels are available in either green or white, measure 24" x 96". Strips are either gold- or steel-colored. Barclite Corp. of America, 385 Gerard Avenue, New York 51, N. Y.

On Free Data Card, Circle **103**

Structural Aluminum System for Low Rise

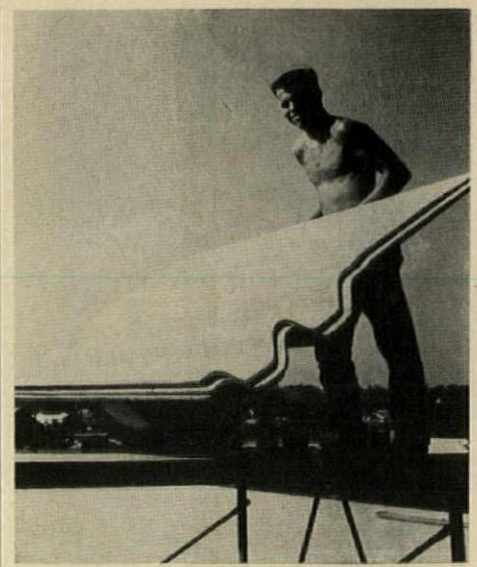
New structural aluminum closure system for one-story buildings has as its basis an assembled load-bearing frame fabricated from 6063-T6 alloy alumi-

num extrusions. This frame, joined to standard roof beams specified by the architect, will take total loads imposed on a one-story building of any square footage, including live, dead, and wind loads. The frames are built on a 4′ module. Two or three of the 90-lb frames can be joined together and erected simultaneously, making it possible to put up 120 sq ft of wall at once. Spandrel panels are of architect's own specification. A number of buildings utilizing the system are now under construction. Functional Structures, Inc., 154 E. Erie St., Chicago, Ill.

On Free Data Card, Circle **104**

Rot-, Fire-Resistant Roof Decking

Two new types of asbestos-cement roof decking provide a structural deck for built-up roofing and a finished nonflaking ceiling with high light reflectivity. "T" and "Cavity" decks have the inherent fire resistance common to asbestos-cement materials, and their inorganic composition guards against deterioration in areas of condensation and high humidity. T Deck weighs 8 lb/sq ft and Cavity Deck, which has a three-skin construction, weighs 10 lb/sq ft. The lighter has a maximum span of 8′, the heavier one



of 10′. As illustrated, the decks are light enough to set in place without use of handling equipment. Keasbey & Mattison Co., Ambler, Pa.

On Free Data Card, Circle **105**

Plastic Panels Are Structural, Translucent

Prestressed, glass-fiber-reinforced panels can handle spans from 4′ up to 30′ in single thicknesses. In application shown, panels span 13′, 2″ at 25

psf live load. (Building is shopping center in Texas by Reeves & Williams.) Cost: $1.50-$2.50 per sq ft in spans up to 15′: $2.50-$3.50 per sq ft in spans up to 30 ft. Architectural Plastics Corp., 1355 River Road, Eugene, Ore.

On Free Data Card, Circle **106**

SOM Coliseum Uses Plastic-Overlaid Plywood

A 22′-high fascia of gleaming white acrylic-surfaced exterior plywood dis-

tinguishes Skidmore, Owings & Merrill's new Memorial Coliseum in Portland, Ore. The new material was supplied by Georgia-Pacific Corp. and U.S. Plywood Corp. in co-operation with Kimberly-Clark Corp., makers of acrylic plastic overlay. Installation of the ½"-thick, factory-finished, edge-sealed panels was rapidly accomplished by crews working from a permanent traveling scaffold which will be used for window washing. Maintenance of the surface is expected to be quite low. New material will be

made in a number of colors, as well as white. Georgia-Pacific Corp., Equitable Building, Portland 4, Ore., and United States Plywood Corp., 55 W. 44th St., New York 36, N. Y.

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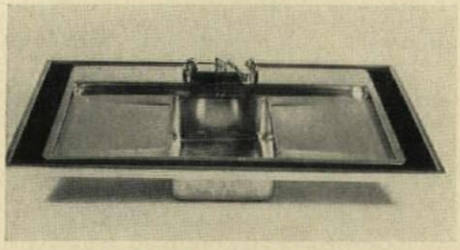


Sink Has Recessed Drainboard

Stainless steel sink insert comes in two models—single bowl with two drain sides (shown) and double bowl style. Unit is recessed from counter, making draining simple. Drainboards and bowl(s) are manufactured in one integral unit, obviating seam leakages. Amenities include cutting board that slides from left to right, and a colander that also slides and, when turned over, becomes a drainboard. Kitchen Conditioner Co., 169 Lodi St., Hackensack, N. J.

On Free Data Card, Circle **108**

Foamglas Now Sandwiched In Kraft Paper

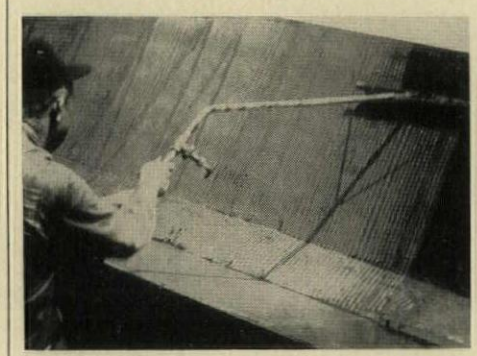
"Foamglas," Pittsburgh - Corning's popular cellular glass material, is now available in a new form. "Foamglas Board" is produced by sandwiching

several 1½"-thick blocks of Foamglas between two layers of laminated kraft paper, with a special asphalt for adhesive. Laminating paper is recessed ⅛" from the edge of the board to permit tightly butted joints that can be sealed with roofing bitumen. Availability of the insulation material in board form speeds installation time and cuts labor for roof insulation applications. Boards are 24" x 48", weigh about 10 lbs. Pittsburgh Corning Corp., 1 Gateway Center, Pittsburgh 22, Pa.

On Free Data Card, Circle **109**

Armstrong Announces Fluid Applied Roofing

A weatherproofing roofing compound for use on unusually configured roofs has been made available by Armstrong Cork. The process, which can be applied by air-operated, pressure-fed rollers, hand rollers, or conven-



tional spraying equipment, employs two compounds: F/A 400, which is based on neoprene and serves as a primer base coat, and F/A 600, based on Hypalon and providing weather-resistance and color for the surface. Basic color is white, but coating may be pigmented with other colors on request. Thickness recommended is 20 dry mils, producing a surface membrane which will weigh, in most cases, less than 20 lbs per 100 sq ft. Armstrong Cork Co., Lancaster, Pa.

On Free Data Card, Circle **110**

Lights Use Handblown American Glass

Lights fashioned of handblown American glass come in two shapes: a curved cone pendant (group shown) and a hemisphere. Colored shades are

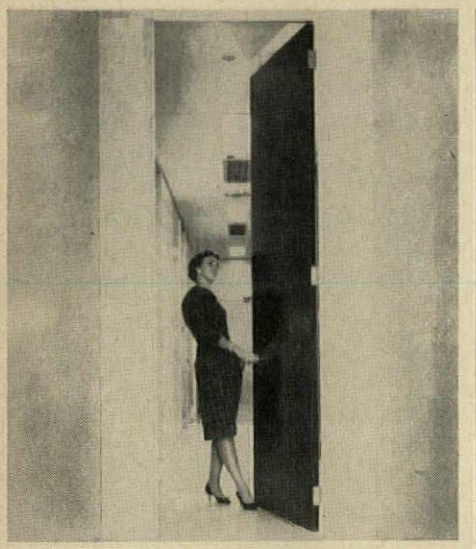
over a white opal ball, accommodating up to a 100-watt bulb. Hemispheres are frosted and crackled for a unique appearance, style shown is of smooth glass. Prices range from $13.75 up to $40.75 for a group. Designed by Norman Cherner for Raymor Manufacturing Co., Inc., 225 Fifth Ave., New York 10, N. Y.

On Free Data Card, Circle **111**

Heat Storage System in Solar-Earth Heat Pump

Two collecting and dissipating coils of "Wether-Bee," a solar-earth source heat pump, serve as storage and utilization elements for heat. Heat collected by the exposed coil is transmitted to a reservoir coil in the earth, to be used on cold nights or cloudy days. By spring, when the system has a low-condensing medium available, it is prepared to utilize the winter's cold to absorb the summer's heat. The heat pump is compact and may be installed in an upright, counter-flow, or vertical position. One unit conditions year-round. The pump is also manufactured as a water source unit for either water or air distribution. Tests have given it a coefficient of performance of 4.02. Heat Pump Systems, Inc., 232 South River St., Aurora, Ill.

On Free Data Card, Circle **112**



Formica Enters Door Field

With the purchase of Logue Woodworkers, manufacturers of Con-Dor-Lux doors, the Formica Corporation is now in the door business. Doors can be specified in any color, pattern or wood-grain Formica plastic laminate. Doors arrive at the job site premortised and ready to hang (orders for the doors will include hardware specs to allow for premortising). The doors are created to fit their specific openings, regardless of type of frame. They are packaged separately and arrive marked for their individual openings. Floor-to-ceiling door shown is surfaced in a dark wood-grain laminate. Formica Corp., 4614 Spring Grove Ave., Cincinnati 32, Ohio.

On Free Data Card, Circle 113

Concrete Hardener Makes Floors Last Longer

"Flintcrust Liquid" is said to prevent sanding and dusting of heavy-traffic concrete floors by hardening the outer layer into a tough surface. It is flushed on just like water and works immediately so that traffic need not be interrupted. Flexrock Co., 3686 Cuthbert St., Philadelphia 1, Pa.

On Free Data Card, Circle 114

Urethane Floor Sealer Withstands Roller Skates

Urethane has been put to use to protect a wood gymnasium floor that is used for roller skating on week ends. Varnishes or sealers (required on gym floors to maintain appearance and ease of cleaning) powdered away under this unusual traffic, exposing the wood to the abrasive action of the skates. The new finish soaks into wood, and tests are said to indicate that it is twice as tough as conventional floor finishes. It is applied by the same methods as a regular floor finish and in the same amount of time, and takes only four hours to dry. Its higher cost is said to be compensated for by its long life and labor-saving advantages. The coating resin, "Spenkel F77-60MS," is sold by Spencer Kellogg & Sons, Inc., P. O. Box 989, Buffalo 5, N. Y.

On Free Data Card, Circle 115

1500-Watt Quartzline Lamp for 240-Volt Power

"Quartzline" lamps, useful because they last twice as long as conventional bulbs and retain their original light output throughout their life, were previously available only in 500 watts for 120-volt power, and 1500 watts for 277-volt power. General Electric has now brought out a 1500-watt lamp to serve the many areas where the lamps can be used effectively but where only 240-volt power is available. The new lamp is available only in limited quantities at present, and costs about $21.75. General Electric Co., Nela Park, Cleveland 12, Ohio.

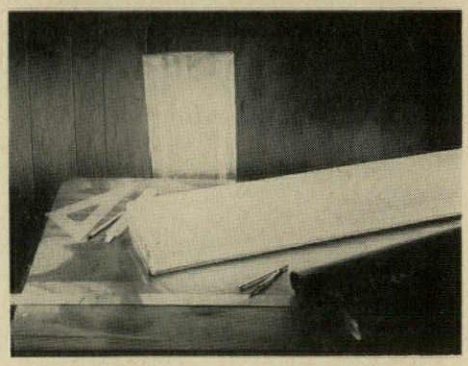
On Free Data Card, Circle 116

Modular Bank Counters Are First of Their Kind

A new concept in bank counter design —a modular system of furniture—is said to be the first of its kind on the market. Only six separate components

serve as the basic design; additions and variations in placement allow for easy expansion and individual styling. A completely new line of undercounter equipment has also been developed, to accompany the modular counters. Twelve basic units offer a variety of possibilities for particular requirements. A large variety of finishes is available—over 100 colors and patterns in plastic-laminate surfacing, also marble and mosaic tile. Advantages cited by manufacturer for the patent-protected system are versatility, flexibility, ease of installation, and economy. Remington Rand Systems, Division of Sperry Rand Corporation, 122 E. 42 St., New York 17, N. Y.

On Free Data Card, Circle 117



Plastic Refractor Resists Discoloration

A new compact lighting fixture has a prismatic refractor molded of "Styron Verelite," a light-stabilized polystyrene that will resist yellowing and discoloration for years. Trademarked "Photometric," the fixture (by The Wakefield Company of Vermilion, Ohio) is designed for both surface and stem mounting. It is available in 4′ or 8′ lengths, and measures less than 4″ in depth. The molded refractor allows the units to be connected in luminous rows with no metal between to cause contrast. The Dow Chemical Company, Midland, Mich.

On Free Data Card, Circle 118

Food Waste Disposal At High Volume

High-volume disposal of food waste in supermarkets, hospitals, food-processing plants, and restaurants can be handled easily and hygienically by a new powered disposal unit. Unit is constructed in a manner similar to heavy-duty hammer mills in order to offer long life and to take care of the large feeds in automatic disposal of waste food materials. Operation begins automatically when water valve is open, and stops when the valve is closed. Waste is moved to the grinder at a uniform rate to prevent overloading regardless of the amount fed into the hopper. Cabinet model is 50″ long x 23″ wide x 36″ high, weighs 625 lb. Buffalo Hammer Mill Corporation, 1247 McKinley Pkwy., Buffalo 18, N. Y.

On Free Data Card, Circle 119

To qualify a client's building for lowest fire insurance rates, reinforcement of a roof deck with an unprotected undersurface is a necessity

...the danger of failure is always present when fire strikes if roof decks are simply specified and built to meet "incombustible" ratings.

Keydeck roof deck reinforcement gives concrete or gypsum decks the tensile strength and monolithic character needed to qualify for hourly fire resistance ratings . . . necessary to get lowest fire insurance rates.

Keydeck also gives greater strength and greater impact resistance to roof decks than ordinary reinforcement.

AIR/TEMPERATURE

Air-Conditioning News

News of air-conditioning applications, developments, and equipment is reported in bimonthly issues of *American Air Facts*, 4 pages. Printed in five regional editions, the first three pages of the newspaper will be identical for all editions; fourth page will contain additional news of local projects and problems. American Air Filter Co., Inc., 215 Central Ave., Louisville 8, Ky.

On Free Data Card, Circle **200**

Ducted Electric Heating

Fresh-Air Electric Heating, 40 pages, describes the various methods of heating by electricity and demonstrates the desirability of ducted systems. Booklet points out that ducted electric heating simultaneously provides for air freshness, humidity control, continuous filtering, greater safety, better temperature control, and addition of central air conditioning. System design is thoroughly described. A brief presentation of products is followed by suggested applications, with floor plans showing recommended duct layouts. Lennox Industries, Inc., 200 South 12th Ave., Marshalltown, Iowa.

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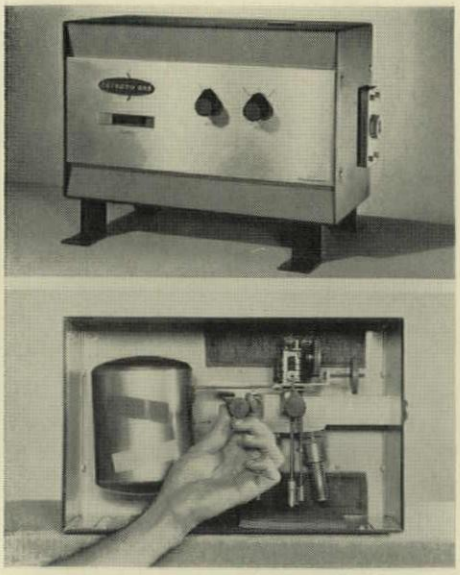


Gas Monitor Guards Against Explosions

A new automatic gas-detection safety device is described in 4-page brochure. "Monitor" senses changes in air density caused by gas accumulations, but is unaffected by changes in humidity, pressure, or temperature. The instrument can set off any type of alarm system through its explosion-proof switch. Cost of unit is said to be less than one-third the cost of existing automatic gas-detection equipment. Size is a compact 15½" x 7" x 10¼". Detectogas Instruments, Inc., 3110 Eastside, Houston, Texas.

On Free Data Card, Circle **202**

CONSTRUCTION

New Lath Designed for Machine Application

"Pinholath," an advanced gypsum lath, is the first specifically designed base for machine application of plaster. Considered a major development in the industry, due to the material and labor savings made possible by its exclusive design, this pin-holed lath has been proven to give greater absorption and, with plaster, greater impact resistance than regular laths now being used for machine application. Its most significant economy is in making it possible to apply full thickness of base coat in one application. Data sheet, 2 pages, describes product. Bestwall Gypsum Co., 120 E. Lancaster Ave., Ardmore, Pa.

On Free Data Card, Circle **203**

New Standard for Douglas Fir Plywood

New *U.S. Commercial Standard for Douglas Fir Plywood* has been issued, superseding all previous editions. Numerous revisions have been made "in the interest of assuring plywood products of reliable, predictable quality and performance." Discussed in the 20-page booklet are specifications relating to definitions, requirements, sampling and testing, standard stock sizes, special constructions, inspection, marking, method of ordering, and nomenclature. Approved DFPA grade-trademarks are reproduced on final pages. Douglas Fir Plywood Association, 1119 A St., Tacoma 2, Wash.

On Free Data Card, Circle **204**

Revised Standard on Heavy-Timber Decking

New 28-page *Standard for Heavy-Timber Decking* has been announced. Under development for the past two years, the new standard represents a compilation of the best information available within the industry. It applies to sawn decking only, not to laminated decking. Information covers species, sizes, patterns, lengths, moisture content, application, specifications, allowable unit stresses, and roof-load span tables. American Institute of Timber Construction, 1757 K St. N.W., Washington 6, D.C.

On Free Data Card, Circle **205**

Thin Sheet for Flashing, Waterproofing

New product for elastic through-wall flashing and membrane waterproofing has been announced. Trademarked "Saraloy 200," the thin-gage flexible sheet is recommended for most waterproofing and flashing applications that do not involve direct sunlight. These include window heads and sills, spandrels, belt and base courses, foundations, tunnels, machinery pits, swimming pool aprons, and shower pans. Nominal thickness of the tough sheet is 1/32". Illustrated pamphlet, 4 pages, gives physical data, recommendations, and specifications. Building Products Sales, The Dow Chemical Co., Midland, Mich.

On Free Data Card, Circle **206**

Research House Explores Uses of Plywood

Tomorrow's Home Today is a complete case history of a research house built to explore the uses of fir-plywood components in home building. The 16-page booklet describes the house built in Champaign, Ill., by DFPA, Plywood Fabricator Service, Inc., and the Lumber Dealers Research Council. In-

Continued on page 85

NOW

Impact and Abrasion Resistance

Maximum abrasion resistance under extreme test conditions . . one minute of strong sand-blasting completely destroyed a baked enamel panel, and removed 90% of a catalyzed epoxy-coated panel—while GLID-TILE *showed no change* in the same test!

Corrosion Resistance

GLID-TILE cures to a nonporous coating that withstands many highly corrosive agents—most acids, solvents, alkalies and hot water. It can be easily cleaned with strong soaps and detergents without harming the beauty and life of the finish.

Stain and Chemical Resistance

GLID-TILE offers chemical and stain resistance against damaging substances such as citric, acetic and lactic acids, grease, oil, chemicals and gaseous fumes. Bacterial contamination can be easily eliminated from GLID-TILE by standard cleaning methods.

Versatility in Application

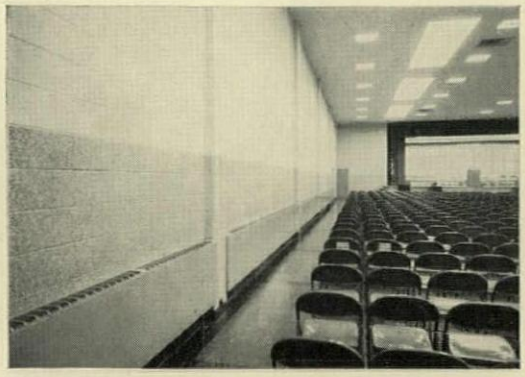
GLID-TILE has versatility—it may be used on many types of surfaces . . . masonry blocks, poured concrete, cement-asbestos panels, wood and metal.

Wide Choice of Tile-Like Colors

A broad range of the latest pastel colors are available by tinting GLID-TILE with Glidden Dramatone Multi-Purpose Tinting Colors.

Easy, Low-Cost Maintenance

GLID-TILE costs only a fraction of the usual structural, glazed or ceramic tile, yet is outstanding in performance and beauty. There are no hard-to-clean, unsanitary mortar joints, which often deteriorate and require expensive replacements.

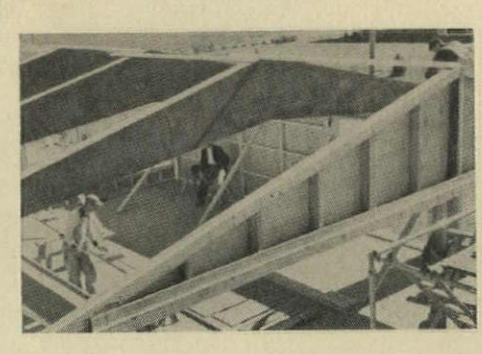


Walls in high-traffic areas retain their tile-like beauty for many years when coated with Glidden plastic finishes.

Refer to Sweet's Architectural File $\frac{13\,H}{GL}$

Glidden plastic finishes offer beauty and easy maintenance for maximum cleanliness wherever they are used.

Continued from page 81



cluded are details of planning, design, and engineering of the six types of components used in the house, and the conclusions that may be drawn from various structural innovations. No materials larger than 2 x 4's were used in the house. Detailed descriptions and photographs of fabrication and erection of the components are provided. Douglas Fir Plywood Association, 1119 A Street, Tacoma 2, Wash.

On Free Data Card, Circle **207**

DOORS/WINDOWS

Full-Size Details on Weatherstripping

Full-size details are a prominent feature of new 1961 catalog of weatherstripping designs. Catalog, 28 pages, shows extruded aluminum and bronze weatherstripping for doors, windows, saddles, lightproofing and soundproofing, sliding doors, and saddles for floor-hinged doors. Recently developed products and specifications are shown. Zero Weather Stripping Co., Inc., 453 E. 136 St., New York 54, N.Y.

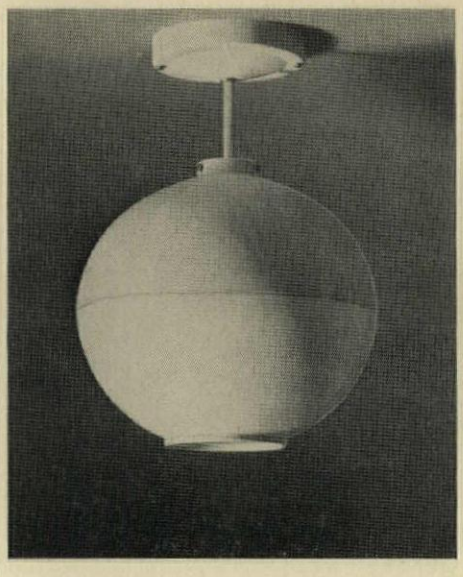
On Free Data Card, Circle **208**

ELECTRICAL EQUIPMENT

High-Efficiency Fluorescent Lamps

Introducing High-Efficiency Fluorescent Lamps, 4 pages, presents technical data and application suggestions for the new light source. Lamps create a new type of white fluorescent light, making them especially suitable for applications where high light output at low cost is more important than critical color rendition. Output is 15% higher than cool white lamps, 36% higher than daylight lamps. Lamp Division, Westinghouse Electric Corporation, Box 388, Bloomfield, N. J.

On Free Data Card, Circle **209**



New Pendant Fixtures For Ceiling or Wall

New series of ceiling-mounted and wall-mounted lighting fixtures is illustrated in 4-page brochure. The fixtures are styled to meet demands for effective lighting without glare, and incorporate the "Rotaflex" spun-plastic shades and globes for light diffusion. Rodisco, Inc., Division of Heifetz Company, Clinton, Conn.

On Free Data Card, Circle **210**

INSULATION

Aluminum Jacketing for Insulation Protection

Bulletin ICB, 4 pages, describes "Al-Cor-Jac" aluminum jacketing, which is applicable not only to piping systems but also to the covering of indoor and outdoor storage tanks, air-conditioning and heating duct work, vents, and any other insulated equipment with a regular shape. Photos of typical installations are provided. Material is available in corrugated or plain rolls and sheets, in 5 aluminum gages. Insul-Coustic Corporation, 42-23 54th Rd., Maspeth 78, N.Y.

On Free Data Card, Circle **211**

SPECIAL EQUIPMENT

Vibration and Noise Controlled by Isolation

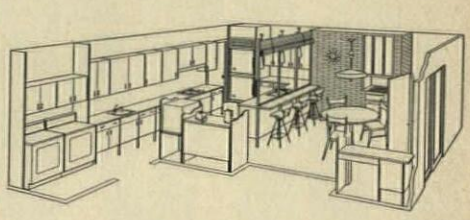
New *Booklet K4G,* 8 pages gives engineering specifications and performance data for 27 types of products for the control and measurement of machinery vibration, shock, and noise. Installation photos show a variety of equipment and the solution of typical problems. Bulletin contains a detailed description of relative merits of steel springs, rubber, and cork as isolation media. A selector chart includes a wide range of equipment, indicating recommended and alternate methods of isolation, and indicating when concrete foundations are necessary. The Korfund Company, Inc., Cantiague Rd., Westbury, L.I., N.Y.

On Free Data Card, Circle **212**

Sound Barriers of Lead

Improved Sound Barriers Employing Lead is a 12-page report of studies by Bolt, Beranek & Newman on the reduction of sound transmission. Technical data and accompanying text show how lead can be used effectively as an acoustical material. A typical example calculates the transmission loss of ⅜" fir plywood. Then the effect of laminating a 1/16" lead sheet to the plywood is calculated. Lead Industries Association, 292 Madison Ave., New York 17, N.Y.

On Free Data Card, Circle **213**



Kitchen Planning

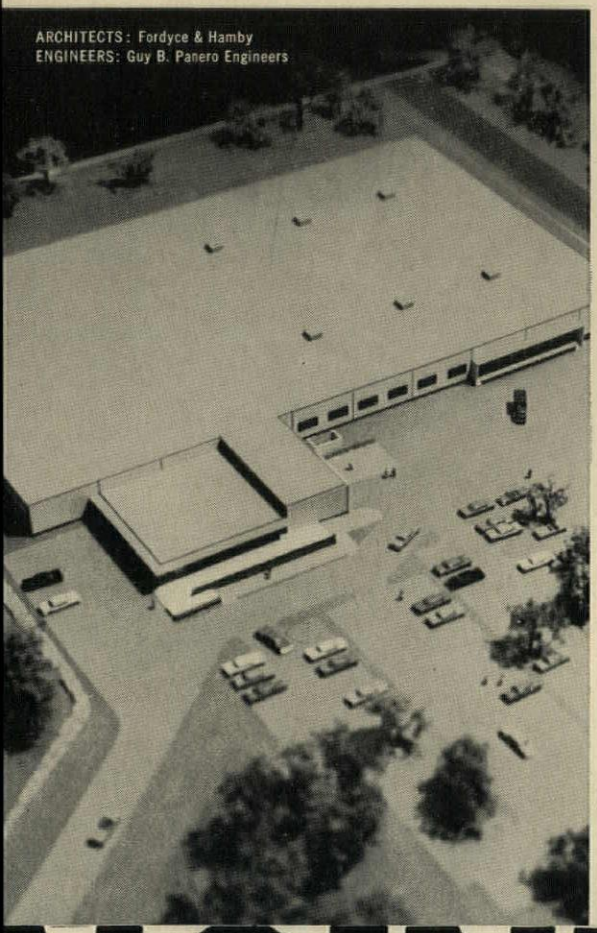
How to Plan a Trend-Setting Kitchen presents 20 pages of full-color kitchens, some from existing homes, some from the firm's Merchandise Mart displays. Each kitchen presents colorful and comfortable solutions to the problems of food storage and preparation, serving, and dining. New "Gourmet" and "Custom" refrigerators and freezers are featured. Revco, Inc., Deerfield, Mich.

On Free Data Card, Circle **214**

Fabrics for Protective Covering

Protective Cover Fabrics is a 14-page general guide to the principal uses of various weather-protective fabrics. Illustrated with sketches of typical applications, the booklet discusses cotton duck, cotton drills, tent twills, and

Continued on page 88



DIVIDENDS ON A $38,000 INVESTMENT IN ADDITIONAL INSULATION:

$91,000 SAVED ON THE HEATING-COOLING SYSTEM

The four inches of insulation will reduce the heat loss or gain through the roof by 70 per cent as compared to one inch of insulation. This permitted the installation of a smaller heating-cooling-ventilating system at a $91,000 saving.

$8,930 SAVED ANNUALLY IN OPERATING COSTS

$5,900 will be saved on fuel and power; $280 on maintenance; and $2,750 in interest. Projected savings: $8,930. This will be a clear annual saving to the company . . . in addition to the initial $91,000 and interest saved on equipment.

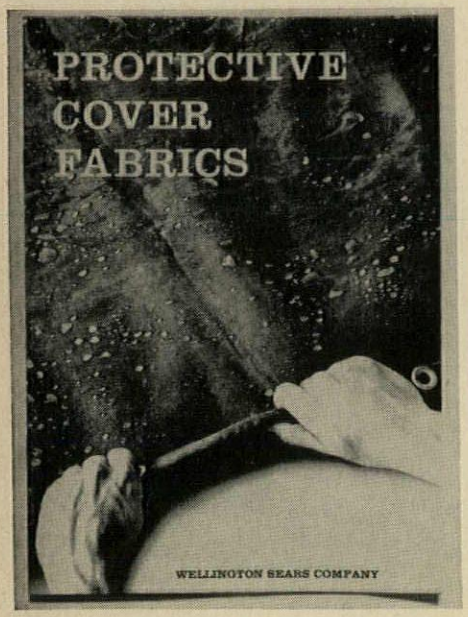
NGINEERING

■ AN ACCURATE MEANS OF EVALUATING MATERIAL PERFORMANCE TO FORECAST OPTIMUM SAVINGS IN INITIAL AND OPERATING COSTS, WITH HIGHEST RETURN ON THE OWNER'S INVESTMENT.

OWENS-CORNING RESEARCH pioneers in making things better with Fiberglas

OWENS-CORNING FIBERGLAS

Continued from page 85



coated nylon. Each type of fabric is described as to its own particular advantages. Some applications for which special fabrics are appropriate are awnings, playing-field covers, swimming-pool covers, air-supported structures. Wellington Sears Company, 111 W. 40 St., New York 18, N. Y.

On Free Data Card, Circle 215

New Revolving File Grows with User Need

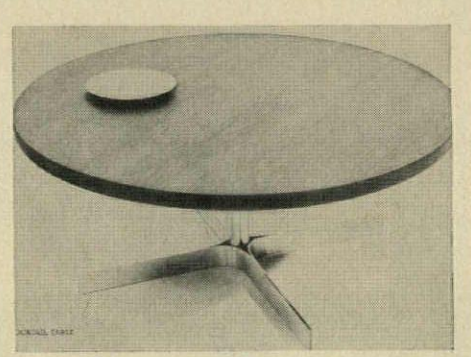
New horizontal rotary file grows with its user's need—up to six times its original capacity—without adding additional floor space. "Speedline" model combines the speed of rotary filing with the modular flexibility of the old sectional bookcase. Basis of the design is the horizontal wheel, or "Rotor-Tier." Instead of being parallel to each other in a rectangular space, as in a drawer, folders of records are filed radially around a hub. Folder, 8 pages, describes system. Wassell Organization Inc., 225 State St. W., Westport, Conn.

On Free Data Card, Circle 216

Specifications for Walk-In Freezers

New *Walk-In Specification Guide* helps owner and architect to determine the most suitable "Walk-In" cooler or freezer for particular requirements. The guide is prepared exclusively for the architectural specification writer, and gives recommendations for the design of new or expanded facilities. Dept. S, Bally Case and Cooler, Inc., Bally, Pa.

On Free Data Card, Circle 217



Contemporary Furniture

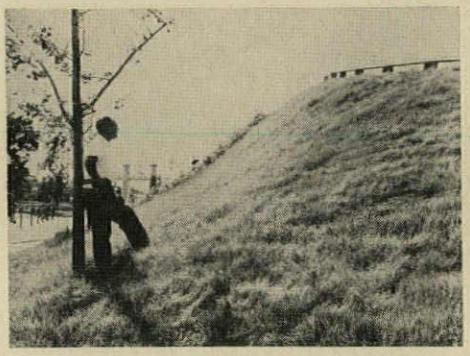
New 16-page brochure presents line of furniture appropriate for either commercial or residential use. Storage units, coffee bars, executive desks, cocktail tables, hi-fi cabinet, and conference table are illustrated, then described briefly in price list. Materials are brushed aluminum, walnut, rosewood, marble. Design throughout the line is restrained and elegant. ODI, 136 William St., New York, N.Y.

On Free Data Card, Circle 218

Plans and Barriers for Parking Lots

Basic parking-lot plans and parking equipment are shown in new 4-page *Bulletin 14A*. Five plans for parking at various angles are shown. The plans give suggested dimensions, but may be adapted to fit virtually any size or shape of lot. Also shown are six styles of wheel-stopping barriers, designed for orderly parking without damage to either vehicle or property. Barriers are suitable for automobile, truck, or bus parking on any type of surface—black top, concrete, macadam, gravel, sand, or cinders. Harris-Barrier, Inc., P. O. Box 23026, Indianapolis, Ind.

On Free Data Card, Circle 219



Seeded Grass Blanket

New 8-page brochure describes "Troy-turf," a blanket containing grass seed, mulch, fertilizer, and other nutrients. The blanket produces grass on steep embankments, in difficult-to-seed wash-out areas, along stream banks, in gullies, and in poor soils. Instructions are included for the simple roll-on installation. Horticultural Division, Troy Blanket Mills, 200 Madison Ave., New York 16, N. Y.

On Free Data Card, Circle 220

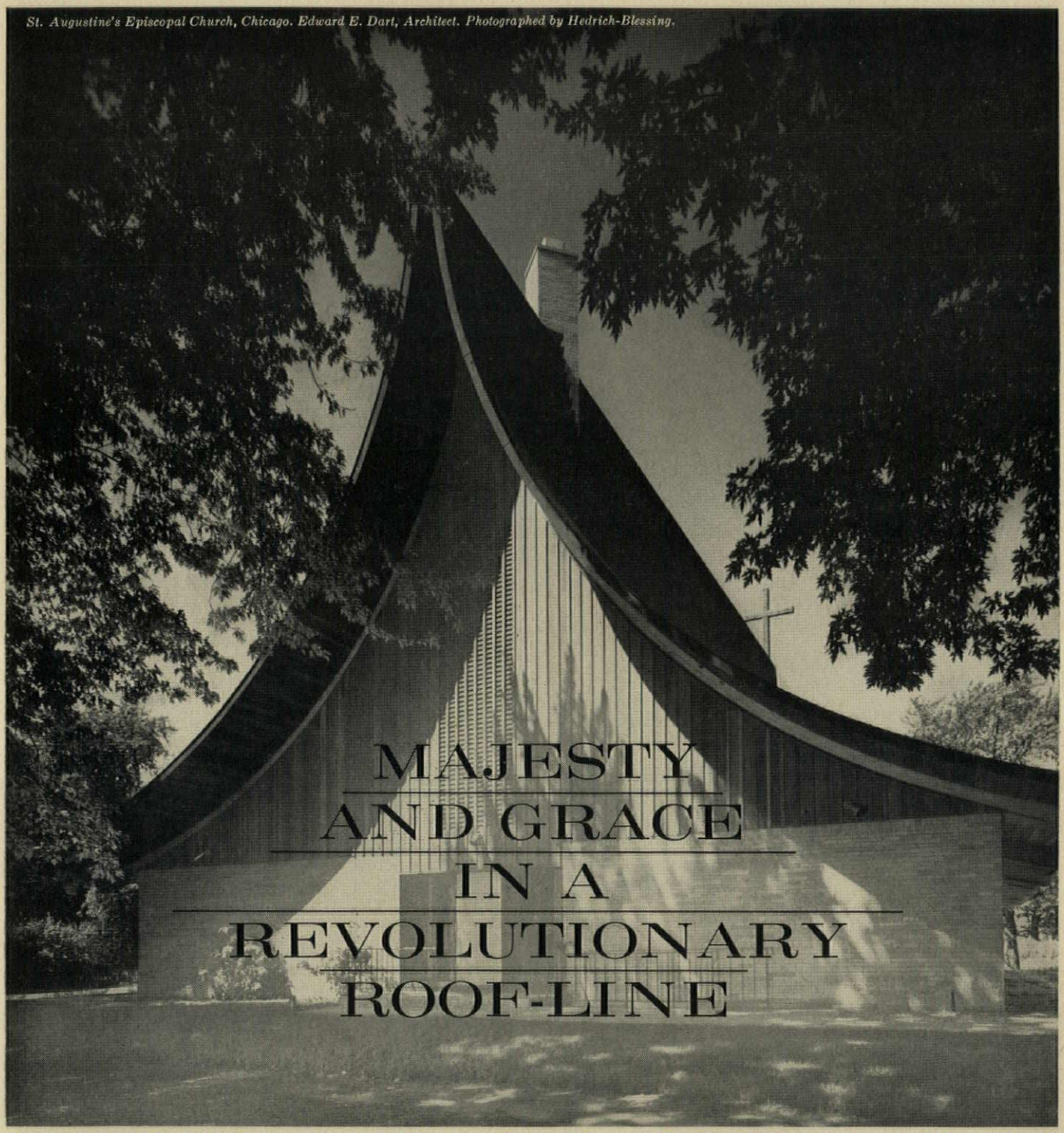
Plastic and Metal Toilet Compartments

New catalog, 20 pages, includes full line of toilet compartments from manufacturer who originated the metal toilet compartment. Color swatches show the 22 vivid colors available in porcelain-enamel or baked-enamel steel. Photographs and details show the various models of ceiling-hung or floor-braced compartments. New item in the line is the plastic-laminate toilet compartment. Descriptive paragraphs give its physical characteristics, and specifications are included. Henry Weis Manufacturing Co., 941 Oak St., Elkhart, Ind.

On Free Data Card, Circle 221

Glass-Fiber Panels for Many Uses

An 8-page brochure described as "the most comprehensive in the reinforced-plastic panel industry" has been published. Contained in the brochure are full testing details and conclusions about "Filoplate," a recently developed panel that is structurally guaranteed for the lifetime of any structure, and specifications for "Rololite," the first cross-corrugated panel in roll form.



THE TRADITIONAL BEAUTY OF BIRD KING-TAB ARCHITECT SHINGLES DIGNIFIES A CURVING ROOF OF MODERN LINES

On this house of worship, the Bird Architect Shingle blends the traditional and the modern . . . flexible, to conform with the roof's special soaring curve; heavy, to insure all-weather protection.

Slatelike Beauty, with depth and rich shadow lines, gives the impact and dignity worthy of a church.

Uniformity of Surfacing in even distribution of jumbo color granules is controlled in manufacture — no unsightly application on the site.

Greater Safety, Triple Protection: 300 lbs. per square, thick as standard slate; 3 full layers at every point, with 5″ exposure. For use on slopes with pitch as low as 2″ in 12″.

BIRD
BIRD & SON inc.
Architect Shingles

See specifications in SWEETS FILE $\frac{8C}{Bi}$ *or* $\frac{3C}{Bi}$ *or write* Bird & Son, inc., ***Box PA-2,*** *East Walpole, Massachusetts • Charleston, S.C. Shreveport, La. • Chicago, Ill.*

MOISTURE AND TERMITES A PROBLEM? *Write for details on Bird Termite Prevention System and Vapor Barrier*

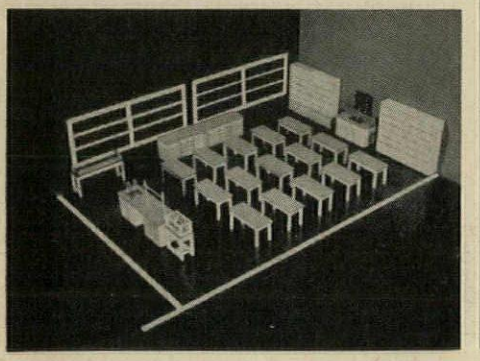
Also included are general specifications, heat- and light-transmission values, and load-carrying tables for the entire line of corrugated, flat, glazing, and decorative panels. Technical and Field Services, Dept. T3, Filon Plastics Corporation, 333 N. Van Ness Ave., Hawthorne, Calif.

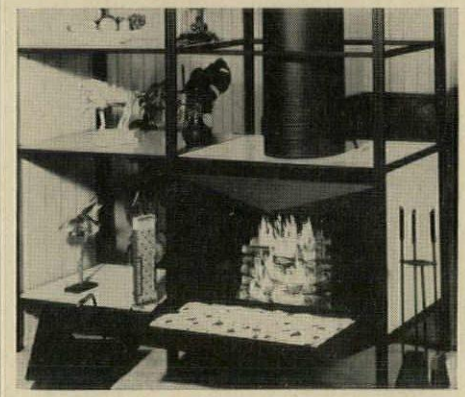
On Free Data Card, Circle 222

Science Furniture for Secondary Schools

Expanded line of stock science furniture is presented in new 48-page catalog. The complete line of secondary school science furniture includes instructor desks, student tables, fume hoods, sink assemblies, aquariums, germinating beds, storage and display cases, etc. In addition to the furniture and equipment catalogued, 11 floor plans are presented to show layouts and roughing-in information on all items. Kewaunee Technical Furniture Co., 3009 W. Front St., Statesville, N.C.

On Free Data Card, Circle 223





Firehood Room Divider

Colorful brochure, 4 pages, shows new "FireHOOD," a conical fireplace that is available in 9 colors of porcelain-enameled steel. Four models suit any requirement—with spun-steel pedestal, without hearth or base (for installation on job-fabricated hearth), with rubber-tipped steel legs, and with casters (for outdoor mobility). Another product, versatile "FireHEARTH," is adaptable to free-standing or wall-fastened application; and when integrated with special shelf units it becomes a decorative room divider. Condon-King Co., Inc., 1247 Rainier Ave., Seattle 44, Wash.

On Free Data Card, Circle 224

SURFACING MATERIALS

Report on Plaster-Ceiling Research

Extensive research by the Gypsum Association on the performance of lath and plaster ceiling systems has been in process for the past seven years, with the purpose of developing plaster constructions that will provide a high degree of crack resistance. The phase dealing with small suspended ceilings is now virtually complete, and a summary of the findings is presented

How to end up with an insulated roof exactly the way you designed it

Specify Insulite Cant Strip and Tapered Edge Strip with Insulite Roof Insulation.

The full Insulite line of roofing products is designed to make it easy for the roofing contractor to do a complete job—and to do it quickly and at low cost.

1 The basic Insulite Roof Insulation is a tough, rugged product with the *extra* strength and rigidity to resist cracking, crushing and flexing.

2 Insulite Accessories—Cant Strip and Tapered Edge Strip—insure perfect joints where the roof meets a vertical surface, or where there is a building-up or tapering-off area. These accessories give a smooth, strong surface that will not break or puncture under hard construction or maintenance activities.

PROTECT YOURSELF FROM MAKE-DO EXPEDIENTS

Insulite Accessories make it easy for any contractor to follow your details. No sawed, beveled or built-up boards. Insulite Cant or Tapered Edge Strips are shaped to do a perfect job even in tough problem areas.

You get perfect construction and insulation where the roof meets a wall, chimney or other vertical surface; where the outer edges taper off; where you want drainage channeled.

BE SURE OF A ROOF THAT CAN TAKE IT

Insulite Roof Insulation is made of all-wood fibers from hardy, slow-growing Northern trees. It is not soft; it is not brittle. It has the high transverse and compressive strength needed to resist the hardest kind of wear.

Insulite Roof Insulation will give you a roof that stands up under loaded wheelbarrows, heavy LP gas cylinders, bitumen kettles, the heaviest equipment that might be used on it.

ACCESSORIES ARE OF COMPATIBLE MATERIAL

Insulite Tapered Edge Strip and Insulite Cant Strip are made from the same basic wood fibers as Insulite Roof Insulation. This eliminates any hazards caused by the introduction of two materials with conflicting properties.

Insulite Accessories have the same low coefficients of expansion; the same vapor permeance characteristics; the same thermal resistance. Dimensional stability of Insulite Roof Insulation is excellent.

CHOICE OF DIMENSIONS AND TYPES

Insulite Roof Insulation comes in 24″ x 48″ and 23″ x 47″ sheets—½″, 1″, 1½″ or 2″ thick. Edges are square in the ½″ thickness. In other sizes you may order either square or shiplapped edges.

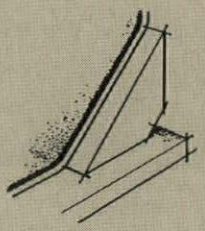
Insulite Cant Strips come in 4′ lengths—either 3″ x 3″ or 4″ x 4″. Insulite Tapered Edge Strips are 4′ long by 12″ wide. They measure 1⅝″ at the thick edge, and taper to ⅛″ at thin edge.

Choose from two kinds of Insulite Roof Insulation: Ins-Lite, or asphalt-treated Graylite.

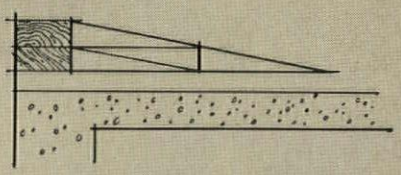
GET MORE FACTS AND NEW BOOKLET

Just call your Insulite representative for more information or send the coupon below directly to Insulite for the new Insulite Roof Insulation Manual.

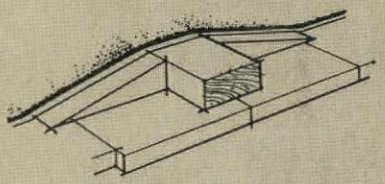
INSULITE ACCESSORIES MAKE IT EASY FOR YOU TO SOLVE SPECIAL PROBLEMS



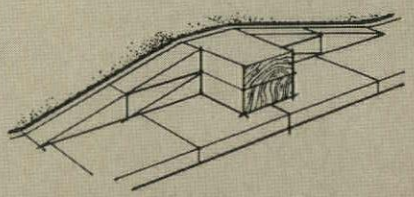
ELIMINATE 90° BEND IN ROOFING FELTS. Specify Insulite Cant Strips where roof meets chimney, wall or other vertical surface. A well-designed joint that protects felt from cracking, makes flashing easier, looks better.



CARRY FELT SMOOTHLY TO ROOF EDGE. Insulite Tapered Edge Strip makes roofs more perfect than ever before. It underlies felt layers, eliminates sharp angles where cracks often develop, carries roofing felt smoothly over edge nailing member.



CHANNEL DRAINAGE ANYWHERE ON A FLAT ROOF. Just position Insulite Tapered Edge Strips on either side of raised nailing base. Because every strip is precision-made to same size, perfect drainage curbs result.



BUILD UP TO HEIGHT YOU NEED. Insulite Tapered Edge Strips are the answer to this problem. Just have them laid as shown here. These strips are bevel-cut from Graylite Insulation Board.

SPECIFY

INSULITE®

Roof Insulation Products

INSULITE, *made of hardy Northern wood*

Insulite Division of Minnesota and Ontario Paper Company, Minneapolis, Minnesota

Please send me my copy of the new illustrated Insulite Roof Insulation Manual. PA-2

NAME _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

For more information, circle No. 372

in 8-page report. The effects of different finish coats on the 186 ceilings studied, along with effects of the plaster base, the plaster basecoat, and ceiling-perimeter construction, are analyzed. Recommendations for plaster performance are clearly summarized, and a chart gives relative performance of various lath and plaster ceilings. Gypsum Association, 201 N. Wells St., Chicago 6, Ill.

On Free Data Card, Circle 225

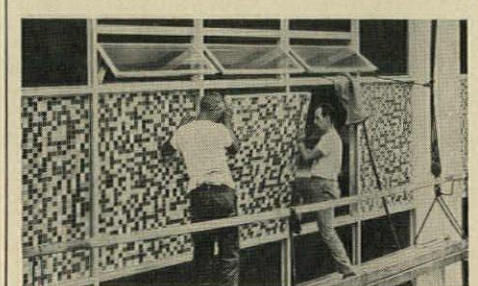
Information on Terrazzo

Information kit, including 30 sheets, contains data and specifications on terrazzo. Subjects discussed are conductive terrazzo, outdoor terrazzo, monolithic terrazzo, terrazzo over radiant heating. Guides to location of divider strips are provided. Other data sheets give resiliency test findings, maintenance instructions, and methods of restoring conductive terrazzo. NTMA membership list is appended. National Terrazzo and Mosaic Association, 2000 K St., N.W., Washington 6, D.C.

On Free Data Card, Circle 226

Curtain-Wall Panels Surfaced with Tile

A new line of curtain-wall panels surfaced with American Olean ceramic tile has been introduced. Folder, 4 pages, shows 4 basic types available

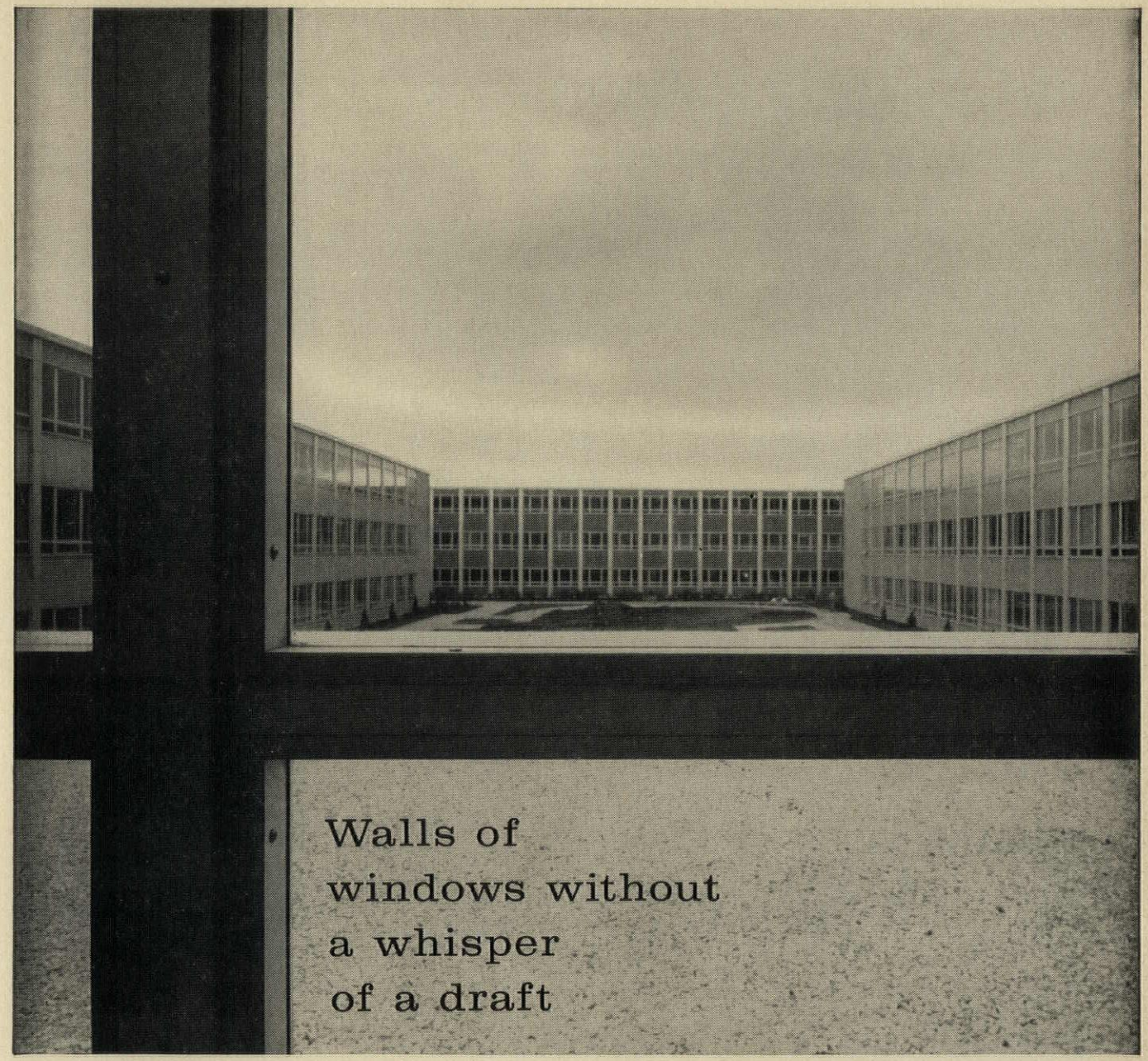


and gives installation details. The tile is set with weatherproof, flexible grout, and is frostproof. An organic adhesive securely bonds the tile to the panel core. Sandwich core is composed of asbestos-cement board bonded to rigid insulating board. Maul Macotta Corporation, 1640 E. Hancock Ave., Detroit 7, Mich.

On Free Data Card, Circle 227

Asbestos-Cement Sheeting

"Colorlith," used in industry and schools for lab-table tops, sinks, hoods, shelves, and other heavily used surfaces, is described in new 12-page



The windows in the new East High School in Rochester, N. Y., were chosen with *winter* in mind.

All projected and hopper ventilating windows contain Schlegel Woven Pile Weatherstripping. Schlegel's dense pile of soft wool fibres adjusts to all uneven surfaces—snugly cushions every window. Its resilience—a property not found in plastic or metal—assures a positive seal.

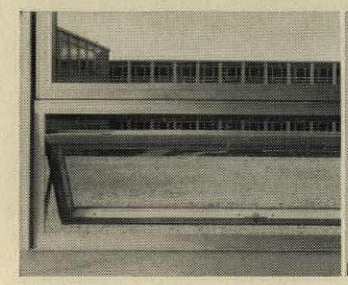
When subzero winds blow up a gale, not one of East High's 2200 students sits in a draft.

Cuts maintenance costs. Here's why you're sure of winterproof windows when you specify windows with Schlegel Weatherstripping. Schlegel Woven Pile won't rust, crack, or rot. It is designed to last as long as the unit it seals.

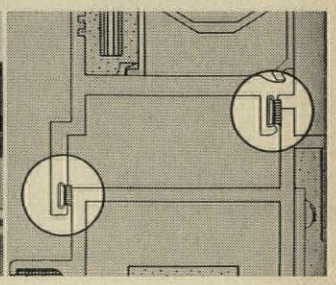
Dow Corning silicone treatment makes it extra water-resistant—locks out howling winds, driving rain, snow, and sleet.

For a list of manufacturers using Schlegel Weatherstripping, write for our new booklet, "Your Guide to Windows — Doors — Screens," — See our insert under "Windows-Screens" and "Doors-Screens" in the 1961 Sweet's Catalog File.

East High School, Rochester, N. Y., anticipates the city's population growth. Built to accommodate 3000 students. Architects: Faragher & Macomber.



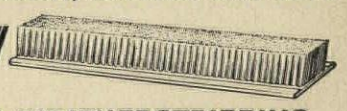
All projected and hopper style windows are weatherstripped with Schlegel deep woven pile to insure a positive seal.



Drawing, courtesy of Adams & Westlake, showing application of Schlegel Woven Pile Weatherstripping.

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

Schlegel

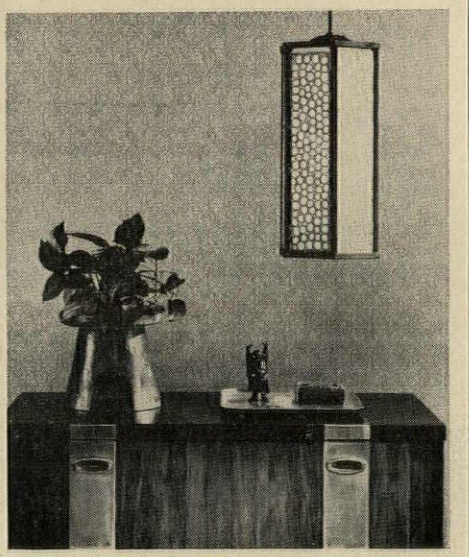


WOVEN PILE WEATHERSTRIPPING

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

brochure. A monolithic asbestos-cement sheeting, Colorlith is highly resistant to physical and chemical abuse. Booklet describes the available thicknesses of the material, with recommendations as to optimum thickness for various applications. Recommended procedures for fabricating, bonding, and cementing are also given. Johns-Manville Corporation, 22 E. 40 St., New York 16, N. Y.

On Free Data Card, Circle 228



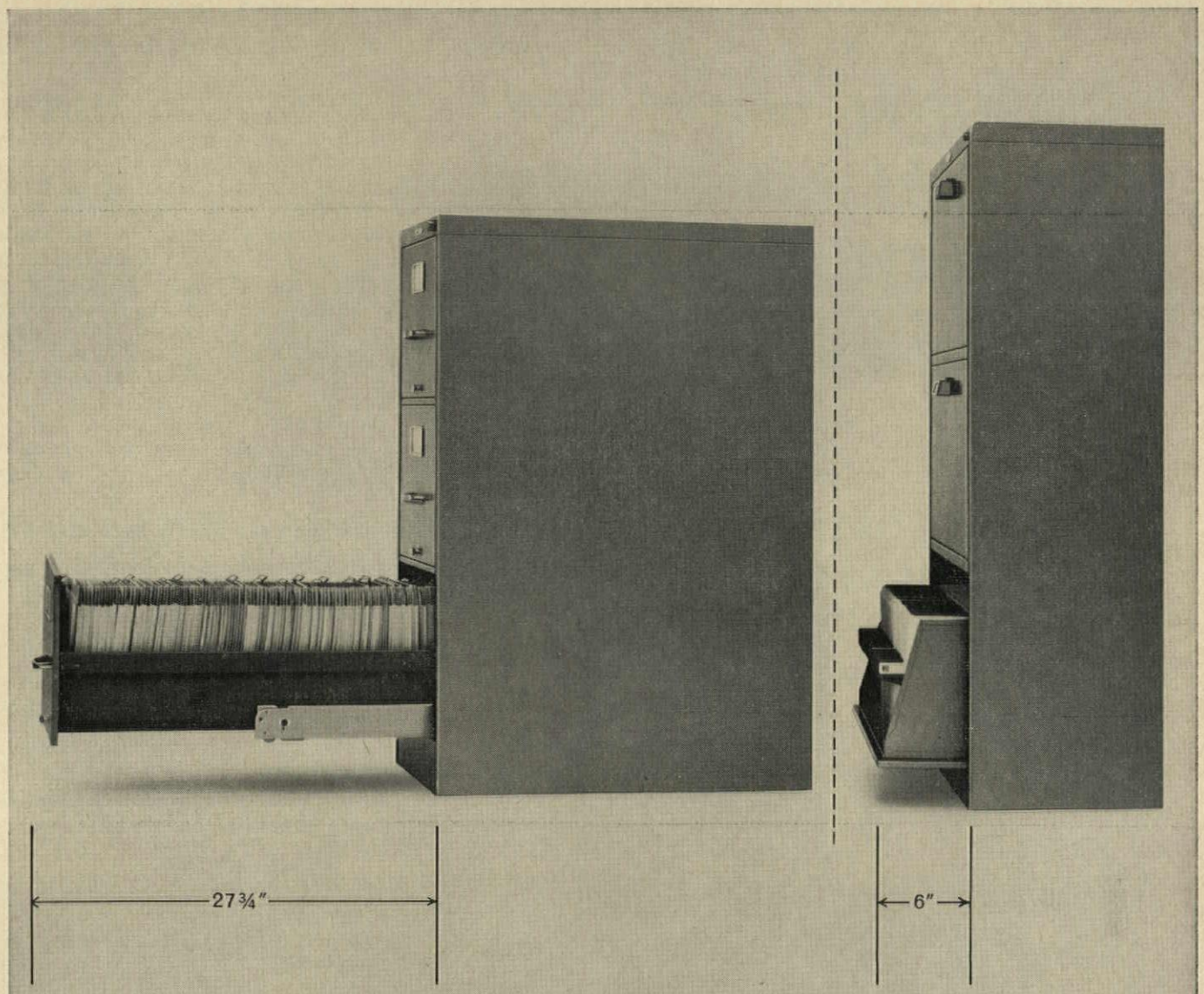
New Development in Wallcoverings

"Endura-Cloth," proclaimed a new development in wallcoverings, is a stain-proof vinyl-covered canvas with unusual resistance to steam, abrasion, scuffing, and fire. Brochure, 4 pages, gives description of its properties and easy installation. Tests have shown that the material is capable of being scrubbed 25,000 times. Patterns are attractively designed. United Wallpaper Company, 3101 S. Kedzie Ave., Chicago 23, Ill.

On Free Data Card, Circle 229

New Developments in Scored Tile

New booklet, 4 pages, gives information about several new products in "Scored Tile" line. Of special interest is a complete selection of trim shapes, now available for the first time, for both conventional mortar installation and for adhesive and thin-set mortar installation. A chart of standard Scored Tile patterns shows the wide range of possible effects. Booklet also announces the introduction of a new Scored Tile design that is adaptable



Both wide open

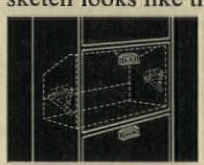
You could design the file on the right into a 12½"-deep wall space facing a narrow aisle and forget about aisle blocking when the compartments are opened.

For this file has no drawers to eat up valuable space. Wide open, with all contents visible and reachable, this file projects only 6" (8" for legal size).

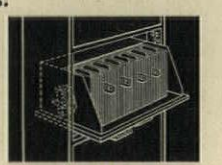
Even if this file were not built into a wall, you could save your client a fat 30% of floor space.

To recommend them, you would specify Y&E *Pro-Files.**

The idea that makes Pro-File work to your advantage is a neat patented Rock-A-Tilt mechanism which in sketch looks like this.



EMPTY FILE CLOSED



FULL FILE OPEN

The center of gravity remains within the shell, even with all the compartments loaded and open. These files may be stacked to the ceiling with no fear of overbalancing or tipping.

Design them into walls. Utilize them as divider half-walls, back to back, or built in under bookcases or shelving. Or, better, use your own imagination.

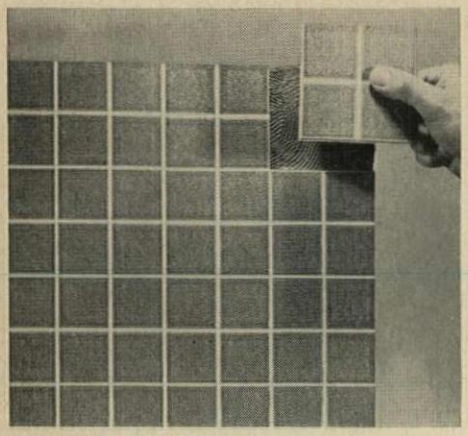
If you would like specification literature on Y&E Pro-Files, tear out this ad and mail it to us with your name and address.

Since we also build darn good standard files, like the one on the left above, we'll send you specifications on them, too, if you'll just ask. **Patented*

YAWMAN & ERBE

A STERLING PRECISION CORPORATION

1093 Jay Street, Rochester 3, N. Y.



for combination with both scored and unscored tile in many ways. American Olean Tile Co., 1000 Cannon Ave., Lansdale, Pa.

On Free Data Card, Circle 230

Large Samples of Formica

New *Architect's Colorbook* with 8½" x 11" sheets gives "mansize" samples of full line of colors and wood grains. Specification sheets are also included. Book will be useful in designing and in presenting ideas to clients. Write to: Formica Corporation, Subsidiary of Cyanamid, 4600 Spring Grove Ave., Cincinnati 32, Ohio.

Concrete Modules in Filigree or Veneer

Gems in Concrete, 6-page folder, shows variety of geometric designs in reinforced-concrete units. "GemGrille" units are filigree modules available in 1′ x 1′ x 3″ or 1′ x 2′ x 3″. "GemCrest" are veneer modules in many sculptured patterns. They can be used as random inserts, vertical or horizontal stripes, entire panels or walls. American Traverse Co., 11 Prospect Ave., Hewlett, L.I., N.Y.

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New Adhesive for Terrazzo-to-Concrete

Booklet, 12 pages, introduces "Terrabond" adhesive, which is based on Thiokol's polysulfide liquid polymer and exhibits an outstanding ability to bond poured-in-place terrazzo to a concrete base. Results of laboratory tests reported in the bulletin indicate that Terrabond adhesive provides a bond stronger than either concrete or terrazzo.

Terrabond terrazzo flooring, consisting of portland-cement terrazzo bonded with the new adhesive, is similar to monolithic terrazzo in that it is installed directly on a concrete slab. However, by the Terrabond process, the terrazzo surface can be as little as ⅜" thick and can be installed at any time, even when slab is fully cured. Additional advantages: initial cost is 30% to 40% lower than conventional terrazzo; lower maintenance cost than resilient floors; impermeable moisture barrier provided by the adhesive. Market Development Dept., Thiokol Chemical Corporation, 980 N. Clinton Ave., Trenton 7, N.J.

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PROGRESSIVE ARCHITECTURE NEWS REPORT

REINHOLD PUBLISHING CORPORATION

430 PARK AVENUE NEW YORK 22, N.Y.

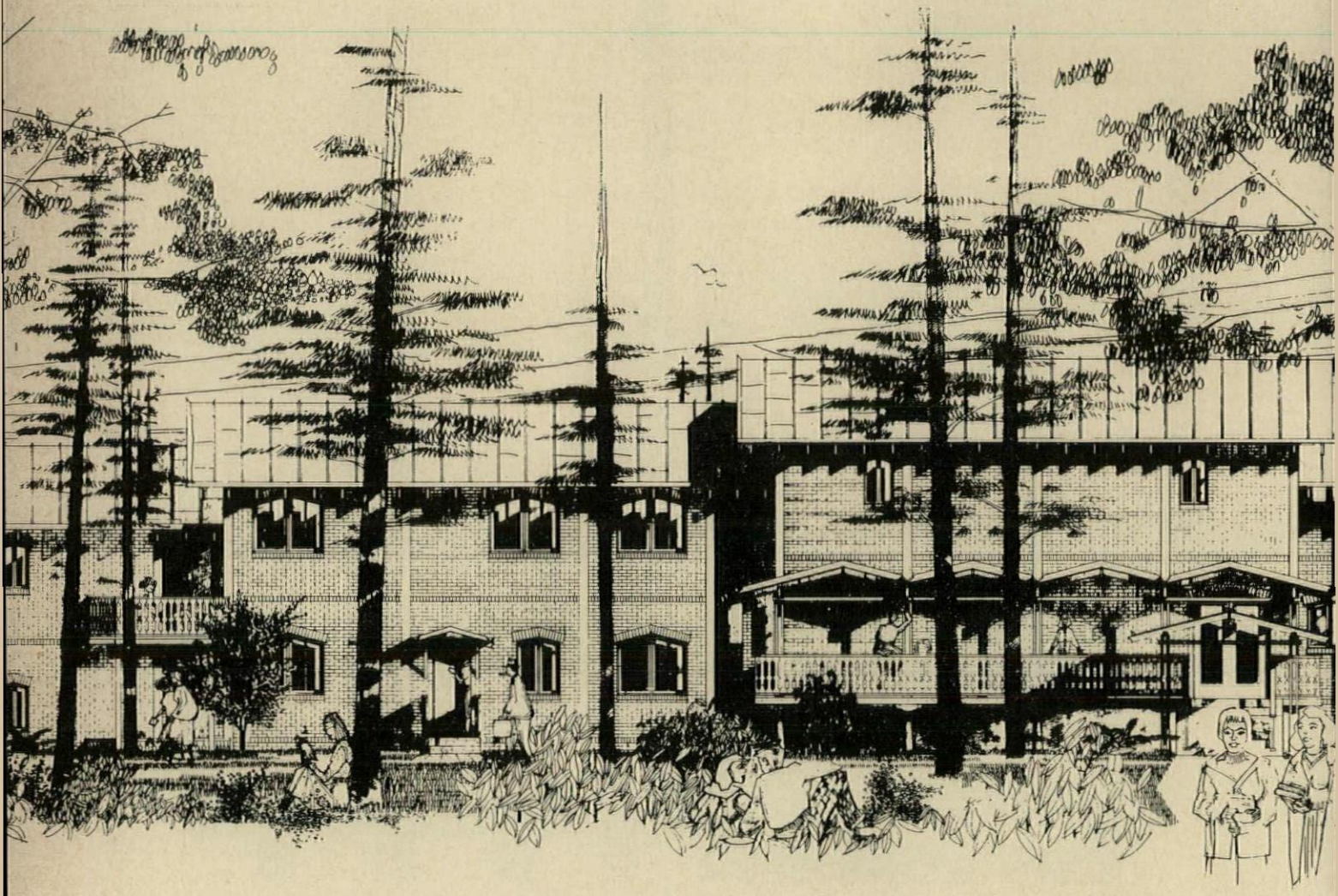
Publisher.....D. Bradford Wilkin

Editor.....Thomas H. Creighton

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

in the March P/A . . .

ARCHITECTS DRAW AGAIN



The Talents of the Architect as Artist *are illustrated in the March issue with a ten-page portfolio of recent outstanding drawings. Renewed interest in surface textures, in many faceted, even sculptural shapes in architectural design has resulted in the architect's return to meticulous pen and pencil renderings.*

The State of Architecture *is another subject of importance in the March issue. The P/A Symposium on the State of Architecture discusses the direction of architecture today. P/A's Editor, Tom Creighton, has conducted a written discussion among nearly 100 most articulate and influential architects. Part I will show the diversity of opinion and lack of design disciplines prevalent today.*

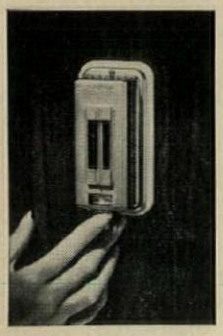
Additional Features Include *articles on public housing for the elderly and two elementary schools. Materials and Methods discusses the preflexing technique of prestressed steel, dew point temperature location, multi-outlet electrical systems, and wire-fabric heating.*

Make sure you receive every issue of PROGRESSIVE ARCHITECTURE. *Use post-free subscription card in News Report Section.*

PROGRESSIVE ARCHITECTURE

A REINHOLD PUBLICATION 430 PARK AVENUE NEW YORK 22, N. Y.

Pencil drawing of dormitories of Western Washington College, Bellingham, Washington, by William Dimmich associated with Bassetti & Morse, Architects.



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This is the ISTA Center in downtown Indianapolis, one of the most modern buildings in Indiana. The major portion of the 9-story structure is devoted to rental office space, while the remainder serves as headquarters for the Indiana State Teachers Association.

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Indiana State Teachers Association Center, Indianapolis. McGuire & Shook, Compton, Richey and Associates, architects; J. M. Rotz Engineering Co., mechanical engineers; Leslie Colvin, general contractor; Freyn Brothers, Inc., mechanical contractor; all of Indianapolis.

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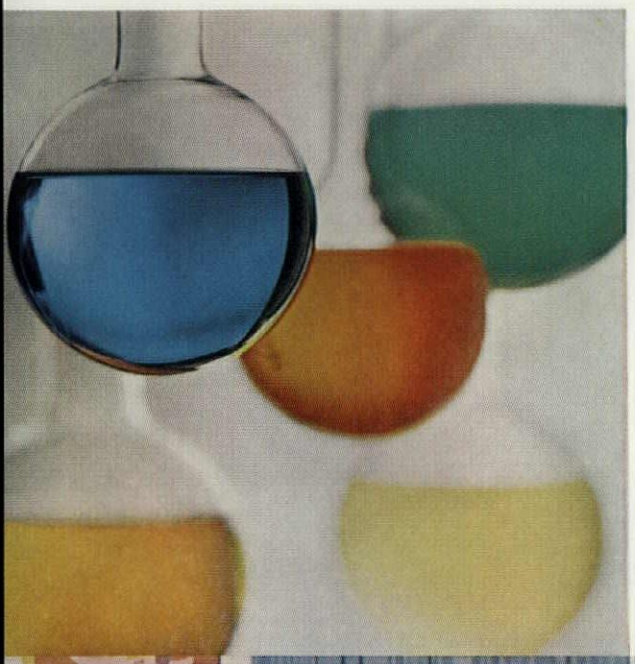

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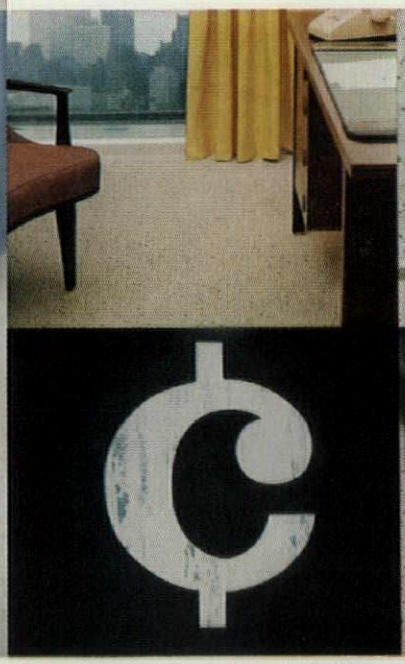

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A brand new catalog describing the new cold-formed chord joist as well as the other Bethlehem joists in both the "S" series and "L" series is yours for the asking. Full details, design and load tables are also included. Write to the nearest Bethlehem sales office, or direct to us at Bethlehem, Pa.

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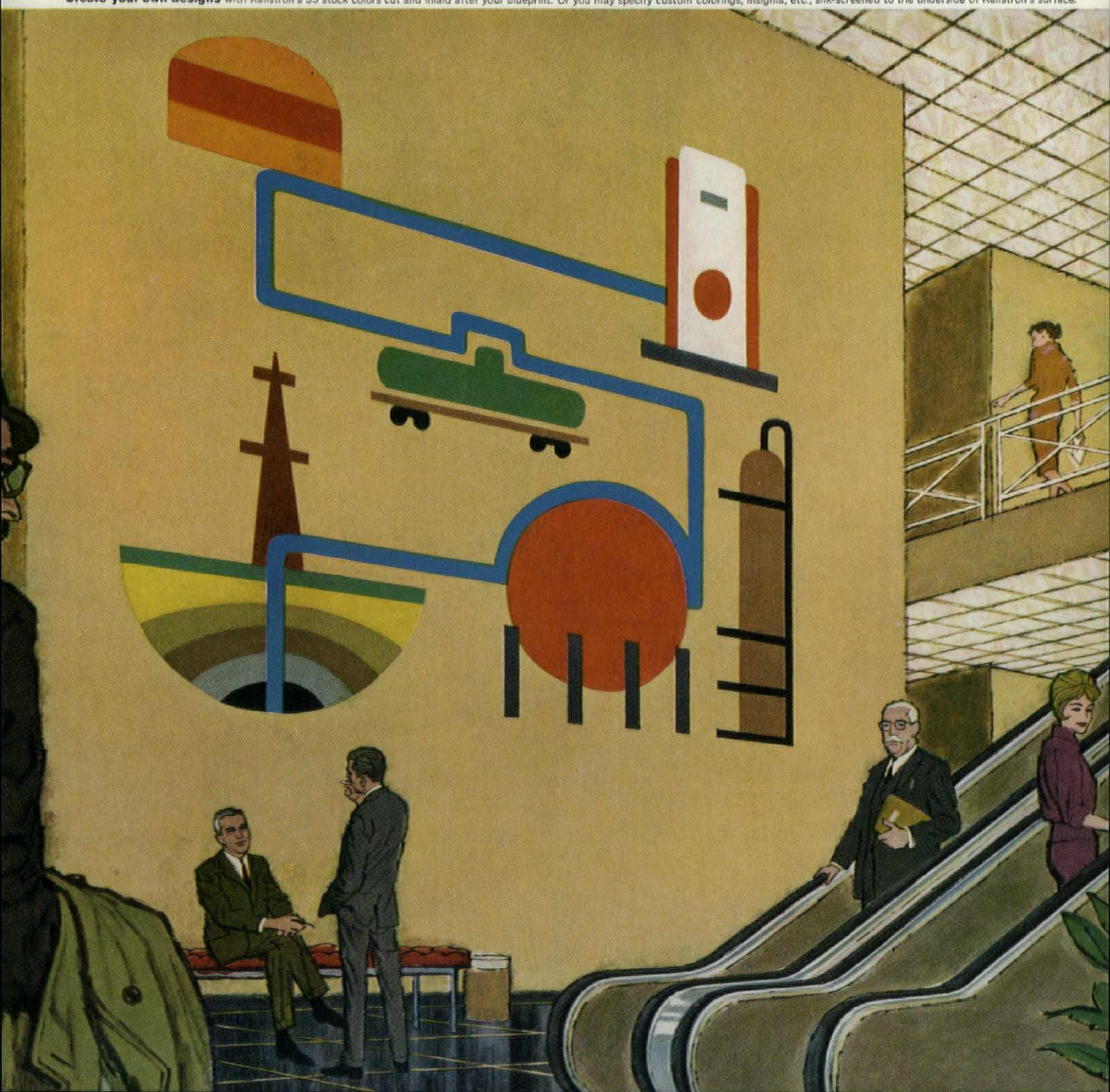
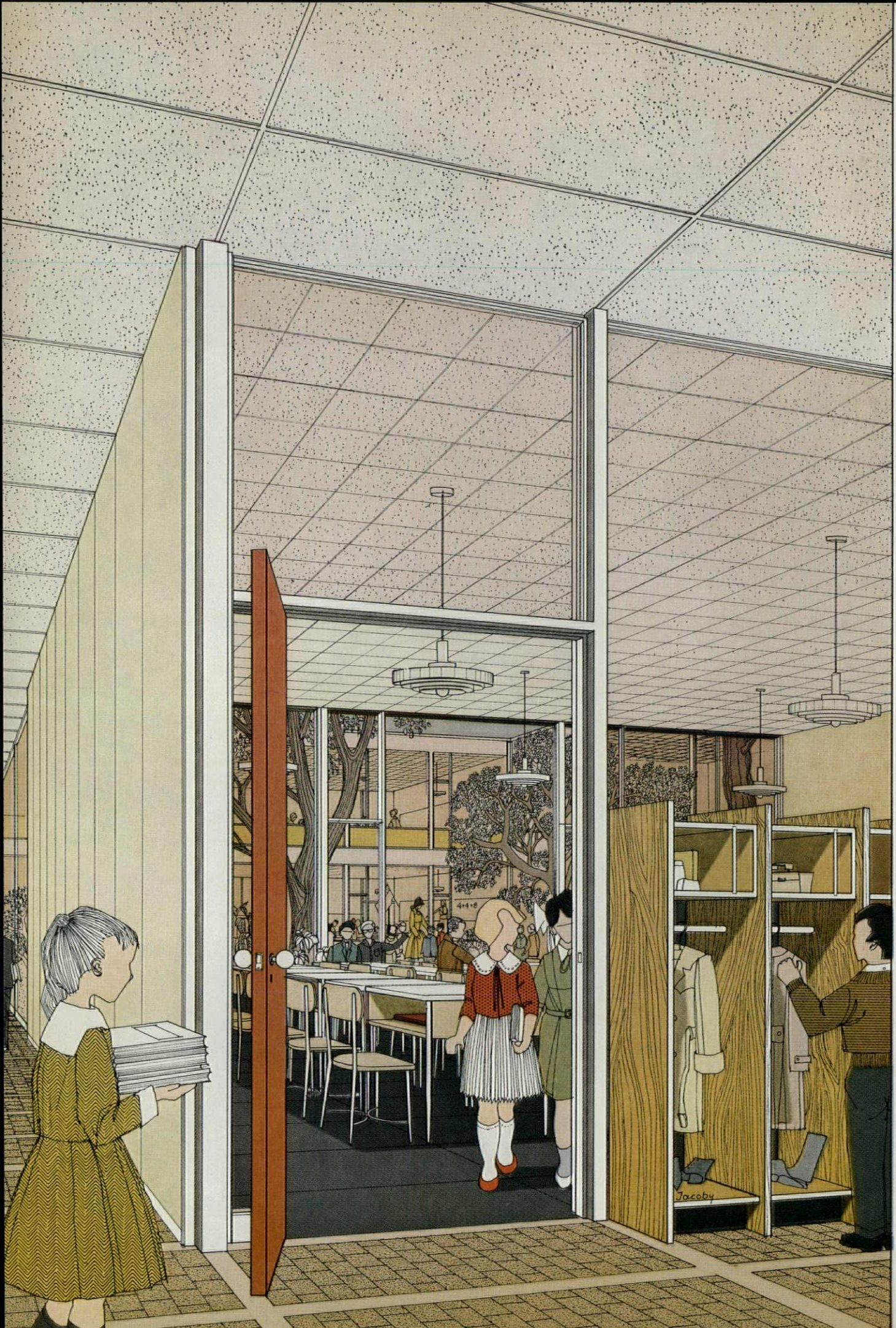



Jacoby

From Armstrong: a giant step in fire-retardant ceilings

Now, for new schools: two types of Acoustical Fire Guard–12″ x 12″ tiles and exclusive new lay-in units

In the school corridor on the left you see the new Armstrong Acoustical Fire Guard *lay-in* ceiling system. The classroom has a ceiling of Acoustical Fire Guard *tile*.

This was the first time-design-rated acoustical tile. Since its development two years ago, millions of feet have been installed.

The new lay-in system is another great advance in fire-retardant ceilings.

Three-hour U.L. rating

The Armstrong Acoustical Fire Guard lay-in ceiling system combines the advantages of an exposed grid system—economy and fast installation—with those of a time-design-rated acoustical ceiling. It protects the structural components of a building by resisting the dangerous transmission of heat from one area to another. Underwriters' Laboratories, Inc., has given this new ceiling system a beam protection rating of three hours. Floor-ceiling assemblies combining this system with bar joist and slab, as well as with beam and steel floor construction, earned two-hour ratings.

Resists 2,000-degree heat

The Acoustical Fire Guard lay-in ceiling system achieves its remarkable fire-retardant quality through two new developments.

The first is the Acoustical Fire Guard lay-in unit. Because of its composition, this new lay-in unit can withstand exposure to flames and 2,000-degree heat. It also offers excellent acoustical and sound attenuation properties.

The second element is a new suspension system capable of withstanding the same extreme conditions as the lay-in unit. Called the Armstrong Acoustical Fire Guard Grid Suspension System,* it is designed to accommodate the expansion of both main runners and cross-tees, and thus to hold the lay-in unit securely in place when exposed to fire. The Fire Guard Grid Suspension System is the first to be combined with a lay-in ceiling unit to offer rated fire protection. Both the lay-in unit and the grid system carry the U.L. label.

Economy in time and money

In most cases, the new lay-in ceiling system will cost even less than ordinary plaster ceilings on metal lath. And like Fire Guard tile, it can save builders up to *two months'* construction time because it goes in dry. This is especially important in school construction. Schools *must* open on time. Fire Guard helps meet deadlines – at savings of thousands of dollars.

The Acoustical Fire Guard lay-in ceiling system is now available in both a Fissured and the popular Classic designs. There are two nominal sizes: 24″ x 24″ x 5/8″ and 24″ x 48″ x 5/8″.

For more information about either Acoustical Fire Guard tile or lay-in units, call your Armstrong acoustical contractor (he's in the Yellow Pages under "Acoustical Ceilings") or your nearest Armstrong District Office. Or write to Armstrong Cork Company, 4202 Watson Street, Lancaster, Pennsylvania.

* Patent Pending

Armstrong ACOUSTICAL CEILINGS

First in fire-retardant acoustical ceilings

Architectural design and rendering by Helmut Jacoby

Hattie Carnegie Fur Salon, New York City—Designer: Mr. Sidney Winters, Manager

This is glass at work

Glass is much more than a design material in this room. Its function is to bring out the true beauty of fashionable furs. It takes glass to transmit true light, the kind of light that makes a fuchsia look like fuchsia, the kind of light in which you never mistake a Norwegian blue fox for a silver.

This particular lighting glass is Alba-Lite.® It's an opal glass. It removes all the harshness from bright light without adding to or detracting from its color.

And Alba-Lite glass will give diffusion in a lasting way. Glass will not discolor or fade over the years. It will never change in any way which might affect the light passing through.

That's one of the reasons an installation like this stays on an architect's "must-show" list for decades.

Glass lasts in other ways, too. It won't warp or buckle with time. It stays clean longer and is easier to freshen than other materials. It has no static charge, so it neither attracts nor holds to dust.

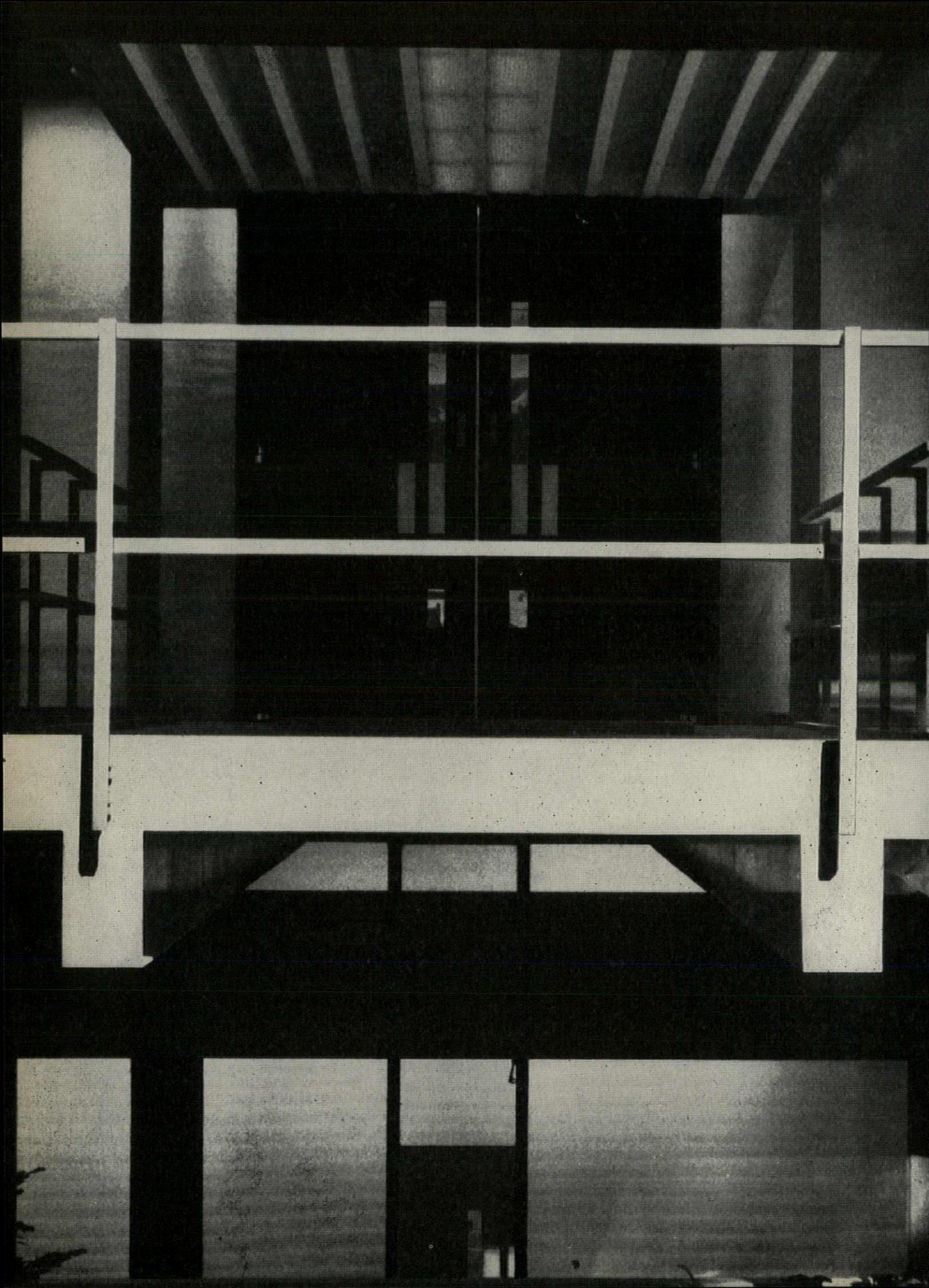
The *Commercial Lighting Application Guide* presents a handy resumé of some of the things you can do with glass. For a copy, write to our Lighting Sales Department, 23 Crystal St., Corning, N. Y.

CORNING GLASS WORKS

CORNING MEANS RESEARCH IN GLASS

February 1961 **PROGRESSIVE ARCHITECTURE**

REINHOLD PUBLISHING CORPORATION
430 PARK AVENUE, NEW YORK 22, NEW YORK



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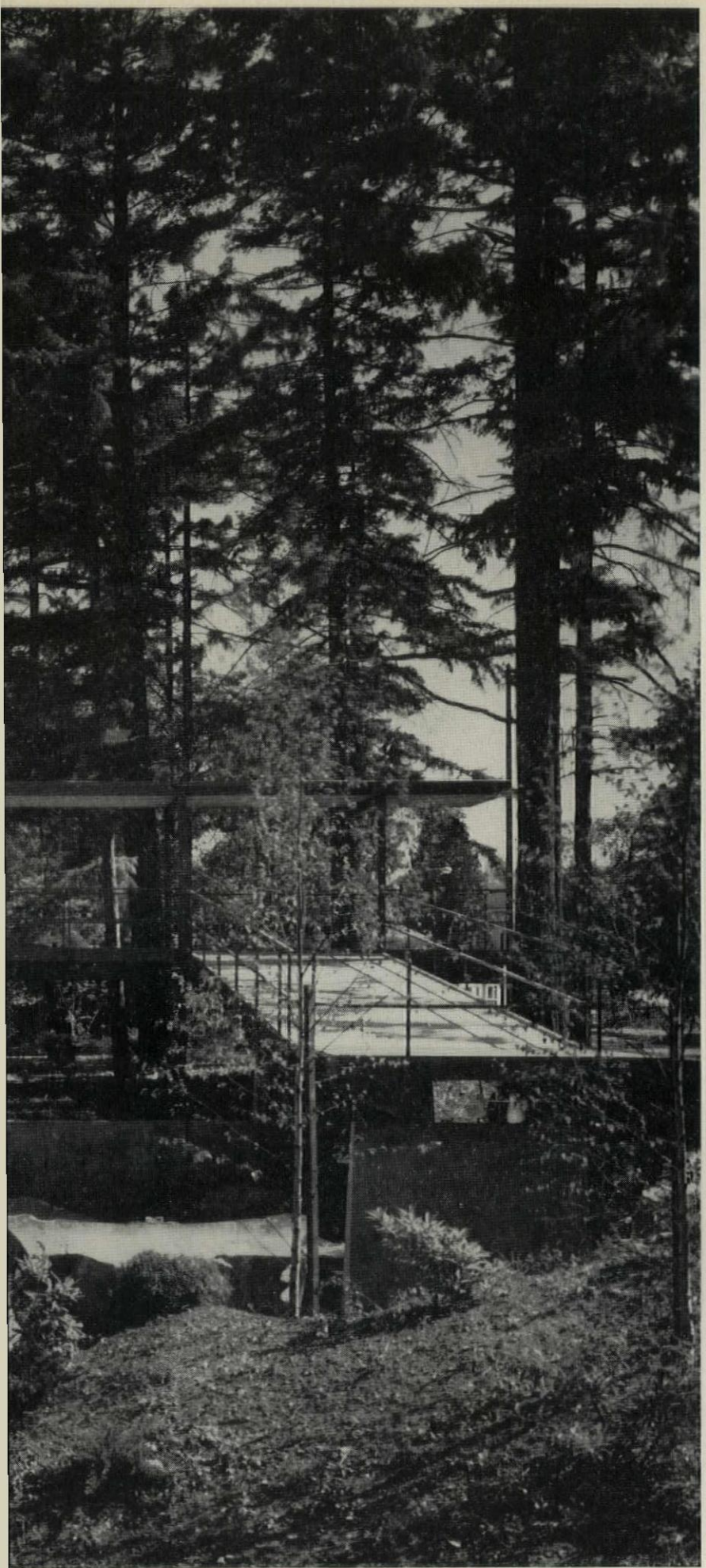
FACULTY CLUB



Photos: Dearborn-Massar

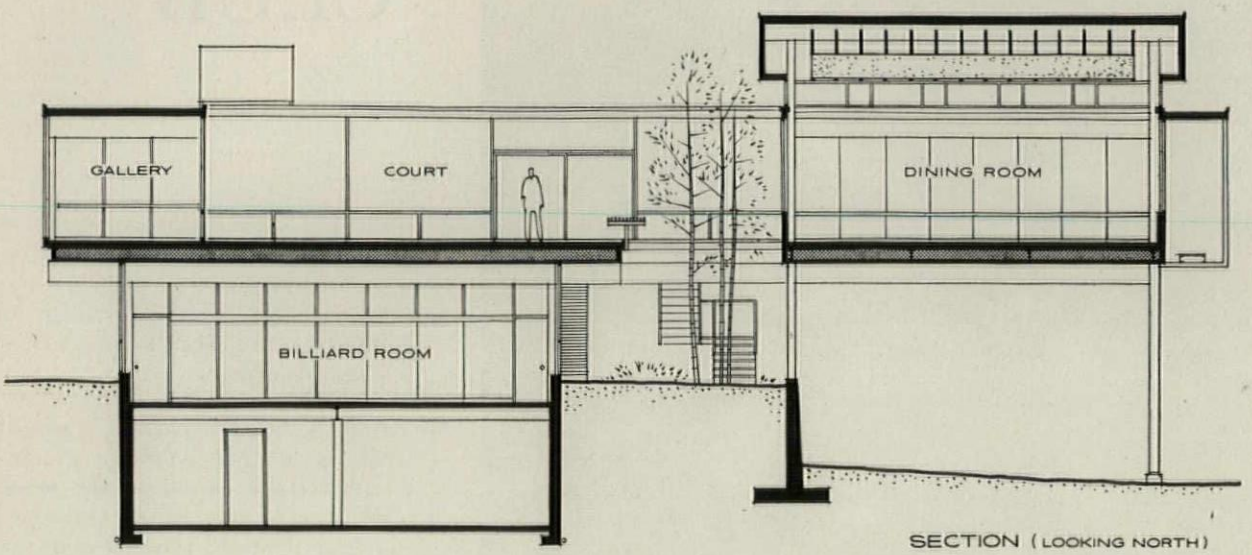
FACULTY CENTER BUILDING • UNIVERSITY OF WASHINGTON, SEATTLE, WASHINGTON • VICTOR STEINBRUECK AND PAUL HAYDEN KIRK & ASSOCIATES, ASSOCIATED ARCHITECTS • ECKBO, DEAN & WILLIAMS, LANDSCAPE ARCHITECTS

Most of the University of Washington's existing campus buildings are in the Gothic style, an idiom, the architects felt, totally opposed in character and scale to the more personal character desired for this building. A faculty club, they thought, should have residential scale to encourage casual use and to achieve the aim of bringing the faculty together. Since the site is somewhat isolated from other buildings, the architects decided that a complete departure from campus tradition was justified. Their goal was an orderly, intimately scaled building in which space is used as an important design element; a building simple enough in concept and detail to suggest a timeless or undated quality.

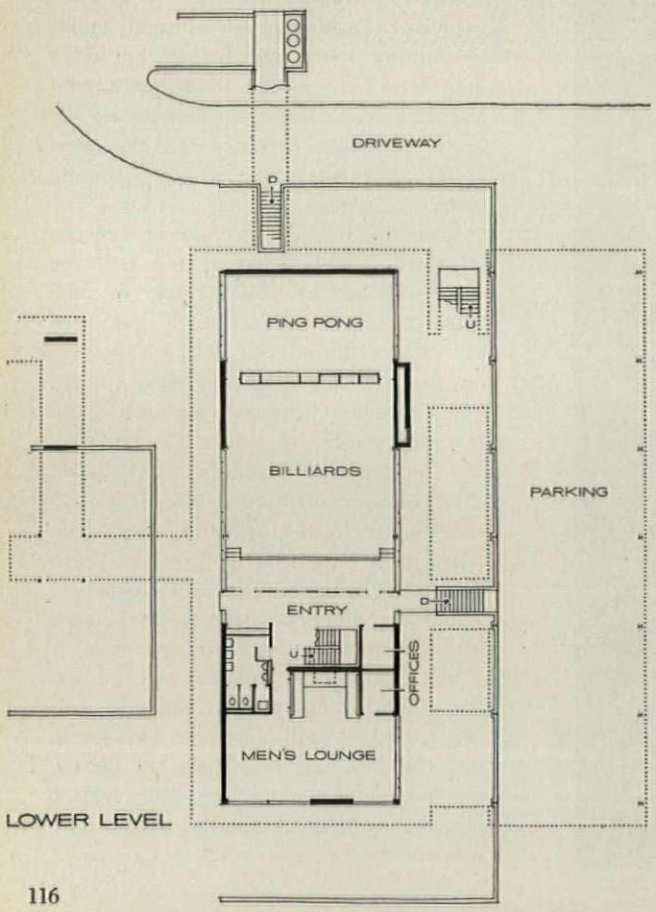
The topography of the steep site was exploited. Parking is out of sight, under the dining room and below the lower floor level. The dining room has a panoramic view to the east; lounges on the south and the entrance on the west (*left*) take advantage of the existing trees.

Economy was a basic factor because two-thirds of the cost of the building was paid for by the faculty. A steel frame was used with steel T-deck roof exposed on the interior, into which were inserted lighting and acoustical panels. The exterior is white stucco with stainless steel expansion joints 9-ft o.c. Windows on the west façade are unpolished gray plate contrasted with clear polished plate in the operating sash. Obscure glass was used also on the north and west walls of the inner court to give the gallery and the court privacy while preserving a sense of openness.

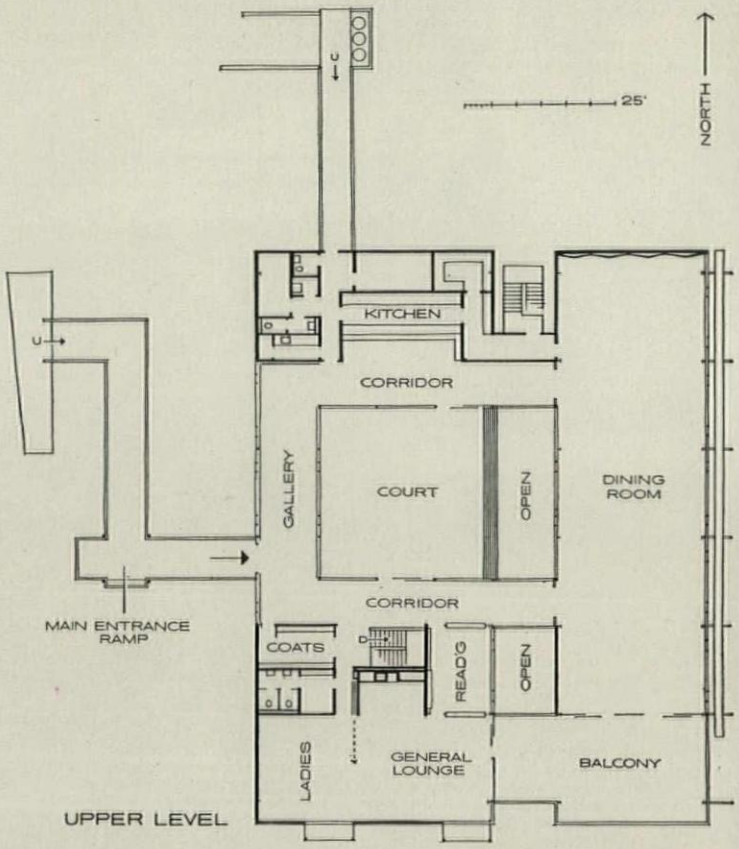
The Center is so popular as a gathering place for many functions that it is anticipated it will soon be too small, and the building may have to be expanded. Total construction costs, including site work but excluding equipment, was about $290,000, or $20 per sq ft.



SECTION (LOOKING NORTH)



LOWER LEVEL



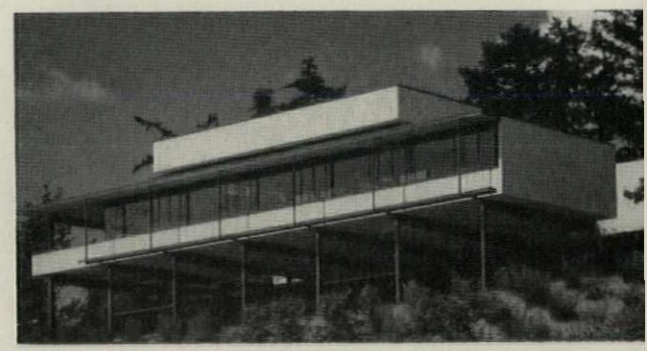
UPPER LEVEL

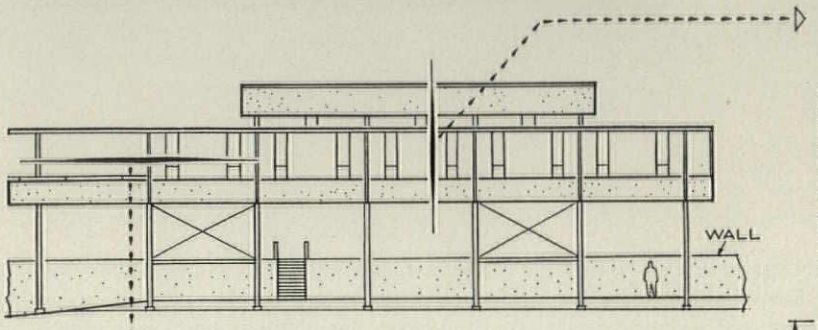
The balcony at the south end of the dining room has a panoramic view east and south to the Cascade Mountains, Mt. Rainier, and Lake Washington (above). *The steel* T*-deck roof of the dining room continues as balcony roof. An uncovered bridge links balcony to lounge.*

The inner court used for receptions and dining (right), *is protected enough for use in windy weather. This glazed "heart of the building," the architects say, gives to the interior a "sense of spaciousness and light in all weather."*

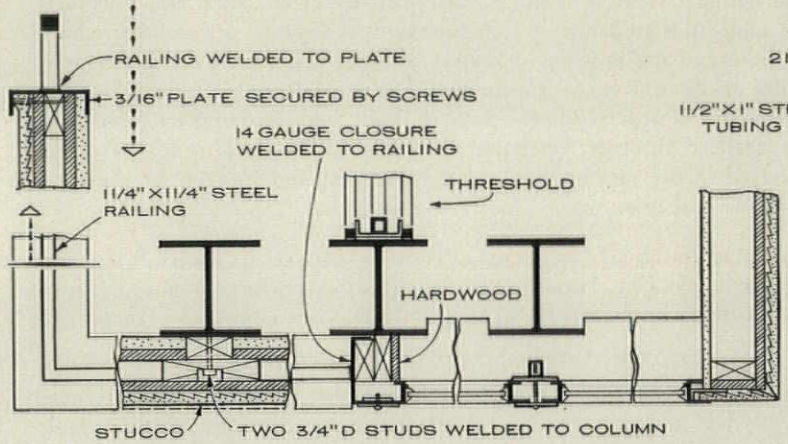
The dining room for 250 persons, the largest and most frequently used space in the club, is given greater importance by the high ceiling over its center section (below *and* acrosspage bottom). *Since neither carpets nor tablecloths could be afforded, acoustical control is provided by two tiers of glass-fiber baffles, hung at right angles to one another* (photo at right and section). *Light is supplied by suspended, incandescent fixtures in this section, and elsewhere by fixtures set in the T-deck. In the dining room and lounges, wood slats are cemented to exposed steel flanges for a finish sympathetic to the adjacent wood walls.*

In placing the building on the steep site, the architect took advantage of the view, existing trees, and different levels: parking, hidden from view, is under the dining room and below the tower floor level (right). *To avoid installing air conditioning, since economy was a prime concern, generous roof overhangs and many operating sash were included and have proven effective. The stucco exterior has a white sand dash finish and stainless steel expansion joints 9-ft o.c. The steel frame is painted dark gray.*

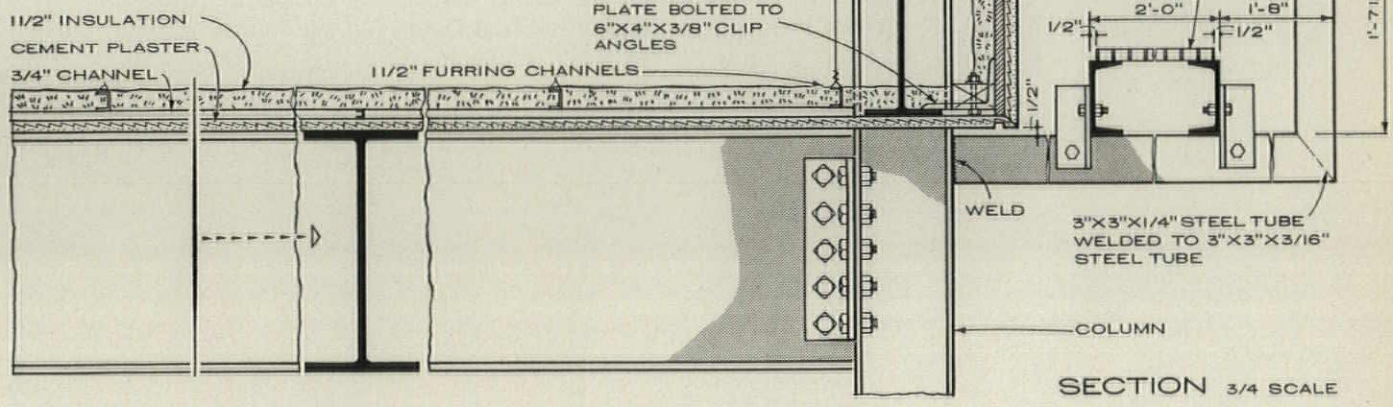


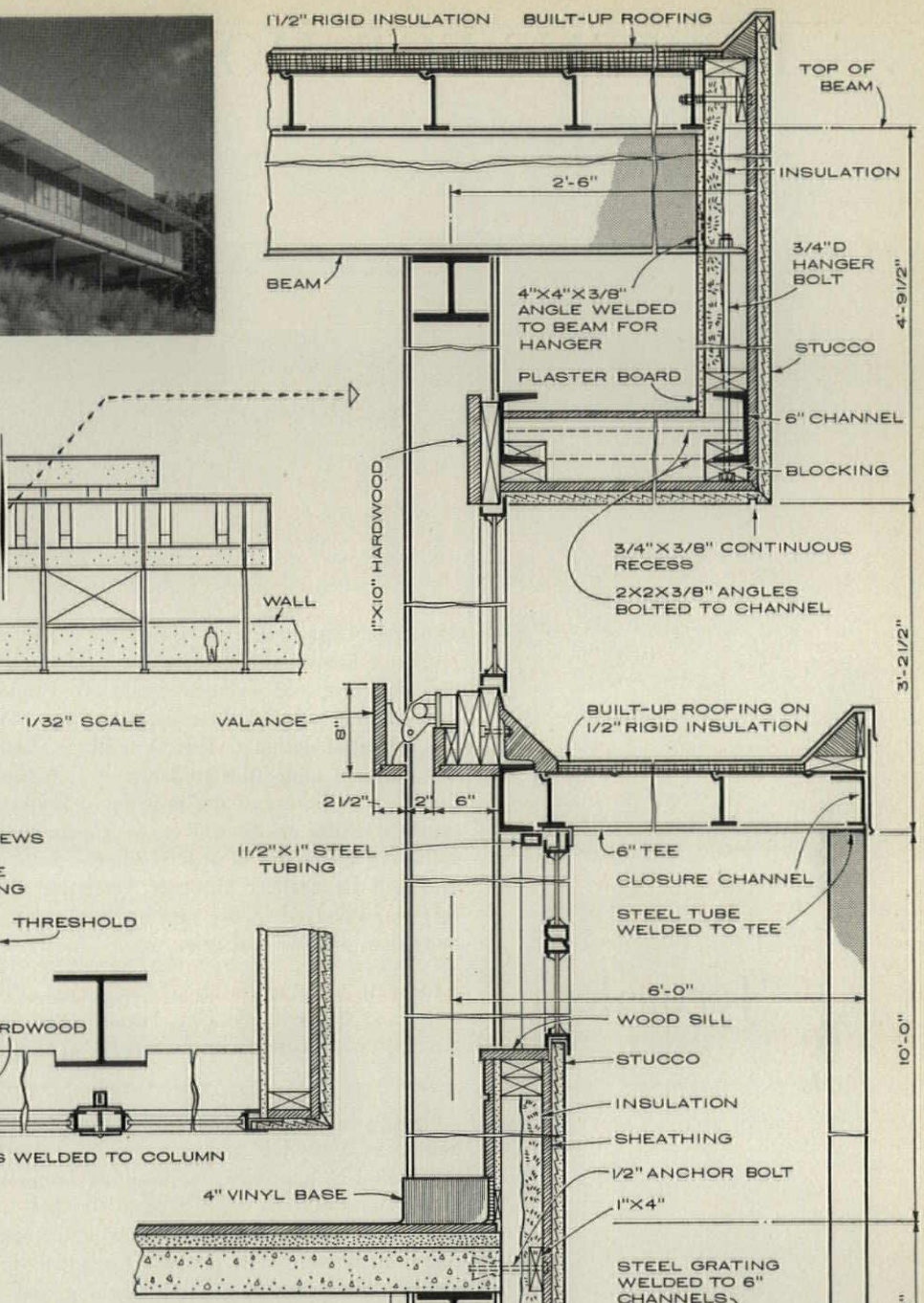


ELEVATION 1/32" SCALE



PLAN SECTION 3/4" SCALE





SECTION 3/4 SCALE

FACULTY CENTER BUILDING, UNIV. OF WASH.: Seattle, Washington PAUL HAYDEN KIRK & VICTOR STEINBRUECK, Associated Architects	SELECTED DETAIL WALL SECTION

U. S. DESIGNS FOR HOSPITALS ABROAD

U.S. architects have a significant part to play in the field of technical aid to other nations. "American know-how" is most sought after in large projects involving special planning and technical problems. Prominent among these complex building types is the hospital. In many countries, not necessarily "underdeveloped" ones, the principal national medical center is American-designed. Often these projects are initiated under the guidance of U.S. Government experts. Several firms have built a large international practice of hospital design. One New York firm is currently working on 25 projects in 9 countries. The two hospitals presented on the following pages are of special interest because both were initiated by Americans and will be realized through American financial aid. In each case, the architect was involved in the project in the earliest stages, and in each he played a more-than-professional role.

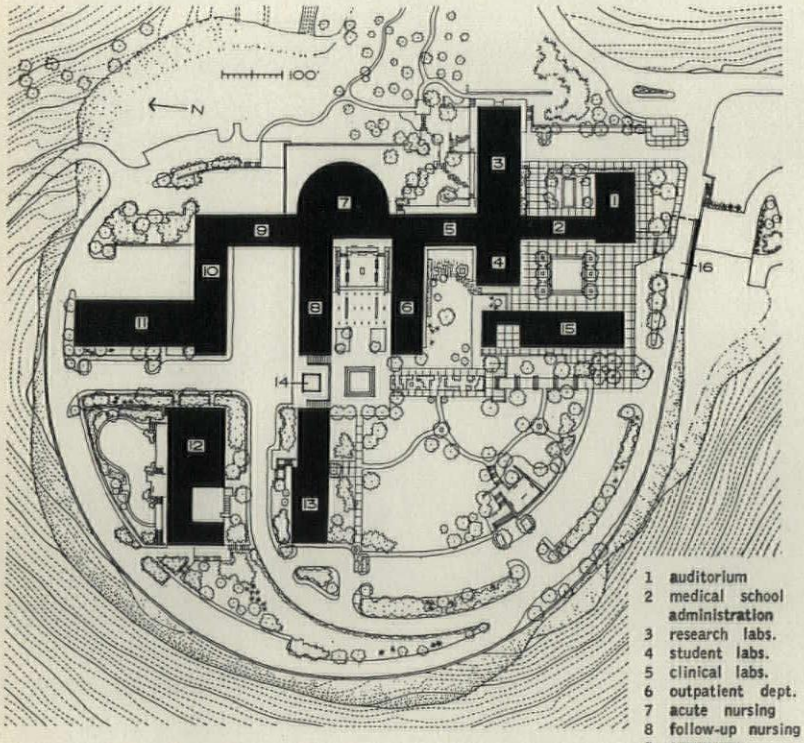
Jerusalem

HADASSAH HEBREW UNIVERSITY MEDICAL CENTER • JERUSALEM, ISRAEL • JOSEPH NEUFELD, ARCHITECT • A. L. ZETLIN, STRUCTURAL CONSULTANT • JAROS, BAUM & BOLLES, MECHANICAL ENGINEERS • LAWRENCE HALPRIN, LANDSCAPE ARCHITECT

Although he has designed other buildings during the period and has become known as a teacher and critic at several schools of architecture, Neufeld, long recognized as a progressive hospital designer, has devoted the major part of his professional activity for the past 10 years to this medical center. His dedication to it has involved him not only in architectural problems, but in programming and research as well. The project, for which preliminary planning began in 1951, will be the primary medical teaching and research facility for Israel and the largest medical complex in the Middle East. It will include a 500-bed hospital, a 40-bed maternity pavilion, nurses' school and residence, outpatient clinic, syna-

Photos, except as noted, Alfred Beinheim

Photo: Chesnik



gogue, teaching facilities for 800 students, research laboratories, and dentistry school; other facilities will be added later as funds become available.

The location outside of the city, somewhat removed from the main university campus, was selected to allow sufficient area for expansion and to free the hospital from the obligation of a city facility to accept all patients. (The teaching requirements of the program demanded strict selectivity in admissions.)

This hospital is the most recent of many sponsored by Hadassah, an organization of American women. Hadassah's program of medical aid to Palestine, which was begun just after World War I, culminated in the construction of a 500-bed hospital on Mt. Scopus in Jerusalem, adjacent to the Hebrew University. Israel lost access to both hospital and university after the fighting in 1948.

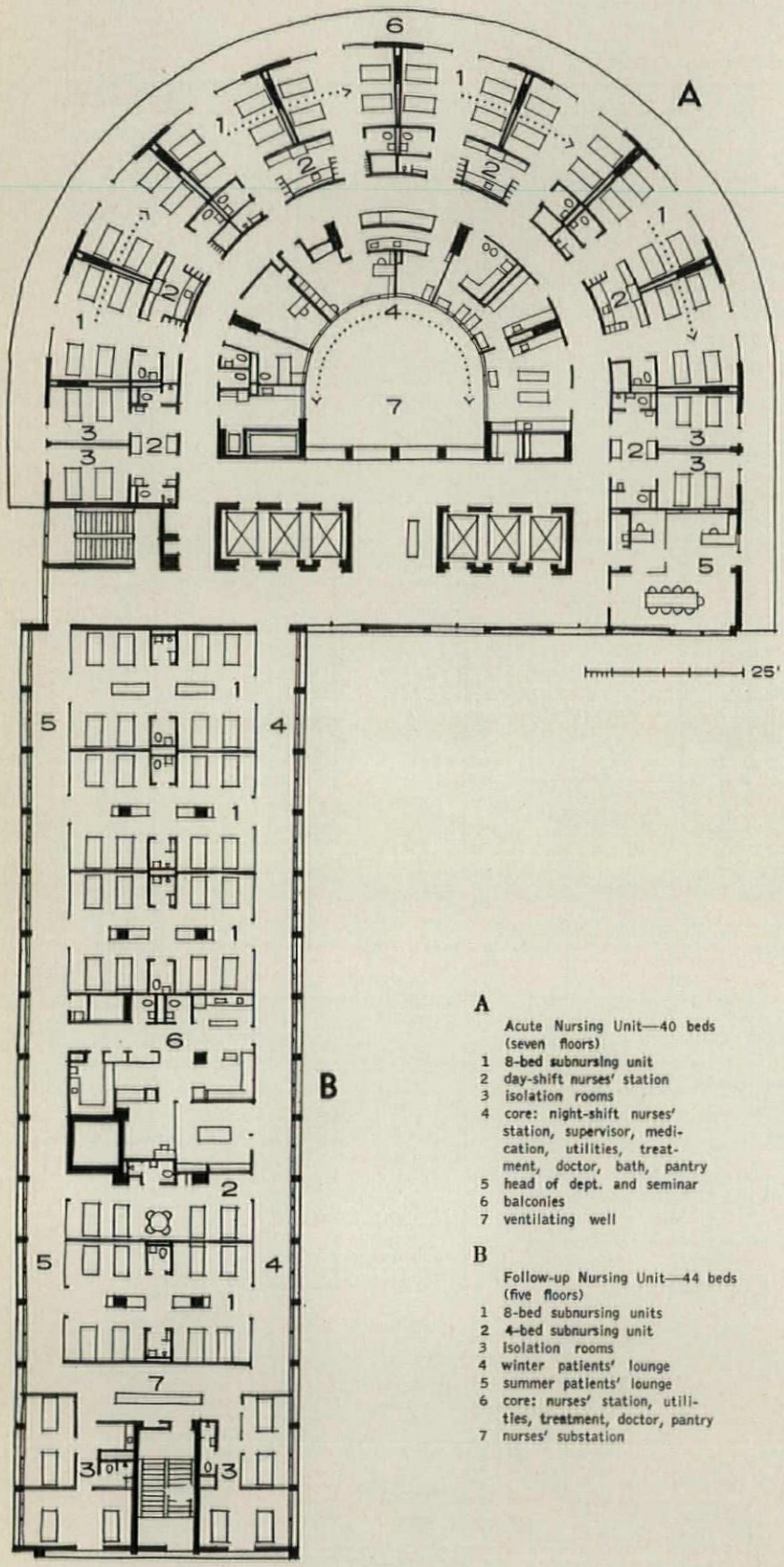
In the present project, Hadassah is contributing all clinical facilities, which are expected to be in operation by the spring of 1961. Teaching and research facilities built by the university will be somewhat delayed, due to the pressure of completing a new campus in Jerusalem.

Typical Israeli hospitals of today are modern in planning and construction; compared to American facilities, their principal difference is in the extent of their mechanical installations. This center, which will be mechanically ventilated throughout and partially air-conditioned, will be the first to approach American mechanical standards.

The site comprises 300 acres on a low hill three miles west of Jerusalem, overlooking the pastoral valley around Ein Karem, an ancient monastery village. The texture of the landscape—warm-colored stone interspersed with the silvery foliage of olive and cypress—is interrupted only by a few unobtrusive stone buildings. In this setting, Neufeld had to place a complex containing acres of enclosed area on several floors.

The building mass was broken into small units informally laid out following the contours of the site. Stone similar to that of the hill itself was used, particularly on the lower floors, to soften the visual impact of the buildings. Differences in elevation were turned to advantage in providing ground-level access to several lower floors.

To provide adequate circulation between departments without penetrating them, the central buildings are organized around a "lifeline" running almost a quarter of a mile from north to south.



A

Acute Nursing Unit—40 beds (seven floors)

1 8-bed subnursing unit
2 day-shift nurses' station
3 isolation rooms
4 core: night-shift nurses' station, supervisor, medication, utilities, treatment, doctor, bath, pantry
5 head of dept. and seminar
6 balconies
7 ventilating well

B

Follow-up Nursing Unit—44 beds (five floors)

1 8-bed subnursing units
2 4-bed subnursing unit
3 isolation rooms
4 winter patients' lounge
5 summer patients' lounge
6 core: nurses' station, utilities, treatment, doctor, pantry
7 nurses' substation

The plan of the acute nursing unit grew out of the need to minimize the distance from nurse to bed for complex, modern treatments. Neufeld's radial scheme, made public far in advance of its completion, has undoubtedly influenced more recent studies of centralized plans for intensive-care units.

The patients are accommodated in self-contained, eight-bed suites, including nurses' stations and sanitary facilities. The central nurses' station functions largely as an administrative center except during the night shift, when substations may not be occupied. The corridor, therefore, carries a minimum of traffic, and over relatively short distances. The void at the center of the unit induces a flow of air to supplement the mechanical ventilation in warm weather.

The follow-up unit is a result of increasing numbers of ambulant patients and new attitudes toward convalescence. The patient transferred there from the acute unit need travel only across a corridor. Here he can enjoy greater self-reliance and sociability, yet remain readily accessible to the doctors and staff members following his case.

In a follow-up unit with a central nurses' station, both patients and staff are likely to spend considerable time in the corridors. In the plan of this unit, the usual tunnel-like interior corridor is replaced by two exterior corridors. Depending on the season, one or the other of these corridors will be used as a patients' lounge. It will be superior to the conventional lounge in that the patient can sit just outside his room, convenient to his personal belongings and accessible to the staff; he can face to the south in the winter, to the north in summer.

The enclosed corridors also offer superior protection from the weather. Even in severe storms, small openings in the corridors can provide ventilation without disturbing patients. The location of heating equipment in the corridors prevents uneven heating of the rooms.

The "core" at the center of the unit is convenient to either corridor. It contains only rudimentary services, compared to the acute unit core, but is designed so that equipment could be added for the treatment of more serious cases.

The patients are accommodated, as in the acute unit, in suites of eight beds. Here rooms are subidivided visually by storage and sanitary facilities to form a sort of "neighborhood" of two-bed spaces, thus offering a suggestion of privacy while encouraging the sociability that is beneficial in convalescence.

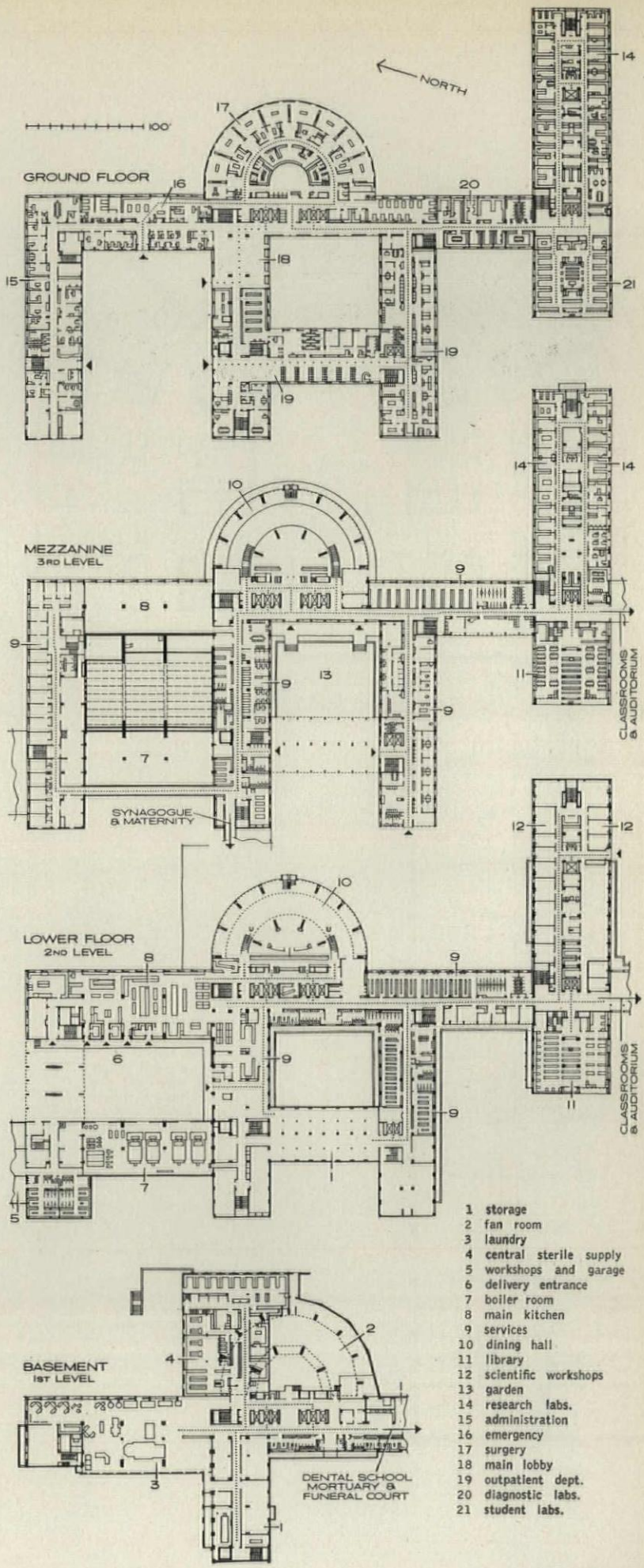
At the center of this line is a vertical "hub," concentrating the major part of all vertical movement in one group of elevators for efficiency of utilization. The essential services—kitchen, laundry, and central sterile supply—are located at the base of this hub. Above them are the main lobby and those facilities for which communication is most critical—the surgery and acute nursing departments.

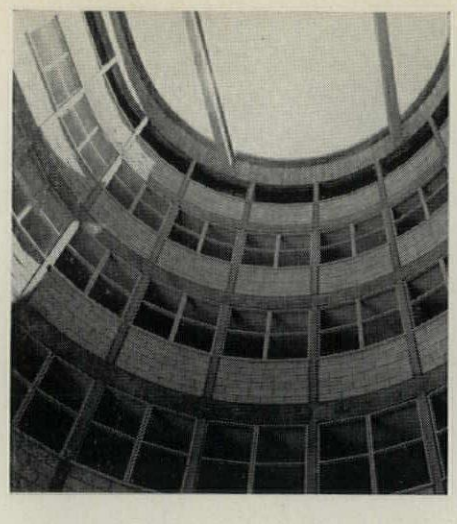
The plaza at the end of the entrance drive provides access to the outpatient, administration, and emergency departments, as well as to the main lobby. The location of the emergency department at this level in the center of the complex facilitates its function as the night control point for the entire hospital.

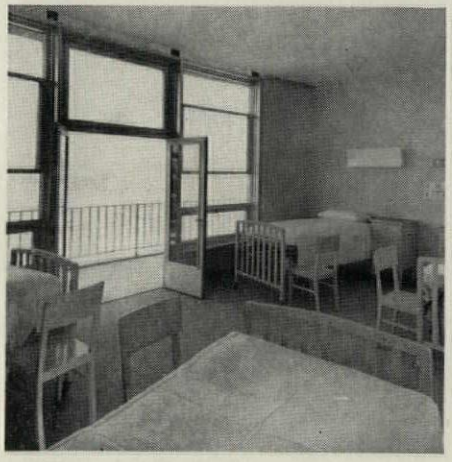
Direct contact between emergency and surgery departments eliminates any duplication of operating facilities. The contour of the site places the surgical suite two floors above ground level, the optimum height where the possibility of conventional warfare must be considered. It is sufficiently insulated from direct aerial bombing, and high enough to minimize the effect of "near-misses" that explode on the ground. The semicircular plan of the suite shortens circulation and allows a radial flow to the operating rooms, which are all equally distant from central facilities.

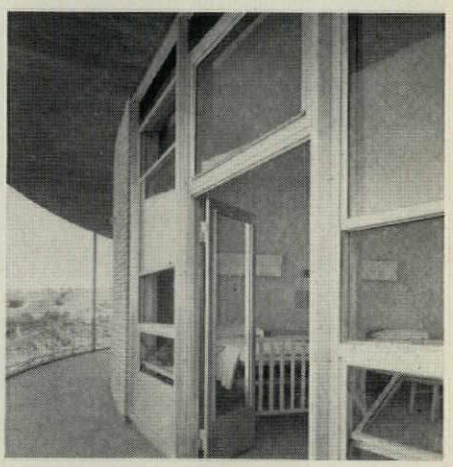
Laboratory and therapy facilities are planned for accessibility to inpatient and outpatient departments, to avoid duplication of costly equipment. X-ray and deep-therapy departments are located on the second and third floors above the main lobby. Clinical laboratories, located next to the nursing units along the "lifeline," are also adjacent to the outpatient clinic. To the south along this line is the eight-story laboratory wing of the university. The organization of the clinical, research, and student laboratories allows for contact between them and facilitates the movement of students and staff between clinics, laboratories, and classrooms.

The possibility of war, ever-present in Jerusalem, required provisions for the emergency operation of the hospital. The nature of the site, and the system of tunnels connecting the buildings, made such provisions possible at little additional cost. In emergencies, the lower-level truck entrance, under the central plaza, would become a well-protected reception point. Underground storage spaces adjacent to it, which are equipped with sanitary connections, could be used for evacuees from the upper floors of the building.

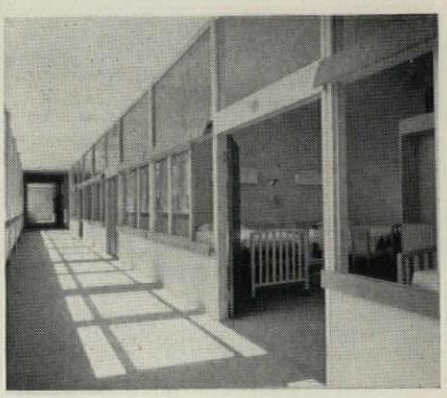


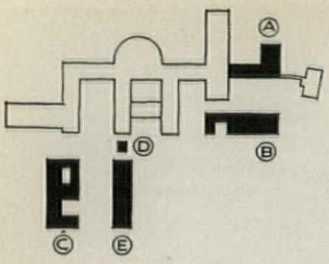




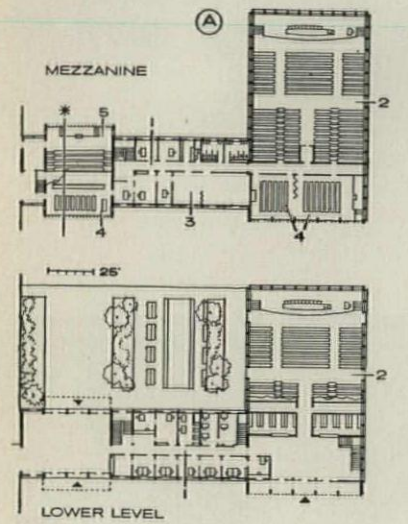


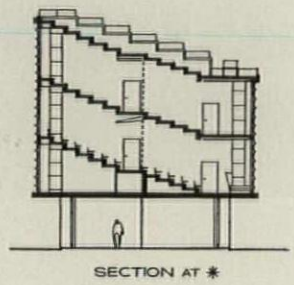
The medical center embodies a pioneering application of Progressive Patient Care principles. The acute nursing unit (above), *radial in plan, is surrounded by shaded balconies overlooking the valley to the east; the central ventilation well can be covered in winter. The follow-up unit* (below) *is composed of eight-bed suites, partially subdivided by storage and sanitary facilities. The sunny south corridor will be furnished with deck chairs in winter for use as a patients' lounge.*





A complex of wings and separate pavilions to the south and west of the central hospital building round out the initial facilities of the medical center. All departments are connected to the central building by tunnels, which carry essential supplies and services and provide for uninterrupted communication in times of emergency.

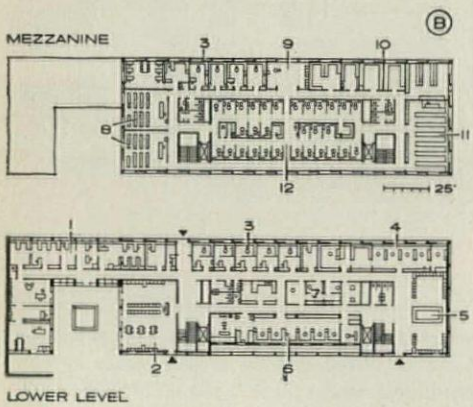




A Medical School Wing
1 administration; 2 auditorium; 3 faculty lounge; 4 classrooms; 5 lecture hall.

Medical School Wing

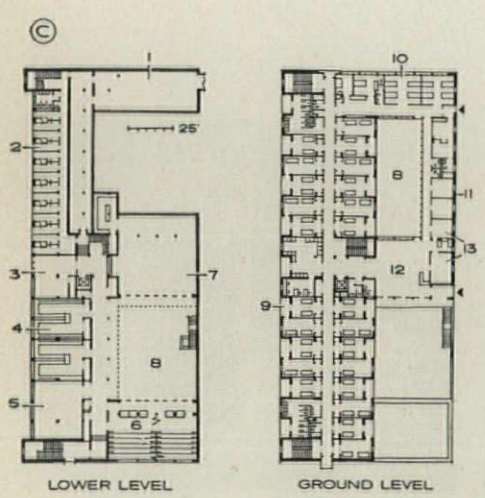
Completing the nursing-laboratory-teaching sequence along the "lifeline" of the center, this two-story wing houses an auditorium, lecture halls, classrooms, and administrative offices for the medical school. Each 176-seat lecture hall can be divided by a movable partition into two 80-seat halls. Above the lecture halls is a rooftop amphitheater, which will be equipped with aluminum seats. The auditorium seats 492.



B Dentistry School
1 administration; 2 lounge; 3 department chiefs; 4 diagnosis; 5 waiting; 6 surgery; 7 x-ray; 8 lecture rooms; 9 demonstration; 10 prosthetics; 11 student laboratories; 12 main clinic.

Dentistry School

This three-story building, sponsored by Alpha Omega, a U.S. dental fraternity, will be devoted to clinical and teaching facilities for a student body of 400. Two additional floors will accommodate further graduate work and research. The basement level, housing lockers and services, provides access by tunnel to the medical school wing. Patients enter at the south end of the lower floor; students and staff, at the north end. The upper two floors are almost identical in plan, with similar facilities for different classes. Patient circulation on these floors is confined to the corridors along the west side.



C Nurses' School and Residence
1 shelter; 2 quiet rooms; 3 library; 4 laboratories; 5 demonstration; 6 classrooms; 7 multipurpose; 8 court; 9 nurses' quarters; 10 infirmary; 11 staff quarters; 12 lobby; 13 administration.

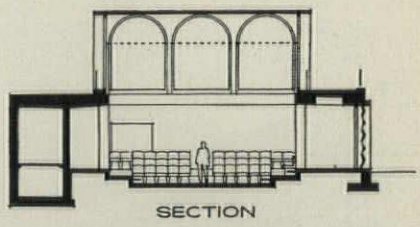
Nurses' School and Residence

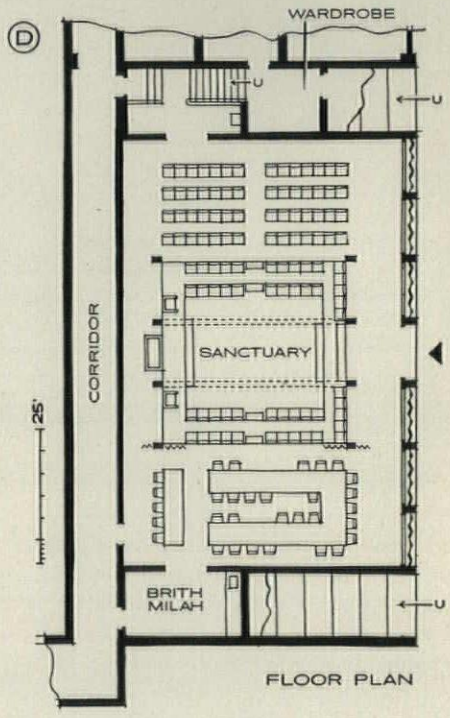
This building houses 172 nurses and the required classrooms and laboratories. Although single rooms are generally considered mandatory for nurses because of the problem of night duty, Neufeld has housed them in double rooms, at a considerable saving. This innovation was made possible by providing 12 "quiet rooms" where off-duty nurses may sleep during the day. All rooms are above ground level and away from vehicular traffic. The courts afford secluded outlooks from the rooms and common spaces. Teaching facilities on the lower level are above grade on the downhill side of the building.

Synagogue

The significance of this building, necessarily so much smaller than its neighbors, is asserted by its prominent position in the center and by its distinctive form and color. Neufeld compares it to "a single stone set carefully at the focal point of a composition." The building is located at the head of a long, gardened mall leading up from the entrance drive and is accessible from the main entrance plaza. Its position between the follow-up nursing unit and the maternity pavilion is convenient for ambulant patients attending services, and for rituals associated with birth.

The form and texture of the building emphasize its relation to the local landscape and the traditions of Jerusalem. The sanctuary is partially submerged in the ground, its roof forming a memorial *piazzetta* opening from the entrance plaza. Local stone is used on the interior for both floors and walls. The austerity of this material will be offset by the brilliant colors of the lantern above. Its 12 vaulted openings will serve as settings for stained-glass windows designed by Marc Chagall, representing—abstractly—the 12 tribes of Israel. This lantern, penetrating the *piazzetta* above, will be the symbol of the synagogue from all points of view.





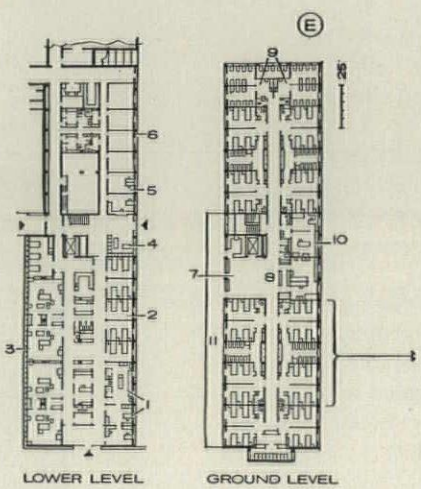
Maternity

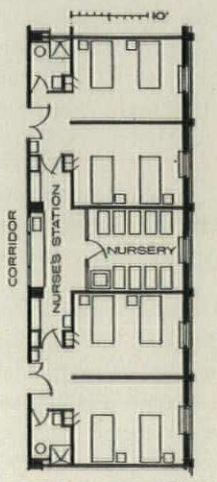
The maternity pavilion offers a new solution to the problem of locating nursery facilities that has certain advantages over either the central nursery or the rooming-in scheme. Neufeld's plan shortens the distance between mother and baby and reduces the risk of cross-infection, thus avoiding the expense of separate compartments for each child.

The basic unit of the design is a suite for eight mothers, with its own nurses' station, toilet, utilities, and nursery. All movement of babies and mothers, and a major part of nursing and visitor traffic, is kept within this suite. Nurses' stations are located so that one can take over the functions of two during night shifts.

Delivery and administration facilities on the lower floor of the pavilion are designed to be adequate for five nursing floors, with a total capacity of 200; in the first stage, only one 40-bed floor is being built.

E Maternity
1 admission; 2 labor; 3 delivery; 4 waiting; 5 administration; 6 staff dormitory; 7 dining and waiting; 8 nurses' station; 9 suspects and prematures; 10 treatment; 11 balcony.



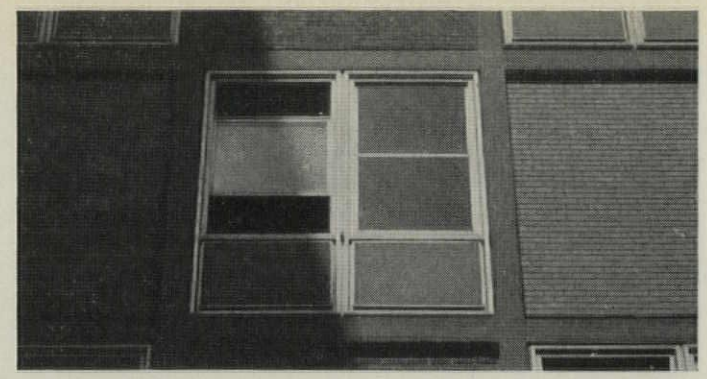


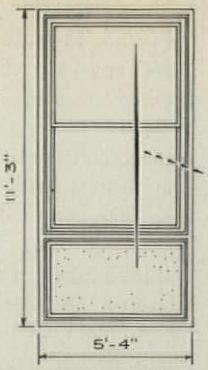
Local stone has been used extensively to relate the buildings to the environment. The white plaster walls which characterized early modern architecture in Palestine tended to weather poorly and seemed out of place among the traditional stone buildings of Jerusalem.

The concrete structural grid of the buildings is exposed on the exterior, with a recessed in-filling of local stone or brick and prefabricated aluminum window units. The stone is cut in the traditional two-to-one proportion and used as a bearing wall. The red and white brick is used alternately to relieve the austerity of concrete and stone, considered too forbidding for a hospital. Seen from a distance, the walls take on the color of the hill; it is only on approaching the buildings that their polychrome character becomes apparent.

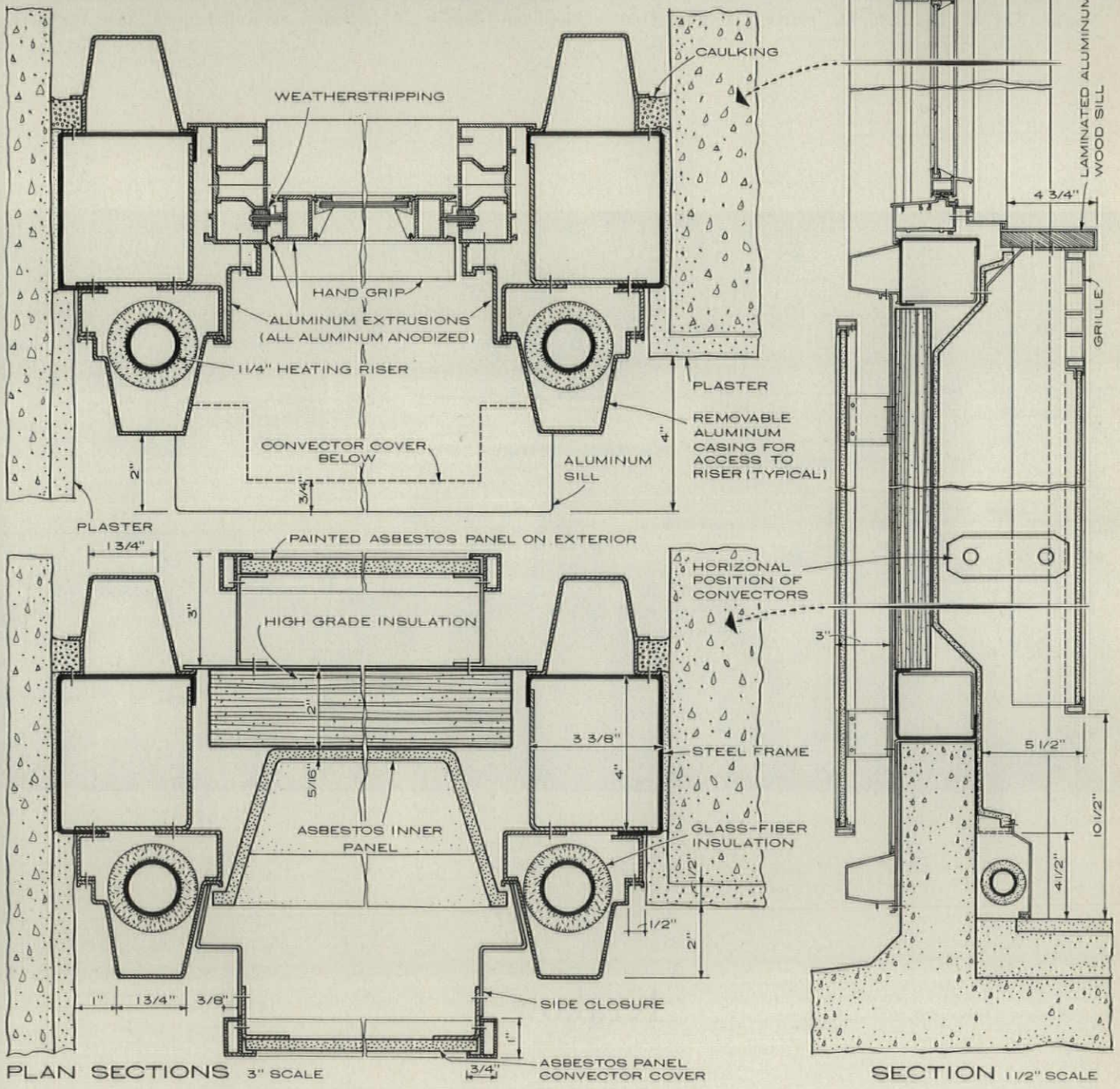
One standard window-wall detail has been applied throughout the center (*acrosspage*, SELECTED DETAIL). It can be used to fill all or half of the structural bay, permitting the development of a "variation-on-a-theme" effect, relating buildings of different types in the center.

The typical unit includes a double-hung window and a spandrel designed to house convectors or ventilators or both. The interior framing is designed to accommodate heating risers and returns within removable aluminum casings.





EXTERIOR ELEVATION



PLAN SECTIONS 3" SCALE

SECTION 1 1/2" SCALE

HADASSAH HEBREW UNIV. MEDICAL CENTER: Jerusalem, Israel JOSEPH NEUFELD, Architect	SELECTED DETAIL WINDOW WALL

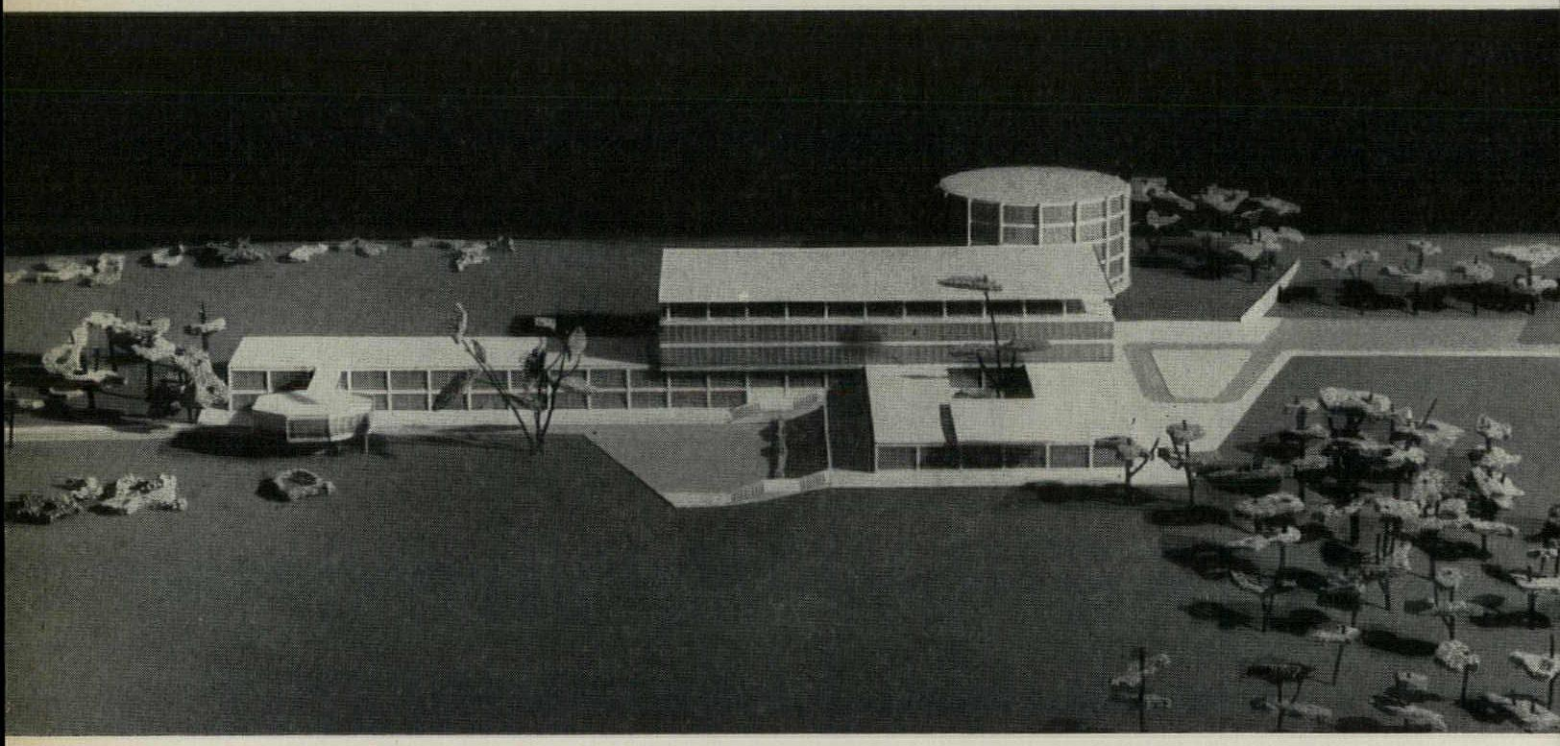
AMERICAN RESEARCH HOSPITAL FOR CHILDREN • KRAKOW, POLAND • W.O. BIERNACKI-PORAY, ARCHITECT

This project is a convincing demonstration that an architect can do more for the world than executing commissions as they come along. Biernacki-Poray, a New Jersey architect, recognized a pressing need and dedicated himself to meeting it, donating his own time and that of his staff and enlisting the support of two national governments and a group of influential private citizens.

World War II had left his native Poland in ruins; losses of manpower and postwar boundary changes hampered recovery and retarded technology. Today, shortages of health facilities and personnel continue to reflect the general privation; inadequate housing has led to an increase in disease, especially among children. Poray's objective was to provide a new pediatric hospital, contemporary in design, construction, and equipment, as a contribution to recovery and as an example for future efforts.

In the spring of 1958, having learned that the U.S. Government had funds exceeding $100 millions on deposit in Poland, Poray approached the State Department concerning his project and obtained enthusiastic approval for it. In Warsaw, the plan was received reluctantly at first as a potential Trojan Horse; Poray was able, however, to secure the wholehearted support of the Polish Government.

Kraków was chosen as the location because its population has nearly doubled since prewar times, with no improvement in hospital facilities. Despite obsolete facilities, its university continues to make major contributions to science, as it has done since the time



Kraków

of Copernicus.

The proposal for a new hospital led to the establishment of a new campus for the Medical Academy, four miles southeast of the city. Thus Poray became involved in preliminary planning for an entire campus.

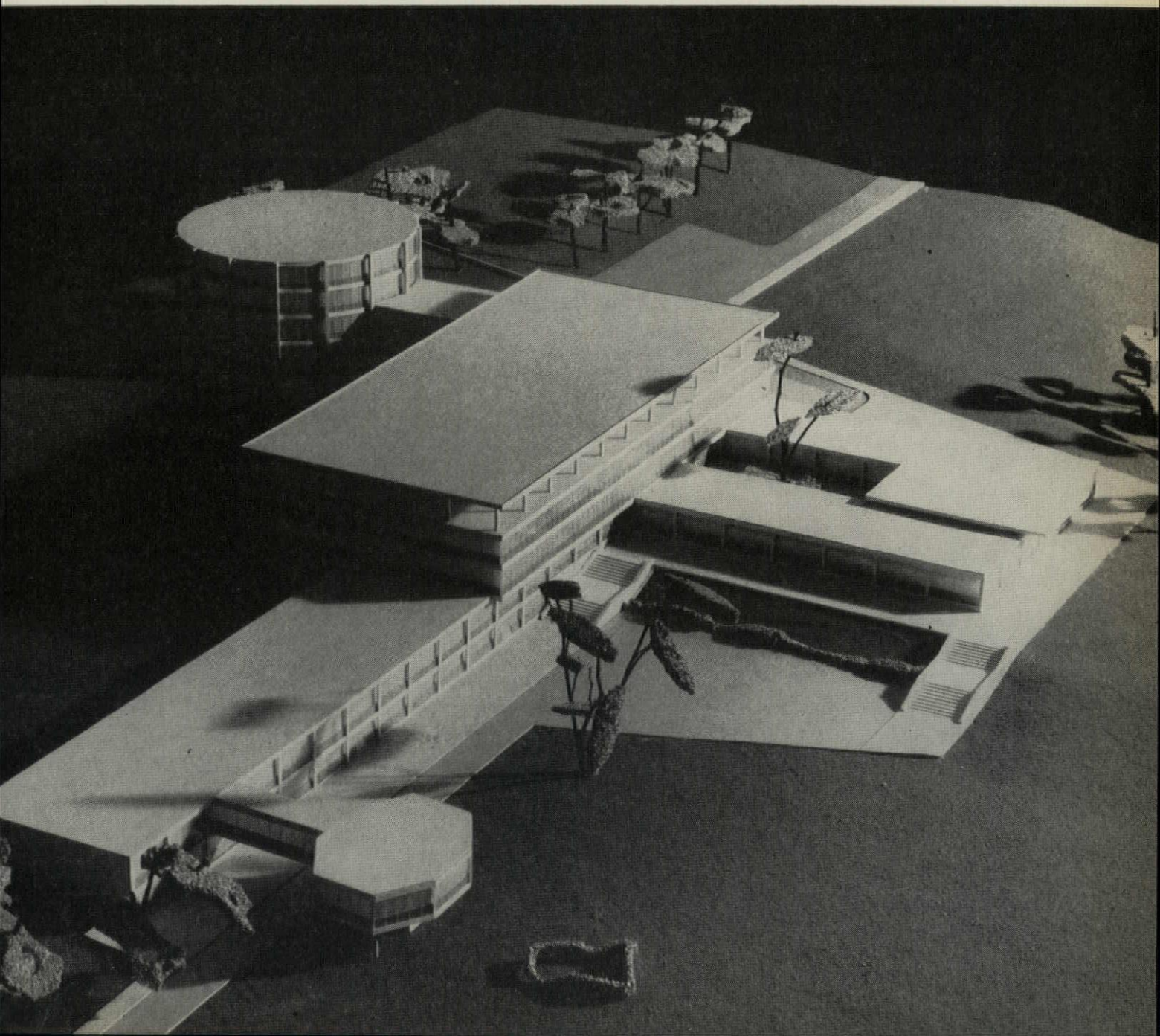
Returning to the United States, Poray organized a committee of industrialists, financiers, legislators, and medical experts to sponsor the project. Its administration was delegated to CARE, which had already handled considerable medical aid to Poland.

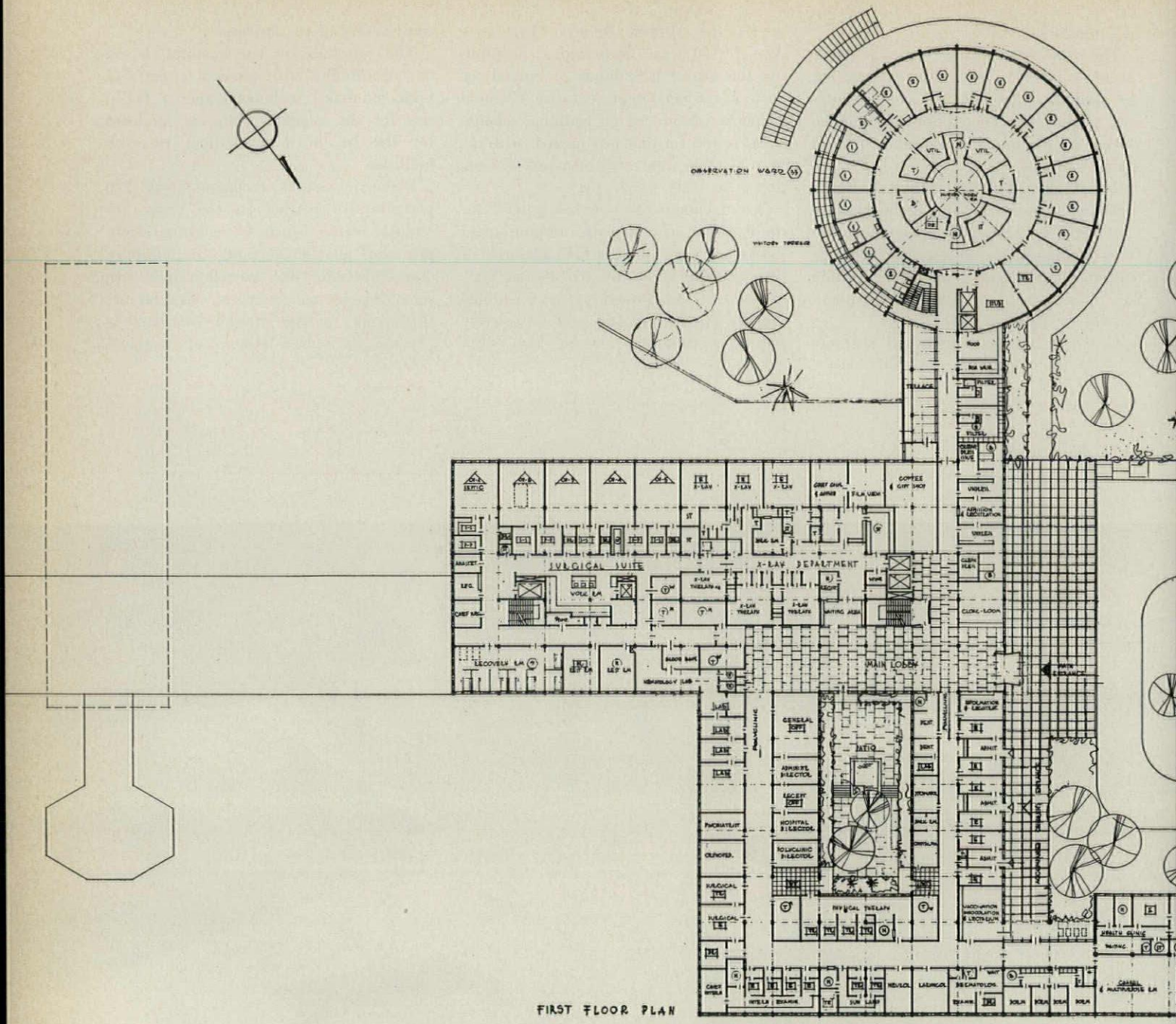
At that point an unexpected obstacle arose: the Mutual Defense Assistance Act of 1951 was interpreted as prohibiting the use of U.S. funds in Poland for such a project. Representative Clement Zablocki introduced an enabling amendment to the act that was passed, with the help of other interested members of Congress, in July 1959.

Arrangements are now being made for the donation of materials and equipment by American manufacturers and for their free transportation by the Polish Government. Ground-breaking is scheduled for the spring of 1961 and completion for early 1964, in time for the 600th anniversary of the university.

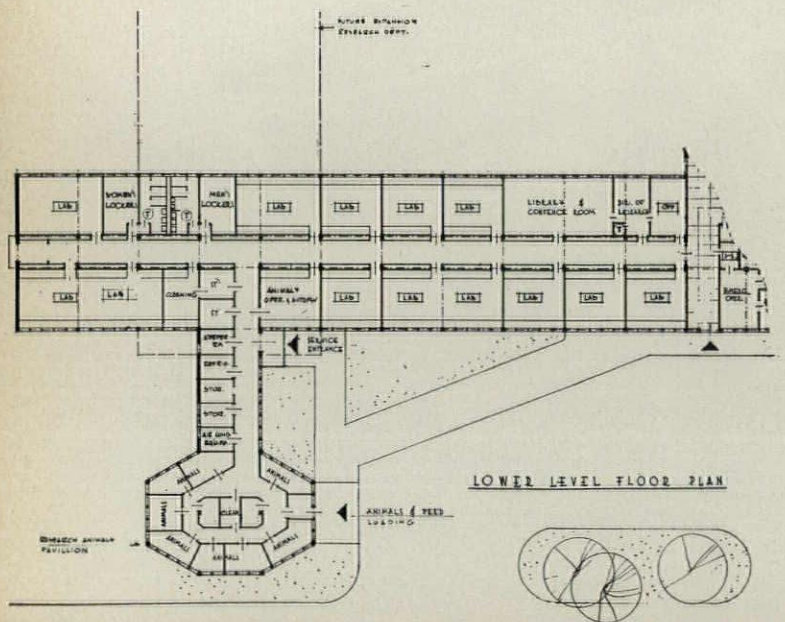
The program for the hospital, based on consultation with medical experts of both countries, includes teaching facilities for the academy, clinical facilities for the region, and medical research facilities.

Pediatric clinics accommodating 270 patients are housed in the four-story circular wing, which is separated from the rest of the hospital to minimize cross-infection. The circular plan was selected for efficiency of circulation; supervision of the curved corridors is effected through a system of overhead





FIRST FLOOR PLAN

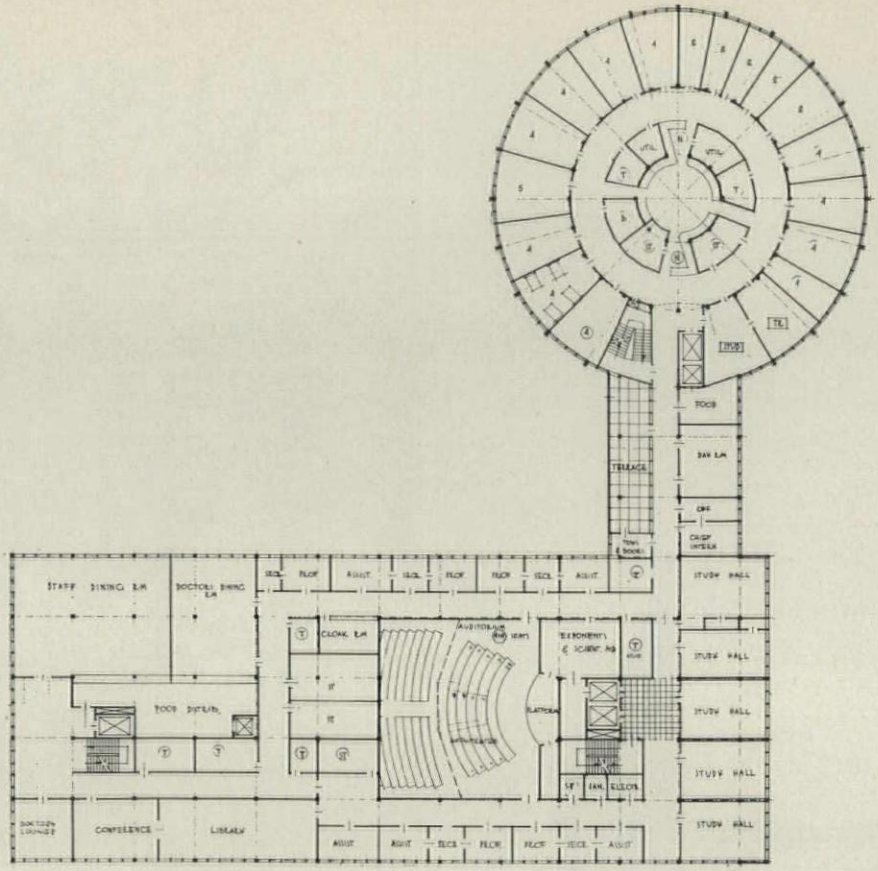


LOWER LEVEL FLOOR PLAN

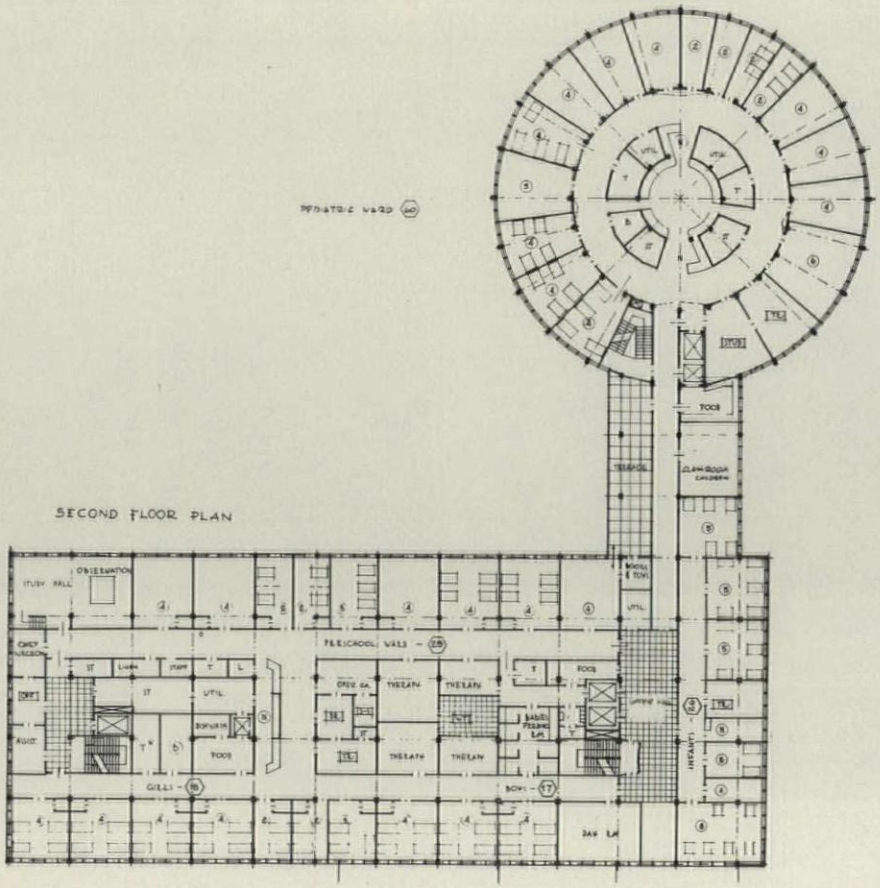
SYMBOLS AND ABBREVIATION

- DOCTOR'S OFFICE ROOM
- TREATMENT ROOM
- EXAMINATION ROOM
- OPERATION ROOM
- PATIENT RETARDATION AREA
- SUB-STERILIZING
- LABORATORIES
- STUDENTS TEACHING AREAS
- NURSES' STATION
- STORAGE AREA
- NUMBER INDICATES DESIGNED OCCUPANCY
- TELEPHONE
- OFFICE AREAS
- WAITING AREAS
- TOILET ROOM
- SHOWER ROOM
- BATHROOM
- FOOD — FOOD DISTRIBUTION AREA
- UTIL. — UTILITY ROOM (WALK)
- REG. — REGISTRATION OF PATIENTS
- HEARING ROOMS

FEBRUARY 1961 P/A



THIRD FLOOR PLAN



SECOND FLOOR PLAN

mirrors. Special rooms equipped with one-way glass and with sound systems allow student observation of treatment rooms. Another clinic of 90 beds is located in the central building, convenient to surgical and diagnostic facilities.

Teaching facilities occupy the upper two floors of the central building. The central auditorium, two stories high, seats 114 for lectures and demonstrations and is expandable to a capacity of 414 for films or conferences. Other facilities on the fourth floor (not shown) include a student reading room and a snack bar.

The polyclinic, occupying a one-story wing to the north, includes provisions for examination, admission, outpatient treatment, and scheduled health clinics. The patio provides an enclosed and supervised play area for waiting children. This wing includes a combination chapel and multipurpose room seating 100, and a 10-bed dormitory unit for parents.

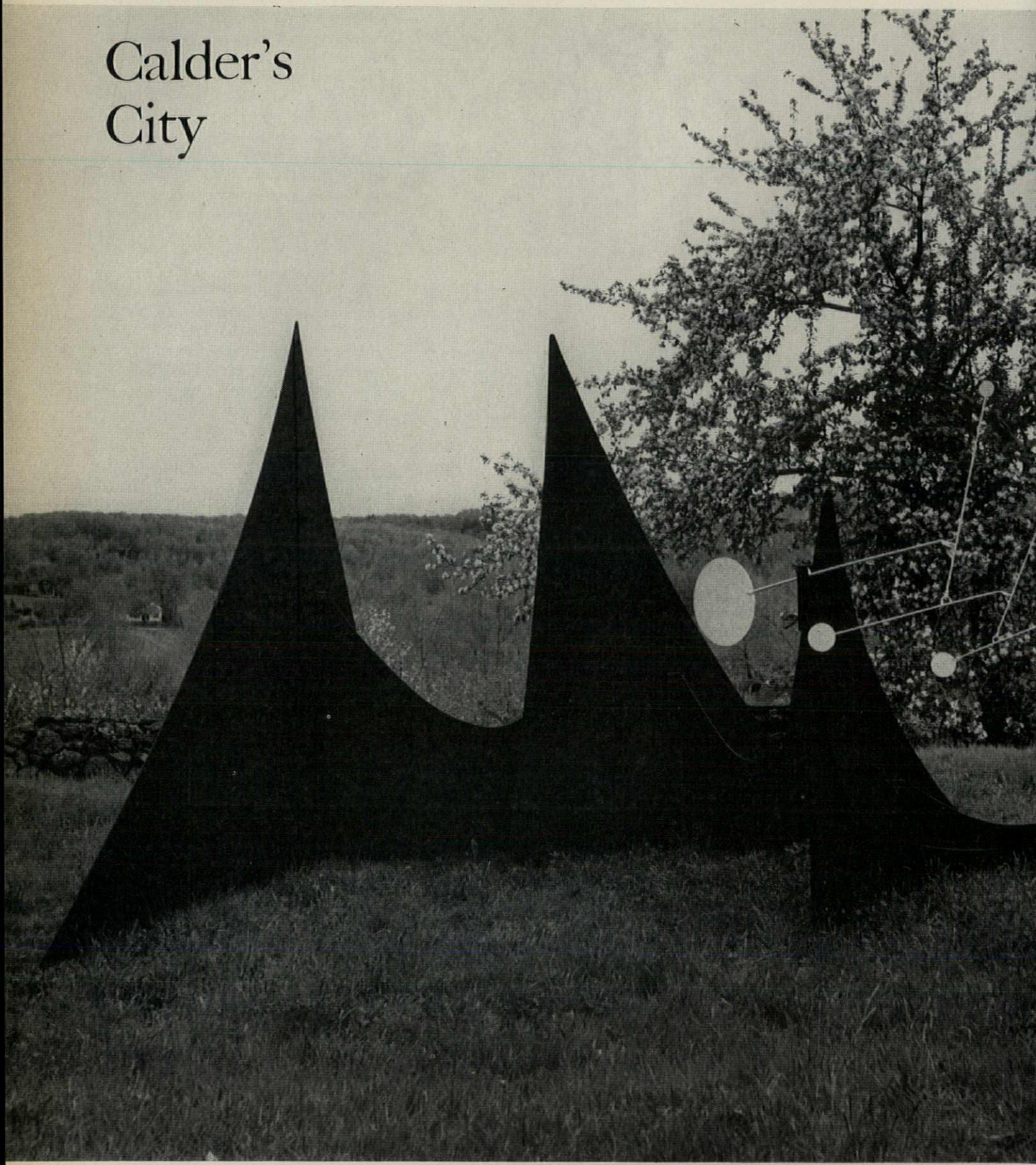
The research department is planned to function as an almost independent institution. Initially, only part of the first floor will be built. (Photographs of an early model show a future second floor.) As funds and trained personnel become available, the department will be expanded to four floors. The animals used in research programs will be housed in a separate octagonal wing, with separate entrances to each room, to minimize the risk of cross-infection. In addition to research facilities, the lower floor houses the kitchen, the laundry, central sterile supply, storage, lockers, and the emergency department.

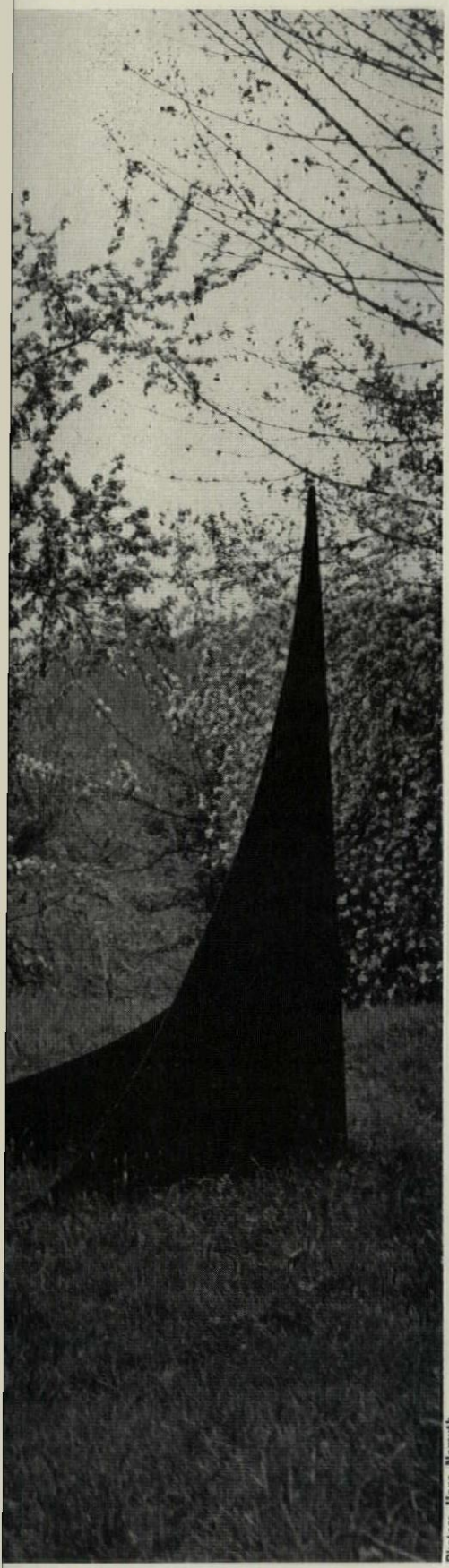
The extensive use of American materials and equipment, the sources of which were not yet determined, required unusual adaptability in design and specifications. Since replacement and repair will be relatively difficult, durability will be the major consideration in the selection of equipment.

Several materials common in the U.S. but new to Poland will be introduced: acoustical treatments, including perforated metal, mineral fiber, and perforated plywood types; vinyl-asbestos floor covering; and flush-type metal office partitions. Aluminum curtain walls with porcelain-enamel spandrels will be used on the exterior; columns and solid walls will be faced with marble or granite.

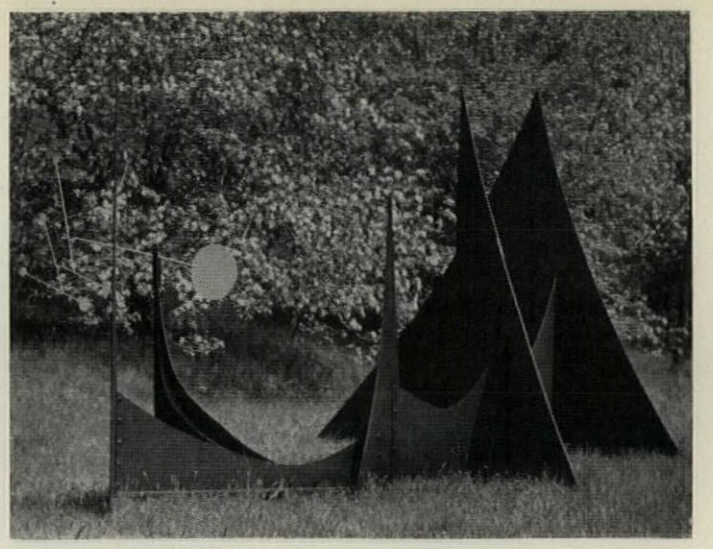
Many mechanical installations will also be new to Poland. Among them will be a heating system utilizing metal acoustical-ceiling panels as radiant surfaces.

Calder's City

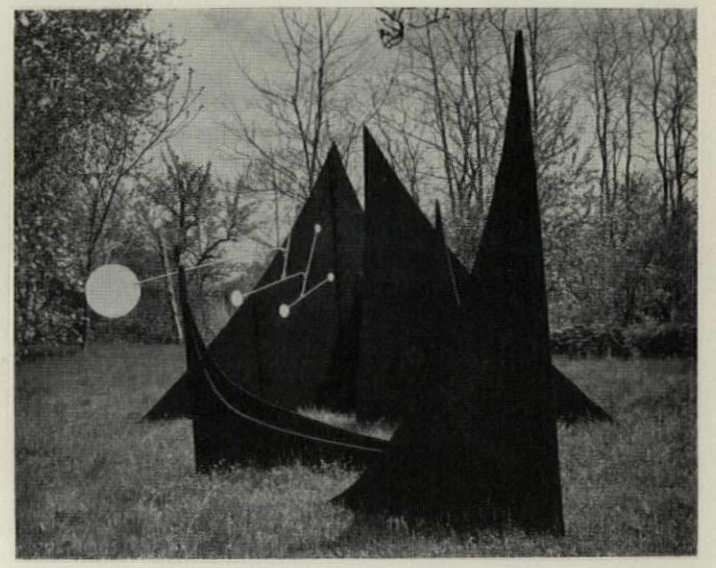




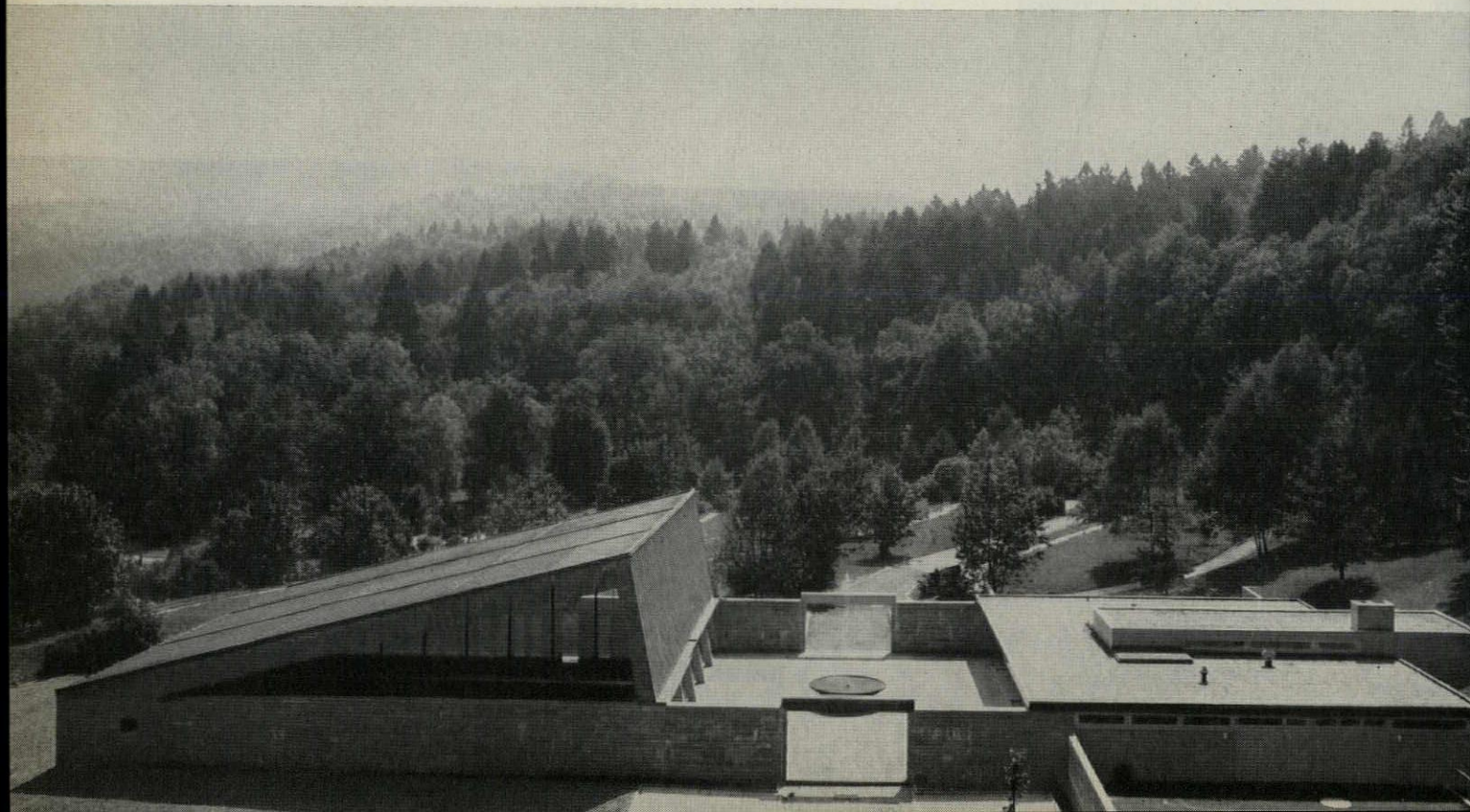
Photos: Hans Namuth

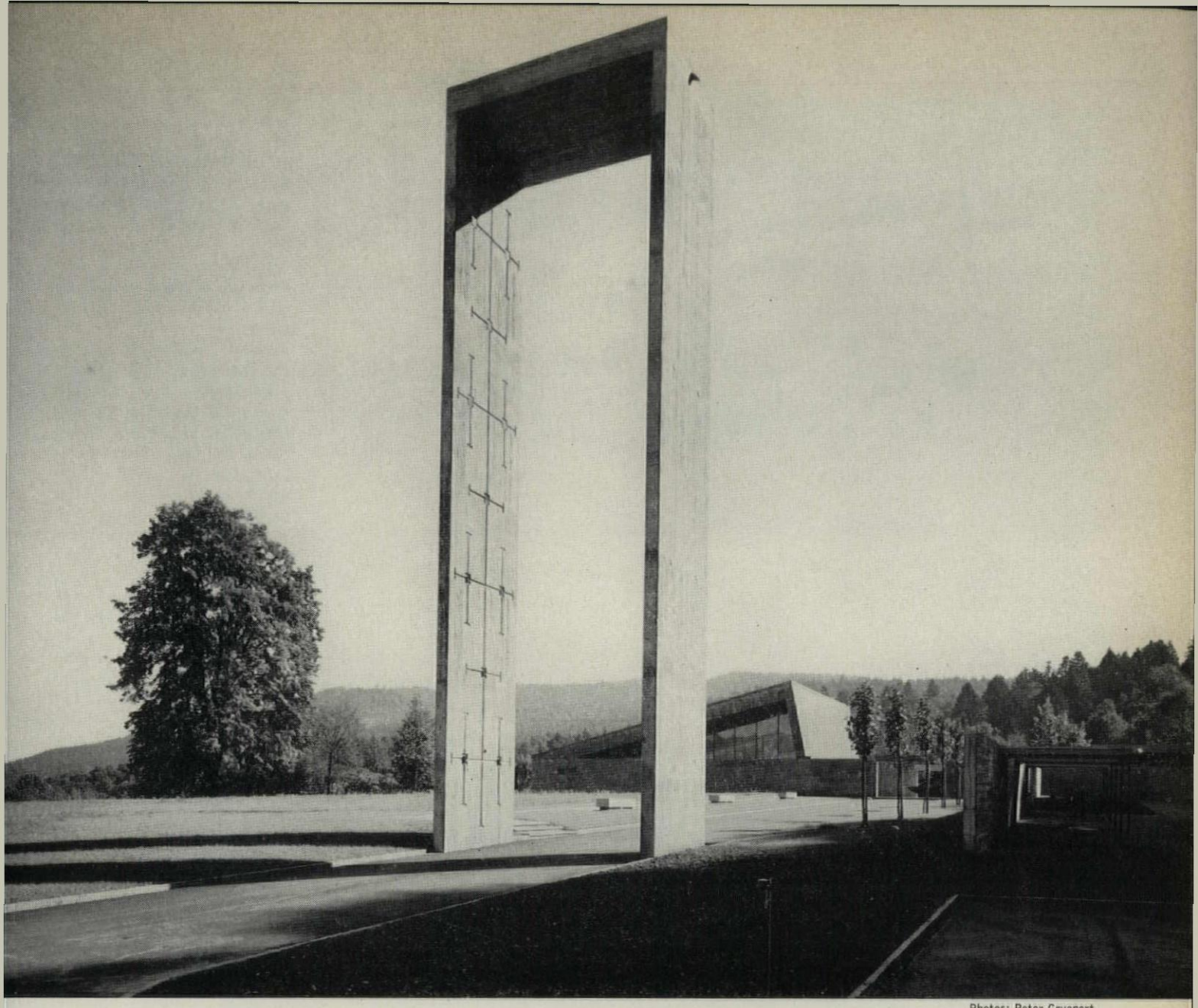


Highlight of the most recent exhibition of Alexander Calder's work was the large stabile-mobile which he titled "The City." It filled so much space in the Perls Gallery that not only were his other, more modest, mobiles, stabiles, and mobile-stabiles overshadowed in the rooms where they were shown, but the space-defining scope of the big piece itself seemed to be lost, even if its size was exaggerated. Its black-painted sheet steel forms, around which and within the enclosure of which one could walk—conscious always of the appended, almost anti-climactic movement of the suspended discs at the culmination —were as out of place in the pleasantly formal gallery rooms as was Sandy Calder himself, red-faced, husky voiced, bluff, and natural-seeming among the sophisticated group that gathers for openings. P/A's Editor, Tom Creighton, suggested to Calder that this was no way to see the piece, that it should be out in the woods or the fields somewhere, where it could form its own peculiar and effective "urban" environment. Calder both frowned and laughed; then a few weeks later he sent the photographs which we show here, happily proving that "The City," like any city, is more handsome when surrounded by green areas. The piece has been sold, Calder reports, to the Museo de Bellas Artes, Caracas, Venezuela.



CREMATORIUM

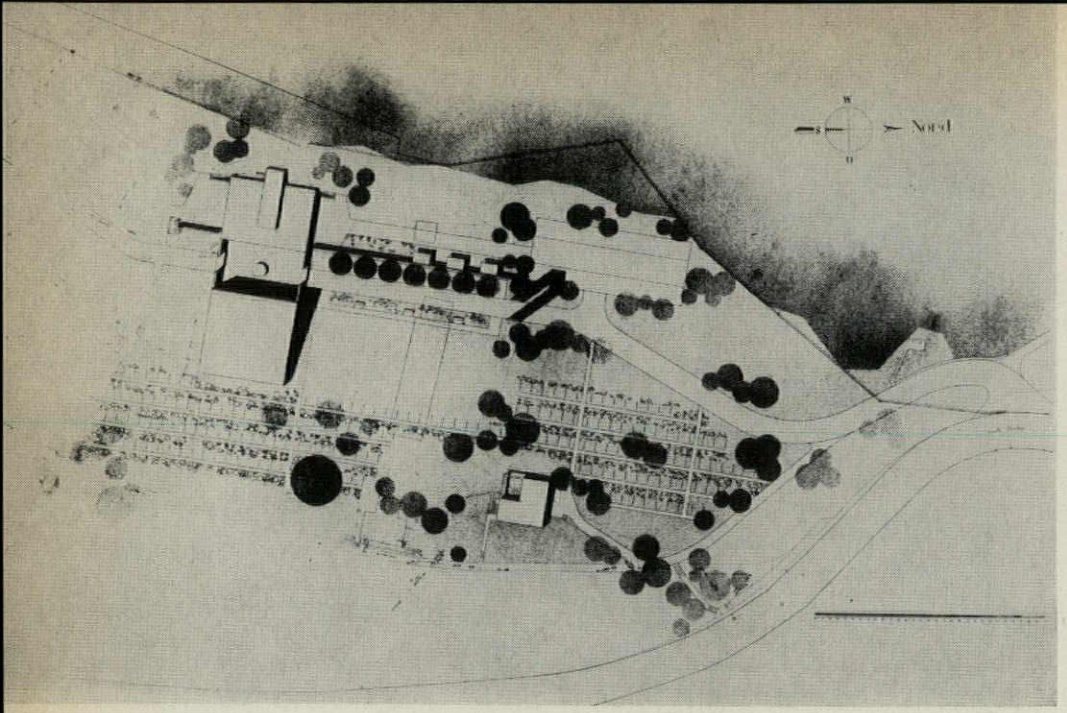




Photos: Peter Gruenert

CREMATORIUM • BADEN, SWITZ. • E. & R. LANNERS & RES WAHLEN, ARCHITECTS

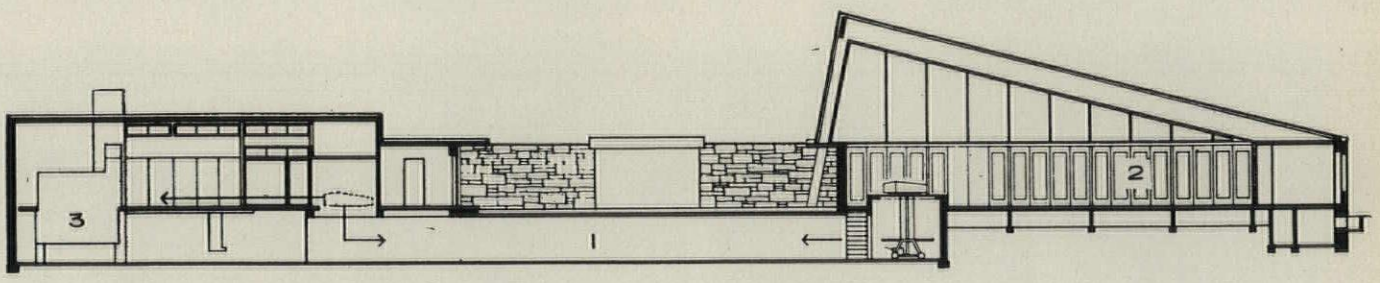
The cemetery of Baden is on the outskirts of town. The approach to the site *(see overpage)* leads uphill along the border of a wooded hill, past a small parking area and an existing, remodeled mortuary, and through the rough concrete monumental arch. From there, a 6-ft-high wall, also of rough concrete, and a row of plane trees lead to the courtyard, which is flanked by the chapel and the new mortuary. The architects say that they used "simple and strong materials to give an effect of serenity and earnestness rather than of mourning." The photographs of the project indicate that they achieved their aim and that good architecture alone can create a suitable environment for interment or cremation; there is no need to resort to sentimental gimcracks, which so often is the case.



The cross-section of the buildings and the courtyard (right, above) *shows an underground passage* 1 *connecting the chapel* 2 *with the furnace room* 3. *After the service, the coffin can be driven through the passage by means of a hydraulic-lift coffin-car. The electric furnace plant was equipped so that the staff would have to do as little manual work as possible. The work of cremation is done by one man only.*

The ground floor and basement plans (right, below) *show the simple disposition of the rooms. The chapel has sheltered exterior corridors on both sides which can be used for standing room during large ceremonies. Waiting rooms at rear of chapel are for relatives, the priest, or a small orchestra.*

The courtyard (below) *indicates some of the natural materials used in the project: cobblestones, copper, and gray-green sandstone.*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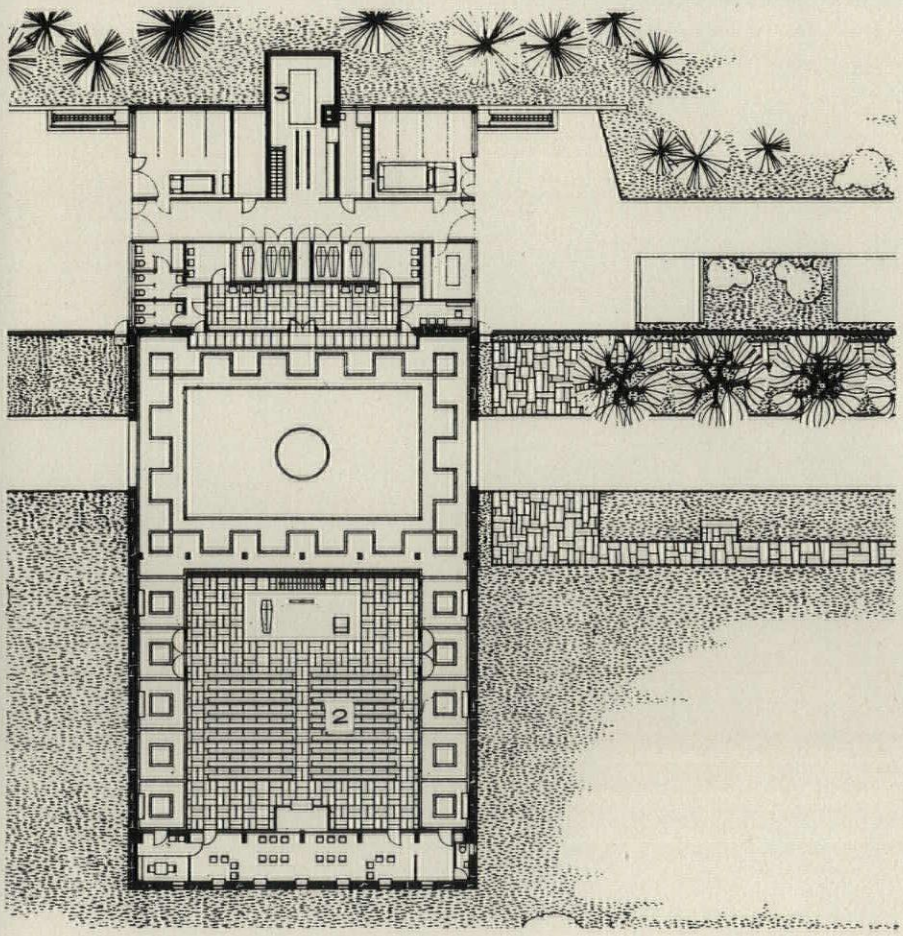
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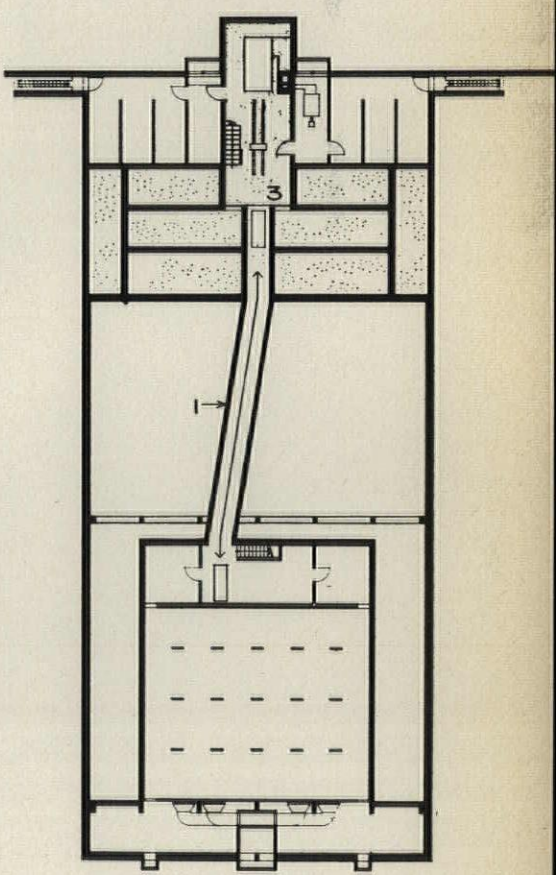
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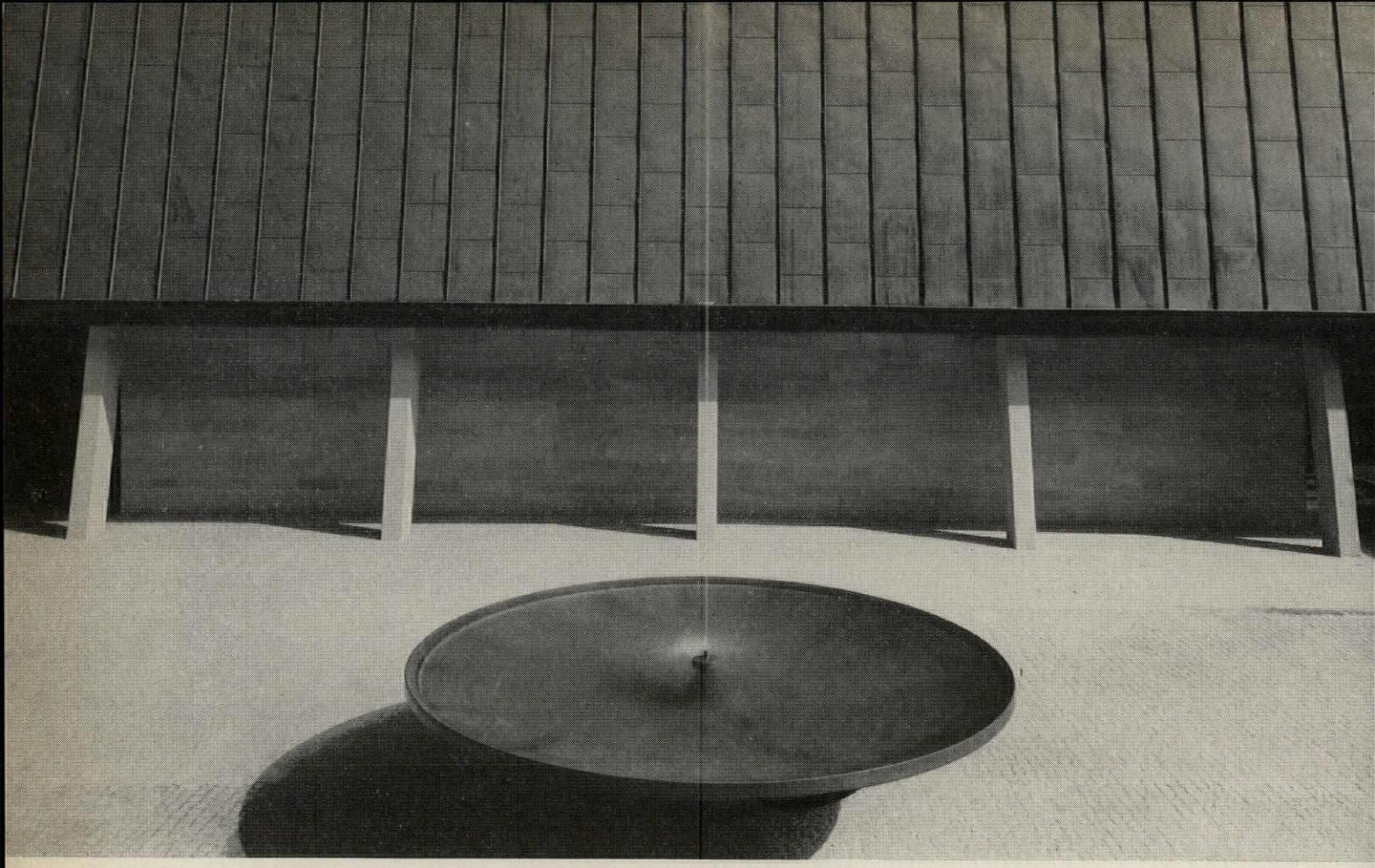
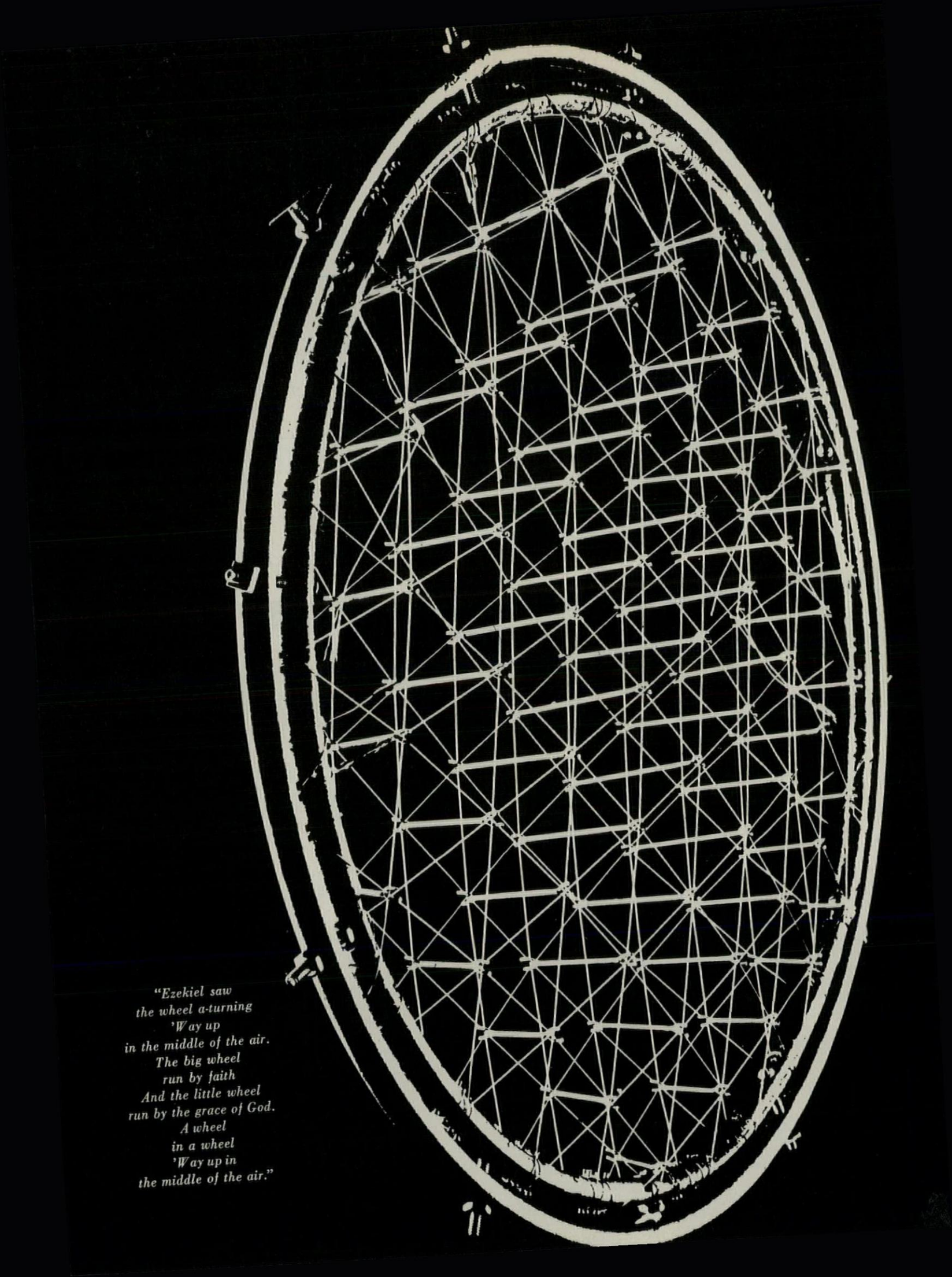
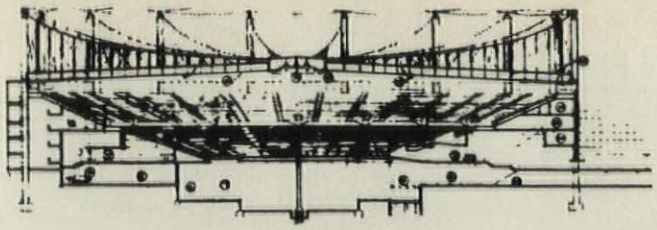


The chapel, which seats 200, is used by both Protestants and Catholics. Main entrance is from the sides. For smaller ceremonies, a dark blue linen curtain is drawn across the window wall; for major ceremonies, the curtain is drawn back and the side passages, protected by wide roof overhangs and perimeter walls, are used as standing room for an additional 180 people. The high windows permit a view of the surrounding wooded hillside. The chapel has a fir ceiling, blue sandstone front wall, red sandstone floor, oak doors, and fir benches. The fountain bowl—a focal element in the courtyard—is of copper.



"Ezekiel saw
the wheel a-turning
'Way up
in the middle of the air.
The big wheel
run by faith
And the little wheel
run by the grace of God.
A wheel
in a wheel
'Way up in
the middle of the air."



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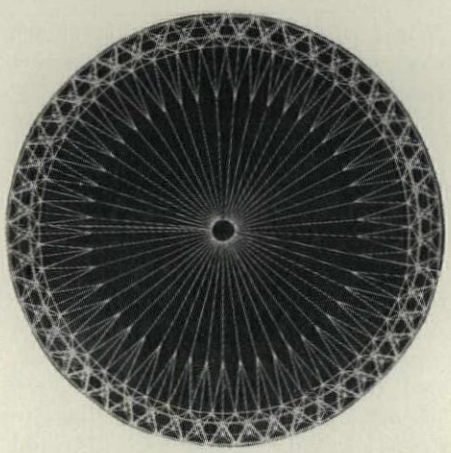

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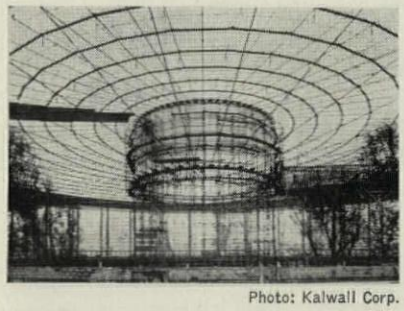

Photo: Kalwall Corp.

4

Photo: Tranquille

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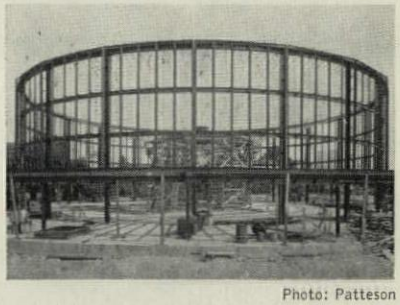


Photo: Patteson

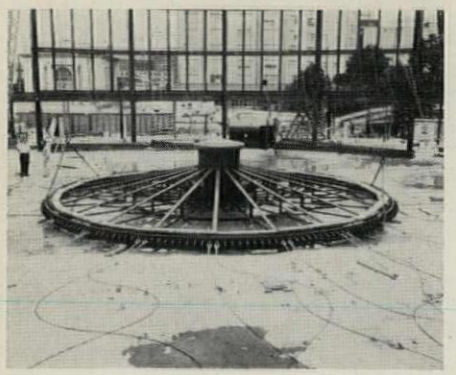
BICYCLE WHEELS

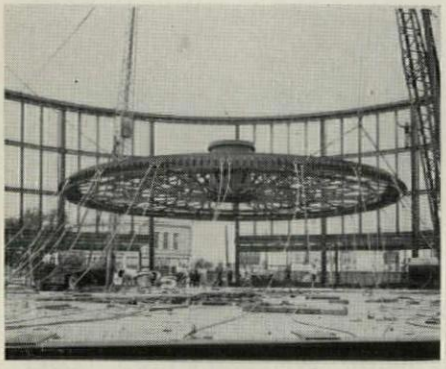
For 2000 years, builders have used domes of revolution to span circular assembly areas, and in so doing have subjected spring-line supports to lateral thrusts. In recent years, one of the most frequently used devices to contain these forces—a method which had its origin early in the Renaissance—has been the perimetrical *tension* ring. The past three decades, however, have bridged the birth and realization of a suspension method of spanning round spaces which utilizes a *compression* ring at the circumference of a structure and a ring of tension at its center. Although others undoubtedly dreamed of the possibility of constructing one, among the first designers in the United States to propose the circular suspension roof were Simon Breines and Josef Van Der Kar, who used such a scheme for a large arena-like structure with a catenary roof 1, which they entered in the international competition for the Palace of the Soviets in 1932. Breines again proposed such a system—with the aid of the late David B. Steinman—for the Roebling Building, to be built at the New York World's Fair in 1939. Gathering war clouds put the project on the shelf, however, and the patent which he had obtained for a structural system of this kind expired in 1950. That others were concurrently and independently aware of the advantages of this structural concept is illustrated by Aladar Olgyay's design for the roof of an autonomous-type "Ring Aircraft Hangar," which he proposed to the U.S. Air Force shortly after World War II 2.

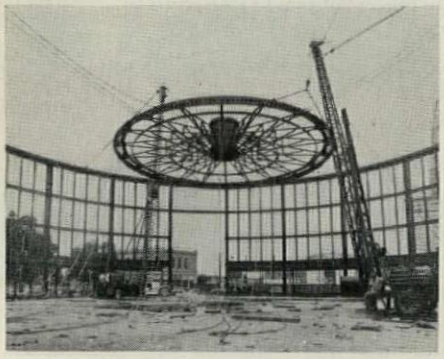
In 1958, Edward D. Stone's internationally known U.S. Pavilion at the Brussels Exhibition, which spanned 330′, was the first of the somewhat erroneously labeled "bicycle-wheel" roofs to be completed 3. At San Antonio, Texas, in the following year, the Villita Assembly Building was dedicated 4. Designed by O'Neil Ford & Associates (N. A. Salas, Project Architect), with William E. Simpson Company as structural engineers, the saucer-shaped, suspended-roof system covers a 132′-wide central room with a seating capacity of 1500 people. *(This structure is documented in detail on the following pages.)* The municipal auditorium of Utica, New York, finished in 1960, contains a prestressed dual-cable suspension roof spanning 240′ 5. Its architects were Gehron & Seltzer, and the structural engineer was Lev Zetlin. Seltzer estimates that a roof of this type may be practical for use in buildings up to 1800′ in diameter, since the costs in roof application actually decrease as the span is elongated.

Among the most recent research

Photo: George Pohl







studies in this general type of roof design is that being conducted by Robert Le Ricolais, working with graduate students at The School of Fine Arts at the University of Pennsylvania. It is Le Ricolais' opinion that, for large-span buildings, the "radial system" heretofore applied is not the optimum one. A far more efficient pattern is derived with the triangular grid system *(see large photograph of model on preceding spread)*. Such a method eliminates the necessity of a center tension ring, which in the case of the Brussels Pavilion amounted to approximately twice the cable weight. Furthermore, with the triangular grid, the intersections of the network involve a fixity at each point, thereby cancelling bracing elements. His tenet is that, although a matter of detail, understanding the properties of the equipartition of the plane are the basic elements of rational design.

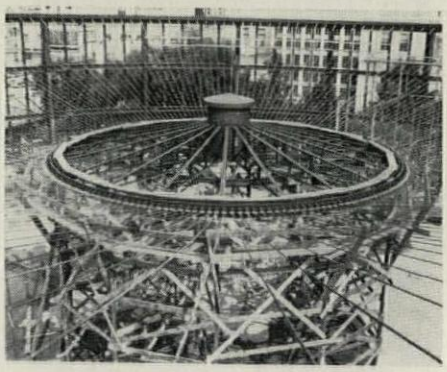
Villita Assembly Building

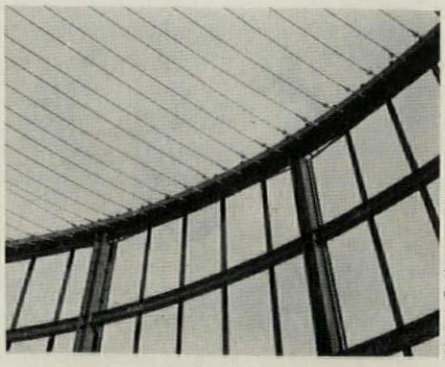
Named after the older section of the city in which it is located, the Villita Assembly Building has a multiuse circular plan which is well suited to its site and the surrounding neighborhood. Having agreed on the logic of a round plan, the designers were led to the consideration of a suspended-roof system, consisting of a compression ring, bearing on exterior columns, and an inner tension ring connected by steel cables which would integrally support a composite roof decking. The feasibility of these preliminary roof studies was readily confirmed by the consulting structural engineers.

The roof was designed for a 20 psf live load in addition to the dead load of its roofing materials. Although a wind load of 30 psf was included in the design of the walls, it was assumed that there would be no wind load coming into a saucer-shaped roof of this kind.

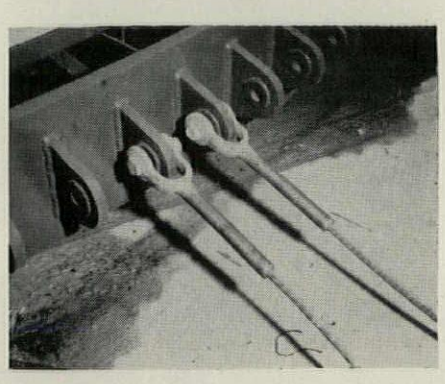
The inner tension ring, with its spider-web truss, was first positioned on the rough concrete floor slab and remained there while a wood scaffold was built at its side. After the ring was raised to its approximate final height by gin poles, the scaffold was centered to support the ring-truss while cable-connecting operations were completed. Since it was anticipated that the cables would elongate under load, each cable was prestretched individually. After end connections had been made, a pull of 18,000 lb was applied to each cable—twice the amount it was expected to support under normal loading—and sustained for 15 minutes. To assure that all stretch had been removed from the cables, this pull was reapplied for a second 15-minute interval.

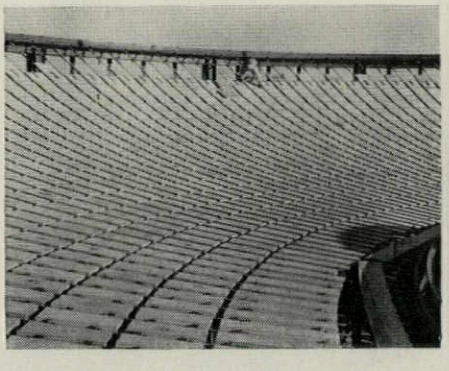
Flutter, which is a tendency of any hung roof if not sufficiently stabilized, was eliminated by the prestressing of the cables. After the pie-shaped, precast concrete roof panels were concentrically anchored to the cables, beginning at the center and allowing 2½″ voids between all panel units, a superimposed load of 50 psf above design load was placed over the entire roof, which was a step requiring 188,000 nominal-size bricks. With this load applied, hiatuses between panels were grouted with regular small-aggregate concrete. Rigid glass-fiber





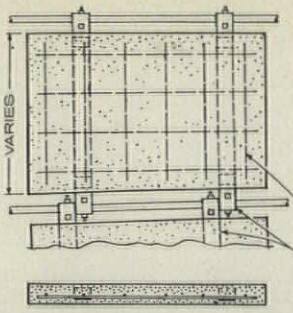
Photos: Patteson



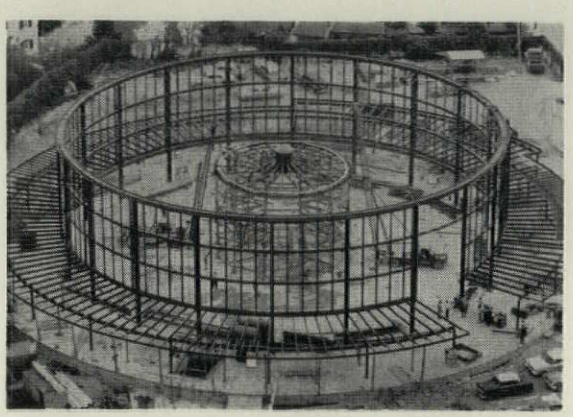


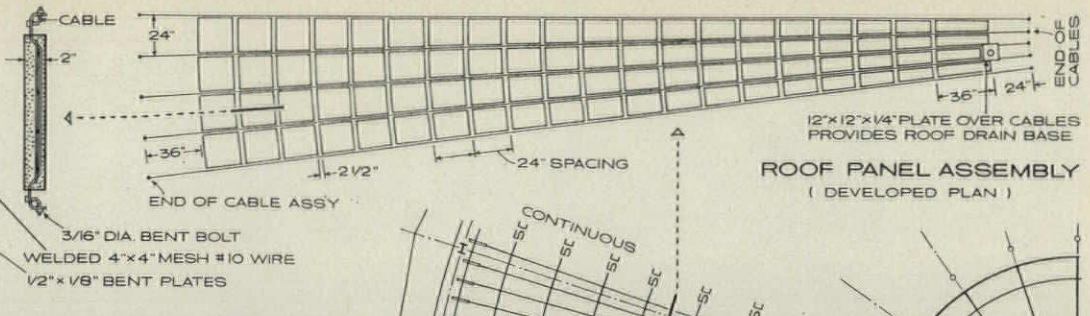
board, later to serve as a sound-absorbing material, was fastened beneath the roof panels to hold the grout in place. After the grout had set, the bricks were removed (again working toward the compression ring), and the residual tension of the cables placed the concrete in compression. A 1″ lightweight concrete topping provided a smooth, curved surface to receive built-up roofing.

The building is owned by San Antonio's City Public Service Board. It is

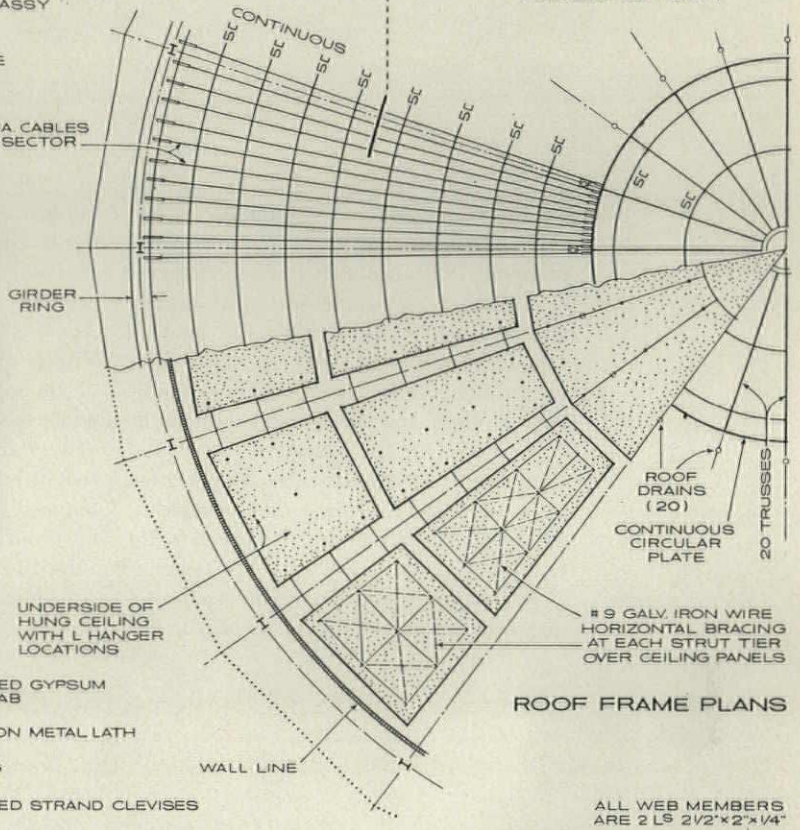


TYPICAL ROOF PANEL

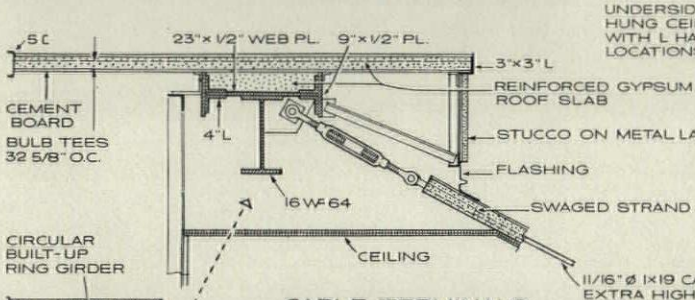




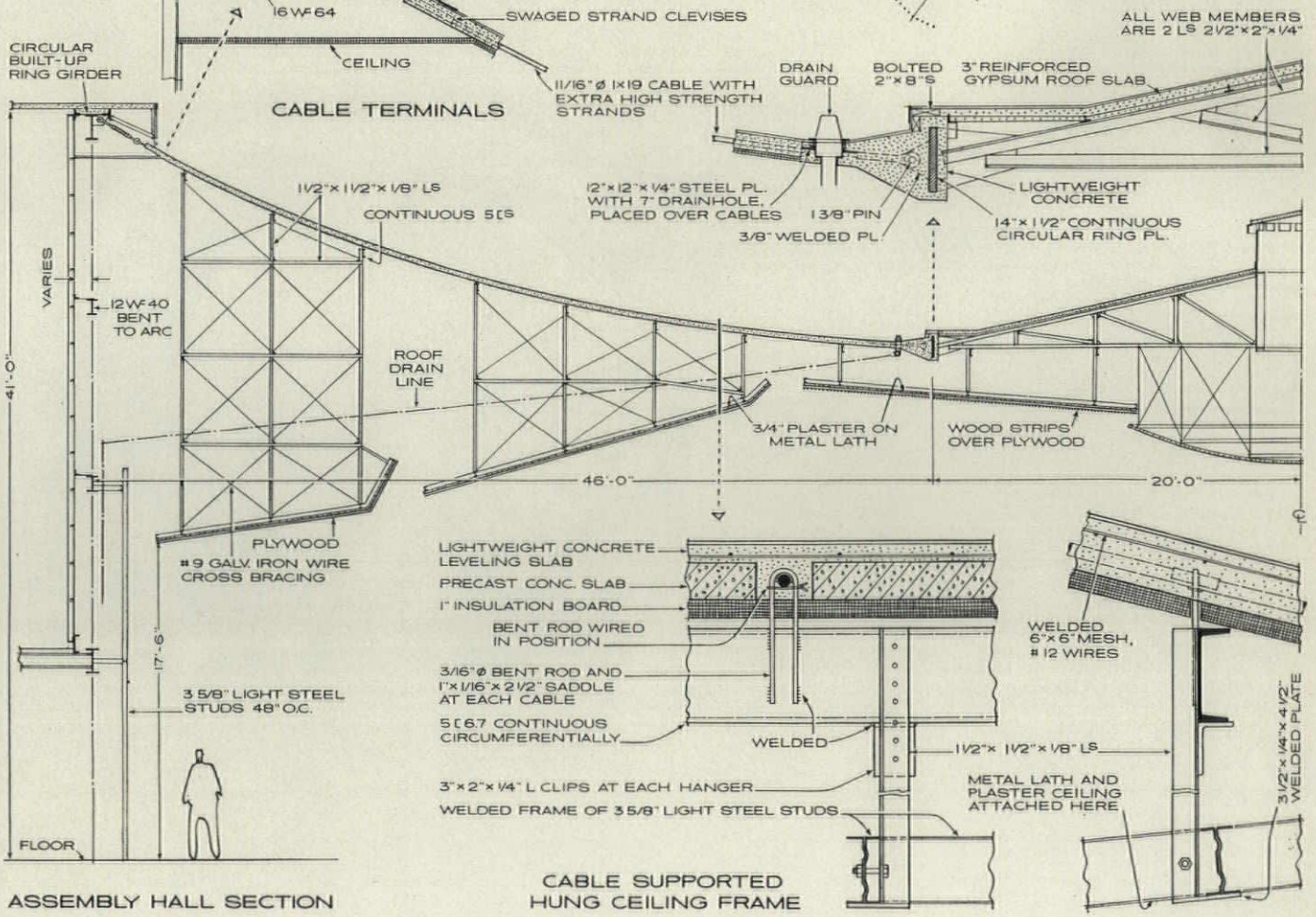
ROOF PANEL ASSEMBLY
(DEVELOPED PLAN)



ROOF FRAME PLANS



CABLE TERMINALS



ASSEMBLY HALL SECTION

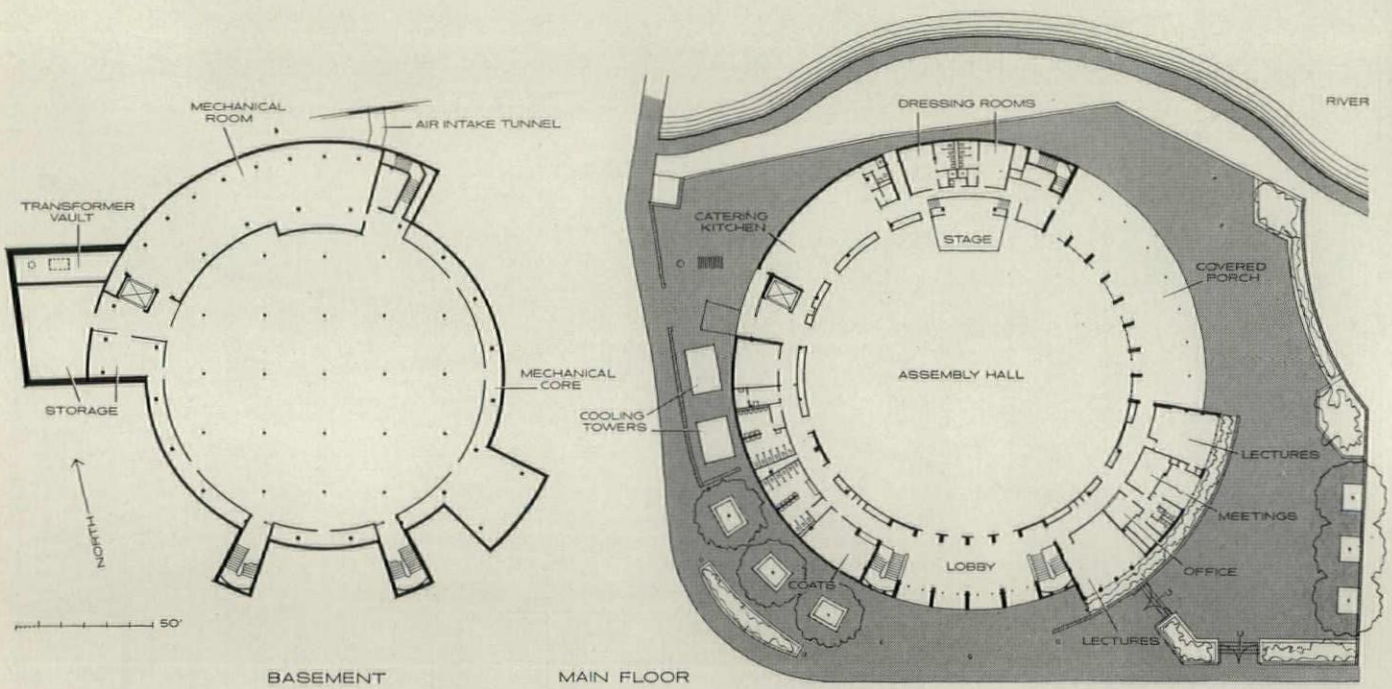
CABLE SUPPORTED
HUNG CEILING FRAME

used for conventions, exhibitions, meetings, parties, banquets, and other entertainment. The main hall has adequate space for 1500 people seated at tables, and a small stage for musical or theatrical performances was provided. The lower outer circle houses auxiliary facilities. Storage and mechanical equipment were placed in the basement, where the large central area can also be used for overflow exhibits, or other purposes, when space demand is exceptionally heavy.

As mentioned previously, the architects decided that a round form for this building was a logical solution to the problem. Considerations which led to this conclusion were explained by them as follows:

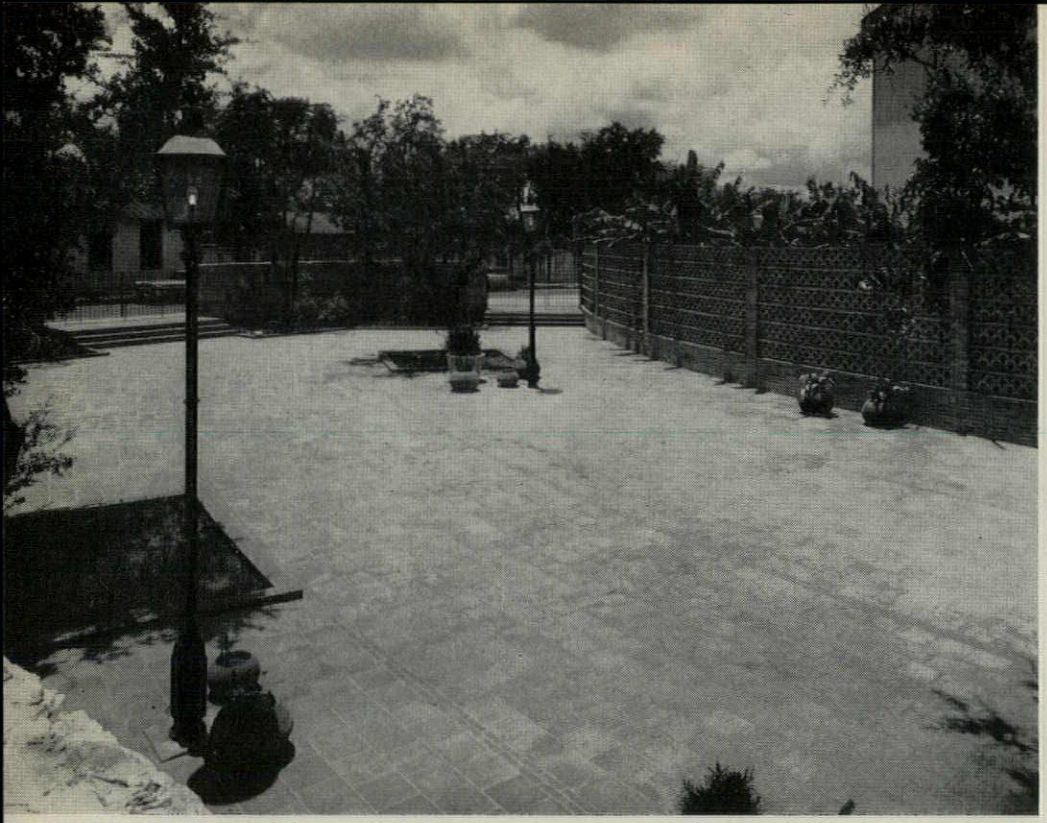
"The site is in the heart of San Antonio, in the section known as La Villita, or the Little Village. This is one of the older parts of the city and its adobe houses were restored a few years ago to their former charm and beauty, the little plaza was landscaped, a small outdoor theater was built on the banks of the river, and the little houses are rented to artists for studios and galleries.

"After much study and discussion, it was decided that a circular building best



BASEMENT MAIN FLOOR

Photos: Roland Chatham

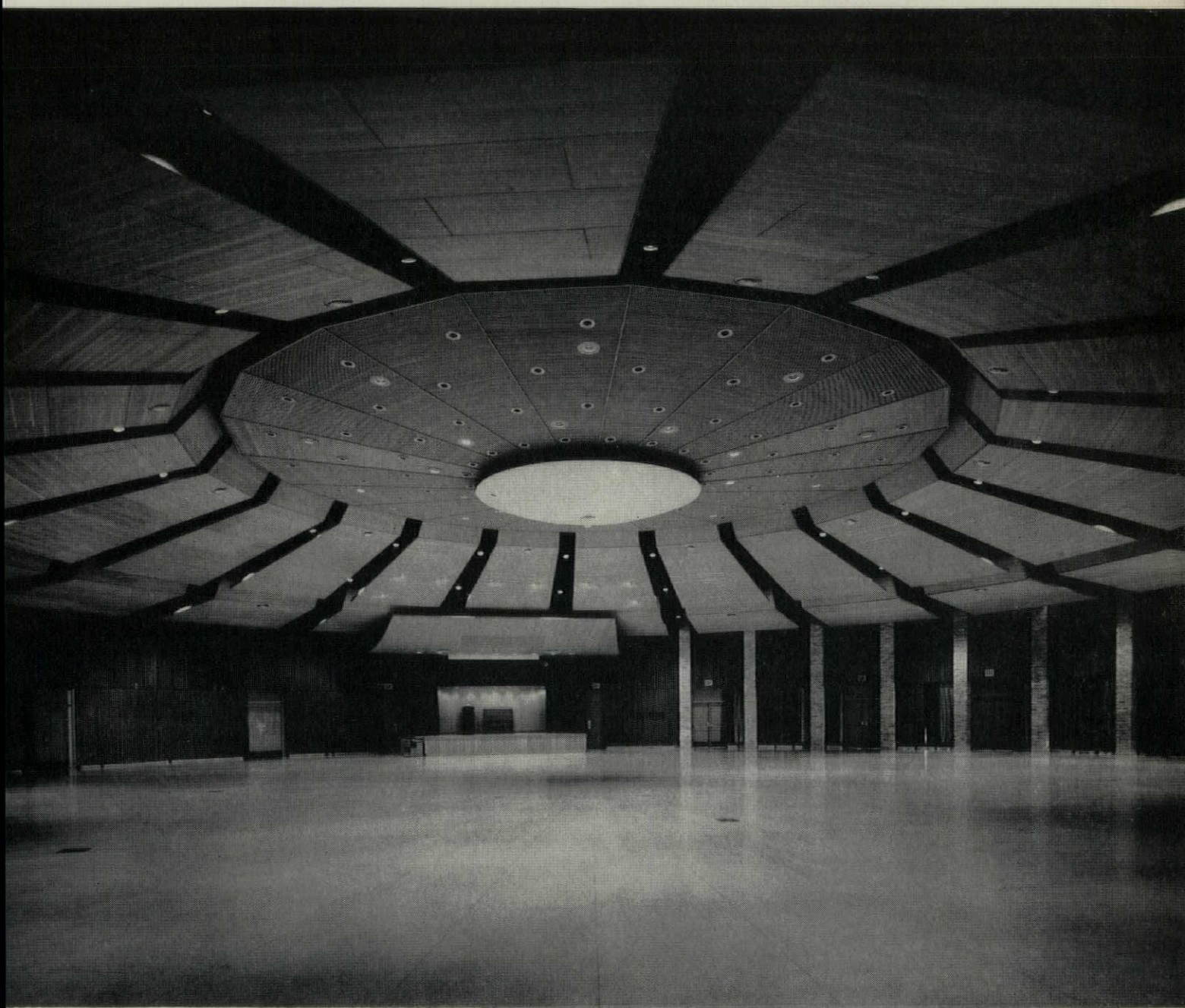


served all interior purposes, was well suited to the unusual site and neighborhood, and would be much more interesting from the standpoint of mass and all elevation appearances than any other form. Further, a circular shape appears smaller and less out-of-scale with the little houses of La Villita than would a big box.

"One could carry this esthetic and function analysis quite far, there being certain pertinent connotations to the words 'circular' or 'round.' When one speaks of a gathering of persons, one often says 'gather around,' 'discussion circle,' 'round table,' etc. We all live in squares and rectangles, generally move on straight-line streets and around blocks, but when we play, we very often find that we naturally 'circle around.' The obvious advantage of the circle in group dancing is clearly shown by the way couples invariably move around a circle in a room of any shape. Of all dances, 80 percent are basically circular in movement and pattern. Those who sit on the sides also invariably form a circle."

Areas surrounding the Villita Assembly Building *(left)* were developed by Landscape Architect Stewart E. King (James E. Keeter, Associate) into pleasant patios and promenades which create a cushion between the formality of the cylindrical shape of the building and the surrounding traffic. Mexican bricks and paving tiles, old Danish gas lamps (discarded by the City of Copenhagen), and local pottery and planting material create a relaxed atmosphere conducive to informal gatherings.

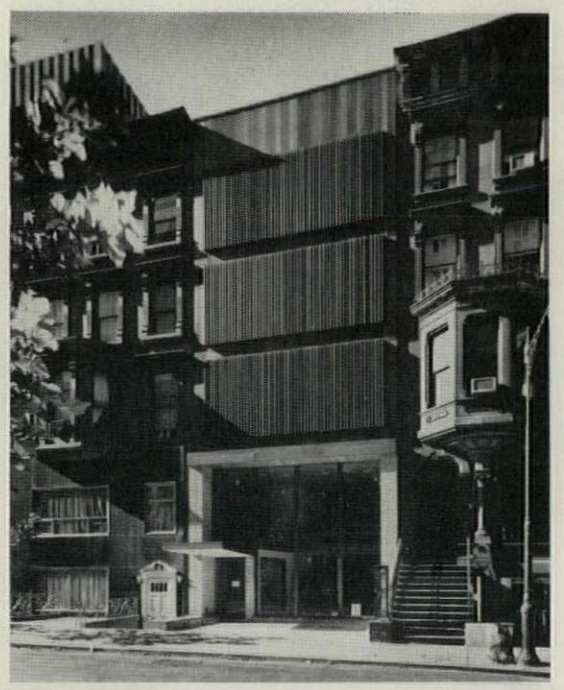
Construction cost, including air conditioning and sound amplification system, was $786,223, or approximately $18.30 per sq ft.



The ceiling of the assembly hall consists of suspended, sound-reflecting wood-surfaced panels.

Crafts Store

AMERICA HOUSE • NEW YORK, NEW YORK
• DAVID R. CAMPBELL, ARCHITECT



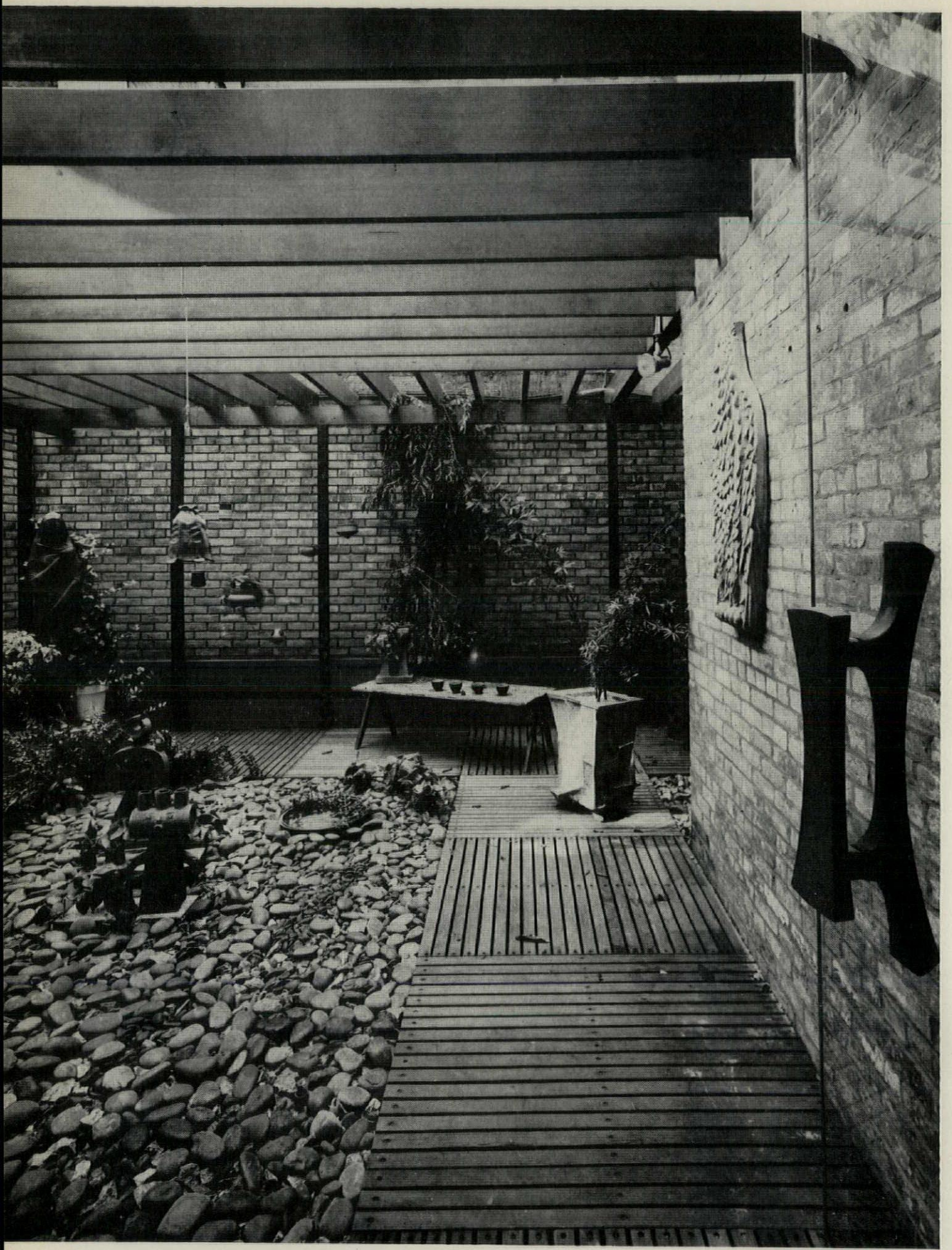
Photos: Louis Reens

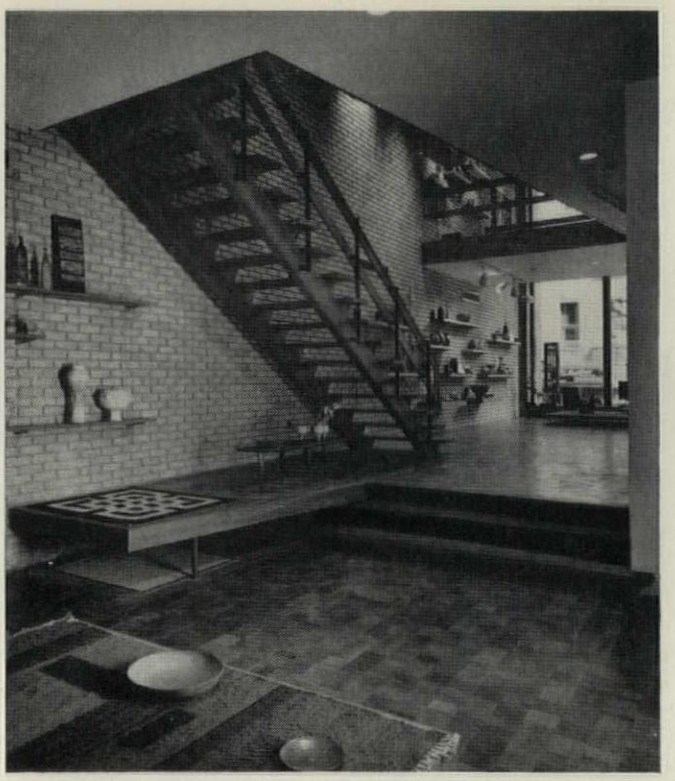
The successful transformation of a brownstone into this retail store devoted to the sale of contemporary American crafts was accomplished by an architect long associated with the craft movement. David R. Campbell, architect of the Museum of Contemporary Crafts (FEBRUARY 1957 P/A), has now become President of the American Craftsmen's Council and Director of the Museum of Contemporary Crafts.

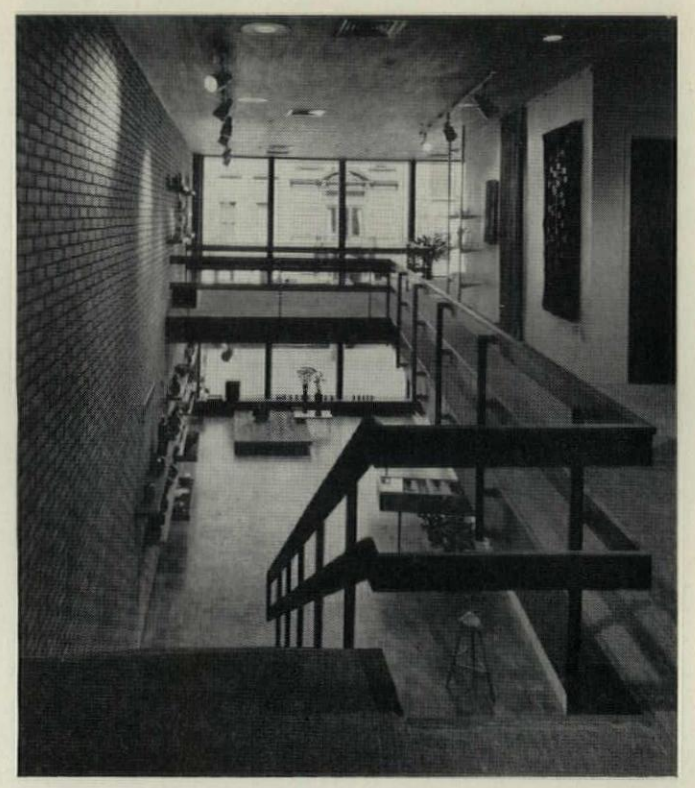
To focus attention on the store and, at the same time, respect the adjacent brownstones, dark-bronze aluminum louvers were used to "blank-out" the upper floors of the façade (*left*), while the interior of the store is displayed through two-story-high windows. The major problem in planning the interior was to provide sympathetic exhibition areas, in a narrow building, for a great number and variety of individual objects—from large tapestry wall-hangings and free-standing sculptures to small ceramics and jewelry; and to show these changing displays in an interior which would give an impression of space without clutter.

The first-floor sales area is fluidly extended back to the rear court and up to the mezzanine. Displays are confined primarily to the walls, where shelves are easily readjusted on recessed metal strips, and to low tables of various heights. Flexible lighting for the changing displays is provided by movable spotlights on ceiling-installed tracks. Surfaces of rough brick, pandanus cloth, and wood provide varied textures to complement the products. Interior furnishings (the stair, cabinets, door handles), as well as the flooring and ceiling, are all of carefully selected materials and express sensitive craftsmanship, thus creating a totally harmonious environment for the work of professional designer-craftsmen.

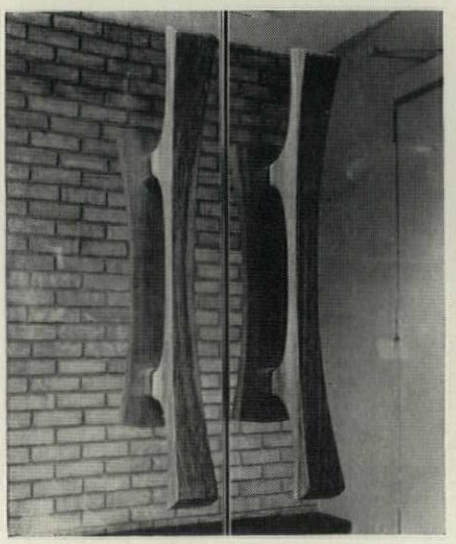
In order to encourage custom installations of craft work at wholesale price, an Architectural and Interior Design Consultation Service has been formed to function as the link between the architect or interior designer and the craftsman. The new Service offers a range of diverse activities. It will help an architect in selecting a craftsman and following a project through to final installation —making sure that specifications are observed and timetables met, transmitting renderings, handling correspondence, and co-ordinating the work of the craftsman and the contractor or subcontractor.

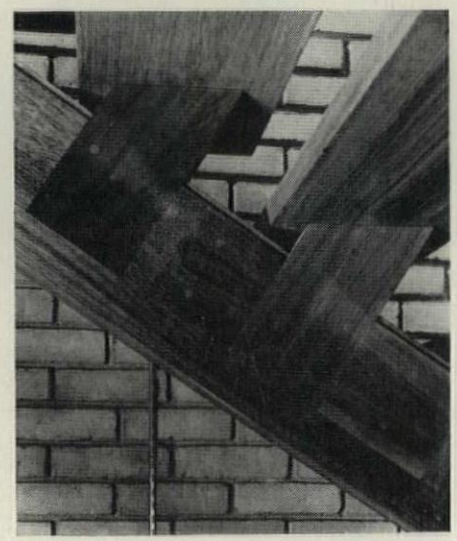






An impression of uncluttered spaciousness is achieved despite the great variety of objects displayed. This goal was accomplished by completely opening the first and mezzanine floors (above) *from front to rear. On the first floor, individual display areas for different kinds of craft work are set off in spaces defined by the mezzanine and the lowered floor level, which extends into the rear court* (left). *Major surfaces are of brick and wood to complement the crafts work. Appropriately, interior furnishings, as shown in the door handles and stair detail* (below), *are expressions of sensitive craftsmanship.*





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

CABINETWORK, STAIR
Storage Cabinets: teak/architect-designed / custom-made / craftsman Jerry Coggiano, The Architectural and Interior Design Consultation Service, 44 W. 53 St., New York, N. Y. **Display Case:** teak and walnut/architect-designed/custom-made/Jerry Coggiano. **Stair:** angelique (Dutch Guiana teak)/architect-designed/custom-made/craftsman Peter Rosati; iron railing/architect-designed/custom-made/craftsman Joseph Tucker.

DOORS, WINDOWS
All: plate glass/Herculite/Pittsburgh Plate Glass Co., 632 Duquesne Way, Pittsburgh, Pa.; set in angelique (Dutch Guiana teak). **Door Handles:** angelique/architect-designed/custom-made/craftsman Richard Lefeber.

FURNITURE, FABRICS, ACCESSORIES
All: made by American craftsmen /America House, 44 W. 53 St., New York, N. Y.

LIGHTING
Downlights: Gotham Lighting Corp., 37-01 31 St., Long Island City 1, N. Y.; Lightolier, Inc., 346 Claremont Ave., Jersey City, N. J. **Movable Spotlights, Track:** "Trol-e-duct"/Bulldog Electric Co., 7610 Jos. Campau, Detroit, Mich.

WALLS, CEILING, FLOORING
Walls: red brick; pandanus cloth /Marie Nichols Fabrics, 151 E. 53 St., New York, N. Y. **Ceiling:** oil-finish rift grain fir; under mezzanine/acoustical plaster/Johns-Manville Corp., 22 E. 40 St., New York, N. Y. **Flooring:** Western Douglas fir/end grain/2½" thick/oil finish; on mezzanine/natural color sisal matting/imported from Holland/Alison T. Seymour Co., 1222 S.W. 171 Place, Seattle, Wash.

The Resident Architect

BY EDWARD L. FRIEDMAN

The problem of supervision of building construction is discussed in this article by a Resident Architect on the staff of I.M. Pei & Associates.

As a profession that is offended by the oversized Detroit Dreamboat, and the slick Madison Avenue techniques used to merchandise it, we would do best not to admit to a device of ours that allows skim milk to masquerade as cream. Every architect, at one time or another, has been disappointed by a building that he had keenly anticipated seeing on the basis of photographs—masterful pictures by a photographer who proved to be more skilled than the building's designer. This not-so-gentle art of deception is sometimes achieved through omission and emphasis; it is most effective, perhaps, when it disguises poor quality of construction and detailing. If, however, the form and design of the architecture are good, then we must heed the concise warning of the *AIA Handbook of Architectural Practice:* "Architects should always be mindful of the fact that their creations are finished building projects and that the construction phase of their service must be complete and competent if the final results are to give them satisfaction." Unfortunately, as the *Handbook* goes on to point out, ". . . complete and competent [architectural supervision] . . . seems to be surprisingly rare," especially in light of the findings of the 1956 Survey of Architectural Practice, which revealed that more than 70 percent of the building projects exceeding a cost of $100,000 were constructed without benefit of continuous supervision by the architect's office. It is difficult to estimate the extent to which architecture has suffered as a result, but the sad truth is that, unlike some of Le Corbusier's work, few buildings are so perfect architecturally that they can overcome defects in their construction.

There is some confusion in the terminology of the profession as to the proper name for the architect's supervisor of construction. The office manager refers to him as a "field man"; registration examining boards are fond of calling him a "clerk-of-the-works"; the *AIA Handbook* has suggested renaming him "project inspector." I myself submit that, due to the changing concept of construction supervision, he should correctly be called Resident Architect. Unlike the familiar field man, who is usually a graduate of the building trades and is more knowledgeable about the contractor's problems than the architect's intent, the Resident Architect has a university background in architectural design and engineering, as well as a considerable apprenticeship in the field. He possesses a broad understanding of mechanical equipment and is able to co-ordinate it physically with the architecture at the time of installation, thus avoiding costly contract changes. He is familiar with the standards of good and bad workmanship in all of the trades, and establishes levels of acceptance for the contractor before the work has been substantially started. The proper execution of the work—determining that the job is properly organized, that the work is expedited, and that safety requirements are met—is his responsibility, and to this degree he shares accountability for the job with the contractor. Above all, he must have the ability to anticipate problems, thus avoiding expensive afterthoughts and unsatisfactory compromises. He is, in short, an architect who is a building construction specialist. As such, he is entitled to the esteem and consideration of the most important members of the architect's staff.

This might suggest that a person, to meet these qualifications, would have to be a sort of Universal Man—a Leonardo, who in addition possesses the wisdom of Solomon. Perhaps there have been Resident Architects of this caliber, but most of them have been attracted by more remunerative positions in the building business, where the profit factor makes reward in proportion to ability more practical. This exodus is due to economic factors, and may be compared to the building engineering professions, where the cream of the graduates are being drained off by industry into better-paying and more responsible positions, causing a substantial reduction in available talent. If industry ever finds room for more architects, we could find ourselves in the same predicament.

It appears unlikely, however, that architectural firms will ever be able to offer the same financial rewards as industry, so other means must be found. What is needed is a reorientation in the curriculum, one that will combine more courses in building construction with more time in the field. If this two-pronged approach to architecture is sufficiently important—and I think it is—an immediate remedy could be requiring a candidate for the licensing examination to acquire as a prerequisite a limited amount of field experience in the employ of an architect or engineer.

What are some of the ways in which one becomes a Resident Architect? In a few cases, it is the result of a person not being proficient as a designer; more often it is the natural outgrowth of the work of the draftsman, as he interprets plans and specifications to the contractor. In some cases, where a new system of construction is being introduced, the architect may find that his own research on the method best qualifies him to supervise the field work. In all events, the system of selection is too casual and, once employed in the field, the future prospects are too dim. Until it is realized by architect and owner alike that compe-

tent supervision can mean the difference between a good building and a bad one, this situation will persist.

The fundamental role of the Resident Architect is to produce a building of quality within the contractual limits of price and intent. An intelligent understanding must be reached of the character of the construction contract purchased, so that a sense of proportion may be maintained in guiding the contractor's best efforts toward the vital areas of the building. Patience and diplomacy are important attributes in creating the necessary atmosphere of respect and understanding with the contractor; a restrained attitude is necessary until his good will has been assured. The Resident Architect must be able to judge how the contractor will manage the job by sizing up his ability and response at the beginning of construction. In the words of the Associated General Contractors of America: "It takes a good architect but a short while to determine whether the project will have to be watched very carefully or the minimum assistance will be required."

The job of Resident Architect should not be interpreted as that of an inspector who simply judges the work once it is completed. It is incumbent on him to verify the work at the time of installation, and to clarify immediately to the contractor the performance that will be expected of him. The frequent habit of misusing the punch list (which is intended for completion of work and correction of minor details) to require removal of work at the contractor's expense, does not always safeguard the owner's interests and may lead to very damaging secondary effects. Neither is the Resident Architect a policeman who observes that the contract is followed to the letter; it is not only a physical impossibility to oversee every construction operation, but reasonable tolerance must be shown in inspection, depending on the nature of the work.

The ethical position of the Resident Architect is a curious one. Legally, he is an agent of the architect of record, and Article 38 of the General Conditions binds him to ". . . side neither with the Owner nor the Contractor, but [he] shall use his powers under the contract to enforce its faithful performance by both." He is retained, however, at the owner's expense, generally due to the architect's recommendation for the desirability of continuous inspection, and he is morally obligated to act in the owner's best interests. Under these circumstances, it is not always advisable to enforce performance by the owner. Of course, these divergent attitudes may never come into conflict, but in order to sustain his professional identity, the Resident Architect should observe a fair and impartial position until such time as the contractor evidences less than good faith in the performance of his contract. Even at these times, it must be remembered that a peaceful—rather than antagonistic—relationship with the contractor will enhance the chances for a satisfactory completion of the contract.

It is a fact of life, however, that there are times when rapport with the contractor cannot be established. Unless the Resident Architect has been invested with the necessary authority, he will be unable to cope with these situations. The contractor must know that the Resident Architect controls the job, that his decisions are not easily nullified, and that he can exert financial pressure by withholding payment for unsatisfactory work. This requires that the Resident Architect be empowered with certification of payments to the contractor and approval of change orders to the contract up to a specified cash amount. If the work is to be properly co-ordinated, it further demands that he be a clearing house for all information and correspondence pertaining to the job.

In spite of these heavy responsibilities, job control by the Resident Architect should never be absolute, and his areas of responsibility and *modus operandi* should be clearly defined. Written records, although cumbersome, are mandatory for instructions to the contractor and job meeting discussions; standard reporting forms describing progress of the work, site decisions, change orders, etc., should be required at scheduled intervals. Matters affecting visual appearance, including shop drawings, should always be referred to the designer. Whenever possible, single installations should be set up for design approval. Change orders issued in the field should be reviewed periodically by a principal of the firm for interpretation and technical merit.

The role of the Resident Architect need not be confined solely to the field. If he is to be ultimately responsible for construction performance, it is advisable that he be given the opportunity to review the plans and specifications before issuance to bidders, to insure that they are adequate and to avoid needless difficulty and expense in the field. Frequently, the contract negotiations have an important bearing on the way the work is pursued in the field. For this reason, the Resident Architect should be present at these meetings. It should be unnecessary to mention that all contract documents should be reviewed for meaning and content by legal counsel before final signing.

After the construction contract is let, job meetings with the contractor and any of his subcontractors should be called by the Resident Architect as early and as frequently as necessary in order to discuss the progress of the work, and particularly to expedite the proper organization of the job. Where complicated construction is involved, the quality of the contractor's job-engineering is of prime consideration, and a prompt collaboration of architect and contractor talents will always be helpful in anticipating problems and developing techniques of overcoming them.

During the course of construction, the Resident Architect will find it useful to keep a photographic record of any defective or unsatisfactory work. This will provide future evidence, should it be needed, as well as an office file of unusual construction procedures that normal progress photos do not describe. Also of value is a personal diary, with daily entries, in which the Resident Architect notes in ink any important discussions or observations not ordinarily covered by other written reports. Photographs and diaries are admissible court evidence, and provide a system of record-keeping that should be automatic with field personnel.

The emergence of the Resident Architect as a building construction specialist, rather than as an interpreter of the plans and specifications, may be traced to the changing character of the general contracting industry. It was not unusual in the past for a general contractor to carry many of his own trades—particularly concrete, carpentry, and masonry —but the pressure of competition has rendered large work forces impractical. In many instances, the general contractor is today only a broker who collects subcontractor bids and organizes them into a single package. This is the trend rather than the exception. Although it has probably brought more competitive pricing, it has also resulted in a reduction of project organization and supervision by the general contractor, and has placed a greater responsibility for construction performance on the architect. This fringe effect merits consideration from the architectural profession, since it provides it with an opportunity to help restore its role of Master Builder.

Portapavilion Restaurant

Unique outdoor restaurant shows new concepts for temporary and portable shelters. Significant aspects of the patent-pending system—its aluminum structural frame, the superior performance of its plastic covering, and its simple jacking method of erection—are discussed here.

An important structural statement on seasonal and temporary shelters has been made in the new outdoor restaurant for Sterling Forest Gardens, near Tuxedo Park, New York. Barrie Greenbie, inventor of the "Portapavilion," designed the restaurant in co-operation with Arthur Wagner Associates, who were in charge of design for Sterling Forest Gardens.

Significance of the structure can be seen in at least two major respects—its structural frame and its plastic covering. First: the bolted aluminum members span a large area without the use of masts, guy wires, falsework, or scaffolding. The structure is self-erecting, having been quickly and easily hoisted into position after almost complete assembly on the ground. The frame may easily be prewired, with all fixtures and appliances attached, before erection.

Second: the Portapavilion is part tent and part building, like the Cambridge Drama Festival Auditorium, but unlike that and other structures of its kind, does not require air inflation to maintain its shape. Instead, the Portapavilion relies for its configuration upon the high tensile strength of the vinyl-coated nylon covering, which is stretched under sustained tension over the aluminum frame. The ability of the plastic covering to withstand considerable tension over long periods of time makes this possible in a manner that conventional canvas will not permit. The designer was thus free to create a shape that is independent of the rigid characteristics of balloons and domes.

Setting

The setting of the Sterling Forest Gardens Portapavilion is also unusual. The restaurant is part of an extensive landscaping development that features meandering walkways, trees, and plantings identified with name plates, a man-made lake, and—at the edge of the property—a loudspeaker-guided tour through geological exhibits.

From the restaurant pavilion, the view that includes this varied landscape and the hills beyond is handsomely framed in the wide gable-shaped openings. Overhead is the plastic covering in a strong, pool-blue color. From the grass outside, half a dozen peacocks strut freely through the restaurant. For the 150 or so diners eating Restaurant Associates' fare in these surroundings, the experience is a delightful one.

Structure

The roof of the Portapavilion is a series of spokes that form two, eight-sided adjoining units. Half of the rafters of each unit are alternately raised above the other half for a "folded"—or multigabled—form. The octagonal unit opening to the view has tables for diners; the rear unit has cafeteria lines and a kitchen serviced from the road.

Each pair of opposing rafters (ridge or valley sections) forms a collapsible bent, which when raised and locked into place acts as a three-hinged arch. Each unit of this structure consists of four such bents joined at a common peak. Two smaller, similar bents form the connecting midsection.

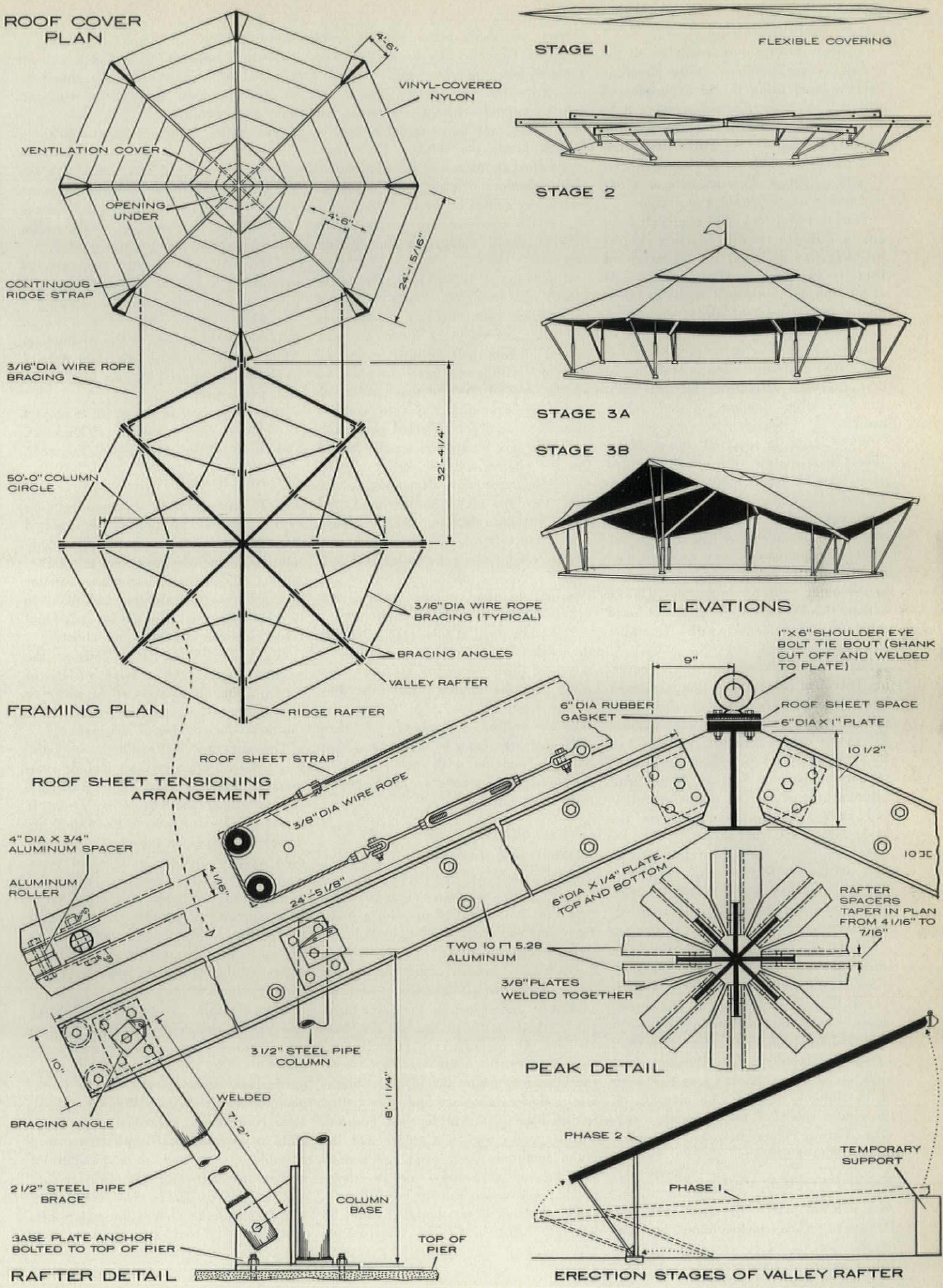
Ridge and valley members are composed of two 10″ aluminum channels bolted together; spacers between the channels permit electrical lines to be unobtrusively located. Lights (and ventilating equipment in the kitchen area) are suspended from the structural frame. Between valley and ridge members, a system of cables and turnbuckles acts as bridging.

Perimeter columns of 4″ OD steel pipe are bolted to the concrete foundation, and flagstone flooring over slab-on-grade runs flush with these connections.

Covering

A 12-oz vinyl-covered nylon (Facile Corporation's "Facilon") is the weather-protective covering of the Portapavilion. It has proven far more successful than canvas in its tensile strength, its wearing ability against the elements, and—when used as it is here—its resistance to wind loading. The material has been notoriously unsuccessful when used in tents, despite properties vastly superior to canvas; however, Greenbie analyzed the cause of its failure in tents and worked out a fabrication pattern that takes greater advantage of the ma-

Ridge and valley members are 10" aluminum channels meeting at special center fitting. Opposing rafters are a collapsible bent, acting as a three-hinged arch when raised and locked into place. Over this structure, plastic covering is stretched under sustained tension.


ROOF COVER PLAN
4'-6"
VINYL-COVERED NYLON
VENTILATION COVER
OPENING UNDER
4'-6"
24'-1 5/16"
CONTINUOUS RIDGE STRAP
3/16" DIA WIRE ROPE BRACING
32'-4 1/4"
50'-0" COLUMN CIRCLE
3/16" DIA WIRE ROPE BRACING (TYPICAL)
BRACING ANGLES
VALLEY RAFTER
RIDGE RAFTER
FRAMING PLAN
STAGE 1
FLEXIBLE COVERING
STAGE 2
STAGE 3A
STAGE 3B
ELEVATIONS
ROOF SHEET STRAP
ROOF SHEET TENSIONING ARRANGEMENT
3/8" DIA WIRE ROPE
4" DIA X 3/4" ALUMINUM SPACER
ALUMINUM ROLLER
4 1/16"
24'-5 1/8"
1"X6" SHOULDER EYE BOLT TIE BOUT (SHANK CUT OFF AND WELDED TO PLATE)
9"
6" DIA RUBBER GASKET
ROOF SHEET SPACE
6" DIA X 1" PLATE
10 1/2"
6" DIA X 1/4" PLATE, TOP AND BOTTOM
RAFTER SPACERS TAPER IN PLAN FROM 4 1/16" TO 7/16"
TWO 10 I 5.28 ALUMINUM
3/8" PLATES WELDED TOGETHER
PEAK DETAIL
3 1/2" STEEL PIPE COLUMN
10"
BRACING ANGLE
WELDED
7'-2"
8'-1 1/4"
2 1/2" STEEL PIPE BRACE
COLUMN BASE
BASE PLATE ANCHOR BOLTED TO TOP OF PIER
TOP OF PIER
RAFTER DETAIL
PHASE 2
TEMPORARY SUPPORT
PHASE 1
ERECTION STAGES OF VALLEY RAFTER

terial's particular strengths.

There was little data available on the material's performance before Greenbie contemplated using it. He experimented with a 1′ x 2′ section, prestressing it to 20 psf, and testing it for all possible weather conditions. He also investigated attachment methods by towing a framed 4′ x 4′ panel at 75 mph behind a car and under water behind a motorboat.

The material can be engineered to any specification; the Sterling Forest covering was designed for 20 psf wind load. It was engineered to resist winds of 60 mph, but withstood winds of much higher velocity during the worst hurricane this past fall. Interestingly, too, in tests on an earlier structure, Greenbie discovered that severe ice loading broke the covering's structural support without noticeable damage to the fabric itself.

When stress is removed, the material almost immediately recovers 50 percent of its stretch, then more slowly up to 92 percent. Thus, after initial installation, one major tensioning adjustment may be necessary after the first heavy wind. Tensioning is easily accomplished by turnbuckles which connect the cover to the outer ends of the rafters. Unlike a tent, the Portapavilion does not need constant adjustments with changing weather conditions.

Each triangular section of the covering (between ridge and valley members) is composed of small rectangular areas, joined together in a sail-like pattern. All seams are heat-sealed, with ¾″ or 1″ overlap. Perimeter edges have a 2″ reinforcing hem of Facilon. Nylon seatbelt webbing along the seams at ridges and valleys is continuous across the peak, taking all wind stress.

At the peak, the fabric has a special ventilating section that keeps the pavilion cool even in the hottest weather. Flutter and flapping is greatly reduced, compared to an ordinary tent or awning.

Fabrication was by Plastic Creators, Little Ferry, New Jersey. Although there is no information available on the estimated life of the material, the fabricators report that swimming pools of Facilon have been in use for more than 10 years. Greenbie's first Portapavilion, built in Saratoga, New York, has been in continuous use for 30 months, or the equivalent of 7 to 10 summer seasons. Canvas tents will last approximately 3 to 4 seasons.

Revised Erection Method

Although not part of the Sterling Forest Portapavilion, a jack-column erection scheme has been more recently developed by Greenbie, to be easily incorporated into this structure.

Each valley unit—rafter, brace, and column—would utilize a telescoping column which may be extended by a jack located inside the column. Each beam is attached by means of pin connections to its column and brace, and the column and brace pinned to the base plate, with the whole assembly free to pivot in a vertical plane along the line of the rafter.

When the building is ready to be erected, all components are assembled radially and connected to a common center fitting. Since the columns are telescoped to half their finished height, all parts are within easy reach of workmen on the ground. As the telescoping columns are extended, the rafters travel upward to their fully erected position.

Power may be applied at only two of the telescoping columns, or at all columns simultaneously, depending on the load, the type of mechanism used, and other variable factors. In a "folded-roof" structure, as at Sterling Forest, power is applied to the valley jack columns only. As all other rafters are attached to the two or more lifting rafters, these are also elevated.

The framework at this stage resembles the earlier Portapavilion at Saratoga—a conical form (page 105, OCTOBER 1959 P/A). For the "folded" form at Sterling Forest Gardens, the ridge rafters may then be raised individually at their outer ends, the inner ends having already been hoisted to peak position. After erection, the jack columns are locked in their final position.

Erection Method At Sterling Forest

The structure at Sterling Forest was erected in a somewhat similar way, except that it was pulled up with a crane from the center. The straight columns were initially attached to the rafters only, folding inward under the rafters. The outer ends of the rafters were attached to, and rested on, the brace members, which were pinned to the base anchors. As the rafters were pulled up by the crane, the outer ends rode up on the braces in a knee action, the columns swung down into place and were bolted to the base plates in finished position. The structure was then secure and the crane removed. Each octagonal section was erected separately, and the connecting midsection put up last.

The Sterling Forest building could be lowered with a heavy duty lift truck or other jacking equipment. According to Greenbie, addition of the jack column erection concept would make this type of structure even more easily demountable and portable.

The entire structure covers 6000 sq ft, weighs less than five tons (exclusive of equipment), and was brought to the site on a single truck. Erection was completed in 36 hours by five men, and the establishment was serving meals within two weeks after the slab was poured.

Total cost of the structure—erected over a week end at union double-time rates, and including plastic covering—was $4 per sq ft. This figure, however, does not include cost of the foundation, which is an expensive, doughnut-shaped grade beam required because of the peat bog underneath.

Others involved in the pavilion project were Henry Gorlin, Structural Engineer, and H. E. Nimke, Mechanical Engineer.

Further Possibilities

The Portapavilion is a patent-pending system, owned by newly incorporated Portapavilion Structures, Ltd. The company is currently prepared to market 40′ to 60′ diameter structures similar to the Saratoga prototype, and plans to develop other designs on an individual basis between architect and client.

Highly flexible in its possibilities, the pavilion could take a wide variety of forms, although a symmetrical plan (or combination of symmetrical elements) is the most efficient use of the system.

The structure is flexible in its function too—other suggestions include summer theaters, cabarets, dance pavilions, skating rinks, and exhibition areas. It would be ideal to cover a band shell, its designer feels, since the plastic covering does not reverberate and would work excellently where acoustics have been designed for open air. For other variations, curtains or panels can be hung at the perimeter (or from other parts of the structure) to provide theater backdrops, exhibition boards, weather protection, or visual interest.

Greenbie, also a painter and stage designer, is recipient of a Ford Foundation grant to develop an experimental dance theater. He is presently working on further developments of the Portapavilion (with Arthur Wagner Associates, New York industrial designers), both in its individual applications as a portable shelter, and in its possibilities as a means of raising formwork for concrete structures. He is also planning an adaptation of the system for collapsible, portable, solid-roof structures.

Structural Elasto-Mechanics

BY PAUL CHELAZZI

In this discussion by an engineer-architect, the elasto-mechanical behavior of a beam, as it occurs in a simple structural design, is analyzed. High school algebra and geometry, plus common construction sense, are the only tools used to develop the related formulas. The author hopes that an understanding of this exposition may assist the architect in his association with his structural engineer.

In lecturing before architectural students, the author has frequently been asked to elaborate on various points of structural elasto-mechanics.

On such occasions, the students seem to reflect a sense of inferiority concerning their ability to fully comprehend the behavior of structures. Since structural form can be a major source of architectural expression, the adequacy of their training becomes a serious question to them.

"We are short in math. Even simple mechanical laws, for example, as expressed by the three equations of statics, are vague when symbolized by the 'mysterious sigmas,' namely, $\Sigma H=0$, $\Sigma V=0$, and $\Sigma M=0$."

But are they so mysterious? Let us examine their meaning in the case of a man who, returning to his home, is pushed against a wall by a gust of wind *1*.

Obviously, the wind pressure **H** which is transferred through his body must produce, at the point where his elbow touches the wall, a reaction **H** which is exactly equal to the pressure of wind **H**. As a matter of fact, should the wall reaction **H** be smaller, his elbow would sink into the wall; or, if larger, he would be thrust away from the wall.

Consequently, all horizontal forces acting on the body must balance; i.e., their sum must be equal to zero. This, simply, is what the shorthand of statics means by $\Sigma H=0$.

As the wind subsides, the man again feels steady on his legs *2*. While in this position, the weight of his body **P** is transferred through his feet to the pavement where the total load must be balanced by the reactions R^{I} and R^{II}. If these reactions were respectively larger or smaller than P^{I} and P^{II} (the components of the body's weight), he would either be forced up into the air or he would sink into the ground. This equalization of forces is indicated by $\Sigma V=0$.

The third equation, $\Sigma M=0$, becomes evident when the man decides to resume his homeward walk in spite of a strong headwind opposing him *3*.

Intuitively, he bends against the wind, shifting the weight of his body forward until he has balanced the wind pressure **H**.

Evidently, this condition is reached when the weight of the body **P** acts along a vertical line, located at a distance **a** from the point where his forward foot transfers it to the ground. Thus, a moment **Pa** is generated which is equal to the moment **Hh** created by the wind.

"Well," one of the students might comment at this point, "perhaps we understand this explanation of statics, but when we begin to investigate basic structural problems the textbooks only offer us formulas 'as shown in treatises on mechanics' that we must take for granted."

This is particularly true of all formulas derived from the differential equation of the elastic curve *4*.

But let us see how we can obtain these formulas by observing the elastic behavior of bent members in the reality of an actual structural design, with the help of some high school algebra and geometry—with an assist from our sidewalk-superintendent's construction sense.

Typical Example

To meet special requirements, the shed shown *5* should be designed with a translucent membrane roofdeck supported on rubber beams. The entire roof structure is so light that its dead load is practically negligible.

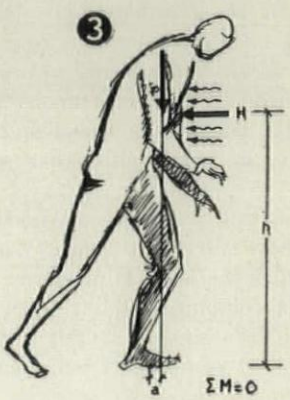
Since it will be built in a locality where no wind or snow would appreciably stress the structure, the only load the beam will carry is that transferred by top-hung doors **P** at the ends of the cantilevered spans.

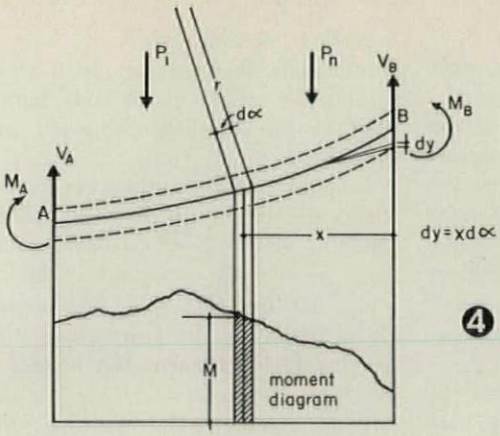
As the columns are also made of rubber, the loads **P** produce marked distortion *6*.

Due to the fact that there is no load on the beam between columns, we can visualize intuitively that the beam will assume a circular curve of radius **r**, the determination of which will be the scope of this investigation.

First, however, let us observe the effect of load **P** when it is transferred to the hinge which—through its plate—bears on the column, causing it to shorten by a fraction ΔL of its length **L**.

It will be seen *7* that the hinge-plate distributes the load **P** over the entire top of the column, so that the component unit areas of its section **A** are evenly stressed by a unit load **f**, which obviously is equal to **P/A**.





4

In Analytical Geometry for $y = f(x)$

$$r = \frac{\left[1 + \left(\frac{dy}{dx}\right)^2\right]^{\frac{3}{2}}}{\frac{d^2y}{dx^2}}, \text{ since } \left(\frac{dy}{dx}\right)^2 \text{ is very small}$$

$$r \simeq \frac{1}{\frac{d^2y}{dx^2}}$$

In Mechanics $\frac{d^2y}{dx^2} = \frac{M}{EI}$

Therefore: $\frac{1}{r} = \frac{d^2y}{dx^2} = \frac{M}{EI}$

From the time that Hooke discovered his famous law *ut tensio sic vis* in the 17th Century, beginning students of physics have known that in load-carrying, elastic-material bodies the ratio between the unit stress **f** and the unit distortion $\Delta L/L$ which it causes, remains unchanged within the range of allowable loading.

Applying this criterion to the shortening of our column, we can equate

$$\frac{f}{\frac{\Delta L}{L}} = E$$

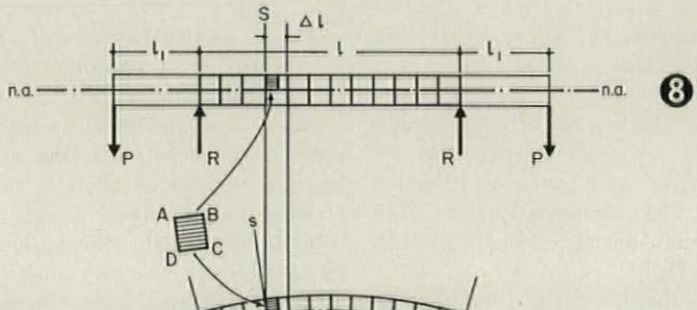
It may also be defined as that load which could shorten the column to one-half its length, since the denominator in the above equation would equal unity. We shall see later, however, what the real physical meaning of **E** is.

Elastic Behavior of the Beam

Let us now observe the elastic behavior of the beam within the central span **l** *8.*

To assist this visualization, the beam has been subdivided into small unit-span lengths ΔL, which have been marked on its profile along with an indication of its neutral axis. The latter has been located at mid-depth of the beam, assuming that it is made of a homogeneous material and that it has the same modulus of elasticity in both compression and tension.

Up to this point of our analysis, the doors have yet to be hung. When they are—when the loads **P** produce reactions **R** at the columns—the left upper quarter zone of the unit-span length **ABCD** (to the right of section **s-s**) will become dis-



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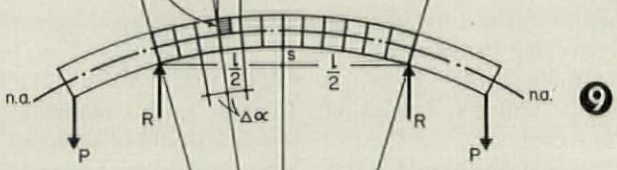

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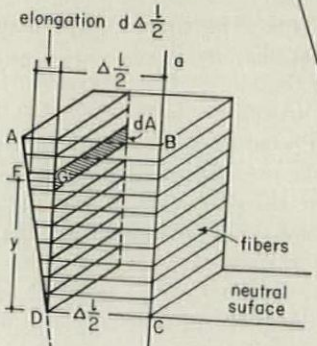


$$\frac{\frac{d\Delta l}{2}}{\frac{\Delta l}{2}} = \frac{y}{r}$$

or

$$r\,\frac{d\Delta l}{\Delta l} = \frac{y}{r}$$

12

$$\frac{l}{2}\Delta\alpha\, r = \frac{l}{2}\Delta l$$

$$\Delta\alpha\, r = \Delta l$$

o

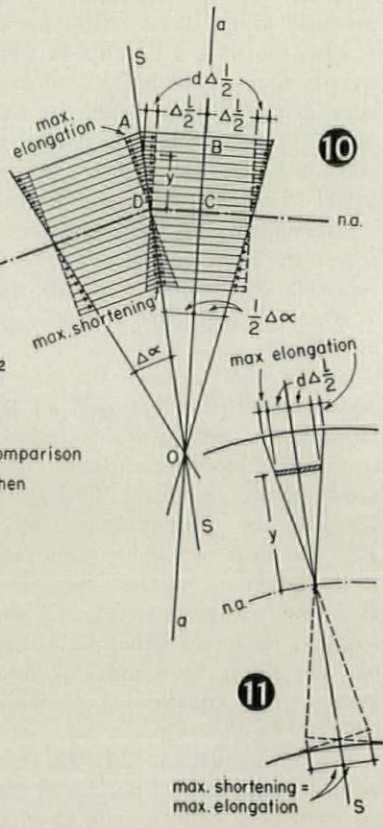
$$r^2 - \left(\frac{l}{2}\right)^2 = (r-s)^2$$

$$r^2 - \left(\frac{l}{2}\right)^2 = r^2 - 2rs + s^2$$

$$\left(\frac{l}{2}\right)^2 = 2rs - s^2$$

Since s is small in comparison with r: $\frac{l^2}{4} \simeq 2rs$, then

$$r = \frac{l^2}{8s}$$



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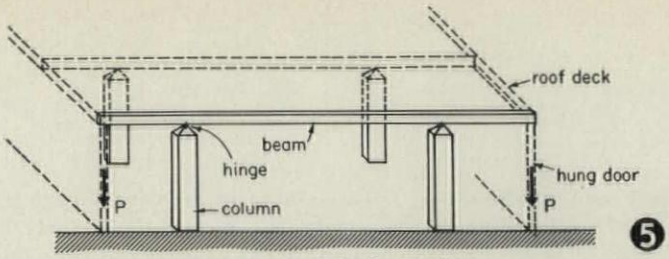


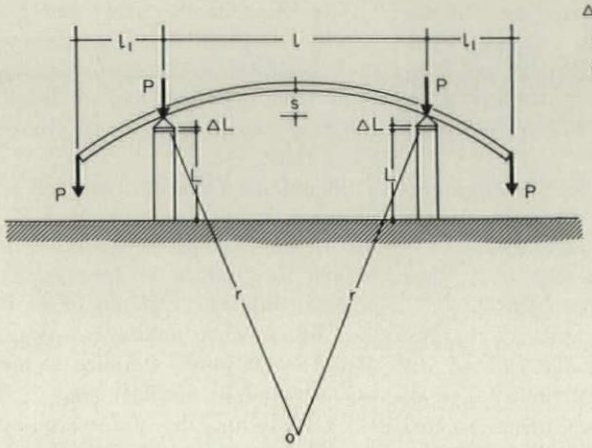
beam dl and roof dl+ll negligible

5

$$\frac{P/A}{\Delta L/L} = \frac{f}{\Delta L/L} = E$$

$$f = E\,\Delta L/L$$

if $\Delta L = L$, $f = E$



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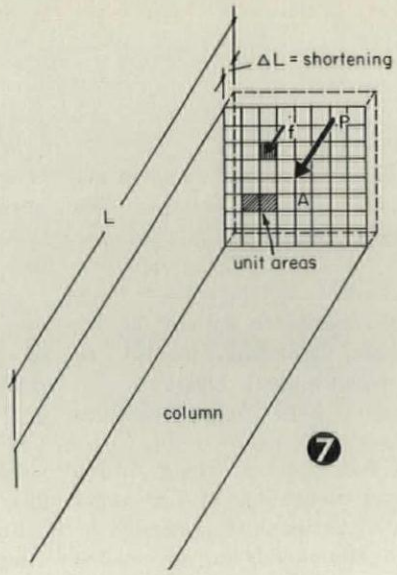


7

13 Radius of Curvature

(1) $f = E\,\frac{d\Delta l}{\Delta l}$

(2) $f\,dA = E\,\frac{d\Delta l}{\Delta l}\,dA$

(3) $\frac{d\Delta l}{\Delta l} = \frac{y}{r}$

substituting (3) in (1)

(4) $f = E\,\frac{y}{r}$

(5) Since $\Sigma f\,dAy =$ resisting moment = M due to load, for (4) $\Sigma\, E\frac{y}{r}\,dAy = M$

As E and r are constants,

$\frac{E}{r}\,\Sigma\,dAy^2 = M$

but $\Sigma\,dAy^2 = I$ and

$\frac{E}{r}\,I = M$, or

(6) $\frac{I}{r} = \frac{M}{EI}$

14 What is E ?

As shown (Fig 5):

$$r = \frac{l^2}{8s}$$ which equated

to (6) gives $\frac{l^2}{8s} = \frac{EI}{M}$ and

(7) $E = \frac{Ml^2}{8sI} = \frac{Pul^2}{8sI}$

15 Beam Formula

Since (6) $\frac{E}{r} = \frac{M}{I}$ and for (4)

$\frac{f}{y} = \frac{E}{r}$, $\frac{f}{y} = \frac{M}{I}$ and

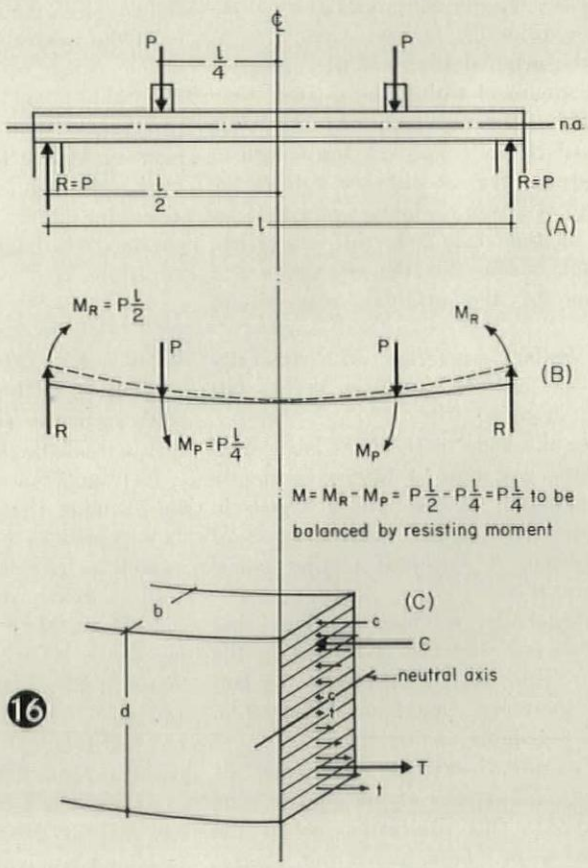
(8) $f = \frac{My}{I}$

for a rectangular section

$I = \frac{bd^3}{12}$ and $f_{max} = \frac{M\frac{d}{2}}{\frac{bd^3}{12}} =$

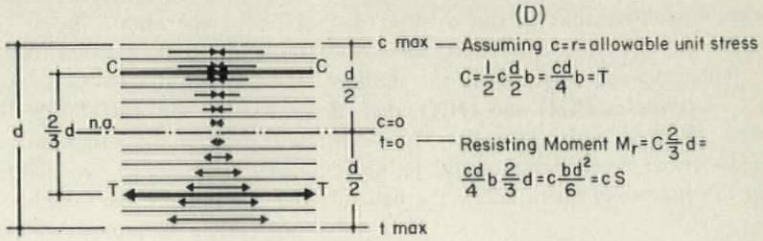
$M\frac{d}{2}\,\frac{l}{\frac{bd^3}{12}} = \frac{M}{\frac{bd^2}{6}} = \frac{M}{S}$ or

(9) $M = f_{max}\,S$



$M = M_R - M_P = P\frac{l}{2} - P\frac{l}{4} = P\frac{l}{4}$ to be balanced by resisting moment

16



(D)

Assuming $c = r =$ allowable unit stress

$C = \frac{1}{2}c\frac{d}{2}b = \frac{cd}{4}b = T$

Resisting Moment $M_r = C\frac{2}{3}d =$

$\frac{cd}{4}b\frac{2}{3}d = c\frac{bd^2}{6} = cS$

torted as shown *8, 9*.

Such a distortion would be more evident if examined in an enlarged view of the unit-span length *10*.

Since the sag **s** is small in comparison with the radius of curvature **r**, the beam may be assumed to be formed by adjacent, linear, unit-span lengths **Δl** which, to demonstrate a clearer understanding of their behavior, are magnified in comparison with radius **r** *10*.

We may now observe, along section **s-s**, how the elongation of the upper fibers (caused by tension) gradually decreases and attains a value of zero at the neutral axis. Immediately below the axis, the compression stresses begin to increase, thereby shortening the fibers; the maximum shortening is reached at the bottom of the beam.

To help evaluate these distortions, let us focus our attention on a fiber located within the quarter zone **ABCD** at a distance **y** from the neutral axis.

In the original shape of the unloaded beam, all fibers within the quarter zone **ABCD** had the same length **Δl/2**. When the loads **P** were applied, the length of the specific fiber at distance **y** from the neutral axis was obviously increased by an elongation **dΔl/2**. In this expression, **d** simply means that the elongation is a fraction of the original fiber length **Δl/2**.

A similar elongation will naturally occur on the adjacent fiber at the left of section **s-s**.

Since the body of the bent beam does not show any sign of failure, evidently the aggregate of the tensile forces in its upper-half section balance those of compression in the half section below the neutral axis.

Consequently, we may conclude that the beam has stretched at the top by the same amount that it shrunk at the bottom; therefore, maximum elongation equals maximum shortening *11*.

Let us now observe these deformations in a larger isometric of the quarter zone **ABCD** *12*. This illustration shows the elongation of fibers above the neutral axis, including that of the fiber at distance **y**, which has a sectional area **dA**.

It may be seen that due to the similarity of triangles **FGD** and **DCO**, **dΔl/2** over **Δl/2** is equal to **y/r**. The same geometrical relationship would be noted in the shortened fibers below the neutral axis.

We have seen that the unit stress **f** is equal to **E** multiplied by the unit distortion **ΔL/L** *7*.

Applying this formula to evaluate the unit stress in the elongated fiber at distance **y** from the neutral axis, **ΔL** in this case is represented by **dΔl/2**, and **L** by **Δl/2**; therefore, **dΔl/2** over **Δl/2**, or **dΔl/Δl**, multiplied by **E** gives the value of **f** *13-1*.

Hence, the resisting tensile force provided by the section area **dA** of the fiber under consideration is *13-2*.

But in *12* we found that *13-3*, when substituted in *13-1*, gives *13-4*.

Obviously, the total resistance that the section can develop is the sum of the partial resistances contributed by all fibers in the section, whether located above or below the neutral axis.

The elastic forces of compression and tension of individual fibers, when multiplied by their respective distances from the neutral axis, produce moments which, when added together (Σ indicates this summation), generate a total resisting moment that has to balance the moment **M** due to loads **P**.

So, through *13-5*, we finally can determine *13-6*, which has thus been obtained without undue mathematical hardship.

Determining E

What is **E**? Although the interpretation of **E** given in the analysis of the column is theoretically valid *7*, it does not present a realistic mechanical picture.

Its significance would be clearer if we examine the curvature of the beam as governed by geometrical conditions *9*, as well as by elastic behavior *13-6*.

In so doing, we obtain *14-7*, an equation which has a true mechanical meaning, since **E** is expressed in terms of a moment Pl_1, a span length l^2, a sag **s**, and a section geometrical factor (which is what **I** actually is, even though it is generally called moment of inertia).

So much is **I** considered simply a factor, that in deriving the beam formula *15-8* and applying it to a rectangular section, we obtain from **I** the section modulus *15-9*, another factor which is sometimes referred to as static moment.

The section modulus **S**, however, may be derived independently by direct elasto-mechanical considerations—without introducing the somewhat misleading conception of moment of inertia.

Let us do so in the case of a homogeneous-material, rectangular-section beam supporting two symmetrical concentrated loads *16-A*.

The effect of the loads and reactions can be visualized by taking the moments they generate with respect to the midspan section, which has to develop the resisting moment necessary to balance them *16-B*.

Should the beam be regarded as fixed in space at mid-span, reaction **R** would lift it to a location indicated by the broken line, while **P** (operating in an opposite direction) would offset part of that lift so that finally the two halves of the beam would stabilize at the location denoted by the full line.

At midspan, the difference between the moments due to **R** and **P** has to be balanced by **C** and **T**, which respectively represent the total compressive and tensile forces provided by the beam fibers *16-C*.

We know that fibers are elastically inoperative in the layer located at the neutral axis; their potential resistance up to a maximum allowable unit stress —**c** and **t**—can be utilized only at the top and the bottom of the beam *16-D*.

Hence, the value of **C** and **T** that can be utilized in the upper- and lower-half sections, is obtained by multiplying the average of the maximum allowable unit stresses in the sections by their respective areas *16-D*.

To produce a resisting moment equivalent to the sum of those that the individual fibers can develop, the lines of action of **C** and **T** must pass through the centers of gravity of the triangular stress-distribution diagrams. These centers are located at a distance 1/3 of **d/2**, or **d/6**, from the top and bottom of the beam.

So the arm of the couple **C-T** is limited to 2/3 of **d**, and the resisting moment that it can develop is $\mathbf{c \times bd^2/6 = cS}$. Thus, **S** is obtained independently of the moment of inertia concept on which the derivation of *15* has been based.

Once the elasto-mechanical behavior, as outlined above, is clear in the architect's mind, his association with his structural engineer should be better integrated and more productive of efficient structures of high architectural merit.

Should this modest effort contribute toward that end, the author would feel amply rewarded.

ADHESIVE-BONDED STAINED-GLASS WINDOWS

Recent development of a clear epoxy-resin adhesive has added a new dimension to the art of stained-glass window design and construction. Stained-glass windows, produced by a method using this new adhesive, can now be included in many buildings where the budget would exclude the possibility of leaded stained glass.

Over the centuries there have been several innovations in the materials used for stained-glass windows—vitrifiable enamels, opalescent glass, and, more recently, free patterns utilizing glass brick and plate glass—but none of these has ever offered serious competition to the age-old combination of pot-metal glass and leading. Now, modern chemistry has joined with the architect and designer for what may be considered the first major breakthrough in stained-glass window construction since "The Ascension" was made for the Cathedral of Le Mans some 900 years ago.

Development of a clear epoxy-resin adhesive has made it possible to produce stained-glass windows for the United Church of Squaw Valley, California, by bonding glass to glass with a virtually indestructible bond line. This new technique offers many opportunities for economical stained-glass windows in churches, schools, institutions, and homes.

Advantages of Bonded Glass

The primary advantage of bonded glass is in the savings realized. To produce 2000 sq ft of stained-glass windows for the United Church—including design, materials, and glass bonding—cost between $7 and $10 per sq ft. This is an appreciable reduction from the estimates of $40 and $80 per sq ft for leaded stained glass to cover the same area. It signifies that stained-glass windows can now be made available to church groups at a price well within their budgets.

This was illustrated by the experience of several representatives of one church who had visited Squaw Valley during the recent Olympic Games. The church they were building had been designed with clear-glass walls, because available funds would not include stained glass. They were not satisfied with this condition, however, since there was too much visual connection with the outdoors, particularly in certain areas. After inspecting the United Church, the members decided that bonded stained glass represented a desirable way to replace the clear glass at a reasonable cost.

Another advantage is freedom of design. With bonded-glass panels, it is possible to float a single element in space. The designer is also free of the structural restrictions imposed by leaded glass. Shapes can be more intricate, for one only needs to cut the stained glass and bond it, in any position, to a clear- or opaque-glass backing. Intriguing color designs are achieved by building layers of glass, a construction previously impossible by other methods.

Design Considerations

The Squaw Valley church has attracted many, because of its contemporary design and its utilization of new construction materials and techniques. It was designed by John Lipscomb, George Killam, and Richard Whitaker, associated with Architects Barbachano, Ivanitsky & Watanabe, of El Cerrito, California; Stefan J. Medwadowski was the Structural Engineer. The glass was designed and executed by Anne Knorr.

The chapel structure consists of a free-standing, shell-like, reinforced-concrete hyperbolic paraboloid, supported entirely by buttresses at its two points of ground intersection. Stained-glass windows enclose this space, the glass becoming lighter and more translucent toward the front of the chapel, to emphasize the shell's directional aspect and lead the worshipers' eyes to the chancel and its natural background. The designers attempted to bring Squaw Valley seemingly within the church by opening the interior to the exterior, at the same time limiting the effect by a feeling of enclosure. These walls could have been attempted with leaded stained glass; however, the leaded lines were objectionable and the cost for design and fabrication was wholly prohibitive. Clear glass was also considered inappropriate, since it would have resulted only in a visual transfer from inside to outside without arresting the eye. A close collaboration between architect and artist was needed to help achieve the religious atmosphere created by the structure, yet produce it at reasonable cost within a short time period.

Working closely with the architects, Miss Knorr produced a scale model of the church that contained the varying color elements and symbolic figures. Her design concept called for a screen of glass with the full richness of rose windows in the rear of the chapel. Color emphasis was to be heaviest at the buttresses and become increasingly lighter toward the roof. Universal religious symbolism—a descending dove, phoenix, and fish—was used.

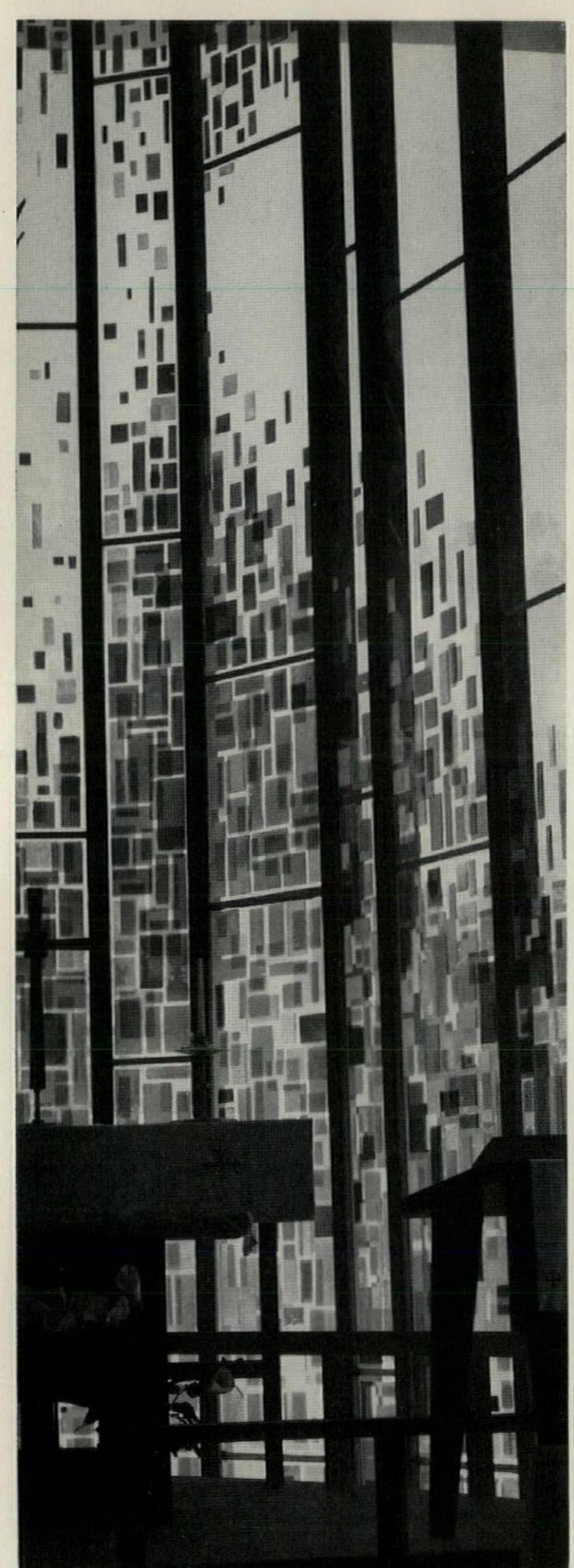
Adhesive Problems

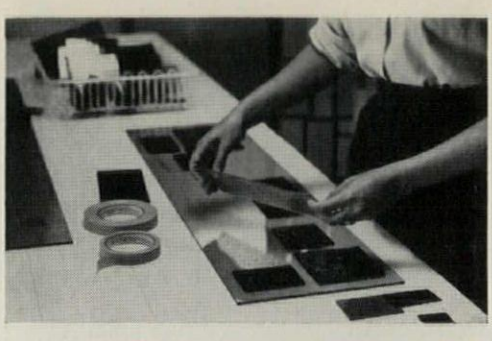
Before work began on the stained-glass panels, several different types of adhesives were considered. Only the epoxy resins seemed to offer assurance of permanence, ease of handling, and economy. A number of manufacturers were given the opportunity to present test data on their epoxy-resin adhesives. The adhesive requirements were both stringent and unusual:

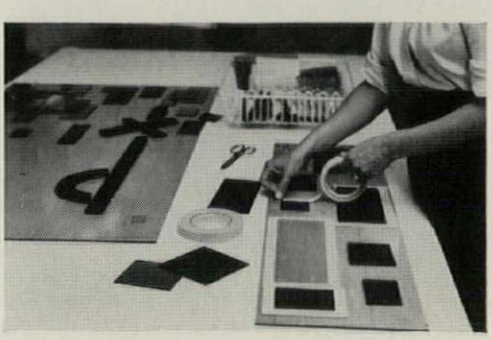
High strength. The adhesive had to bond glass to glass permanently, with shear strengths high enough to produce a shatterproof, "safety-glass" effect. This indicated that a sharp impact could crack the glass, but the adhesive must not allow it to shatter or separate where it was bonded.

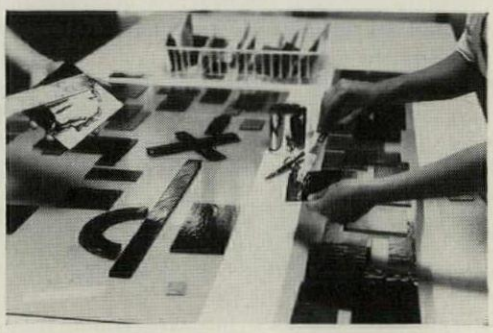
Flexibility. Because the window panels are high, glass flexing caused by wind loading and internal and external pressures had to be taken into account. Thus the adhesive had to remain flexible in nature, and not become brittle with age, or with changing climatic conditions.

Clarity. To avoid even a slight darkening of the stained glass which would impair its brilliance, the adhesive had to cure to a clear film. This was a difficult assignment, for epoxy resin itself has a yellowish cast. Since adhesive color is related









1 *Bonded layers of glass are visible in detail of chancel. At night, lights beneath chapel floor highlight edges to produce soft, prismatic effect.* 2 *Rectangular stained-glass segments are positioned prior to bonding to clear-glass backing.* 3 *Putty knife is used to spread thin layer required for bonding.* 4 *Masking tape around each glass piece produces even edge of adhesive when glass is pressed down.* 5 *Pieces on clear glass are allowed to remain until adhesive sets—in a matter of hours —to permit handling of panel.*

to bond-line thickness, even a yellow formulation will become clearer as it is progressively thinned out. However, it was necessary that the epoxy adhesive have a virtually transparent bond line regardless of resin thickness.

Aging properties. Not only did the adhesive have to assure a transparent bond line, but it also had to stay clear and nonyellowing.

Thermal changes. A highly critical problem was the difference in thermal expansion to which the adhesive would be exposed. The stained-glass pieces are bonded to the inside of the window panels. In the winter months, the stained glass is warmed by the heat in the chapel, while the gray crystal is subjected to freezing temperatures outside. If the adhesive were not able to compensate for these simultaneous variations in temperature, bond failure would cause the stained glass to pop off. It should be noted that the temperatures in the summer months reverse the conditions—the interior is cool while the exterior reaches 90 F.

Moisture resistance. Another important requirement was that the adhesive be unaffected by prolonged exposure to moisture condensation. It was expected that some water would develop and remain on the bond line for long periods of time, and could even be trapped at certain locations. The epoxy adhesive, therefore, had to be moisture-resistant to prevent bond deterioration.

It is understandable then that this unusual stained-glass window project could have died in embryo unless an adhesive were produced to fulfill all of the above requirements. With only weeks remaining before fabrication had to begin, so that the church would be completed by dedication day, Miss Knorr turned the bonding problem over to Adhesive Engineering, San Carlos, California, a division of the Hiller Aircraft Corporation.

This company, a pioneer producer of epoxy adhesives for aircraft, missiles, and other rugged adhesive-bonding applications, developed an adhesive for the desired properties and thoroughly tested it to prove that it would be satisfactory. Tradenamed "Glasshesive," the two-component, room-temperature curing epoxy adhesive is based on Shell Chemical Company's Epon(R)828 resin, and possesses other exceptional properties in addition to meeting the specifications previously outlined.

The adhesive has a working life of two hours at 70 F, which allows enough time to bond a substantial number of glass pieces without having to mix up small batches of adhesive at frequent intervals. It is a controlled-flow liquid of syrup-like consistency which spreads out when pressed against the glass. The adhesive sets within 10 to 12 hours to permit handling the bonded panels, and cures with good strength in 24 hours at 70 F. It is waterproof, and resistant to climatic changes and temperatures from –67 to 220 F.

One of the adhesive's most important features is that it utilizes a minimum-irritation curing system, and can be regarded as less toxic and less sensitizing than most conventional systems.

Bonding Glass to Glass

In the United Church there are 175 individual stained-glass panels, ranging in size from 10″ x 3′ to 3′ x 7′. Approximately 50 pieces of stained glass are bonded to each double-strength $\frac{3}{16}$″ thick gray crystal panel. The imported, hand-poured pieces vary in thickness from $\frac{1}{16}$″ to ½″ and in length from 2″ to 12″.

To construct the panels, Miss Knorr and her assistants had to cut and bond over 9000 pieces of glass. Each piece was cut to shape, so that the flow of glass would blend with the hyperbolic-paraboloid form of the concrete shell. After the stained glass was properly positioned on each panel, the bonding surfaces were wiped to remove dust and then cleaned with a chemical to remove all oil film. The adhesive was prepared by mixing together the premeasured resin and curing agent.

The adhesive was applied in a thin layer over the surface of each piece of glass to be bonded. To minimize air pockets and to avoid excessive build-up in any one spot, the adhesive was carefully smoothed out. The stained glass was then pressed down against the panel.

A second layer of stained glass was similarly bonded to the first layer to attain the multicolored effects projected in the design. In most cases, the second layer covers only certain portions of the glass underneath, while acting as a connecting bridge between several pieces of glass.

About 10 adjoining panels were prepared at one time, so that contrasting color schemes could be better controlled. When the adhesive had set sufficiently to permit handling, the bonded panels were removed from the tables and stacked vertically to cure.

Cutting the glass to produce the phoenix, dove, and fish symbols was quite intricate—particularly the phoenix, since it involved inside cuts. That it can be done by the skilled glass designer, however, is further indication of the design latitude available with this type of stained glass. Basically, any shape that can be cut in glass can be incorporated into a design. The real challenge lies in the fact that the designer is no longer restricted to the one-plane rigidity of leaded stained glass. The epoxy adhesive permits glass to be overlaid in myriad patterns without distracting from the continuity of design.

Erecting the Panels

Of the 175 panels made, only three were broken—two in transit and one at the construction site. However, breakage occurred only where stained glass was not bonded to the clear panel. Interestingly, the breaks ran in a zigzag pattern around the bonded glass and appeared as if they had been cut cleanly with a glazier's tool. Wherever the stained glass was hit, it cracked but did not shatter.

To hold the stained-glass panels in place, the architects designed a system of glue-lam columns divided into three different spacings around the chapel shell. The mullions, which ended 1½″ from the roof shell, were designed to take a horizontal wind loading of 15 psf. Since design of the roof was based on over 100 psf, slip joints were placed at the top of each mullion to allow the shell to deflect a maximum 1½″.

The panels were joined to the wood mullions with a wood stop on both sides. Between each panel is a horizonal aluminum H-section. If glass breakage occurs, a panel can be replaced easily, since there is enough space within the aluminum strip to permit the glass to be slipped out. Any panel can be duplicated exactly and installed like a standard window in a relatively short time and at low cost. By comparison, a broken, leaded stained-glass window usually requires a technician to remove it, so that it can be returned to the manufacturer for repair. This becomes a time-consuming and expensive procedure.

The Future

It is believed that this is the first time that stained-glass windows have been successfully made by bonding glass to glass. The use of extremely large areas of stained glass now becomes feasible, because costs can be substantially reduced. The technique may similarly be used in public buildings, when budgets permit art work. Technical, sculptural, and three-dimensional constructions are not only possible, but are actually under consideration.

FREE-STANDING STAIR

Photo: Mac Mizuki

BY PAUL ROGERS

The structural design of a free-standing stair—a type which has challenged architects and engineers for many years—is analyzed by the President of Paul Rogers & Associates, Consulting Engineers, Chicago. Although similar stairs have been designed by empirical methods, this structural solution follows a precise mathematical analysis developed by a German engineer.

A spectacular stair was recently constructed as part of the new Diplomat Motel in St. Louis. The stair, which connects the second and third floors, is outside of the building and its landing is entirely unsupported. Such a structure, silhouetted against the sky, creates a dramatic effect.

The theoretical computations of this stair are rather complicated. In addition to bending moments and shear forces, severe torsional forces are present which —combined with axial and compression and/or tension forces—call for higher mathematical calculations than is usual in building construction.

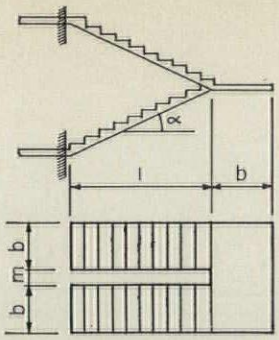
A thorough mathematical analysis of the free-standing stair was developed by the German engineer W. Fuchssteiner. In general, his recommendations were followed. A brief description of this design procedure may induce other architects to adopt this intriguing form of construction.

A stair section similar to the one constructed is shown in diagram 1. An imaginary support is provided at "B" 2. This "rigid frame" is analyzed for dead and live loads, and the envelope of the maximum bending moments is drawn.

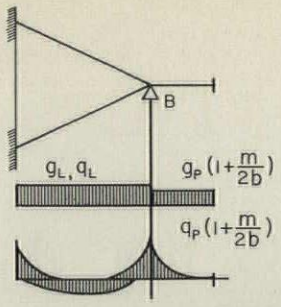
As the support at "B" is not real, its effect must be counteracted by horizontal shear forces which, in turn, create torsional moments in the stair flights 3.

The selection of dimensions and reinforcing bars was in accordance with the optimum combination of moments, shear, torsion, and axial forces *(acrosspage, Derivation of Formulas)*. The final stair as detailed is illustrated 4.

Architects were Hausner & Macsai, Chicago, and Joseph Passonneau, St. Louis, Associate Architect.



PLAN AND ELEVATION OF STAIR ❶



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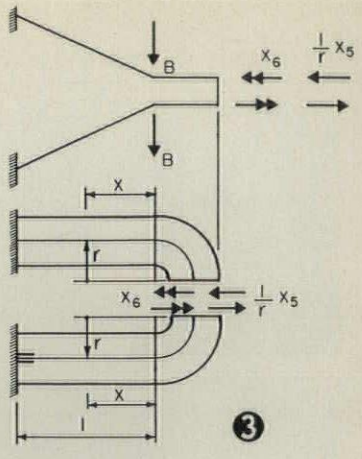
IMAGINARY SUPPORT AT B, LOADINGS & MOMENT DIAGRAM



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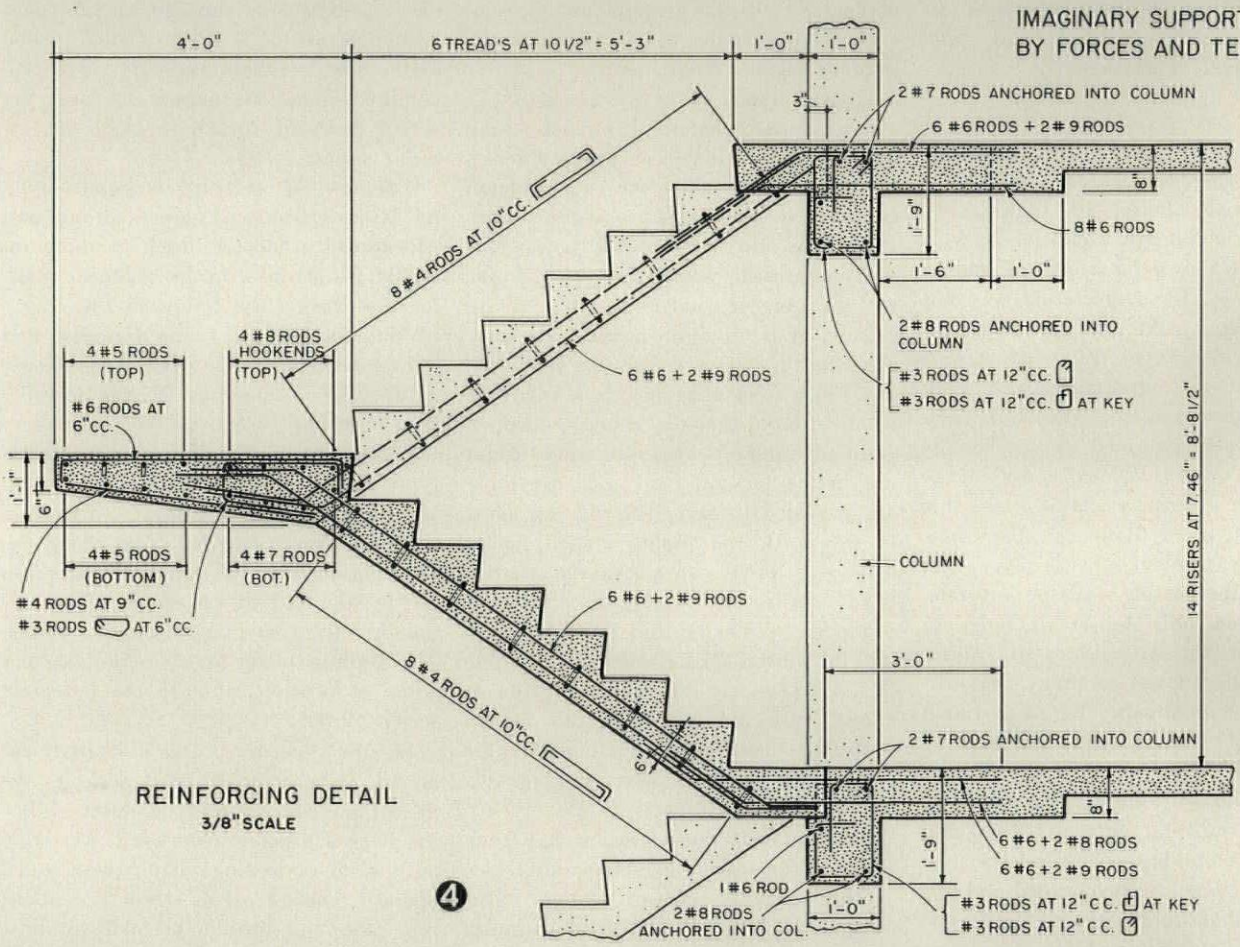
IMAGINARY SUPPORT REPLACED BY FORCES AND TENSION



REINFORCING DETAIL
3/8" SCALE

❹

APPENDIX: DERIVATION OF FORMULAS

THE $\frac{EI}{r}$ TIMES WORK INTEGRAL IS AS FOLLOWS:

$$\delta_{ik} = \int_0^{\varphi_2} \left[M_{xi} M_{xk} + \frac{I_x}{I_y} M_{yi} M_{yk} + \frac{1}{2}\left(1+\frac{I_x}{I_y}\right) M_{T_i} M_{T_k} \right] d\varphi + \int_0^{l} \left[M_{xi} M_{xk} + \frac{I_x}{I_y} M_{yi} M_{yk} + \frac{1}{2}\left(1+\frac{I_x}{I_y}\right) M_{T_i} M_{T_k} \right] \frac{dx}{r\cos\alpha}.$$

THE SOLUTION OF THE INTEGRALS FURNISHES:

$$\delta_{05} = B l^3 \operatorname{tg}\alpha/(3 r^2 \cos\alpha); \quad \delta_{06} = 0;$$

$$\delta_{55} = \frac{\pi}{4}\times\frac{I_x}{I_y} + \frac{l}{r\cos\alpha}\left[\frac{I_x}{I_y} + \frac{1}{2}\sin^2\alpha\left(1-\frac{I_x}{I_y}\right) + \frac{l^2}{3r^2}\operatorname{tg}^2\alpha\right]$$

$$\delta_{56} = -\frac{1}{2}\left(1-\frac{I_x}{I_y}\right)\frac{l}{r}\sin\alpha,$$

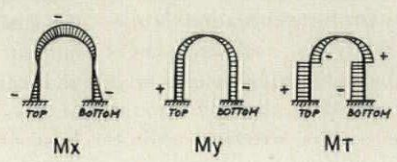
$$\delta_{cc} = \frac{\pi}{8}\left(3+\frac{I_x}{I_y}\right) + \frac{l}{r\cos\alpha}\left[\frac{I_x}{I_y} + \frac{1}{2}\cos^2\alpha\left(1-\frac{I_x}{I_y}\right)\right]$$

$$X_5 = -\delta_{05}\times\delta_{cc}/(\delta_{55}\times\delta_{cc} - \delta_{5c}^2) \text{ ft-lb}$$

$$X_6 = +\delta_{05}\times\delta_{5c}/(\delta_{55}\times\delta_{cc} - \delta_{5c}^2) \text{ ft-lb}$$

SHEAR FORCES, AXIAL FORCES, MOMENTS AND TORSION,

IN LANDING:	IN STAIR-RUN:
$Q_x = 0,$	$Q_x = (\mp)(B\cos\alpha + \frac{1}{r}X_5\sin\alpha),$
$Q_y = \frac{1}{r}X_5\cos\varphi,$	$Q_y = 0,$
$N = -\frac{1}{r}X_5\sin\varphi,$	$N = (\pm)(B\sin\alpha - \frac{1}{r}X_5\cos\alpha),$
$M_x = X_6\cos\varphi,$	$M_x = -Bx - \frac{x}{r}X_5\operatorname{tg}\alpha,$
$M_y = X_5\sin\varphi,$	$M_y = (\pm)(X_5\cos\alpha + X_6\sin\alpha)$
$M_T = -X_6\sin\varphi.$	$M_T = (\pm)(X_5\sin\alpha - X_6\cos\alpha)$



Mx My MT

Central AC For Apartments Grows

BY WILLIAM J. McGUINNESS

A review of current air-conditioning methods for apartment buildings, and evidence of a trend toward central air conditioning, are presented by a practicing mechanical engineer.

Within the past three years, the use of central air conditioning for apartment houses has increased rapidly. It is now expected that almost all high-quality apartments will be air conditioned, with a preference shown for a central source. Prior to 1958, the expectation was not quite so definite. At that time, we witnessed the decline of the window unit in favor of the through-the-wall unit. The latter device, also air-to-air in principle, and self-contained except for its electrical connection, calls for large holes in the exterior walls. Perhaps this requirement, more than any other, now threatens to supplant it with any system that leaves the outside walls imperforate, or punctured only by small holes to admit fresh air. There are, of course, other considerations—so many that air-conditioning methods for apartment houses will undoubtedly continue to change and move toward ideal solutions to the problems presented. Some of these methods recently or currently used, and reasonably suitable, are as follows:

1 *Window Units.* Self-contained and air-cooled. Include compressor, condenser, and evaporator coils and fan. Fresh air for ventilation is admitted directly from outdoors. Condensed moisture discharged directly to outdoors.

2 *Through-the-wall Units.* Identical in operating principle with window units. Like them, the only central connection is electricity.

3 *Fan-Coil Units Below Windows.* Hot or chilled water from *central* source flows through finned-coil tubes over which a fan blows room-air for conditioning. Fresh air for ventilation is distributed separately to each apartment from a central conditioning source or is taken in, unconditioned, directly through a small grille in the exterior wall at the unit for conditioning there.

4 *Induction Units Below Windows.* Unit operation similar to (3), but fan is replaced by the centrally conditioned fresh (ventilation) air, which, by jet action, induces the greater flow of room-air over the finned tubes, by which the induced air is conditioned.

Disadvantages of the window unit (1) are, of course, obvious. Principal among these is that it displaces planned fenestration and must therefore be considered largely a makeshift. Other shortcomings, shared by through-the-wall units (2), are compressor noise, dust and drafts, and dripping of condensate.

Most of these disadvantages are overcome by the use of central air conditioning (3). "Centralization" is a reference to the fact that a cooling medium (chilled water) is produced centrally for use in the fan-coil units. Because pipes are provided to carry this cooling agent to the coils, the piping system and a three-way valve can provide a method of delivering hot water, also centrally produced, to the fan-coil units for heating in winter. These systems close up the wall (except for a small grille to admit fresh air when this air is not centrally distributed), eliminate the compressor in the room, and provide heat in the same unit.

So far, little consideration has been given to the use of induction units (4), another type of central system. This method, so popular now in office buildings, requires that conditioned fresh air be brought to the jet unit to replace the fan and introduce tempered ventilation air at this desirable location. The extra expense and difficulty of routing air ducts up (or down) exterior walls has discouraged the use of induction units. Indeed, the scheme of introducing tempered, fresh ventilation air into rooms from locations on high interior walls in connection with fan-coil units is more expensive than merely leaving the small hole at the unit, through which outdoor air may be drawn by the fan and conditioned by the room. In 1957, at the Harrison Park Apartments in East Orange, N.J., which have a fan-coil installation, ventilation air was introduced to apartments and, under greater pressure, to public corridors. This prevented apartment cooking-odors from penetrating to the halls. Excess air was exhausted through kitchens and baths (APRIL 1957 P/A). This is one of the few installations of its type. Economic comparisons appear to favor the direct fresh-air intake through the exterior wall.

The use of central air conditioning by fan-coil units is now a strong and widespread trend. A dozen or more installations are now in the planning stage in New York City, following the choice of this method by Louis Denberg and Alexander Hirsch for Wedgwood House at 69 Fifth Avenue. A 211-ton installation, it employs Carrier "Weathermaker" fan-coil units and a Carrier absorption-type water chiller. The power is purchased steam, which appears to be consistently chosen for buildings along the distribution lines of this utility. Fresh air is admitted at the units, which are individually controllable by the tenant. The cooling tower is above a two-story wing, a location close to the basement water chiller.

In the specific case of apartment houses, where quiet is important, the use of the absorption-type water chiller has been a great step forward. Available on a wide scale since 1945, these units, operating on 12 psi of steam and utilizing water and lithium bromide for heat transfer, have provided a quiet and simple source of chilled water. The noise and vibration of a compressor is avoided, and the need for the employment of the specially licensed operating engineer, demanded by most cities, is eliminated. Its lack of vibration makes it suitable for installation on the roof next to the cooling tower, minimizing the condensing-water piping.

The next step is probably the use of centrally distributed fresh air to eliminate the last of the holes in the façade. This development will probably lead to use of induction units for central air-conditioning systems in apartment houses.

The architect for Wedgwood was H. I. Feldman, and the Consulting Engineer, E. U. Markush.

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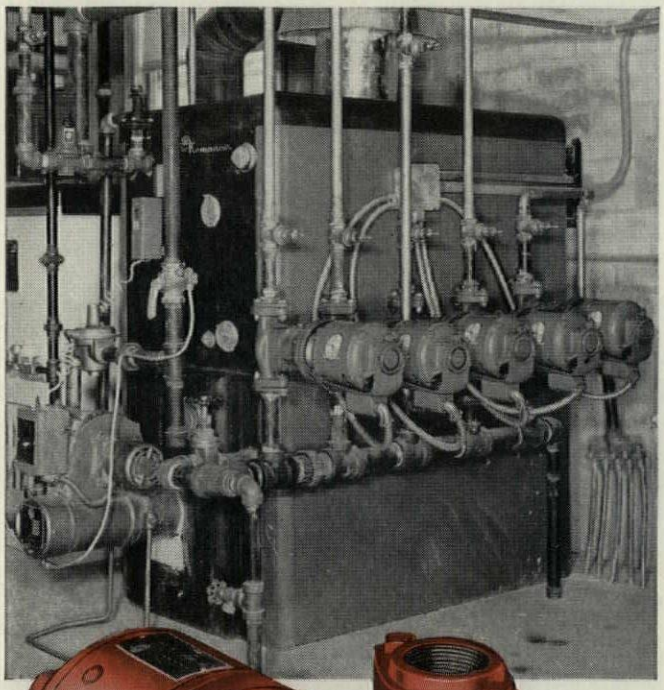

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CSI Activities Reviewed

BY HAROLD J. ROSEN

Since its founding in 1948, the Construction Specifications Institute has overcome many of its growing pains. Some of its goals and standing-committee work that are of special interest to architects and engineers are discussed by the Chief Specifications Writer, Kelly & Gruzen, Architects-Engineers.

The Construction Specifications Institute, also known as CSI, is an organization of individuals concerned with the preparation of specifications for the construction of buildings and heavy construction. The institute was organized during 1948 and 1949 by a small group of men in Washington, D.C., who were, for the most part, employed by the Federal Government and who recognized the need for an organization that would work together to improve construction specifications.

Today, the organization has a membership of about 3500 individuals in some 40 chapters throughout the nation. The active members are those who are concerned professionally with specifications used in the design, construction, maintenance, and equipment for construction projects. They are primarily architects and engineers. The associate members are those who use specifications in purchasing or procuring construction materials and equipment, and are primarily engaged in selling and manufacturing construction materials and equipment; and those who are engaged in contracting in the construction industry.

The goals of CSI are: (1) to effect close association and co-operation between those in the construction industry in a major effort to improve construction specifications; (2) to co-operate with architects, engineers, contractors, and manufacturers in an effort to develop concise, clear-cut specifications; (3) to work toward the adoption of uniform methods of specifying; (4) to disseminate information concerning specifications; (5) to provide a pool of specifications data for the benefit of all; (6) to assist in the adoption of proper curriculums in professional schools to train future professional specifications writers.

The years since 1948 have been filled with growing pains, slowly developing membership, organizational tribulations, and limited funds. The goals set by the early pioneers were not yet bearing fruit. Recently, however, having overcome many of these earlier problems, concerted efforts on the part of the national officers of CSI have resulted in programs that are intended to implement these goals.

Various standing committees have been established to work on the specific goals of CSI. Those committees that are of specific interest to specifications writers are Committees T–1, T–2, and T–3.

Committee T–1 is the Technical Committee, with subcommittes as follows: T–1a (Civil Engineering and Heavy Construction); T–1b (Architectural); T–1c (Mechanical and Plumbing); T–1d (Electrical); T–1e (Bibliography); and T–1f (Nomenclature). Committee T–1 and its subcommittees are charged with attaining the technical objectives of CSI. For example, under subcommittee T–1b various chapters have received assignments to develop technical data on specific architectural subjects. The Philadelphia chapter has prepared a CSI "Recommended Practice on Glass and Glazing." This tentative recommendation encompasses: Part I (Items Included); Part II (Items Not Included); Part III (Nomenclature); Part IV (References); and Part V (General Data on Glass), which includes the companies manufacturing glass in this country, the uses of glass, and trade practices. Subcommittee T–1a (Civil Engineering and Heavy Construction) has, through the northern California chapter, issued a "CSI Recommended Practice on Paving and Related Work." The New York chapter is charged with the responsibility of subcommittee T–1f (Nomenclature), and is endeavoring to compile and define a list of terms used in specifications that will be looked upon as standard in the construction industry.

Committee T–2 is devoted to the establishment of General Conditions. It has already issued a cross-reference, comparative index of the General Conditions of these major associations: AIA, ASCE, AASHO, and APWA.

Committee T–3 (Specifications Methods Committee) has as its objective the task of developing better specifications-writing techniques, more effective methods for preparing specifications, more precise and standardized specifications language, more logical arrangements, better formats, and other guide lines to better specifications. Subcommittees have been established to accomplish the above as follows: Subcommittee B–1 is engaged in preparing a general arrangement of the Contract Documents; Subcommittee C–1 is concerned with the tabulation of a list of trade sections; Subcommittee D–1 is charged with the development of Standard Forms, Arrangement and Contents of Invitations, Conditions of Bids, Proposal Forms, and Addenda; Subcommittee E–1 is concerned with developing a general approach to writing trade sections, such as form, arrangements, and contents; Subcommittee E–3 is charged with enunciating general principles for use of trade names by investigating the "or equal" clause, base bid clauses, and performance specifications; Subcommittee F–1 is concerned with a listing of good and poor specifications language; and Subcommittee G–1 will try to develop standards of typing, binding, and appearance of specifications books.

These ambitious goals are slowly being realized through the work of the various committees. The Construction Specifications Institute welcomes new members to its fold who are interested and concerned with its problems. Application for membership should be made to: The Construction Specification Institute, 632 Du-Pont Circle Building, Washington 6, D.C.

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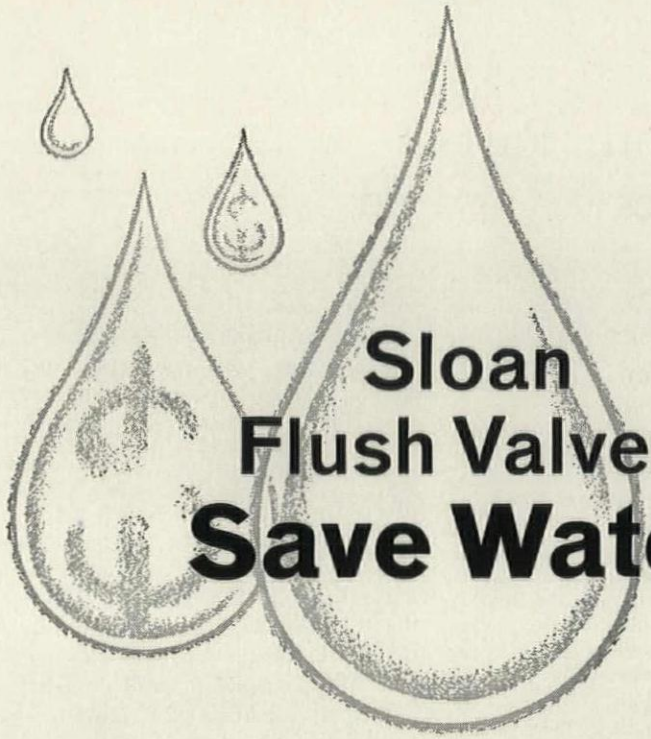

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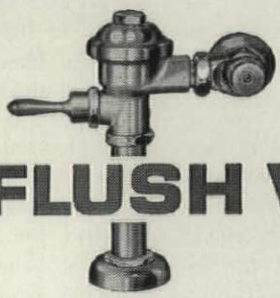

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Arbitration: Part 3

BY JUDGE BERNARD TOMSON & NORMAN COPLAN

Nassau County District Court Judge and a New York lawyer continue their discussion of arbitration.

The decisions of the United States Supreme Court relating to arbitration which we have discussed in our last two columns were followed by still a third decision involving the application of the arbitration provisions of a collective bargaining agreement to grievances filed by certain employes against their employer (*United Steel Workers*, v. *Enterprise Wheel and Car Corp.*, 4 L. Ed. 2d 1424).

In this case a number of employes had left their jobs in protest against the discharge of another employe. They were advised to return to work by the officials of their union, but when they sought to comply with these directions, they were told by the company that they were no longer employed. A grievance was filed, but the employer refused to arbitrate. A Federal court ordered arbitration, and the arbitrator found that the discharge of the men was not justified, even though their conduct was improper. In his view, the facts warranted, at most, a short suspension, and, therefore, ordered the reinstatement of the employes with back pay.

After the discharge of the employes and before the arbitrator had rendered his award, the collective bargaining agreement expired. The employer contended that the expiration of the contract barred reinstatement of the employes. The arbitrator rejected this position, ruling that the agreement imposed an unconditional obligation on the part of the employer which survived the termination of the contract.

The employer appealed to the courts, and the Federal Circuit Court of Appeals held that an award for back pay subsequent to the date of termination of the collective bargaining agreement could not be enforceable, and the requirement for reinstatement was also unenforceable because the collective agreement had expired. On appeal to the United States Supreme Court, this decision was reversed. The Supreme Court said:

"The refusal of courts to review the merits of an arbitration award is the proper approach to arbitration under collective bargaining agreements . . . the arbitrators under these collective agreements are indispensable agencies in a continuous collective bargaining process. They sit to settle disputes at the plant level—disputes that require for their solution knowledge of the custom and practices of a particular factory or of a particular industry as reflected in particular agreements.

When an arbitrator is commissioned to interpret and apply the collective bargaining agreement, he is to bring his informed judgment to bear in order to reach a fair solution of a problem. This is especially true when it comes to formulating remedies. There the need is for flexibility in meeting a wide variety of situations . . . the question of interpretation of the collective bargaining agreement is a question for the arbitrator. It is the arbitrator's construction which was bargained for; and so far as the arbitrator's decision concerns construction of the contract, the courts have no business overruling him because their interpretation of the contract is different from his."

The expanding use and acceptability of arbitration as reflected in the United States Supreme Court decisions discussed in this series of columns is also mirrored in recent decisions relating to disputes in the construction field. One of the most significant of these determinations was a case decided by the New York Court of Appeals (New York's highest court) involving the scope of arbitration under a construction contract. *(In the matter of the arbitration between Grayson Robinson Stores, Inc. and Iris Construction Corp.*, 8 N.Y. 2d 133).

In the New York case, a contractor was the owner of certain vacant land. He entered into a contract with a company that operated retail department stores to construct a department store on his property and to lease it to that company for a period of 25 years at a specified rental. The agreement provided for arbitration of all disputes pursuant to the rules of the American Arbitration Association.

After the plans and specifications for the building were completed and the public ground-breaking ceremony had been held, the contractor advised the tenant that because of difficulties in obtaining mortgage money, he could not proceed with the work unless the tenant agreed to increase the rent, which was then provided by the contract. The tenant refused to increase the rental and the building was never completed. Although the tenant was aware of the fact that the contractor needed mortgage money to construct the project, there was nothing in the agreement between them which would have relieved the contractor from his obligation to construct the project in the event he would have difficulty in obtaining this money.

The contractor contended that his obligations under the construction contract were impossible of performance and that he was, therefore, relieved of his obligation to the tenant. The tenant, on the other hand, demanded arbitration of the question and requested the arbitration panel to order the contractor to specifically perform the contract. The arbitrators ruled that financial difficulty did not excuse the contractor from performance, as distinguished from actual or physical impossibility, and ordered him to "proceed forthwith with the improvements of the leased premises in accordance with the terms of said lease, as amended."

The contractor, in opposing the confirmation of this arbitration award by the courts, took the position that the arbitrators were without power to enforce specific performance of a construction contract. He argued that a court of equity, because of necessity of continuous judicial supervision, would not order specific performance of a construction contract, and, therefore, the court should not confirm an award which directs specific performance of such an agreement. The lower courts, confirming the award, rejected this argument.

Next month's column will discuss the appeal of this case.

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Chaos Among the Creators

Dear Editor: As a fifth-year student in the Department of Architecture, University of California at Berkeley, I undoubtedly suffer from the universal student "affliction": that is, an overly critical and even pessimistic attitude toward the evolving world of design. An awareness of this tendency has thus far kept my criticism in verbal—and therefore revisable—form.

It appears to me that in contemporary architecture's headlong flight toward originality and individuality, even its most able and talented proponents have gone beyond deepening and expanding the groundwork of their early 20th Century predecessors. In fact, many seem to be busy embellishing and even destroying the architectural development of the past half century. In the name of "delight" and other more flowing and less meaningful terms, (conjured up by various writers of architectural and lay publications in their haste to show the world the new and the different), we are passing by more serious and thoughtful architectural endeavors. It is almost as if Professor Steen Eiler Rassmussen's "Inevitable Architectural Cycle" is about to repeat itself once more. If I might attempt to paraphrase the explanation which he put so well in a history "course" a few years ago: The architect continually tries for individual expression, and attempts to put before the public something new, different, and therefore interesting and exciting. This results in a repetitive cycle of development from the pure and simple through the different, to the exciting, and thence to the "Baroque." (There is then a great "purifying revolution" and the cycle begins once more.) One needs only to view a few of the various periods of development in our architectural past to find examples of this theory. On the other hand, if this trend can be construed as bringing about a serious expression of our continuingly changing Western civilization, perhaps it is a desirable occurrence.

Certainly many great designers the world over are consciously answering new architectural problems with new, valid, and exciting forms (although another time and place would also be apropos to question such forms in light of our developing needs and technology).

However, it is the efforts either of those who are unable to attain similar heights of creative endeavor or those who are not interested in thoughtful architectural design that are most disturbing to myself and my classmates. To cite a few examples: Dramatic if not exotic forms as might befit the governmental edifices of a nation's new capital city, carved from the very jungle, are scaled down, "squashed" together, and applied to a bowling alley in Michigan so that "it will not look like a bowling alley." Or the bold roof forms that relate to the total scheme of an equally bold high school are "lifted" and set down on a bathhouse! Finally, a well-known designer signs his name to a "serene" residential entry design which features nonstructural columns that begin in a structural form and end in a banana peel—surrounded by a riot of texture, color, and gold gild!

How can we as architects have the effrontery to condemn the most mundane of builders for taking once-valid architectural idioms, making them "popular," and then misapplying them over miles of tract development when the architectural profession itself is everywhere pandering valid design to the point, in some instances, of architectural fakery?

Perhaps these thoughts have uncomfortably likened my attitudes to those of the Victorians, who fought the dawn of a new era at the turn of the century. Perhaps I am old before my time. However, I cannot help feeling that it is time for this profession, which I am about to enter, to pull up short, to take stock, and to inquire, collectively, where we are going.

RICHARD SCHOEN
Berkeley, California

The questions raised in Mr. Schoen's letter are important ones that have been troubling P/A's Editors. We feel that it is indeed time to "inquire, collectively, where we are going." Last month, in reporting the Jury discussion during the P/A Design Awards Program, we indicated some of the realization of chaos on the part of the Jury. That was a realization, by mature, experienced critics, several of whom also teach architecture, of a state of confusion among their professional colleagues. Mr. Schoen's plaint comes from a similar realization, on the part of a student of architecture, of a chaotic state within the body of architects from whose work he is supposed to be learning. It is here that the stock-taking is most important. One can happily practice in a situation where everything goes; learning principles or developing directions in such a situation is impossible.

We would disagree with Mr. Schoen in only one respect. The words "delight," "serene," and other "less meaningful terms" were not conjured up by "various writers." These are words used by the architects themselves to describe their individual efforts within the diversity of design at the moment. It is the practice of architecture, not the reporting of it, that produces the "exciting forms" that Mr. Schoen suggests might be questioned "in light of our developing needs and technology."

It seems to us that it is the responsibility of the press to report, to analyze, and even to question the work being done in its field. It is for the purpose of questioning, of asking the architects to "pull up short, to take stock, and to inquire, collectively, where we are going," that P/A begins reporting next month, in a Symposium on the State of Architecture, replies from more than 50 of the most respected practitioners to a series of questions that we asked them. Whether this Symposium answers the

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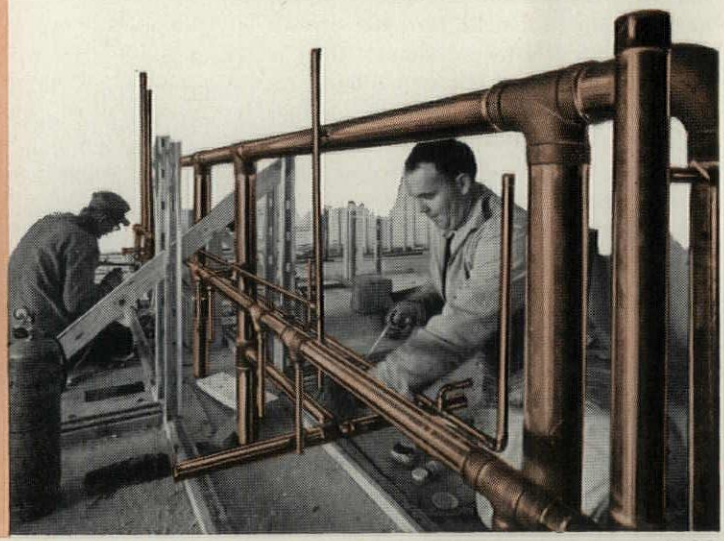

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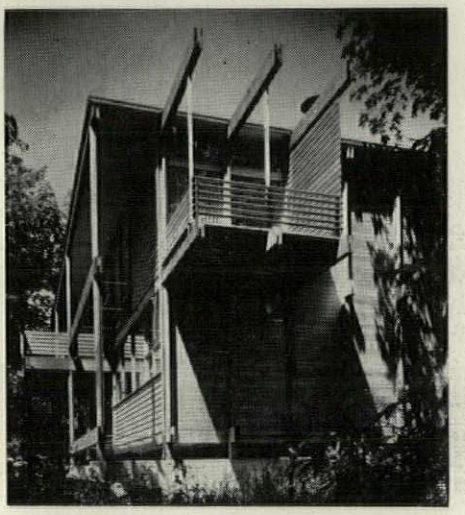
vital questions that are raised in Mr. Schoen's letter, and that are in the minds of many students of architecture, will be up to the reader to decide. We are sure, however, that you will find the discussion extremely interesting, somewhat disturbing, and strong enough to constitute a "statement" on directions at this time.

T.H.C.

Regionalism and Individualism

Dear Editor: As a native of the region with which Paul Hayden Kirk and his work have become identified, I feel obligated to take issue with your editorial statement that "Little provision need be made for outdoor living in a climate where it is seldom warm and often rainy" (page 124, NOVEMBER 1960 P/A).



First off, while that statement may be an irrefutable architectural truth (I'm not an architect and therefore unqualified to judge), it most certainly doesn't apply to our Northwest climate. Ours is certainly one of the most "outdoor" regions in the country. True, it is often rainy in the Northwest. But no matter how often it rains, it's a rare year when annual rainfall exceeds 35 inches. It is almost never cold in the Puget Sound basin (the region in which the Kirk house was built) but, by the same token, it is rarely hot either.

That we are not blessed with good weather always, compels us to be prepared to take every advantage of "weather-permitting days." For this reason, a very casual look at recent home design in this area will reveal that outdoor living is a primary consideration.

Although your statement is a simple one and seemingly harmless, it is used to rationalize the lack of outdoor living provisions in the Kirk house. So used, it should first be true. I'm sure that Kirk can supply you with a host of more accurate reasons for excluding the outdoor living aspects of the design.

I found John Dixon's introduction to the section astute and interesting. In my opinion, he omitted the final and most significant step. The forces that continue to minimize regional differences also tend to whittle away at man's opportunity to express himself individually. I feel that the architect represents one of the few forces left to help man protect and preserve his individualism. Assuming his design to be sound, he should certainly be more aware than ever of his moral obligation to provide man with a fortress from which he can defend his desire to express himself as he chooses. His house should—by its very design—tempt its occupant to be himself. I feel certain that man's house will be the last bastion of his individuality. Let's protect it fiercely. Saving "regionalism" is nothing by comparison.

R.V. DENBY

Dear Editor: Congratulations on the "Places, People, and Houses" article in the NOVEMBER 1960 P/A. This is the most commendable piece done by the professional press in years, and if continued, might help to stimulate less conformity and more real character in progressive architecture!

BUFORD L. PICKENS
Director of Campus Planning
Washington University, St. Louis, Mo.

Cheers from Overseas

Dear Editor: I have just received the October issue of your very beautiful and useful magazine. This is the second copy I have received since I began my subscription, and I want to express my admiration not only for its contents but for the esthetic pleasure produced by its well-designed pages.

DAVIDE LORENZINI
Palermo, Italy

Late Comments on "The Passing of the Pro"

Dear Editor: We want to compliment you on your "Passing of the Pro" in the AUGUST 1960 P/A. Your comments with respect to architects should be made more often, as witness the ersatz "boxes," renderings by the square inch, etc.

KARL KAMRATH, FAIA
Houston, Tex.

Dear Editor: We in the South miss the "Pro" probably more than you do in the North, as we have had so few of them by comparison. I believe this from observation of workmanship as I travel about.

I looked for your possible comment and observation on the passing of the "Pro" *architect.* It seems to me that with the increased complication of the mechanical systems and gadgets, numbers and types of materials, and with big business dealing more and more with big business (architectural corporations), we see less and less of the "Pro" architect, who is being replaced by a composite technician. Although I am a "proprietor" of Aeck Associates, I don't think I am mistaken on this score; I just have the same regrets that you have in your article.

RICHARD L. AECK, AIA
Atlanta, Ga.

Great Architecture: A Collaborative Achievement?

Dear Editor: You have stated in a recent article that great architecture springs from the creative genius of individual men; that the individual spirit, only, can conceive and carry out a totally unified achievement; and that architectural contribution from groups of individuals are ineffective and lacking in co-ordination.

How, then, can you ignore one of the greatest collaborative efforts of all time: the union of architects, artists, sculptors, craftsmen, and laymen, each doing their own part, to produce the cathedral at Chartres?

ROSALIND P. LEVINE
Orange, N.J.

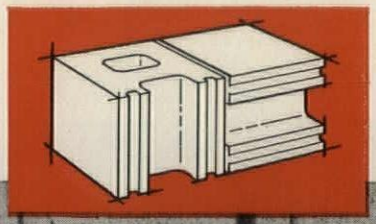
The Mantelpiece Swindle: Let's Not Lament the Past

Dear Editor: I have just finished the NOVEMBER 1960 P/A with considerable joy—due not only to the word picture but the whole format. The report of the Award Seminars is certainly refreshing and most informative. Let's have more.

Now about the editorial. I have always enjoyed the P.S. for its combination of learning, wit, etc. I was a little disturbed, however, about the mantel swindle. I prefer your thoughts and predictions of what's to come, rather than about what has been. With the new environment, there must be plenty to offer your readers about art and architecture.

ROBERT M. LITTLE, FAIA
Miami, Fla.

Great new things are shaping up in concrete block



Wall designed by Architect Alfred B. Parker, Miami. Photo courtesy of National Concrete Masonry Association.

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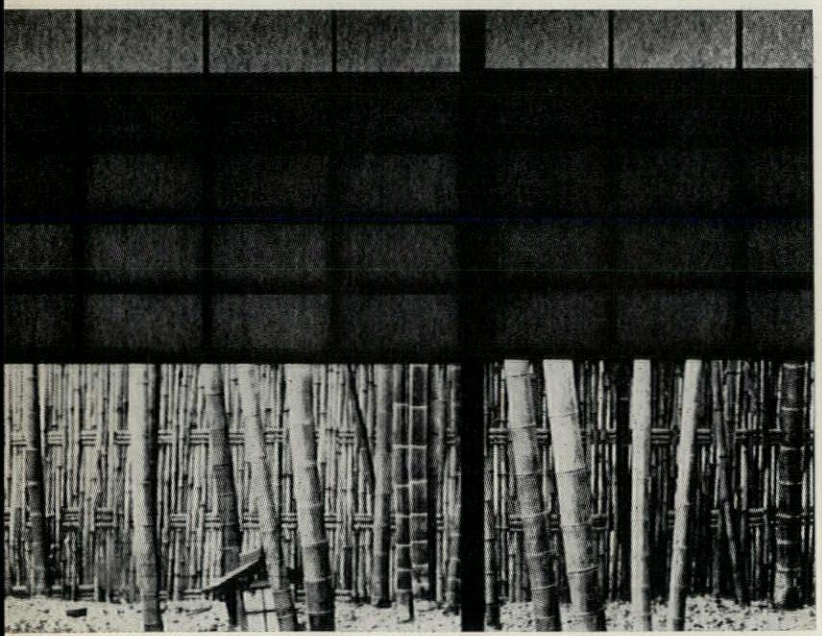

BY JAMES C. ROSE

Noted landscape architect of New York, N. Y., gives a critique of Japanese Gardens for Today. *David H. Engel. Foreword by Richard Neutra. Charles E. Tuttle Co., Rutland, Vt. and Tokyo, Japan, 1959. 270 pp., illus. $15*

I have postponed writing a review of this book for some time now, because I could not put my finger on exactly what disturbed me about so handsome a product —for it is a handsome book, beautifully turned out. No less a person than Richard Neutra has written a brilliant foreword, with his usual clarity and feeling for the written word. David Engel has also done well in the organization of his material, photographic and written.

Both Neutra and Engel caution us abundantly that while we may look at the pictures as much as we wish, and try to understand the Japanese motivation that brought these gardens to reality, we must —under no circumstances—crib them wholesale. I could not agree more. It is difficult, however, to conceive of a fifth-grader so dull of purpose that he would not sense the perfect opportunity, despite authoritarian warnings. And while garden-club members may not have retained all the perspicacity of their school days, it is hardly possible that the idea should not rub off on them, also.

Japanese Gardens for Today has almost the identical format of *Gardens of Japan* (by the Japanese architect Tetsuro Yoshida, and published in 1957 by Frederick A. Praeger). But Yoshida—fortunately, I think—did not understand the Western appetite for being told exactly how-to-do-it. Engel, on the other hand—unfortunately—understood this appetite too well not to use it for his own advantage in writing about Japanese gardens for Western consumption. Thus we have the dilemma wherein Teacher understands full well the value of principles, but also realizes that class grades (and consequently his own standing in the front office) will be much higher if he steps out of the room for a moment and gives the kids a break.

Engel has organized his material in terms of theory, practice, and realization (of form). In "The Theory" (15 pages, 6 of which contain color plates), the author attempts to distill from the various periods of Japanese gardening history those principles which he considers con-

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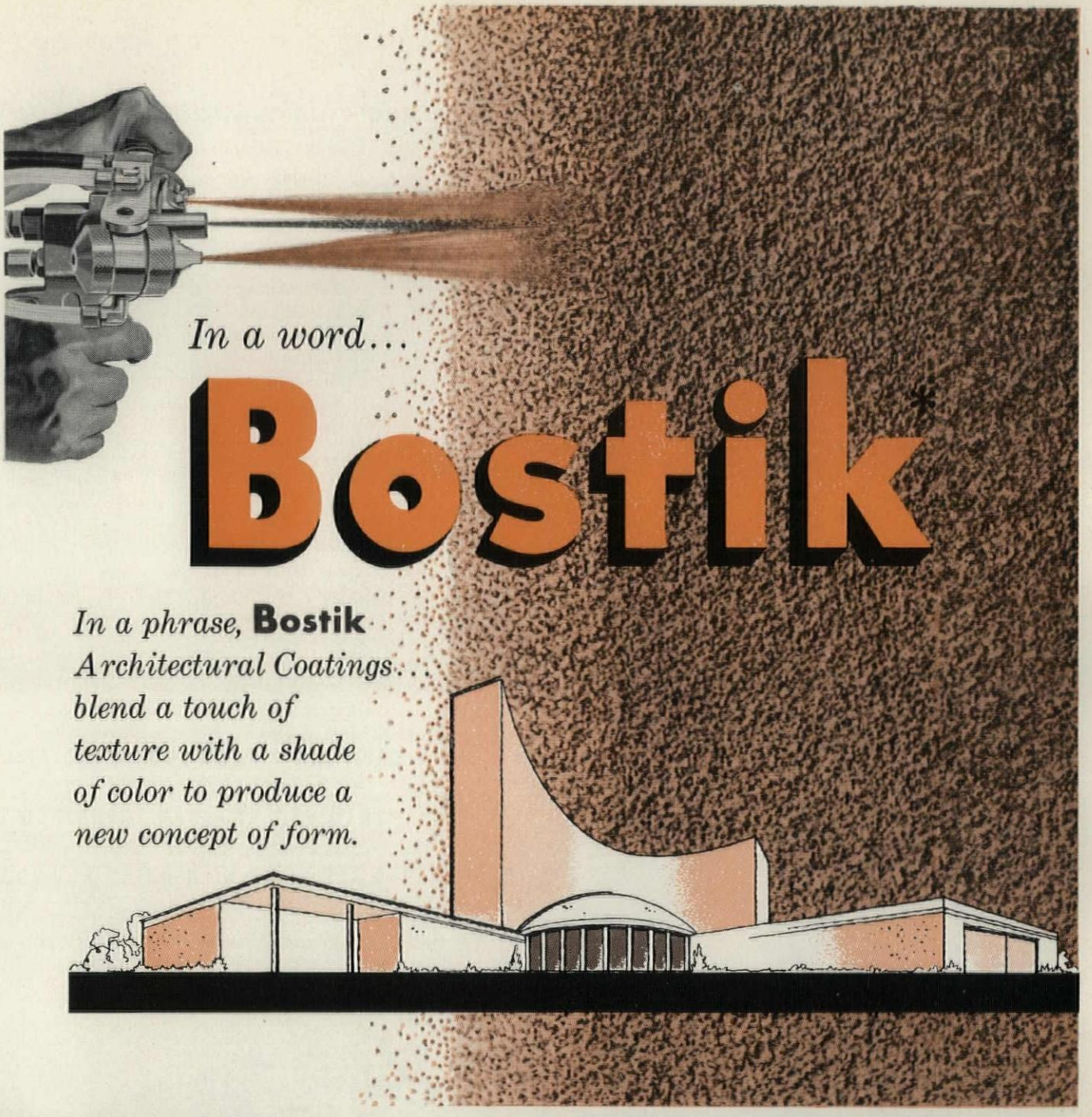

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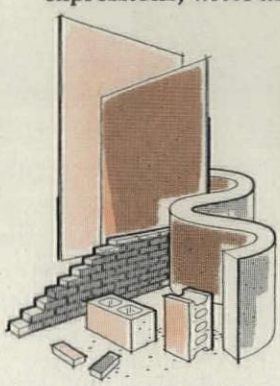

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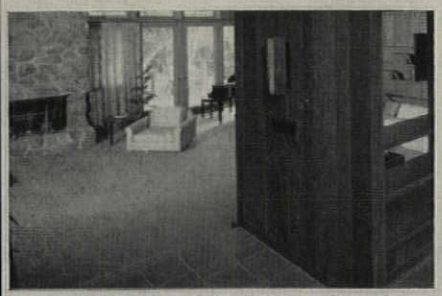

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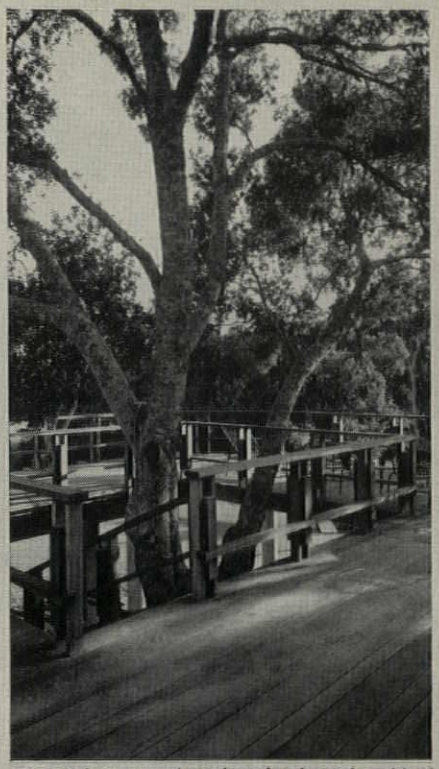

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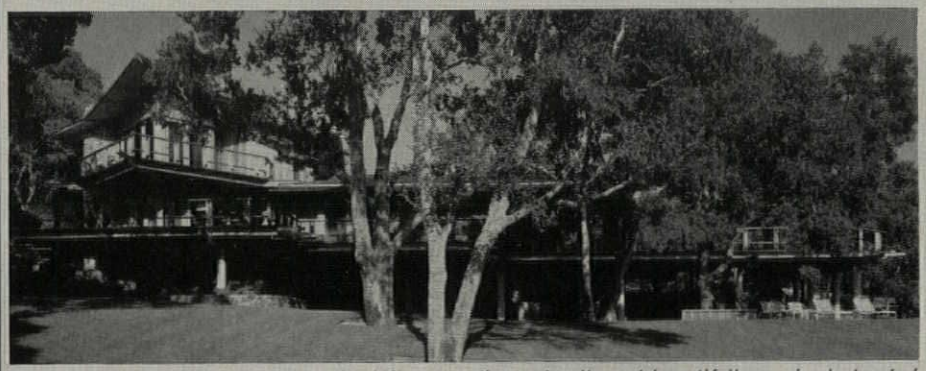

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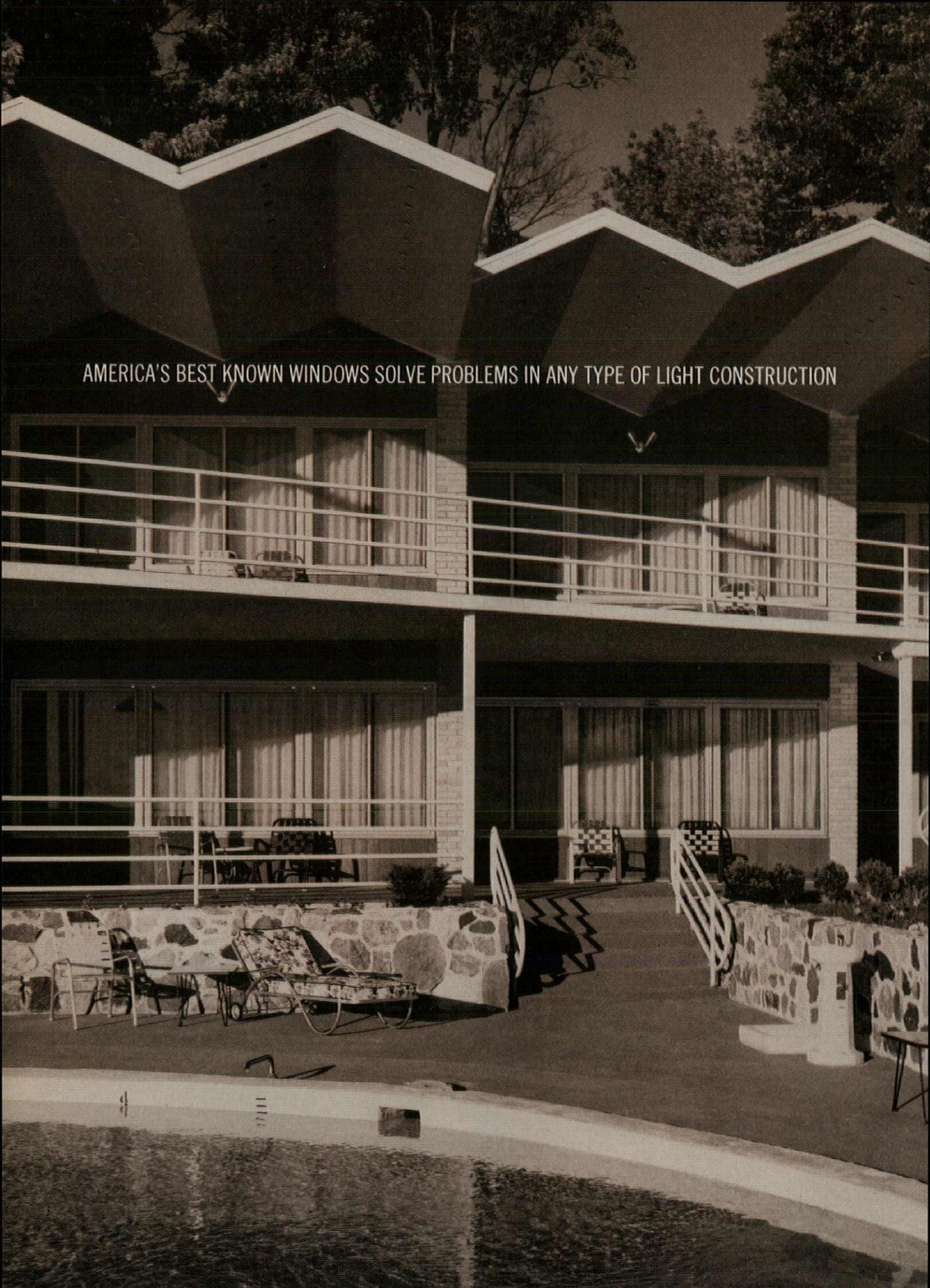
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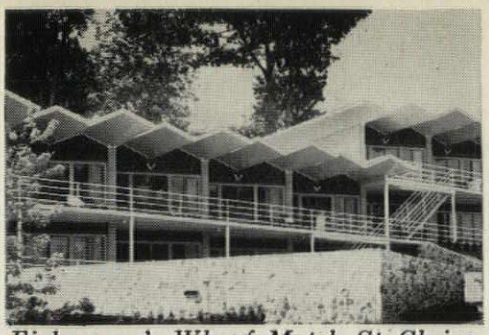

Fisherman's Wharf Motel, St. Claire, Michigan. Architect: George D. Lytle

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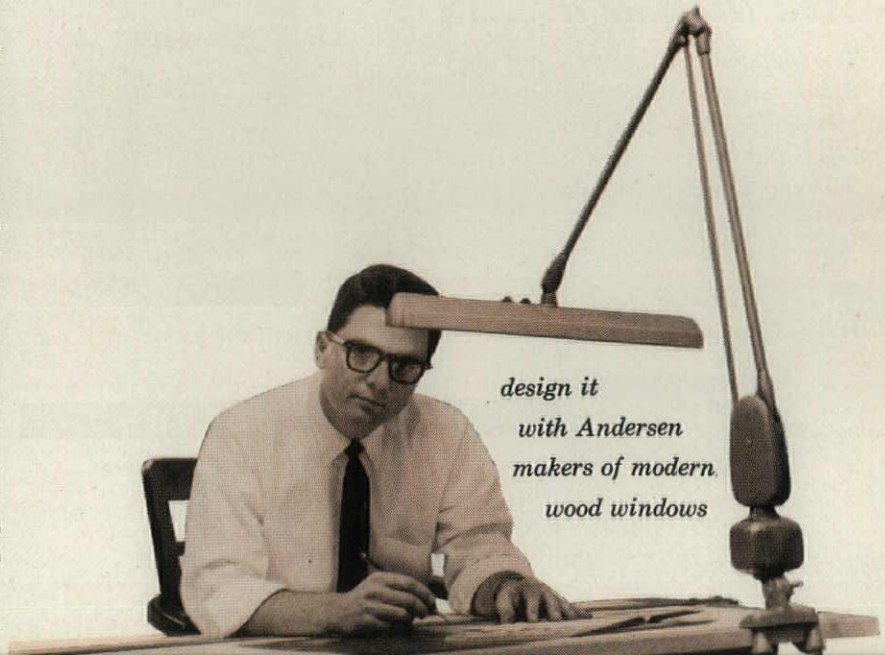

Continued from page 184

tinuing in Japanese gardens today. "The Practice" (23 pages, 4 of which contain color plates and 6 contain diagrams of fences, paving patterns, etc.) is a review of techniques, giving specific instructions and disclosing various tricks in scale and perspective which the Japanese like to employ: " . . . a boat may be constructed in half the ordinary size, with the result that the pond looks bigger than it is. . . ."

By "The Realization," the author means the sort of form that has resulted from these theories and practices, and he devotes the next 200 pages to black-and-white offsets that are large and clear. With the exception of a few extraneous pictures showing pavings and walls made of roof tiles set on edge in a spaghetti-like pattern, the bulk of this section shows exactly what it is intended to show: the forms that result from an almost religious devotion to nature and an almost total disregard for the effort, the patience, and the dedication required to achieve this degree of sublimation in the landscape. The difference in values cannot but impress Americans, who would like to have the same thing, but in a supermarket package to which one adds water, stirs to the proper consistency, and disposes of for replacement when it comes time to rake the pebbles.

However, the "Plant List," occupying the final 20 pages of the book, may be the very elixir that Americans are looking for in the supermarket. I hardly noticed it in the original perusal of the book, since I do not usually examine the conventional appendage of a "plant list" with meticulous care. I certainly would have passed this one by as undistinguished, except that "herbs" and "tall evergreen trees," classified together, caught my eye. In skipping about, I learned that the yellow birch tree is hardy in a *moist, dry* soil. At this point, I decided to start at the beginning of the chapter, only to find that "Many species not commonly found in Japan . . . are so appropriate and attractive in naturalistic settings that, in the author's opinion, if they existed in Japan, they would be used in Japanese gardens . . ." This makes one wonder whether, in the author's opinion, the species which *are* commonly found in Japan would be used if they did *not* exist there.

In the next paragraph, Engel reiterates his conviction that his list is "especially appropriate for planting in a Japanese naturalistic garden," and then warns the reader to "confine your selection to plants on this list." Apparently he will tolerate no deviation, even though some of the plants do not grow in Japan. Or perhaps this whole section is for the garden clubs with whom one admittedly must be stern.

All of this makes me wonder whether Engel is entirely sincere (or consistent, to say the least) when he proclaims in his introduction that ". . . no one advocates merely copying the Japanese garden. What *is* proposed is simply that we understand the principles of its design, its handling of materials, and, above all, its spirit." He goes on to say: "Once having grasped these essentials, we may proceed to plan a garden, adapting the sense and spirit of Japanese design to the material and physical requirements and limitations of the project." This sounded good at first reading, but it has bothered me more and more since then. It is too reminiscent of another era when, for instance, architects labored under the delusion that, since medieval man had managed to capture a sense and feeling of religion in Gothic cathedrals, American

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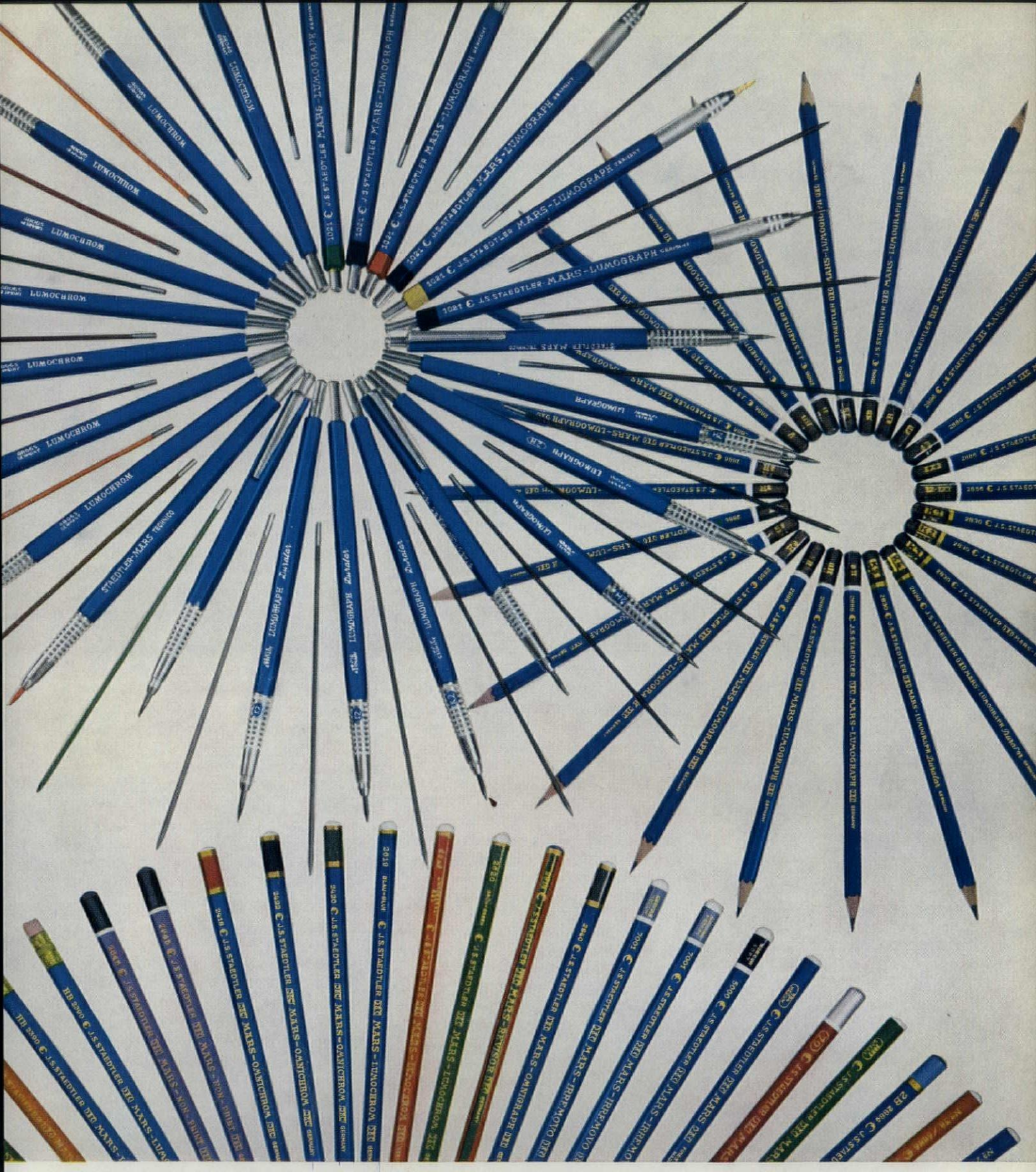

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Continued from page 190

Gothic would also have a sense and feeling of religion. Examples of this kind of thinking are legion in the history of our building. Is it possible that we never quite "grasped the essentials"? Or did we fail to "adapt the sense and spirit" to the project at hand? Or is it more likely that we were attempting the impossible—to endow stone and mortar with feelings we ourselves did not possess, using alien techniques in a wholly different climate of opinion? The question is whether we could ever successfully transfuse the undeniable spiritual quality of Japanese gardens to gardens in this country, or whether, in the long run, we must find our own spirit and message—however grim that prospect may be.

Of course, there is value in the study of Japanese gardens; books should—and will—be written about them. But I think that the book to clarify their meaning for us is likely to emphasize their differences rather than their "adaptability," spiritual or pictorial. And by differences I mean basic differences—stemming from the Japanese culture—in anthropology, values, mores, philosophy, and disciplines, especially disciplines. Such a book would do for landscape design what *Space, Time and Architecture* did for architecture.

Japanese Gardens for Today does not even pretend to this category. But it does imply, and therefore pretend to, this kind of background, which it simply does not have. For if it did, it would find it impossible to conclude that armed with brief theory, a hint of techniques, a hundred pictures, and an inviolate plant list we could produce (or adapt) the sense and spirit of Japanese design to our advantage.

But book-writing, like garden-making, is a tricky business; the purposes are not always on the surface, and the surfaces do not always have a spiritual meaning. The spiritual meaning is almost always in a local, almost private, context —very difficult to transplant in a different culture half way around the world. And, to lapse from *Japanese Gardens for Today* to a localism of my Pennsylvania Dutch background, it still "wonders me" how such a beautifully turned out book (published in Japan by an all-Japanese staff) can be so confused and deceptive in its point of view and purpose. But then, the discrepancy between beauty and character still comes as a little shock to me. I have long since, however, lost faith in the written word—ever since the day that Antonin Raymond received a veteri-

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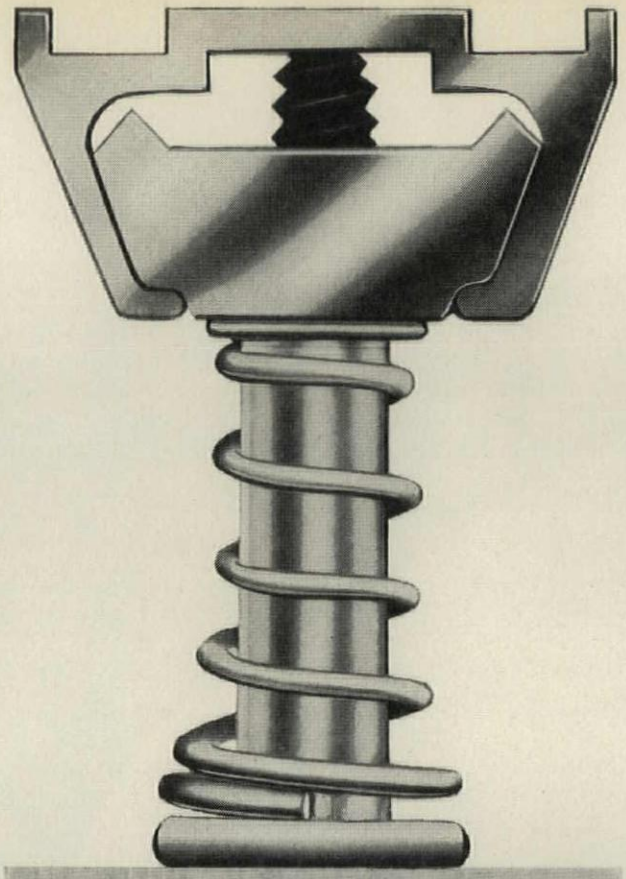

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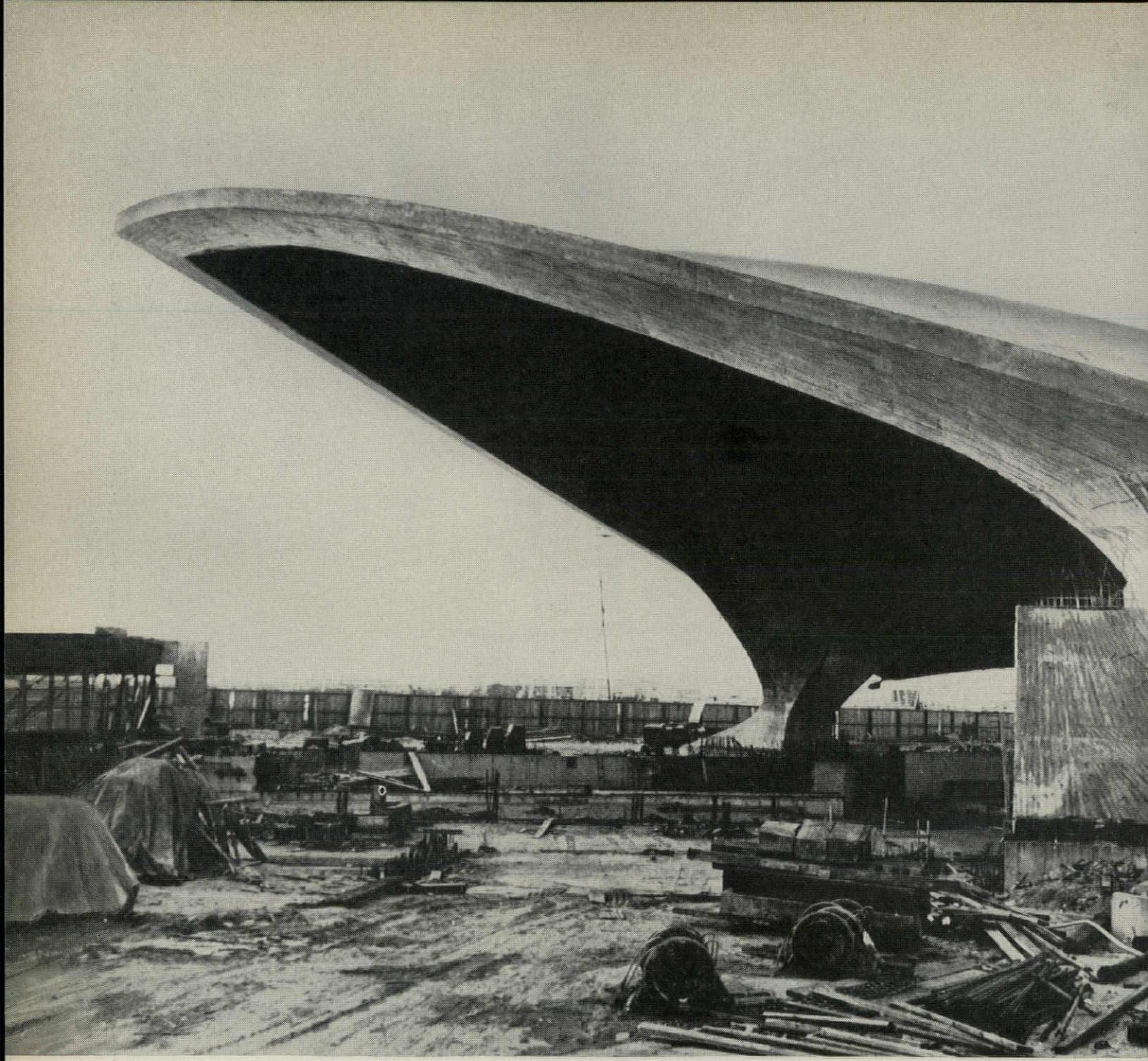

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Photo by George Adams Jones

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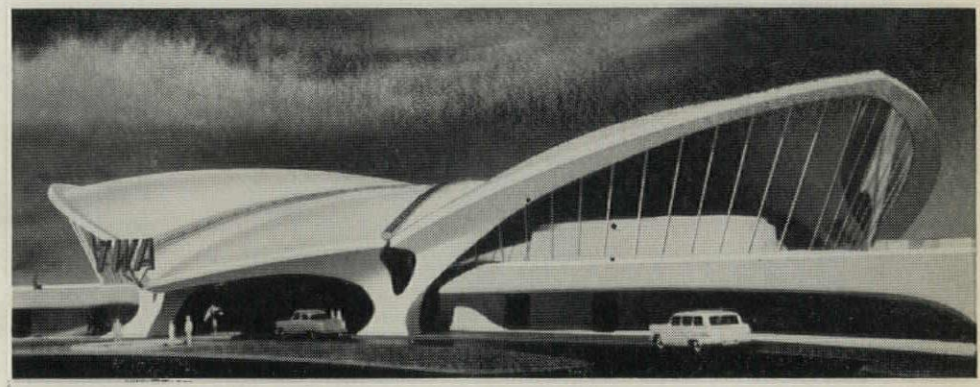

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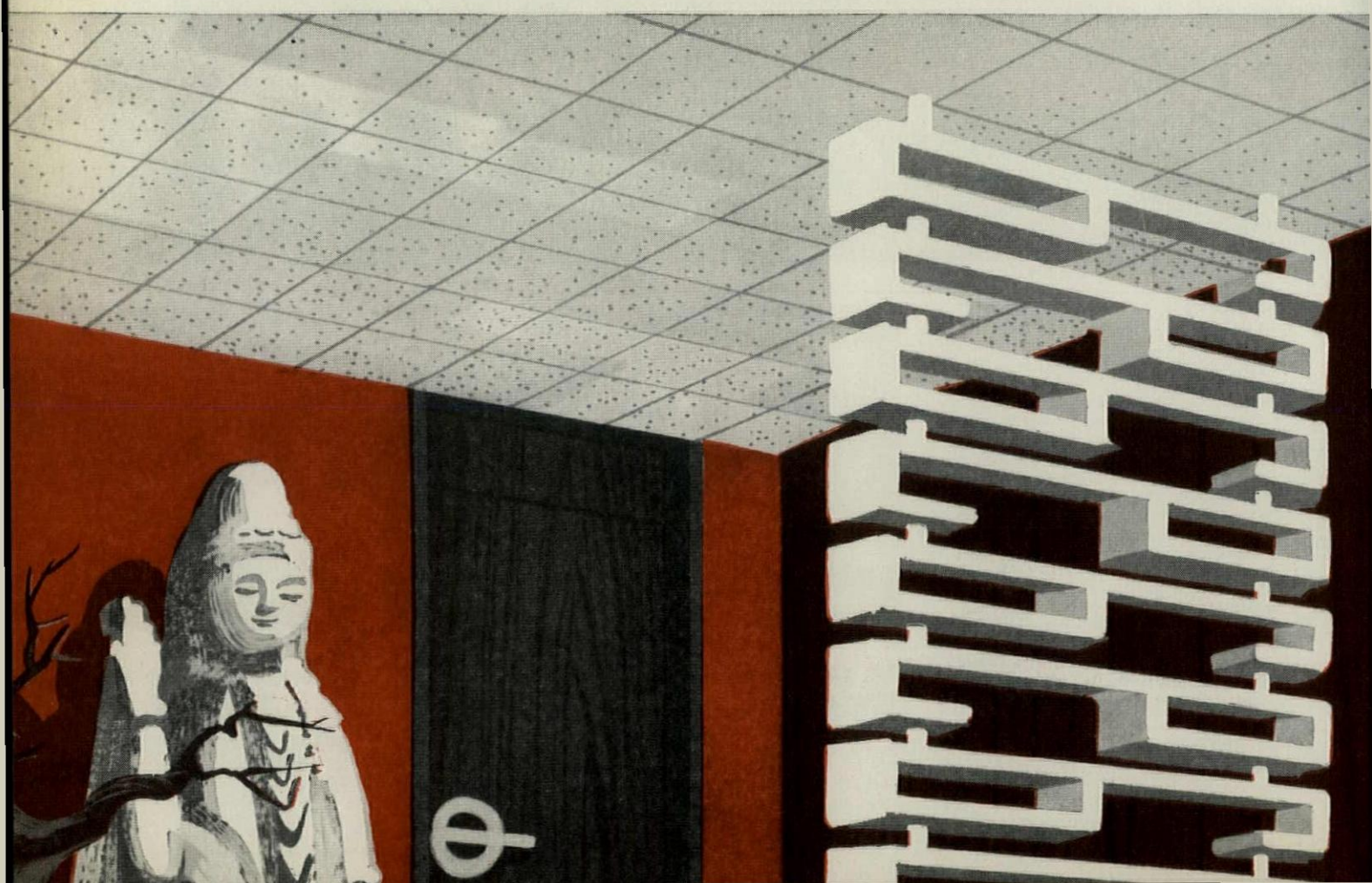

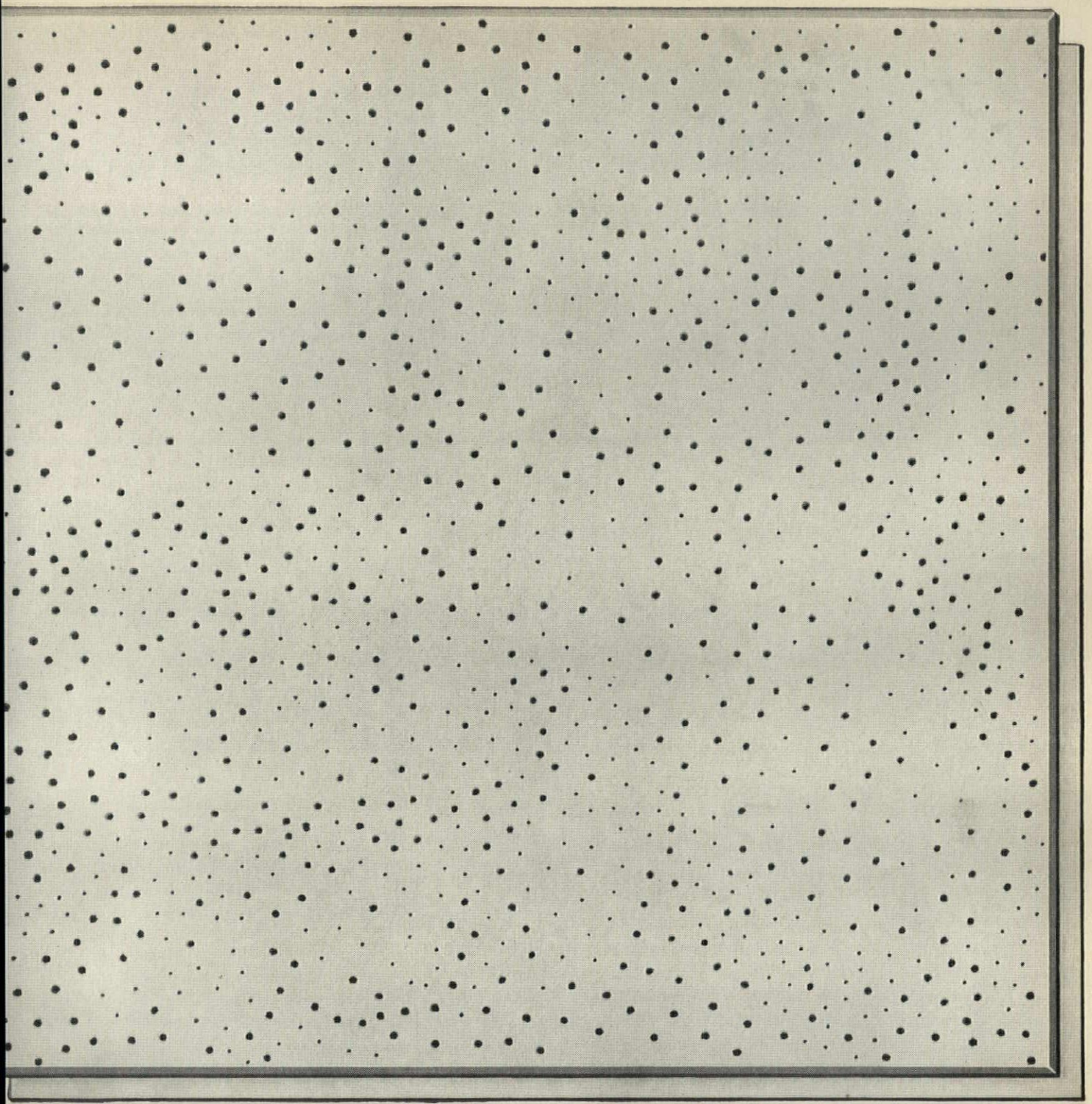

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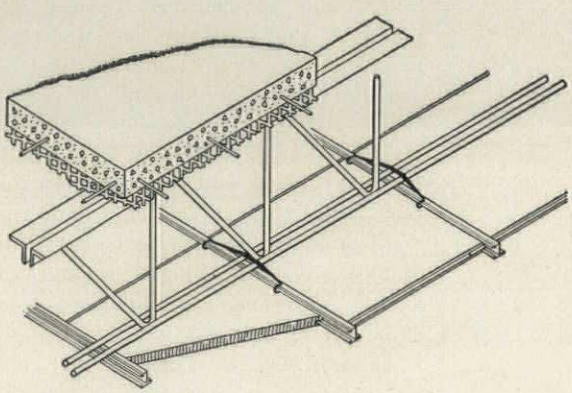

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Continued from page 192

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Space-Frame Research

Structural Analysis of "Unistrut" Space-Frame Roofs. *Paul H. Coy and University of Michigan Research Institute. University of Michigan Press. Ann Arbor, Mich., 1959. 326 pp. (in two volumes), illus. $18 (boxed)*

These two books present with elegant typography the results of 11 years of research into space-frames built of Unistrut components. Sponsored by Charles W. Attwood, President of Unistrut Corporation, the work has been done under the direction of Architect Paul H. Coy at the College of Architecture and Design of the University of Michigan, with the aid of the University's Research Institute. Coy is to be congratulated on showing that an architect can be entrusted with the direction of what is conventionally considered "engineering research."

Finding an exact solution to the analysis of this type of complex three-dimensional truss is practically impossible. Even if the vertical supports are ignored, and if the joints are assumed to be perfect spherical hinges, such a relatively straightforward framework as Coy's third test structure is indeterminate to the 257th degree!

This, of course, merely places it in the same category as almost any other real building. The problem is to find an approximate method of calculation that will predict reasonably accurately the forces that the various members will have to carry. Coy wisely chose to pattern his approach on the moment-distribution method, based on the theory of elasticity. Engineers are familiar with this method and it is accepted by municipal authorities.

The simplifying assumptions are explained at length in the early part of the book. Experiments carried out in 1955, on five full-size structures erected and tested at the University of Michigan, proved the practical validity of these assumptions. Computations for 20 space-frames, or their components, comprise the major part of Volume A. The second, B, gives a very clear summary of the roof spans that are possible with the Unistrut elements and how lateral loads should be carried, followed by tables of fixed-end moments and distribution and carry-over factors.

Although Coy chose the theory of elas-

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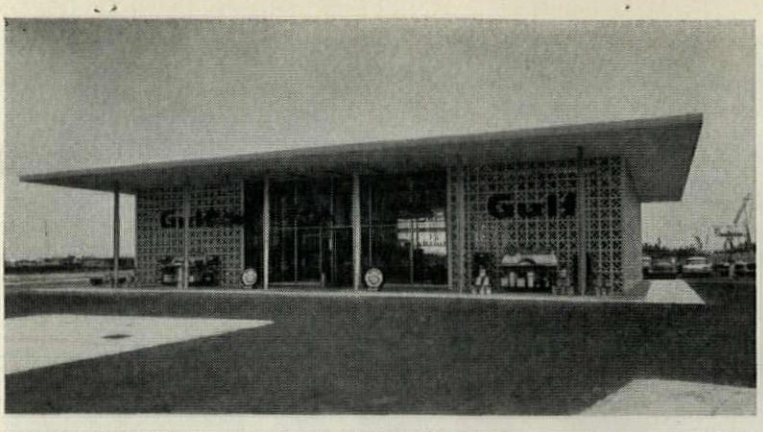

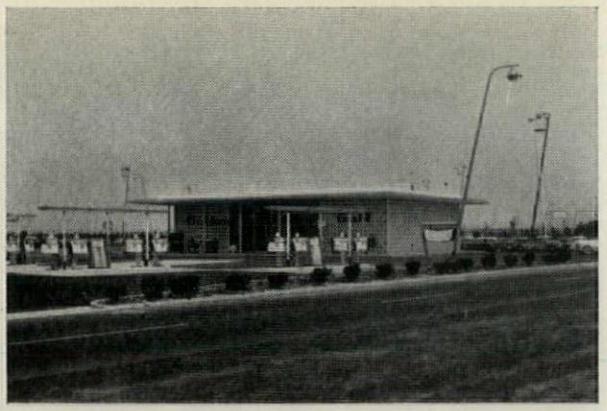

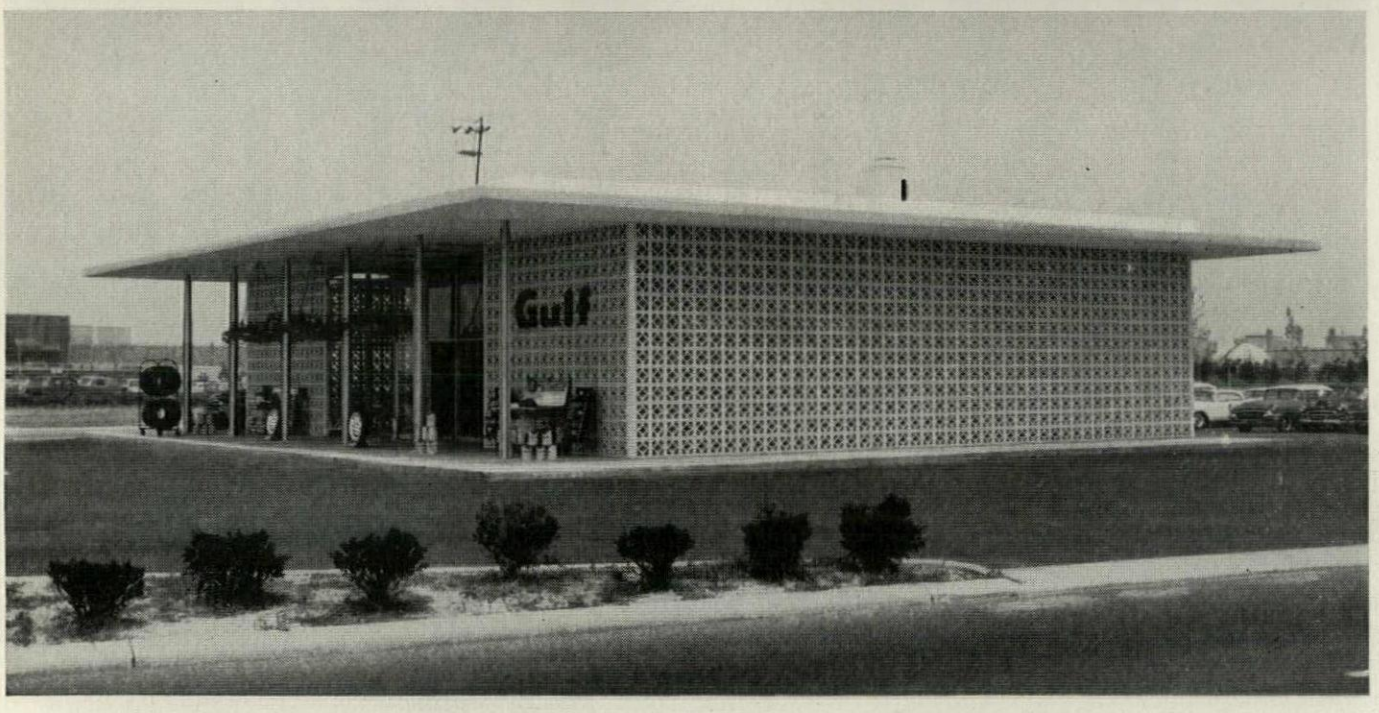

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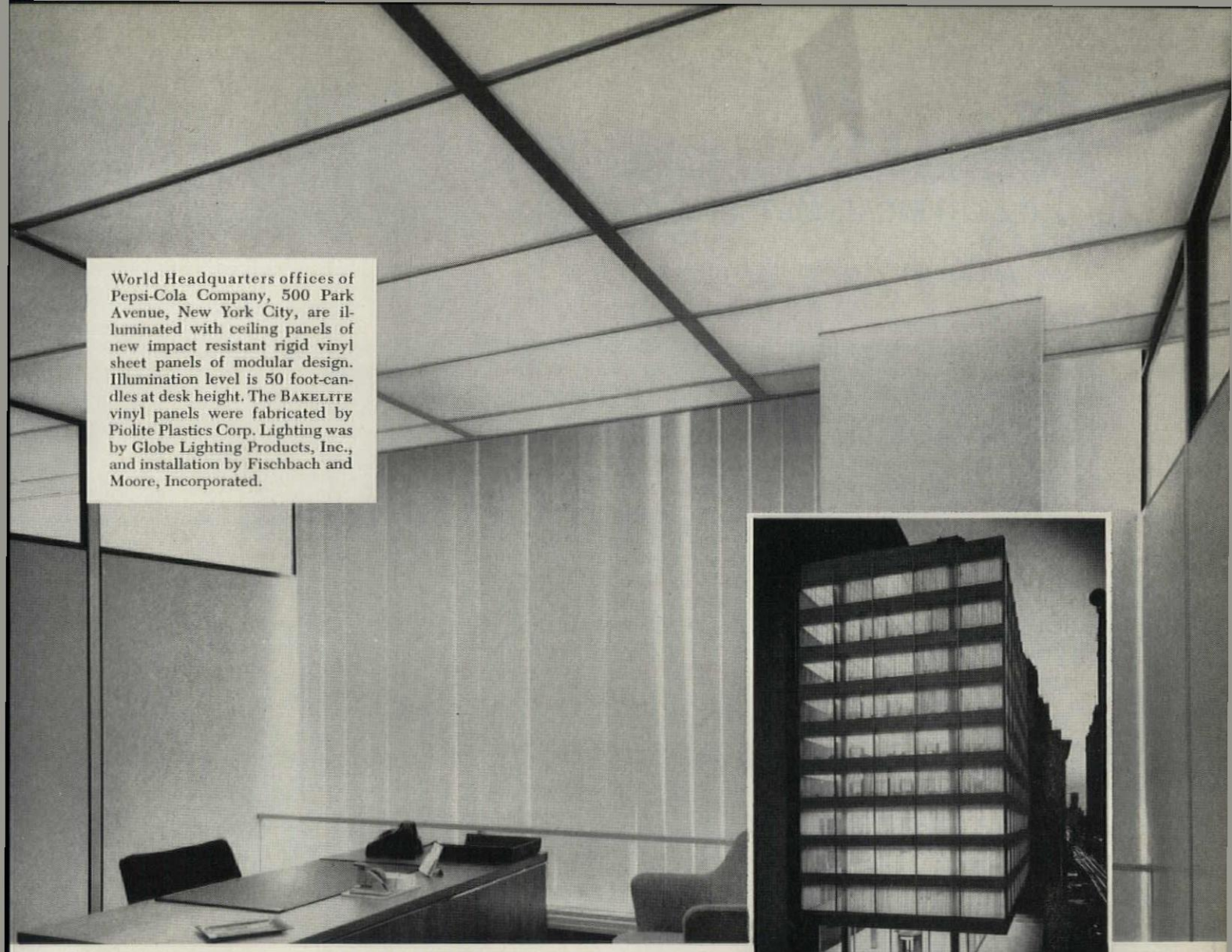

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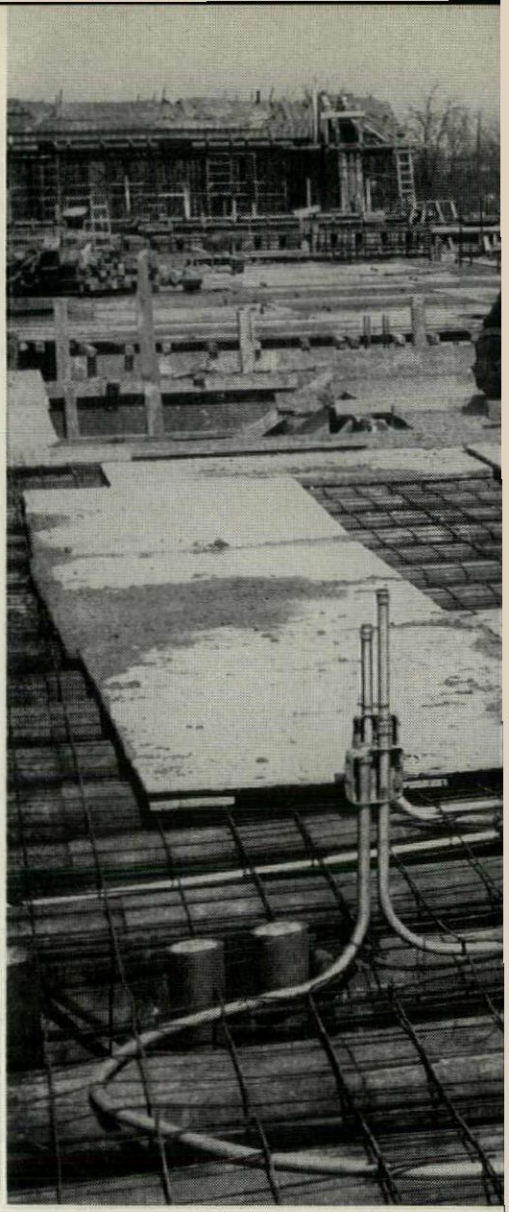

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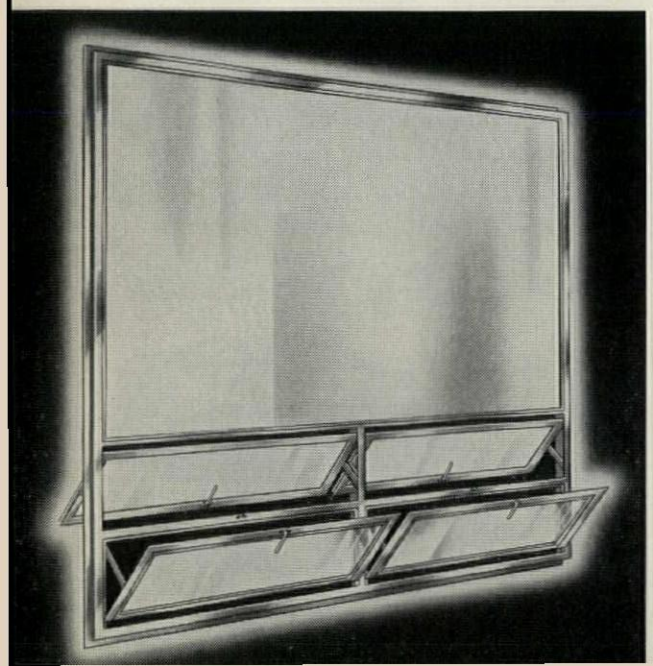

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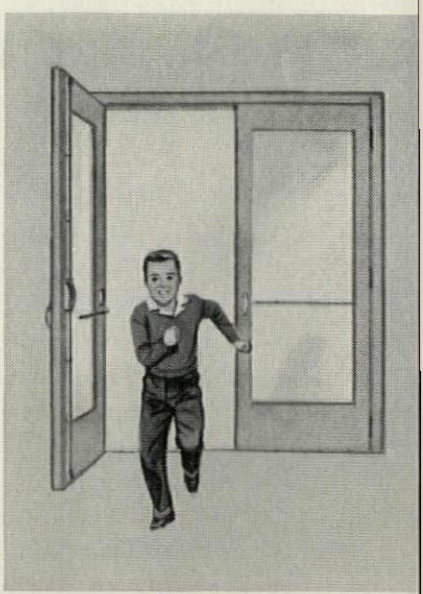

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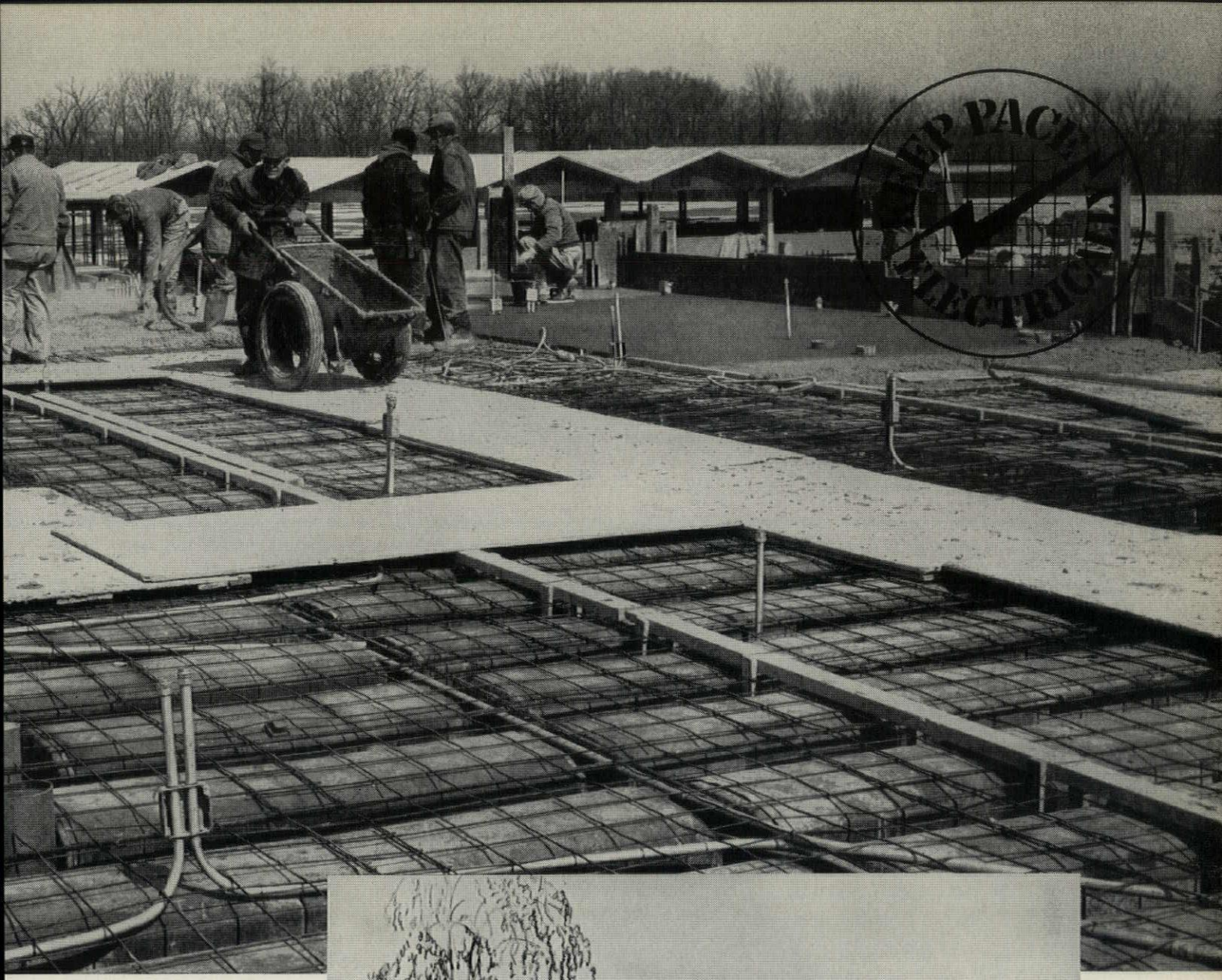

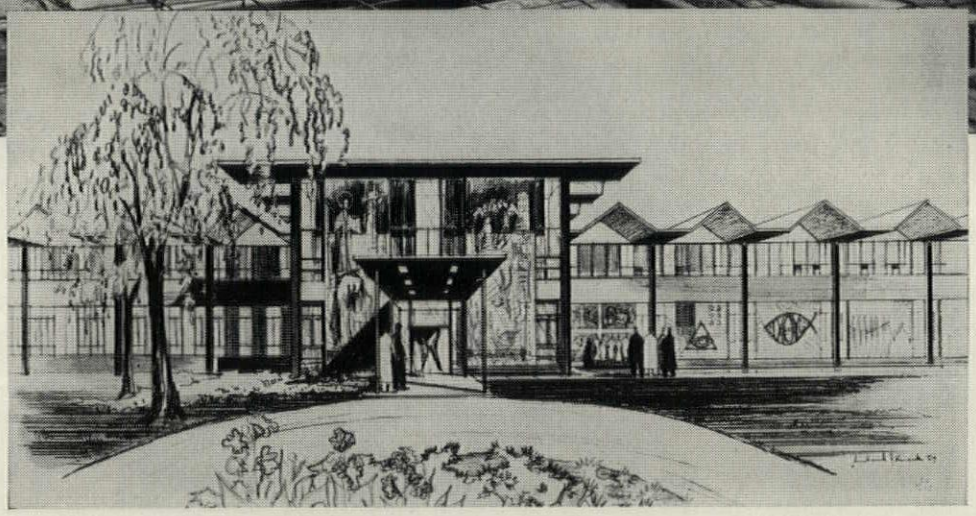

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Continued from page 198

ticity as the basis of his recommended method of calculation, he includes a special chapter on the theory of limit design and its particular advantages in predicting the true strength of a highly indeterminate structure such as this.

It is to be hoped that the Unistrut Corporation will continue to sponsor further study of space-frames and encourage the acceptance of limit design by engineers and building officials. There is no reason why the work done up to now should not be extended to provide general numerical solutions for various space-frames, especially for larger spans. Even if more theoretical studies are not directly applicable to trusses built of Unistrut components, the impetus given to this type of construction would result in the use of more Unistrut space-frames.

H. SEYMOUR HOWARD, JR., AIA
Associate Professor of Architecture,
Pratt Institute, Brooklyn, N. Y.

Required Reading

The Cost of a Schoolhouse. *A Report from Educational Facilities Laboratories, 477 Madison Ave., New York 22, N.Y., 1960. 144 pp., illus. (paperbound)*

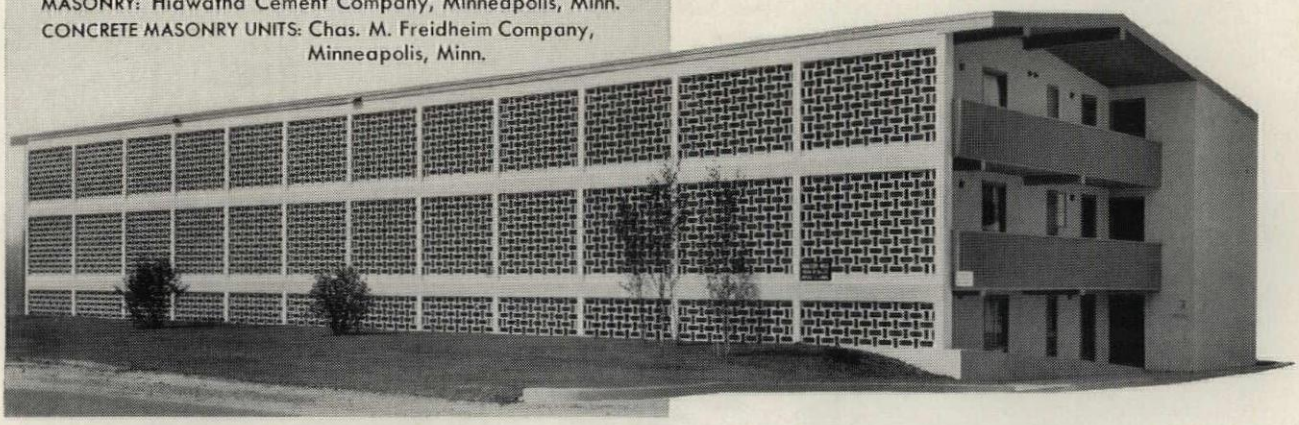
Architects and school administrators with wide experience in school design and construction, who are thoroughly conversant with recent research in the processes of learning and teaching, will find little new in this most recent report from Educational Facilities Laboratories, nor is it intended that they should. *The Cost of a Schoolhouse* obviously has not been published for this small, knowledgeable group. Instead, it is aimed at the large number of school administrators, architects, and school board members who have had little previous experience in school design and building, and whose professional reading is limited.

As such, it is right on target, for it presents in lively and thoroughly readable fashion as many facts as its potential readers are likely to absorb. It also has a final provocative chapter, "Tomorrow," which states many of the convictions about the future that Educational Facilities Laboratories has acquired in the two years since it was established by the Ford Foundation (with an appropriation of $4,500,000) "to help American schools and colleges with their physical problems by the encouragement of research and experimentation and the dissemination of knowledge regarding educational facilities."

Purists may quarrel with the format,

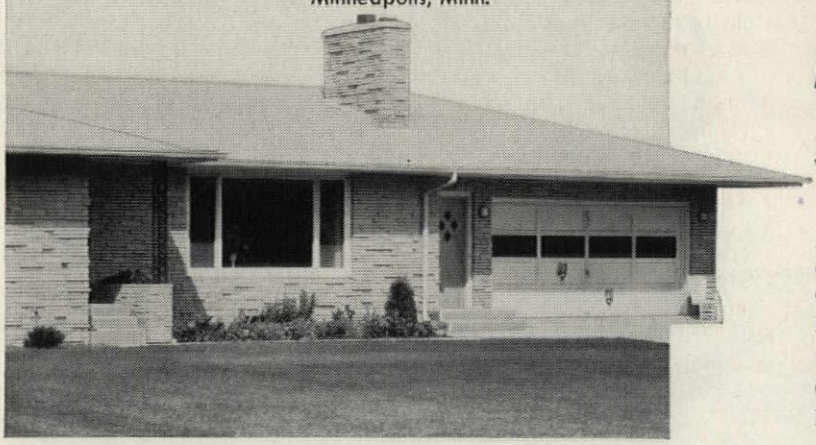
Continued on page 214

ARCHITECT: James Stageberg, Minneapolis, Minn.
CONTRACTOR: Richard Neslund Construction Company, Minneapolis, Minn.
MASONRY: Hiawatha Cement Company, Minneapolis, Minn.
CONCRETE MASONRY UNITS: Chas. M. Freidheim Company, Minneapolis, Minn.



The geometric pattern of the solar screen for Monterey West, one of Minneapolis' newest, smartest suburban apartments, consists of economical 8" wide open block units.

BUILDER: Anderson-Rath Company, Minneapolis, Minn.
CONCRETE MASONRY UNITS: Chas. M. Freidheim Company, Minneapolis, Minn.



Shadow Stone (split block) in 2" and 4" units was laid in a random ashlar pattern in this Golden Valley, Minnesota home. Available in a variety of colors, the units in this home are limestone gray.

CONTRACTOR: Mark Z. Jones Construction Company, Minneapolis, Minn.
MASONRY: L. J. Langer Company, St. Paul, Minn.
CONCRETE MASONRY UNITS: Chas. M. Freidheim, Company, Minneapolis, Minn.

Lightweight 4" high masonry units in the walls and the decorative entrance screen give distinction to this concrete masonry home. Concrete units were also used to build a prototype radiation shelter in the basement of this house.

Concrete block patterns *make these buildings stand out . . .*

Attractiveness and quality—as well as economy of construction—are the contributions made by concrete masonry to the three housing structures pictured here.

- Luxury living in the suburban apartment is enhanced by a building-long solar screen which provides architectural effect, privacy and comfort.
- Split block for the medium priced home has all the advantages of the finest stone or face brick—attractiveness, long-life, low maintenance—but not the high cost.
- A simple concrete block entrance screen accents the doorway of this low-silhouette all-concrete masonry home.

These applications are typical of the ever growing, increasingly imaginative uses of concrete masonry in all types of modern construction—in every price range.

To lay up the block in each of these structures, the contractors used Lehigh Mortar Cement. Its plasticity and workability made it easier for the masons to do a good job—helped assure clean, durable masonry walls. Lehigh Portland Cement Company, Allentown, Pa.

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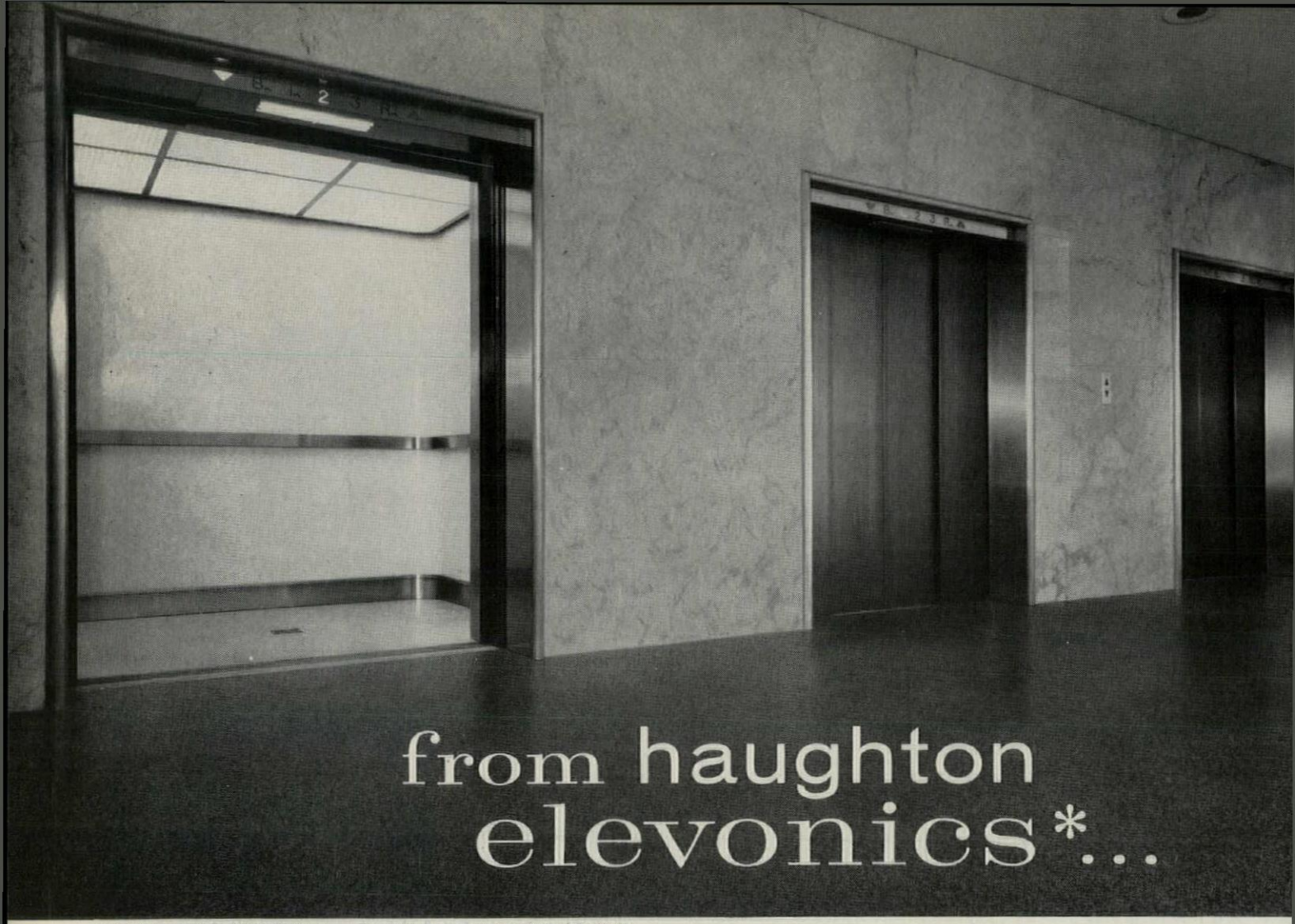

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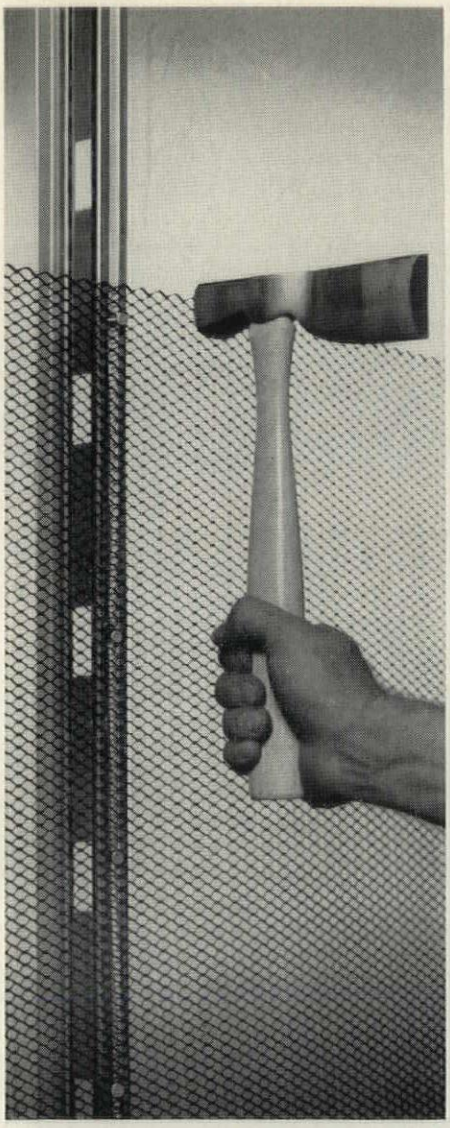
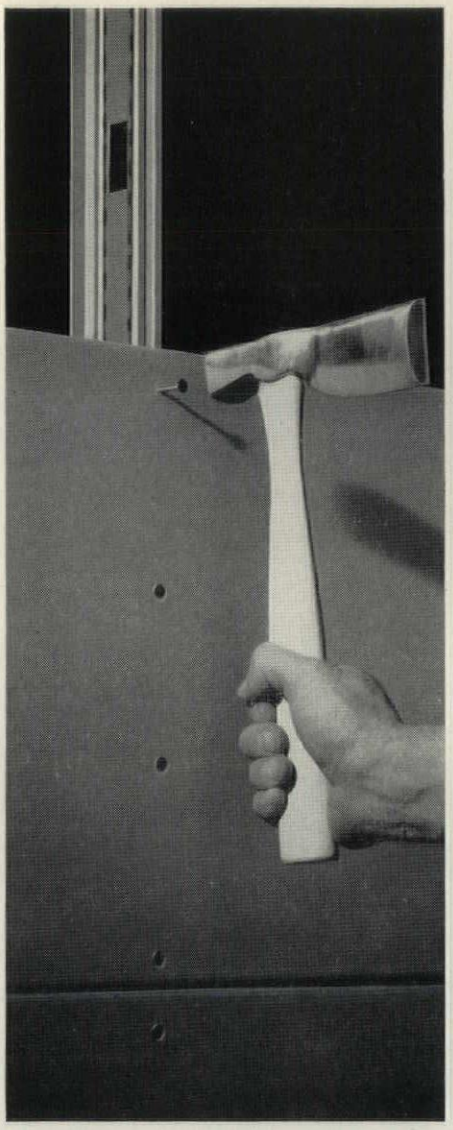
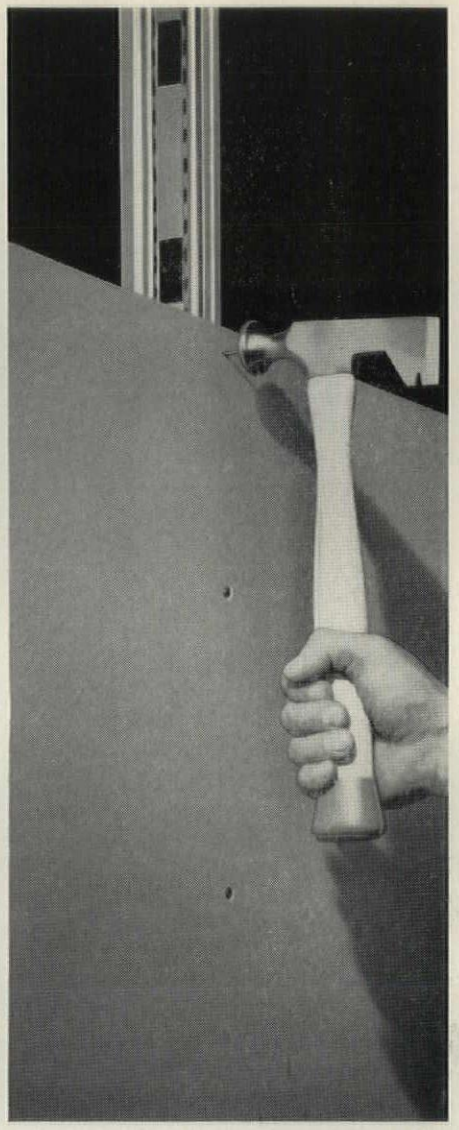


WITH WIRE MESH



WITH LATH AND PLASTER



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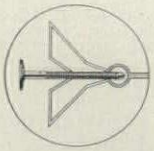

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Continued from page 208

but it strikes me as precisely right to attract the many readers who would never wade through the usual hardcover tome filled with architectural jargon or educational gobbledygook. It is concise and generously illustrated.

I find particularly frightening the prediction that "ultimately the school will become as automated as the American home, where the housewife has been freed of so many boring and laborious tasks." When this comes to pass it may be that the teacher will be required to hold a graduate degree in engineering—which, of course, would also be useful to the housewife of today. There is little doubt that machines will be able to take over many routine tasks, thus freeing teachers for more creative work, yet it is to be hoped that education will not be dehumanized in the process.

The Cost of a Schoolhouse points to the discouraging fact that "though there is no national system of education in America, our schools are as alike as though uniformity were compulsory and diversity were illegal." But progress is being made by a small group of talented and dedicated architects, and an even smaller group of educators, who have the fortitude to try something different. "Historically the school was not architecture, at least not notable architecture." But there is hope: "No architectural historian could overlook today's schoolhouse in America or abroad."

Educational Facilities Laboratories, Inc., under the capable direction of Dr. Harold B. Gores, has in its short life already made significant contributions to progress in school design. This book should be part of the library of every architect interested in schools, and should be compulsory reading for most school administrators and school board members. It is available without cost from Educational Facilities Laboratories.

PHILIP H. HISS
Designer and Author
Chairman, Board of Public Instruction
Sarasota County, Fla.

An Interesting Reminder

Architecture in America: A Photographic History from the Colonial Period to the Present. *Wayne Andrews. Introduction by Russell Lynes. Atheneum Publishers, 162 E. 38 St., New York 16, N. Y., 1960. 183 pp., illus. $15*

Any book with the word "architecture" in its title will pique the curiosity of the profession. This book, however, does not seem intended primarily for the profession, and although it may be prominently displayed in bookstore windows, many architects may be content to leave it there.

Wayne Andrews, an editor at Charles Scribner's Sons, and President of the New York Chapter of the Society of Architectural Historians, has written several books on history and architecture. This survey is a collection of his own photographs taken over the past 20 years—a scrapbook of his travels to some of the monuments of American architecture.

When a small volume attempts such scope—ranging from our colonial beginnings to our present diversities of style—it is inevitable that disagreement will arise concerning the author's emphasis. He devotes 10 pages to H. H. Richardson, 15 to McKim, Mead & White, and 24 to Frank Lloyd Wright, which may or may not be out of line. But then the total package of Neutra, Gropius, Breuer, Mies, Johnson, Harrison, SOM, Belluschi, Yeon, Yamasaki, Saarinen, Maybeck, Greene & Greene, Weese, Schindler, Harris, and Wurster is lumped together (and in that order) as the final 26 pages.

There is an assumption in his presen-

Continued on page 218


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Continued from page 214

tation that some of these men can be neatly characterized by a single photo of a single building. Mies has, of course, his Lake Shore Apartments; Belluschi has, not so inevitably, his Equitable Building; but then Harwell Hamilton Harris has six photographs covering four residences; and Wurster, Bernardi & Emmons close the book with three shots of the Palo Alto Behavioral Sciences Center.

But this, after all, is what makes horse racing. At least we can spot Andrews' favorites with the most casual glance; we know his enthusiams, and we have the privilege of placing our bets elsewhere. At any rate, it is a pleasure to see a few old favorites still in the running. A number of lesser-known early buildings are included in the survey, and photos by Andrews are reported to be in great demand for the slide collections of architectural schools.

A more serious criticism arises, however, in connection with the author's glib captions, which, aside from an occasional introductory page, are the only commentaries in the book. Particularly glaring is his use of the word "impersonal." Some examples: "Neutra is famous for the impersonal elegance of his designs . . ."; "Gropius . . . an impersonal educator in Germany and America . . ."; and (discussing Le Corbusier and his influence on the UN building) "Impersonal in most of his work, Le Corbusier has only recently experimented with sculptural forms in which his personality is evident."

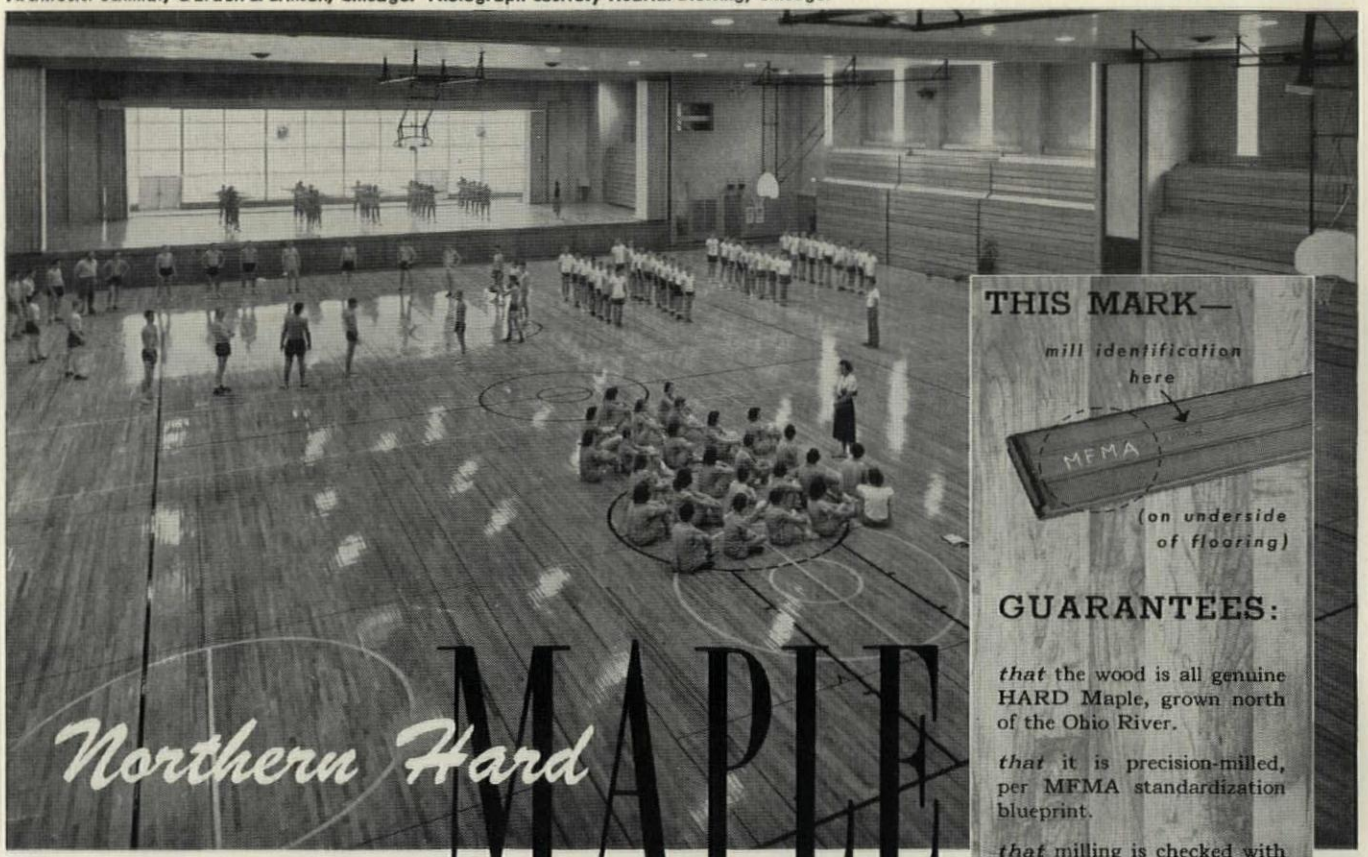
In earlier sections of the book, comments are more anecdotal—about the architects, their times and trials—and give a fresh view of some often-anthologized buildings.

There is a complete absence of descriptive comment, such as on details of style, use of materials, and development of form. Andrews avoids all this, taking for granted either the trained person's sensitivity, or the amateur's indifference to such matters. As a result, his book is certainly not pedantic. Some readers will feel, however, that there is little meat to it.

The layout is undistinguished, with one or two photographs on each page. By not using more dramatic layout or illustrations, Andrews attempts to focus attention on the total building in its broad setting of time and region. There are few detail shots or interiors. Andrews feels that "a good photograph is *not* a record of a building." He thus gives architectural photography less of a place as an art

Continued on page 222

Gymnasium, Riverside School, Riverside, Ill., floor of First Grade Northern Hard Maple.
Architects: Schmidt, Garden & Erikson, Chicago. Photograph courtesy Hedrich-Blessing, Chicago.



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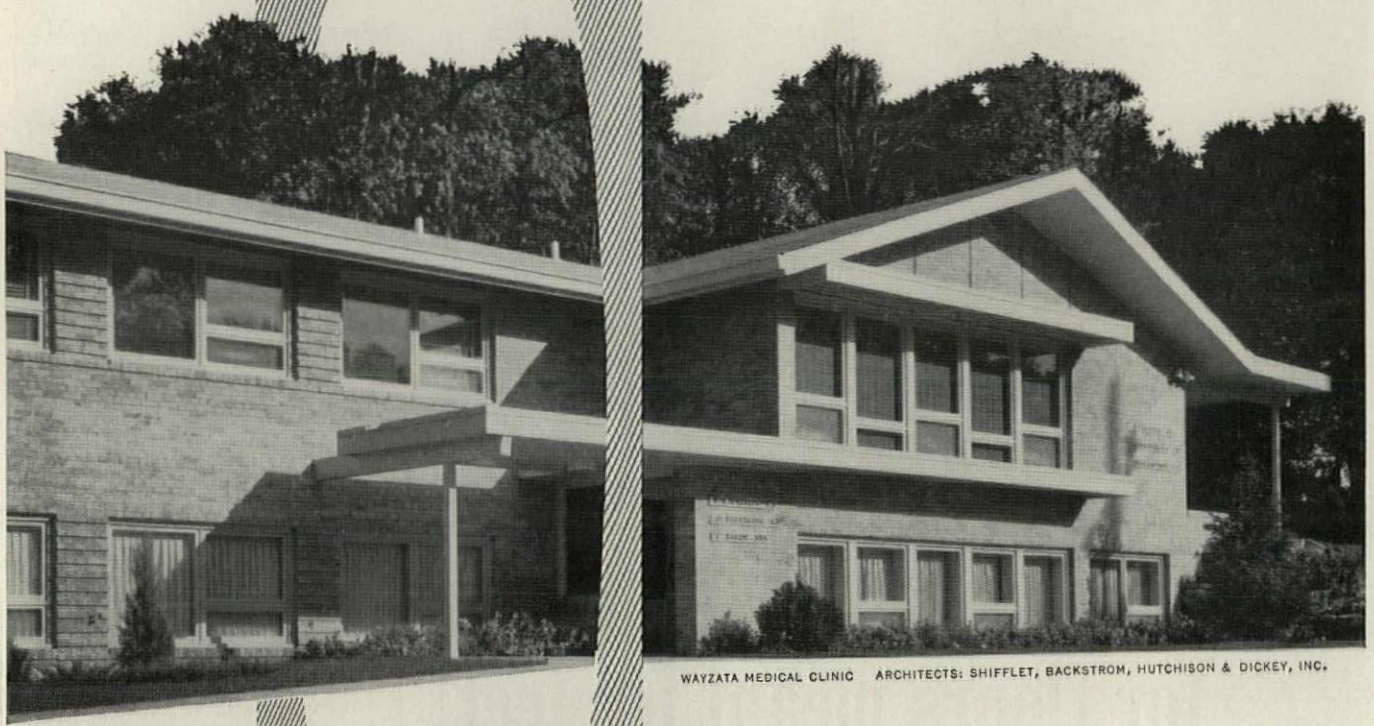

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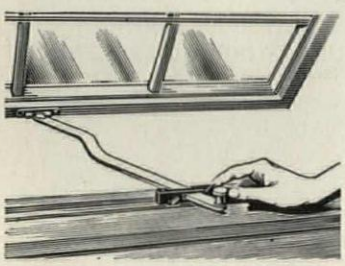

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Continueld from page 218

form in its own right, the more to encourage our visiting the buildings and walking through them. This point has a certain validity, but we learn so little about a building from Andrews' photographs that our curiosity to experience the building more fully may remain untouched. At a time when architectural journals and books are increasingly off on a more exciting road, the conservative realism of Andrews is an interesting reminder of the way things used to be.

E.P.

OTHER BOOKS TO BE NOTED

Creation Is a Patient Search. Le Corbusier. Introduction by Maurice Jardot. Frederick A. Praeger, 64 University Pl., New York 3, N.Y., 1960. 312 pp., illus. $15

Made in Denmark. Arne Karlsen and Anker Tiedemann. Jul. Gjellerup, Copenhagen, 1960. Distributed by Reinhold Publishing Corp., 430 Park Ave., New York 22, N.Y. 175 pp., illus. $7.95

The Works of Affonso Eduardo Reidy. Klaus Franck. Introduction by Sigfried Giedion. Frederick A. Praeger, Inc., 64 University Pl., New York 3, N.Y., 1960. 144 pp., illus. $11.50

Graphic Architectural Drafting (2nd Edition). J. Edgar Ray. Distributed by Taplinger Publishing Co., Inc., 119 W. 57 St., New York 19, N.Y., 1960. 256 pp., illus. $4.80

A series of drawings—sketches, isometrics, perspectives, and working drawings, showing residential details and methods of construction—presented "for the draftsman, builder, and layman."

Public Interiors. Misha Black. B.T. Batsford, Ltd., London, 1960. Distributed by Architectural Book Publishing Co., Inc., 151 E. 50 St., New York 22, N.Y. 190 pp., illus. $22.50

Office Building and Office Layout Planning. Kenneth H. Ripnen. McGraw-Hill Book Co., Inc., 330 W. 42 St., New York 36, N.Y., 1960. 182 pp., illus. $10

Step-by-step procedures on the planning of offices and office buildings, with specific information on determining space requirements and providing all necessary services. Further advice to management helps in deciding whether to build or renovate, and how to choose an architect. Book is intended to bring tenant, owner, and architect into closer understanding.

The Mexican House, Old and New. Verna Cook Shipway and Warren Shipway. Architectural Book Publishing Co., Inc., 151 E. 50 St., New York 22, N.Y., 1960. 188 pp., illus. $12.50

Compilation of ASTM Standards on Bituminous Materials for Highway Construction, Waterproofing and Roofing. American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa., 1960. 474 pp. $5.50

More than 100 specifications, with test methods and definitions, as a guide to the production and use of bituminous materials. Since compilation was last issued in 1958, over 40 standards have been added or revised.

Le Corbusier 1910–1960. Edited by Boesiger and Girsberger. Distributed by Wittenborn & Co., 1018 Madison Ave., New York 21, N.Y., 1960. 334 pp., illus. $15

The Visual Arts Today. Edited by Gyorgy Kepes. Wesleyan University Press, 356 Washington St., Middletown, Conn., 1960. 272 pp., illus. $6

Graphis Annual 60/61. Edited by Walter Herdeg. Distributed by Frederick A. Praeger, Inc., 64 University Pl., New York 3, N.Y., 1960. 231 pp., illus. $15

Ninth edition of the world-famous encyclopedia of advertising design. New volume contains 850 illustrations of recent, outstanding work, with material selected from 22 countries and from such varied media as magazine and newspaper ads, book and record jackets, posters, TV ads, packaging designs, letterheads, trademarks.

Prestressed Concrete. Y. Guyon. John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N.Y., 1960. 1300 pp., illus. 2 vols. $33

The Solomon R. Guggenheim Museum. Frank Lloyd Wright. Edited by Ben Raeburn. Horizon Press, Inc., 156 Fifth Ave., New York 10, N.Y., 1960. 72 pp., illus. $3.95

The architect's original and illuminating statements on his concept of the controversial museum, with photos of the building under construction and completed.

Interiors Book of Restaurants. William Wilson Atkin and Joan Adler. Whitney Library of Design, 18 E. 50 St., New York 22, N.Y., 1960. 215 pp., illus. $15

Thomas Jefferson's Architectural Drawings: A Massachusetts Historical Society Picture Book. Foreword and notes by Frederick Doveton Nichols. Massachusetts Historical Society, 1154 Boylston St., Boston 15, Mass., 1960. 32 pp., illus. $1.25 (paperbound)

A lively and scholarly essay on Jefferson's architectural development, with a selection of representative drawings.

Mechanical-Electrical Equipment Handbook for School Buildings: Installation, Maintenance, and Use. Harry Terry. John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N.Y., 1960. 412 pp., illus. $9.50

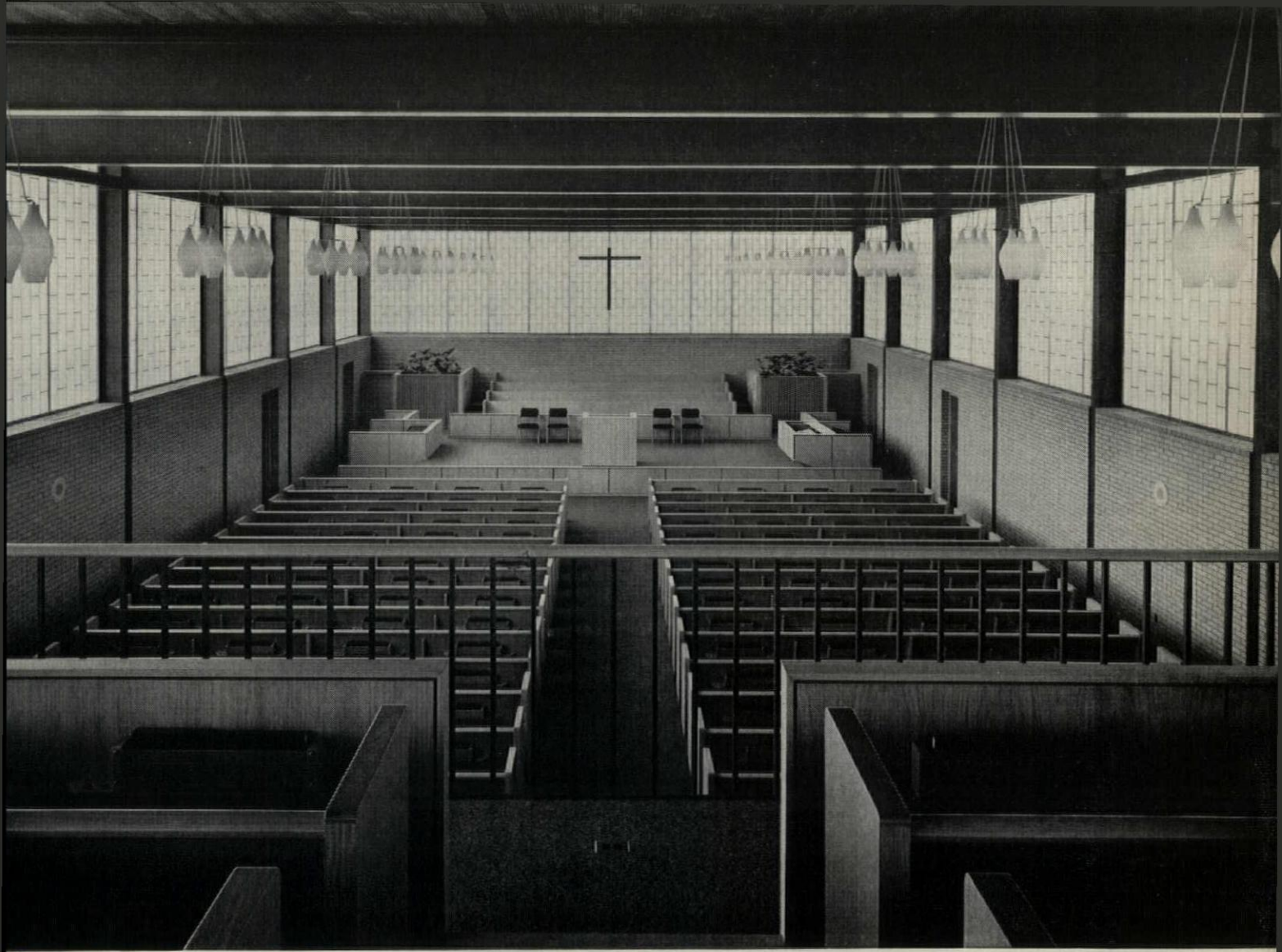
Engineering and Architectural Lettering. Hiram E. Grant. McGraw-Hill Book Co., Inc., 330 W. 42 St., New York 36, N.Y., 1960. 32 pp., illus. $1.25 (paperbound)

Handbook on lettering techniques, describing basic principles (and showing proper hand and pen position) for vertical, inclined, architectural, and Old English lettering. Practice sheets are detachable.

Building with Steel. Don A. Halperin. American Technical Society, 848 E. 58 St., Chicago 37, Ill., 1960. 254 pp., illus. $6

Your Future in Architecture. Richard Roth. Careers in Depth Series. Richards Rosen Press, 13 E. 22 St., New York 10, N.Y., 1960. 159 pp., $2.95

Written for high school students, an easy-to-read answer to the questions: Who is an architect and what does he do? Discussion of personal qualities, educational background, satisfactions, responsibilities, and opportunities.



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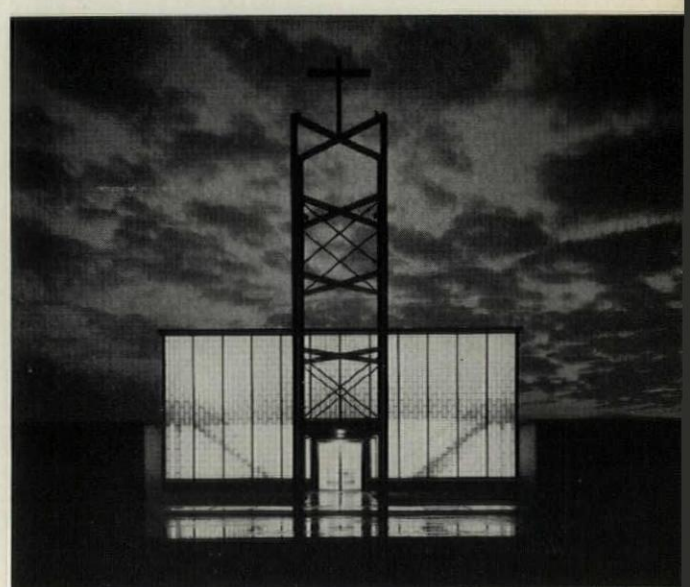

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NOTICES

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THOMAS J. RUSSELL, Architect, 533 E. Ocean Blvd., Long Beach 2, Calif.

New Firms

COLONEL CLINTON B. F. BRILL, (ret'd), RALPH C. ROE, and KENNETH A. ROE, principals in firm of BRILL ENGINEERING CORPORATION, Consulting Engineers, 220 Church St., New York, N.Y.

BURMEISTER AND BEALLE, Architects, 1914½ Grant St., Mobile, Ala.

R. F. HENNING, Architect, 4202 Emmet St., Omaha 11, Neb.

SVERDRUP & PARCEL, Consulting Engineers, 111 8th Ave., New York 11, N.Y. and 915 Olive St., St. Louis 1, Mo. Formerly SMILLIE & GRIFFIN.

JAMES A. WARES, Architect, Broadmoor Center Bldg., Tuscon, Ariz.

New Partners, Associates

A. ERNEST HENNESSY, ERIC C. RISING, WILLIAM M. SVENSSON, made Partners in firm of NARAMORE, BAIN, BRADY & JOHANSON, Architects-Engineers.

JOHN STURGIS, made an Associate in firm of LEACH, CLEVELAND & ASSOCIATES, Architects-Planners-Engineers, Los Angeles, Calif.

Elections, Appointments

WILLIAM J. HAYES elected Vice-President and Director in firm of TARAPATA-MACMAHON, ASSOCIATES, INC., Architects-Engineers.

Name Changes

WARREN W. CUNNINGHAM, made Partner in firm of GEDDES BRECHER QUALLS CUNNINGHAM, Architects. Formerly GEDDES BRECHER & QUALLS, Architects.

HERBERT H. SMITH ASSOCIATES, Architects, 1241 Parkway Ave., West Trenton, N.J. Formerly COMMUNITY PLANNING ASSOCIATES, INC.

E. N. TURANO and LEONARD FELDMAN, principals in firm of E. N. TURANO, Architects-Planners, 16 E. 52nd St., New York 22, N.Y. Formerly TURANO-GARDNER ASSOCIATES.

Academic Appointment

PROFESSOR G.M. MANDALIA, formerly of Kharagpur, India, made Head, Architecture Department, University of Roorkee Roorkee, U.P., India.

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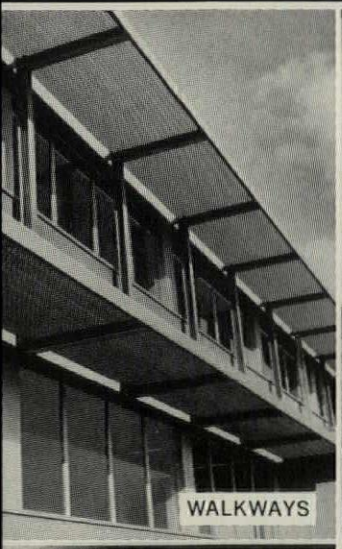

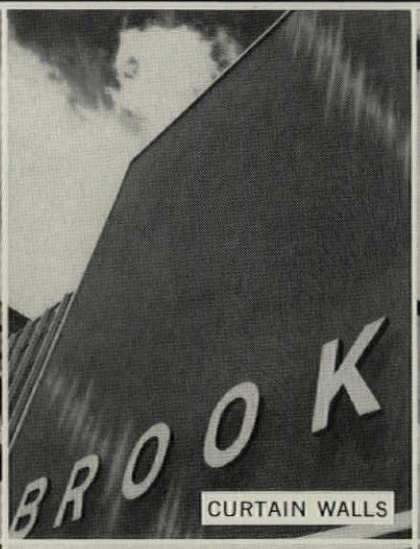

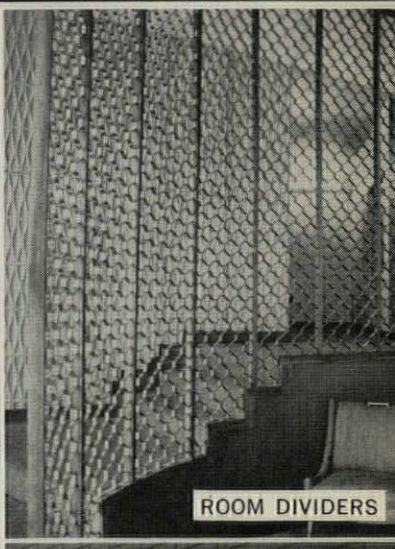

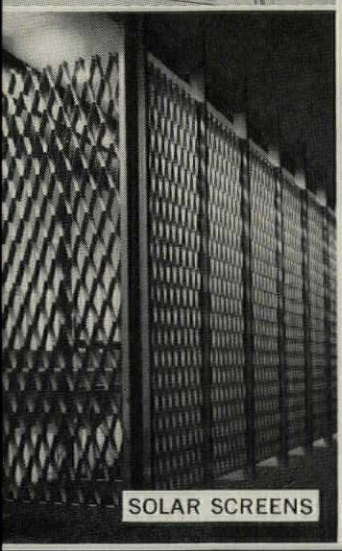

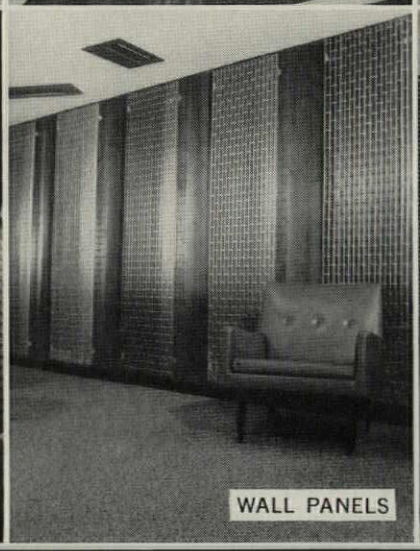

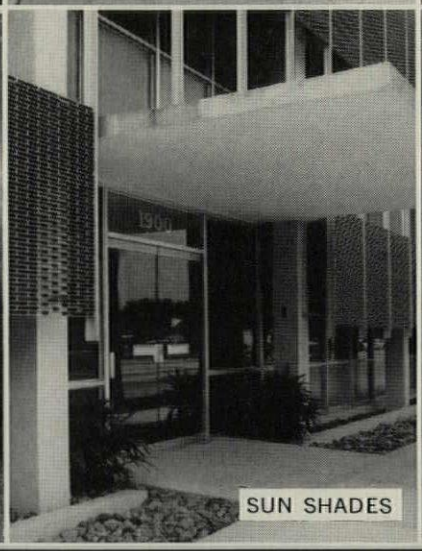

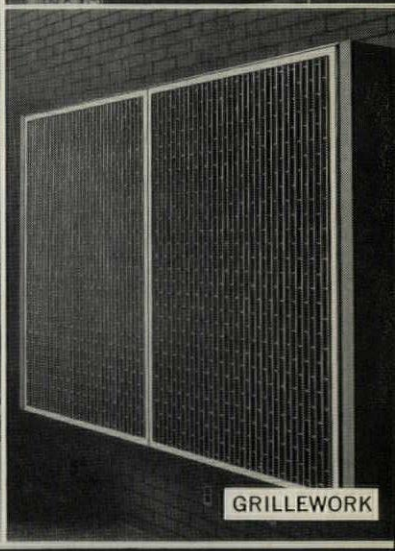

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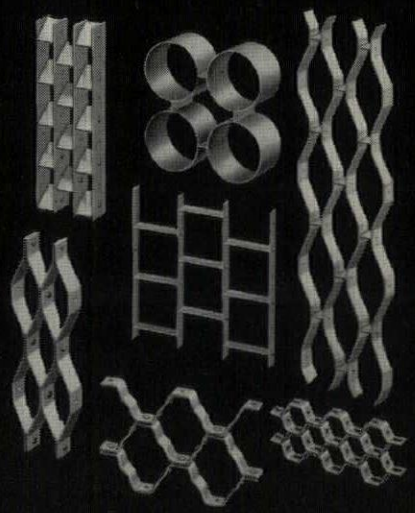

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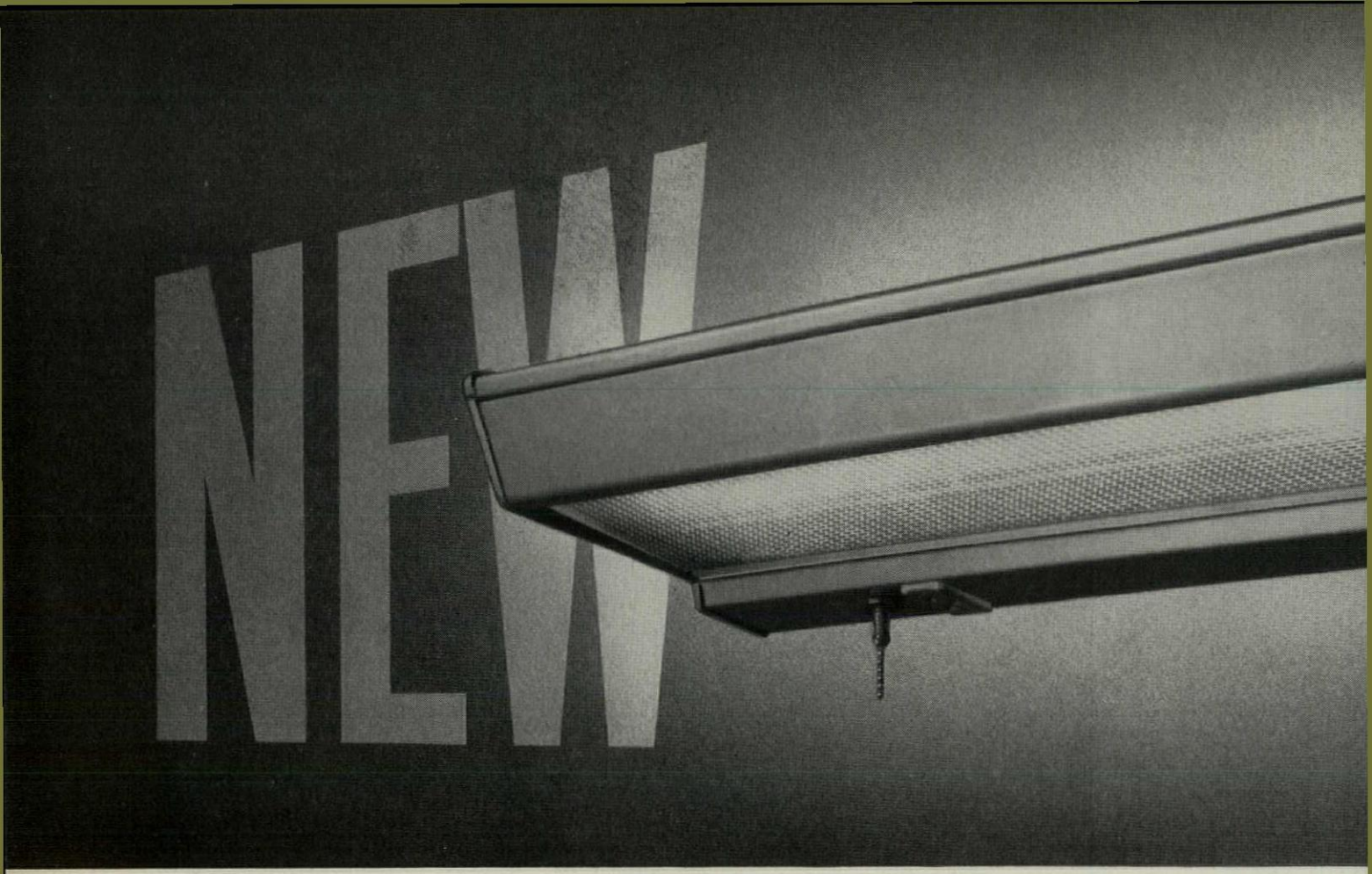

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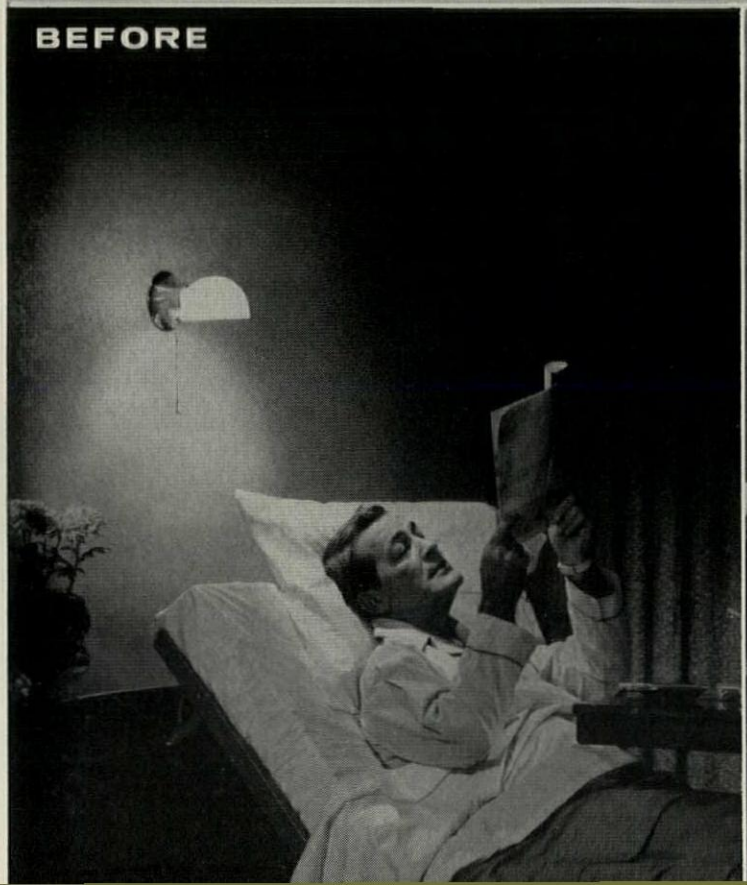

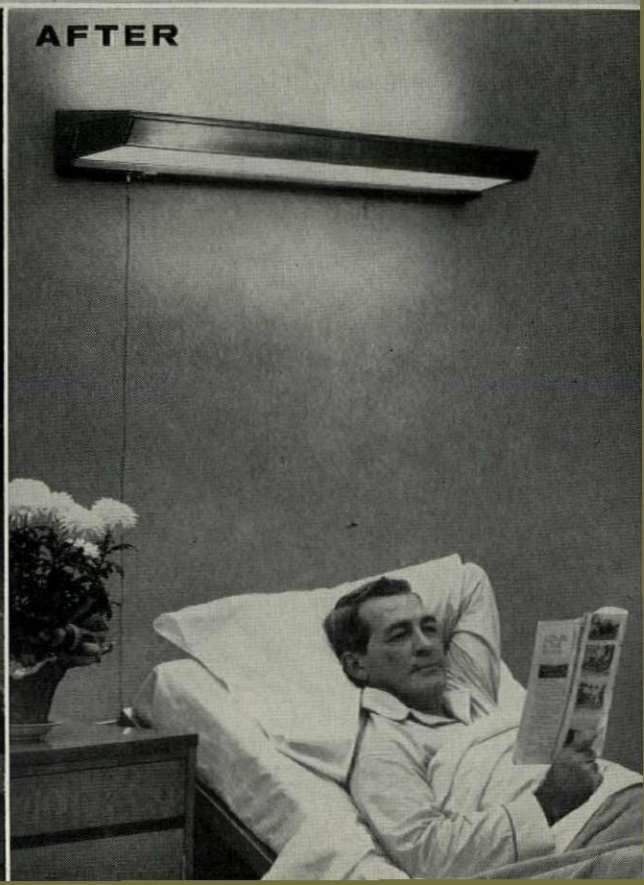

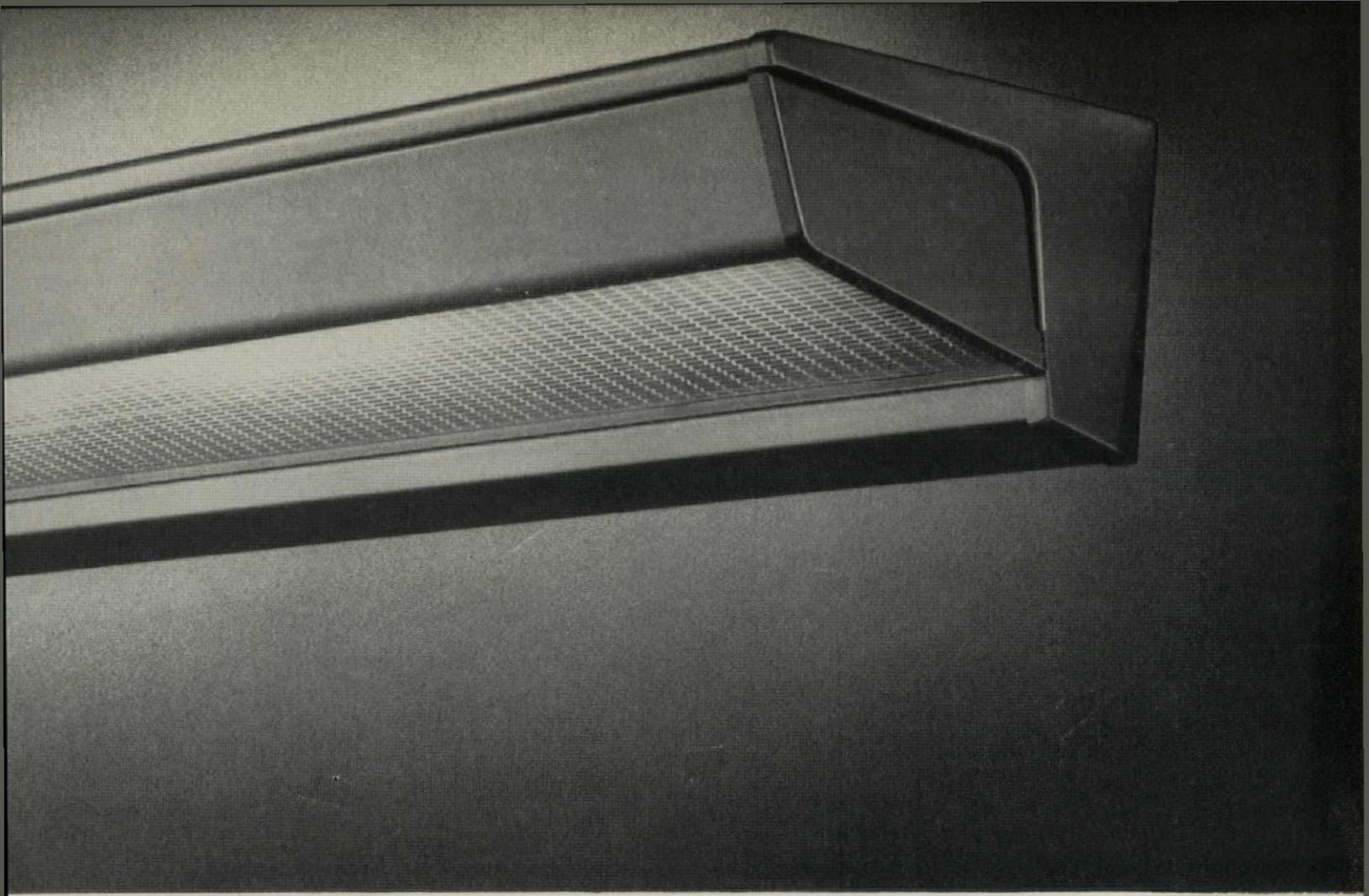

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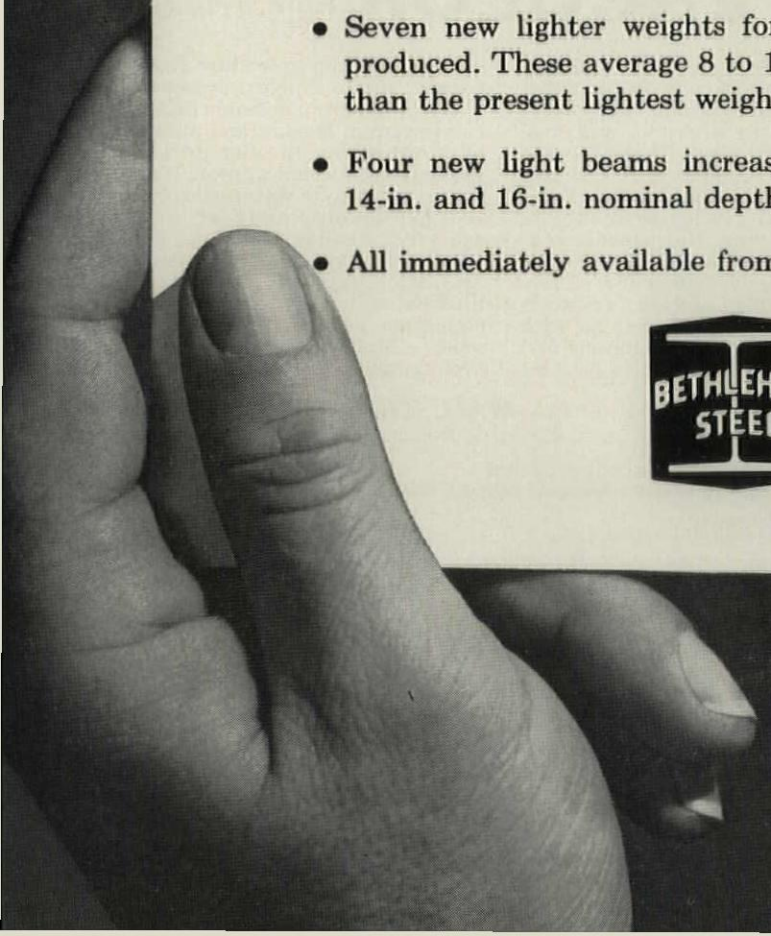

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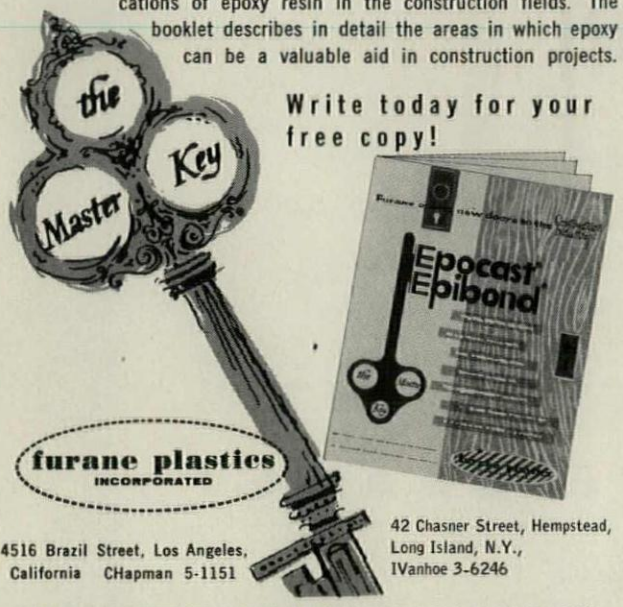

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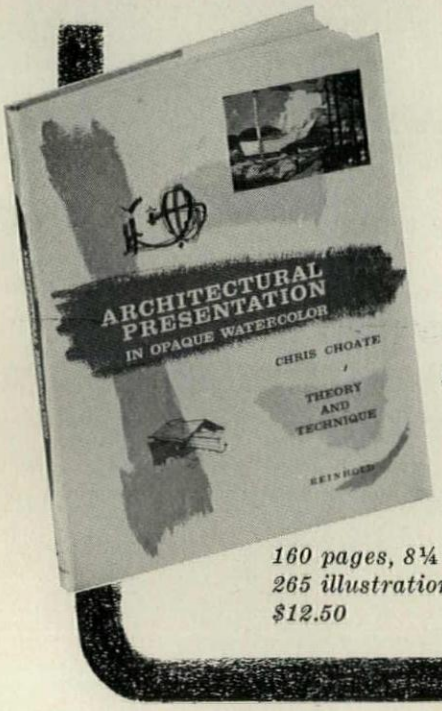

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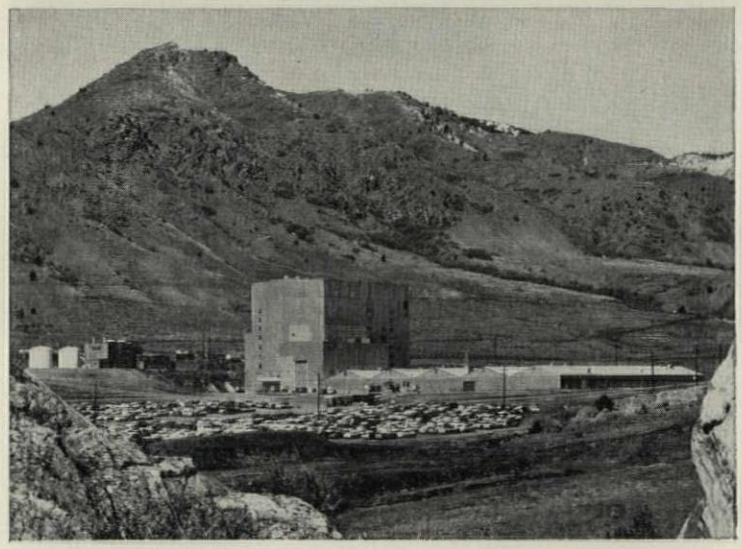

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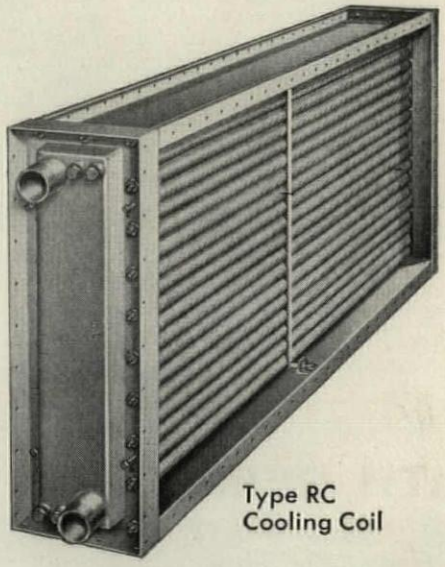

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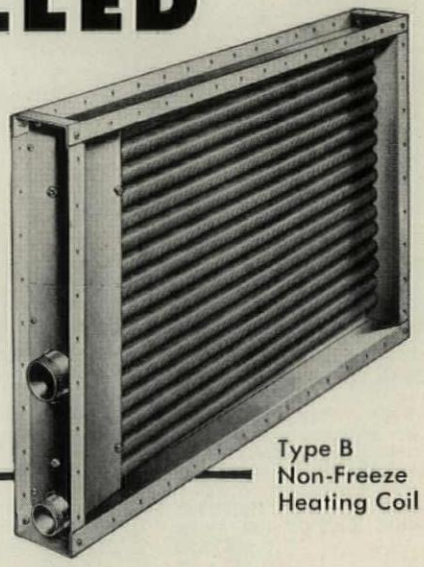

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P.S.

The Franklin Delano Roosevelt Memorial Competition has produced, in the first award, what seems to me a very stirring, a very fitting memorial design. In addition, the entire competition results seem to me a most important, most indicative picture of the status of U.S. architecture at this point. I have just come back from seeing the models of the six finalists at the opening of an exhibition of these and a number of other submissions at the Corcoran Gallery in Washington. In addition, I have spent days going through a microfilm of all of the 562 entries in the first stage of the judging, in order to assist in preparation of a book, which Reinhold will publish, that will show the total competition. Hence I write, if not with authority, at least with a rather full knowledge of the complete picture, and after a lengthy and sober consideration of the models and the drawings of the winning design and the other finalists and honorable mentions.

I wish that other journalists had done the same. Fritz Gutheim recorded a quick adverse reaction in *The Washington Post;* and John Crosby, the syndicated Herald Tribune columnist who is now a very witty authority on everything including architecture (and with whom I usually agree, even on architecture), has reported that he and the "avant-garde" New York architects don't like the design. These comments, made after a view of the very inadequate publicity pictures that were sent out immediately after the judging, have been picked up eagerly and fondly by several elements of the population of which I am not overly fond. They are the same groups that were quick to make amusing and quotable remarks about the UN Headquarters preliminaries, the St. Louis waterfront competition result, and the Air Force Academy concept. One coterie is made up of professional scoffers at contemporary design—in painting, sculpture, architecture, and even music and the dance. They would have preferred to see a typical Washington-type-architecture memorial. Another clique is composed of those who oppose competitions. They would rather have had the project put in the hands of a "safe" architect-sculptor-landscape team ("safe" meaning—let's not do anything exciting or controversial, boys, because that will make it hard to get the project through Congress and we'd never get our fee that way).

Now I know that neither Gutheim nor Crosby, or the others making cute, snide remarks about book ends and so on, want to aid the persons I describe, but the fact is that they are providing such an assist—and quotable quotes—for the reactionaries who are likely to oppose this memorial in Congress. And I want to make it clear that I would not take issue with them so sharply if I were not truly convinced that this is a *good* result. In other words, I am not only applauding Judge Francis Biddle and his Commission for their wisdom and clear thinking in devising and carrying through this competition, rather than in making the award of the job a political handout; I am also complimenting the architectural result.

The problem was a difficult one. It was obviously impossible to design a building; the Lincoln and the Jefferson Memorials are too close to try to make an equal, more contemporary statement in architecturally enclosed space. That was where Katselas went off, with his handsome plastic structure. The dimly lighted grottos are for more somber memorial purposes, as is the Roman Ardeatine Memorial to the slaughter of Roman citizens; this is where Myller went astray, with his beautiful single slab. And yet something rising was called for (nearly a hundred of the entries used some form of grouped column symbols) that would speak for itself without competing with the simple spire dedicated to George Washington. A delightfully shaped and landscaped bowl, such as Sasaki and Luders devised, or a subtly sculptured landscape like the Wehrer-Borkin entry, do not provide sufficient focus, enough finality.

That left Geller and the winning team. For my money it was a tossup. Geller's scheme has more for the viewer to do and see; it has more excitement in the outward thrusting form of the slabs. But the Pedersen-Tilney, Wasserman-Beer, Hoberman design that the jury favored is deceptively simple. It raises straight up, slabs that are sculptured with great delicacy—slabs that rise from bases that interlock in a series of platforms, steps, and terraces, in a manner that creates—or rather suggests—handsomely articulated space. And in the center, locking everything in a balance that again is not as simple as it first seems, is a final, underplayed tablet. As one enthusiastic architect said the other night (having come to scoff, but staying to praise loudly): it seemed to speak of the man himself who was being remembered, standing at the focal, key point of many interlocking activities, tying them together into a workable unity.

I have my minor quibbles about the design. I hope that certain improvements are made (particularly in landscaping) in the final design. But I hope it gets built. And I certainly will give no comfort to those who will now try to prevent that happening.