

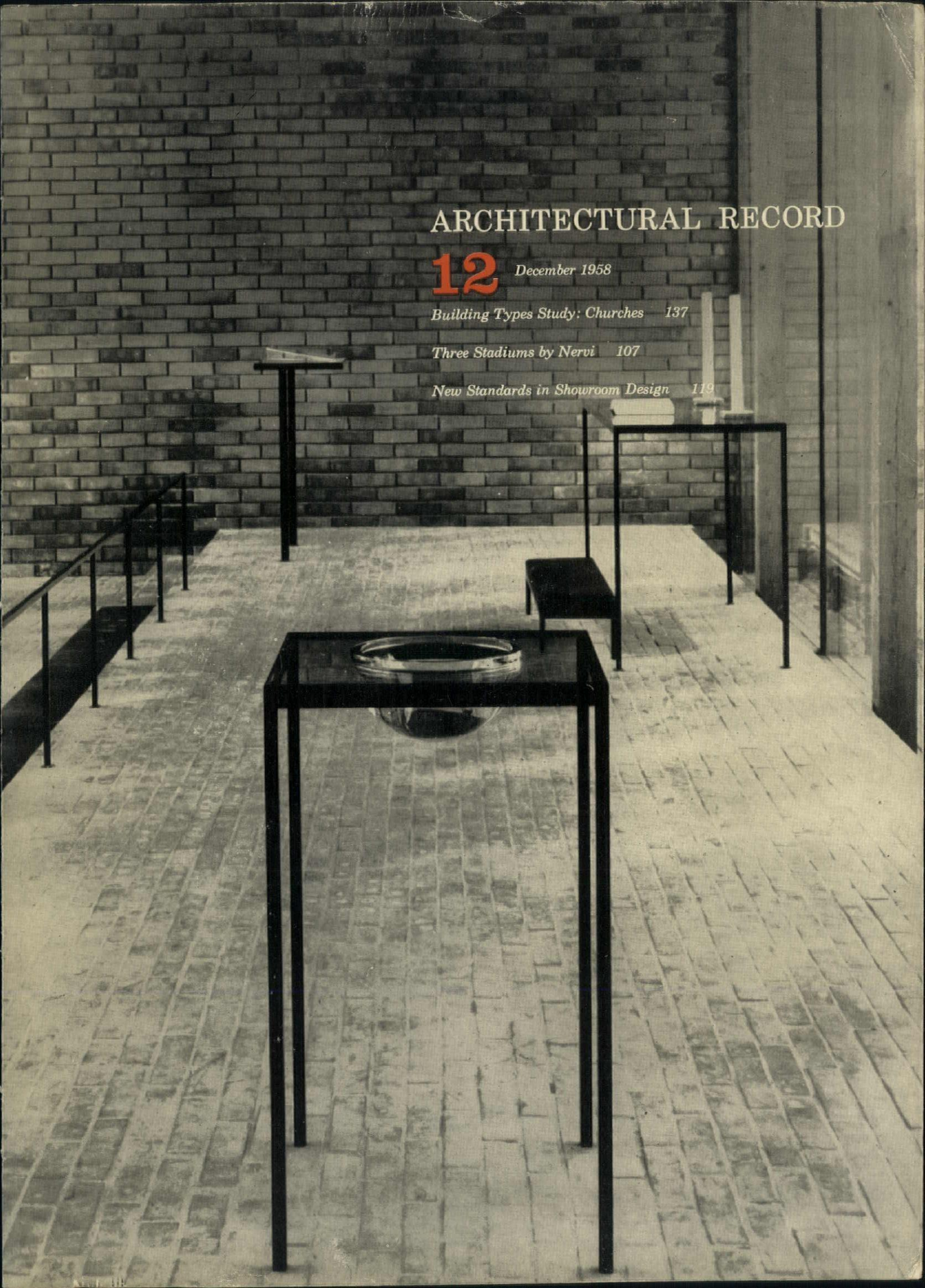
# ARCHITECTURAL RECORD

**12** December 1958

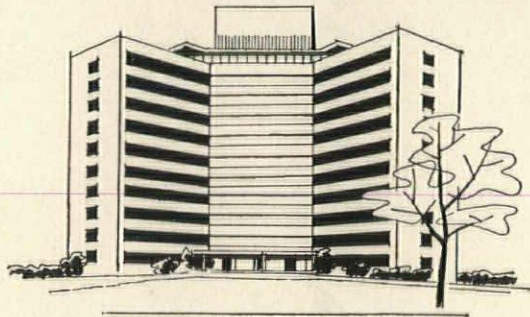
*Building Types Study: Churches* 137

*Three Stadiums by Nervi* 107

*New Standards in Showroom Design* 119




# MODERN, FIRE-RESISTIVE HOSPITAL CHOOSES GRINNELL SPRINKLERS



Rhode Island Hospital, Providence, R. I.  
Architects: SHEPLEY BULFINCH RICHARDSON & ABBOTT  
General Contractors: GILBANE BUILDING COMPANY



*Vital work areas get  
this  extra measure  
of safety*

The new, 12-story Rhode Island Hospital in Providence is exemplary of the latest and best in hospital design. Its facilities include 452 beds, 14 operating rooms, an administrative center, service rooms, cafeteria, kitchen, and office areas.

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**GRENADIER CORPORATION**



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**THIOKOL POLYSULFIDE TYPE SEALANTS**

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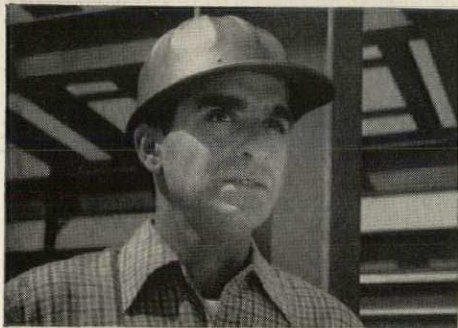
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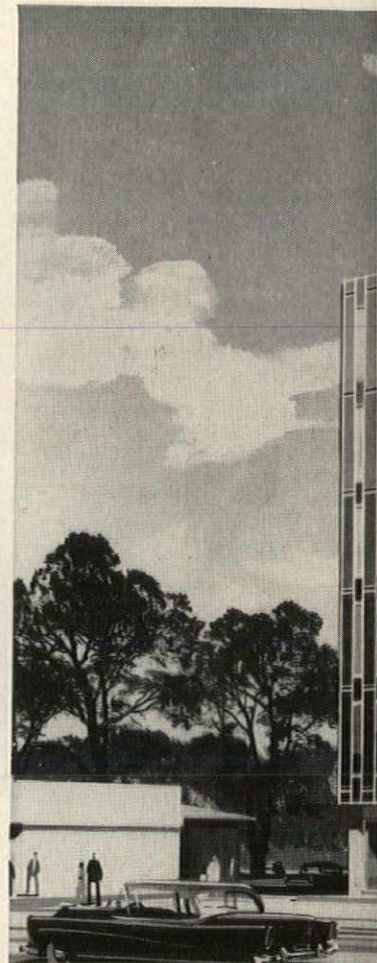


◀ **OWNER** representative W. F. Timoney says, "This is the most economical system we could use to attain a structural floor with under-floor electrification. Placing of E/R Cofar is fast and economical. After the steel frame and stairs were erected, we put in Cofar and had an immediate work platform on every floor of the building. We'll consider this system in all our multi-story buildings. We *know* its good!

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◀ **COFAR ERECTOR W. DerVartanian** of Reinforced Steel Erectors Corp., says, "Usually we place steel over wood forms but this job is much simpler. Cofar was delivered so fast, we didn't know where to put all the bundles. It places easily, makes a good work deck and all the sheets are well marked. You get a list of what each bundle contains. Sheets are uniform, too. Altogether, I'd say it was a real smooth operation!"



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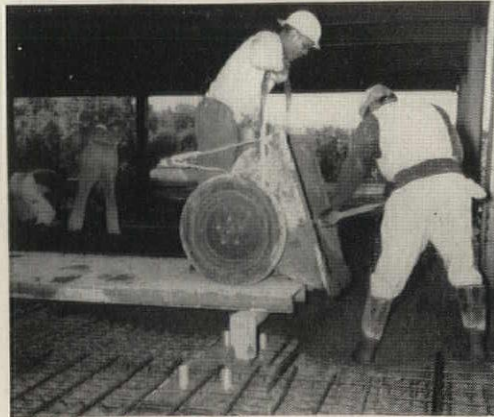
Owner: *Max Philippon, N. Y. C.*; Architect: *Pedersen & Tilney, N. Y. C.*; Associate Architect: *Swanson Associates, Inc., Bloomfield Hills, Mich.*; General Contractor: *R. E. Dailey & Co., Detroit*

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slab construction is simplified when E/R Cofar is specified



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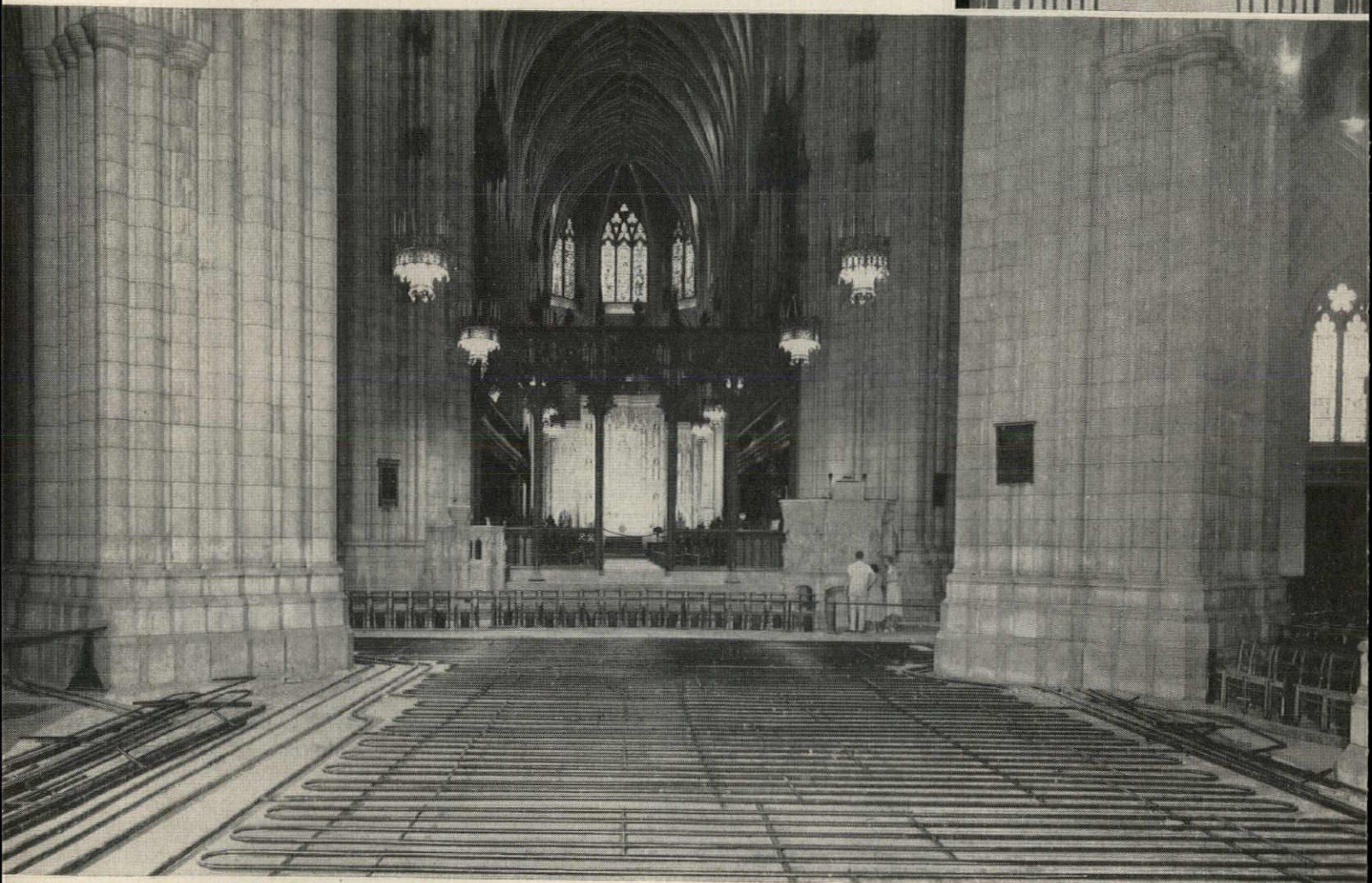
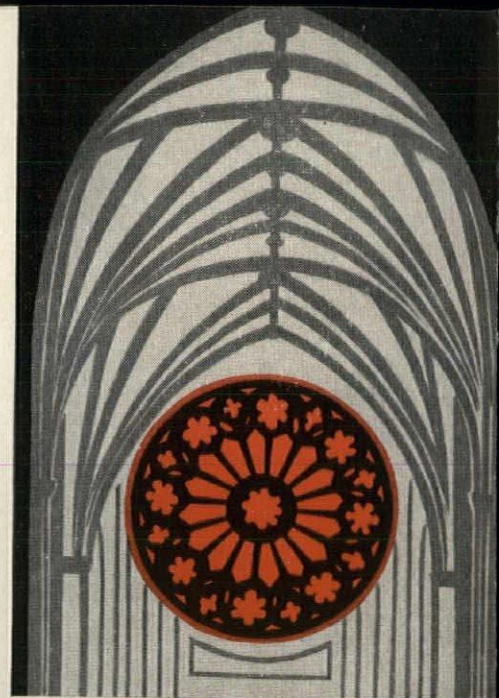
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for this cathedral*



National Cathedral, Washington, D.C. Philip Hubert Frohman, F.A.I.A.

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December 1958

## THE RECORD REPORTS

*Thomas S. Holden* 9

*A Record Special Report: Conference on Urban Design Criticism* 10

*Buildings in the News* 12

*First Year out of School: One Way to Use it* 20

*Meetings and Miscellany* 25

*A Washington Report* by Ernest Mickel 30

*News from Canada* by John Caulfield Smith 36

*Washington Topics* by Ernest Mickel 52

*Construction Cost Indexes* 56

*Required Reading* 60

*Calendar and Office Notes* 240

*Current Trends in Construction* 272

## THREE STADIUMS BY NERVI

*Flaminio Stadium* Rome, Italy 107

*Stadium* Taormina, Sicily 112

*Sports Palace* Rome 114

*Nervi's Views on Architecture, Education, and Structure* 118

## DEERING MILLIKEN CO. BUILDING

New York City Carson & Lundin, Architects 119

## TWO HOUSES

West Los Angeles, Calif. Mario Corbett, Architect 125

Kirkwood, Mo. Harris Armstrong, Architect 127

## WAREHOUSES ASSUME EXPANDED ROLES

*Richmond Food Stores, Inc.*

Richmond, Va. The Ballinger Company, Architects and Engineers 129

*Row, Peterson & Co. Building* Evanston, Ill. Perkins & Will, Architects-Engineers 130

*Davis Brothers, Inc. Drug Warehouse* Denver, Colo.

James Sudler Associates, Architects; D. R. Roggenbach, Associate Architect 131

*Service Buildings: Warehouses with Additional Functions*

Article by Erik P. Johnsen and Ralph S. Crummé 133

## BUILDING TYPES STUDY 265: RELIGIOUS BUILDINGS

*Introduction* 137

*Chapel of St. James the Fisherman* Wellfleet, Mass. Olav Hammarstrom, Architect 138

*St. Sylvester's Church* Eminence, Mo. Helmuth, Obata & Kassabaum, Architects 140

*Chapel in Finland*

Tech Town, in Otaniemi near Helsinki, Finland Kaija & Heikki Siren, Architects 142

*St. Peter's Lutheran Church* Norwalk, Conn. Pedersen & Tilney, Architects 148

*Brentwood Methodist Church* Denver, Colo. W. C. Muchow, Architect 150

*Synagogue for Congregation Beth El*

South Orange, N. J. Davis, Brody, & Wisniewski, Architects 152

## Cover:

Chapel near Helsinki, Finland. Kaija and Heikki Siren, Architects. Pietinen photo

## ARCHITECTURAL RECORD

December 1958

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## ARCHITECTURAL ENGINEERING

*Introduction* 157

*Characteristics of Classroom Heating and Ventilating Systems* 158

*Building Research Around the World* 163

TECHNICAL ROUNDUP 165

PRODUCT REPORTS 167

OFFICE LITERATURE 168

TIME-SAVER STANDARDS: Checking a Prestressed Concrete Beam 171

SEMI-ANNUAL INDEX 276

INDEX TO ADVERTISING 282

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*How to put the new architecture in with the old? Or, what new architecture do you put alongside the old? The present firm of Shepley, Bulfinch, Richardson and Abbott, still going strong since the days of the famous Richardson, has been doing buildings in the Boston area for three generations, has some positive thoughts on a contemporary problem.*

## BUILDING TYPES STUDY: INDUSTRIAL BUILDINGS

*Back on the boards again after the recent recession, buildings for industry are again coming in new packages, for new purposes, in new places, by new architects. The January Building Types Study shows something of the great variety of buildings tailored to a purpose.*

## SEMANTICS OF SPECIFICATIONS

*Words, words, words. Who hasn't got himself thoroughly lost in them while trying to write specifications. David Todd, chairman of the nomenclature committee of the Construction Specifications Institute, writes of current efforts to use words to the best purpose.*

## COSTS OF SCHOOL INSURANCE

*The architect trying to deliver an economical school building will of course plan for low maintenance costs, a sizable item of which is insurance. Emil Szendy, an architect with much background in building code writing, tells how various construction types and fire control factors affect the cost of insuring the building.*

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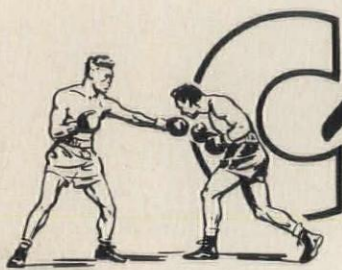
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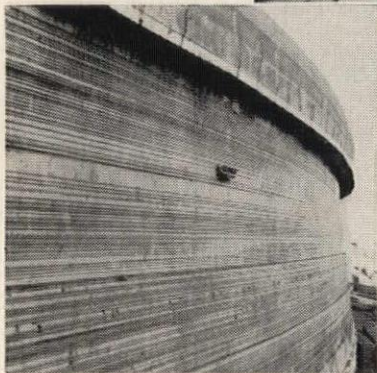
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# Championship Material

1,146 WRAPS of prestressing wire on tension ring induced a compressive force of 14,000 lbs. per circumferential foot. Ring rests on rocker columns which absorb internal stresses and force of high velocity winds.



## Versatile Concrete Scores Victory in Cuba's Magnificent Sports Palace

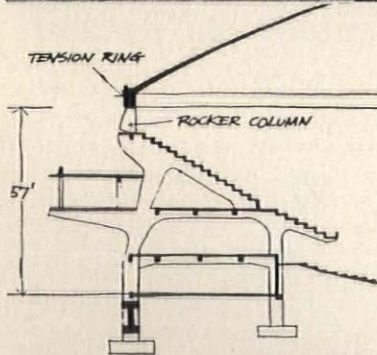
● Five miles from the heart of Havana, in 65-acre Sports City, stands a monument to Progress as well as Athletics—Cuba's magnificent new Sports Palace.

Boasting the largest concrete dome in the Western Hemisphere—with 286' interior diameter—the building accommodates 18,000 spectators without a single pillar or post to block vision.

To absorb the stresses inherent in the flat shape of the dome (which rises only 40', or a 1:7 height-to-diameter ratio), and to withstand winds of hurricane force, the dome's perimeter connects with a prestressed concrete ring 3' thick and 5' high. This tension ring rests in turn on 24 reinforced concrete

rocker columns, hinged top and bottom to absorb both internal and external stresses.

Ranking as one of the world's finest arenas, this project required 32,500 barrels of El Morro Cement, made by Lone Star's Cuban subsidiary, La Compañía Cubana de Cemento Portland. 28-day strength of dome concrete was 4,500 psi.



CROSS SECTION shows how monolithic dome and tension ring rest on hinged rocker columns, supported by stadium wall. Outer foundation is a 10' deep continuous ring girder.

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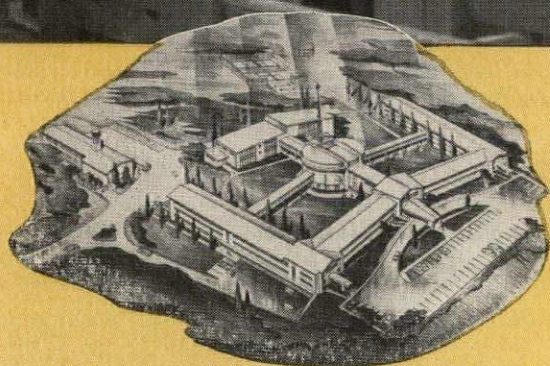
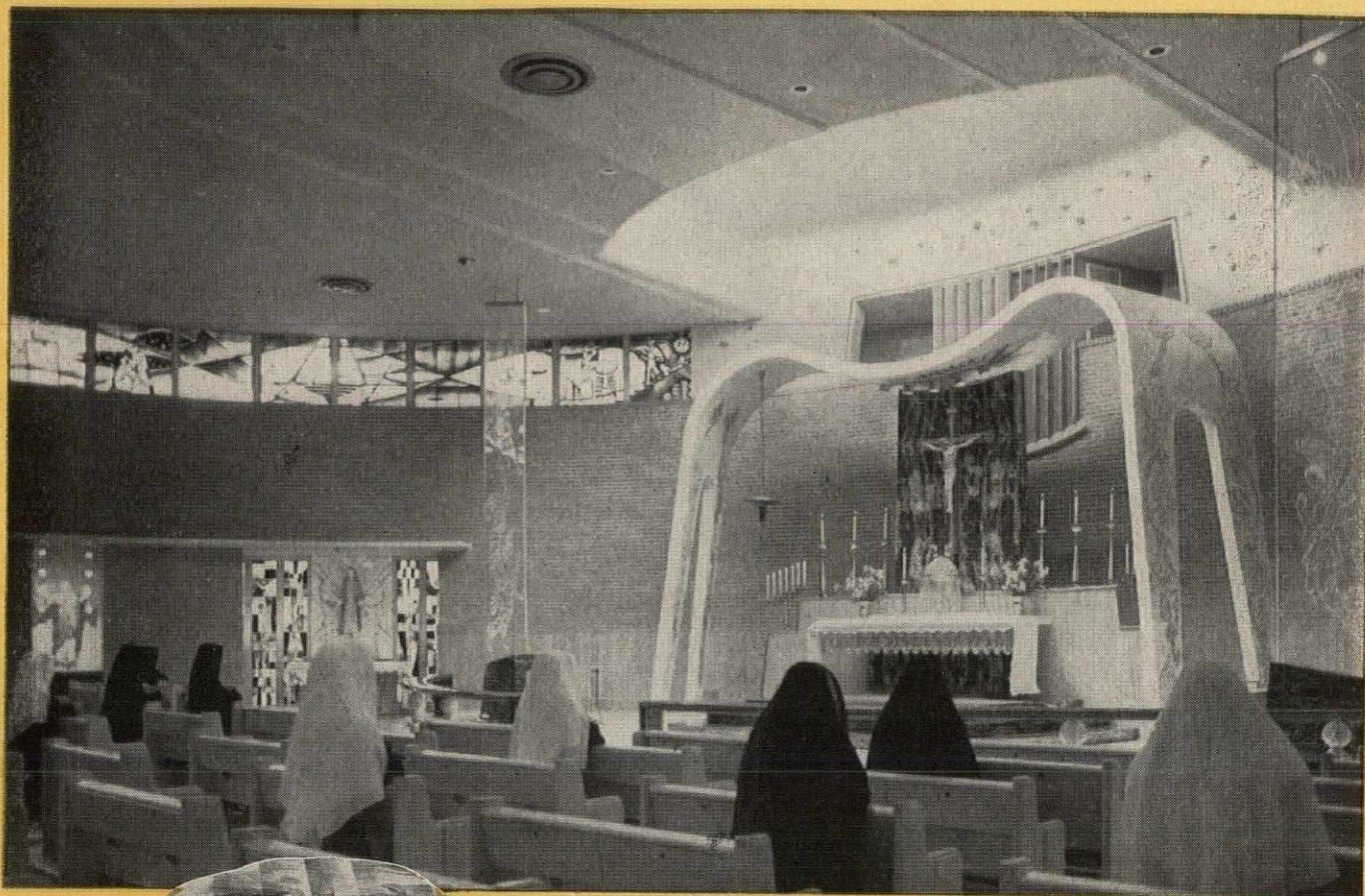


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# THOMAS STEELE HOLDEN 1886 - 1958

Thomas Steele Holden, one of the great men of the construction industry, passed away suddenly on November 3. His age was 72.

Mr. Holden was a man of many talents, and he devoted them all in one way or another to the industry he served. Through most of his life, he was associated with F. W. Dodge Corporation, and in his various capacities he always maintained a close relationship to ARCHITECTURAL RECORD.

Few men could count so many real friends, but even the closest of them would be hard put to catalogue his achievements, or even to classify his profession.

Thomas Holden began his career as a mathematician, with a master's degree from the University of Texas. He taught mathematics for a short time there, and later at M.I.T., but was not long satisfied with the prospects in this field. His background in mathematics, however, played a large part in his later contributions to construction economics and statistics.

Mr. Holden's association with M.I.T. gave him an opportunity to fulfill an old ambition, the study of architecture. In 1916, he received his B.S. in architecture from that school, and began his practice in Boston and in Ohio. But World War I ended this practice, and events moved so rapidly for him thereafter that he was never able to resume it. Here, again, he had acquired essential background for the unique career that lay ahead of him.

At the end of the first World War, the high cost of living and the housing problem were of great concern, and the U. S. Department of Labor called on Mr. Holden, then an army ordnance officer, to help establish new statistical programs. He joined the Department as an economic investigator, and thus began a new career which was to make him the nation's foremost construction economist.

It was here, in 1919, that he first came to the attention of the F. W. Dodge Company, as it was then known. The company, possessed of a vast flow of construction news, felt that it could fill one of the great gaps in the nation's economic information by compiling statistics on contract awards, and Mr. Holden was brought in as chief statistician to organize the program.

His rise to national prominence was rapid. His writings and speeches became widely known and depended on, and it was only a short time before he was recognized as the principal authority on construction economics. He rose rapidly in F. W. Dodge Corporation as well, becoming a vice president, a director, and, in 1941, president.

Mr. Holden held this last position until 1953. Then, at an age when many men would be content to retire after a full life, he became vice chairman of the board, and went right on working in his chosen field. He continued for many years to supervise Dodge statistical work and remained, until the end, in charge of public relations.

A characteristic of his life was service to others, particularly to organizations in architecture and building. As president of the New York Building Congress in the dark depression days, he rebuilt that group from near-extinction. He helped organize building congresses in Chicago, Washington and Connecticut. He worked long and hard for the Regional Plan Association and the Commerce and Industry Association of New York, the Business Advisory Council of the U. S. Department of Commerce, the John B. Pierce Foundation and dozens of other groups.

Among his many honors, those of which he was most proud were honorary memberships in the American Institute of Architects and the Architectural League of New York, and the initial Award of Recognition by the Producers' Council.

Mr. Holden's closest associates will remember him best for his unbounded faith in the future, and in the growth potential of America. His view was always forward, and he was impatient with chronic pessimists, even in the depths of war and depression. And in the long run, events always proved him right.

It seems fitting that on his last morning, until only a few minutes before his passing, he was cheerfully working on plans for presenting his outlook for 1959. The title he had chosen for the outlook was singularly suited to the last work of such a man. It was:

"Onward and Upward: Growth Trends Resumed."

—George Cline Smith



## HOW CAN CRITICISM IMPROVE URBAN DESIGN? RYE CONFERENCE PONDERERS

By David A. Crane

How to generate better published thought and sharper criticism on design of American cities was the subject of a conference held October 2-4 at Rye, New York. The University of Pennsylvania Conference on Urban Design Criticism, sponsored by the University's School of Fine Arts and Institute for Urban Studies, provided a two-day Westchester retreat for fifteen national leaders in various fields of communications and design. Made possible by a Rockefeller Foundation grant, the Conference was called by Dean G. Holmes Perkins to take another step toward the growing revival of interest in urban design. The University based its appeal on the premise that criticism, or the lack of it, has a lot to do with the urban environment achieved. Conference participants were also reminded that getting critical discussion of design into schoolrooms, museums, press, or television would have little value if we did not also improve urban design ideas at their source: in universities, research centers, or individuals.

A major suggestion advanced during the conference was for the formation of a small council of interested designers, scholars, critics, and journalists to carry on the discussion begun at Rye. The spirit of this proposal appeared to be a desire for further self-education at leadership level. Springing from Lewis Mumford's plea against "mere design propaganda," the idea of beginning with an educational council received fairly general support by the participants after the difficulty of setting priorities among several action proposals was recognized.

The proposals actively supported at the conference suggest what some immediate needs might be. Some programs would give formal support for "massive public controversy" on urban design, on a local or a national basis. It was suggested that such programs might be modeled on the lines of the British *Architectural Review's* Counter Attack Bureau which lends technical assistance to civic groups engaged in design controversies. Other measures suggested

at Rye were based on the principle that better public design education and "environment awareness" must be provided as a cornerstone for controversy if controversy is to be really constructive. In this category an experimental museum-public schools "awareness campaign" in one city, including the sponsorship of some public "urban design watching," was proposed by J. B. Jackson, Editor of *Landscape*. Still other proposals made at the Conference stressed the need for conferences and fellowships to encourage self-education of newspapermen and other writers who cover urban affairs or design subjects.

Running through most of the discussions at Rye was the feeling that no action directed to the press or its lay and professional audiences would in itself be enough. Needed research and unwritten books were listed, as well as other more general needs at the highest intellectual levels. Kevin Lynch, associate professor of city planning at M.I.T., suggested public controversy would be chiefly useful for attracting "better minds" into the fields of architecture and city planning. Ian McHarg, chairman of Pennsylvania's Department of Landscape Architecture, urged that the design professions look beyond "clichés of shape" to fresh source material in fields like physiology, psychology, or theology. He proposed a small exchange, with its own journal, through which interested persons in many different fields of learning could contribute to the theory and knowledge of urban design.

Mrs. Catherine Bauer Wurster, lecturer on city and regional planning at the University of California, led a discussion of popular and professional values involved in urban design, pointing to a need for more study in this category. She and Gordon Stephenson, of the School of Architecture, University of Toronto, twofold a general conviction that the "making of beauty" can be tackled separately only at the risk of falling into the same blind alleys characterizing today's planning pre-occupations with slums, efficiency, or investment opportunity. Eric Larrabee, executive editor of *American Heritage*, added a warning that a market for urban design writing will not be available until designers and their literary champions develop more understandable vocabularies and arguments.

With Dean G. Holmes Perkins presiding, the conference discussions began with prepared talks by individuals. These were based on a working paper prepared and circulated in advance and on prior correspondence of various design critics with Dr. William L. C. Wheaton, director of the Institute for Urban Studies.

In a talk on his Boston home region, Editor Edward Weeks of *The Atlantic* noted an inexorable attrition against natural and architectural amenities in cities. He cited recent "improvements" at Walden Pond as examples of commercial and civic "vandalism" permitted or encouraged by the planners and local press. Mrs. Jane Jacobs, associate editor of *Architectural Forum*, commented on the nature of criticism in commercial architectural magazines. Among other factors, she referred to the tendency of the magazines to devote too much space to description of "extenuating processes" and too little to criticism of "accomplished products." This, she said, partly results from over-zealous "patriotism for the cause of modern architecture or city planning, whatever individual faults there may be." Mrs. Jacobs compared this preoccupation with ins-and-outs of architect-client-builder negotiations to the situation which would exist if drama critics were to devote themselves largely to difficulties of casting, strikes, or theater rentals. Other talks on strategy, timing, and the personality aspects of design criticism were given by Frederick Gutheim, planning consultant, journalist and architectural critic, and Grady Clay, real estate editor for the *Louisville Courier-Journal*.

Some of the highlights of the conference at Rye were provided in evening slide talks. In one of these Leslie Cheek, executive director of the Virginia Museum of Fine Arts, illustrated his museum's remarkable traveling exhibit, "Virginia Town." Louis Kahn, architect, provided a sense of the city design which is left undone by explaining his imaginative concepts about the "order" of city streets.

It was announced that Dean Perkins will convene a second conference of his own School of Fine Arts faculty this month. The faculty will review proposals made at Rye with special attention to possible activities in design and research institutions. Findings of both conferences will be distributed late in the winter.

Mr. Crane, assistant professor of city planning at the University of Pennsylvania, prepared the "working paper" circulated in advance of the conference and is responsible for editing the proceedings

# 76 Quarts of Actual Water

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**NO WONDER TIMBER ROTS —  
PAINT PEELS — PLASTER CRUMBLES —  
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Because vapor has slight density, about 1/205,000th the density of water at 32°F and 1 millionth at zero degree F., it passes through brick, stone, plaster, etc. Most building materials, even asphalt paper, are porous to vapor.

When vapor meets a cold front inside walls and ceilings and reaches a dew-point, it condenses. This destructive "fall-out" (condensation), stimulates the growth of the ever-present microscopic spores of fungi in timber that cause dry-rot. Paint peels! Plaster cracks! Masonry crumbles! Iron rusts! Destructive condensation cost over a MILLION DOLLARS in repair bills to one apartment development alone!

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Such insulation is available commercially in continuous pre-fabricated lengths of 375 to 750 ft. It is installed in ceilings, walls, floors and crawl spaces; between wood beams and studs, steel girders and trusses.

... in the form of 152 lbs. of  
WATER VAPOR

Here's the breakdown for a family of 4 per week

	VAPOR
Breathing and Perspiring (2 oz. per person per hr.) .....	51.0 lbs.
Showers (½ lb. per bath) .....	14.0 lbs.
Washing Clothes .....	4.3 lbs.
Drying Clothes Indoors .....	26.0 lbs.
Cooking (Gas) (4.7 lbs. daily) .....	32.9 lbs.
Ordinary Dish Washing (1 lb. daily, automatic much more) ..	6.0 lbs.
Mopping (100 sq. ft. daily, 3 lbs.) .....	18.0 lbs.
<b>TOTAL WEEKLY VAPOR</b>	<b>152.2 lbs.</b> or 76 quarts

In addition, each 1,000 sq. ft. of soil under a building may produce 96 lbs. of water vapor DAILY.

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TYPE 4	C.105=3½"	C.038=8¾"	5¢ sq. ft.
TYPE 5	C.081=4"	C.034=9½"	6¢ sq. ft.
TYPE 6	C.068=4½"	C.034=9¾"	7¢ sq. ft.
TYPE 9	C.043=7¾"	C.029=11¼"	12¢ sq. ft.

Types 1, 2, 7, 8 also available

\*Determined by method of National Bureau of Standards in H.H.F.A. Research Paper 32.

†Calculated on basis of limiting thermal values cited in Fed. Specs. LLL-f-321b; HH-1-585; HH-1-521c; HH-1-551a.  
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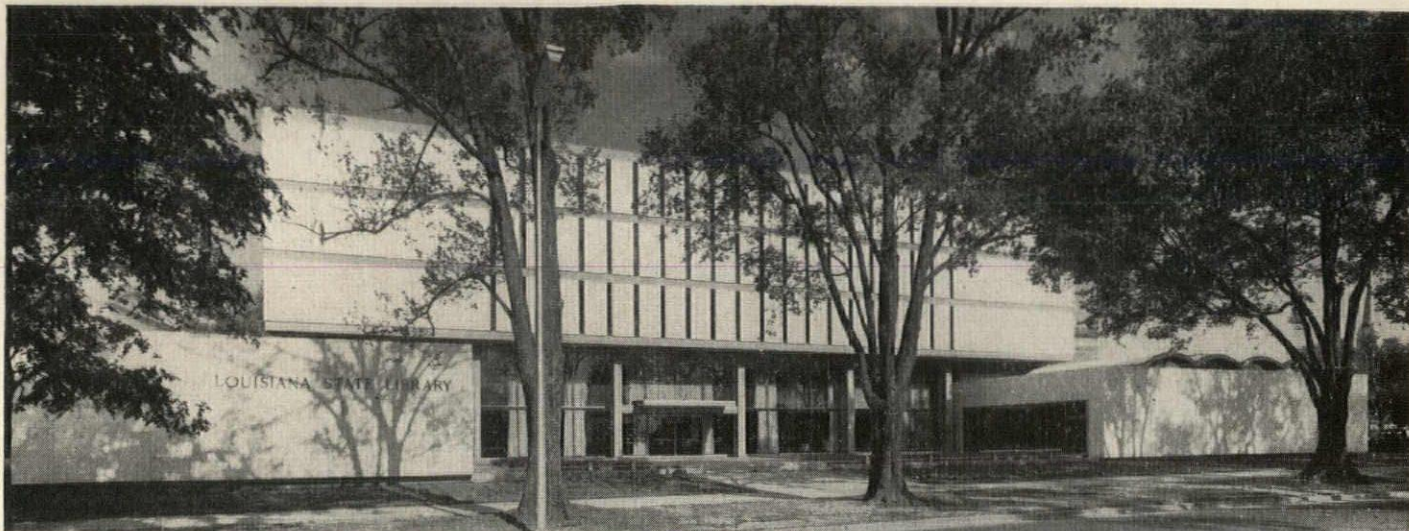
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FIRM \_\_\_\_\_

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ADDRESS \_\_\_\_\_

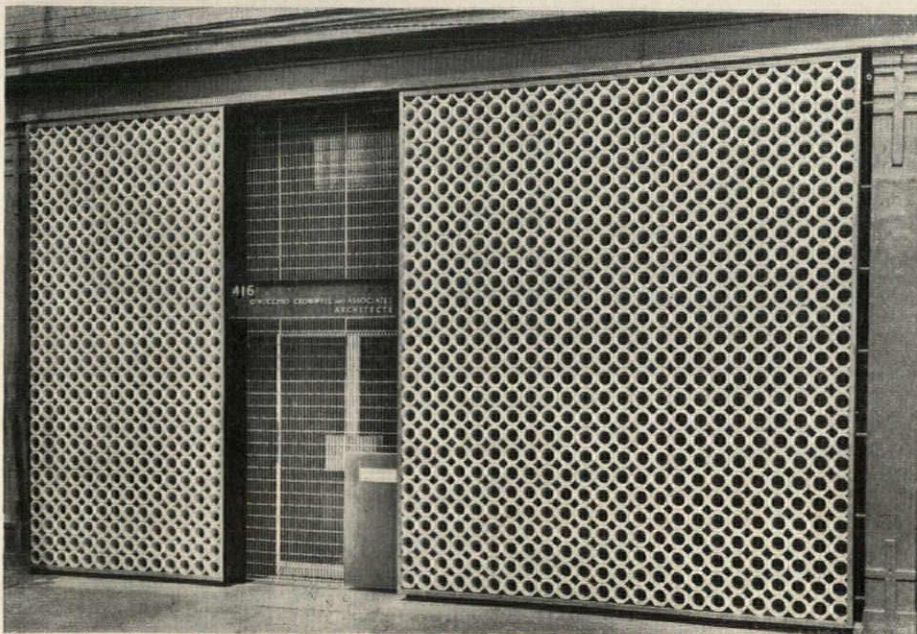
## EIGHT BUILDINGS CITED IN GULF STATES A.I.A. AWARDS PROGRAM



Honor Award: Louisiana State Library, Baton Rouge; William R. Burk and John J. Desmond, Architects; George A. Caldwell, General Contractor



Honor Award: Retail Store, Sears Roebuck and Company, Pine Bluff, Ark.; A. L. Aydelott and Associates, Architects; Dougherty Liddell Construction Co., General Contractor

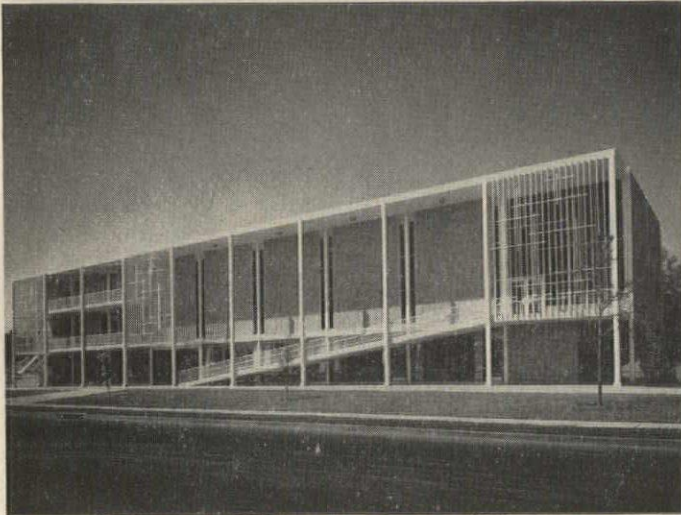


Honor Award: Architects' Own Offices, Little Rock; Ginocchio-Cromwell and Associates, Architects; Kelley-Nelson Construction Co., General Contractor

The 1958 edition of the annual honor awards program of the Gulf States Region of the American Institute of Architects was held in October in conjunction with the ninth annual Gulf States Regional Conference at Biloxi (page 28).

Eight awards were given: three Honor Awards and five Awards of Merit. There were 70 entries in all.

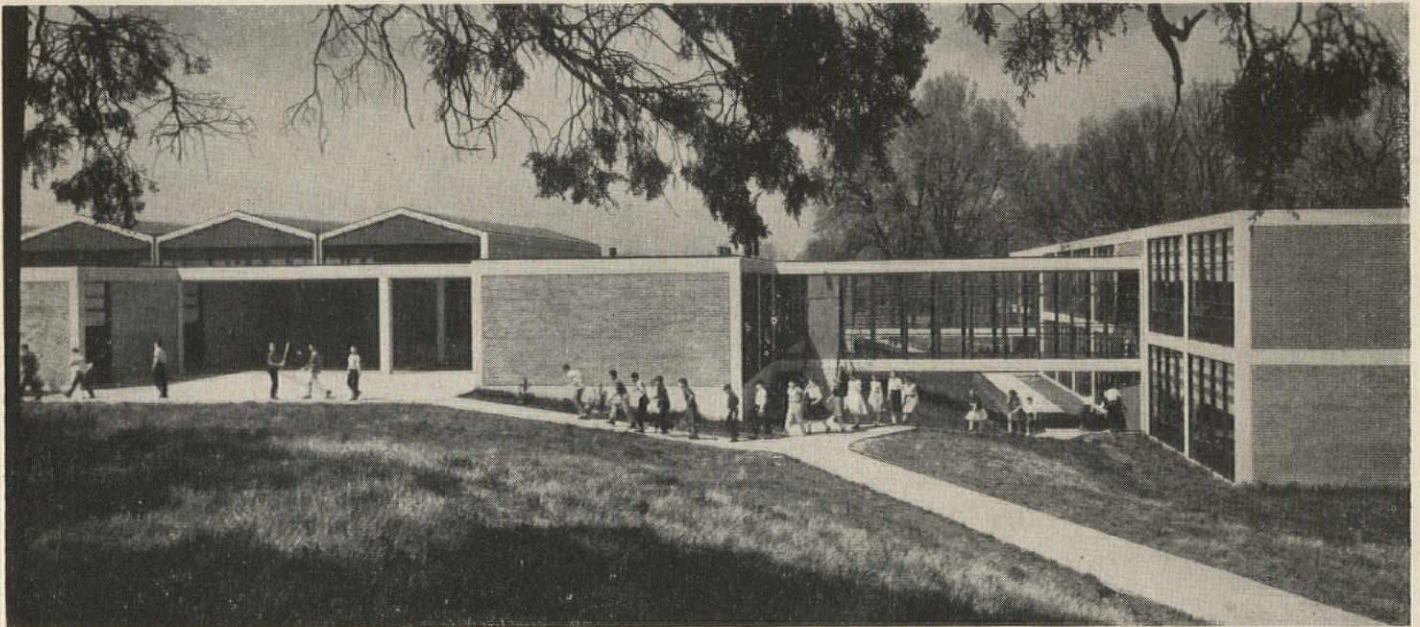
Jury for the competition consisted of Albert Bush-Brown, of the School of Architecture and Planning of Massachusetts Institute of Technology; Paul Heffernan, dean of the School of Architecture of Georgia Institute of Technology; and Frank Lopez, of Engelhardt, Engelhardt, Leggett and Cornell, educational consultants, of New York.



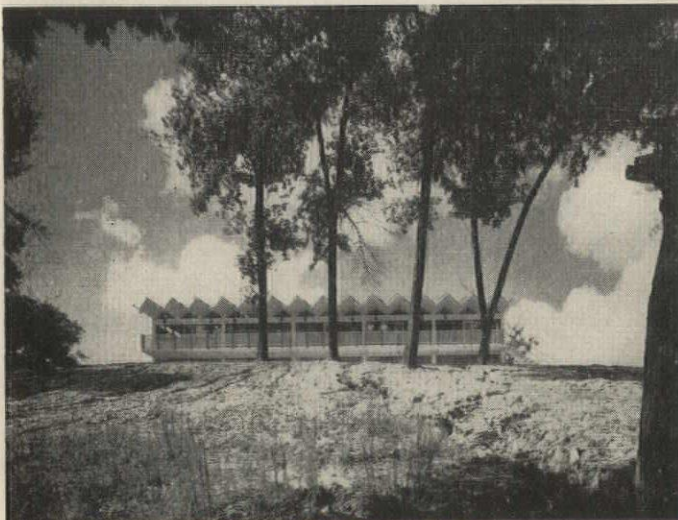
Award of Merit: Christ Methodist Church, Memphis; Office of Walk C. Jones Jr., Architect; Canfield & Scarbrough Construction Co., General Contractor



Award of Merit: Caribe Building and Architects' Offices, New Orleans; Curtis and Davis, Architects; R. P. Farnsworth & Co., Inc., General Contractor



Award of Merit: Richland Elementary School, Memphis; Mann and Harrover, Architects; S. & W. Construction Co., General Contractor (AR, Aug. '58, p. 179)



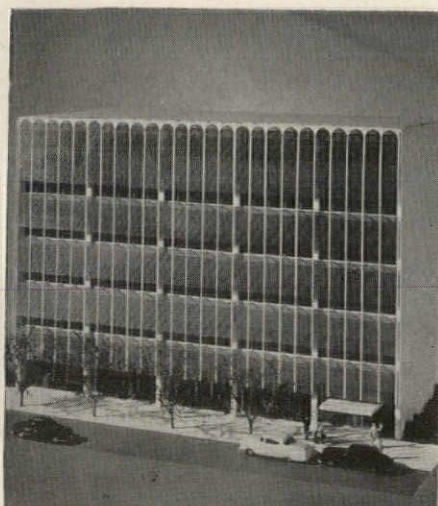
Award of Merit: Restaurant and Swimming Pool, Hot Wells, La.; Glankler and Broadwell, Architects; Gravier & Harper, General Contractor



Award of Merit: River Week End House, Tangipahoa River, La.; John and Mary Mykolyk, Architects



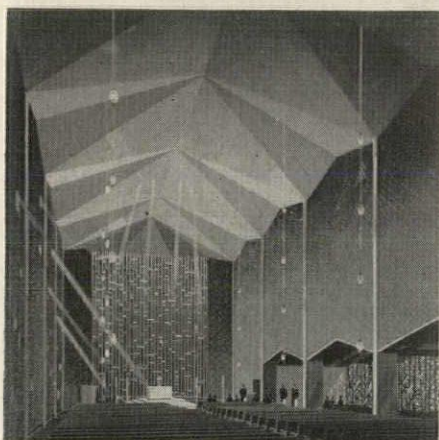
The 21-story Norton Building is to be Seattle's first major new office building in nearly 30 years. Estimated cost: more than \$12 million. The plaza will feature sculptures by two Washington State men: a welded copper piece by Harold Balazs and a cast stone bird by Philip McCracken. Architects: Bindon & Wright. Consulting architects: Skidmore, Owings & Merrill. General contractor: Howard S. Wright



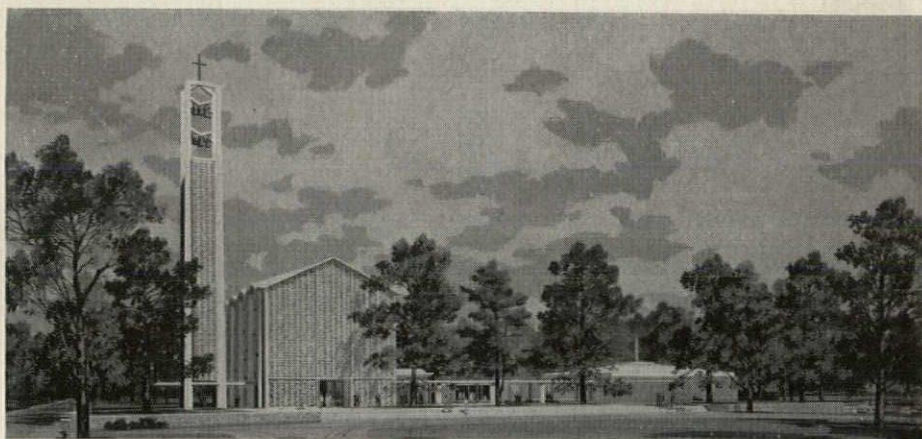
The Independence Life Insurance Company's new headquarters building in Pasadena, under construction, has five stories, with exterior walls rising six stories, to hide equipment penthouses. The 36,000-sq ft, reinforced concrete structure has a gold aluminum grill, patterned by vertical aluminum strips. Cost: about \$1,250,000. Architects: Welton Becket & Assocs. General contractor: Carter Co. Contractors and Developers



The First National Bank Building in Minneapolis is to be finished in 1960. The five-story bank portion is stainless steel, and the 23-story office tower is anodized aluminum. Underground parking and an auto-bank are below the plaza, which will be used for ice skating and seasonal displays. Architects: Holabird & Root & Burgee associated with Thorshov & Cerny. General contractor: Naugle-Leck, Inc.

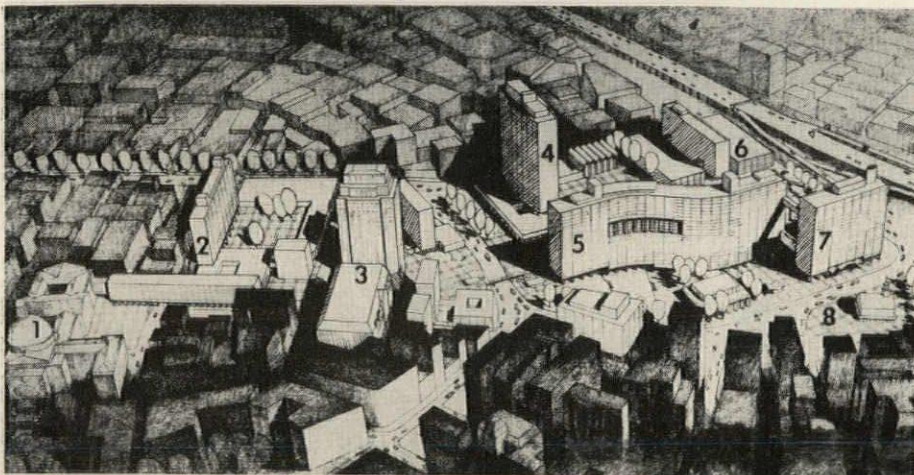


Plans for the new St. Mark's Episcopal Church, New Canaan, Conn., were approved recently by the vestry. The rendering above shows the interior of the main church, to seat 700. At the right are the free-standing bell tower, the church, court, and parish hall seating 400. The new facilities are to



be built near the existing church house. The preliminary estimated cost, including all buildings, site work, church fittings, fees, and contingencies, is about \$1,540,000. The folded plate roof is of reinforced concrete and the translucent south wall (shown in the exterior rendering) has patterned grill

work. In addition to the church and parish hall (the latter including four classrooms), there are to be a chapel, choir room, parlor, sacristy, kitchen, nine religious-school classrooms, and a 250-car parking area. The altar is free-standing. Architects: Sherwood, Mills & Smith



The design for a proposed \$150-million Federal, state, and municipal government center in Boston was recently presented to Mayor John B. Hynes, the Boston Planning Board, the Redevelopment Authority, and Federal officials by the First Realty Co. of Boston. The site, in the heart of the city, stretches from the State House to the Central Artery (top right in perspective). Key: 1. State House; 2. State Office Building; 3. Courthouse; 4. 22-story private office building; 5. 15-story, million-sq ft Federal Building; 6. Merchandise mart; 7. City Hall, facing re-named Freedom Square (now Dock Square) and 8. historic Faneuil Hall, which would be given a new, more prominent setting. The State Office Building is designed so it would not overshadow Bulfinch's State House dome. Architects: The Architects Collaborative



## FIVE CATHOLIC INSTITUTIONS WIN FIRST AWARDS IN COMPETITION

The five buildings on this page are the 1958 first-place winners in the Catholic Institutional Architectural Competition sponsored each year by *Catholic Property Administration*, magazine devoted to the planning, construction, equipping, and operation of Catholic institutions. The competition is held "to encourage creative design for liturgical, functional, and esthetic Catholic structures, and to encourage effective utilization of building materials." The judges this year were: Gerald G. Diehl, A.I.A., Detroit; Raymond M. Marlier, A.I.A., Pittsburgh; Leo A. McMullen, A.I.A., Pittsburgh; the Rev. William G. Ryan, Greensburg, Pa. They made three awards each in five categories, basing their selections on how well the designs solved a particular problem or filled a specific need.



St. Lawrence Martyr School, Redondo Beach, Cal. Category: "an elementary school accommodating 400 or more, which has been completed, is under construction, or with design in 'approved' stage." Architects: Comeau and Brooks, Encino, Cal. General contractors: Walter Drazan, Los Angeles, and Sam Duff Co., Long Beach



Above: St. Alphonsus Church, Hessmer, La. Category: "a church seating no more than 400, which has been completed, is under construction, or with design in 'approved' stage." Architects: Bodman and Murrell and Smith, Baton Rouge, La. General contractor: E. E. Rabalais and Son, Bunkie, La. Below: St. John the Evangelist Rectory, Lafayette, La. Category: "a small rectory which has been completed." Architect: H. J. Lagroue, Lafayette. General contractor: J. B. Mouton and Sons, Lafayette



Above: Sisters of St. Joseph Convent, Manhattan, Kans. Category: "a small parish convent which has been completed." Architects: F. O. Wolfenbarger & Assocs., Manhattan. General contractor: Green Construction Co., Manhattan. Below: Providence High School, Burbank, Cal. Category: "a high school accommodating no more than 750, which has been completed, is under construction, or with design in 'approved' stage." Architects: Gene Verge and R. N. Clatworthy, Los Angeles. General contractor: Pozzo Construction Co.



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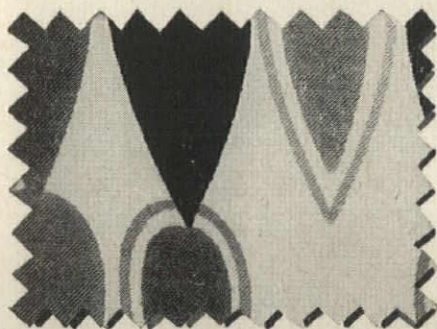
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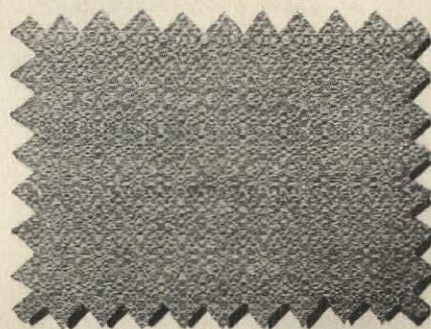
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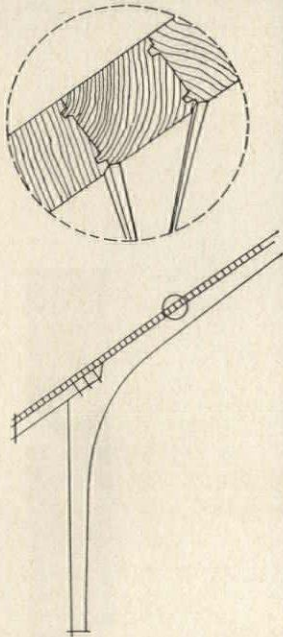
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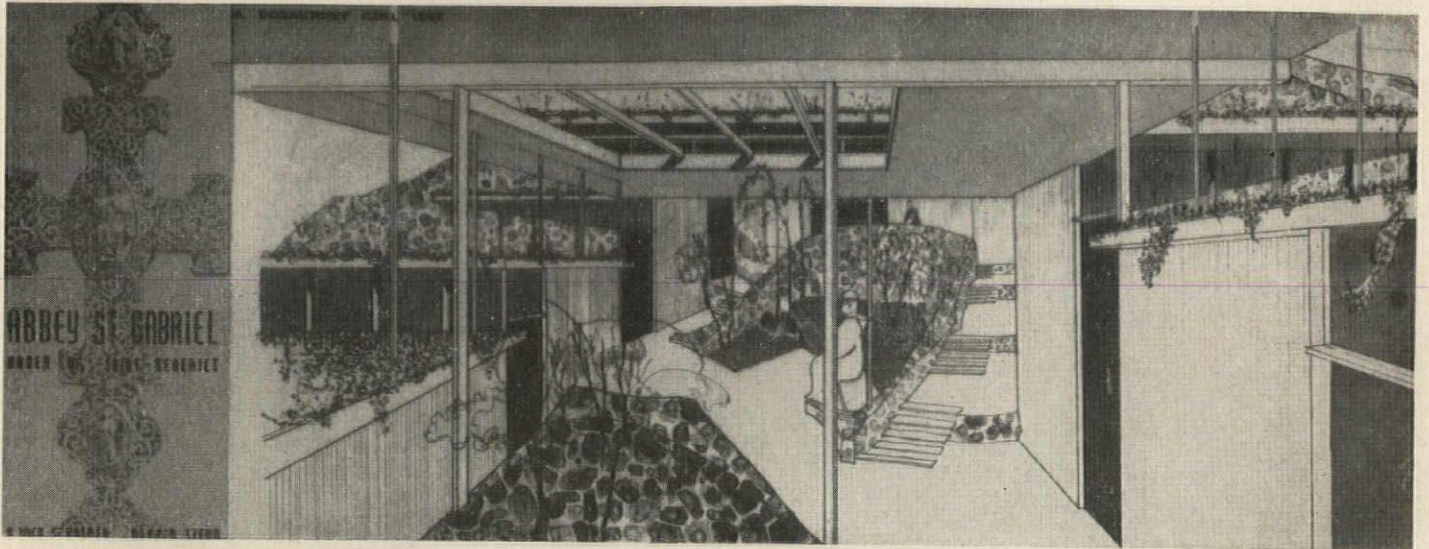


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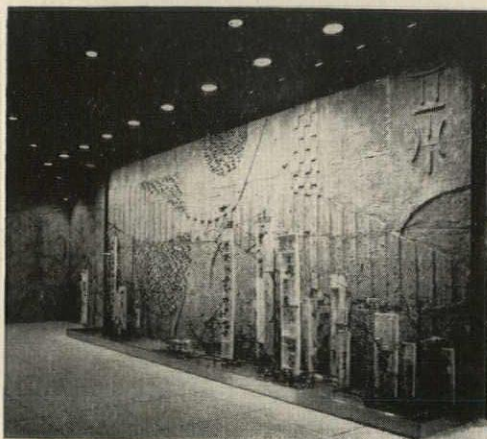
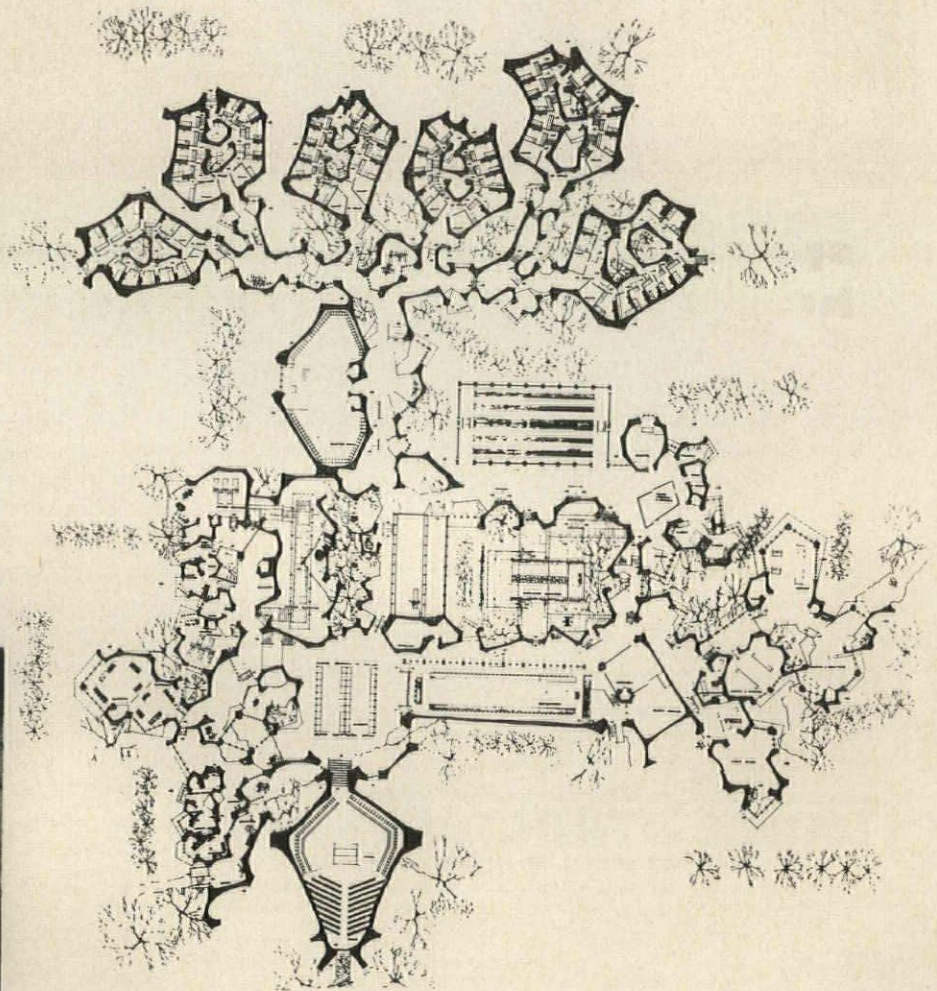
FIRST YEAR OUT OF SCHOOL: ONE WAY TO USE IT

H. Jack Schainen and Alfred Chas. Stern, Design Associates, who are two young men a year out of Pratt Institute's School of Architecture, have designed a monastery for the Benedictine Fathers in Weston, Vermont, and a residence in New York (in association with architect Stanley Salzman); they have completed a sculptural mural for the Lorillard building in New York, and are in the process of making another one for a New York hotel. They also design and fabricate lighting fixtures for a manufacturer. In their spare time they have provided Manhattan with a new art gallery, at 200 East 41st Street, where they hope "the architect and interior designer can meet to work with the related arts."

The monastery plan, begun as a thesis project, was completed as a serious long-range development program, and the "client" seriously hopes that some day it can be executed, even though no funds are in sight and no time can be set for construction. Abbot Leo A. Rudloff, O. S. B., says it

is "ingenious, original, interesting and inspired." For their program Schainen and Stern used parts of the rule of St. Benedict by which the

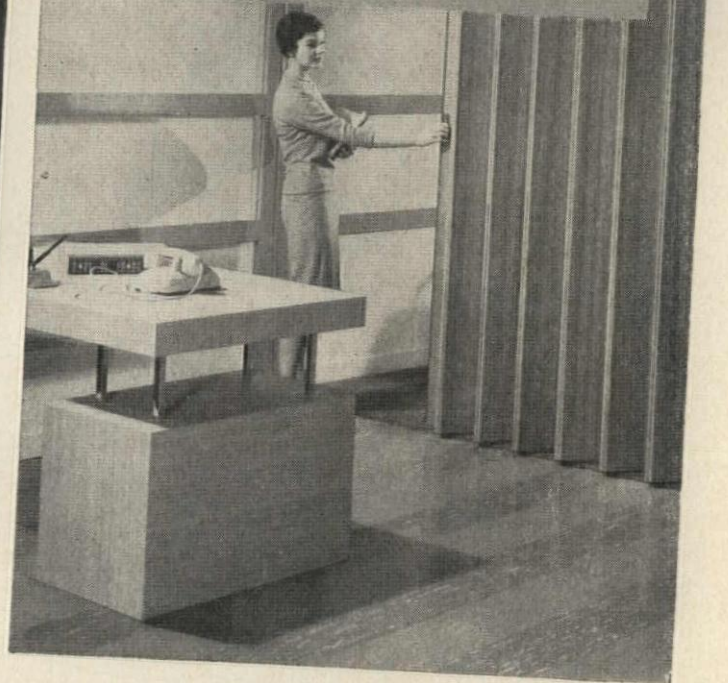
monastery is run, so that, according to Abbot Leo, "the whole plan appeared as an organic whole, a form with a soul."



(Top) Dormitory cell unit and (above) site plan for projected Benedictine priory. At left: Noon City, mural in Lorillard Building, New York



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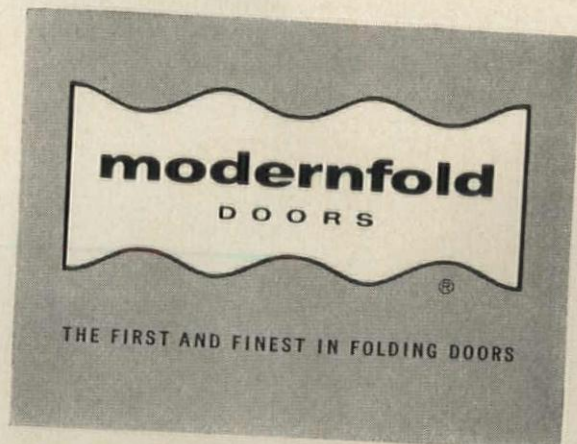
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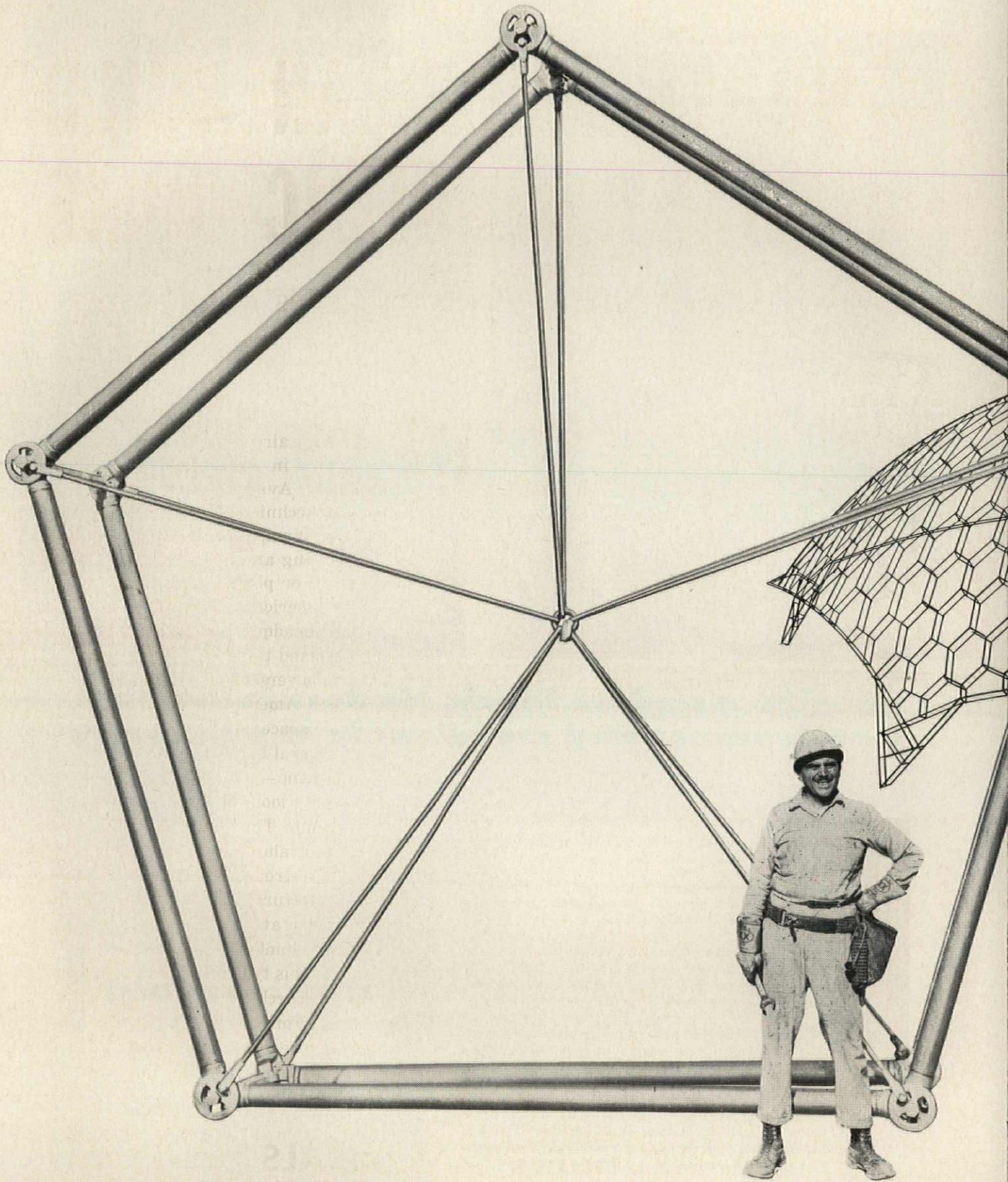
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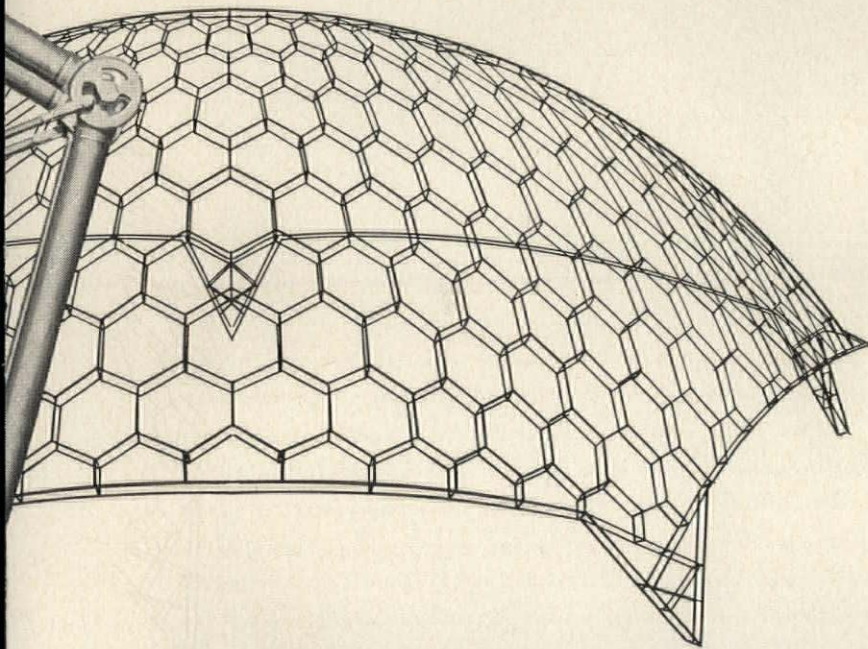


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The American Society for Metals designed its new headquarters building 35 miles east of Cleveland to be a dramatic demonstration of metal's versatility. The Columbus Division of North American was chosen to build the geodesic space-lattice dome that is the major architectural highlight.

The dome—250 feet in diameter and 103 feet high—looks like an enormous open-end honeycomb. The Columbus Division built it of 11-foot aluminum pentagon and hexagon sections—strong, lightweight, durable.

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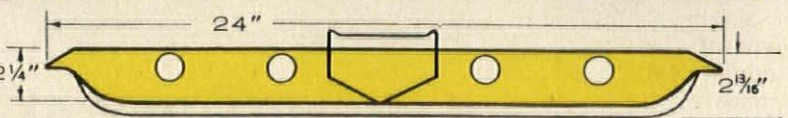
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—Drawn for the RECORD by Alan Dunn

“So, the more rational the structure, the more irrational the mural—Do I make myself clear?”

### Conference on Urban Building

The Fourth National Construction Industry Conference is being held in Chicago, December 10-11. The co-sponsors are the American Institute of Architects, American Society of Civil Engineers, Armour Research Foundation of Illinois Institute of Technology, Associated General Contractors of America, and Building Research Institute.

“Creative Trends in Urban Building” is the theme of the conference. Among the speakers at the first session, “Human Needs in Urban Society,” will be John E. Burchard, dean, School of Humanities and Social Studies, M.I.T., and consulting editor, ARCHITECTURAL RECORD. Speakers at the following sessions, “The Architects Respond,” “The Engineers Respond,” and “The Builders Respond,” are to include: Paul M. Rudolph, chairman of Yale’s Department of Architecture; Walter A. Netsch, Jr., Skidmore, Owings & Merrill; William L. Pereira, Pereira & Luckman; Louis I. Kahn, Philadelphia; Philip Will, Jr., Perkins & Will; Raymond W. Sauer, supervisor, structural analysis, Armour Research Foundation; Eduardo Torroja, Spanish engineer; Richard J. Daley, Mayor of Chicago; Albert M. Cole, Administrator, Housing and Home Finance Agency.

### Six Houses Win Magazine Awards

Space for large families is the emphasis in *Parents’ Magazine’s* annual Builders’ Competition for the Best Homes for Families with Children.

National and Regional Merit Awards are given to houses selling for \$16,000 to \$25,000 and to those selling for less than \$16,000 (exclusive of land). Recognition of the work of builders is the main purpose of the awards.

Fox and Jacobs Construction Company, Dallas, won both the National Merit Award and a Regional Merit Award in the higher price group for the Beers house in Dallas, designed by the builder’s staff under the direction of Parker Folse. Another Regional Merit Award in the same price group went to the Lusk Corporation, Tucson, Ariz., for the staff-designed DeVries house there.

There was no National Merit Award in the lower price group. Regional Merit Awards went to: Cecil E. Jennings, Lubbock, Texas, for the Fanin house there, designed by Donald H. Honn, A.I.A., of Tulsa; John C. Mackay & Associates, Menlo Park, Cal., for the Fraser house in Sacramento, designed by Irving Caster, San Mateo architect.

Two Special Awards for Distinctive Architectural Design were made. Eichler Homes, Inc., Palo Alto, Cal., received one for the Frisbie house, San Mateo, designed by Anshen & Allen, A.I.A., San Francisco. The other winner was Edward Green & Harmon White of Benjamin Franklin Homes, Inc., Newton, Mass., for the Harris house in Wayland, Mass., designed by Compton & Pierce, Architects, Cambridge, Mass.

The award jury this year included: Martin L. Bartling, Jr., Knoxville builder and treasurer, National Association of Home Builders; Richard

Bennett, F.A.I.A., Loeb, Schlossman & Bennett; Ralph Johnson, director, Construction Department and Research Institute, N.A.H.B.; William H. Scheick, A.I.A., executive director, Building Research Institute; and Maxine Livingston, family home editor, *Parents’ Magazine*.

### Thiry Named Exposition Architect

Paul Thiry, F.A.I.A., of Seattle, has been appointed chief architect for the Century 21 Exposition, to be held in Seattle in 1961. Mr. Thiry was the unanimous choice of the Seattle Civic Center Advisory Commission and the World Fair Commission, the two groups governing the international fair. The setting for the exposition is ultimately to become Seattle’s new civic center.

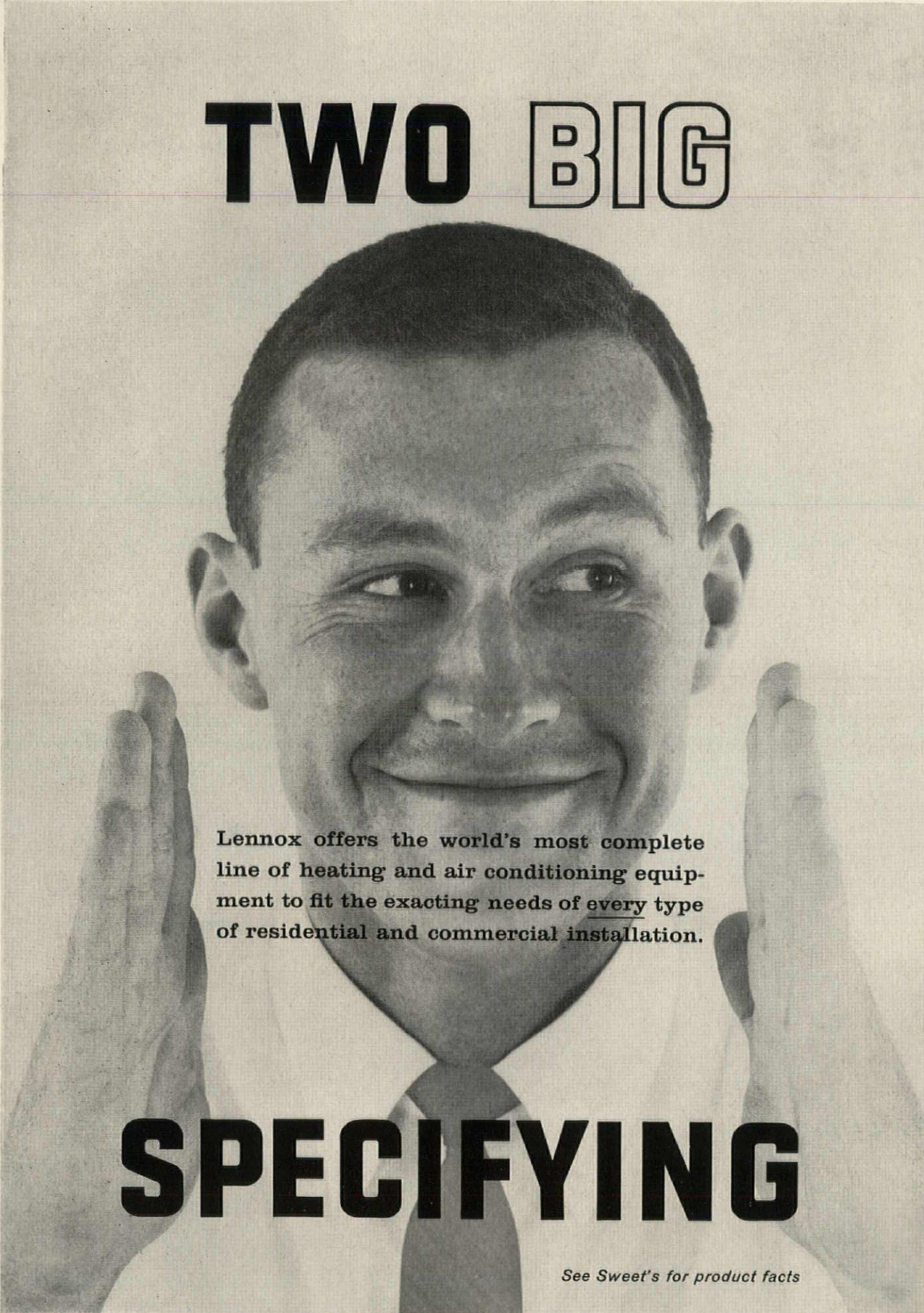
### Harley Awarded Detroit Medal

Alvin E. Harley, F.A.I.A., senior member of the Detroit firm of Harley, Ellington and Day, Inc., Architects and Engineers, was awarded the 1958 Gold Medal of the Detroit Chapter, American Institute of Architects. Mr. Harley, an A.I.A. member since 1920 and a Fellow since 1947, has practiced in Detroit for half a century.

### Johnson Honorary N.S.I.D. Member

Philip Johnson, New York architect, recently was given honorary membership in the National Society of Interior Designers for his contribution to the field of interior design. The award was the first of its kind presented to an architect by the Society.

# TWO BIG

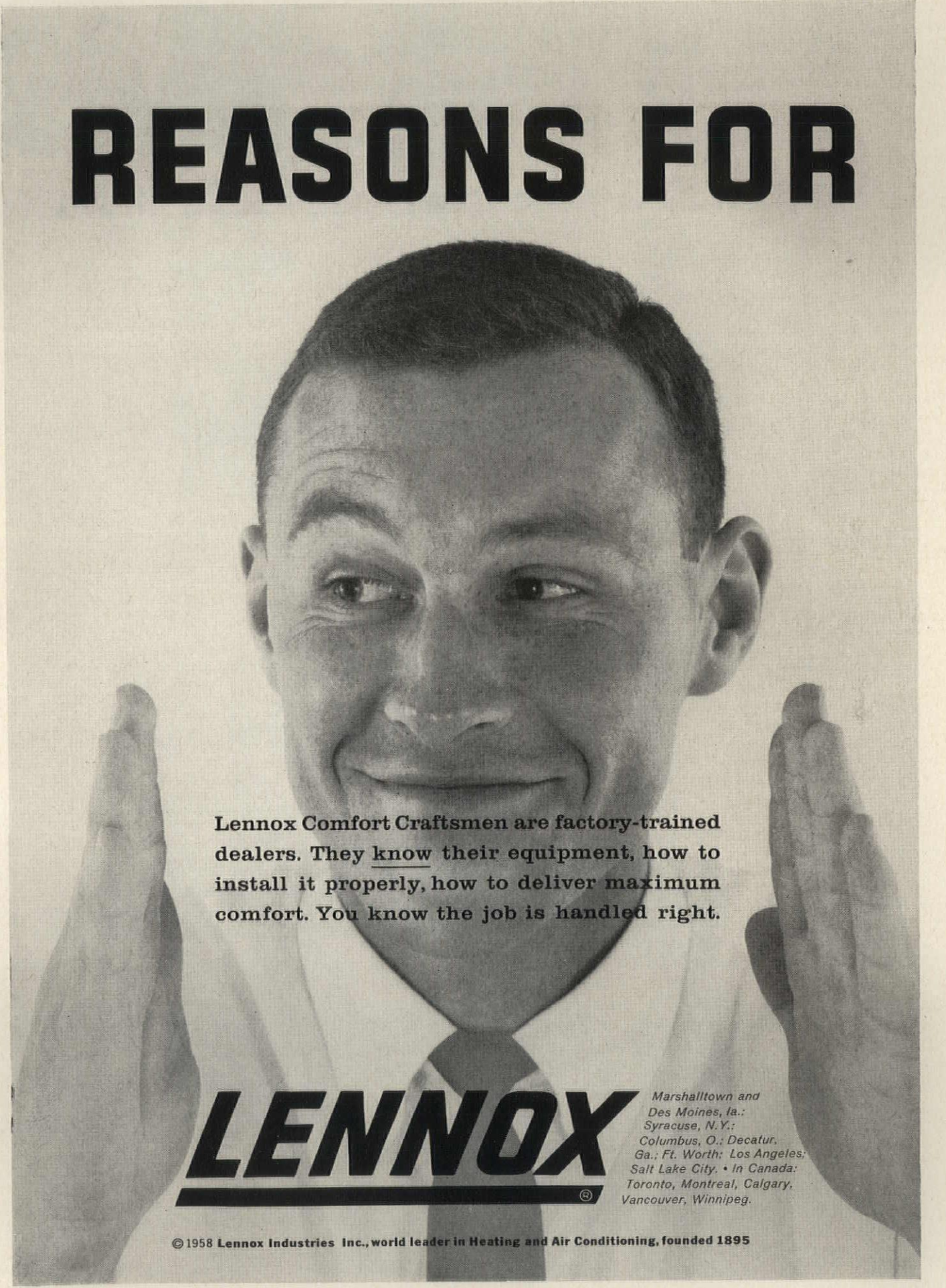


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## Modular Bibliography

The Modular Building Standards Association has issued a bibliography of books, articles, and technical papers dealing with the modular system of coordinated dimensioning. The publication is free from the Association at 2029 K St., N.W., Washington 6.

## B.R.I. Meeting on Resilient Floors

Difficulties encountered in the use of resilient flooring materials were given the spotlight at a meeting of the Building Research Institute in Washington, September 17-18.

A survey, especially conducted for this event, with 490 replies, including 61 architects, showed that the number-one problem in resilient flooring was indentation of asphalt tile. An analysis of the survey given at the conference, while acknowledging the seriousness of this problem, was quick to point out that even though 50 per cent of the complaints on indentation were racked up against asbestos and vinyl-asbestos tile, these two materials constitute 62 per cent of the market.

This same analysis reported that there is a demand for both better information and better workmanship, and that failure to follow instructions is still one of the most significant causes of difficulty.

Another paper pointed out that floor coverings rarely wear out, and more usually are replaced because of mechanical damage, architectural changes or for redecoration. Floor coverings can be unsatisfactory, due to poor wood or concrete sub-floors, or the use of inferior underlayments. Factors to take into consideration in the selection of resilient coverings include the possibility of sub-floor moisture, cost, degree of comfort required, and ease of maintenance.

Another feature of the meeting was the presentation of an information chart listing dimensions, cost, use level (suspended, on grade, below grade) and physical characteristics.

—Robert E. Fischer

## New York Architects Meet

The New York State Association of Architects' annual convention was held at the Powers Hotel, Rochester, October 16-18. Some 230 architects, exhibitors, guests, and wives attended.

The newly elected officers are shown in an accompanying cut. Among the distinguished guests were: John Noble Richards, national president of the A.I.A., and Mrs. Richards; Trevor W. Rogers, A.I.A. regional director, and Mrs. Rogers; William B. Macomber, Assistant

Secretary of State; Col. Clinton B. F. Brill, chairman, New York State Thruway Authority; Maurice Payette, president, R.A.I.C.

At the sometimes stormy business meetings a great deal of discussion centered about the publication, *The Empire State Architect*, and the duplication of committees between the state organization and the A.I.A. regional organization.

—James S. Hornbeck

## Gulf States Conference

The Ninth Annual Conference of the Gulf States Region of the A.I.A., held in Biloxi, Miss., October 5-8, was a provocative, bustling affair, boasting a huge attendance (reportedly 500) and the unexpected presence of the current Miss America.

The theme, "Architecture in the Space Age," was well covered by speeches and seminars by a prominent list including Frederick Graf von Surma, government space and missile expert, and Buckminster Fuller.

Sam T. Hurst, dean of the School of Architecture at Alabama Polytechnic Institute, summed up the space age as a paradox: "It . . . produces the finest housing in the world for Prudential and Seagram, but has not organized itself to solve on any wide scale the basic living functions. . ."

The exhibit of the year's architectural work included 70 buildings, and was one of the finest collections seen by this reporter. See pages 12-13 for award winners.

—Herbert L. Smith, Jr.



Two photographs taken during the recent Gulf States Regional A.I.A. Conference. Above: Mrs. A. L. Aydelott; G. Scott Smitherman, Shreveport; A. L. Aydelott, Memphis; N. W. Overstreet, Jackson, Miss.; Thomas J. Biggs, Jackson. Below: Mr. and Mrs. John M. Ware, Jackson; John N. Richards, A.I.A. president, and Mrs. Richards; John H. Pritchard, regional director, and Mrs. Pritchard



Three pictures taken during the North Central States Regional A.I.A. Conference and Minnesota Society of Architects' annual convention in St. Paul (AR, Nov. '58, p. 25). Top: officers and directors, North Central Region: seated, left to right, John Magney, Minneapolis chapter; John Fugard, Jr., Chicago; John N. Richards, A.I.A. president; Harold Spitznagle, regional director, South Dakota; Leo Weissenborn, Chicago; Clarence Herges, South Dakota. Standing, Joseph Flad, Wisconsin; W. Brooks Cavin, past president, Minnesota Society; Gerald Buetow, St. Paul; Gordon Comb, St. Paul; William Bentzinger, South Dakota; Lee Millke, Illinois; Al Wegleitner, Minneapolis; W. J. Bachman, Chicago; Paul Damberg, Duluth; Charles Boettcher, Northern Illinois. Center: newly elected officers of the Minnesota Society of Architects: Milton Bergstedt, St. Paul, treasurer; G. Clair Armstrong, Minneapolis, president; W. Brooks Cavin, outgoing president; George Townsend, St. Paul, vice president (Kenneth Backstrom, Minneapolis, secretary, was not in photo). Bottom: Marcel Breuer; Mrs. John N. Richards; E. A. Jyring



Newly elected officers of the New York State Association of Architects are, left to right: S. Elmer Chambers, third vice president; Frederick H. Voss, second vice president; Martyn N. Weston, treasurer; Harry M. Prince, president; Joseph F. Addonizio, executive director; Simeon Heller, secretary; John W. Briggs, first vice president

FREQUENT

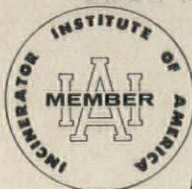
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Incinerator Catalog or see it in Sweet's.*

SURVEY CONTINUES TO DEVELOP DATA ON BUILDING PLANS OF COLLEGES AND UNIVERSITIES

As the U. S. Office of Education progresses with its survey of college and university buildings, existing and planned, it continues to amass information which is of great significance for architects, as well as education officials, both public and private. The survey has shown, for example, that U. S. colleges and universities plan facilities during the period 1956-1970 that would cost an estimated \$5.5 billion.

With the earlier efforts of new building data assembly (AR, Aug. 1957, page 16) now well established and running smoothly, the Office is placing new emphasis on its inventory program. Two new staff men—Dr. Eugene Higgins and William S. Fuller—are devoting their time to developing details on inventorying the nation's supply of college and university physical facilities. A third new staff man, John B. Rork, is analyzing data already collected on projected facilities covering the period 1956-1970 inclusive. A first published report from the project, now a couple of years old, is expected around Christmas time. (All three of the new staffers are known as specialists for physical facilities.)

Altogether, this program of collecting and publishing statistical information on existing and proposed structures in the higher education field, along with its details of space use, materials use, building types, cost data, etc., promises to be one of the most comprehensive Federal government efforts of its kind.

The overall project can be broken down into five studies, now all actively underway, according to Dr. Robert Bockelman, who is in charge: (1) the actual new facilities provided from 1951 to 1955 inclusive; (2) the planned construction reported for 1956 through 1970 inclusive; (3) the all-inclusive inventory; (4) a study of and report on what higher education officials feel to be their real institutional building needs now and in the years ahead; and (5) the listing of new institutions and space made available by them, including all junior colleges as well as four-year public and private colleges and universities.

To compile the last-named as completely as possible, Dr. Bockelman's staff is writing present universities

and colleges, state organizations, religious groups and other possible sponsors to ascertain where new institutions are being planned and what their size will be. The object is to get the information early. To await the application for accreditation does not give up-to-date knowledge on new schools established, he said. The lag could be many months or longer.

The inventory project is trying to reach 1937 higher learning units listed in the latest education directory plus new ones started since that publication came off the press. The directory is revised annually, and the attempt to secure data on new colleges and universities, begun earlier this year, will supply information not otherwise available, it is expected. The initial survey letters in the inventory project were mailed out in April. Nearly 600 replies now are on hand.

Two additional letters have just gone out. One was to those colleges and universities already replying to explain the use to which the data is being put and how the inventory will be kept up to date during the years ahead. The second is a nudge to those not responding, explaining the importance of the program and urging cooperation.

An extremely good response has been recorded in the other phase of the work—new and projected buildings. Here an average of 90 per cent of total enrollment has been blanketed. In the case of the universities it is 99.4 per cent; liberal arts, 84.7 per cent, and teachers' colleges, 88.7 per cent. Weaknesses lie only in the junior college area, where only 47.5 per cent have been covered, and in theological schools, where the figure is 58.1 per cent. The Office is working on raising these last two percentages.

From data already compiled and ready for publication it is apparent that the real break-through on college and university building occurred late in 1952 and early in 1953, one Office spokesman said. With little building during the depression and World War II, in the postwar period when temporaries were used, and during Korea, the big push came in those years when the colleges finally were able to begin their building

programs. The birth rate influence, stemming from the war years, is only now beginning to show in increased enrollments and the demand for more structures brought along with them.

Data submitted to date on college and university building plans has indicated that 67 per cent of the projected construction falls in the years 1956 through 1960 as part of the longer period from 1951 through 1970 for which the institutions were asked to report.

(The first publication due at Christmas time is to cover building from 1951 through 1955 only. Subsequent chapters will pick up the projections in five-year intervals.)

The Office is considering conducting repetitive five-year studies of building plans beginning next Spring. This has not been determined, but such a course would keep the building plans data fresher for an indefinite period into the future.

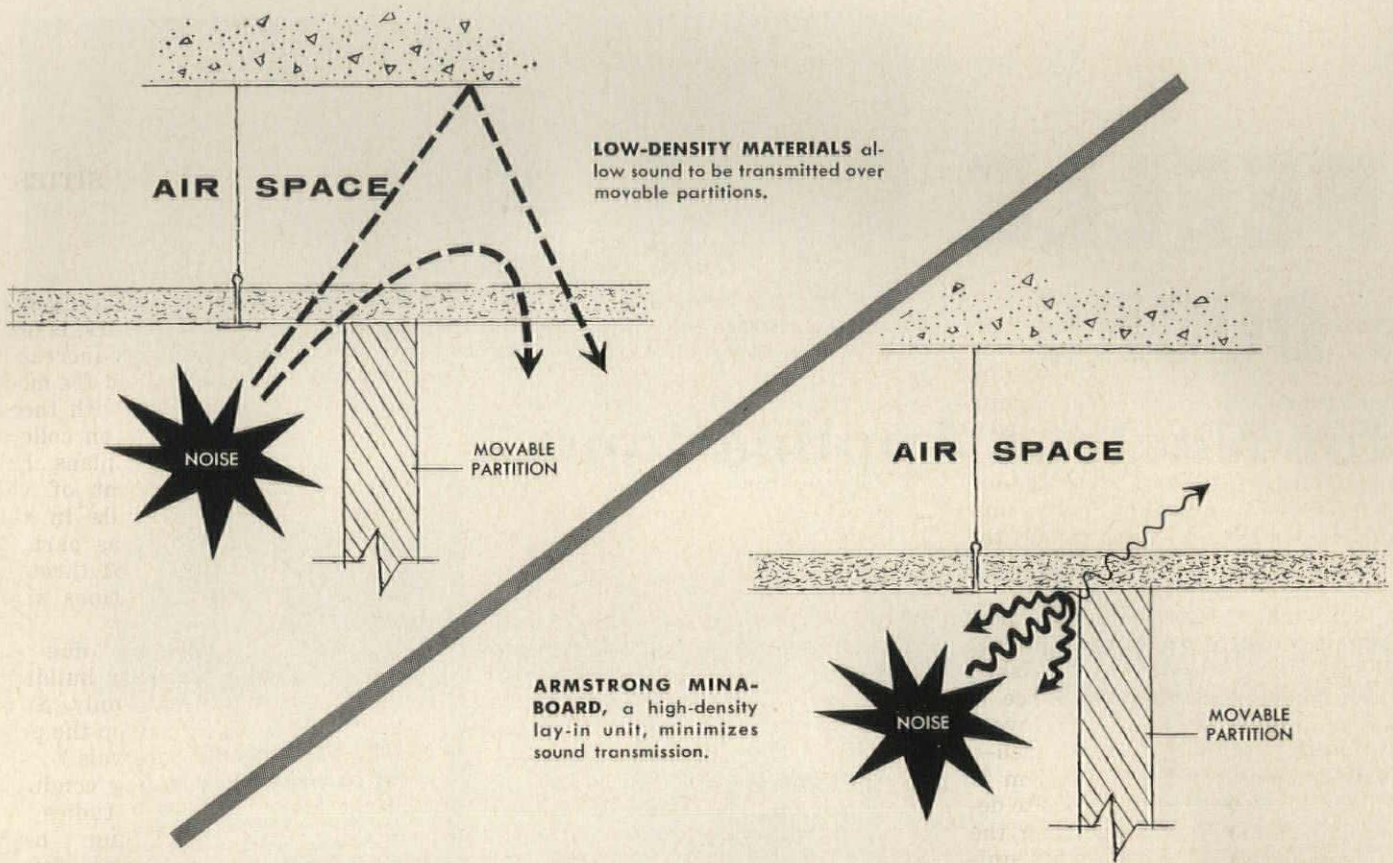
Who uses this wealth of data now being assembled? Officials report that the institutions themselves are the greatest users so far. This may be because they are aware of its existence, having contributed. But those in the program in Washington are sure that architects, engineers, contractors, subcontractors and material suppliers will find greater and greater value in the recorded trends as the information multiplies.

State and other education leaders are beginning to use the material and state legislatures are just becoming aware of its availability.

An important smaller facet of the program is a concentrated survey of actual college and university construction from January 1, 1956, through June 30, 1958. This will be weighed as are the projections on record and compared to them to ascertain how closely results have followed intentions submitted earlier.

The inventory phase will not begin to show published results until sometime next year and the first printings will be preliminary in character. When assembled, this data will show condition of building (obsolescence can be measured accurately), and will indicate physical facility supply for main campuses only. Farm, camp and foreign property is not to be included.





## HOW NEW **Armstrong** MINABOARD HELPS SOLVE SOUND-TRANSMISSION PROBLEMS

The installation of acoustical lay-in units in grid systems poses a major sound-transmission problem. Where ceiling-height movable partitions are used, sound will be transmitted through low-density boards in the suspended ceiling and reflected off the slab above the adjacent partitioned areas.

Until the introduction of high-density Armstrong Minaboard, the available solutions to the problem (extending the partitions upward to the slab or placing backer board behind the units) interfered with either the mobility of the panels or the intrinsic advantages of the grid system.

Minaboard, however, now makes it possible to gain—in most instances—the economy and functional advantages of a grid system and the flexibility of movable partitions without the accompanying sound-transmission problem. Minaboard can now be installed, by itself, in areas where a grid system would previously have been unsatisfactory.

Minaboard's special density and composition provide excellent resistance to sound transmission—much higher than that offered by low-density ceiling boards. The table at left shows figures for a *single pass!*

Minaboard also offers high resistance to "breathing," good acoustical efficiency, and incombustibility. Armstrong Fissured Minaboard is the only fissured incombustible lay-in unit available today.

For more information and samples of Armstrong Minaboard, contact your Armstrong Acoustical Contractor or write directly to the Armstrong Cork Company, 4212 Rock Street, Lancaster, Pa.

**Db Transmission Loss of Armstrong Minaboard**

Frequency (cps)	Transmission Loss (db)
125	8.6
250	10.8
500	13.8
1000	17.9
2000	22.5
4000	25.9

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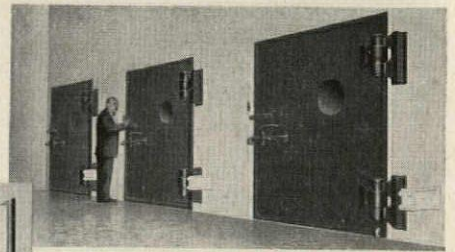
A great wealth of design and engineering experience, gained in furnishing doors for X-ray rooms, high frequency sound laboratories, jet engine test cells and for some of the most prominent nuclear laboratories in the world places The Peelle Company in a strong position to engineer, fabricate and install the various types of doors required for nuclear facilities.

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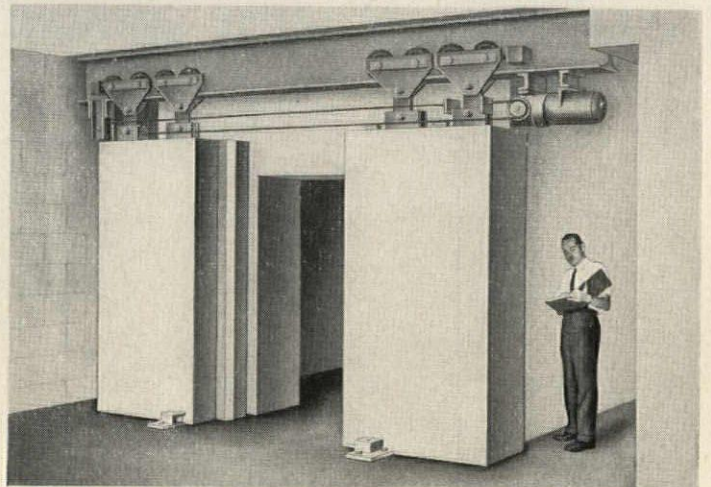
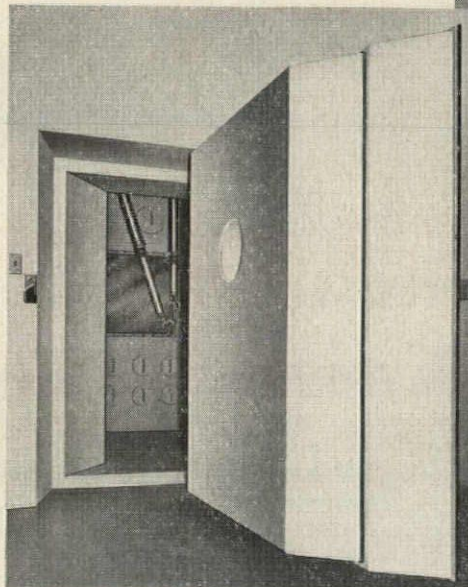
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### HOT CELL DOORS AT PLAINSBORO, N. J.

The above battery of hot cell doors was photographed in the Industrial Reactor Laboratories for which Peelle engineered and installed eight nuclear shielding doors of various kinds. Photo at left shows one of these doors partially opened. Each of these doors weighs 26 tons and consists of a 3' thick steel shell filled with concrete and hung on massive steel hinges of superior design. A transfer hole in each door permits placing small objects in the cell while the door is closed.



ARCHITECTS & ENGINEERS: SHAW, METZ & DOLIO  
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### HOT LAB DOOR IN CARACAS, VENEZUELA

This Peelle center parting, horizontal sliding door in the I.V.I.C. Reactor Building is motorized. To provide extra hall space, the door panels were constructed of machined solid steel slabs, measuring 16" in thickness and weighing 15 tons. The opening frame consists of heavy steel slabs to provide proper shielding and interlocking.



## **Golden** Aluminum Grating for Architectural Use

Here, a new application for aluminum grating—*gold-anodized aluminum grating*—an exacting installation where quality equal only to Borden's would do, the new Congregation Beth El Synagogue in South Orange, N. J., designed and built under the supervision of the architectural firm of Davis, Brody and Wisniewski of New York City.

**BORDEN METAL PRODUCTS CO.**



PLEASE  
TURN

PAGE



## new Architectural Use for Aluminum Grating

Borden pressure-locked type grating, of gold-anodized aluminum, backed by porcelain enamel panels and bolted to mullions, forms the facade of this dramatic new structure.

Installation of the grating, which was made with special spacing and in panel sizes to meet the architect's specifications, was simple and quick. The panels were supplied with lugs welded to the grating in such a way as to easily slip into pre-drilled holes in the mullions.

The gold-anodized aluminum grating is spaced from the porcelain enamel panels at a distance which creates the desired spatial effect. The floating effect of the roof is achieved by the glass areas above the grating.

The spacing of the grating away from the porcelain backing panels gives full play to the self-cleaning aspect of Borden pressure-locked grating. Rain is deflected and carried away; there is no surface for debris to accumulate upon.

Gold-anodized aluminum grating never needs painting—provides a maintenance-free decorative grill for modern architecture.

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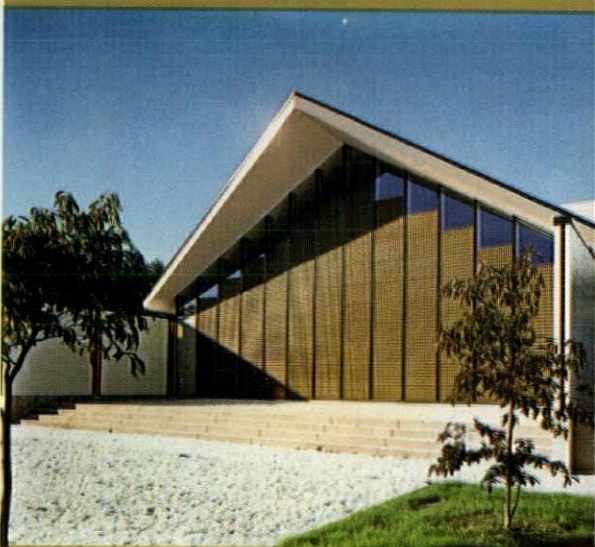
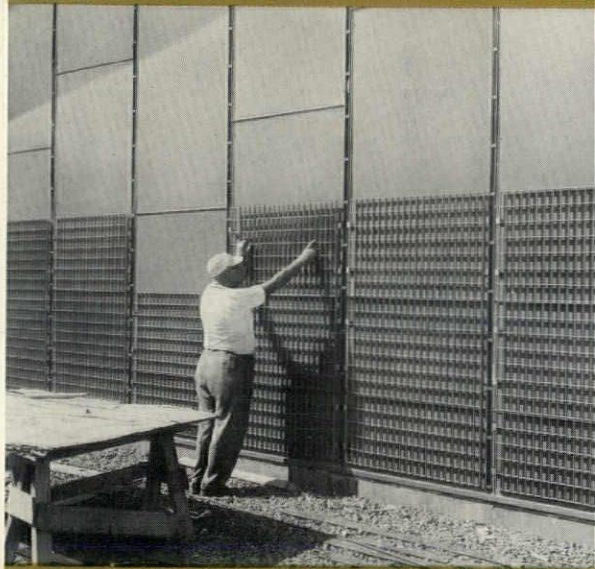
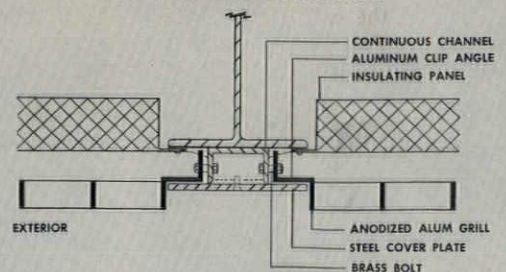
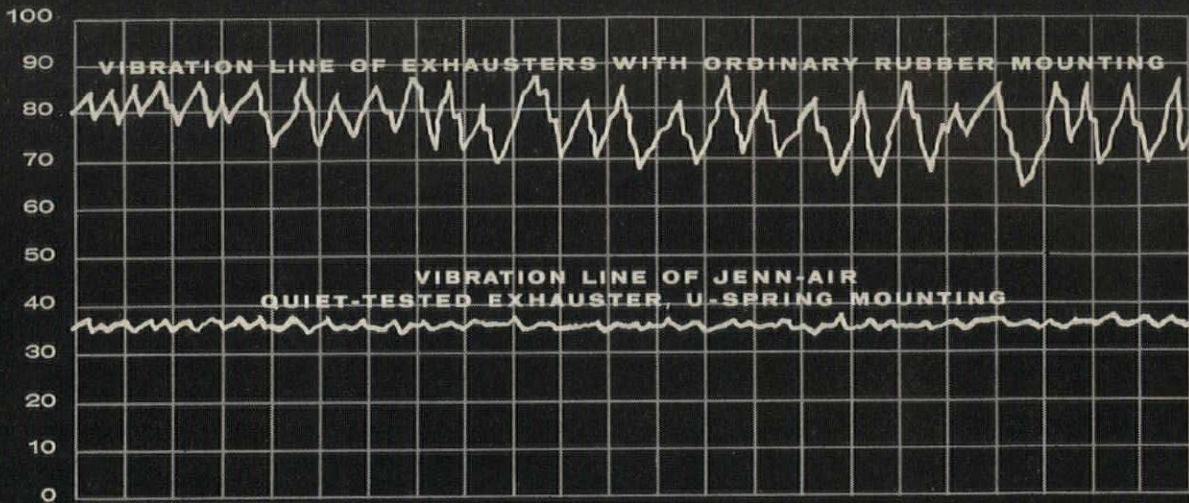


DIAGRAM SHOWING HOW GRILL  
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Based on the findings of Pittsburgh Testing Laboratory

The above chart shows a comparison of vibration levels between ordinary exhausters and Jenn-Air Quiet-Tested Exhausters.

## 44% Less Vibration with JENN-AIR Quiet-tested Roof Exhausters!

*Independent Laboratory Tests Prove Conclusively That Jenn-Air Quiet-Tested Roof Exhausters With U-Spring Suspension Show 44% Better Vibration Isolation Than Exhausters With Power Assembly Mounted in Rubber*

Noise elimination is a problem which faces the ventilation industry today. To minimize the noise caused by vibration, Jenn-Air developed the Quiet-Tested Roof Exhauster with U-Spring cushion suspension. Now an independent laboratory offers proof positive this new principle of suspending the power assembly with U-Springs does the job. The PITTSBURGH TESTING LABORATORY, an independent research firm, was recently asked to compare Jenn-Air's Quiet-Tested Roof Exhauster, with U-Spring Suspension Mounting, against exhausters with ordinary rubber isolators. Tests were conducted under actual working conditions. Result: (see chart for dramatic evidence): *Jenn-Air Exhausters showed 44% less vibration transmission than the other exhausters.*

### U-SPRING CUSHION SUSPENSION MOUNTING REDUCES VIBRATION . . . NOISE LEVEL

This innovation is another important improvement by Jenn-Air. It ensures against the major operating vibration and noise being transmitted through the duct work and into the building. The stainless steel also assures you the permanency of this quiet operation. Jenn-Air—and only Jenn-Air—Quiet-Tested Exhausters are proved under simulated field conditions. Each unit must pass rigid inspection by the critical *Vibronic Eye* . . . is 'screened' in Jenn-Air's Sound-Elec Test Chamber to detect noise and vibration.

Patents Pending



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Jenn-Air Quiet-Tested Roof Exhauster, with U-Spring Cushion Suspension Mounting. Note low contour design which complements modern architectural lines.

**JENN-AIR PRODUCTS COMPANY, INC.**

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Panels, most of which are 5'6" x 6' x 2", were fastened directly to the structural frame with no back-up needed. The walls are weather-tight, noise- and fire-resistant.

Architects everywhere are finding that concrete is the one completely versatile building material for structures of every size and kind.

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*Consulting and Structural Engineers: Phillips-Carter-Osborn, Inc. and Rhuell A. Andersen. Denver, Colorado*

*Contractor: Mead & Mount Construction Company, Denver, Colorado*

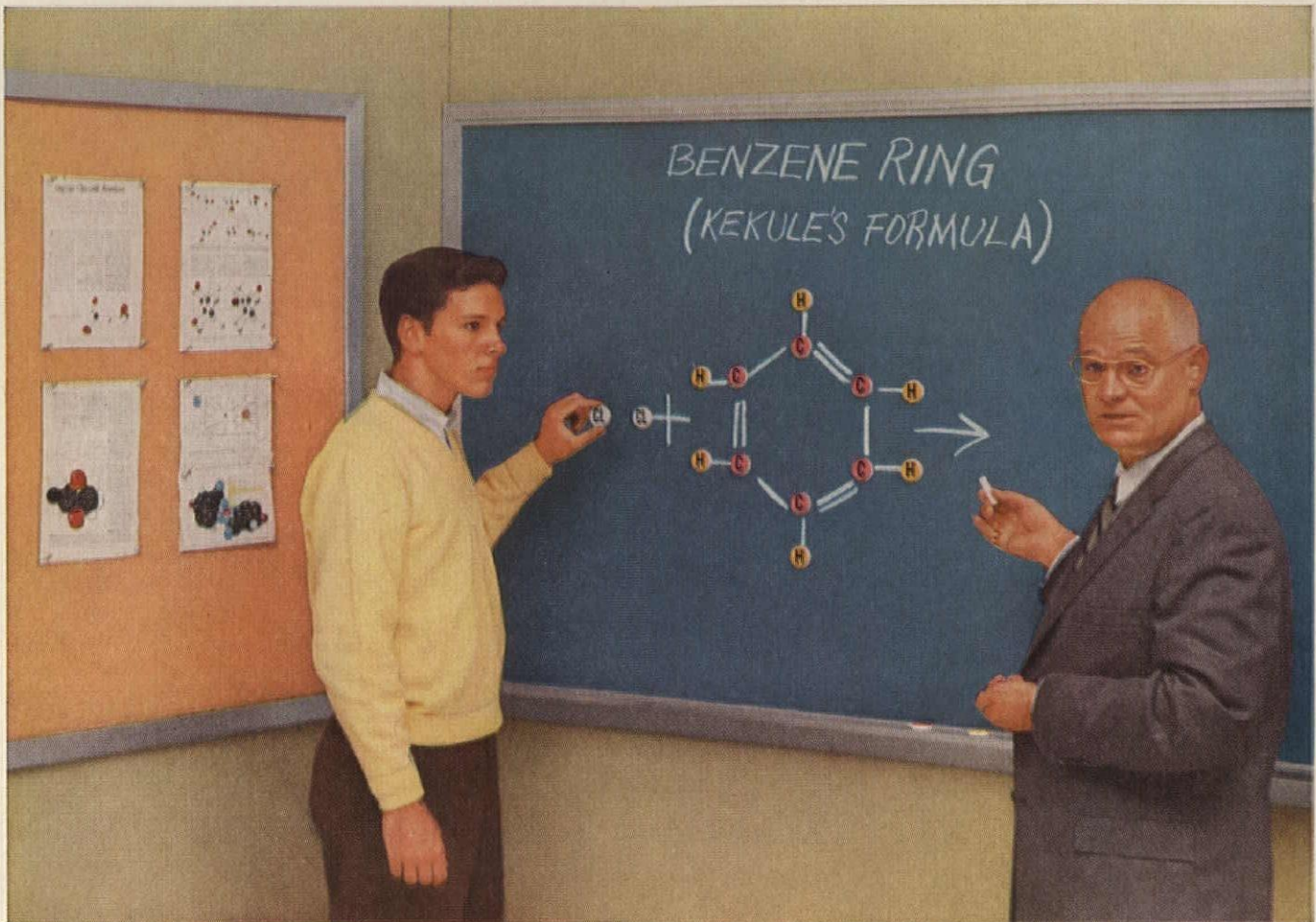
**PORTLAND CEMENT ASSOCIATION**

*A national organization to improve and extend the uses of concrete*

**FOR STRUCTURES...**

**MODERN**

**concrete**



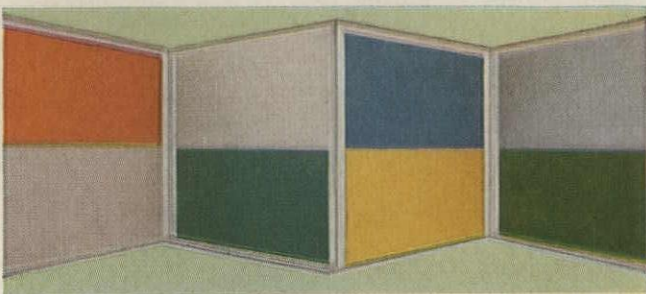
From chemistry to kindergarten cutouts, teaching can be more effective with Weldwood Chalkboard. The magnetic feature makes possible use of movable symbols attached to small magnets. Available in a variety of colors, Weldwood Chalkboard and Tackboard offer you dozens of decorating possibilities.

## Catalysts for learning — and for building classroom beauty — colorful Weldwood Tackboard and magnet-holding Chalkboard

Classrooms today are not the grim, cheerless places they often were in the past. Our young people can benefit from modern facilities such as the bright — and functional — Weldwood Chalkboard and Tackboard installation pictured above. Here is an attractive setting for learning that offers the added advantages of visual aid teaching opportunities.

But to cost-conscious school planners, a Weldwood Chalkboard and Tackboard installation's most important feature is the way it cuts maintenance and saves schools money.

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Weldwood Chalkboard has a glare-free porcelain enamel face over steel that never needs resurfacing. This is bonded to exterior grade plywood and backed with .015" aluminum. Weldwood Chalkboard won't shatter or buckle, and is guaranteed for the life of the building.

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**Free School Planning Booklet.** "Weldwood Products for School Construction and Remodeling," has 20 pages of photographs showing Weldwood installations in schools. Write for your copy and see Weldwood products at any of 115 Weldwood branch showrooms in United States and Canada. Architects are invited to call on the Weldwood Architects' Service representative in their areas. United States Plywood Corporation, Dept. AR 12-58, 55 W. 44th St., N. Y. 36, N. Y.



**New Executive Director  
Named by R.A.I.C.**

Robbins L. Elliott of Ottawa has been appointed executive director of the Royal Architectural Institute of Canada. He assumed his new duties in Ottawa effective November 1. Mr. Elliott, a native of Wolfville, N. S., is 38. A World War II veteran, he has a master's degree in economics from the University of Toronto and had considerable newspaper experience before entering the Federal civil service 11 years ago. He has been employed in various capacities, first with the Reconstruction and Supply Departments and then with the Department of Public Works. Appointed assistant director of Property and Building Management in 1955, he became in 1956 director of personnel, the position he left to head the R.A.I.C. staff.



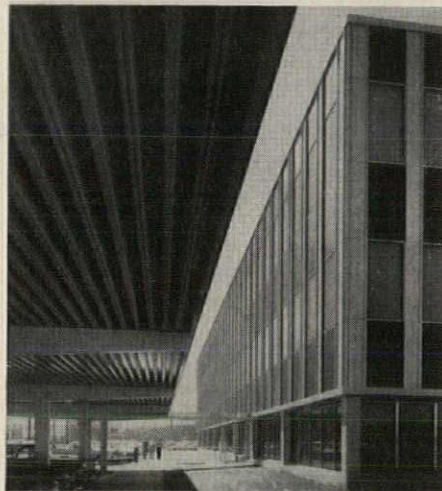
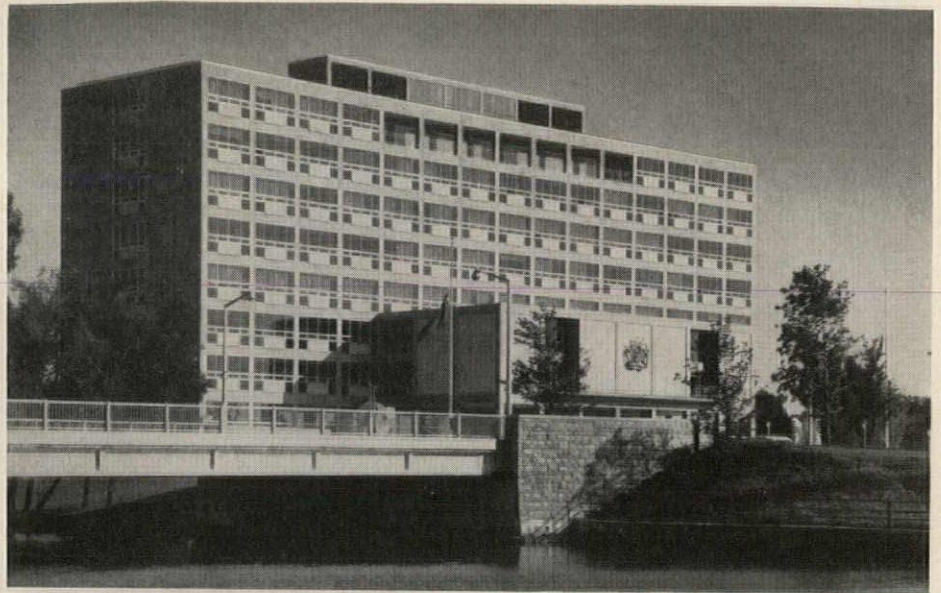
**Stainless Steel Featured in  
Atlas Steels' New Building**

The Administration Building for Atlas Steels Ltd. recently opened at Welland, Ont. (photos at right), gives Canada its first all stainless steel curtain wall building. The wall consists of matte black stainless steel spandrels with bright stainless mullions and sills and gray glazing. Inside the building stainless steel has been used wherever practicable. Rosewood panels are divided by stainless ribs. Lobby furniture has stainless steel frames. The freestanding columns in the main reception lobby have two faces of slotted stainless steel grills. Stainless has been used for most of the hardware, stair railings and trim. The washrooms have stainless steel partitions; and the kitchenette just off the main Board room is equipped with stainless steel appliances.

The building is planned within a simple rectangle 80 ft wide by 160 ft long and is three stories high. All three floors are designed around a central service core containing washrooms and heating and air conditioning ducts. Offices are divided by steel partitions.

The building is basically steel frame with reinforced concrete footings and retaining walls. All the floors are poured concrete over Q-decking.

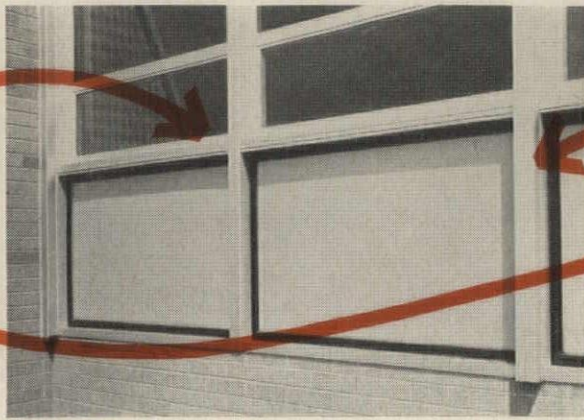
Contract cost of the building was \$859,110, approximately \$22 per sq ft. Cladding cost was \$7.50 per sq ft including glazing.



Above: Ottawa's new city hall, on the bank of the Rideau River. Architects (who were competition winners): Rother, Bland and Trudeau, Montreal; structural engineers: DeStein and McCutcheon, Montreal; electrical and mechanical engineers: Wiggs, Walford, Frost and Lindsay, Montreal; general contractor: Perini Ltd., Toronto and Ottawa. The building, which cost \$3,400,000, provides 120,000 sq ft of office area for 350 employees. At left and below: Administration Building for Atlas Steels Ltd., Welland, Ont.; architects: Prack and Prack, Hamilton, Ont.; general contractors: Pigott Construction Co. Ltd., Hamilton. Canada's first all stainless steel curtain wall building provides 39,000 sq ft of floor area on three floors 80 by 160 ft; cost was approximately \$800,000







Detail shows use of Inlock gaskets with 1" porcelain panels.

*lock out leaks, have design freedom with*  
**INLOCK<sup>®</sup> GASKETS**



St. Dominic School, Youngstown, Ohio. *Architect:* P. Arthur D'Orazio, Youngstown, Ohio

Inland developed the patented Inlock Neoprene Structural Gasket to provide a leakproof member for today's curtain wall architecture.

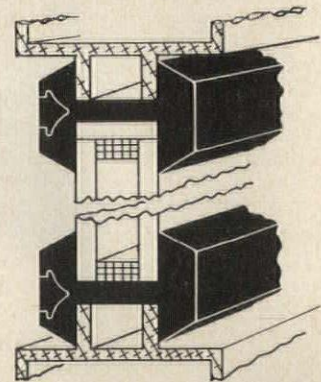
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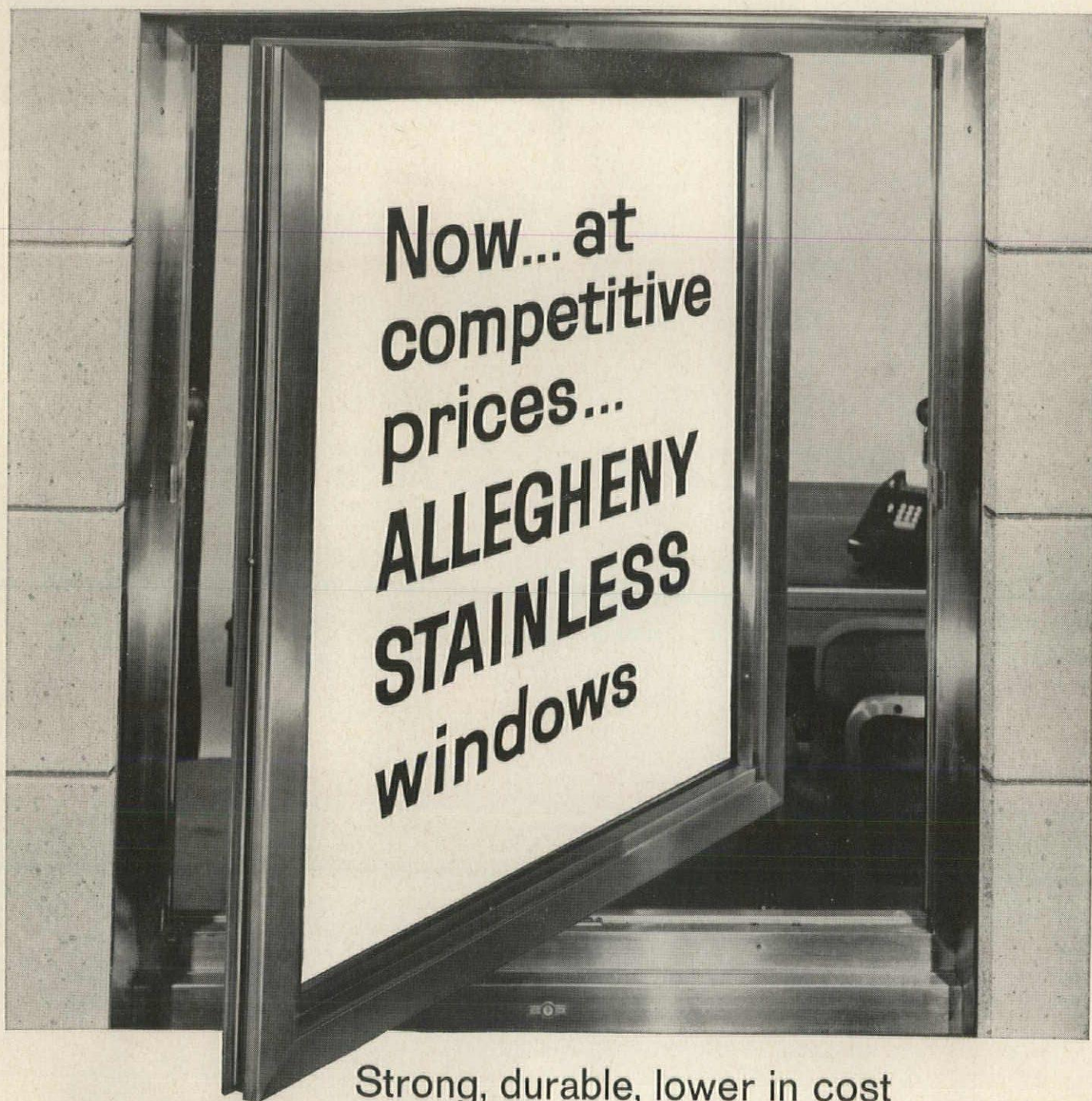
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sive atmospheres, the brightness and freedom-from-pitting of Allegheny Stainless are recorded history; yet different patterns, textures and colors make news each day.

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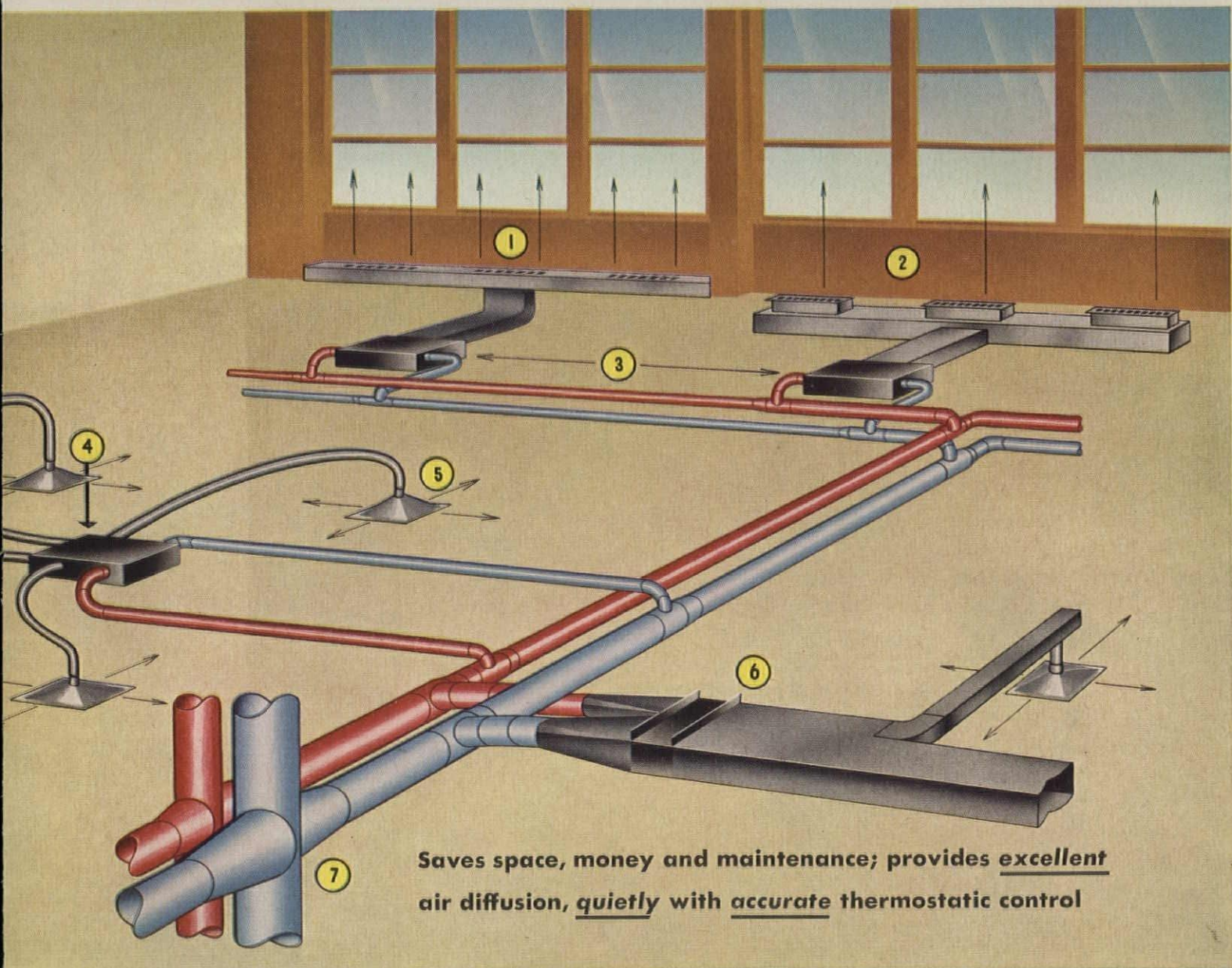
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**3. Anemostat Constant Volume High Velocity Units** — Automatically controlled by thermostats in the occupied spaces.

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**5. Anemostat Air Diffusers** — Available in any type for high velocity units — square, round, rectangular or perforated plate — to match special or standard type ceilings. Diffusers are available to suit architect's specification.

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**Alberta Architects Protest Design Competition**

Seeking "an untapped source of ideas," Premier Manning of Alberta recently announced a competition for designs for new homes for the aged to be built in rural parts of the province. He said the competition would be open to laymen as well as to architects, and that sketches would be accepted which "need not necessarily meet architectural standards." His only stipulation was that the building should be a one-story structure to cost about \$200,000 with furnish-

ings and landscaping and to provide accommodation for 50 persons. Prizes were set at \$5000, \$2500, \$1000 and \$500. Ten additional awards of \$100 each were also provided for each of the ten best individual design features.

Reaction of the Alberta Association of Architects was quick and sharp. Pointing out that such a competition would violate both its Act and its bylaws, the Association notified its members that they should refrain from participating until the conditions were fully investigated.

**New Vancouver Church Erected Over Existing Basement**

St. John the Apostle Roman Catholic Church in Vancouver (photos below) is constructed over an existing basement which was only two thirds the size of the structure required. As a result, the floor level had to be set at 5 ft above grade. To avoid unpleasant height and bulk which would have resulted from the floor level being too far above grade, the architects used steel trusses exposed on roof, with 4-in. decking hung on the lower chord. The main nave seats 350. The original basement is used as 2400-sq-ft meeting hall and the new basement incorporates kitchen

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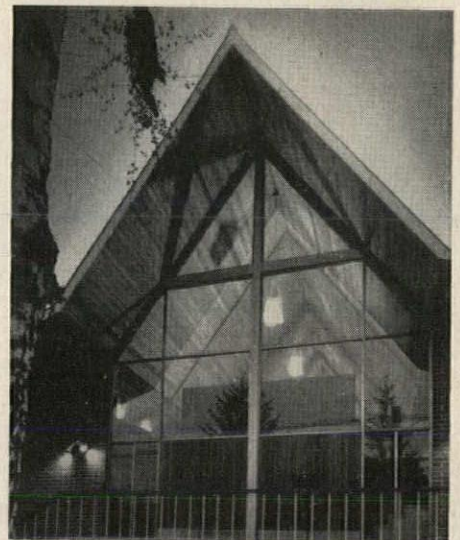
This service is available to architects without obligation. Call your nearby American representative, or write.

Willamette View Manor, Portland, Oregon. Architect: Walter E. Kelley, Portland, Oregon. Laundry Equipment: The American Laundry Machinery Company.

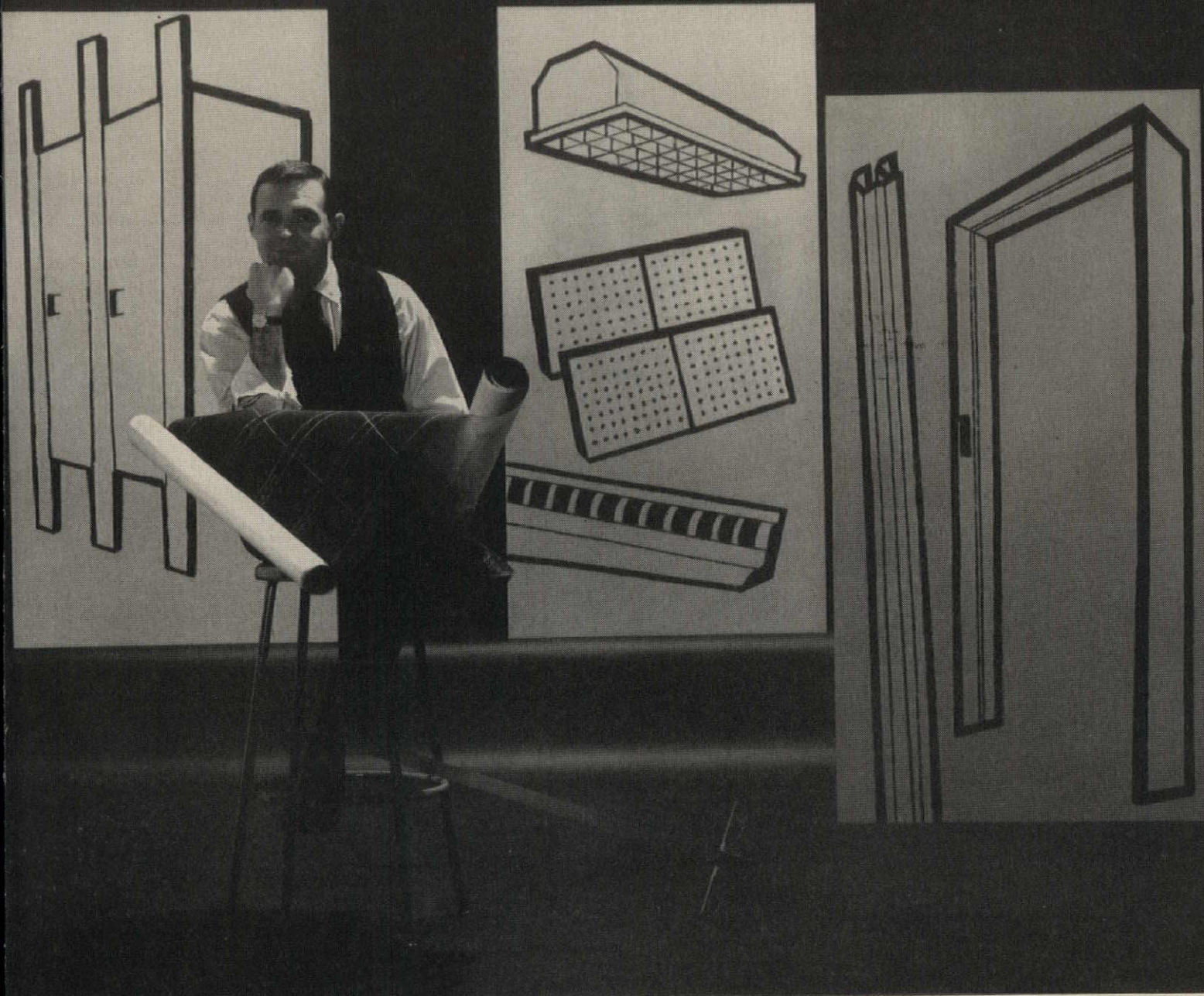


**The American Laundry Machinery Company, Cincinnati 12, Ohio**

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and meeting rooms. Cost was about \$95,000. Toby and Russell of Vancouver were the architects; Richmond Consultants, structural engineers; Simpson and McGregor, electrical engineers; Hansen Construction Co. Ltd., general contractor.



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Today, it's almost axiomatic that the more zinc-coated steel you put to work for you, the more freedom your buildings will have from corrosion—and the more freedom you'll have from customer kicks about corrosion and corrosion-caused maintenance costs.

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Look at the formability, for example. With either electrolytically zinc-coated steel sheets, or continuous process zinc-coated sheets, the tight coating stays tight through the severest fabrication operations. How about corrosion prevention? It's long-lived, uniform, relentless. First cost is low. Maintenance costs are nil. And the results are a lasting credit to your building and your reputation. How about paintability? Electrolytic zinc-coated steel surfaces, chemically treated, are unexcelled for painted products. It lets paint dig in and hold its unbroken smoothness and beauty for keeps.

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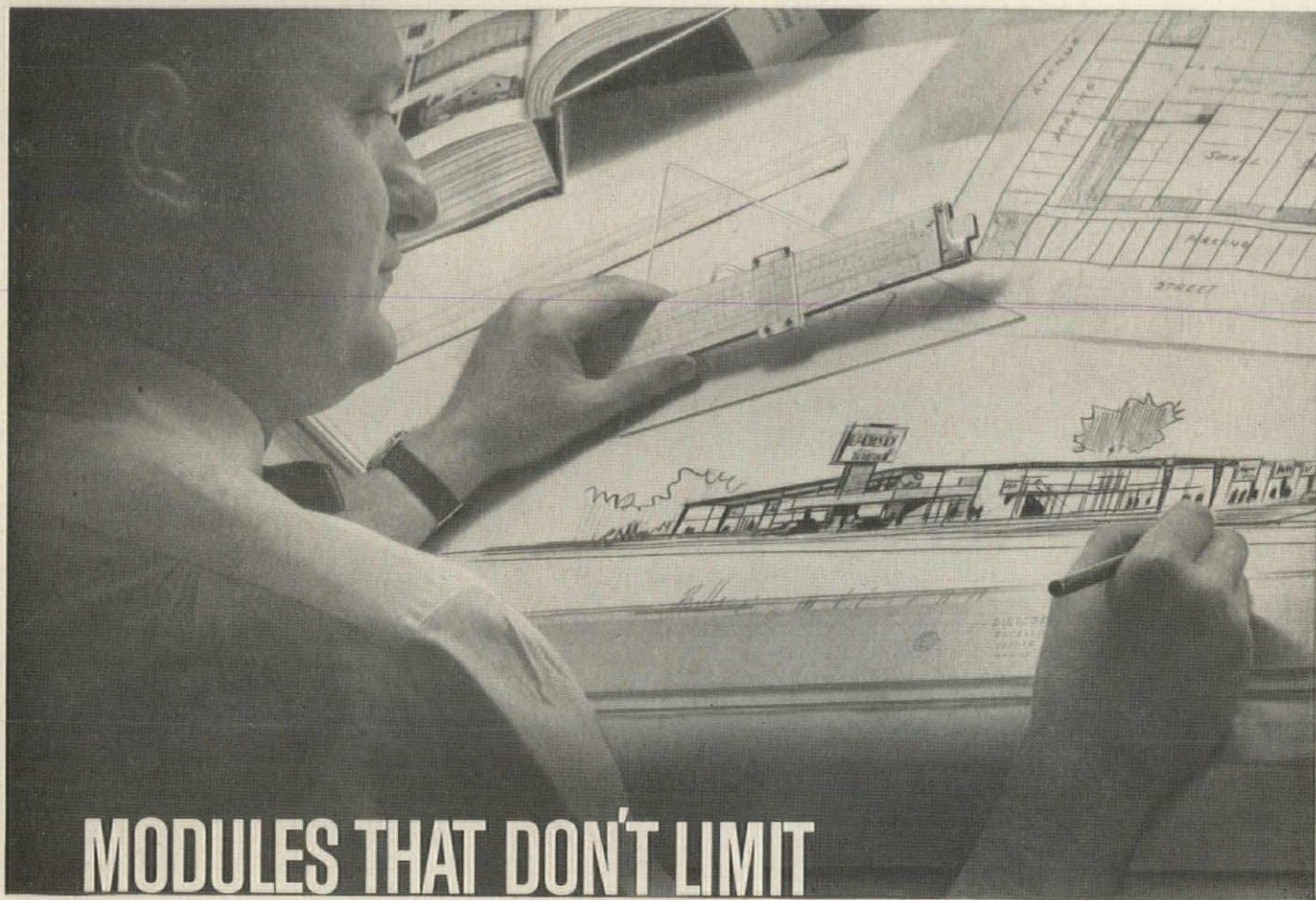


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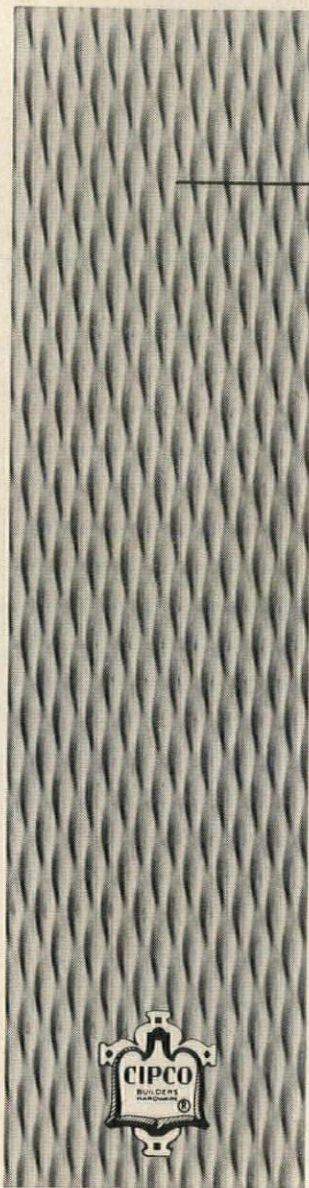
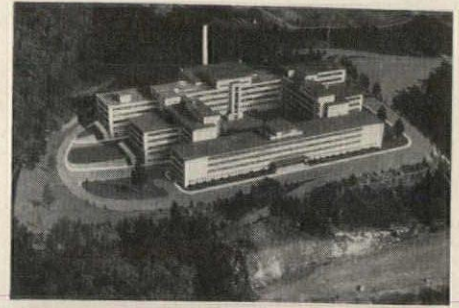
City ..... State .....

**New Building Completed for Ecole Polytechnique**

A new building to accommodate 1500 engineering students has been opened by the Ecole Polytechnique of the University of Montreal. Architect was Gaston Gagnier of Montreal; structural engineers, Lalonde and Valois; mechanical engineers, P. F. Vinet; electrical engineer, Fernand Leblanc; general contractor, Quemont Construction Inc.

The building, located atop Mount Royal in the heart of the city and ad-

joining the existing university campus, is divided into four main blocks which are subdivided in eight wings. The main block on the front contains administration, library, classrooms, offices, laboratory of strength of materials and general vestuary and cafeteria. The two lateral blocks contain various departments as does the rear block, which also has the Department of Hydraulic, the most modern in Canada, with facilities that include reservoirs, a larger ship canal, and a turbine canal, all constructed of prestressed concrete.



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ARMOR** } **PLATES**

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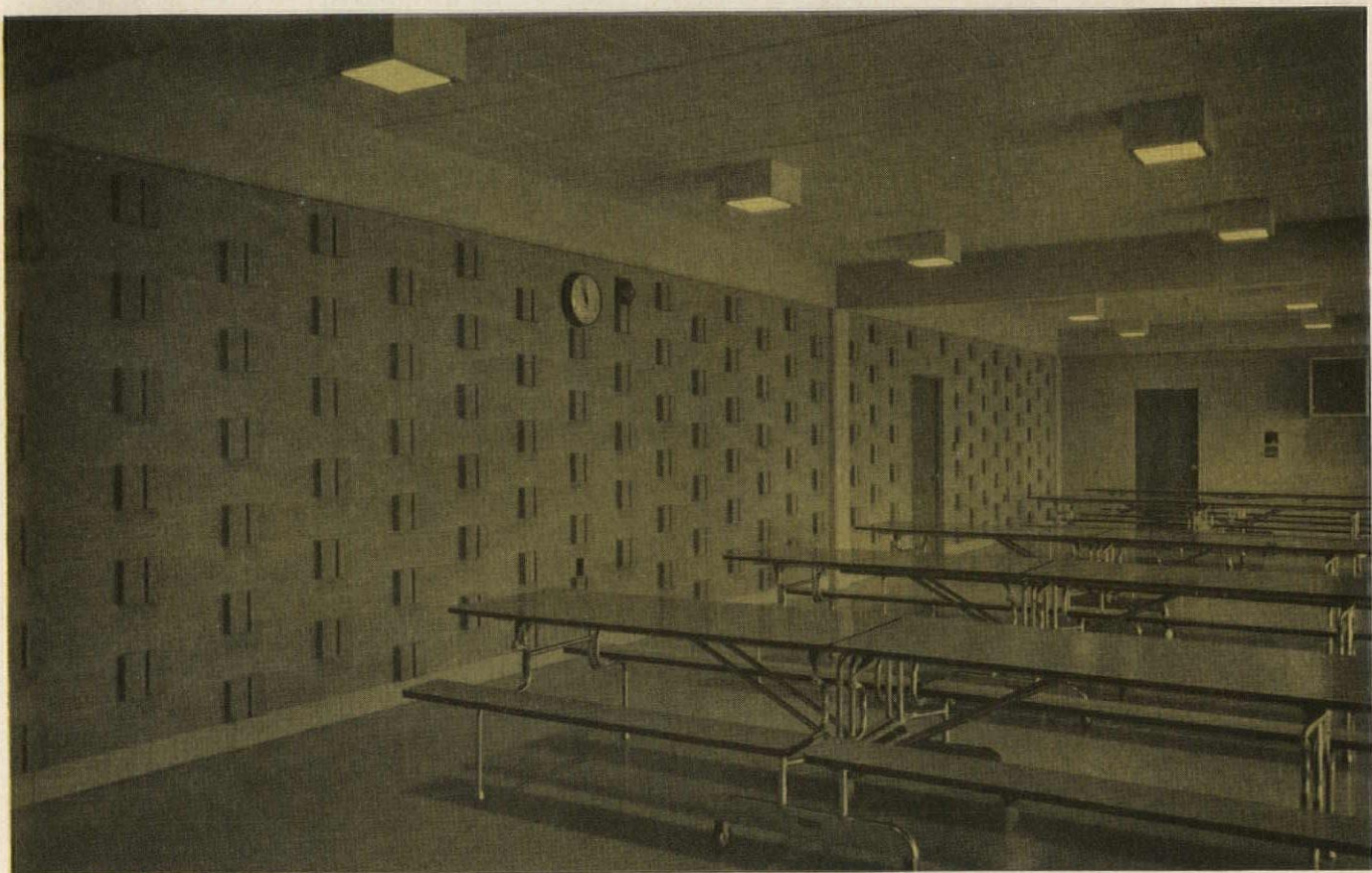
**News Notes**

Believed to be the first large, privately-owned building in Asia to be designed by Canadian architects, the 15-story Victoria Park Hotel is taking shape on the boards of John B. Parkin Associates of Toronto. . . . Charles Edouard Campeau, M.P., of Montreal has been returned for a second term as president of the Community Planning Association of Canada. . . . An exhibition of school architecture was being arranged by the Ontario Association of Architects for the annual meeting of the York County Elementary School Trustees Association in Thornhill, Ont., on November 26. . . . Canada's first fire research building was officially dedicated in Ottawa on October 3, as a prelude to the 1958 Fire Prevention Week. Costing, with its equipment, about \$1 million, the new laboratory forms part of the Building Research Center of the Division of Building Research, National Research Council. . . . Newest members of the Architectural Institute of British Columbia are Alfons B. Pas, Jordan A. Kambouroff, G. A. Killack and Norman Urquhart. . . . A new architectural firm has been announced in Calgary, Alta.: Raymond Skelly and Associates, 513 Eighth Avenue West, with Mr. Skelly and Carl H. Roche as principals. . . . Two U. S. architects recently paid



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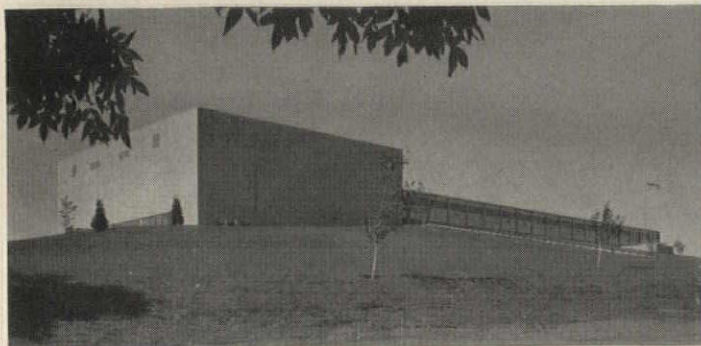
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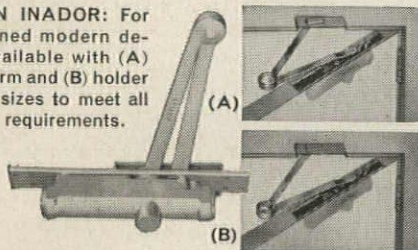
# DOOR CLOSERS THAT DON'T SHOW USED THROUGHOUT MIAMI'S NEW DUPONT PLAZA CENTER



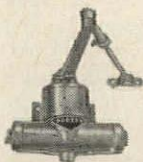
ARCHITECTS—PETERSEN & SHUFLIN, MIAMI

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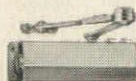
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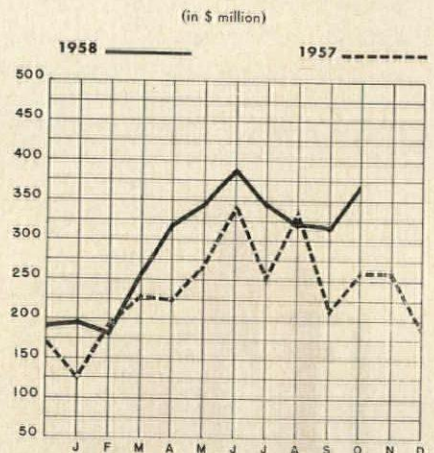
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visits to Canada. On October 3, at McGill University, Montreal, Richard Neutra gave a public lecture under the auspices of the Ecole des Beaux-Arts and the McGill School of Architecture. On October 9, Louis Kahn addressed the University of British Columbia School of Architecture in Vancouver. (Mr. Kahn also spoke at the A.I.A. Northwest Regional Conference, held this year October 10-12 at Harrison Hot Springs, B. C.). . . . Theme for the next Ontario Association of Architects convention, to be held at the Royal York Hotel, Toronto, February 5-7, will be "The Master Art." Chairman Robert Servos says it will present an opportunity for "architects to take a look at themselves, historically and legally." Prof. Nikolaus Pevsner, Britain's well-known architectural critic, has agreed to lead discussion on the historical aspects of the profession; and it is hoped that Hon. Mr. Justice Stewart of the Ontario Supreme Court, authority on architectural copyright, will handle the legal department. . . . Richard E. Bolton, Montreal architect, heads the 29-member Special Housing Committee recently appointed by the Associate Committee on the National Building Code of the National Research Council. First meeting of the group was held in Ottawa on September 25.

The Massey Medals for Architecture, Canada's top architectural awards, will be presented by the Governor General at ceremonies scheduled for the National Gallery December 5. Purpose of the Medals, instituted in 1950 and presented again in 1952 and 1955, is to encourage architects to higher achievement and to promote public interest in architecture.

Contracts Awarded: Comparative Figures\*



\*Compiled by the Editor and staff of The Building Reporter, from information collected by Maclean Building Reports



**Alberene Stone adds "Dark Accent" Beauty That Requires no Maintenance**

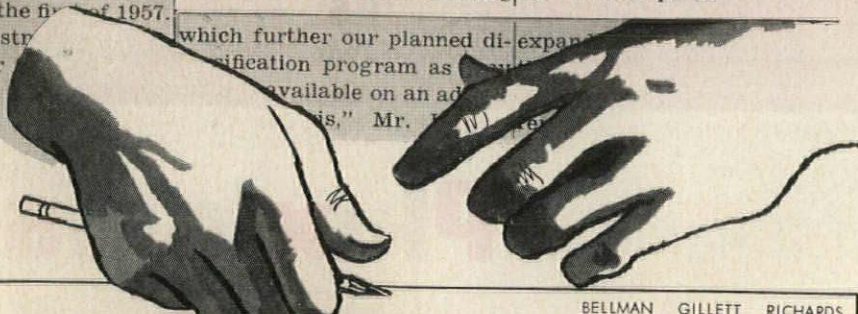
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metal and metal  
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parel and leather  
reased their bor-  
\$11,000,000.  
4,000,000 loans to  
down \$455,000,  
first of the year.  
e same date they  
56,000,000, down  
the first of 1957.

The Toledo Trust Company's Branch Bank exemplifies the beauty and utility of Alberene Black Serpentine Stone—a natural silicate stone that is weatherproof. Its low absorbcency rate, fine grain and absence of stratification prevent spalling and splitting in freezing temperatures. Its all-silicate mineral components resist chemical attack, staining

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For full information and technical assistance address: Alberene Stone Corporation, 380 Fourth Avenue, New York 16, N. Y., Dept. R.



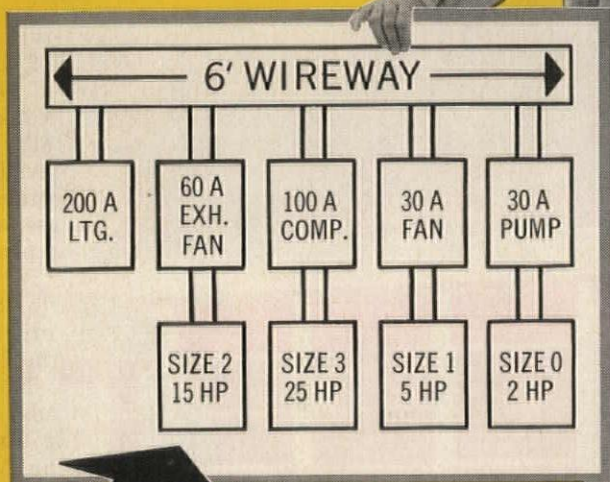
BELLMAN GILLETT RICHARDS  
Architects-Engineers, Toledo

**ALBERENE STONE**

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# STARTERS IN QMB PANELBOARDS!

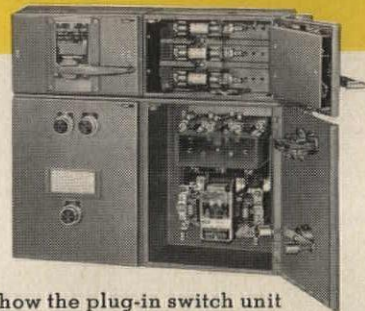
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IT TAKES  
**41 HOURS AND 6 FEET**  
OF WALL SPACE TO INSTALL  
AND WIRE SWITCHES  
AND STARTERS LIKE THIS

IT TAKES  
**12 HOURS AND 30 INCHES**  
OF WALL SPACE FOR THE  
SAME INSTALLATION WITH A  
QMB STARTER PANELBOARD

• Why mount separate starters and disconnect switches? It costs extra money. It wastes space. It takes a lot more time. QMB Starter Panelboards give you a *safer* installation because you can't open a starter when the switch is ON. They give you a much *better looking* job. Since they can even be *flush* mounted, they offer a lot more installation *flexibility*. QMB panelboards accommodate reversing and non-reversing starters, sizes 0 through 3. QMB switchboards and unit substations handle sizes 0 through 5. All of them are available, factory-assembled and wired. Or get enclosures, starters and plug-in switch units from your Square D distributor for on-the-job assembly.



Notice how the plug-in switch unit is mounted directly above the starter, permitting interlocking. The starter cannot be opened when the switch is in the "ON" position.

It's easy to order these starter and switch units. See Page 57 in your Square D Digest and order from your distributor.

EC&M HEAVY INDUSTRY ELECTRICAL EQUIPMENT...NOW A PART OF THE SQUARE D LINE



## SQUARE D COMPANY



**COLORFUL**

**ELEMENTARY**

**SCHOOL**

**Northwestern Elementary School, Clark County, Ohio**

**Architects:** Zeller & Hunter, Springfield, Ohio

**Mechanical Engineer:** W. C. Koenig Co., Springfield, Ohio

**Curtain Wall System:** The William Bayley Co., Springfield, Ohio

**Porcelain Enamel Panels:** The Enamel Products Co., Cleveland, Ohio

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# Demonstrates Economy and Design Freedom of Porcelain Enamel Curtain Walls

Architects make full use of unlimited color of porcelain enamel and efficiency  
of curtain wall modules in unique design of attractive, low-cost school.

Constructed in 1957 at a cost of only \$765 per pupil, Northwestern Elementary School was designed to house 720 pupils in 24 classrooms, with a central service unit capable of handling an eventual enrollment of 1200. In basic design and effective use of modern materials and construction methods, it represents a distinct achievement in creating attractive schools that meet educational requirements and limited school board budgets.

Basic factors in the low cost of this school, according to the architects, were the block-type plan and the use of porcelain enamel curtain walls. They chose curtain walls because of their fundamental economy, because they could be simply and quickly erected, and because they permitted maximum use of cost-cutting factory-assembled materials in modular units. Porcelain enamel also made it possible to design a more

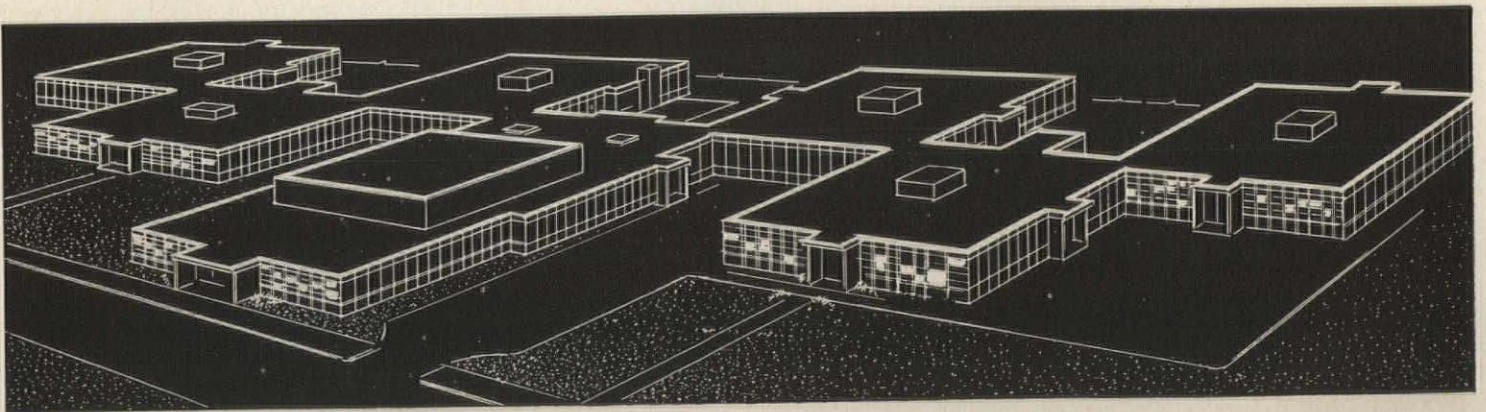
interesting and colorful exterior that will require little maintenance.

## Porcelain Enamel on Armco Enameling Iron

For elementary schools, college buildings and other types of architecture this modern architectural metal

- ... provides unlimited and time-proof color.
- ... assures lasting durability.
- ... keeps maintenance costs low.
- ... offers added freedom in design.
- ... is keyed to modern architecture.

For details about this colorful school, write for a copy of Armco Architectural Data Sheet 1-1. For general information on porcelain enamel in architecture, ask for a copy of "Architectural Design with Porcelain Enamel on Armco Enameling Iron." Armco Steel Corporation, 3088 Curtis Street, Middletown, Ohio.



## ARMCO STEEL



Armco Division • Sheffield Division • The National Supply Company • Armco Drainage & Metal Products, Inc. • The Armco International Corporation • Union Wire Rope Corporation • Southwest Steel Products

Two New U. S. Studies Provide Airport Planning Data

New information on airport planning is contained in two studies recently completed and published by Federal agencies.

The Airways Modernization Board, now part of the new Federal Aviation Agency, considers its completed research project on exit taxiway location and design to be of very high value to architects and engineers starting immediate modernization of runway capacity for the jet age.

This study was completed by the

Institute of Transportation and Traffic Engineering of the University of California, Berkeley, and announced this fall.

Involved were tests to determine the location and safe, comfortable turn radii for exit taxiways that are designed to permit higher turn-off speeds: that is, to equip the airport to accept more aircraft in a given time.

The findings are contained in a 90-page publication and results are being made available to all interested persons or organizations.

Here are some of the general conclusions:

—Transport category and military aircraft can safely and comfortably turn off runways at speeds on the order of 60 to 65 mph on wet and dry pavements.

—The most significant factor affecting the turning radius is speed, not the total angle of turn nor passenger comfort. (Passenger comfort was not critical in any of the turning movements.)

—The computed lateral forces developed were substantially below the maximum lateral forces for which the landing gear were designed.

—Because of limitation of space it was not possible to determine the upper limit of turnoff speed for the larger transport category and military aircraft—in excess of 60 mph. For other aircraft, it is suggested that for the present exit taxiways be limited to speeds not much in excess of 60 mph.

—A slightly widened entrance (100 ft) gradually tapering to normal width, is preferred.

—Total angles of turn of 30 deg to 45 deg can be negotiated satisfactorily; the smaller angle seems to be preferred because the length of the curved path is reduced, sight distance is improved, and less concentration is required of pilots. Angles greater than 45 deg were not tested.

—It was found that a larger radius curve is desirable as providing a transition from a straight-ahead direction to a more sharply curved path. If the transition is not provided, tire wear on large jets might be excessive.

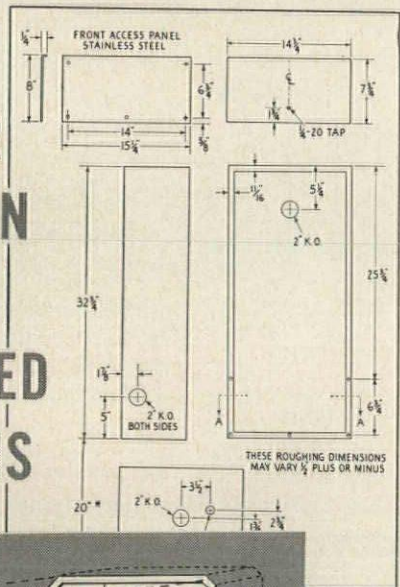
—More information is needed on stopping distance. For the present, the recommendation was for length of turnoff based on a 3.3 ft per sec deceleration rate. This is applicable only to transports.

(Daytime and night guidance is covered in detail.)

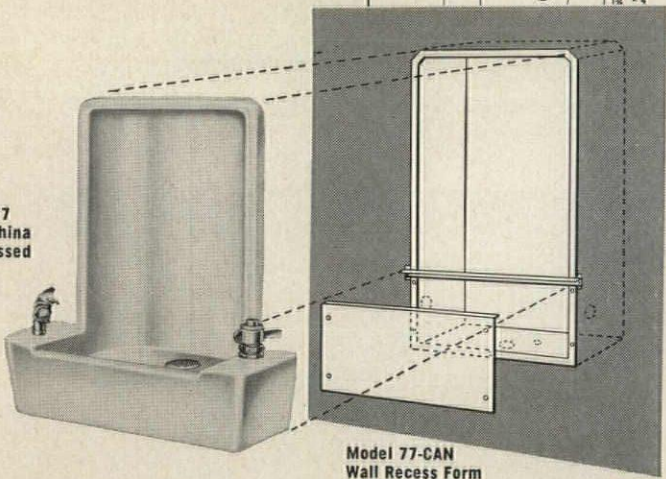
A discussion of exit distance from threshold brought out the important effect of altitude and temperature. If only two exits are provided on a runway and the airport is to serve (1) both conventional piston-engine transports and prop-jets of a similar size and (2) large jet transports, distances of 4000 ft and 6500 ft from threshold were suggested for exit speeds not exceeding 60 mph. At a given airport, consideration must be given to modifying these distances for altitude, temperature and prevailing winds. If four exits are provided, the report suggests distances of 3000, 4000, 5500 and 6500 ft.

The sponsoring government agency  
*continued on page 252*

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Model 77 Vitreous China Semi-Recessed



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WALL RECESS METAL FORMS for Haws Fountains... provide the exact required opening, access panels, knock-out holes, etc., for simple, efficient, economical installation. Install HAWS special metal "CAN" form in the unfinished wall, and the recessed fountain fits snugly and securely. Write for detailed specs on all HAWS recessed models, with special metal forms. Write today.

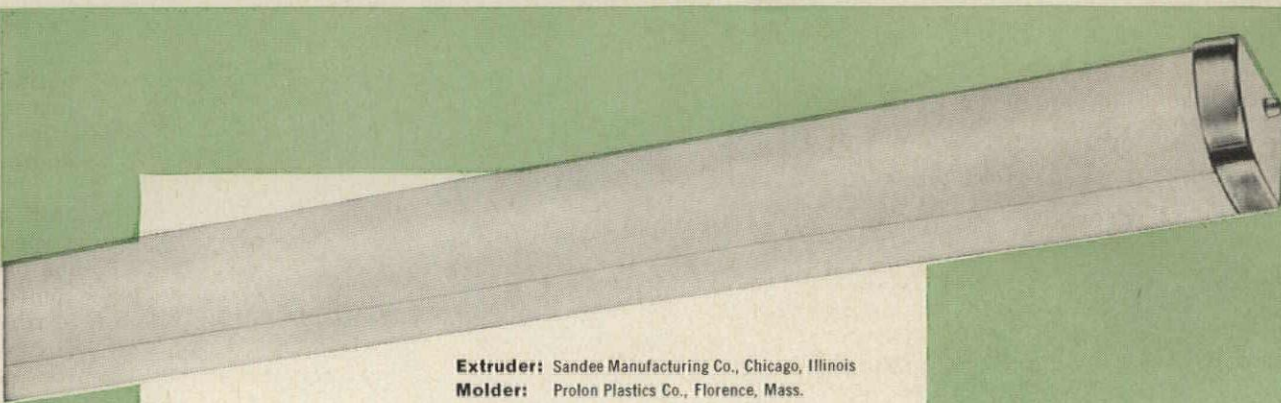
See HAWS Catalog in Sweets Architectural File



DRINKING FAUCET COMPANY

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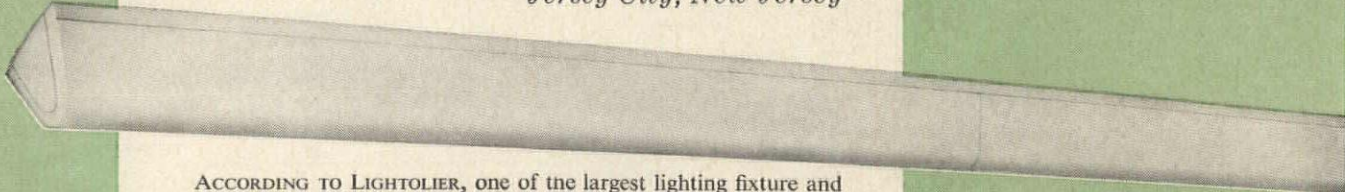




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**Molder:** Prolon Plastics Co., Florence, Mass.

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says **LIGHTOLIER,**  
*Jersey City, New Jersey*



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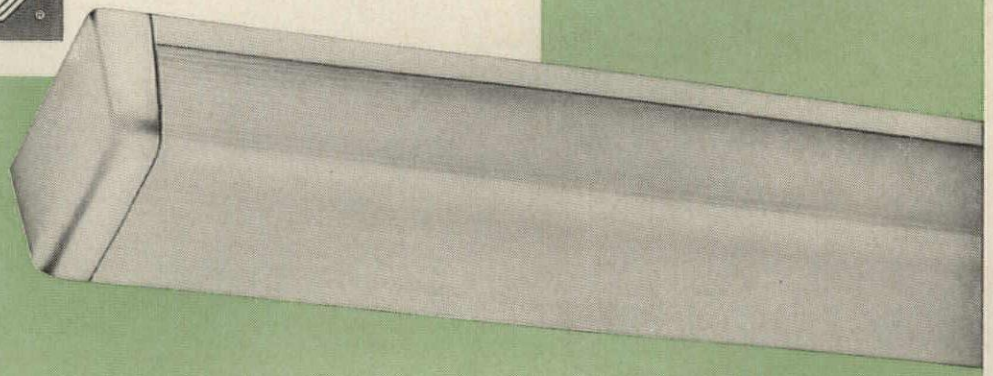
When you're specifying fluorescent lighting fixtures for new construction, or the remodeling of old, be sure to specify fixtures made from EVENGLO polystyrene.

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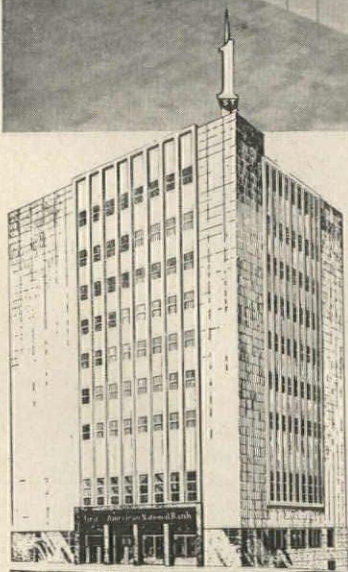
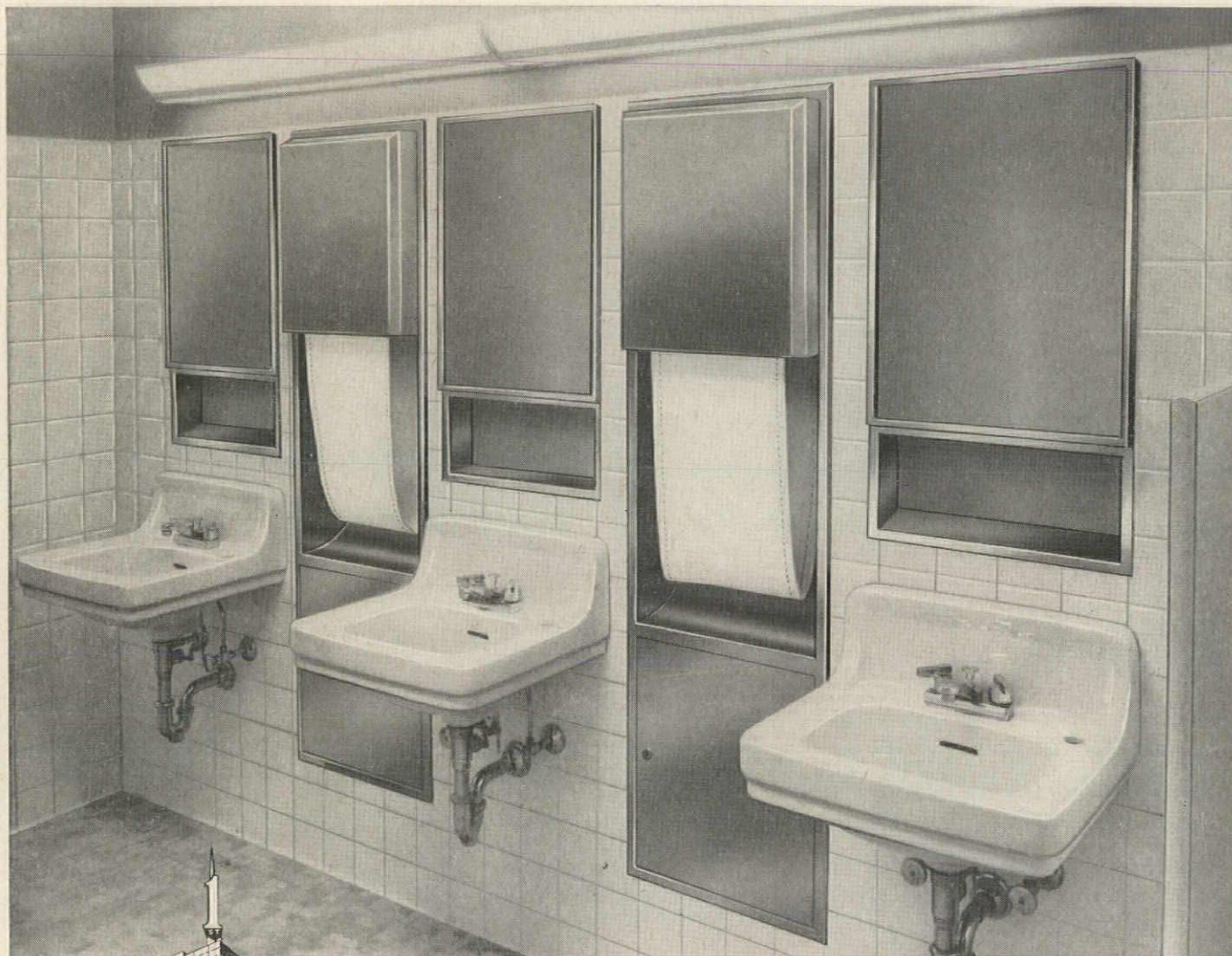


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functional beauty  
and "linen" luxury  
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# Continuous Cotton Towels



← New First American National Bank Building, Duluth, Minn. Architect Thomas J. Shefchik, A.I.A., Duluth. Contractor: Fowler-Veranth Construction Company and Klippen-Holm Company, Duluth.

↑ Recessed continuous towel cabinets with base storage units. End clutter of waste receptacles. Integrate with the modern design of the wash room. (This installation serviced by: American Linen Supply Company, Duluth.)

You provide the finest in hand drying facilities AND MORE when you specify continuous towel cabinets.

*Low cost installation and service by a linen supplier . . . Reduced maintenance and janitorial costs . . . Elimination of litter, storage and disposal problems . . . Limits fire hazard and plumbing repairs.*

Add to this, the fact that you do not

obligate the owner to any particular service, even when you specify recessed cabinets like the ones pictured above. (Recesses are designed to accept any of a wide variety of cabinets.)

So, why not make sure your clients get the best? Specify the luxury and quality of cotton toweling . . . include continuous towel cabinets in your design.

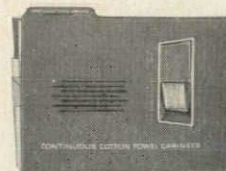
*\* Send for this free Planning-for-Cloth kit*

## Linen Supply

Association of America

and National Cotton Council • 22 West Monroe Street, Chicago, Ill.

*Illustrated, includes specifications for recessed unit and continuous cloth towel cabinets. Write—to Linen Supply Association on your letterhead.*



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For new construction or for remodeling, to specify portland cement-base paint as a masonry finish is to assure lasting beauty of exterior and interior surfaces.

When applied to concrete, block, brick or stone, portland cement paint made with ATLAS\* WHITE cement bonds permanently to the surface. It forms a coating that not only enhances the original beauty of design, but gives added resistance to moisture and weather extremes.

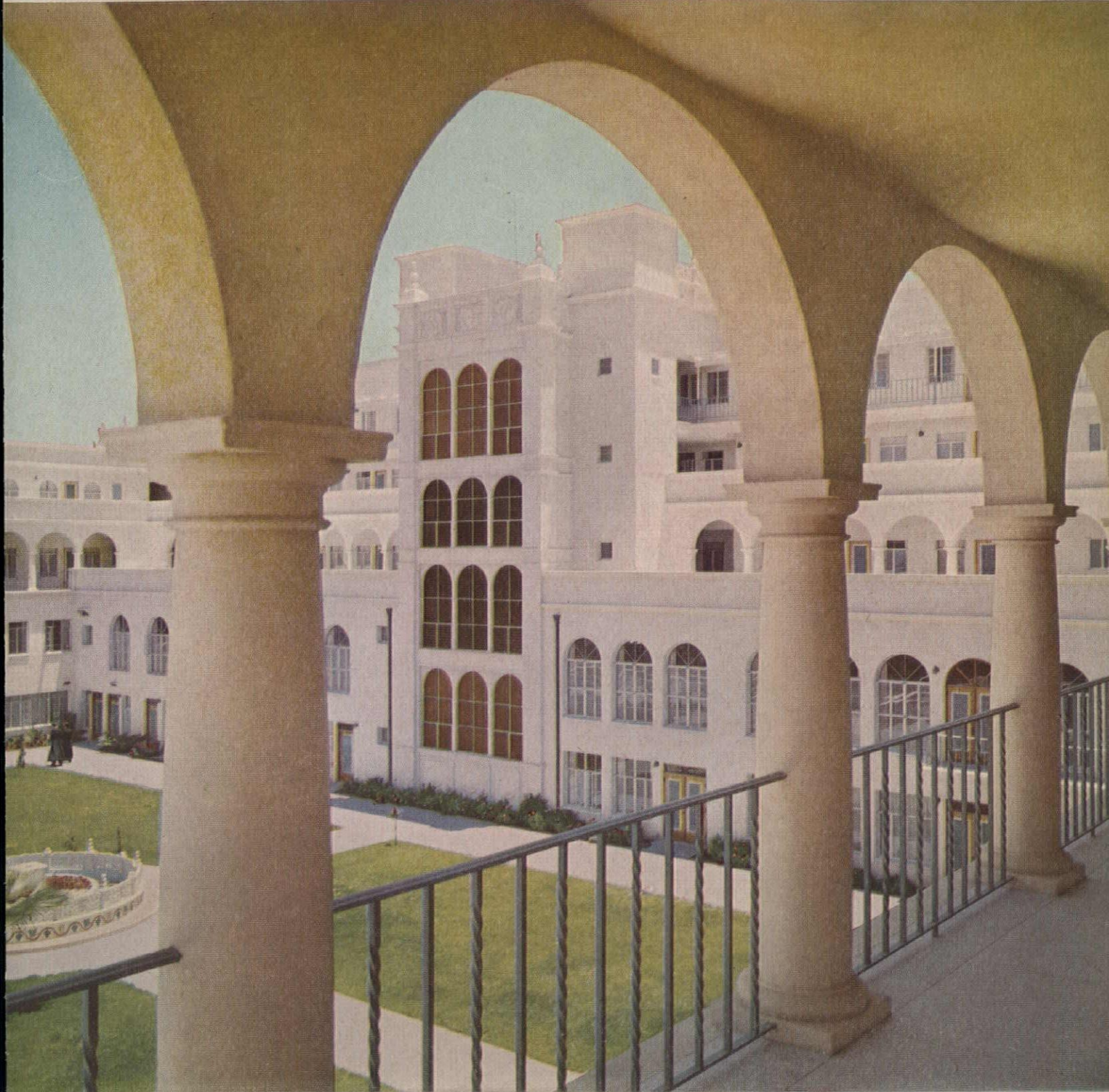
Maintenance costs are low. Frequent repainting is un-

necessary. Application is easy, economical. Packaged in dry powder form, portland cement paint is simply mixed with water, applied with brush or spray, then moist-cured.

Paints made with ATLAS WHITE portland cements are produced and distributed by leading paint manufacturers in a range of colors—and in pure white. Aggregate-bearing types are available for use on rough-textured masonry.

■ For more information, write: Universal Atlas, 100 Park Avenue, New York 17, N. Y.

Immaculate Heart Seminary, University of San Diego, Alcala Park, San Diego, California, newly constructed of concrete masonry units, with exterior finish of portland cement paint (aggregate-bearing), product of Standard Dry Wall Products, Inc. Architect: Edgar V. Ullrich. Contractor: L. J. Ninteman Construction Co., Inc., San Diego.



Maker of PORTLAND and special cements

Universal Atlas Cement  
Division of



United States Steel

TRADEMARK

# Construction Cost Indexes

Presented by Clyde Shute, Director of Statistical Policy, Construction News Div., F. W. Dodge Corp., from data compiled by E. H. Boeckh & Assoc. Inc.

Labor and Materials: U.S. average 1926-1929=100

## NEW YORK

## ATLANTA

PERIOD	RESIDENTIAL		APTS., HOTELS, OFFICE BLDGS.	COMMERCIAL AND FACTORY BLDGS.		RESIDENTIAL		APTS., HOTELS, OFFICE BLDGS.	COMMERCIAL AND FACTORY BLDGS.					
	Brick	Frame	Brick and Concrete	Brick and Concrete	Brick and Steel	Brick	Frame	Brick and Concrete	Brick and Concrete	Brick and Steel				
1930	127.0	126.7	124.1	128.0	123.6	82.1	80.9	84.5	86.1	83.6				
1935	93.8	91.3	104.7	108.5	105.5	72.3	67.9	84.0	87.1	85.1				
1939	123.5	122.4	130.7	133.4	130.1	86.3	83.1	95.1	97.4	94.7				
1946	181.8	182.4	177.2	179.0	174.8	148.1	149.2	136.8	136.4	135.1				
1947	219.3	222.0	207.6	207.5	203.8	180.4	184.0	158.1	157.1	158.0				
1948	250.1	251.6	239.4	242.2	235.6	199.2	202.5	178.8	178.8	178.8				
1949	243.7	240.8	242.8	246.6	240.0	189.3	189.9	180.6	180.8	177.5				
1950	256.2	254.5	249.5	251.5	248.0	194.3	196.2	185.4	183.7	185.0				
1951	273.2	271.3	263.7	274.9	271.8	212.8	214.6	204.2	202.8	205.0				
1952	278.2	274.8	271.9	265.2	262.2	218.8	221.0	212.8	210.1	214.3				
1953	281.3	277.2	281.0	286.0	282.0	223.0	224.6	221.3	221.8	223.0				
1954	285.0	278.2	293.0	300.6	295.4	219.6	219.1	233.5	225.2	225.4				
1955	293.1	286.0	300.0	308.3	302.4	225.3	225.1	229.0	231.5	231.8				
1956	310.8	302.2	320.1	328.6	324.5	237.2	235.7	241.7	244.4	246.4				
1957	318.5	308.3	333.1	345.2	339.8	241.2	239.0	248.7	252.1	254.7				
July 1958	333.1	318.9	356.8	375.5	365.8	245.1	240.6	257.5	264.5	263.7				
August 1958	335.1	320.7	357.7	377.4	366.7	245.3	240.8	257.8	264.7	263.9				
September 1958	335.1	320.7	357.7	377.4	366.7	245.3	240.8	257.8	264.7	263.9				
September 1958	% increase over 1939		171.3	162.0	173.7	182.9	181.9	% increase over 1939		184.2	189.8	171.1	171.8	178.7

## ST. LOUIS

## SAN FRANCISCO

PERIOD	RESIDENTIAL		APTS., HOTELS, OFFICE BLDGS.	COMMERCIAL AND FACTORY BLDGS.		RESIDENTIAL		APTS., HOTELS, OFFICE BLDGS.	COMMERCIAL AND FACTORY BLDGS.					
	Brick	Frame	Brick and Concrete	Brick and Concrete	Brick and Steel	Brick	Frame	Brick and Concrete	Brick and Concrete	Brick and Steel				
1930	108.9	108.3	112.4	115.3	111.3	90.8	86.8	100.6	104.9	100.4				
1935	95.1	90.1	104.1	108.3	105.4	89.5	84.5	96.4	103.7	99.7				
1939	110.2	107.0	118.7	119.8	119.0	105.6	99.3	117.4	121.9	116.5				
1946	167.1	167.4	159.1	161.1	158.1	159.7	157.5	157.9	159.3	160.0				
1947	202.4	203.8	183.9	184.2	184.0	193.1	191.6	183.7	186.8	186.9				
1948	227.9	231.2	207.7	210.0	208.1	218.9	216.6	208.3	214.7	211.1				
1949	221.4	220.7	212.8	215.7	213.6	213.0	207.1	214.0	219.8	216.1				
1950	232.8	230.7	221.9	225.3	222.8	227.0	223.1	222.4	224.5	222.6				
1951	252.0	248.3	238.5	240.9	239.0	245.2	240.4	239.6	243.1	243.1				
1952	259.1	253.2	249.7	255.0	249.6	250.2	245.0	245.6	248.7	249.6				
1953	263.4	256.4	259.0	267.0	259.2	255.2	257.2	256.6	261.0	259.7				
1954	266.6	260.2	263.7	273.3	266.2	257.4	249.2	264.1	272.5	267.2				
1955	273.3	266.5	272.2	281.3	276.5	268.0	259.0	275.0	284.4	279.6				
1956	288.7	280.3	287.9	299.2	293.3	279.0	270.0	288.9	298.6	295.8				
1957	292.0	283.4	295.2	307.1	302.9	286.3	274.4	302.9	315.2	310.7				
July 1958	297.6	288.3	306.2	320.0	315.0	290.7	275.6	313.2	329.1	322.6				
August 1958	298.3	289.2	306.3	320.1	315.2	291.4	276.5	313.3	329.2	322.8				
September 1958	298.3	289.2	306.4	320.2	315.5	291.4	276.5	313.3	329.2	322.8				
September 1958	% increase over 1939		170.7	170.3	158.1	167.3	165.1	% increase over 1939		175.9	178.4	166.9	170.0	177.1

Cost comparisons, as percentage differences, for any particular type of construction, are possible between localities, or periods of time within the same city, by dividing the difference between the two index numbers by one of them; i.e.:

index for city A = 110  
index for city B = 95

(both indexes must be for the same type of construction).

Then: costs in A are approximately 16 per cent higher than in B.

$$\frac{110-95}{95} = 0.158$$

Conversely: costs in B are approximately 14 per cent lower than in A.

$$\frac{110-95}{110} = 0.136$$

Cost comparisons cannot be made between different types of construction because the index numbers for each type relate to a different U. S. average for 1926-29.

Material prices and wage rates used in the current indexes make no allowance for payments in excess of published list prices, thus indexes reflect minimum costs and not necessarily actual costs.

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Architect: Robert Billingsbrough Price, A.I.A., Flooring Contractor: Selden's, Inc.

**LONG WEAR...LOW COST...EASY MAINTENANCE  
MAKE MATICO THE LEADING SCHOOL FLOORING**

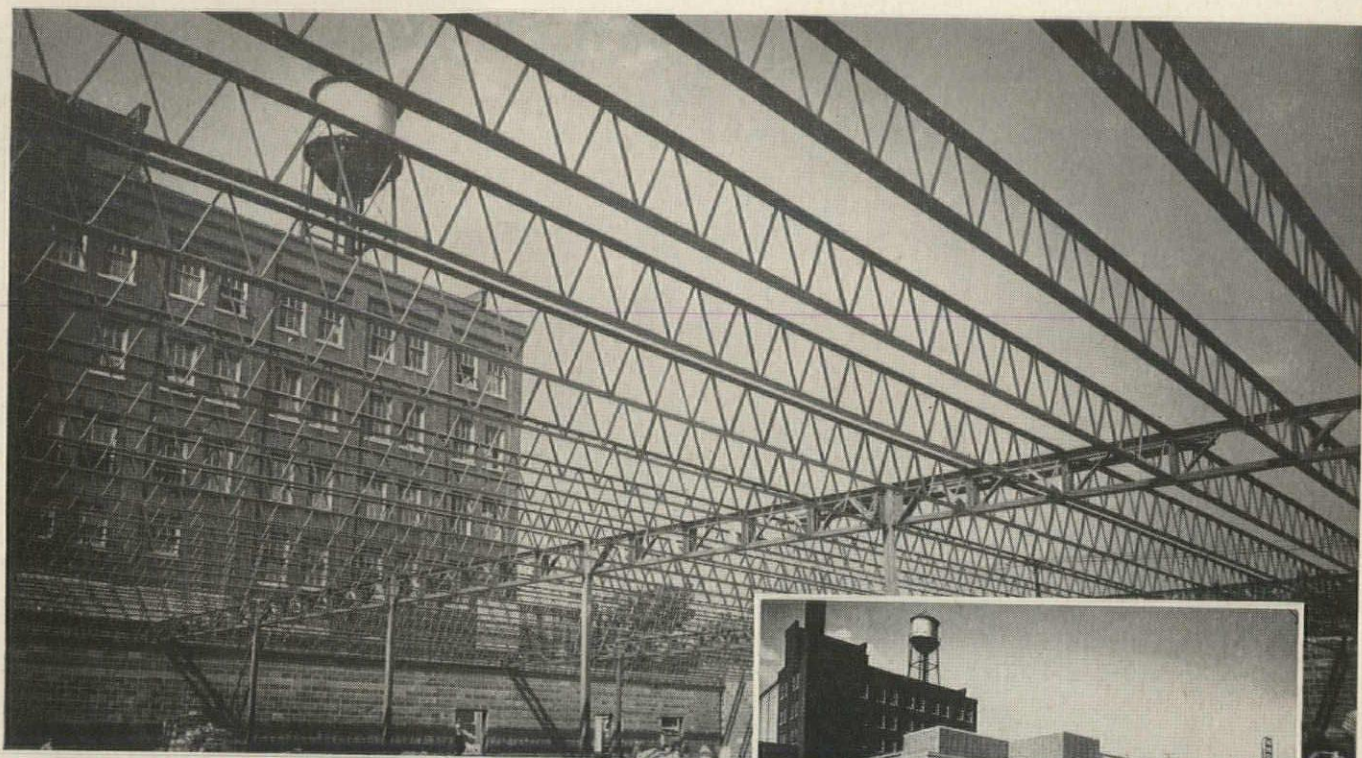
Puyallup Junior High School, Puyallup, Washington, is just one of the modern schools where Matico is proving once again why it's the first choice of so many school architects. The reasons are simple: Low in cost, Matico is made to stand up under heavy traffic conditions; it saves on cleaning bills; adds a colorful note to school interiors. Good reasons why you should specify Matico for your next project. For specification data write Dept. 8-12, P. O. Box 128, Vails Gate, N. Y.

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# V-LOK

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#### A & P

Architect:  
A&P Staff Architects  
Contractor:  
W. B. Fossen & Son  
Ashland, Ky.

#### EVANS

Architect:  
Dean, Dean & Paules  
Huntington, W. Va.  
Contractor:  
W. B. Fossen & Son  
Ashland, Ky.

*V-Lok Design Manual is available.*



Kroger Supermarket, Charleston, W. Va. 145 x 140 foot wall bearing V-LOK frame. Upper photo shows framing completed—only 5 days after delivery of steel.



A&P Supermarket, Ashland, Kentucky. 32 x 140 foot wall bearing V-LOK frame. Erection time for steel framing only 4 days.

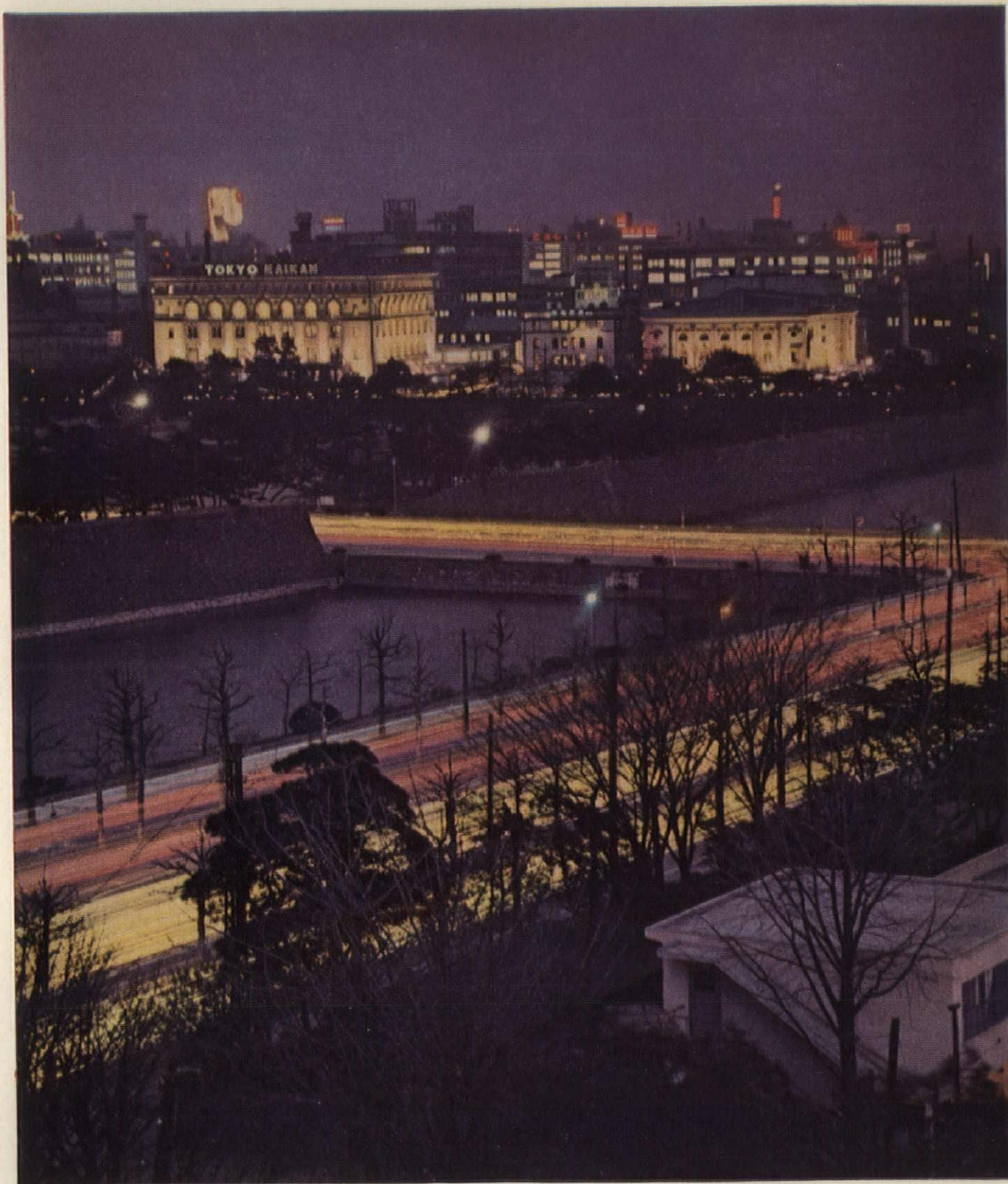


Evans Supermarket, Ashland, Kentucky. 182 x 184 foot wall bearing V-LOK frame. Erection time for steel framing — one week.



# MACOMBER

CANTON 1, OHIO



**TOKYO**, Japan with its 8,600,000 population and fantastically high price of land has been forced to expand upward. Despite earthquake hazards, Japanese architects in recent years have skillfully doubled the height of new structures from the traditional 5 or 6 floors to 10 and 12 stories. This is reflected in Tokyo's downtown skyline as viewed above from across the moat surrounding the Imperial Palace. The TOYO OTIS ELEVATOR COMPANY meets the demand for the finest in vertical transportation with the same design leadership and outstanding value that made OTIS the accepted word for elevator quality in the United States and throughout the world.



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## Churches: Mystic and Organizer

THE CHURCH INCARNATE: THE SACRED FUNCTION OF CHRISTIAN ARCHITECTURE. By Rudolf Schwarz. Translated by Cynthia Harris. Foreword by Mies van der Rohe. Henry Regnery Co., 20 W. Jackson Blvd., Chicago 4. 231 pp., illus. \$7.50.

WHEN YOU BUILD YOUR CHURCH. By John R. Scotford. Channel Press, 159 Northern Blvd., Great Neck, N. Y. 245 pp., illus. (rev. ed.). \$3.50.

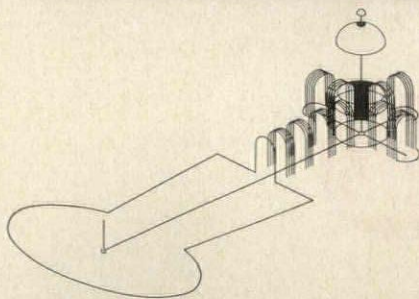
BY JOHN OLIVER NELSON  
Yale University Divinity School

Church construction does demand both mystic and organizer, and these two books—each admirable in its field—represent the extremes of the two approaches. Schwarz is the notable architect of more than 60 German churches, and Scotford the practical American planner and building-campaign adviser.

Mies van der Rohe's words for this translation of Schwarz' original 1938 classic are sober fact: "This book throws light for the first time on the question of church building, and illuminates the whole problem of architecture itself. Yet it is not only a great book on architecture; indeed, it is one of the truly great books—one of those which have the power to transform our thinking."

Writing as a devout Roman Catholic, Schwarz discerns six historic types of spiritual-psychological mystique in church building down through the Christian centuries. The "ring," a close-knit circle of people around a sacramental table, is the first. Second is the "open ring," edifice and group opened to great new vistas behind the altar, still with the officiant in the center. The third type is the "chalice," the dome-above-dome form with the basilica variant, and with the altar shifted often to an apsis. The "way," people in a

A "delicate and intelligible" diagram



squared procession, marching as it were with leader at the head, is the fourth basic form, the church serving as canopy from portal to altar in sometimes involved courts and added vistas. (The designs of Desiderius Lenz, in a "succession of spaces corresponding to the succession of periods within the history of salvation," wondrous and impractical, are genially noted here.) Fifth among the types is the "cast," worshippers facing a rounded apse whose

*continued on page 268*

## After "No Parking," What?

PARKING. By Geoffrey Baker and Bruno Funaro. Reinhold Publishing Corp., 430 Park Ave., New York 22. 202 pp., illus. \$9.50.

BY JOHN T. WEEKS

An automobile is not a conveniently disposable item. Weighing a couple of tons and occupying a good round thousand cubic feet on the average, it is a rather uncompromising lump, putting aside esthetic questions, and deserves more attention than it has, to date, received. Astronomic numbers of words have been composed into praise, and even damnation, but only a few magazine articles (e.g., "Commercial Parking Garages," AR, September '58) and learned texts have been devoted to the question of what you do with the thing when you're not using it.

Mr. Baker, presently of Yale University's Graduate Program in City Planning, and the late Mr. Funaro, who at the time of his death (1957) was assistant dean of the School of Architecture at Columbia University, collaborated on several earlier compendia and have, in this volume, filled a previously empty place in the architect's reference shelf.

The text treats almost all aspects of the parking problem of today, only holding aloof from the commercial - operator - versus - municipal - authority squabble. It is evident to the authors that the parking attendant has no great future in an economy of rising costs and wages, so they are firmly partisan in the only other large-scale disagreement in the field.

The book is full of meat only slightly marbled with fat. There are many examples of parking garages, of which 33 are complete with plans of

representative floors, there are 23 pages of charts and diagrams, and the layout is easy to follow with very few exceptions. One thing, more exceptionable than any other, really causes difficulty in following the text: the captions are in every case in the same type face and size as the body of the text, breaking the thread of concentration in many annoying ways. Some of the graphs in the middle of the book are difficult to read, but there are no other marked construction difficulties.

In certain of their conclusions the authors are opposing at least part of the stream of professional opinion (full of eddies as it is), most notably in their championing of the 90-deg parking layout. Factually the authors run afoul of the Pigeon Hole parking machine manufacturers, who have told the reviewer that their machine will park cars two deep on at least one side of the elevator well.

In any case this book is complete, authoritative, full of sound opinion, and possessed of an excellent index—altogether worthy of the architect's \$9.50.

## Sound and Its Problems

ACOUSTICS, NOISE AND BUILDINGS. By P. H. Parkin and H. R. Humphreys. Frederick A. Praeger, Inc., 15 W. 47th St., New York 36. 331 pp. illus. \$15.

Richard Neutra has said, "Architecture is illuminated not only by light but by sound as well." However, the study of sound can be an exasperating one, because it requires the fusion of contributions from such dissimilar fields—physics, music, physiology, engineering, psychology. Eventually, a unified discipline may arise. Much of the pressure toward this end stems from the realization that research in sound may yield results of unexpected importance to the structuring of our sensory environment. Problems of acoustics and noise control, especially, are being treated more and more sympathetically, and it is now rare to encounter a new concert hall or auditorium that makes hash of music or speech.

The present volume, its British authors declare, "is not a textbook on physical acoustics . . . nor is it addressed only to architects. . . .

*continued on page 63*



**STANLEY** is a name I know



CHARLES THOMAS, A.H.C., The N. T. Bushnell Co., New Haven, Conn.

## "Stanley swing-clear hinges give me 2" more per opening."

"And, believe me, hospital corridor doors to patients' rooms can use the extra space! Beds and stretchers used to mar them up in no time at all unless I prescribed expensive angle and stretcher plates. Thanks to Stanley swing-clear hinges, that's no longer true — now there's room to spare.

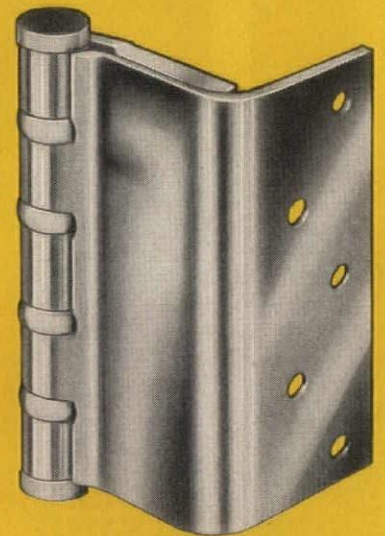
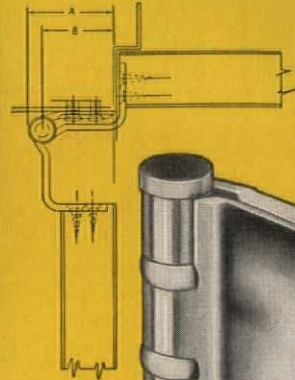
"Swing-clear hinges are half-

mortise or full-surface design, and they don't require special jamb construction. Part of Stanley's patented, full-jeweled, ball bearing line, they'll last for the life of any hospital where they're applied."

For details, write Stanley Hardware, 1612 Lake Street, New Britain, Connecticut.



Hospitals across the country today benefit from the extra inches provided by Stanley swing-clear hinges recommended by Mr. Thomas and other leading hardware consultants.

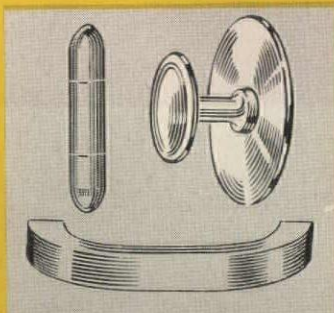


Stanley swing-clear hinges take door completely out of the opening — provide 2" more clearance at every opening.

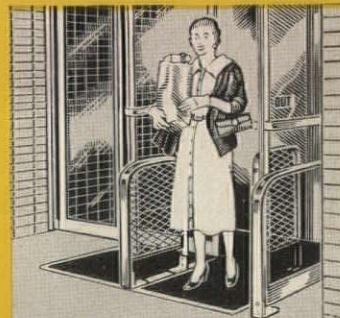
STANLEY IS THE NAME TO LOOK FOR ON QUALITY PRODUCTS LIKE THESE



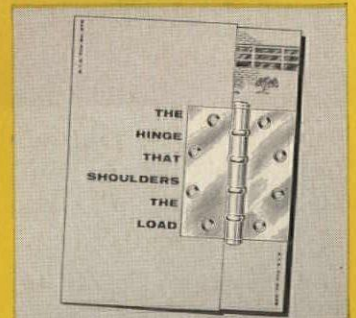
Hospital Hardware Brochure, A.I.A. File No. 27B. A concise folder of special hinges and other hardware for hospitals.



Solid aluminum cabinet hardware (also available in brass) is one of the eight smart and practical styles made by Stanley.



Stanley MAGIC-DOOR Controls offer an automatic welcome to visitors entering hospitals and other public buildings.



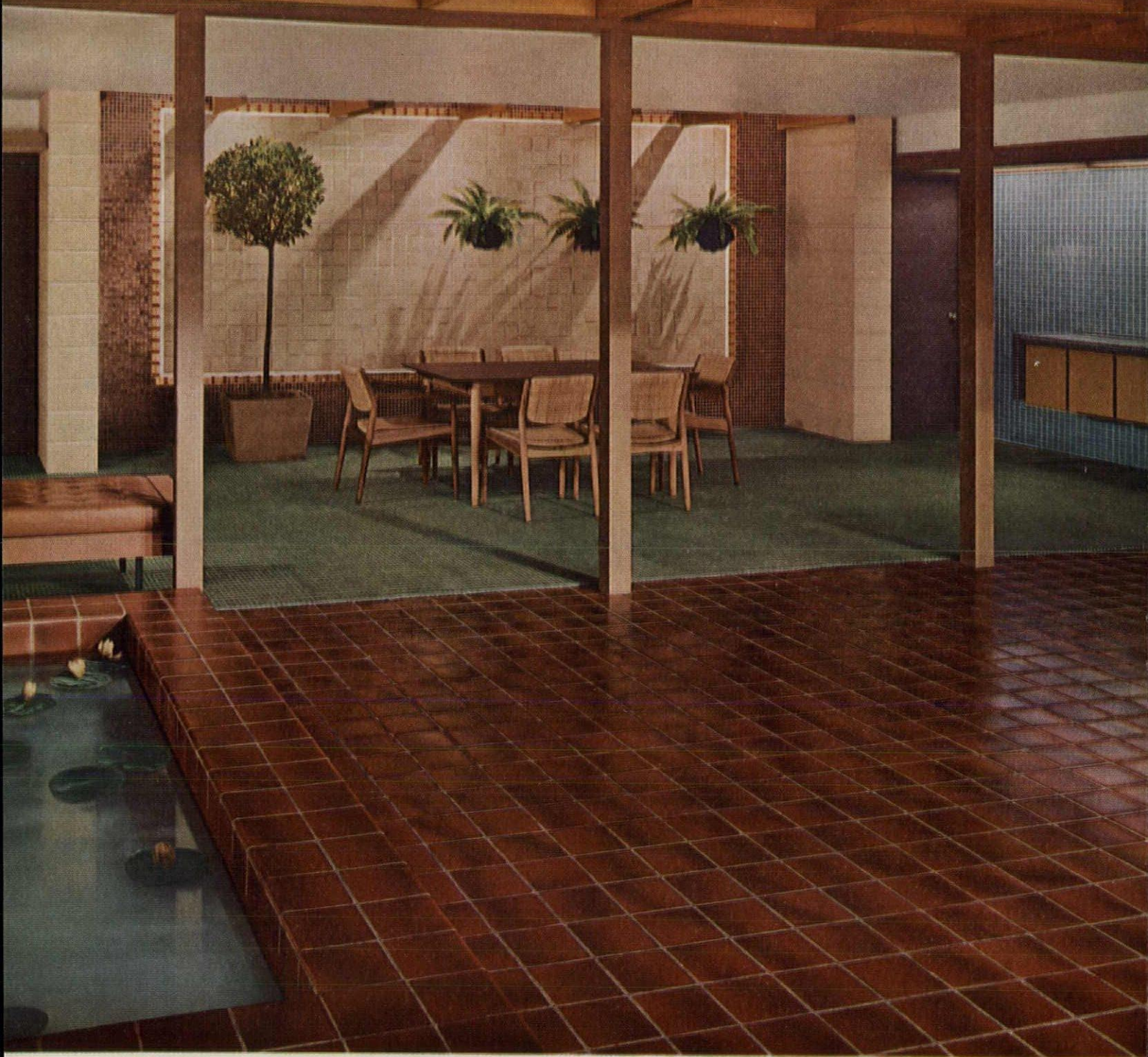
A graphic illustration of why Stanley's full-jeweled, ball bearing hinges last as long as the buildings where they're used.

AMERICA BUILDS BETTER AND LIVES BETTER WITH STANLEY

**STANLEY**

This famous trademark distinguishes over 20,000 quality products of The Stanley Works—hand and electric tools • builders and industrial hardware • drapery hardware • door controls • aluminum windows • stampings • springs • coatings • strip steel • steel strapping—made in 24 plants in the United States, Canada, England and Germany.

CERAMIC TILE



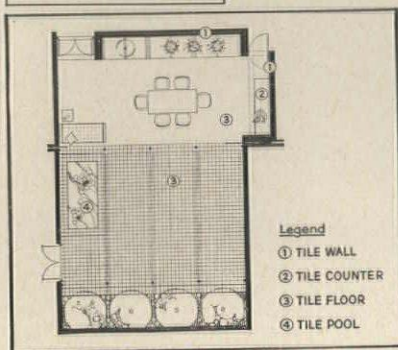
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## CERAMIC TILE



Floor Plan of Dining Court

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CERAMIC

tile

## Required Reading

### Sound . . .

The information is designed for specialist readers . . . and may even be of some use to the layman." Unfortunately, the book suffers from this shotgun approach. Some topics, like noise measurement, are over-detailed; others, like audiology and music reproduction, are scanted. The result is an extremely uneven presentation. There are also some curious omissions. Surely, for example, the authors might profitably have included the work of their countryman, G. A. Briggs, on volume levels in large halls.

Although this book might serve as an addition to the reference shelf, it is not recommended to the architect who seeks either an introduction to or a comprehensive study of acoustics and noise control in buildings.

—ARTHUR FISHER

### Houses Here, Furniture Abroad

OLD VIRGINIA HOUSES ALONG THE JAMES. By *Emmie Ferguson Farrar*. *Hastings House*, 151 E. 50th St., New York 22. 231 pp., illus. \$12.50.

ENGLISH FURNITURE. By *John Glog*. *Macmillan Co.*, 60 Fifth Ave., New York 11. 181 pp., illus. (4th ed.). \$3.75.

These two books are written from antithetical points of view. Mrs. Farrar's book on Virginia houses is an unabashed exercise in sentiment and nostalgia, directing an affectionate and lingering gaze upon the past, while Mr. Glog's book, dealing with the production of an era equally remote in time, avoids any considerations other than technical and esthetic ones.

The first book is a large and handsome volume profusely illustrated with excellent photographs, both interior and exterior, of Virginia habitations ranging from simple farmhouses to great mansions such as Westover and Carter's Grove, and including a few public buildings. There is no attempt at formal analysis; rather, the approach is anecdotal, a "remembrance of things past" that would serve as an admirable guide to anyone planning a sentimental journey through tidewater Virginia.

Mr. Glog's book, a new edition of a work originally published in 1934, is a compact volume dealing with English furniture not from the usual antiquarian point of view, but by the more rigorous modern standards of functional and esthetic honesty and sincerity. Vulgar design and shoddy craftsmanship are reprobated,

continued on page 268

# 3rd MARS Design Contest

HACKENSACK, N. J.—The MARS Outstanding Design Contests have uncovered numerous interesting designs which might otherwise never have been brought before technical audiences. They have attracted such wide interest that MARS Pencils is sponsoring another contest in 1959.



Carl J. Rauschenberger, Anaheim, Calif., one of the winners in the 1958 MARS Contest.

If you are an engineer, architect or student, the MARS contest offers you a "showcase." It provides you with a valuable opportunity to have projects you designed shown in leading magazines where they will be seen by the men in your profession.

## \$100 Awards

Send in your designs. Every winner will receive \$100; winning entries will be reproduced in the wide list of technical publications in which the MARS Outstanding Design Series appears. There are no strings attached. You will be given full credit. All future rights to the design remain with you. You can reproduce it later wherever you like and sell or dispose of it as you wish.

The subject can be almost anything—aviation, space travel, autos, trains, buildings, engineering structures, household items, tools, machines, business equipment, etc. Projects will be selected on the basis of appeal to design-minded readers, broad interest, attractive presentation. Do not submit a design that is in production. The project, in fact, does not need to have been planned for actual execution. It should, however, be either feasible at present or a logical extension of current trends. It cannot be unrealistic or involve purely hypothetical alterations of natural laws.

The sooner you send in your entry, the greater the chance of its selection.

### It is Simple To Submit a Design For Mars Outstanding Design Series

Just mail in an inexpensive photostat or photocopy of the subject—one you can spare, since it cannot be returned—and a brief description.

If your entry is accepted, we will ask for a clear illustration of your design in order to prepare a sharp rendering, or photograph suitable for reproduction. Your material will then be returned to you.

Send your entry to:

**J.S. STAEDTLER, INC.**

Hackensack, New Jersey



Plumbing and fire protection with

## **National Pipe—**

### St. Louis Federal Housing Project

**USS NATIONAL Steel Pipe** was used in the plumbing and fire-protection systems of the George L. Vaughn apartments—federal housing project in St. Louis, Missouri.

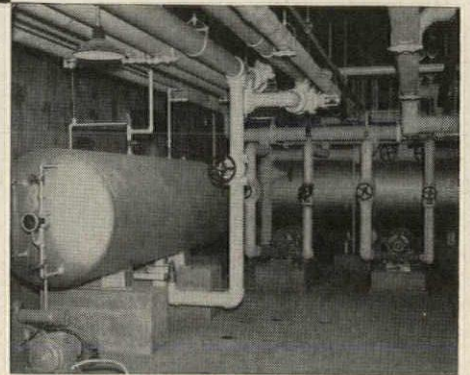
Approximately 11,304 feet of pipe, ranging in size from  $\frac{3}{4}$ " to 8", comprises the systems in the four buildings.


In the plumbing systems, the pipe is used for hot and cold water supply mains and hot water return mains. In the fire-protection systems, an 8" main supplies water to each building, where there is a fire hose cabinet on each landing supplied by a 6" riser. A constant pressure of 100 psi is maintained throughout each fire-protection system.

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When you specify **IMPERIAL Watrous**

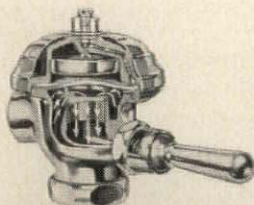
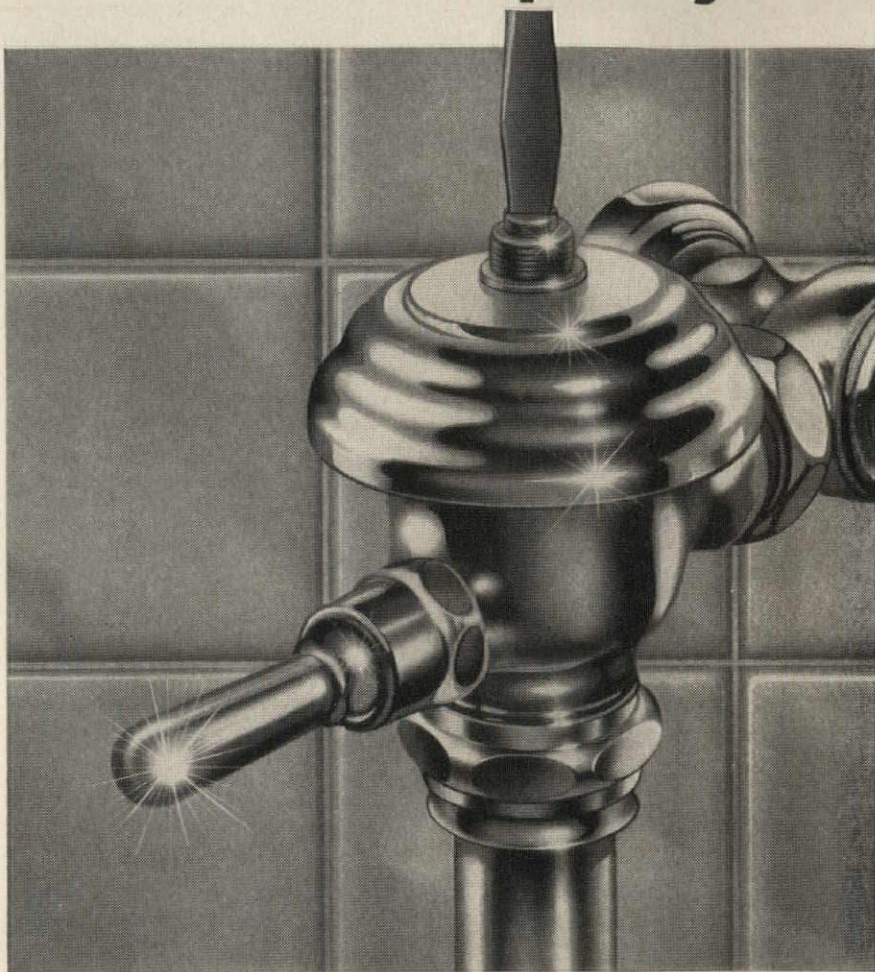
... you cut project water bills  
**\$\$\$\$ per flush valve per year**

Watrous sets the standard for trouble-free installations . . . convenience, low maintenance, looks and performance. And Imperial Watrous flush valves install easily on all types and makes of fixtures.

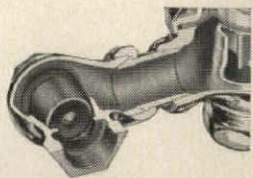
Famous economizer — Watrous water saver — is a simple screw adjustment. Sets water use at minimum for the fixture on which the valve is installed — actually saves up to thousands of dollars per year for hotels, schools, hospitals, institutions, industrial plants, etc. It's a "powerful convincer" for installing Watrous.

Wide choice of hand- and foot-operated diaphragm and piston-type flush valves available for exposed and concealed installation. And look at all of these Watrous features:

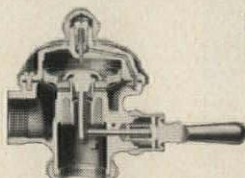
- ☆ Water-saver adjustment
- ☆ Self-cleansing by-pass
- ☆ Single-step servicing
- ☆ Silent action
- ☆ Self-tightening handle packing



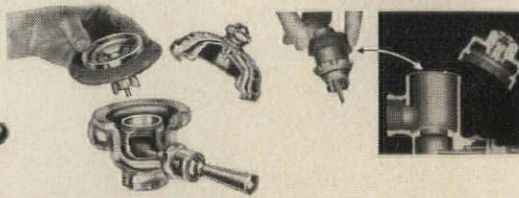
**Self-cleansing by-pass** guards against dirt or sediment in water. Thoroughly cleans by-pass orifice each time flush valve is actuated.



**Silent action design** eliminates objectionable line, shut-off and closing noises. Substantially reduces bowl noise. Optional.



**Self-tightening handle packing** prevents leakage. Handle spring maintains tension. Eliminates need for periodic re-tightening.



**Single-step servicing. Diaphragm-type or piston-type.** Entire operating unit of diaphragm or piston-type flush valve can be replaced in minutes, without taking valve off the line.



Write for catalog 449-A for full information on Imperial Watrous flush valves and soap dispensers.

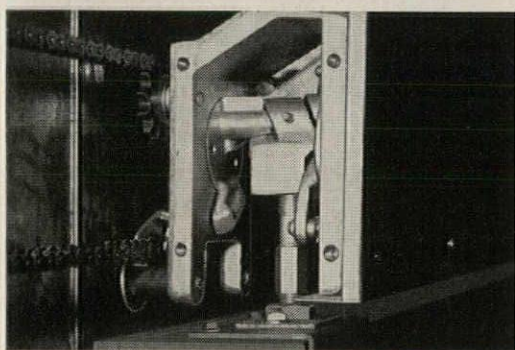
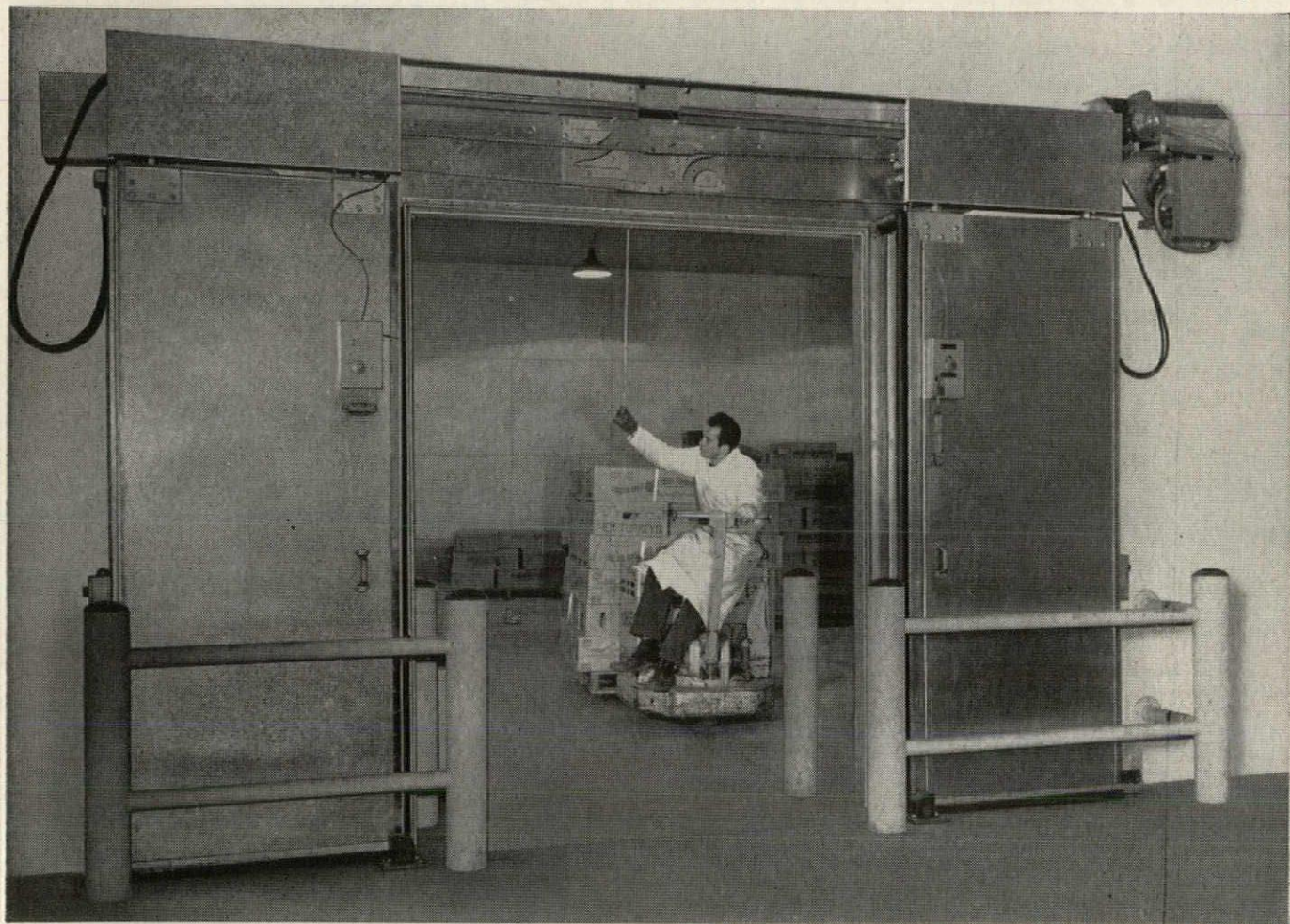
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THE IMPERIAL BRASS MFG. CO.

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ADJUSTABLE FLUSH VALVES • DIAPHRAGM AND PISTON TYPES

# New Jamison *Electroglide*\* Power Door speeds traffic, saves refrigeration *automatically!*



**EXCLUSIVE CAMLOK COMPRESSION SEAL**—Jamison Camlok cams doors "in" against frame and "down" against floor at all points.

These other exclusive features mean dependable, smooth operation.

**SHOCK ABSORBER CHAIN LINK**—reduces wear and tear

**SPRING LOADED SUSPENSION**—minimizes power requirements

**IMPROVED SAFETY EDGE**—sensitive full height and full travel of door

**SEALED-IN-OIL REDUCTION GEAR**—trouble-free operation, minimum maintenance

Electroglide offers famous Jamison Cold Storage Door quality and performance plus a completely new design for power operation. Both bi-parting and single leaf Electroglides are available to meet all job requirements.

High volume traffic can now speed on its way in busy cooler and freezer operations with minimum loss of refrigeration. Electroglide is specifically designed to accelerate truck movement with its instant automatic opening and closing.

**Rapid smooth opening**—Spring suspension helps doors open easily and smoothly. Doors move "out" and "up", riding on level tracks with gaskets clear of sill and frame.

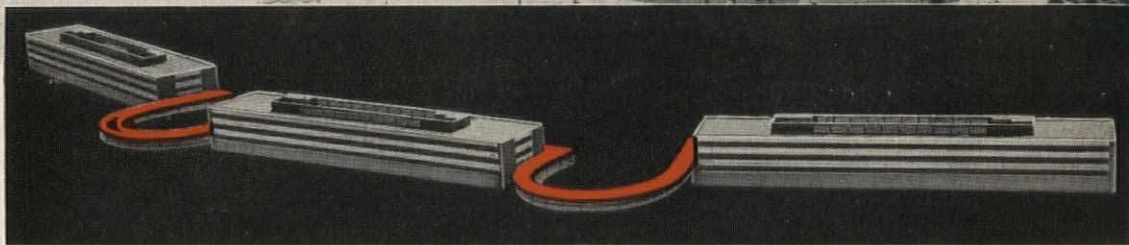
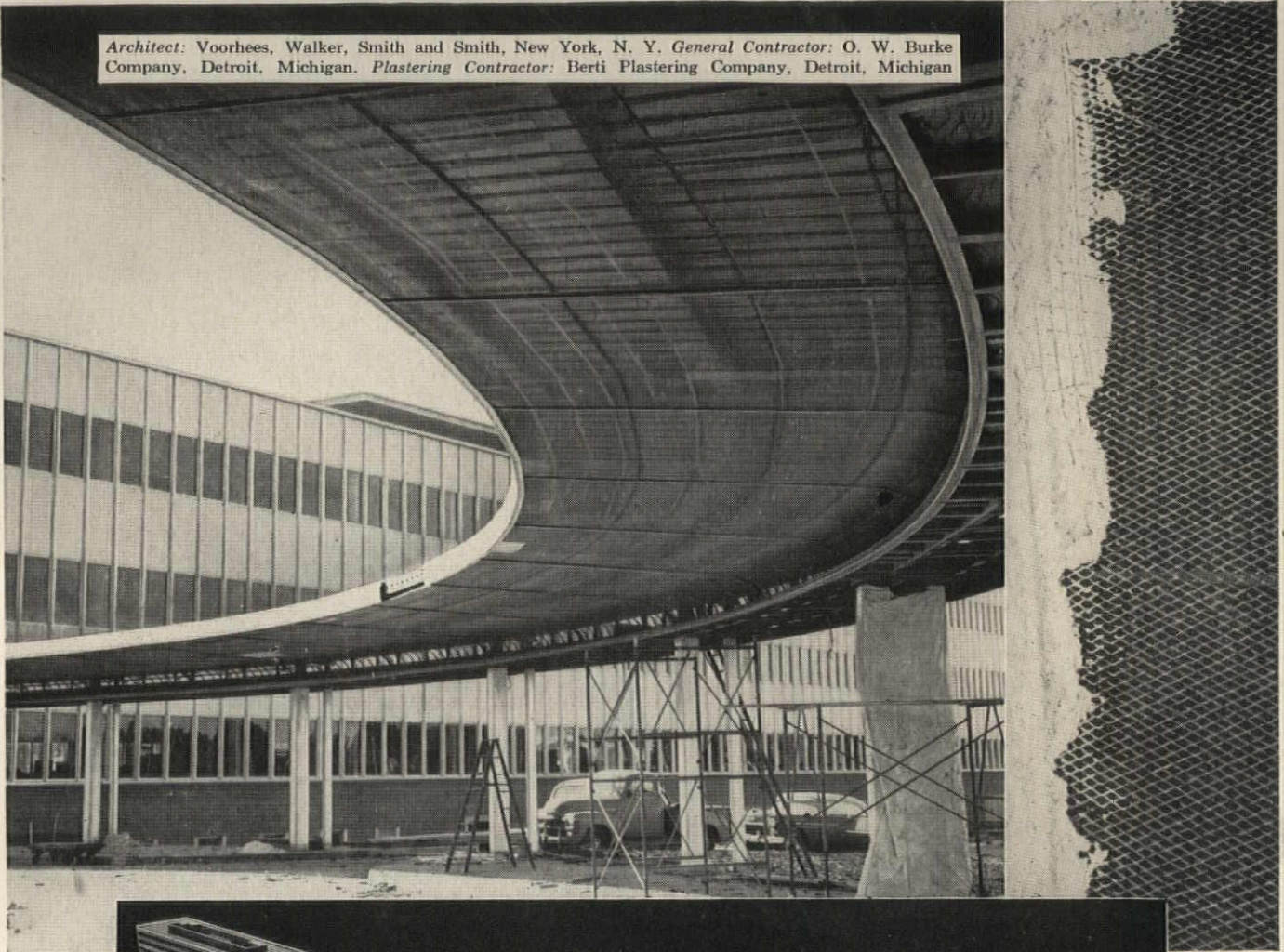
Electroglide is made for both cooler and freezer use. Write today for new Electroglide bulletin to Jamison Cold Storage Door Co., Hagerstown, Md.

\*JAMISON TRADEMARK

# **JAMISON**

**COLD STORAGE DOORS**

Architect: Voorhees, Walker, Smith and Smith, New York, N. Y. General Contractor: O. W. Burke Company, Detroit, Michigan. Plastering Contractor: Berti Plastering Company, Detroit, Michigan



Canopies (shown in red) provide all-weather protection for visitors to these Staff and Product Engineering Buildings.

Wheeling Metal Lath has excellent keying surface. It forms easily, making it ideal for curved applications.

## Wheeling Metal Lath with cement plaster used on unique canopies at Ford Research Center

One of the many innovations at Ford Motor Company's Research and Engineering Center is a cantilevered canopy that joins each of the three new Staff and Product Engineering Buildings to provide shelter for visitors. Cove lighting assures safety at night by providing even illumination throughout area.

Wheeling Metal Lath with cement plaster was chosen for several reasons. First, the type of construction minimized the weight of the cantilevered section and allowed smooth, even curves that are so essential to proper lighting. Second, Wheeling Metal Lath is made of famous Cop-R-Loy® steel — the controlled

copper-bearing steel with proven extra-long-lived qualities. And, finally, the complete line of Wheeling Lath Accessories enabled the use of products that were job-engineered for each other.

Find out for yourself how these products can help you. Ask your nearest Wheeling representative for full details on the complete Wheeling Metal Lath and Accessories, including new Bar-Z Snap-In Stud Systems and new Double-Ex Expanded Metal Corner Bead. Or write Wheeling Corrugating Company, Wheeling, West Virginia.



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# IT'S NEW OWENS-ILLINOIS the only curtain wall system

Architect's drawing of a THINLITE office building uses yellow Thinlite Daylighting Panels on sunless north exposure. On the sunny sides of the building, green Thinlite Panels reflect solar heat to keep interiors cool.

DOUBLE  
NEOPRENE  
GASKETS

HEAD

ALUMINUM STRUT

PANELS

SHELF  $\angle$

SILL

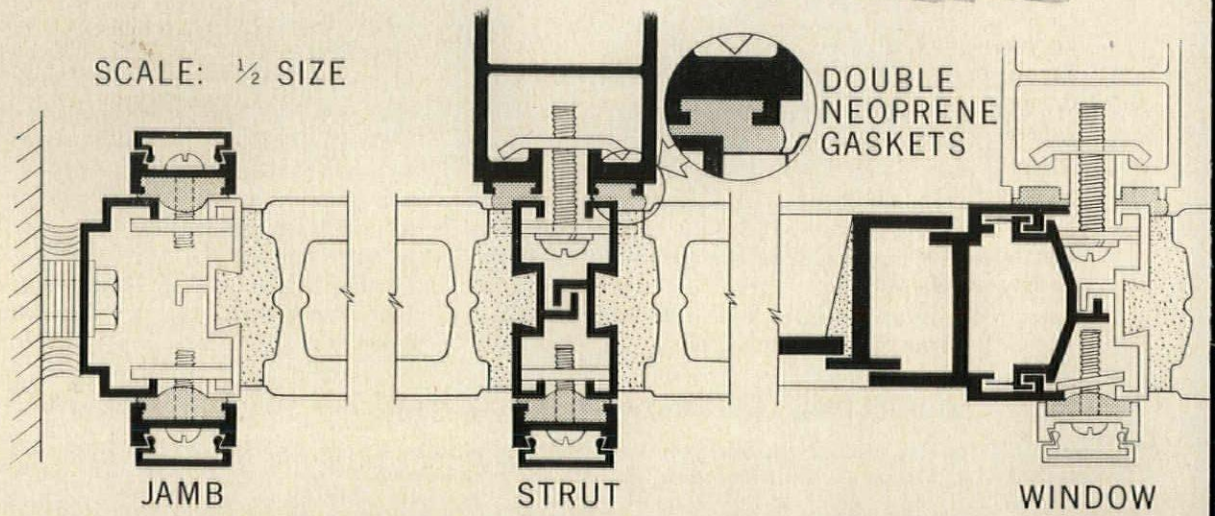
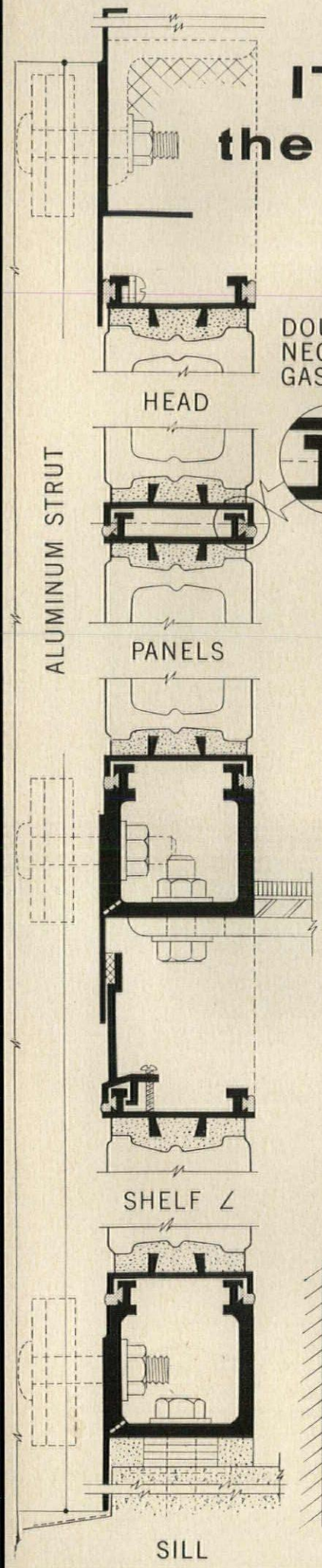
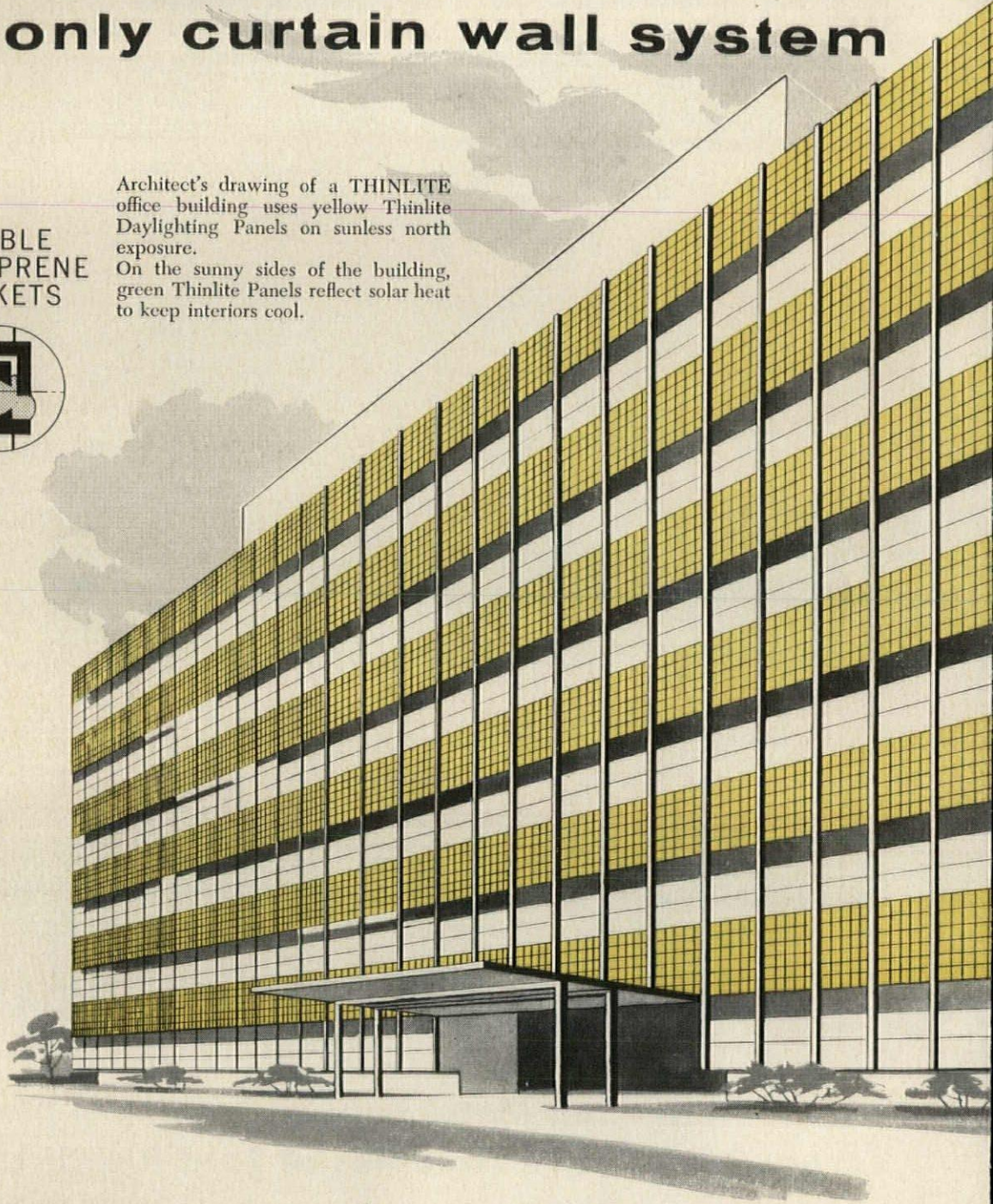
SCALE: 1/2 SIZE

JAMB

STRUT

WINDOW

DOUBLE  
NEOPRENE  
GASKETS

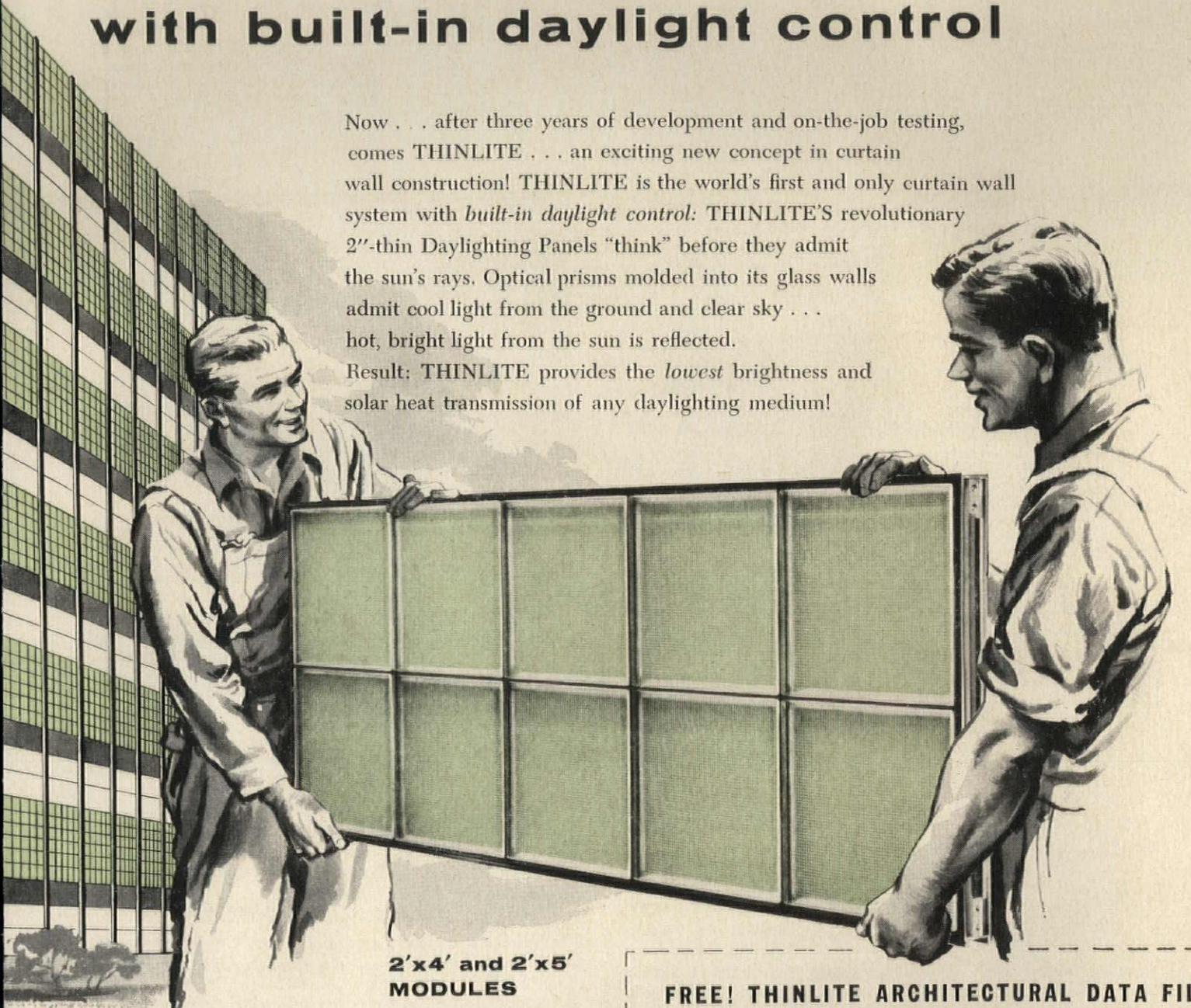




# THINLITE

## with built-in daylight control

Now . . . after three years of development and on-the-job testing, comes THINLITE . . . an exciting new concept in curtain wall construction! THINLITE is the world's first and only curtain wall system with *built-in daylight control*: THINLITE'S revolutionary 2"-thin Daylighting Panels "think" before they admit the sun's rays. Optical prisms molded into its glass walls admit cool light from the ground and clear sky . . . hot, bright light from the sun is reflected. Result: THINLITE provides the *lowest* brightness and solar heat transmission of any daylighting medium!

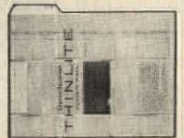


**2'x4' and 2'x5'  
MODULES**

*Easy-to-handle* prefabricated THINLITE Daylighting Panels are available in 3 colors to meet all daylighting conditions: green (for sunlight exposure), soft white (for general use), and sunlight yellow (for non-sun exposures). THINLITE Accessory Panels—Ceramic Face Glass Panels in a number of striking colors, Window Panels in both fixed and projected types, and decorative glass and porcelain unit panels — provide the architect with a limitless variety of color and texture accents.

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THINLITE CURTAIN WALL

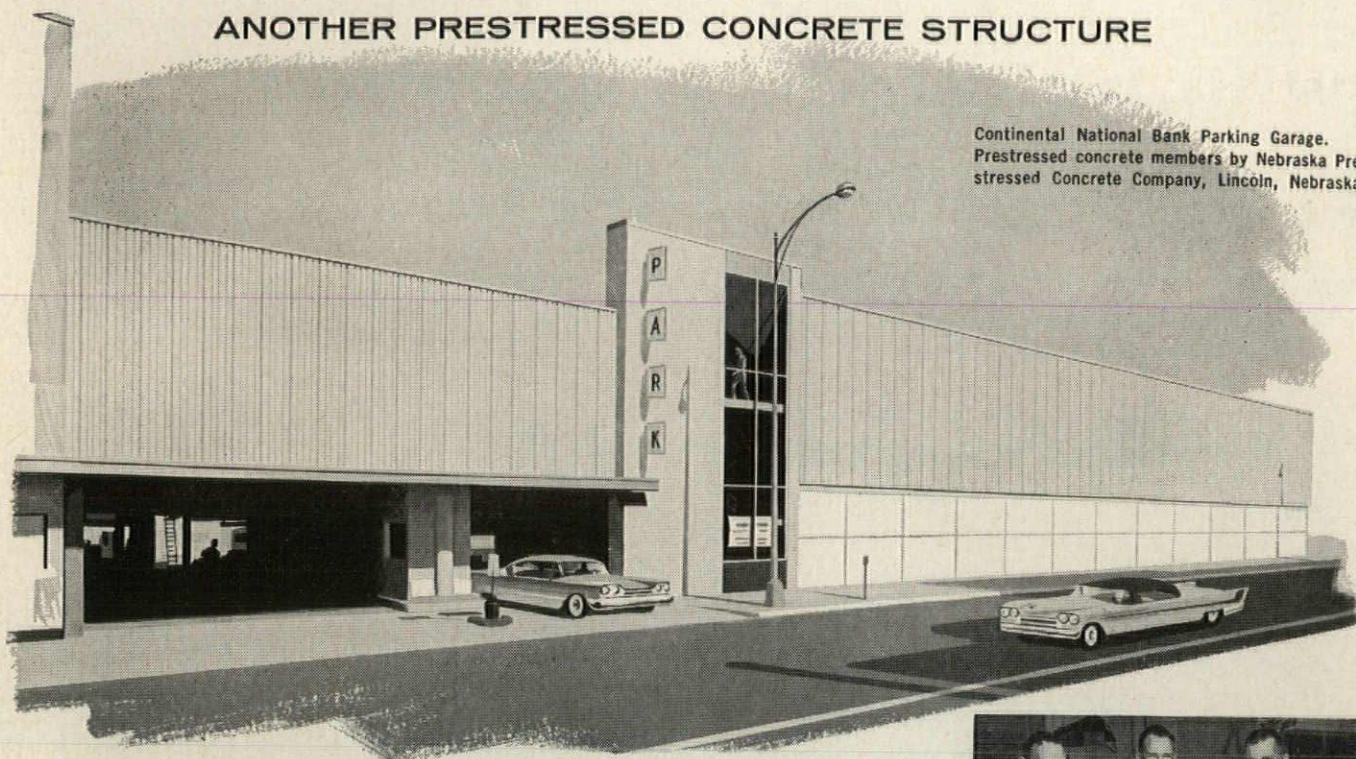
AN **I** PRODUCT

**OWENS-ILLINOIS**

GENERAL OFFICES • TOLEDO 1, OHIO

## ANOTHER PRESTRESSED CONCRETE STRUCTURE

Continental National Bank Parking Garage.  
Prestressed concrete members by Nebraska Pre-  
stressed Concrete Company, Lincoln, Nebraska.



### Architect Ellery Davis Tells Why Prestressed Concrete Was Chosen For Bank Parking Garage



Shown here are Ellery H. Davis; Claus Johnson, Structural Engineer; and William M. Fenton, Architect, of the firm of Davis & Wilson, Architects & Engineers, Lincoln, Nebraska.

Because Mr. Davis' reasons are extensive and important, we proceed at once to quote him:

1. "At the time this building was designed, structural steel deliveries in our area were running about 12 months from date of contract award. This was not satisfactory to our clients, who desired prompt use of the building. Moreover, since this is a type of structure which is open to the elements, we felt that from the standpoints of maximum weather and fire resistance, and elimination of maintenance painting, concrete construction would be more suitable.

2. "After the decision was made to employ a concrete system, we set up alternates with the precast, prestressed, twin-tee joist system, plus a concrete fill versus a conventional cast-in-place reinforced concrete joist system or pan system using removable steel forms. Under the pan-system alternate, the fill was omitted and the top of the structural slab was to be integrally finished with a float texture. Under both alternates, the joist floor system was carried by cast-in-place reinforced concrete girders and reinforced concrete columns of the same cross section and of the same reinforcement. The bids of all general contractors quoting this job showed a substantial saving in favor of the *prestressed floor joist system*.

3. "From the point of view of the builder, the prestressed joist system permits *faster construction* as it *requires no forming or shoring, can be placed in cold weather, and can be used immediately after placement*.

4. "We found a general tendency for the prestressed members to design *shallower in depth* than the cast-in-place members, resulting in *as much as 3 inches less in floor-to-floor height*. This *reduces the total height of the building* and also *eases the grade on the ramps*.

"The above statements express our thinking on the choice of the precast, prestressed, joist floor system in the subject structure."

"... Expresses our thinking on the choice of prestressed concrete" is a phrase that is becoming increasingly prevalent among architects the country over; a phrase that is applied to all kinds of structures; schools, warehouses, office buildings, shopping centers, storage tanks, motels, etc.

Roebling's role in the prestressed field goes back to the introduction of the method in this country. We invite inquiries of any nature on the subject of prestressed concrete. We have at hand literature, experience and the *desire* to bring the many benefits of prestressed concrete to your attention. An inquiry to Construction Materials Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey, will bring a prompt reply.

# ROEBLING



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Subsidiary of The Colorado Fuel and Iron Corporation

**CONSULT ROEBLING . . . First in U. S. with prestressing and tensioning elements**

HERE'S NEWS IN ALUMINUM SIDING

**DYLITE** has 3 times  
the insulation of wood

**AND** is water-proof  

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strong  

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low-cost  

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lightweight

This colorful aluminum siding, recently introduced by ALSCO, Incorporated, Akron, Ohio, has a bonded backing, three-eighths of an inch thick, of DYLITE expandable polystyrene.

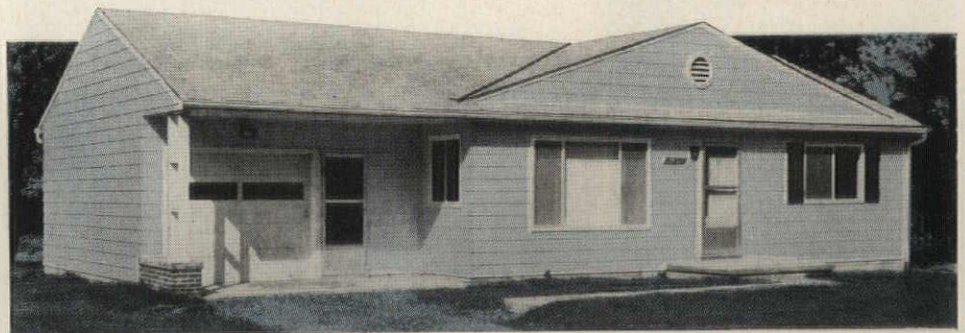
DYLITE costs less than competing materials. It's lightweight, water-proof, does not rot or warp, and is safe from vermin and mildew damage. DYLITE is strong. Its strength adds rigidity to the aluminum panels while its light weight means that the 12½-foot lengths of aluminum siding can be easily installed by one man. In addition, the panels are designed to meet F.H.A. Specifications and satisfy the requirements of the International Conference of Building Officials.

For more information on DYLITE expandable polystyrene, and these other fine plastics by Koppers: DYLENE polystyrene, SUPER DYLAN polyethylene and DYLAN polyethylene—wire or write Koppers Company, Inc., Plastics Division, Dept. AR-128, Pittsburgh 19, Pennsylvania. TWX Call Number PG533

*DYLITE, DYLENE, SUPER DYLAN and DYLAN are registered trademarks of Koppers Company, Inc.*

**Typical Properties of DYLITE**  
—2 Lb. Density/Cu. Ft.

- Compressive Strength—30 Psi
- Tensile Strength—55 Psi
- Water Vapor Transmission—1.18 Perms.
- Water Absorption—.04 Lbs./Sq. Ft. After 48 Hrs. Immersion
- Thermal Conductivity—0.242 at a 70°F. Mean Temperature
- Energy Absorption (Maximum Load)—56.74 In. Lbs./Cu. Ft.



Expanded DYLITE board molded by:  
Dyfoam Corp., New Castle, Pa.



**KOPPERS PLASTICS**

Offices in Principal Cities • In Canada: Dominion  
Anilines and Chemicals Ltd., Toronto, Ontario

is **DURABILITY** essential?



HERE'S WHERE YOU NEED

**Moultile**

No other material you specify has to stand up to the day after day pounding that floors get. That's why so many architects specify durable, long-lasting Moultile Asphalt and Vinyl-Asbestos Tile. Moultile has proved its ability to "take it" in installation after installation across the country. Moultile delivers on upkeep, too. It is economical to maintain . . . requires a minimum of care. For your next project, be sure to specify colorful, low-cost Moultile.

Now Moultile is quality-checked by *AccuRay*<sup>®</sup> to meet your most exacting standards.



**MOULTILE, INC.** • Houston, Tex. • Joliet, Ill. • Long Beach, Calif. • Newburgh, N.Y.  
Jubilee • Moultile Asphalt Tile • Moultile Vinyl-Asbestos Tile • Moulcork • Parquetry

MOULTILE, INC., Dept. M8-12, Box 128, Vails Gate, N. Y. A55  
Send me complete Moultile specification data.

Name \_\_\_\_\_ Address \_\_\_\_\_  
City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

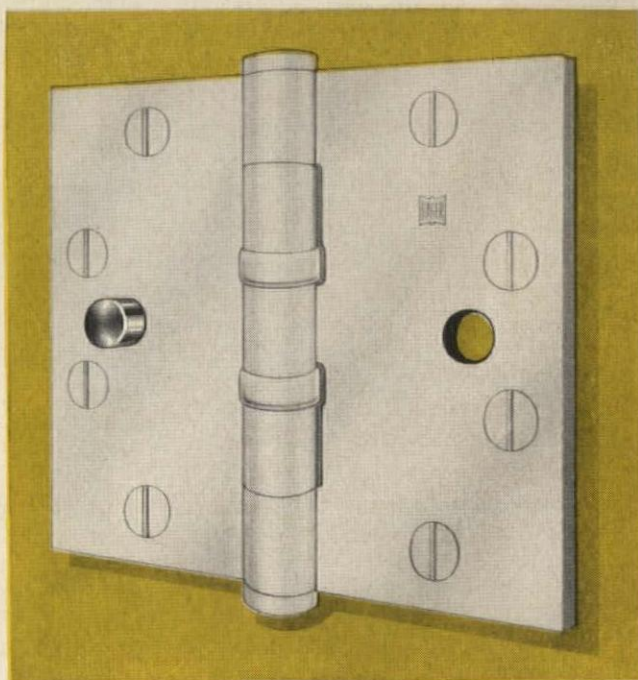
ANNOUNCING HAGER'S NEW

# *Syncretized* SAFETY STUD

**for maximum security**

even if the pin is pulled...  
**you can't pull  
the leaves apart!**

**IT'S  
TAMPER-PROOF**



Available on  
all Ball Bearing  
and template  
Plain Bearing  
Butt Hinges, at  
additional charge.  
Specify  
Symbol SH.

No question about the simple unfailing function of HAGER'S new SYNCRETIZED safety stud. Come night-fall when doors swing shut, an inconspicuous yet rugged metal stud on one hinge leaf penetrates the thickness of the other. All's secure. Pull the pin...knock off the knuckles...the leaves remain "locked" at a point beyond a prowler's reach. Here is maximum security in a handsome, Hager hinge!

For pilfer-proof protection specify Hager's new *Syncretized* Safety Stud feature on that next *security* job!

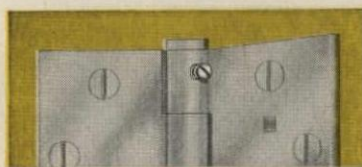
**EVERYTHING...security, flawless performance, beauty...Hinges on Hager!** ®



**1.** Position of syncretizing metal stud when door is open. It is unnoticed.



**2.** Door closed. Leaves are interlocked by metal stud, preventing movement of door in *any* direction with respect to jamb.



FOR MEDIUM SECURITY...  
specify set screw in barrel  
reducing easy pin removal.  
Specify symbol N.R.P.

© 1957 C. HAGER & SONS HINGE MANUFACTURING COMPANY • ST. LOUIS 4, MISSOURI  
HAGER HINGE CANADA LIMITED • KITCHENER, ONTARIO

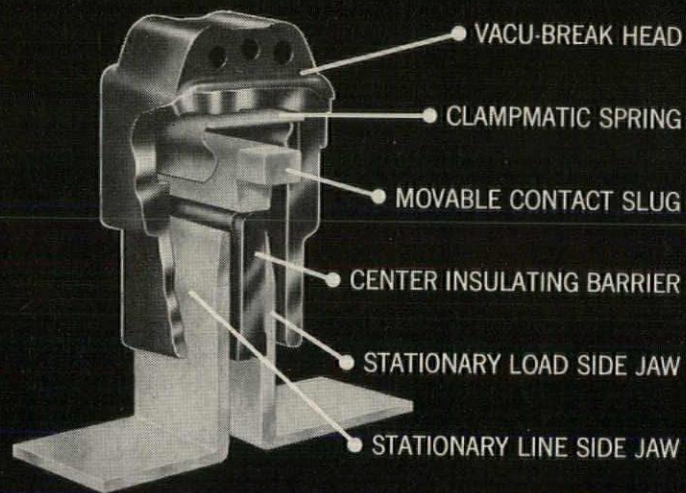
# FOR SAFETY'S SAKE BUY VACU-BREAK



There's a big difference in safety switches—a difference between maximum safety and halfway safety—low maintenance and excessive maintenance. These differences are readily apparent when you look at the design and operation of the Bulldog Vacu-Break Clampmatic\* Safety Switch.

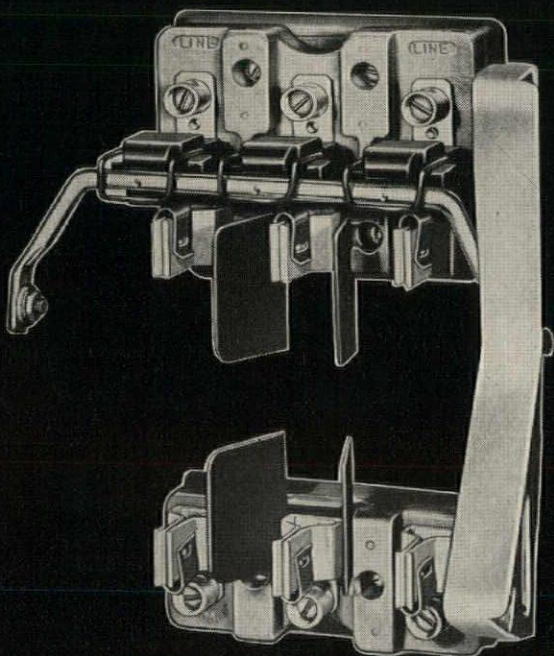
**THE VACU-BREAK:** Contacts are housed inside compact arc chambers which have very little air space. When contacts are "broken" under load, arcs can't build up because of the lack of oxygen. Pitting and burning of the contacts are reduced to the absolute minimum. Maintenance is virtually eliminated.

**POSITIVE SWITCHING:** For positive safety, the Vacu-Break switching mechanism does not rely on tricky toggles or springs to trigger the disconnect operation. The operating handle is directly connected to the contact heads by means of a sturdy metal rod. Push the handle "OFF" and the switch *is off!*



Vacu-Break heads are connected directly to the switch handle. No toggles or triggers . . . no tricky springs. No danger of switching failure, either. One of several exclusive Bulldog Vacu-Break features that set the performance standards for the industry.

Close-up of Vacu-Break head shows movable contact slug inside the compact, oxygen-limiting arc chamber. Clampmatic spring assembly assures bolt-tight contact, speeds "break". This combination guarantees positive, safe operation, long switch life.



**WITHSTAND 100,000 AMP FAULT CURRENT:** Vacu-Break Clampmatic switches equipped with current-limiting type Amp-Traps\*\* were subjected to 100,000 amp short circuit current. *The switches were undamaged.*

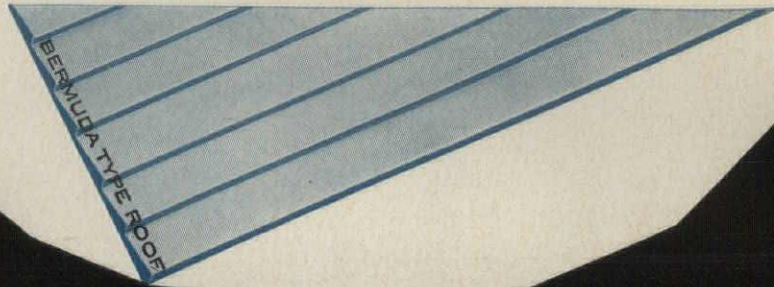
*Play it safe!* Compare, recommend, buy . . . Bulldog Vacu-Break Clampmatic Safety Switches. They cost no more than other switches . . . yet give you the maximum in safety and performance. © BEPCO

\*Vacu-Break and Clampmatic are registered trademarks of the Bulldog Electric Products Company.

\*\*Amp-Trap is a registered trademark of the Chase-Shawmut Company.

**BULLDOG** 

Bulldog Electric Products Company, Division of I-T-E Circuit Breaker Company, Detroit 32, Michigan. *Bulldog Export Division:* 13 East 40th Street, New York 16, New York. *In Canada:* Bulldog Electric Products Co. (Canada) Ltd., 80 Clayton Rd., Toronto 15, Ont.



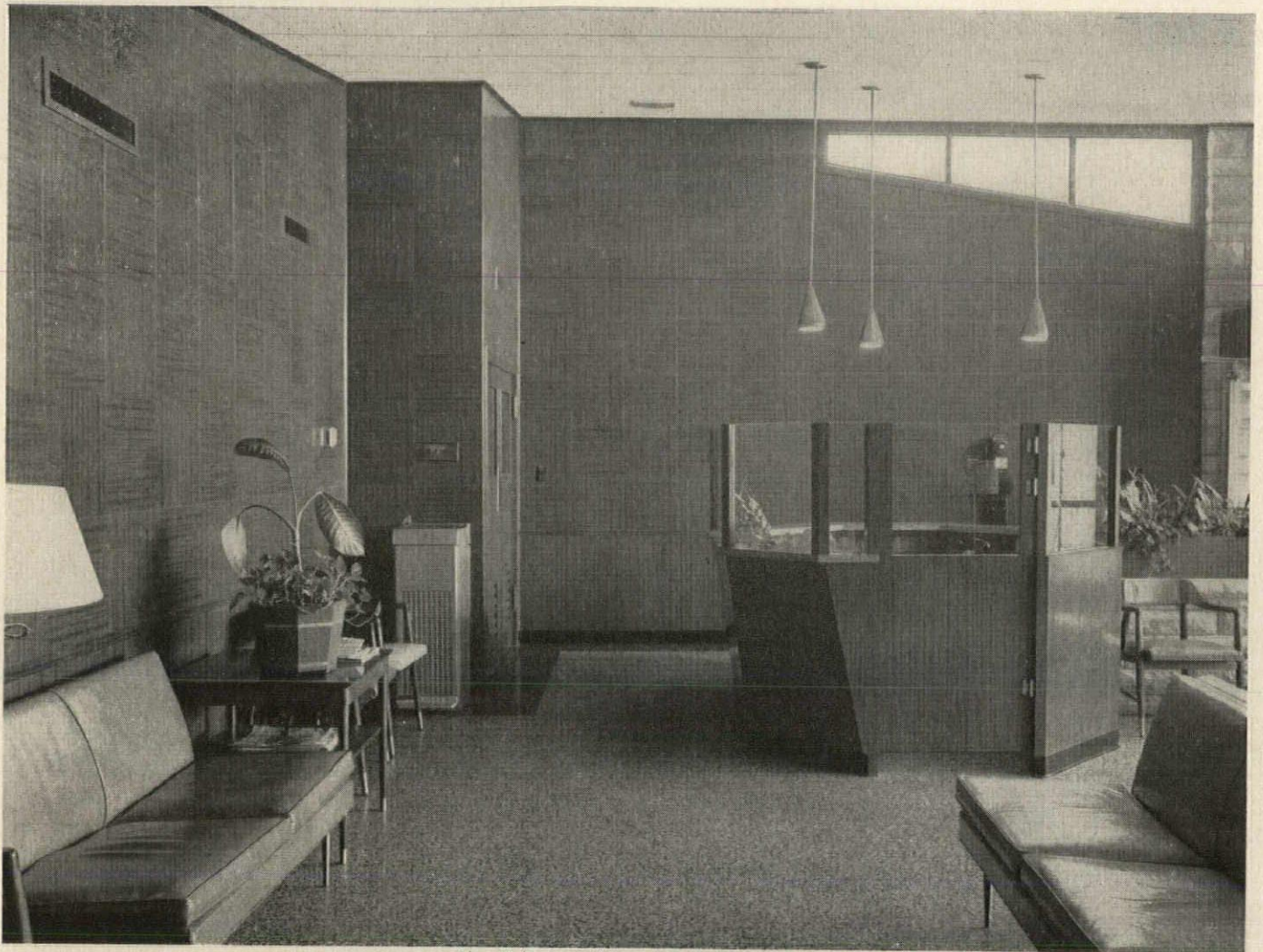
THERE REALLY IS A NEW  
CONCEPT IN ROOFING...

So new, we must frankly acknowledge, that only a limited number of architects are as yet acquainted with it—or, for that matter, with Terne itself as a basic roofing material. These few, however, have found that Terne has unique superiority when measured by every accepted functional criterion. And they have also discovered in Terne—here is the conceptual excitement—a hitherto unexplored dimension of linear and shadow effect, of color as a positive statement in an area where it has previously played so small a part. We believe your reaction will be similar, and very cordially solicit a request for further information.

**FOLLANSBEE**  
STEEL CORPORATION  
FOLLANSBEE, WEST VIRGINIA



ALEXANDER MEMORIAL ARENA BUILDING, GEORGIA TECH/ARCHITECT: AECK ASSOCIATES, ATLANTA, GA./ROOFING CONTRACTOR: R. F. KNOX COMPANY, INC., ATLANTA, GA.



New Medicenter Building reception walls and desk feature striped mahogany Marlite Plank and Block

**"Marlite provides a smooth, easily-maintained surface in attractive colors and patterns"**

*says architect Juliet Peddle*

"The new Medicenter Building, Terre Haute, Indiana, has five self-sufficient suites that include an office, waiting room, examination and consultation rooms. All interior walls are Marlite plastic-finished paneling. Six colors, three marble patterns, and six wood grains were used. The result is both attractive and efficient, and requires only a minimum of maintenance."

More and more architects are planning imaginative interiors with Marlite. This versatile paneling

—dimensioned for standard modular sizes—fits right, looks right, goes up fast with minimum cost in place. And Marlite's baked melamine plastic finish resists heat, moisture, grime and stains. It wipes clean with a damp cloth; stays like new for years.

Get complete details from your building materials dealer, refer to Sweet's File, or write Marlite Division of Masonite Corporation, Dept. 1205, Dover, Ohio.

5807

*that's the beauty of* **Marlite®**  
*plastic-finished paneling*

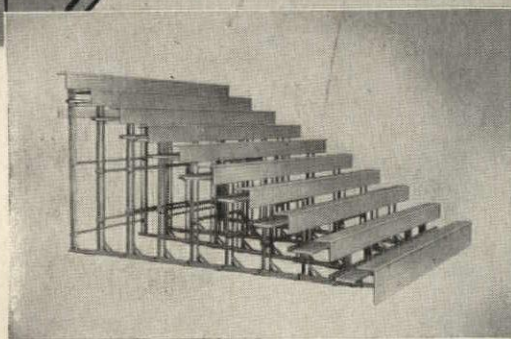
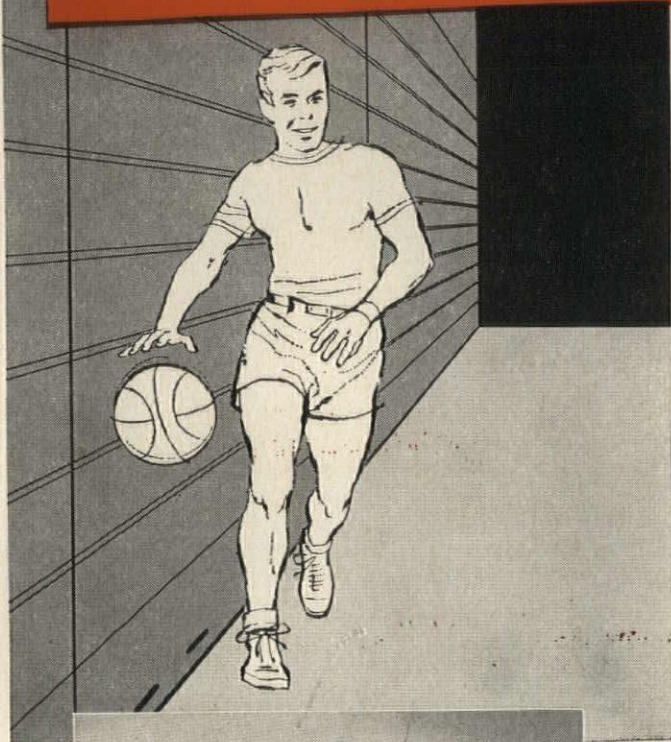


MARLITE IS ANOTHER QUALITY PRODUCT OF MASONITE® RESEARCH

**Marlite branch offices and warehouses:** 204 Permalume Place, N.W., Atlanta 18, Georgia • 18 Moulton Street, Cambridge 38, Mass. • 1925 No. Harlem Ave., Chicago 35, Illinois • 8908 Chancellor Row, Dallas 35, Texas • 1577 Rio Vista Ave., Los Angeles 23, Calif. • 2440 Sixth Avenue So., Seattle 4, Washington • Branch office: 101 Park Avenue, New York 17, N. Y.



# HERE'S WHY gym seats should have vertical fronts when closed



Medart Telescopic Gym Seats can be furnished with 10½" or 11½" row rise and 22" or 24" row spacing.

**EXCLUSIVE FULLY-AUTOMATIC POWER OPERATION IS AVAILABLE AT SMALL COST. (PATENTS PENDING.)**



### IDEAS ON GYM SEATING!

Medart's Gym Seat Catalog tells how to get better, safer seating with minimum investment. Write for your copy.

### MEDART MAKES THE WORLD'S FINEST

Telescopic Gym Seats • Basketball Backstops  
Basketball Scoreboards • Gymnastics Apparatus • Physical Therapy Equipment

**MEDART TELESCOPIC GYM SEATS** have vertical fronts for the same reason that cabinets, lockers, desks—even walls and room dividers—are built with vertical surfaces from top to bottom. Seats that protrude more at floor level, than at waist or eye levels, fool the eyes and trip the feet. Vertical surfaces create no hazards; can't cause skinned shins and bruising falls.

Vertical fronts won't accumulate excessive dust like sloping surfaces—don't need constant cleaning.

Architecturally, Medart's vertical front seats raise no construction problem if seats are to be recessed; always present a good-looking, flush wood-panelled appearance.

### MEDART SEATS HAVE MANY OTHER SUPERIOR FEATURES

1. Safer self-supporting free-standing understructure.
2. Eight vertical steel-angle uprights per seatboard.
3. Retracting rubber rollers put load on floor, not on casters or walls.
4. Interlocked telescoping supports and roller housings for easier operation, straight non-binding trackage.
5. More leg and foot room — better visibility.

# MEDART

## TELESCOPIC GYM SEATS

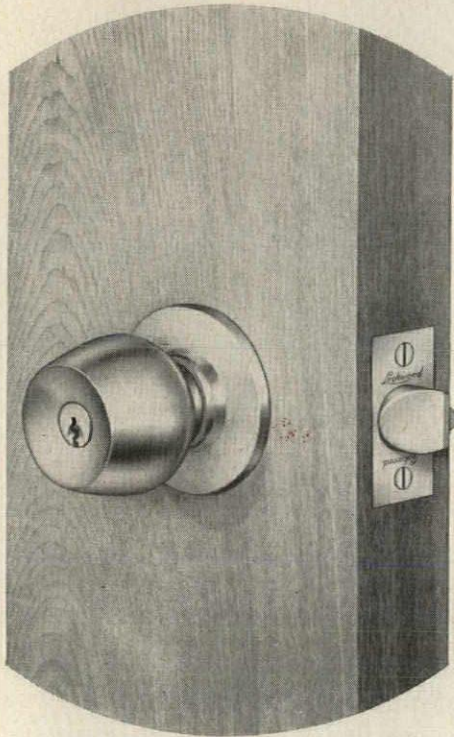
*SPECIFY the best, then INSIST on it!*

FRED MEDART PRODUCTS INCORPORATED  
3540 DE KALB • ST. LOUIS 18, MISSOURI



# twins

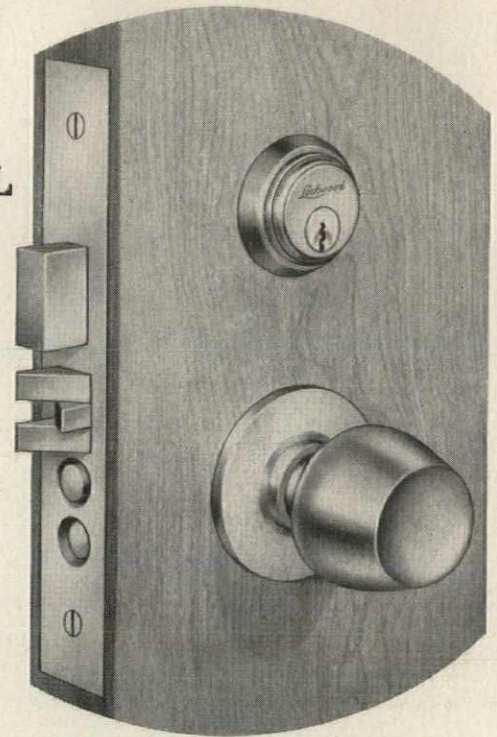
(but not identical)



**ZEPHYR DESIGN**  
heavy duty cylindrical  
lockset in cast  
brass, bronze or aluminum

◀ **CYLINDRICAL  
AND  
MORTISE** ▶

with  
matching  
trim



**ZEPHYR DESIGN**  
heavy duty mortise  
lock in cast  
brass, bronze or aluminum


WHEN LOCKWOOD IS SPECIFIED, it is possible to utilize the advantages of cylindrical and mortise locks with matching trim in one installation.

- **LEADER IN MODERN, HEAVY DUTY CYLINDRICAL LOCKS**, Lockwood's "H" Series features compactness, ease of installation and complete range of functions... despite space limitations of the cylindrical housing.
- **LOCKWOOD ENGINEERS PIONEERED** the standardization of external dimensions of mortise locks, so that today one standardized mortise enables installation of any function, whether doors are wood or metal. Architects can now specify mortise locks for the complete installation or just for certain doors.

*There are many advantages in specifying Lockwood locks, panic exit devices and door closers. See our catalog 18e-LO in Sweet's Architectural File or write for a copy.*

# LOCKWOOD

LOCKWOOD HARDWARE MANUFACTURING COMPANY, FITCHBURG, MASS.



FOR ROCKEFELLER CENTER'S  
NEW TIME & LIFE BUILDING

# CURTAIN WALLS

IN ALUMINUM  
BY

**GENERAL BRONZE**

Latest addition to world famous Rockefeller Center in New York City is the new 48 story TIME & LIFE Building now being erected on the Avenue of the Americas at 50th Street.

In achieving a truly majestic appearance for this attractive new building the architects, Harrison & Abramovitz & Harris, have used large 28 ft. curtain wall bays between narrow vertical piers of limestone extending the full height of the building.

Dark gray expanded metal and glass spandrel units, set within a dark alumilited grid, are given a pleasing contrast by two deep mullions in each bay with outside facing of natural aluminum. An unusual feature of the building is the way the architects have used these deep mullions to house the air duct risers for the building's air conditioning system.

For detailed information on General Bronze products—curtain wall systems, windows, revolving doors, architectural metal work—give us a call or see our catalogs in Sweet's.

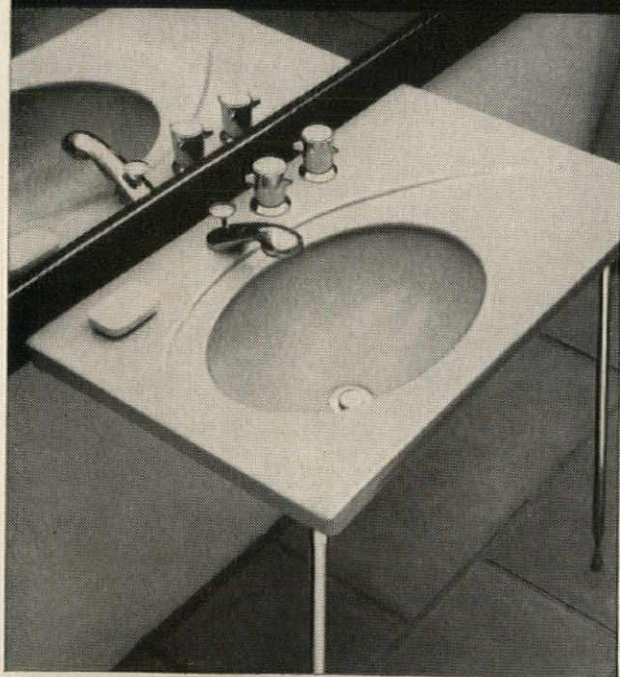
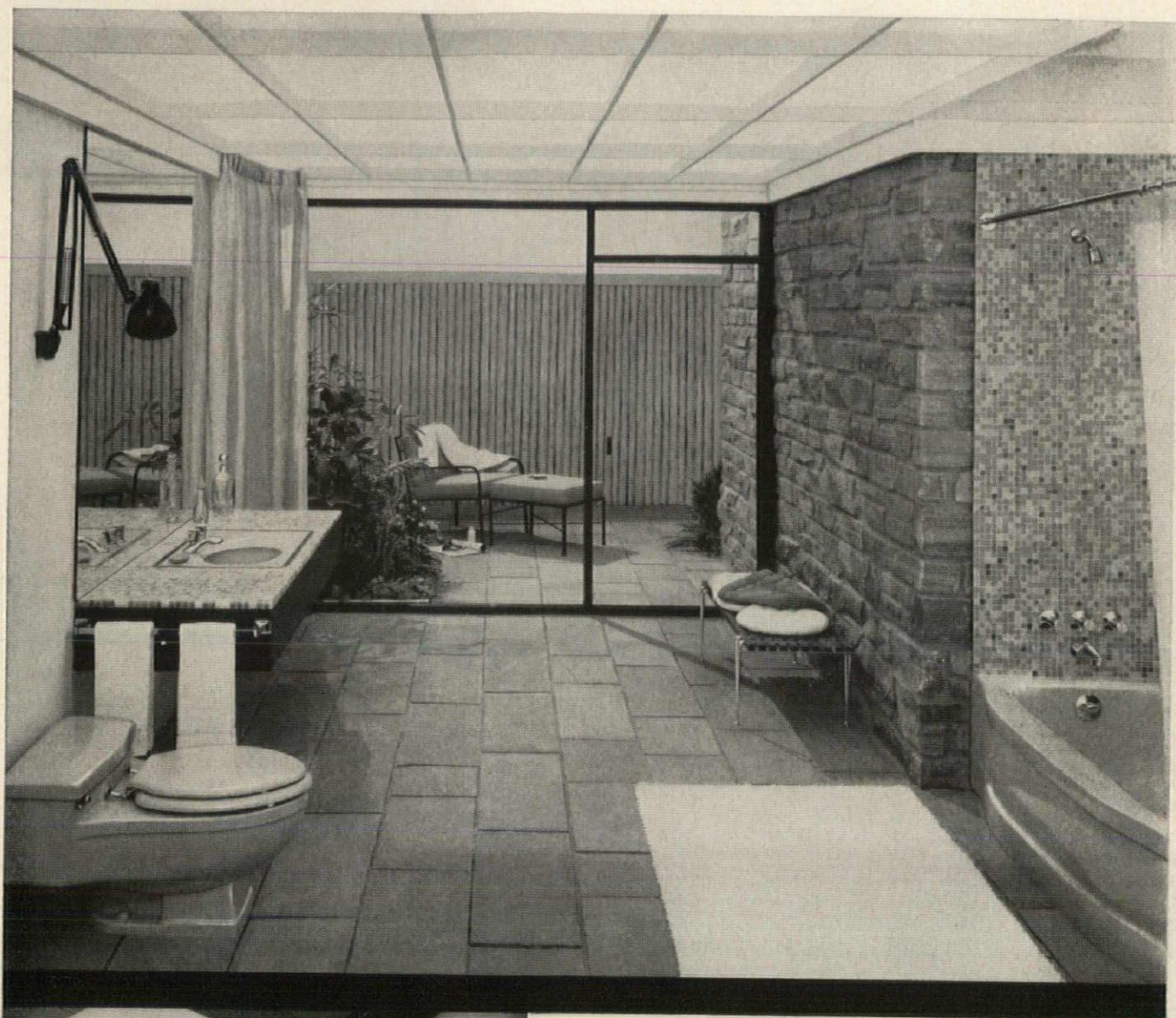
Time & Life Building, New York, N. Y.  
Architects: Harrison & Abramovitz & Harris  
Contractors: George A. Fuller Co.  
John Lowry, Inc.



**GENERAL BRONZE**

CORPORATION · GARDEN CITY, N. Y.

SALES OFFICE: 100 PARK AVE., NEW YORK, N. Y.



**NEW!** This vitreous china lavatory with revolutionary new fitting arrangement, featuring spray spout, may be built into a vanity or instal'ed on a cabinet or legs.

## **Briggs ideas that help sell more homes**

*A unique bathroom featuring the ultramodern, wide-shelf Chaucer lavatory*

Simplicity that spells personal luxury . . . contemporary textures that delight . . . accented by the compatible color of handsome Briggs Beautyware in such harmonizing tones as Coral, Autumn Yellow, Sea Green, Sky Blue, Pearl Gray and Sandstone. Here's a bathroom filled with translatable ideas for your homes, including the enviable luxury of Briggs' new, wide-shelf lavatory. For striking bathrooms that will make every home "stand out" against competition, build with Briggs Beautyware—America's smartest plumbing fixtures.

BRIGGS MANUFACTURING COMPANY • WARREN, MICH.

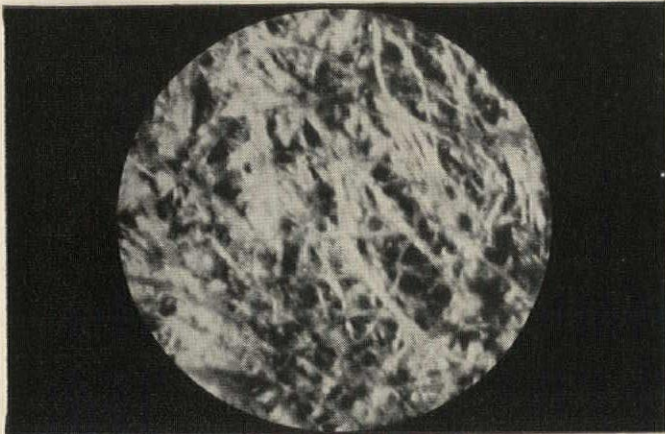
# **BRIGGS**

B E A U T Y W A R E



# THE MICROSCOPE PROVES THE DIFFERENCE

New CHEM-FI manufacturing process preserves the fiber strength of natural wood . . . makes Barrett board stronger, more uniform.



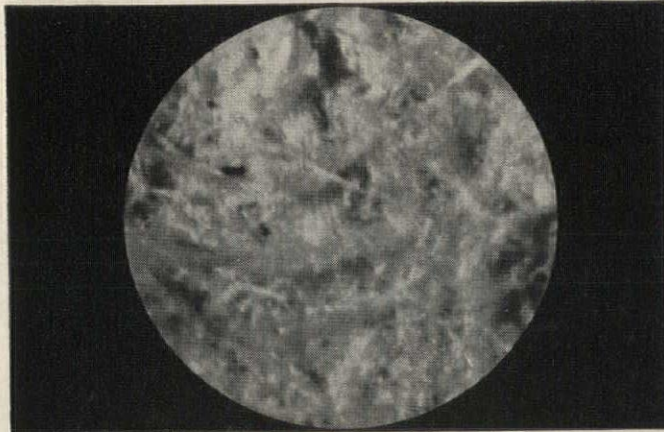
**BARRETT INSULATING BOARD** (magnified 20 times)

This microphotograph shows the long, interlocking wood fibers that reinforce Barrett Insulating Board . . . give it superior strength, uniformity and uniform thermal resistance. Barrett's CHEM-FI process separates the wood fibers by chemical means, retaining the strength of the natural wood from which it's made.



**PROCESS B** (magnified 20 times)

Notice that insulating board made by Process "B" has little uniformity in its fiber lengths. Some fibers are long, others are powder-like, providing no reinforcement. For a given board density (and thus a given K factor), Barrett's CHEM-FI manufacturing process produces insulating board of maximum strength.



**PROCESS C** (magnified 20 times)

Insulating board made by these processes shows same preponderance of short fibers. Barrett Insulating Board using the CHEM-FI process, is made with longer, more uniform fibers, which have a reinforcing effect and substantially improve strength.



**PROCESS D** (magnified 20 times)

## Architects—these microphotographs carry an important message for you!

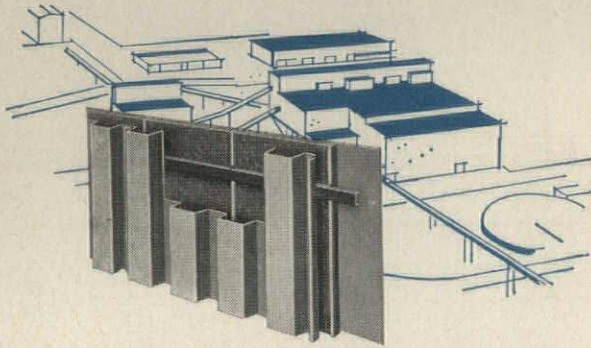
Compare Barrett Insulating Board with that made by three other processes. There you'll find conclusive proof of the greater strength and more uniform insulating power of Barrett Insulating Sheathing and Barrett Roof Insulation. To insulating sheathing, Barrett's CHEM-FI Process brings superior strength

for increased resistance to stress, and greater wall rigidity. To Barrett Roof Insulation, it brings uniformly high insulating value and light weight. Specify Barrett Insulating Sheathing and Roof Insulation made by the CHEM-FI Process—the biggest improvement in insulating board since its introduction.



**BARRETT DIVISION**  
40 Rector St., New York 6, N. Y.





## Skiing weather is working weather with Milcor Wall Panels

Here, 1200 squares were erected fast in the cold of Northern Michigan's ski country

Temperatures drop mighty low in Iron Mountain, Michigan during December, January, and February. It gets too cold to make much headway with masonry construction. But weather didn't worry the Bechtel Corporation in the erection of M. A. Hanna Company's iron ore processing plant.

They closed in the building fast, by using Milcor exterior wall panels. These were quickly fastened to subgirts with self-sealing, self-tapping screws.

Construction costs stayed down. And so will maintenance costs — Milcor exterior panels are Bonderized, fortified against corrosion.

Milcor Wall Panels are available also as field-assembled, non-load-bearing sandwich walls comprising interior steel liner panels, insulation, and fluted exterior panels.

See Sweet's, section 3b/In — or write for catalog 243.

## MILCOR<sup>®</sup> Wall Panels

*It pays... in many ways... to specify Milcor Steel Building Products*

MILCOR  
CELLUFLO  
Sweet's,  
section 2a/In

MILCOR  
ROOF DECK  
Sweet's,  
section 2f/InL

MILCOR  
RIBFORM  
Sweet's,  
section 2h/In

MILCOR CONVECTOR  
ENCLOSURE WALL UNITS  
Sweet's,  
section 30h/In

MILCOR  
METAL TRIM  
Sweet's,  
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**INLAND STEEL PRODUCTS COMPANY** Member of the **INLAND Steel Family**

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CLEVELAND • DALLAS • DENVER • DETROIT • KANSAS CITY • LOS ANGELES • MILWAUKEE • MINNEAPOLIS • NEW ORLEANS • NEW YORK • ST. LOUIS.

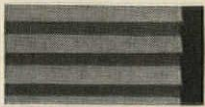
WP-1

Architect: Oswald H. Thorson, A.I.A. Photo: Hube Henry, Hedrich-Blessing



EXTERIORS UNLIMITED — Not only does each individual pattern of

California redwood siding produce its own pleasant wall texture... it can be used

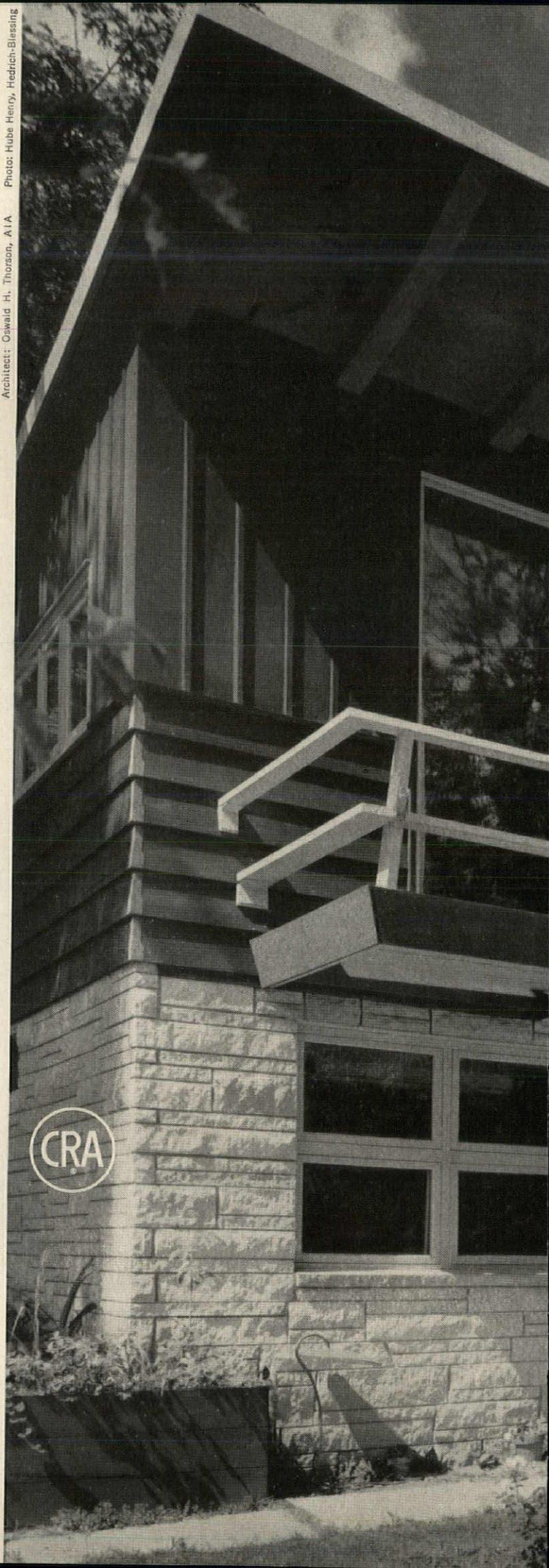


to harmonize or contrast with other redwood patterns... other building materials

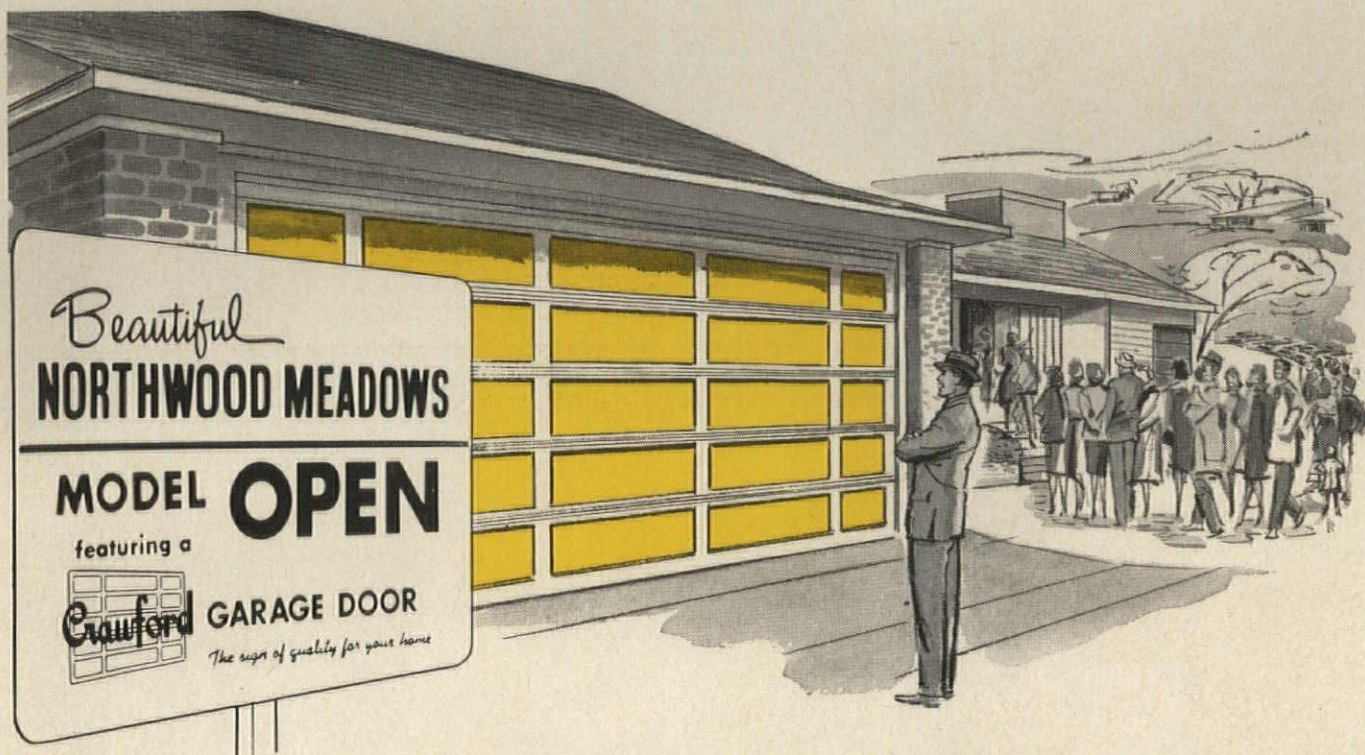


...to provide a rich visual interest and textural variation on any home exterior.

CALIFORNIA REDWOOD ASSOCIATION • 576 SACRAMENTO ST. • SAN FRANCISCO 11







## BIG BOOST for Home Sales

CRAWFORD DOORS and Crawford are, in fact, helping to boost sales for home builders everywhere, with



a one-two combination that's hard to beat.

First there's Crawford's door . . . and let's face it, in most of today's new homes, the garage door occupies almost a third of the entire

frontage. It's true, too, that the front of the house sells *first*, stops the "shoppers". And with the beauty . . . the eye-appeal, buy-appeal . . . of a Crawford door to complement and enhance the architecture of the homes you build, *you stop them!*



Second, as the perfect follow through, there's Crawford's "hard

sell" promotional kit. It's loaded with such items as outdoor signs, directional arrows, interior feature signs, news releases and more . . . all designed to help *you* put up more SOLD signs (and they're in the kit, too).

There's more to the story, much more, so why not write for complete details. Write today.



### CRAWFORD DOOR COMPANY

216-20263 HOOVER ROAD, DETROIT 5, MICHIGAN

In Canada: Crawford Door Sales Co., Ottawa, Ontario



120,000 SQ FT OF RADIANT CEILING saved AT&T approximately 30 per cent on initial costs. Temperature varies less than one degree between floor and ceiling,

and the lightweight aluminum panels need little or no maintenance. 100,000 LBS OF ALCOA ALUMINUM were used in ductwork and outlet panels of radiant ceiling.

# RADIANT ACOUSTICAL CEILING OF ALCOA ALUMINUM

## tames weather, saves money for AT&T

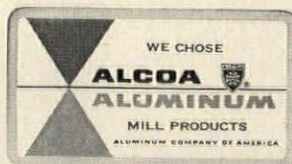
Heating, cooling and ventilating problems are solved handily in American Telephone & Telegraph's Long Distance Switching Center. A radiant ceiling of Alcoa® Aluminum performs all three tasks, besides providing an acoustic buffer with a noise reduction coefficient up to 85 per cent. Integrated lighting troffers complete the picture of a handsome, contemporary, economical installation.

This versatile ceiling is possible because of aluminum. Mill-finished, it gives the tops and sides of the ceiling ducts a low emission rate. The bottoms, however, are anodized for a high emissivity factor. The perforated outlet panels are interchangeable in an infinite variety of patterns—they simply snap into place—to control air distribution and adapt to changing load requirements. Their permanent finish completely eliminates painting, and their light weight facilitates handling. AT&T is so pleased with the sys-

tem—they saved approximately 30 per cent on first costs alone—that they have installed a similar one in their new building in Wayne, Pa.

A detailed drawing of this Simplex ceiling is shown on the opposite page.

Aluminum building materials and components offer architects maximum design freedom with the added rewards of economy and practicality. Your nearest Alcoa sales office will be glad to consult with you at any time. Or write: Aluminum Company of America, 1880-M Alcoa Building, Pittsburgh 19, Pa.



Your Guide to the Best  
in Aluminum Value

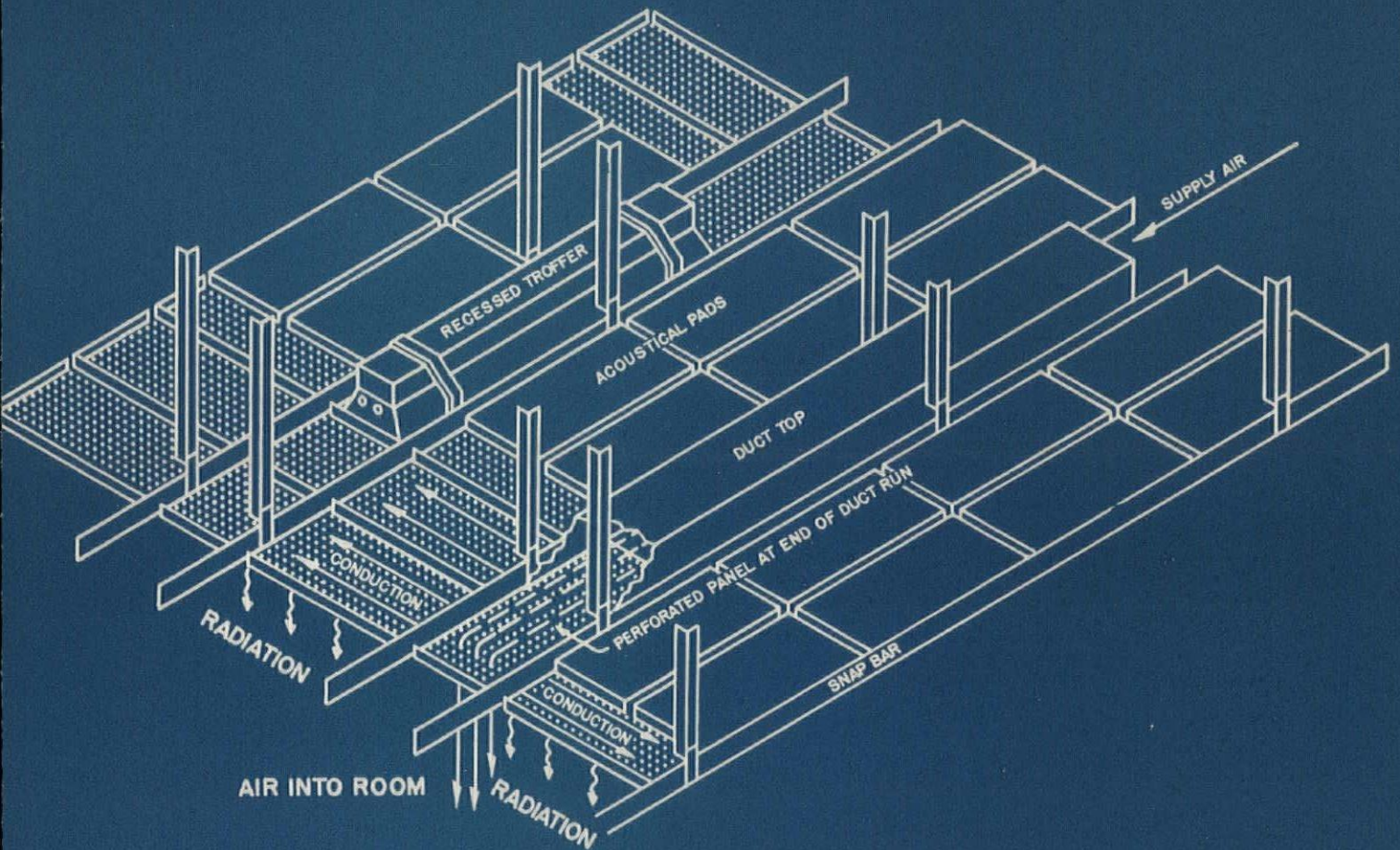


ALCOA THEATRE

Fine Entertainment, Alternate Monday Evenings

# AMERICAN TELEPHONE & TELEGRAPH CO.

## Detail of Radiant Acoustical Ceiling Installation



BUILDING — Long Distance Switching Center, White Plains, N.Y.

OWNER — American Telephone & Telegraph Co.

ARCHITECT — Lorimer & Rose, New York, N.Y.

CONSULTING ENGINEER — John D. Dillon, New York, N.Y.

ALUMINUM RADIANT ACOUSTICAL CEILING — Simplex Ceiling Corp., New York, N.Y.

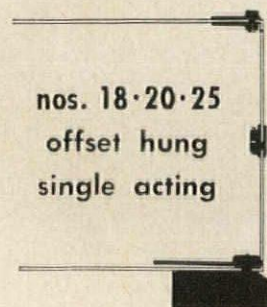
ALUMINUM CEILING SUBCONTRACTOR — National Acoustics Corp., New York, N.Y.

for the **MODERN ENTRANCE**



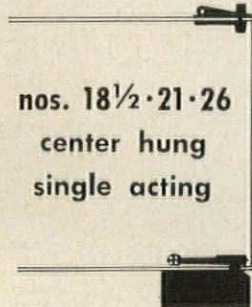
## concealed floor type door closers

4 basic styles in a variety of sizes and types to meet every installation requirement



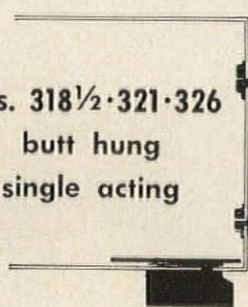
nos. 18·20·25  
offset hung  
single acting

Allow full unobstructed door opening space and wide door swing to 180°. Has arm locking device for vertical adjustment of door.



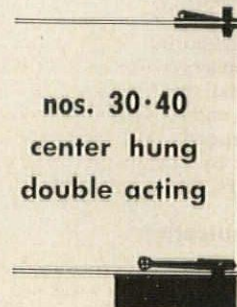
nos. 18½·21·26  
center hung  
single acting

Hanging hardware completely concealed. Ideal for batteries of doors. Require no mullions allowing greatest open entrance area.



nos. 318½·321·326  
butt hung  
single acting

For installations where it is desirable to have door hung independently from closer. RIXSON ball hinges with vertical adjustment recommended.



nos. 30·40  
center hung  
double acting

For doors that swing both in and out. Each swing separately adjustable to local wind and draft conditions. Completely concealed.

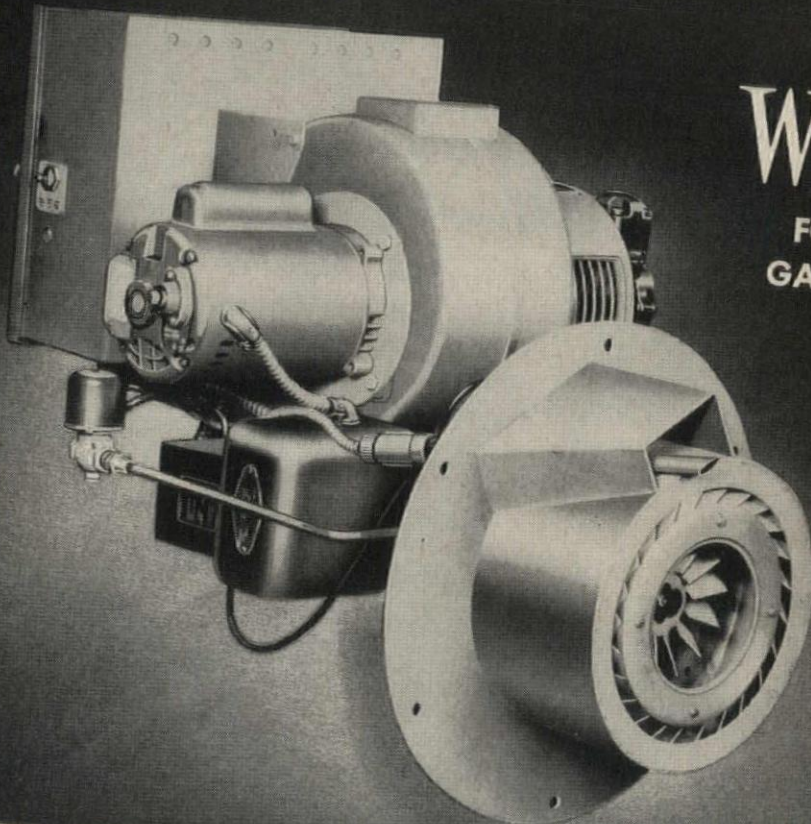
write for complete information and templates

**THE OSCAR C. RIXSON COMPANY** *originators of the checking floor hinge*  
9100 w. belmont ave. • franklin park, ill. CANADIAN PLANT: 43 racine road • rexdale, ontario

Another new development by Iron Fireman

**WhirlBlast**  
TRADE MARK

**FORCED DRAFT  
GAS-OIL BURNER**



## Now...forced draft firing for smaller boilers

The Iron Fireman WhirlBlast gas-oil burner was created to fill the need for forced draft firing in all types of medium size boilers and particularly for the increasingly popular sealed firebox Scotch boiler. Now you can have the advantages of forced draft firing in boilers as small as 18 bhp. The necessity for costly and unsightly smokestacks has been eliminated. All air for combustion is supplied by the burner blower. No extra motors, fans or draft ports are required.

### No pulsation

A newly developed firing head has solved the old problem of flame pulsation. This has been accomplished without recourse to firebox vents or other alterations.

### Outstanding features of the WhirlBlast burner

- 1. Switches fuels instantly.** Fuels can be changed automatically with appropriate controls, or manually by the flick of a switch.
- 2. No high smokestack.** A stub stack or vent is all that is required.
- 3. For all types of boilers.** Fires sealed firebox boilers under pressure. Also greatly improves draft conditions in natural draft boilers.
- 4. Easily installed.** Available with either a flange or pedestal mount. Bolts directly to the boiler front. Inverted model (with draft tube on top) permits mounting on Scotch boilers without interfering with flue doors.

- 5. Fuels.** Fires No. 2 fuel oil and all types of fuel gas. Available in either oil, gas or dual fuel models.



**Complete package ready to operate — boiler, burner, controls**

Complete boiler-burner units assembled, wired and tested at the factory. Totally enclosed control panel is built into the burner. Wide range of sizes; easily specified by model number.

**IRON FIREMAN®**

**AUTOMATIC FIRING EQUIPMENT  
FOR HEATING, PROCESSING, POWER**



*For more information, mail coupon*

IRON FIREMAN MANUFACTURING COMPANY  
3058 West 106th Street, Cleveland 11, Ohio.  
(In Canada, 80 Ward Street, Toronto, Ontario)

Please send more information and specifications on the Iron Fireman WhirlBlast burner.

Name \_\_\_\_\_  
Firm \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

**ACCEPTED**

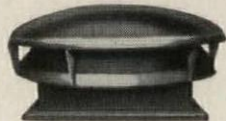
*Allen*

**ROOF VENTILATION**

Whatever your ventilating needs, be sure to see how Allen equipment can meet your requirements efficiently and economically.

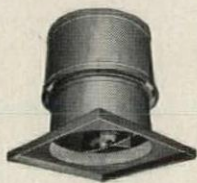
**NEW "I-LINE"  
for EYE APPEAL**

The new "I-Line" provides an attractive low contour, assuring maximum capacity or efficiency with the minimum over-all height.



**POWERFUL "VD"  
for HIGH VELOCITY**

By moving a large volume of air at high velocity, this Vertical Discharge fan keeps fumes from sifting back into building.



*Allen*

... is prepared to investigate ventilating problems and plan systems for the efficient removal of heat, fumes, vapor or dust.

**WIND-DRIVEN  
TURBINES**

Three types of Allen turbines take full advantage of the economy of natural air movement.



**EXHAUST FANS**

Remote drive Staxauster is designed to handle corrosive fumes, and/or high temperature air.



**THE ALLEN LINE**

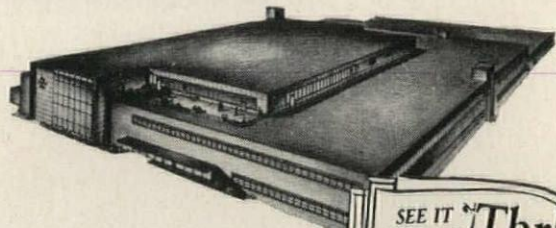
Write today for catalog that gives specifications and performance data on these and other units in the Allen ventilator line.



**ALLEN COOLER &  
VENTILATOR, INC.**  
ROCHESTER, MICH.

Roof Ventilators for Every Commercial and Industrial Need  
REPRESENTATIVES IN PRINCIPAL CITIES

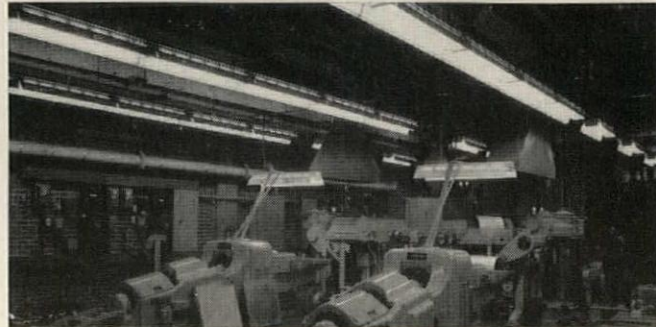
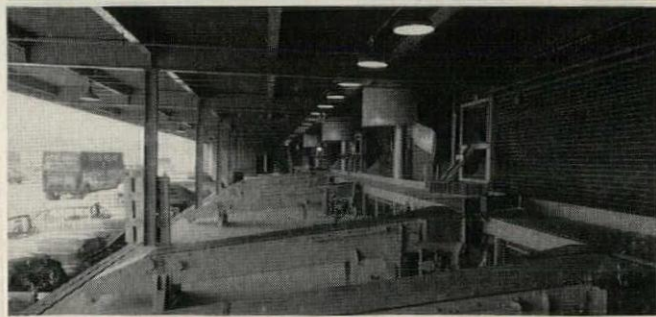
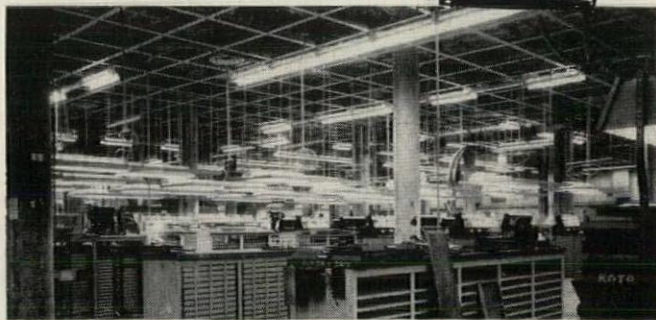
*Wheeler*  
**LIGHTS THE  
GLOBE**



SEE IT TODAY! *Thr*

*Boston Evening  
Globe*

Ultra-new Boston Globe — world's most modern newspaper plant — specified Wheeler Industrial Lighting Fixtures throughout! Wheeler Fluorescent and Incandescent Fixtures of all types make it the most efficiently lighted newspaper plant as well.



Take your industrial lighting problem to . . .

*Wheeler* **REFLECTOR COMPANY**

Division of Franklin Research Corporation

275 Congress Street

Boston 10, Massachusetts

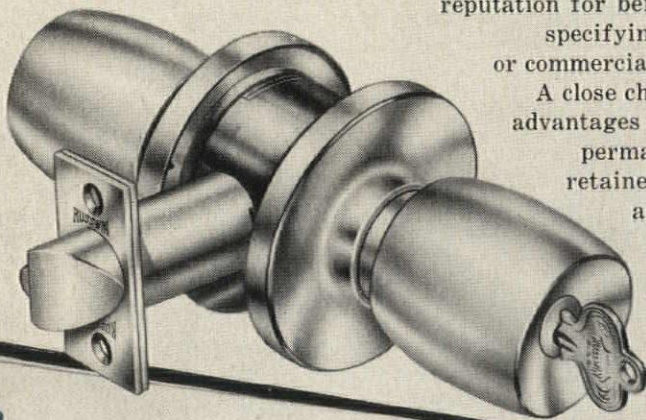
# ROUGH RESISTANT



## STILEMAKER DOORWARE

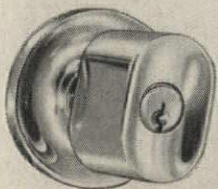
This heavy-duty cylindrical lock line has earned a schoolwide reputation for being *rough-resistant*...a point to consider when specifying doorware for any type of institutional or commercial building.

A close check of Stilemaker construction will reveal the advantages of such features as...a full  $\frac{5}{8}$ " throw permanently lubricated latch bolt; concealed knob retainers; long knob shank bearing for knob rigidity and many others. All the facts are available in concise form. Consult your Russwin Specialist or write Russell & Erwin Division, The American Hardware Corporation, New Britain, Conn.

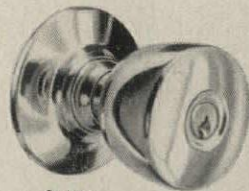


**RUSSWIN**®  
*distinctive doorware*

*As well as Attractively-Styled*

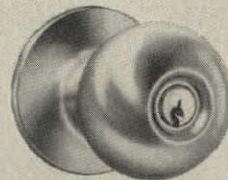
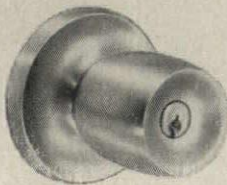


**ERA DESIGN**  
in cast brass,  
bronze or aluminum



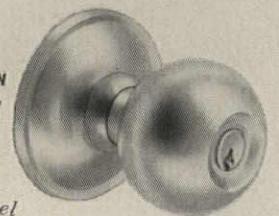
**FLARE DESIGN**  
in cast brass,  
bronze or aluminum  
**COSMIC\* DESIGN**  
in wrought brass,  
bronze or aluminum

**COMET DESIGN**  
in cast brass,  
bronze or aluminum



**BRISTOL DESIGN**  
in cast brass,  
bronze or aluminum  
**HADDAM\* DESIGN**  
in wrought brass,  
bronze or aluminum

**MONO DESIGN**  
in cast brass,  
bronze or aluminum

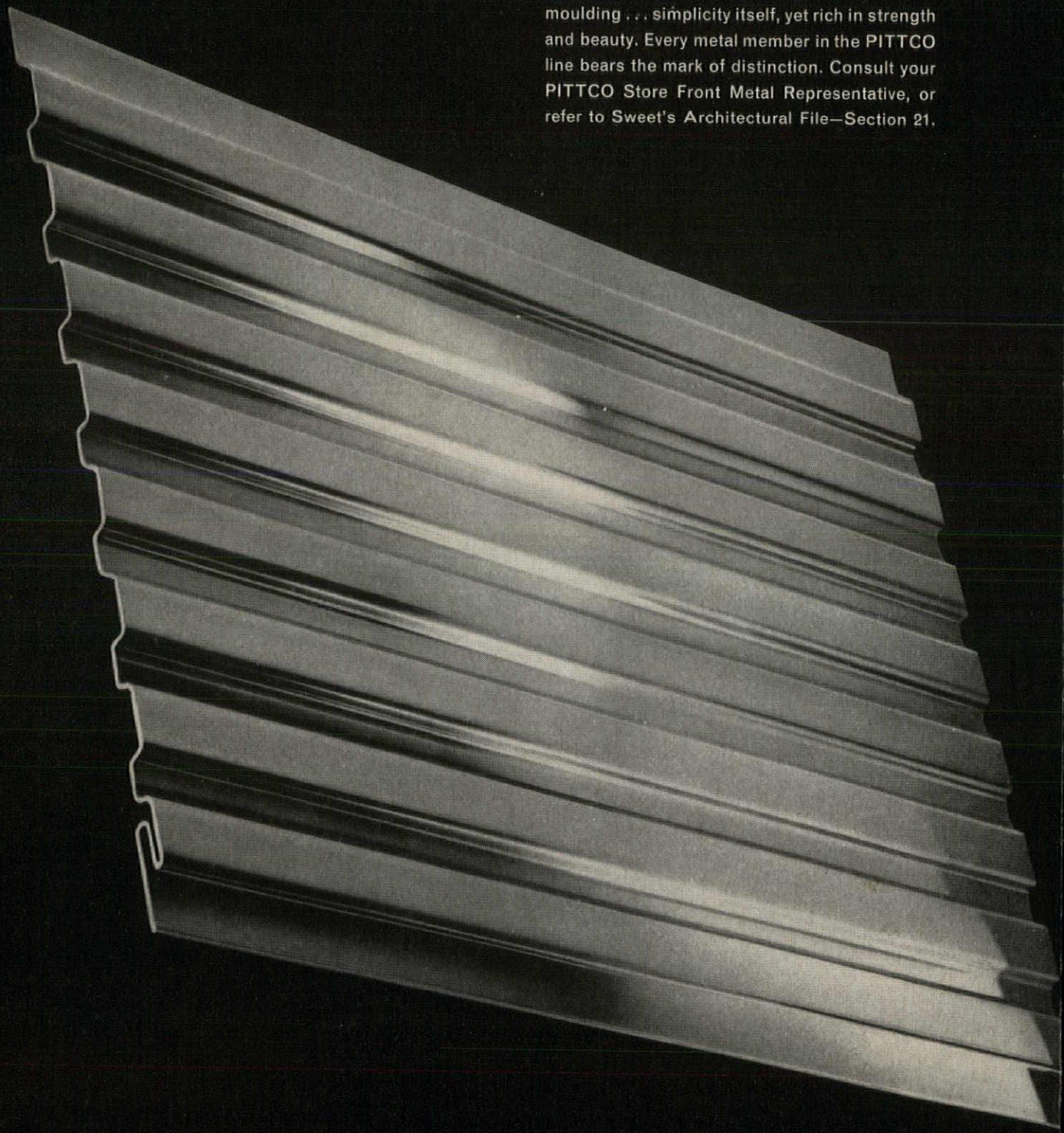


*\*Can be furnished in stainless steel*

# PITTCO MOULDING

## NO.2083-8

Profile of an expertly designed store front moulding . . . simplicity itself, yet rich in strength and beauty. Every metal member in the PITTCO line bears the mark of distinction. Consult your PITTCO Store Front Metal Representative, or refer to Sweet's Architectural File—Section 21.



PAINTS · GLASS · CHEMICALS · BRUSHES · PLASTICS · FIBER GLASS

**PITTSBURGH PLATE GLASS COMPANY**

IN CANADA: CANADIAN PITTSBURGH INDUSTRIES LIMITED



# New Akron School Selects Lennox Comfort Curtain

*... as the finest of all heating-ventilating systems once again comes in at the lowest bid price!*



This winter the new Robert Guinther School will have one of the most refreshing and comfortable indoor climates of any school in the entire country. The reason: the specification of the new Lennox Comfort Curtain heating-ventilating system.

This all-new system applies to classrooms the

sound, tested principles of perimeter air distribution, with the rapid, accurate responses to temperature changes which only an all air system can give. In comfort, in flexibility, in economy of installation and operation—it outperforms all other systems. Read the facts below. Then send in the coupon for free booklet.

## NEW LENNOX COMFORT CURTAIN SYSTEM OFFERS THESE IMPORTANT AND FAR-REACHING ADVANTAGES

**More effective temperature control at all times**—Eliminates overheating problem. Holds temperature to a variance of 1 degree despite heat gains from the sun, lights, and occupants.

**Continuous ventilation**—New Comfort Curtain system draws in controlled amounts of outside fresh air, filters this air, then mixes it with heated or re-circulated air, and distributes it evenly throughout the classroom. No drafts or "cold spots" near the windows.

**Individual classroom control**—Each classroom can be maintained at its own temperature level in accordance with occupancy and activities. Controls are part of Comfort Curtain system. No extra cost.

**Greater flexibility**—No money for extra equipment need be expended initially for future requirements. Comfort Curtain, modular by design, may be added as the school expands. System may be fired by gas, oil, or electricity, and air conditioning can be added without upsetting the original installation.

**Lower building costs**—No expensive pipe tunnels. Installation time and expense reduced with completely assembled units.

**Lower operating costs**—Modular design permits operation in areas where heat is required, non-operation in others. Maintenance is simple and can be performed inexpensively by local heating contractor.

# LENNOX

© 1958 Lennox Industries Inc., World Leader in Heating and Air Conditioning, founded 1895; Marshalltown and Des Moines, Ia.; Syracuse, N.Y.; Columbus, O.; Decatur, Ga.; Ft. Worth, Texas; Los Angeles, Calif.; Salt Lake City, Utah. In Canada: Toronto, Calgary.



**FREE** 28-page booklet on new Lennox Comfort Curtain. Just fill out coupon and mail to:

LENNOX INDUSTRIES INC., Dept. AR-88  
P. O. Box 1294  
Des Moines, Iowa

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_



Ribbed siding — 4" pitch



Ribbed siding — 5.33" pitch



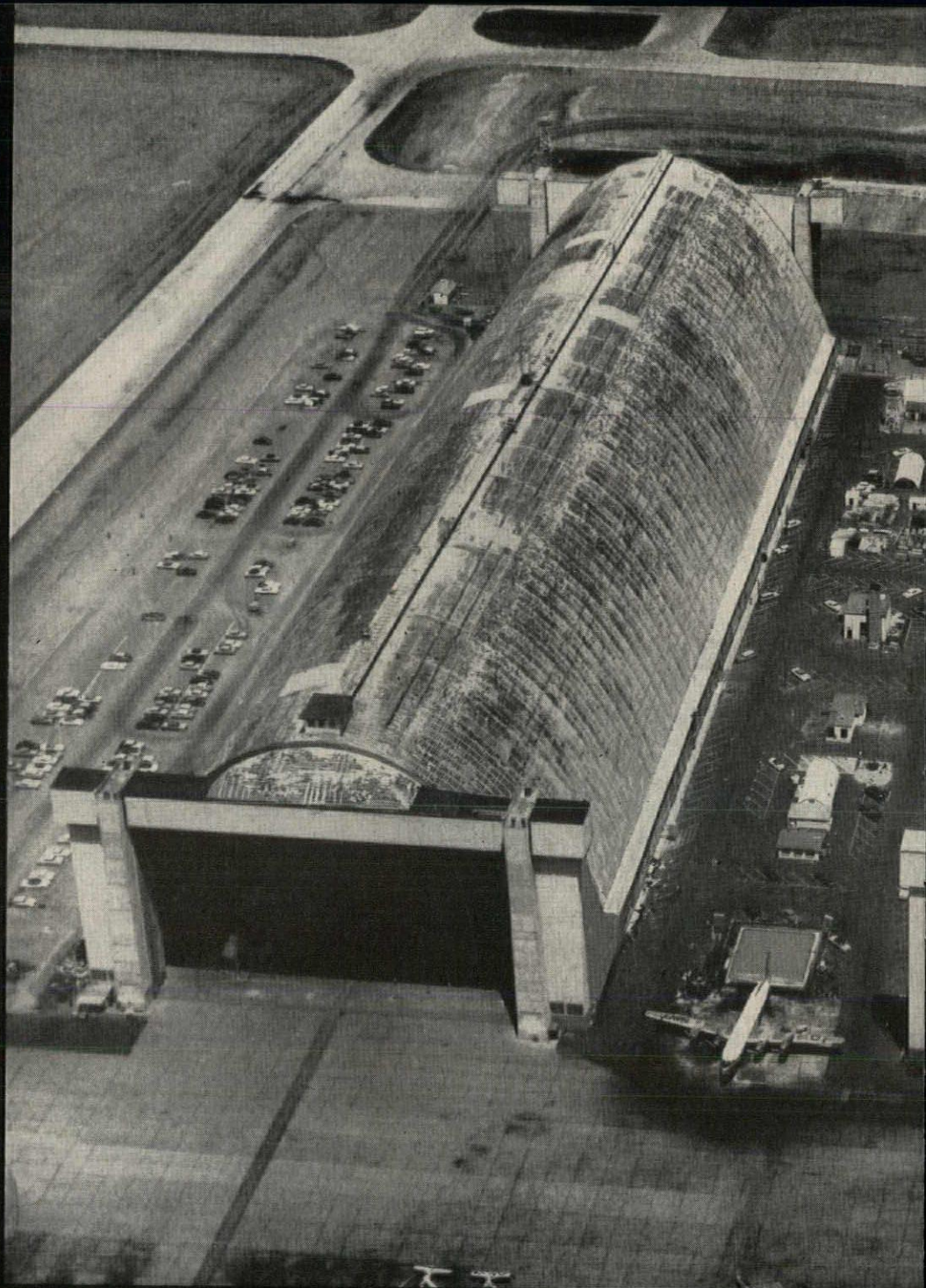
Ribbed siding — 8" pitch



V-beam roofing and siding —  
4 1/4" pitch

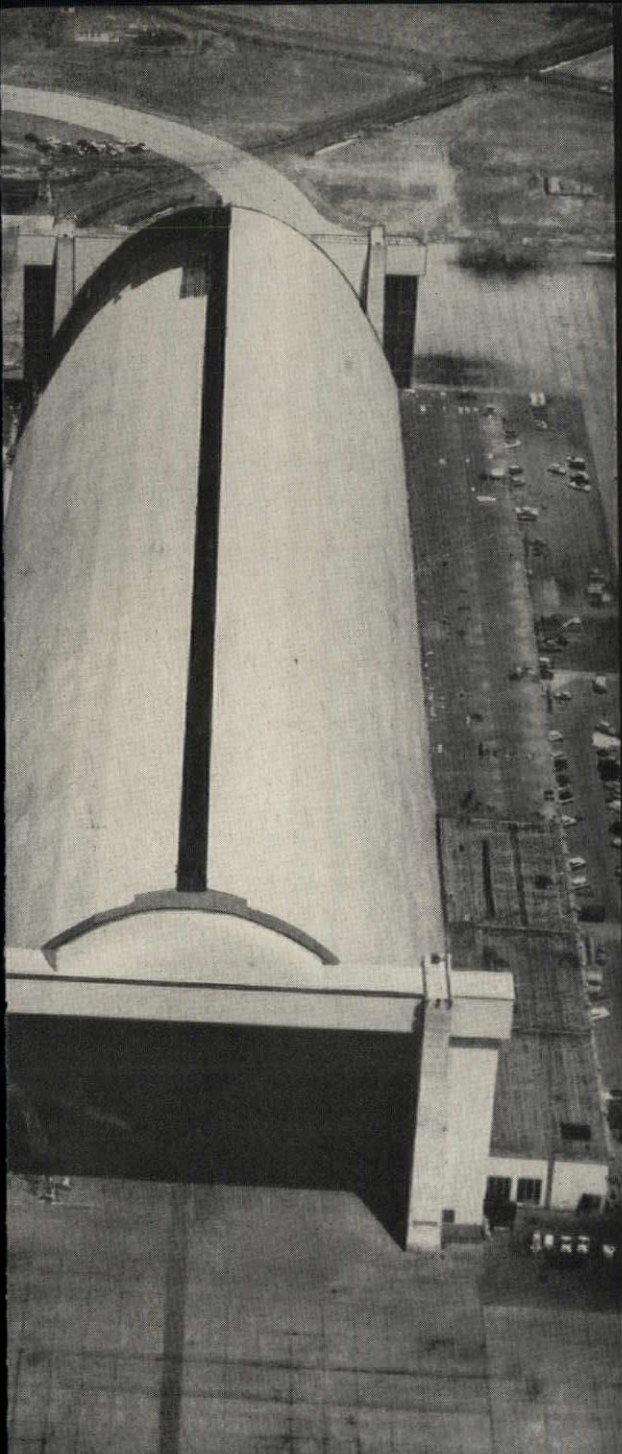


Industrial corrugated roofing  
and siding — 2.67" pitch



**A KAISER ALUMINUM ROOFING  
AND SIDING SHEET  
FOR EVERY INDUSTRIAL NEED**

These roofing and siding sheets are available in a selection of thicknesses, finishes, widths, lengths. Flashing sheet, pre-formed flashing, closure strips and other accessories also available. For full information, see Sweet's 1958 Architectural File 8b/Ka or Industrial Construction File 4b/Ka. Complete specifications provided on request.



# 16-ACRE OVERHEAD PROBLEM SOLVED!

*Two huge Navy hangars get a sturdy re-roofing with lightweight sheets of low-maintenance Kaiser Aluminum*

At Moffett Field, California, leaky roofs were threatening the structural wood framework of two giant Navy hangars with rot and deterioration. Repairs were constant and costly. A new covering was obviously needed.

Why did consulting engineers Waters, Ruth and Going specify aluminum for the job? Because careful studies pointed up these important advantages:

1. Aluminum is so *light in weight* that there would be no need to re-stress the buildings.
2. Aluminum is the most *inexpensive* of the durable, permanent-type roofing materials available.
3. Aluminum promises *minimum maintenance* because it won't rust or rot — and resists corrosion.

**Quick to apply** — Here's what contractor Dale Benz reports on the project: "Using extra wide 45 $\frac{5}{8}$ " sheets of 0.032" thick Kaiser Aluminum stucco-embossed industrial corrugated roofing, 16 of our men were able to place between 400 and 500 sheets every day.

"All told, over 700,000 square feet were efficiently covered — at a weight saving of a half-pound per square foot over the original composition material."

**Functional good looks** — Result: a low-cost, sturdy and attractive roofing capable of withstanding even high velocity winds. "Barring an act of God," says Benz, "these roofs should easily last the life of the hangars themselves."

★ ★ ★

Kaiser Aluminum offers a complete supply of cost-saving industrial building products, including the components for new insulated "sandwich wall" construction. Consult the yellow pages of your telephone directory or write for literature. Kaiser Aluminum & Chemical Sales, Inc., 919 N. Michigan Avenue, Chicago 11, Illinois.



THE BRIGHT STAR OF METALS

▲ **Aircraft hangars.** U. S. Naval Air Station, Moffett Field, California. Re-roofing of hangar at left commences as work on hangar at right nears completion. Consulting Engineers: Waters, Ruth and Going, San Jose, Calif.; Contractor: Dale Benz, Inc., Phoenix, Arizona.

◆ **Workmen easily apply** corrugated Kaiser Aluminum over built-up roofing. Aluminum's light weight made the job go fast.

## APPROVED APPLICATORS

Additional information on Kaiser Aluminum industrial building products may also be obtained from:

### WALTER G. MITCHELL COMPANY

2303 Jefferson Street  
Torrance, California

### CAREW STEEL COMPANY

R. D. 9  
York, Pennsylvania

### DALE BENZ, INC.

1912 West Grant Street  
Phoenix, Arizona

### WM. C. KULZER COMPANY

3340 North 10th Street  
Philadelphia, Pennsylvania

### HUGHES STEEL ERECTION CO.

171 Harvey Street  
Cambridge, Massachusetts

### GALLERY INDUSTRIES, INC.

130 Hillvue Lane  
Pittsburgh 37, Pennsylvania

### METAL PRODUCTS, INC.

106 Birney Street  
Greenville, South Carolina

### FRASER EDWARDS COMPANY

2412 Harrison Street  
San Francisco, California

### THE YOUNG COMPANY

1101 West First Street  
Charlotte, North Carolina

### SOUTHERN FABRICATING, INC.

P. O. Box 97  
Staley, North Carolina

### LYDICK ROOFING COMPANY

1301 Foch Street  
Forth Worth, Texas

### ALLETOWN ROOFING & SHEET METAL COMPANY, INC.

Highland & Fenwick Streets  
Allentown, Pennsylvania

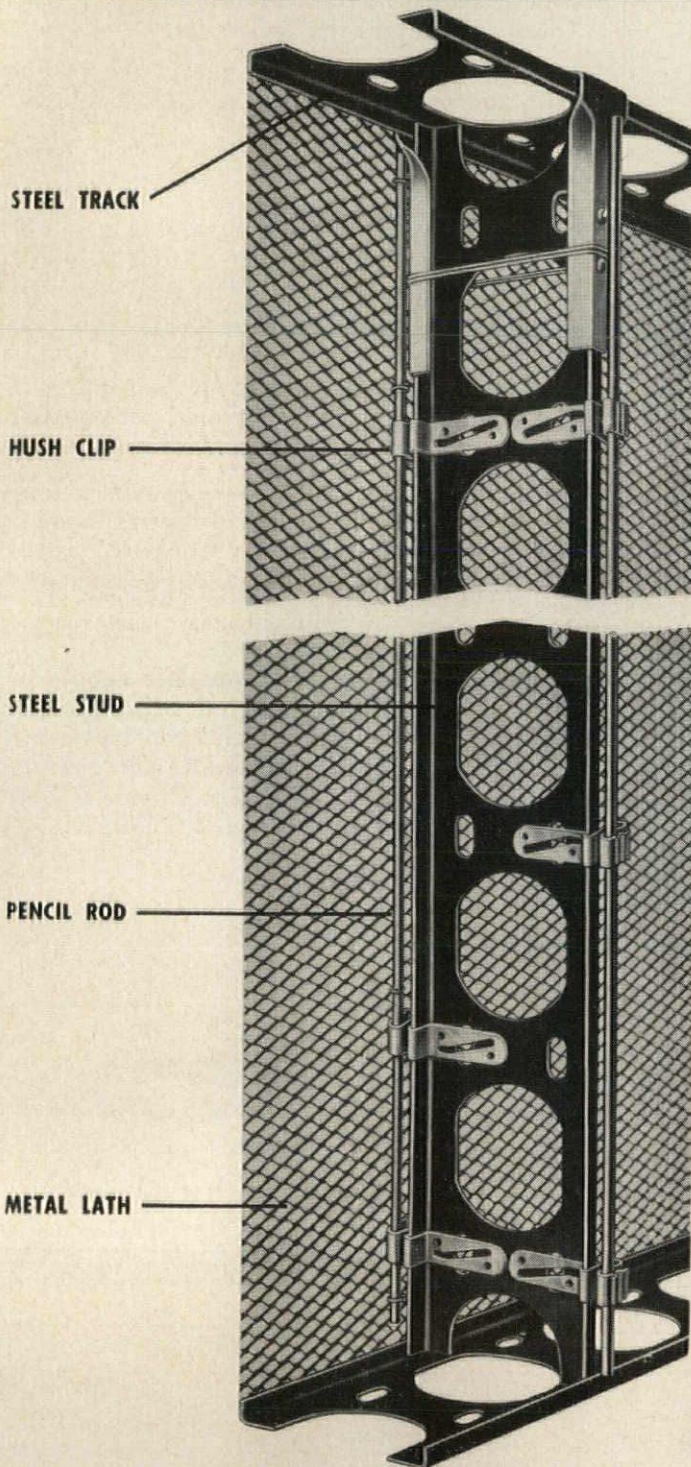
### PATTERSON STEEL COMPANY

P. O. Box 2620  
Tulsa, Oklahoma

### R. G. VARNER STEEL PRODUCTS, INC.

P. O. Box 781  
Pine Bluff, Arkansas

here's a partition that  
**STOPS SOUND AND FIRE**  
 in their tracks!



**FIRE-RESISTIVE RATING: 3 1/2 hours.** Test conducted with a partition of 4" studs and 1" perlite plaster on each face. An identical partition also met all ASTM Fire and Hose Stream Requirements for a 3 1/2-hour partition.

**SOUND-TRANSMISSION LOSS RATING: 56.4 decibels.** This partition had 3/4" studs and 3/4" sanded gypsum plaster on each face.

The above fire and sound ratings are the highest ever obtained by a metal lath and plaster partition. They were recorded by Penmetal's HUSH-CLIP\* system, in tests conducted by a recognized Midwestern research laboratory.

For a better fire rating, you'd have to go to costly, heavy, solid masonry or reinforced-concrete construction. A comparable sound rating cannot be obtained with a conventional double partition, even when the assembly is 10" thick, and mounted on 1" cork strips. The HUSH-CLIP system does not require cork strips, and can be as thin as 5 1/2".

Utilizing steel studs and track, and plaster over metal lath, the system features a unique clip used in combination with a pencil rod. Because direct wall-to-stud contact is limited to point of clip, the area over which sound is transmitted is greatly reduced. Since components are designed to fit together, assembly is easy and economical.

Another advantage of this system is resistance to plaster cracking. The wall proper is held away from the studs by the resilient clips which allow the panel to "float." Movement due to expansion and contraction is thus absorbed and possibility of cracking is greatly reduced.

Send for full details of this unique partition. Ask for a copy of folder 615-L.

**PENN METAL COMPANY, INC.**

General Sales Office: 40 Central St., Boston 9, Mass.

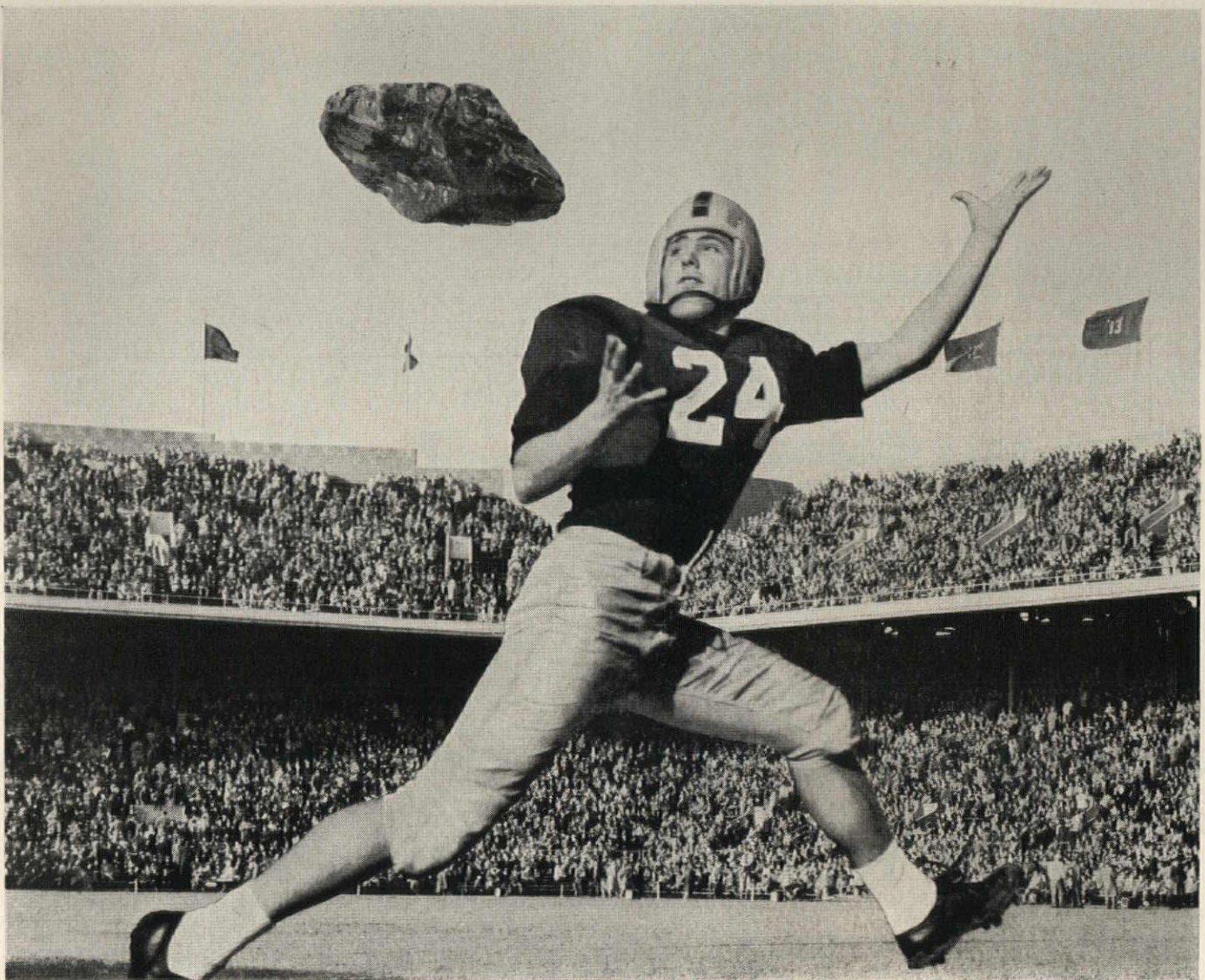
Plant: Parkersburg, W. Va.

District Sales Offices: Boston, New York, Philadelphia, Pittsburgh, Chicago, Detroit, Dallas, Little Rock, Seattle, San Francisco, Los Angeles, Parkersburg



a name to remember

\*Patent pending



## Coal scores with Notre Dame

### University power plant burns coal for modern steam generation

Enrollment growth and building expansion had put a strain on the power plant at the University of Notre Dame, South Bend, Ind. After careful study—by the consulting firm of Albert Kahn Associated Architects and Engineers, of Detroit—a decision was made to modernize steam facilities and add power generating equipment. Two new coal-fired boilers, a turbo-generator and auxiliary equipment were installed.

Maximum efficiency is achieved through automatic combustion control and complete instrumentation. Today steam is generated *economically*. Another noteworthy result of these innovations has been the *cleanliness* of operation . . . making Notre Dame's power plant a model of good housekeeping.

#### Consult an engineering firm

If you are remodeling or building new heating or power facilities, it will pay you to consult a qualified engineering firm. Such concerns—familiar with the latest in fuel costs and equipment—can effect great savings for you in the efficiency and economy of coal.

#### Coal is lowest-cost fuel

Today, *when the annual cost of fuel often equals the original cost of the boilers*, you should know that bituminous coal is the

### BITUMINOUS COAL INSTITUTE

Dept. AR-12, Southern Building, Washington 5, D. C.

lowest-cost fuel in most industrial areas. And modern coal-burning equipment gives you 15% to 50% *more* steam per dollar, while automatic operation trims labor costs and eliminates smoke problems. What's more, tremendous coal reserves and mechanized mining procedures assure you a constantly plentiful supply of coal at stable prices.

*For free literature or technical advisory service, send coupon below.*

SEND COUPON FOR NEW "Guide Specifications for Underfeed Stoker Fired Low-Pressure Heating Plants." Heavy demand for the first edition of this booklet, adaptable for design loads 3,000 to 26,000 EDR steam, has justified an expanded edition covering application of underfeed stokers to firetube, water-tube and sectional cast iron boilers. Complete specifications criteria cover all aspects of typical heating plant.



Gentlemen: Please send me:

AR-12

Guide Specifications Booklet  Case histories on larger plants

I am interested in your advisory service

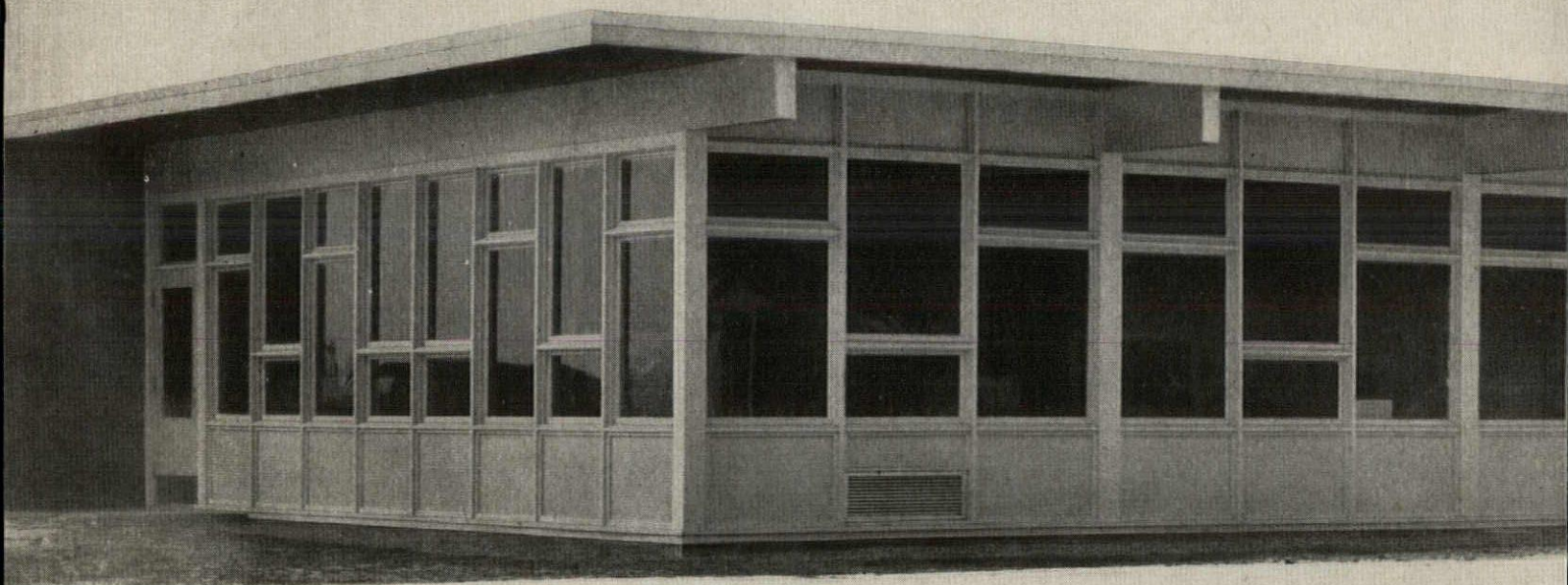
Name \_\_\_\_\_

Title \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

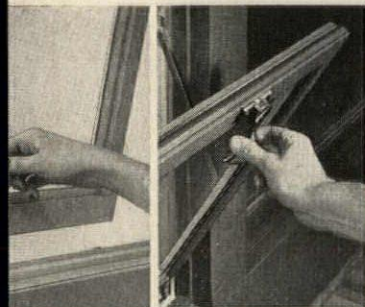
City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_



*Superintendent of schools says . . .*

# “Andersen windows add warmth, beauty, comfort to school”

**SEE HOW FUNCTIONAL ANDERSEN FLEXIVENTS<sup>®</sup> ARE:**



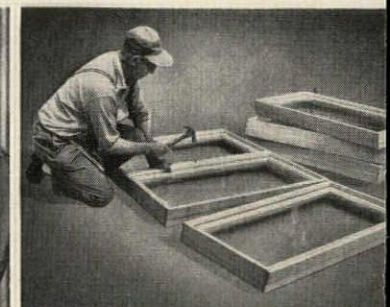
**Easy to open.** Andersen special design and engineering make Flexivent Windows open smoothly. Choice of underscreen operators optionally available.



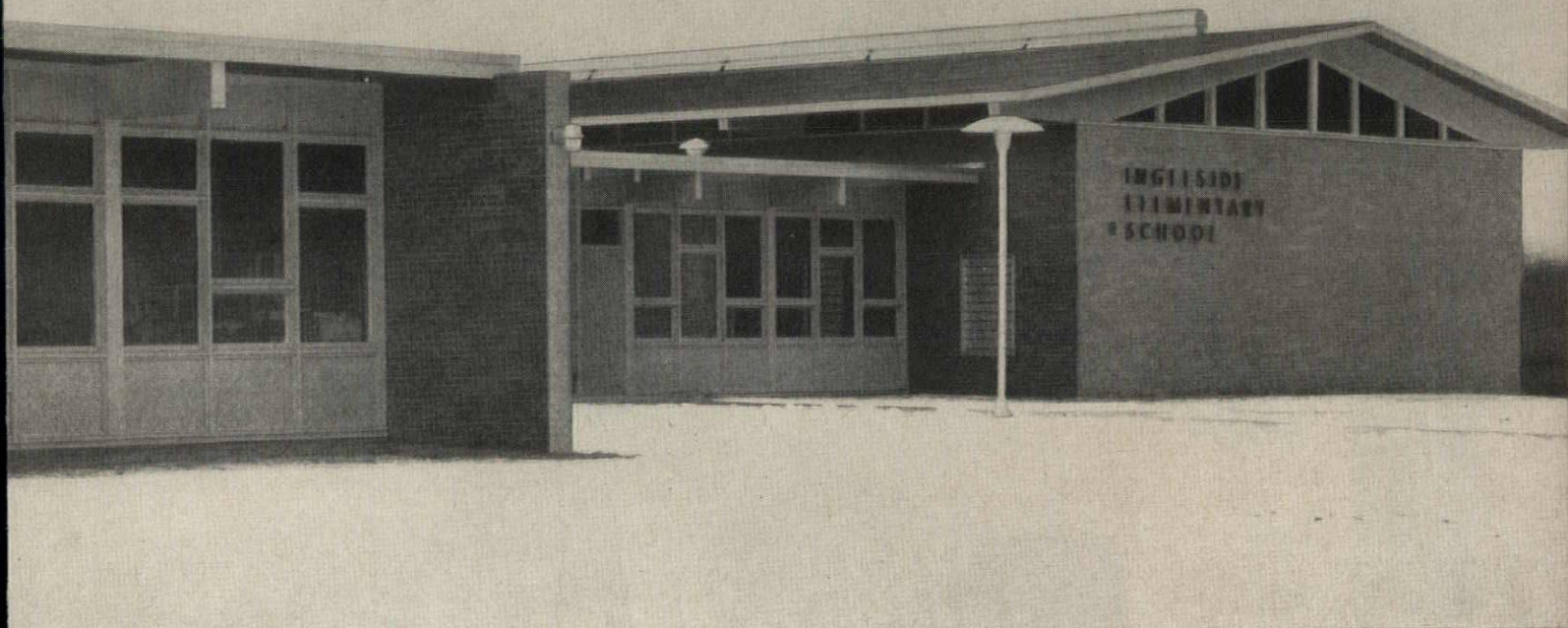
**Easy to clean.** Andersen Flexivents open easily in all positions to make cleaning a snap. Outside glass can be cleaned easily, safely, economically from inside school.



**Insulation.** Natural insulation values of wood provide savings in heat transfer by conduction through glass by as much as 20% . . . save up to 10% total heating cost.



**Easy to install.** Units are factory assembled, sash hung and weatherstripped. Designed for economical joining into a variety of groupings to fill almost any opening.



*Giffels & Rossetti, Detroit, Mich., Architects and Engineers. REB Construction Company, Richmond, Mich., Builders.*

*Andersen Flexiview and Flexivent Windows provide light and ventilation. Their warm wood helps create a homelike atmosphere.*

“Andersen Flexivent and Flexiview Windows were selected for our new Ingleside Elementary School to complement the extensive use of wood in the interior,” reports W. L. Berkhof, Superintendent of Schools, Mount Clemens, Michigan.

“The installation,” continues Mr. Berkhof, “has enhanced the beauty of the building and provided the feeling of warmth which is so desirable in facilities designed for younger children. Our heat loss is small. Limited infiltration assures optimum comfort for our pupils.”

Andersen Flexivent and Flexiview Windows adapt perfectly to the low lines of modern buildings. They're remarkably easy to install. Almost 100% trouble free. Penta-treating of sash and frame assures permanent protection against termites and decay. Flexivent's versatility in stacks, ribbons, groupings or with fixed sash permits use in any fenestration plan.

For more information on Andersen Windows, see your Sweet's Architectural Files or write for Detail Catalog or Tracing Detail File to: Andersen Corporation, Bayport, Minnesota.

# Andersen Windowalls

TRADEMARK OF ANDERSEN CORPORATION

ANDERSEN CORPORATION • BAYPORT, MINNESOTA





**STOP**

**WASTE**

**WITH**  
**GENUINE** STRUCTURAL CLAY  
**FACING TILE!**

You save both time and money with genuine Structural Clay Facing Tile. Remember, only genuine Facing Tile gives you both a sound structural wall and a maintenance-saving finish, *all in one*. Inferior substitute materials do not satisfy the same rigid specifications ... cost you more in the long run.

Rich, permanent colors with durable, glazed surfaces always clean sparkling new with soap and water. Modular sizes lay up fast with a single trade.

Save money for your clients ... insist on genuine Structural Clay Facing Tile and stop needless waste.



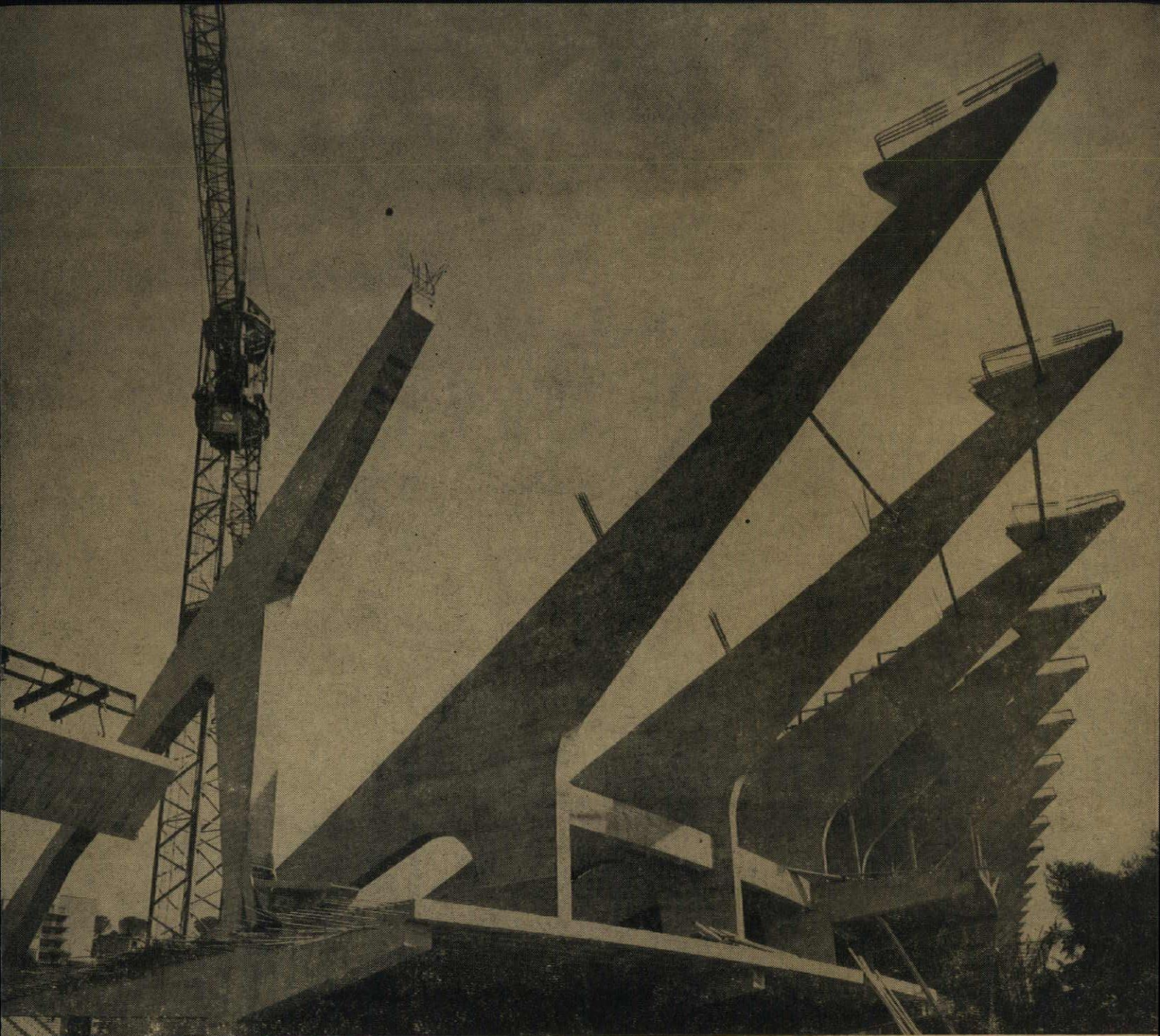
This seal is your assurance of highest quality Facing Tile.

**FACING TILE INSTITUTE**

2556 Clearview Avenue, N. W., Glendale 5-5329, Canton 8, Ohio  
 1520 18th Street, N. W., Hudson 3-4200, Washington 6, D. C.  
 1947 Grand Central Terminal, Murray Hill 9-0270, N. Y. 17, N. Y.  
 228 N. LaSalle Street, Randolph 6-0578, Chicago 1, Ill.

*These companies contribute to Facing Tile research and development:* **ARKETEX CERAMIC CORPORATION**, Brazil, Ind. • **CHARLESTON CLAY PRODUCTS CO.**, Charleston 22, W. Va. • **THE CLAYCRAFT CO.**, Columbus 16, Ohio • **HANLEY COMPANY, INC.**, Pittsburgh, Pa. • **MAPLETON CLAY PRODUCTS CO.**, Canton, Ohio • **METROPOLITAN BRICK, INC.**, Canton 2, Ohio • **MCNEES-KITTANNING CO.**, Kittanning, Pa. • **NATCO CORPORATION**, Pittsburgh 22, Pa. • **STARK CERAMICS, INC.**, Canton 1, Ohio • **WEST VIRGINIA BRICK CO.**, Charleston 24, W. Va.

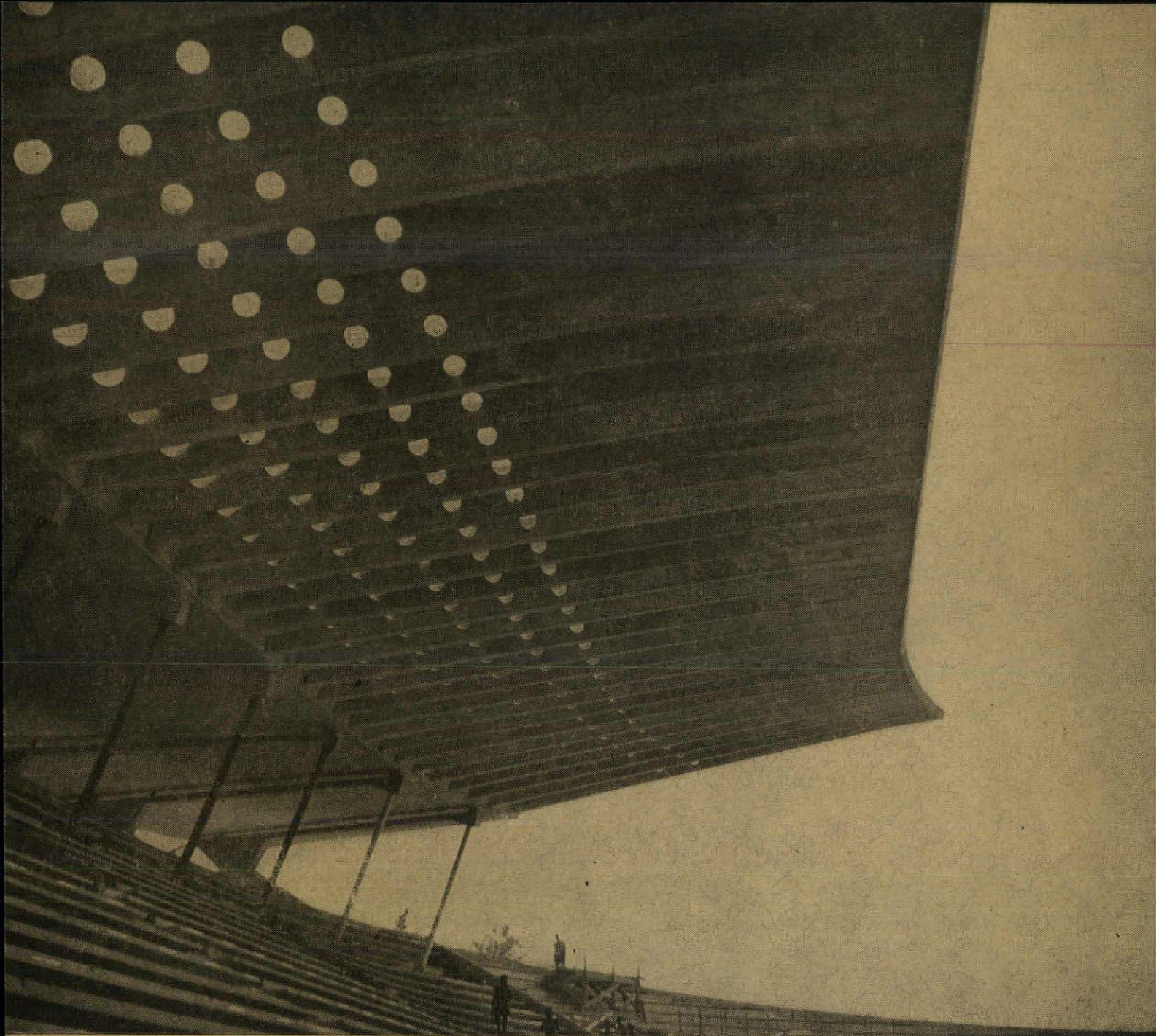




*Flaminio Stadium, Rome. Jane Doggett photo*

*Three Stadiums by*  
**NERVI**

ARCHITECTURAL RECORD DECEMBER 1958



Vasari

## For the Olympics: Flaminio Stadium, Rome

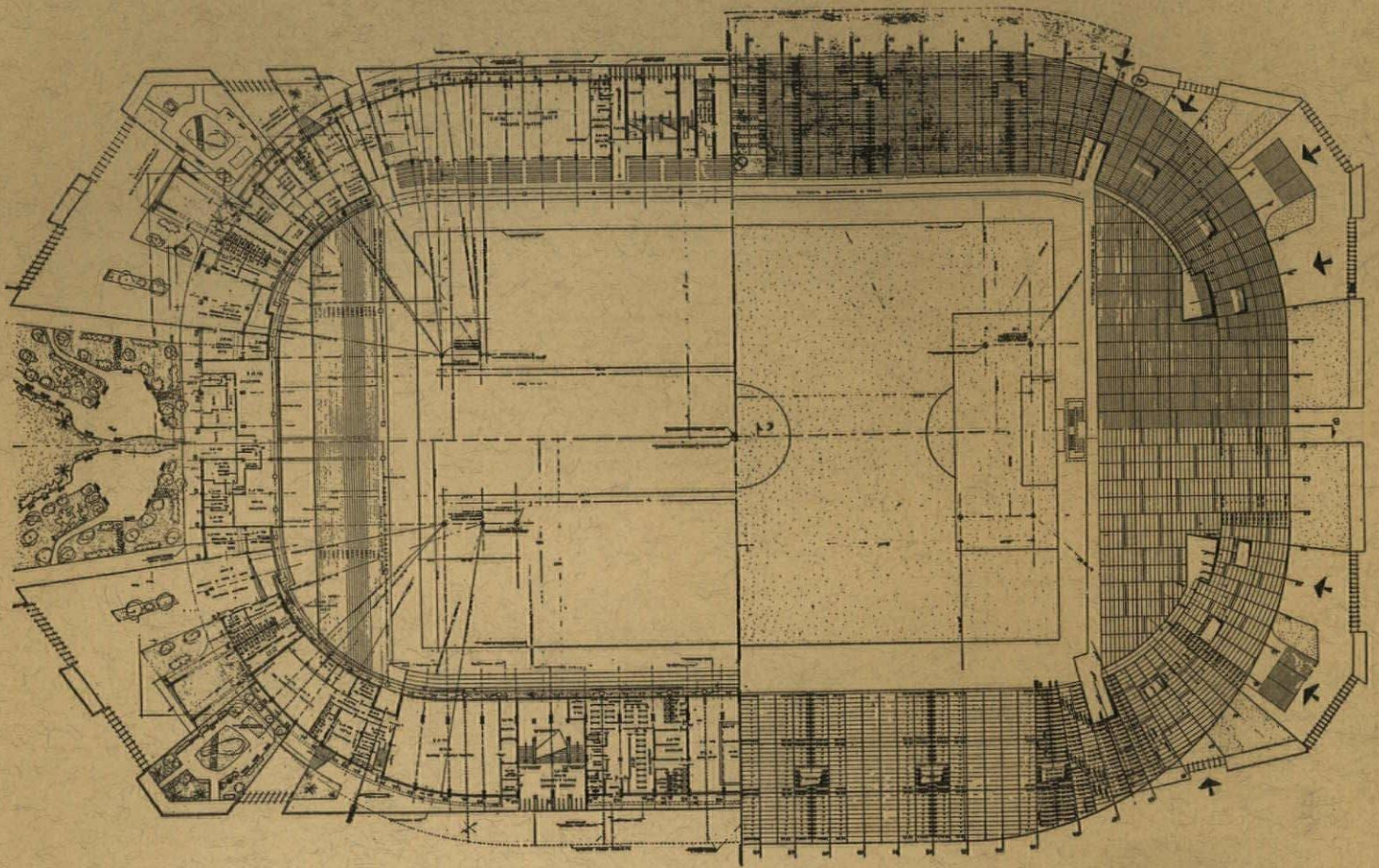
*Designed by Pier Luigi Nervi and Antonio Nervi*

*This structure was built by assembling 7652 precast concrete elements, which were molded on the site during a nine-month period. Seven thousand tons of Portland cement were used. Located in a pleasant residential area in Rome, the Flaminio Stadium—designed for 46,250 spectators and for the XVII Olympiad in 1960—is nearing completion, as the latest photos show.*

*A pure crescent shape, which Nervi considers the ideal form for such a stadium, since it concentrates the maximum possible audience in the preferred central zone of the long sides, was not practicable here due to the perimetrical shape of the existing playing field and stadium;*

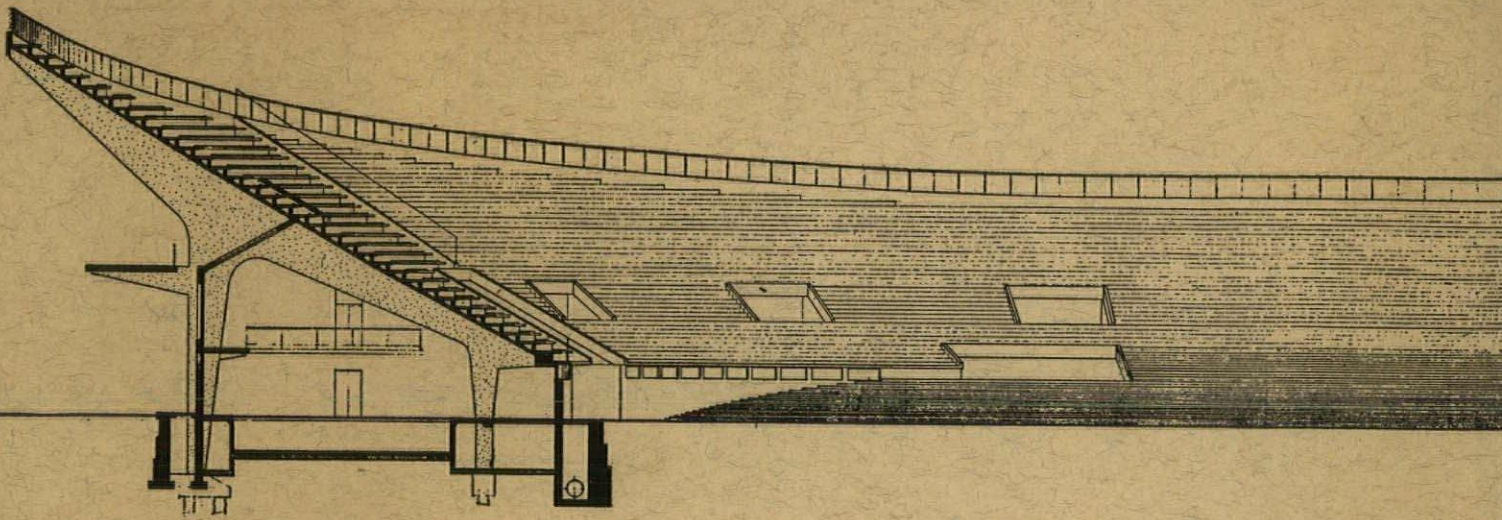
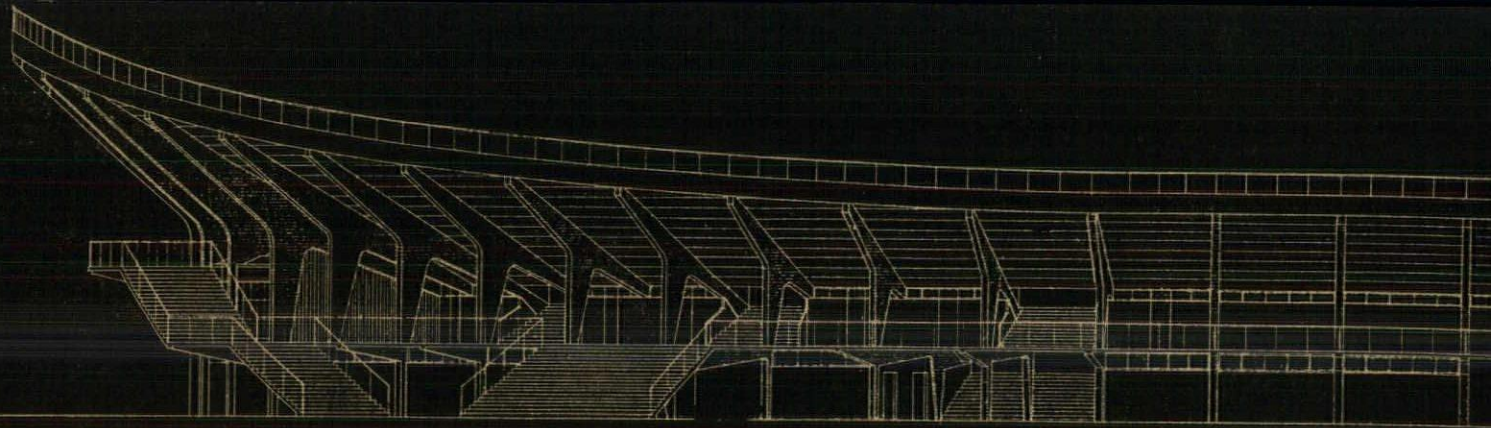
*prohibitively expensive overhangs would have been required. However, the height of the necessarily straight-sided gradins ring was varied in order to reach an optimum seating concentration.*

*Five gymnasiums and an 82-by-32-ft swimming pool (all to be used during games on the field) were required. They were placed under the stands, in addition to the usual dressing rooms, public toilets, bar, etc. This led to the unusual system of peripheral flying platforms and stairs for public entrance and exit. These and the entire lower external portion of the ring—to a height of roughly 9 ft—are clad in polished Roman travertine.*



Seiamanna

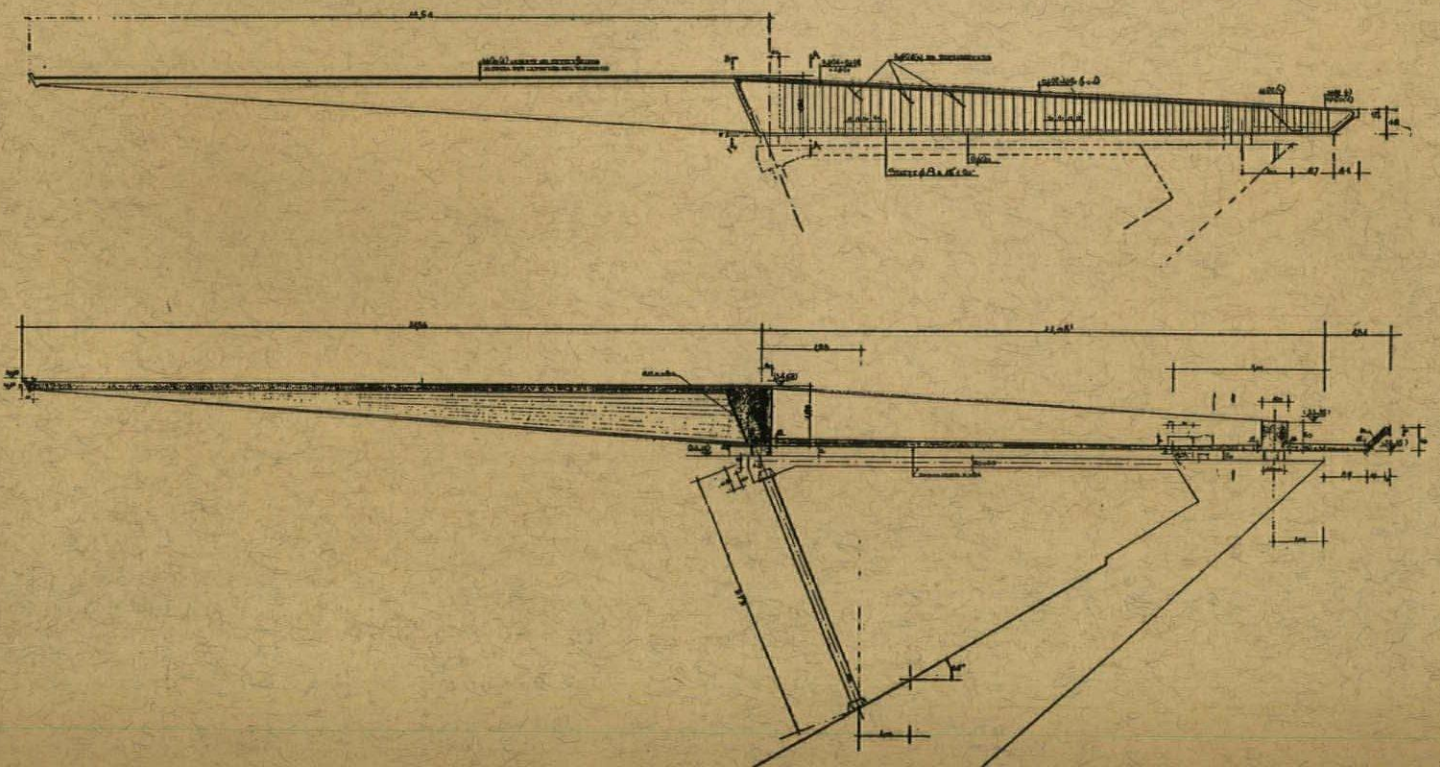


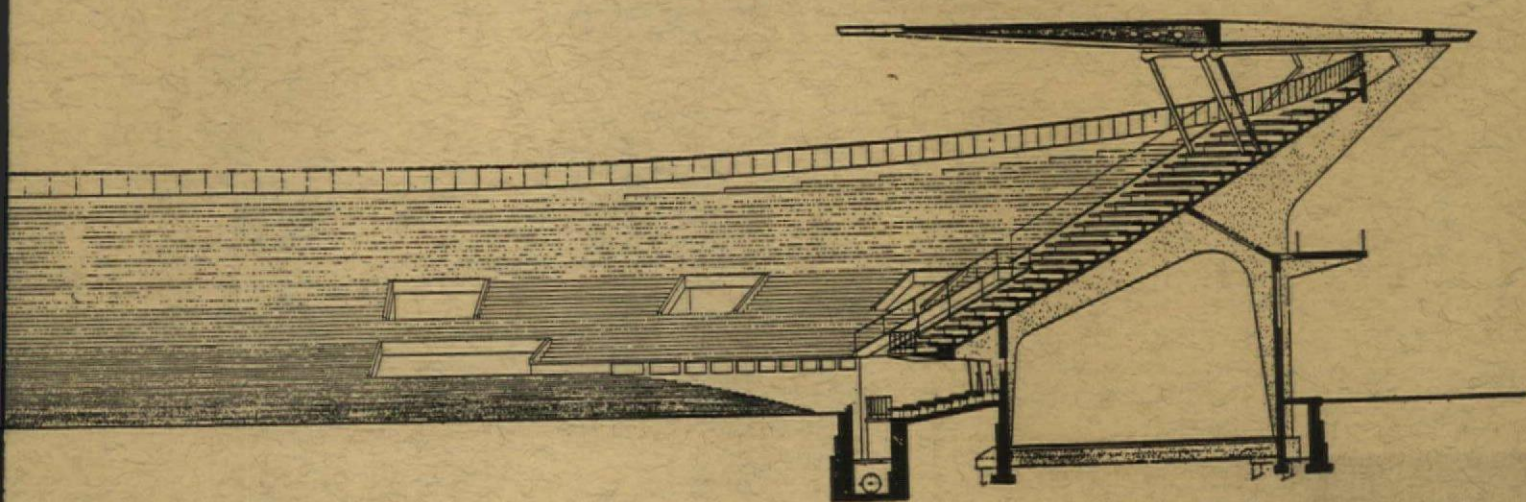
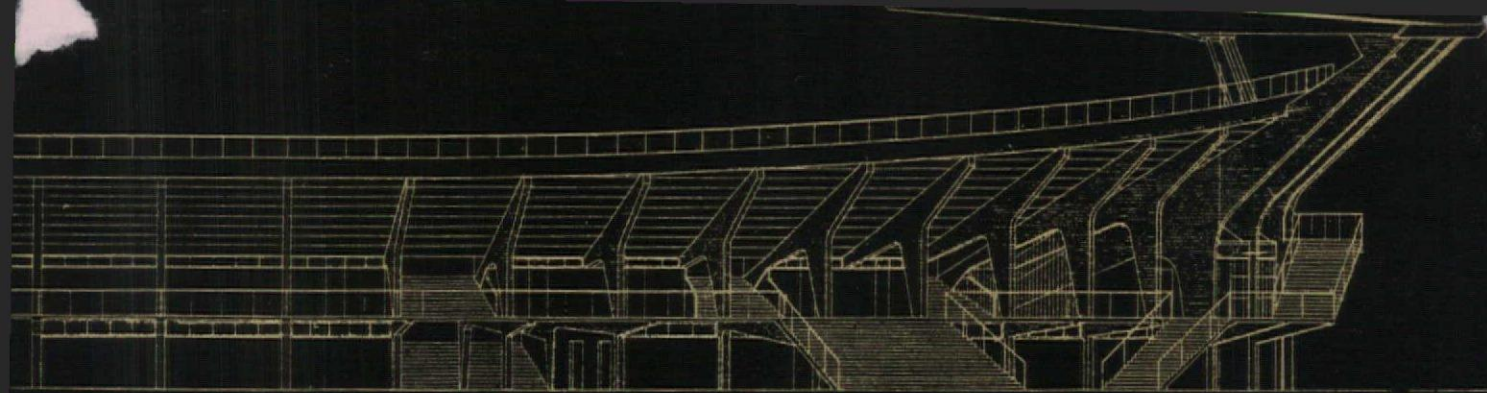


Flaminio Stadium, Rome

The graceful cantilevered roof—details at left—is supported at roughly its two-fifths point by conglomerate-filled, slender steel stanchions. The overhanging portion is undulating in form and is punctured (see p. 108) by circular, glazed openings in order to reduce the dead-load and to provide soft lighting for nighttime contests.

The design of the seating and its part in the structural synthesis is notable; refer to Nervi's detail and the photo below. The structure consists of the precast main frames

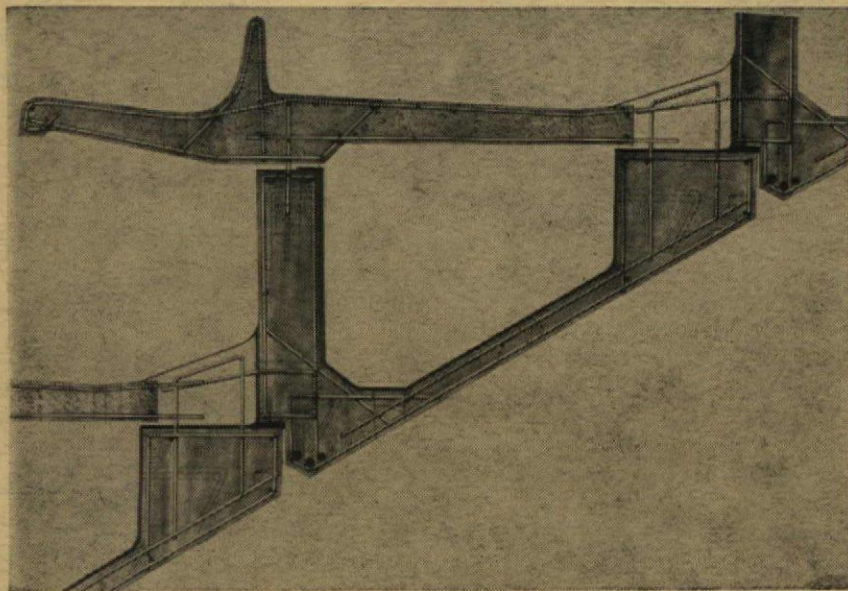




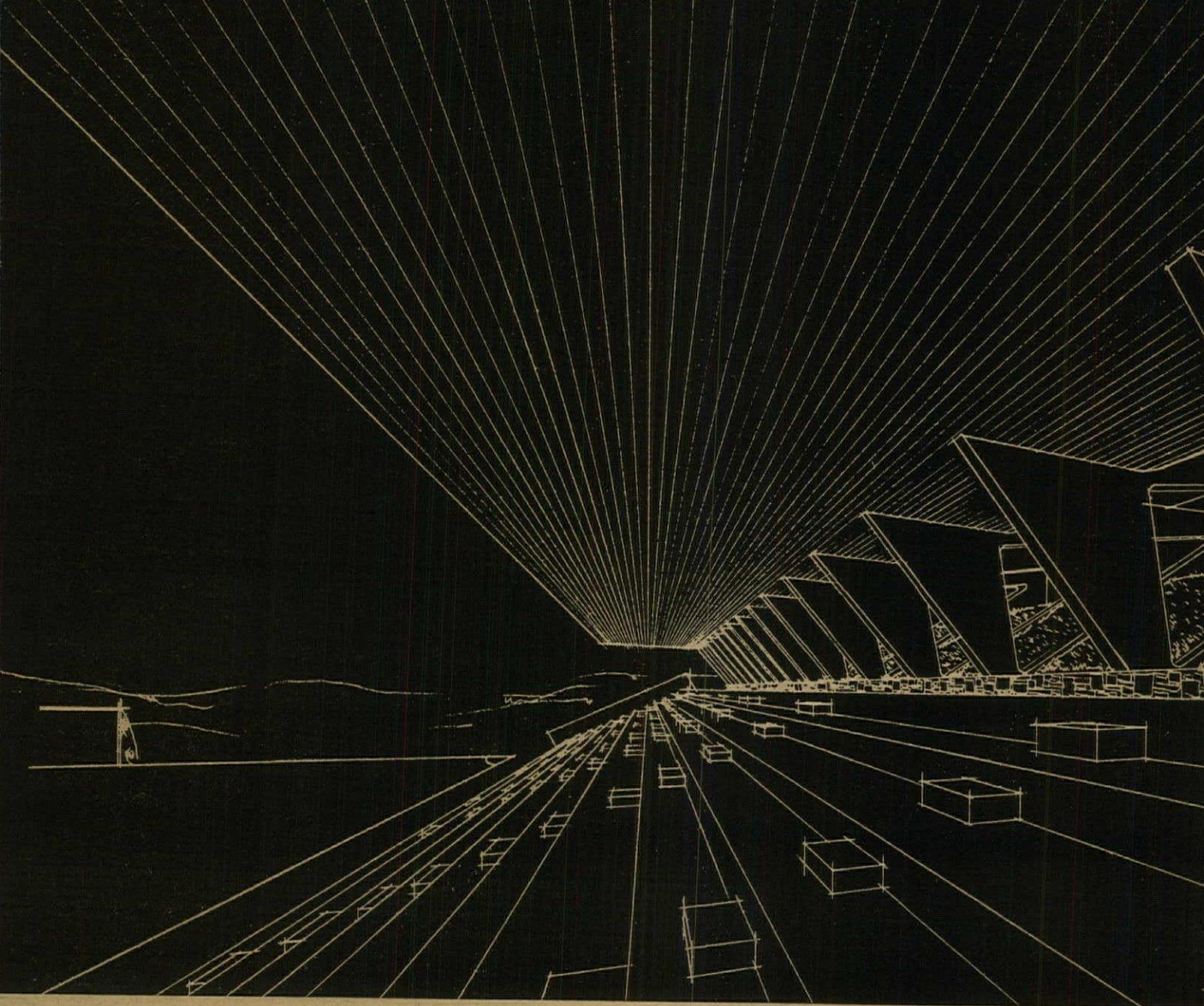
and their lateral struts, plus the two precast elements comprising the gradins and seats. The U-shaped bearing elements—waterproofed to collect and convey rainwater—lie directly on the main frames; are doweled to each other and the frames; are joined at these points by concrete cast in place. As Nervi puts it, the monolithic structural unity of the whole stadium is recovered by such joining.

Next, the element comprising the walkway and seats is

added. The 19-in. wide seats are finished in smooth exposed aggregate, the walkways in bush-hammered aggregate. Each finish was placed as a layer in the pre-casting mold. Note that spectators can pull back their feet to permit passage without soiling the gradin riser. The height of the seats above the walkway remains constant; while the inclination of the gradin flight varies in accordance with the requirements of the optimum visibility curve for spectators.

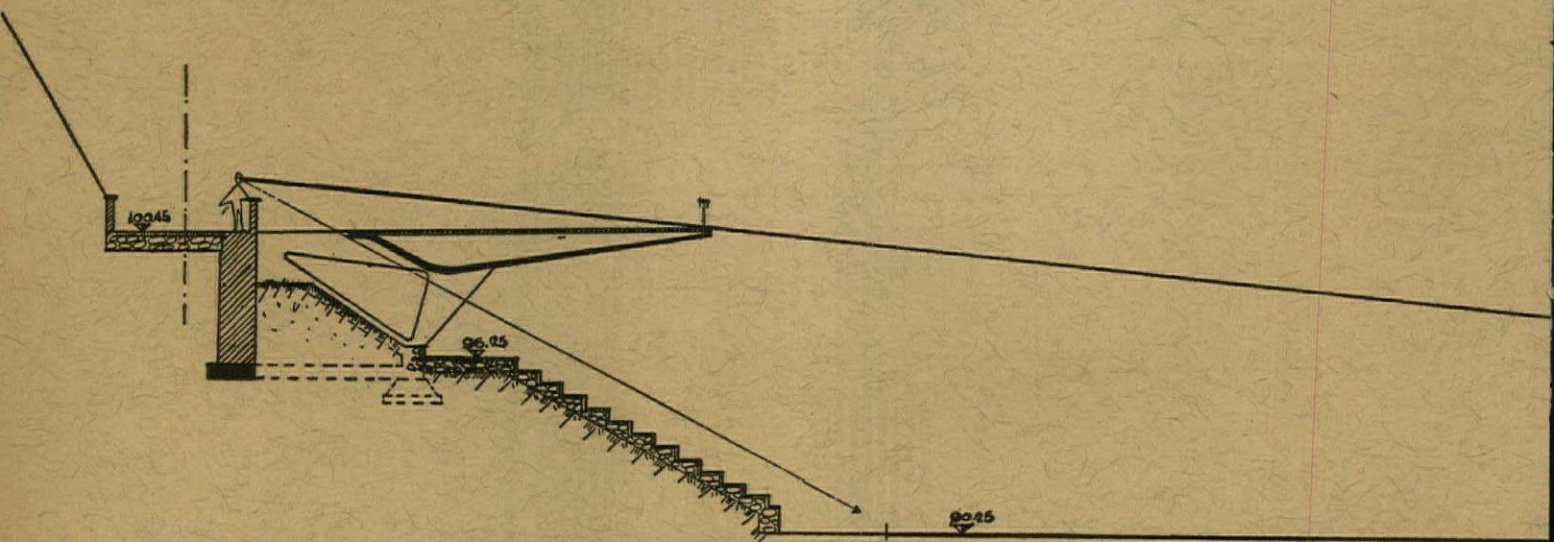


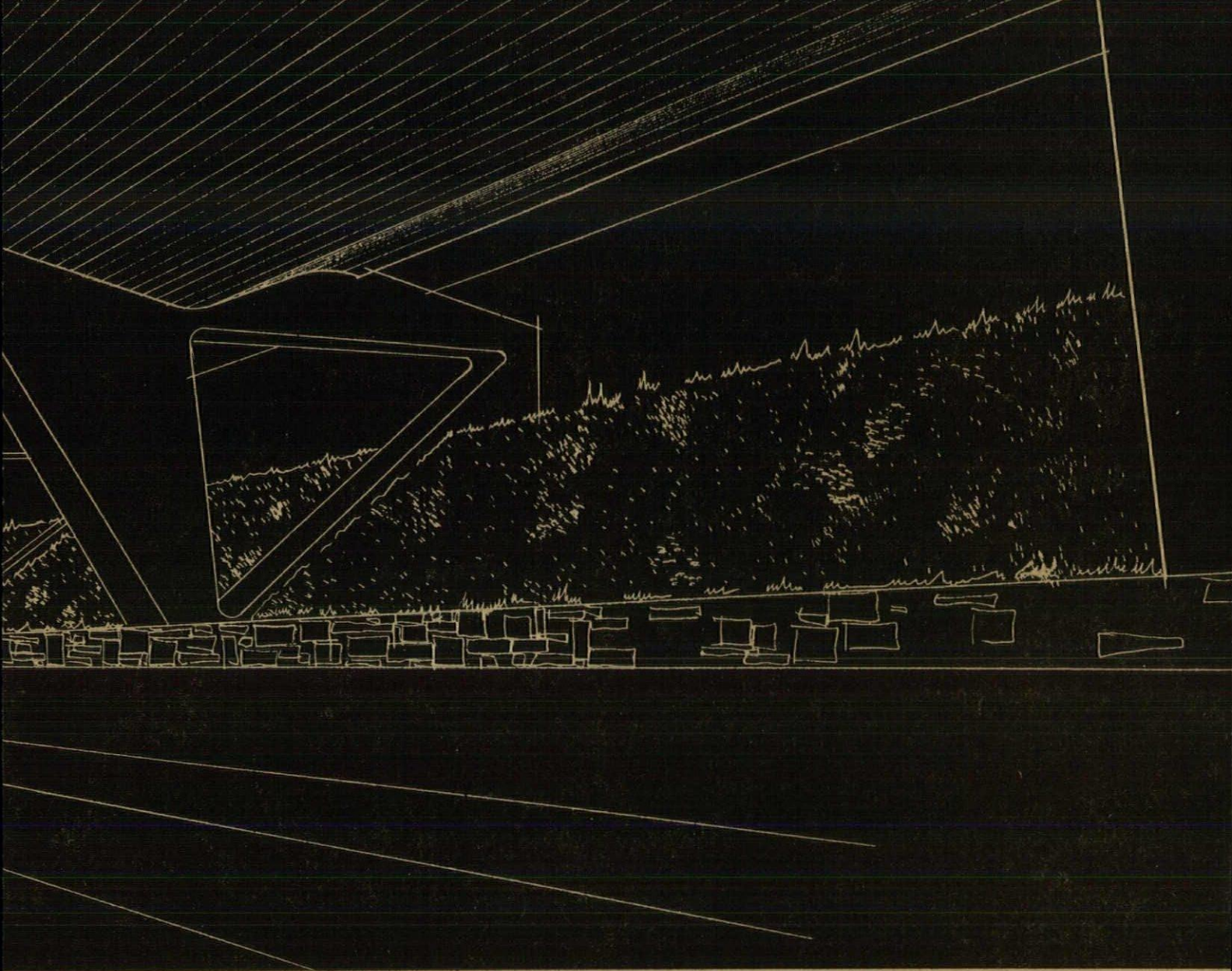
Yasari



## An unusual Stadium in Taormina, Sicily

*Designed by Pier Luigi Nervi and Antonio Nervi*





Two principal requirements were set up for this 2300 seat stadium: the attractive view to the ocean from the public street (at left of cross section) had to be maintained, yet public view of the playing field had to be blocked. Construction has begun.

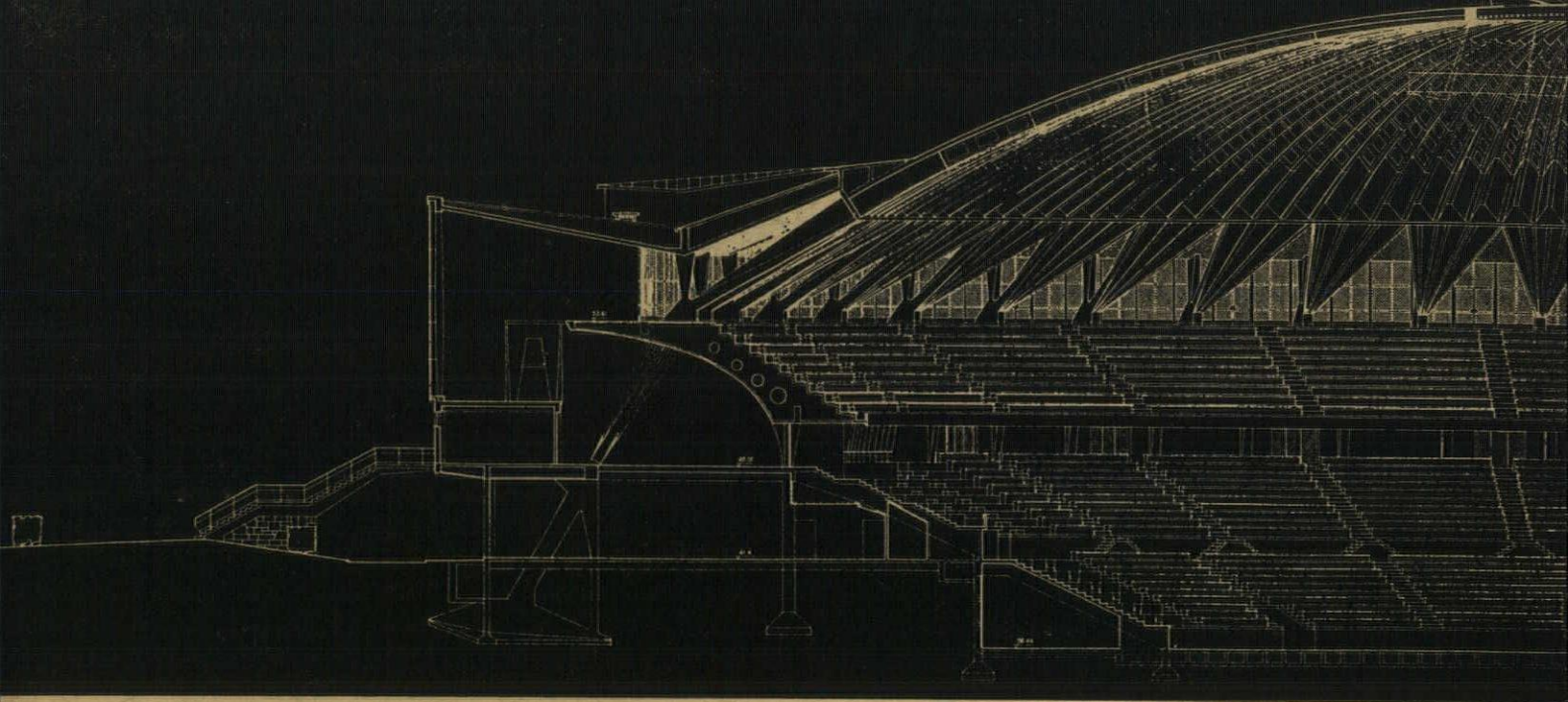
The ingenious solution consists of a cantilevered, reinforced concrete terrace that does triple duty. It blocks the view; shelters most of the seats; and its brick-paved upper surface will offer an especially favorable spectator vantage point during games. The only access is by two

bridges easily controlled during contests; otherwise it will be open as a public promenade.

The slope at the rear of the seats will be planted with flowers; portions of the gradins serving foot traffic will be faced with locally made tile.

The retaining wall along the street and its overburden will contribute to the stability of the cantilever complex which has a calculated total load—peopled—of 260 lb per sq ft. The drainage system will converge to a single collection receptacle at the foot of the slope.

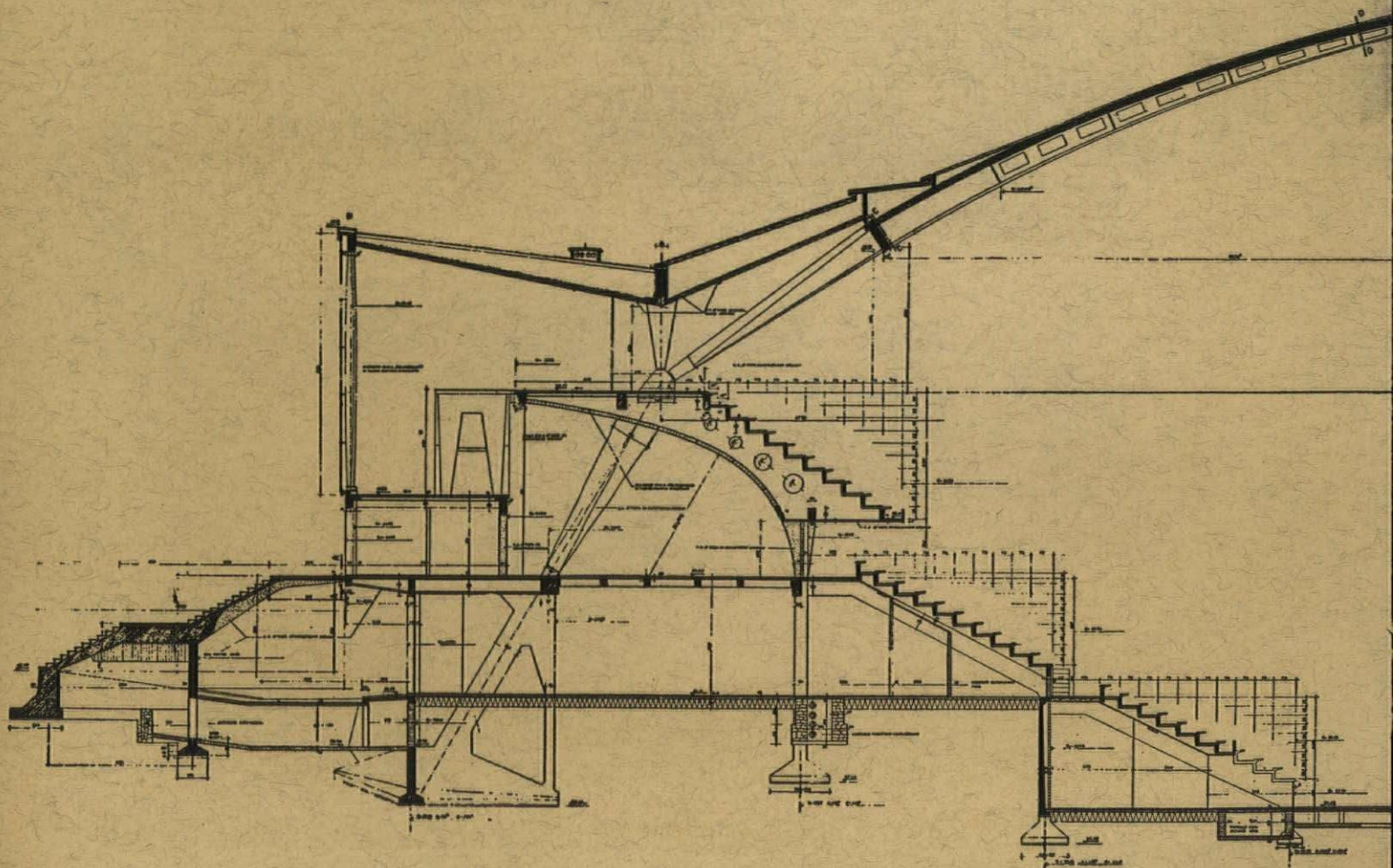




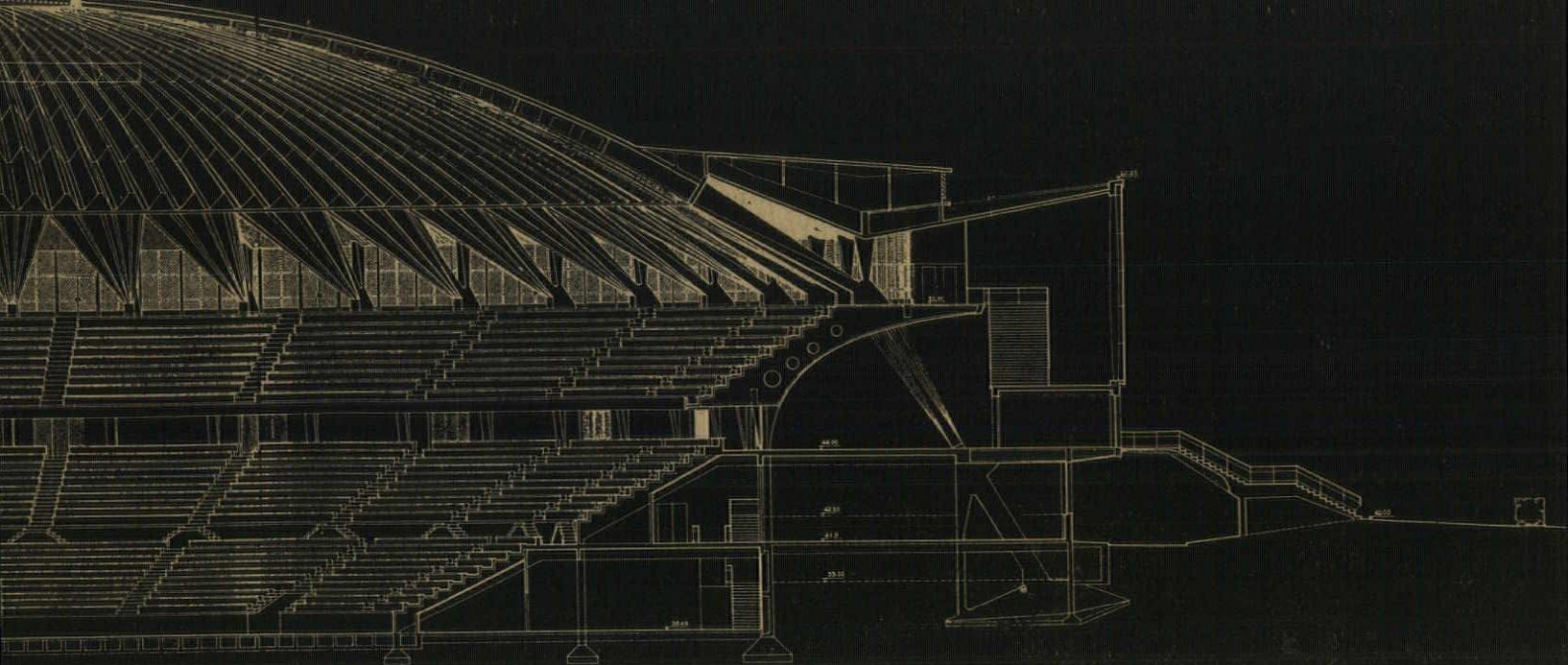
## For the Olympics: Sports Palace, Rome

*Designed by Pier Luigi Nervi and Marcello Piacentini*

*Technical Installations: Gino Parolini*



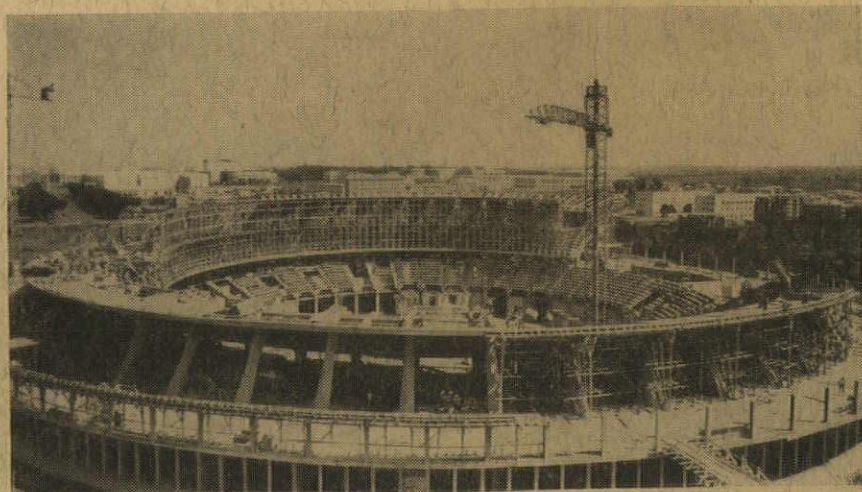
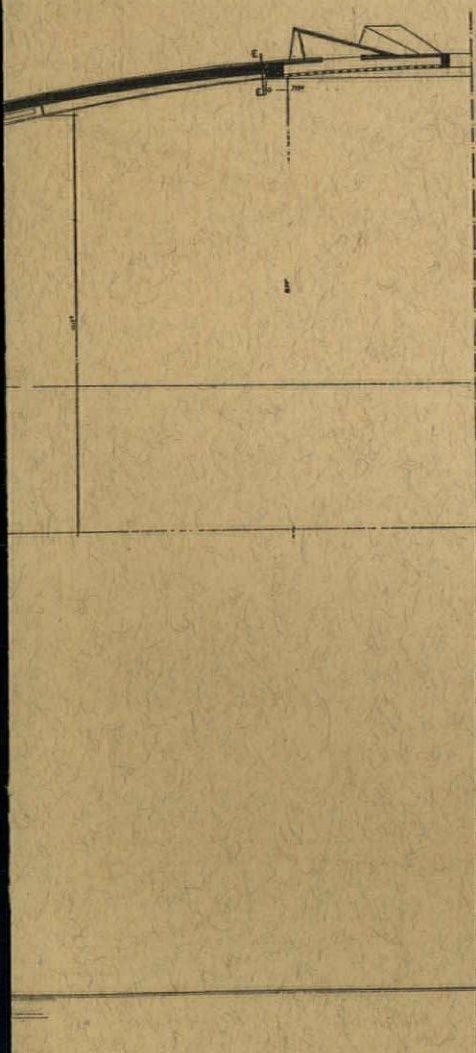




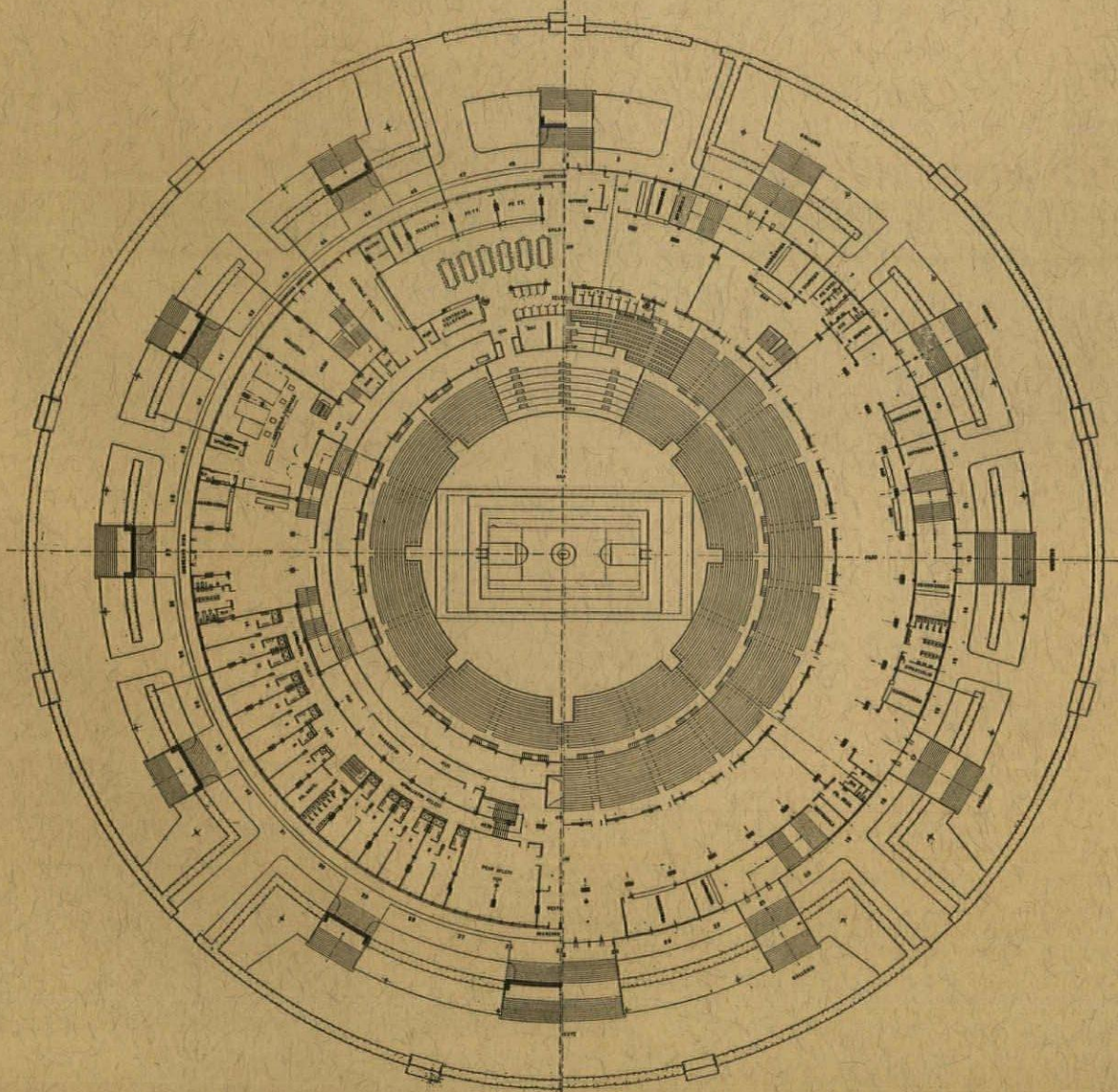
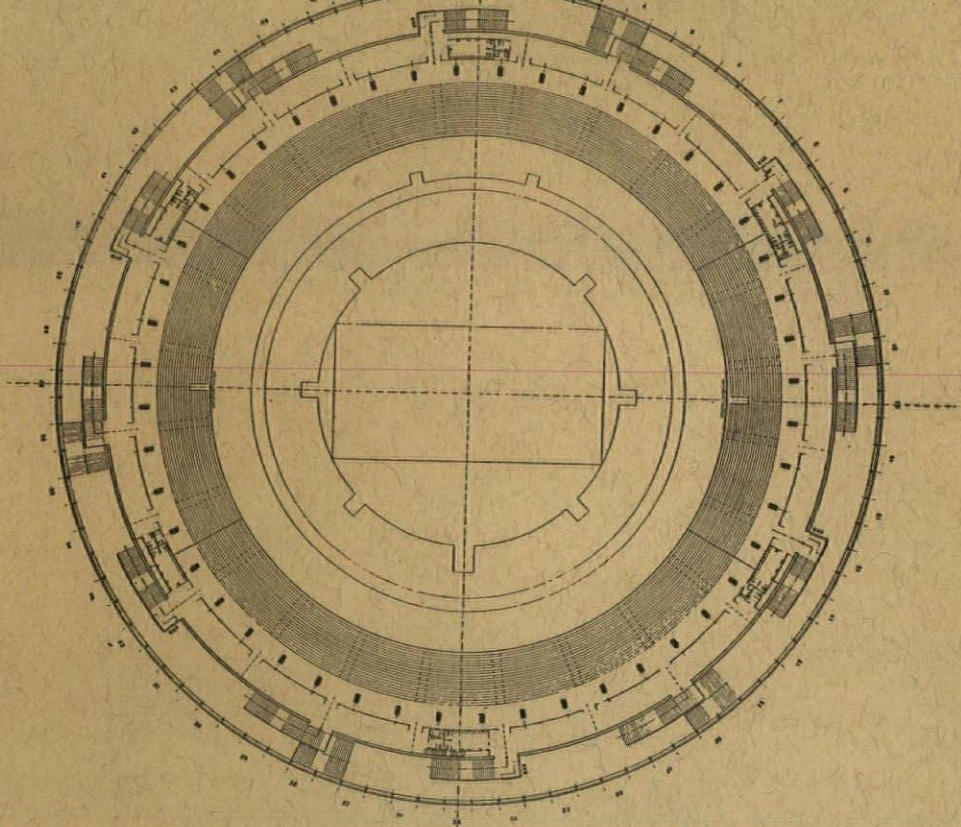
*This domed sports palace for the 1960 Olympiad will have an arena suitable for a variety of indoor sports, with boxing and wrestling as the most important. Its three-zone, circular arrangement (p. 116) had to fulfill a complex set of requirements in addition to seating 14,000.*

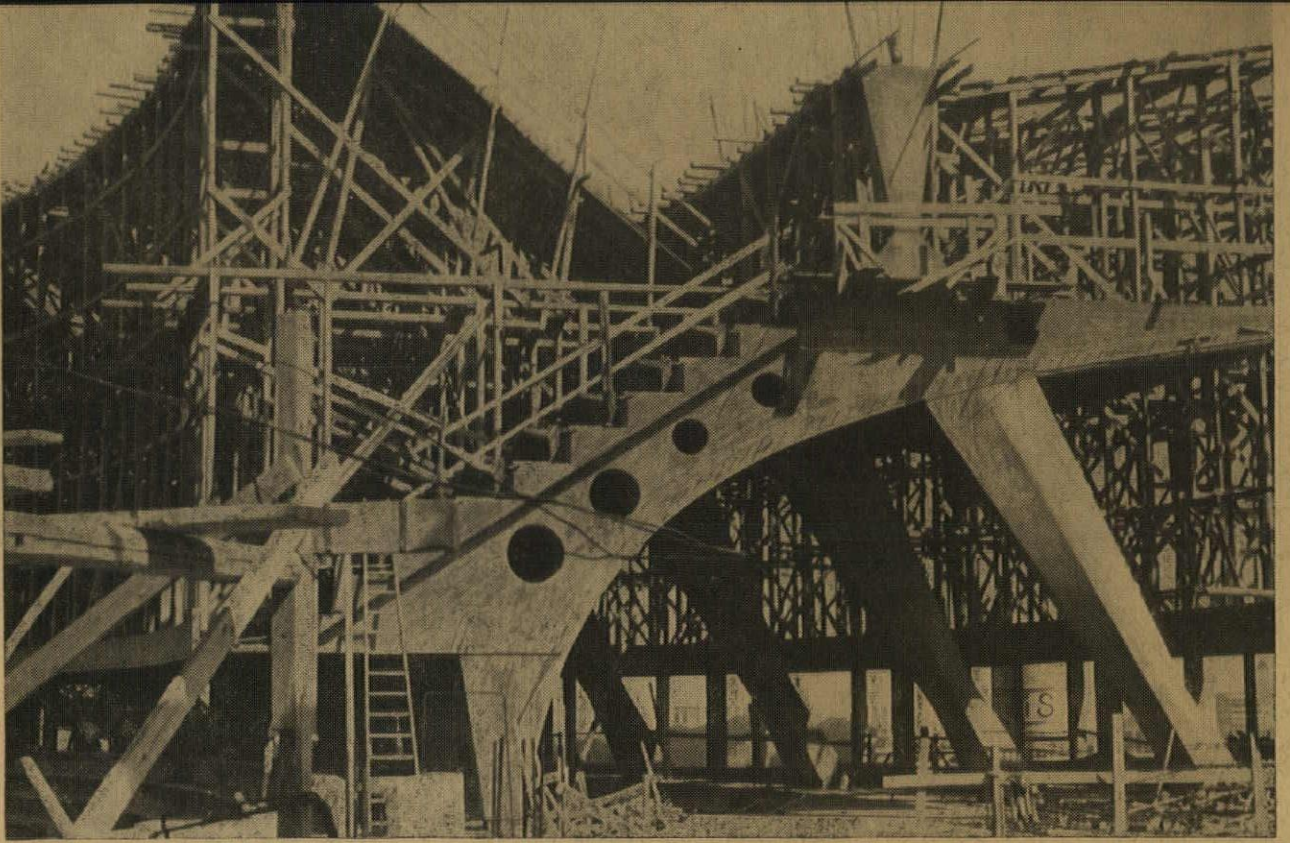
*In designing the dome, which rests on 48 supports spaced on a 100 ft circle, Nervi's aim was lightness and ease of erection. It is composed of thin (1½ in.), undulating precast concrete units with ribs cast into both the troughs and crests of the wavy surface. The units are grouted together in assembly. The 48 fan-like, thrust-transmitting elements are also assembled from precast units.*

*The lower supports, of reinforced concrete, carry also the perimetrical roof and slabs, thus reducing their slope to keep them within the building and lowering the lateral thrust on the foundations. The spectator seats are precast elements which rest upon poured-in-place reinforced concrete diametric beams. Forms for the latter were constructed over a prototype full-size pattern, with certain portions composed of castings with surfaces machined after form removal.*



Gherardi-Fiorelli

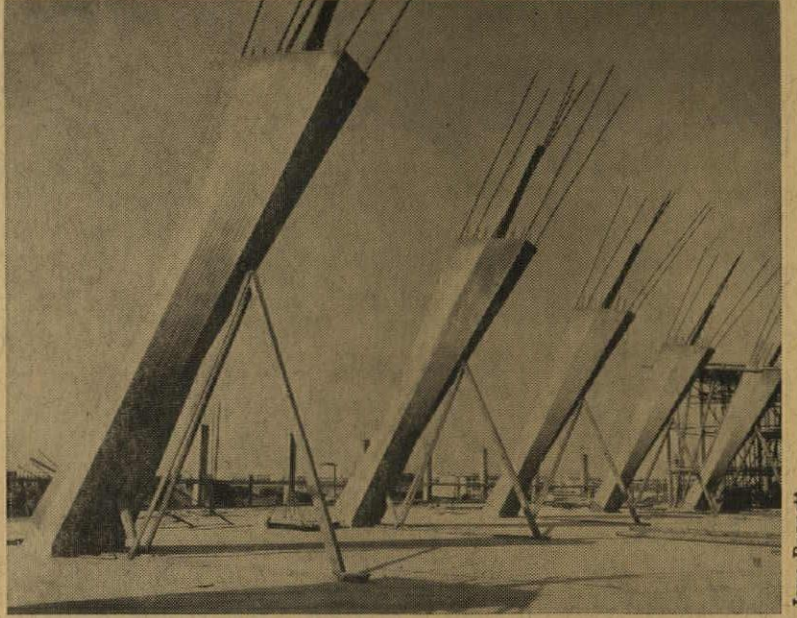




Gherardi-Fiorelli



Gherardi-Fiorelli



Jane Doggett

*Olympic Sports Palace,  
Rome*

The plan is basically a three zone one composed of: the annular exterior zone for initial crowd distribution and entrance; the perimetrical interior zone (top, left) comprising the high seats and the services and athletes' facilities below; and the inner ring of lower seating with storage below.

The complex circulation, seating, and services scheme resulted from the requirements that certain categories of the public have separated seating and access, as well as the press; and that athletes and officials be completely isolated from each other



Jane Doggett

## Nervi's views on architecture, education, and structure

*Engineer PIER LUIGI NERVI writes:*

I hold that we never value enough the complexity and incomparable difficulty of architecture; of true architecture, that is. For true architecture requires us to write a poem with words such as urban planning, architectural design, structural synthesis, and economic analysis; each one of which infers a lifetime of study to be thoroughly understood. Moreover, the poet-architect must wait until there is someone in authority who will understand him, appreciate him, and ask him to write the poem.

No wonder then, that in the growth and spread of architecture, the ratio of authentic masterpieces to the quantity of mass-produced, mediocre buildings is small—both in time and in space. It would be a great achievement merely to improve our standards; to avoid certain mistakes or displays of bad taste which, because they last in time and remain within everybody's sight and waste money, are usually more harmful than the mistakes being made in other intellectual and artistic fields.

One should also consider that architectural works are the wealth of all. Everyone can enjoy their beauty since they constitute the most significant element in evaluating an historical period or civilization. It would therefore seem logical that everybody should take an interest in architecture and thus help bring about the needed improvement in standards.

In this connection the essential considerations are better architectural education and a deepening appreciation of architectural problems on the part of the client. The first can be achieved by influencing directly the curricula and efficiency of our architectural schools; the second only indirectly by improving the architectural awareness of the average person. A wider spread of lectures on, exhibitions of, and discussions about architecture should prove of value in trying to accomplish the latter aim.

The education of the future architect is one of the great problems colleges face. In a few short years (now five nearly everywhere but soon to be increased, I believe) we must develop in our young men not only creative imagination plus the sensibility necessary to change ideas into reality, but simultaneously a mastery of the practical means of bringing beauty into being. These are divergent and even contrasting attitudes. On the one hand the free world of the spirit; the search after beauty; the critical study of historic architectural forms from esthetic and spiritual viewpoints. On the other, technological and economic facts; structural laws; mathematical calculations; estimating computations; industrial problems—the cold and objective world which cannot be modified or bent by our will, but can merely be guided in order to accomplish our aims.

We are forced to admit that not too much attention is given by some teachers to the broad fields of technology, construction, and economics; and that the students themselves are seldom inclined to love such topics. Yet we notice daily the growing importance of technology in significant architectural development; and we perceive the inevitable, progressive influence of structure upon architecture.

But if one is to master structural problems, he must thoroughly understand the laws of statics and strength of materials; even so completely that physical and mathematical knowledge becomes structural intuition—the only true source of inspiration in creative structural design. When, as it so often happens, structural invention derives only from formal sources, the result can hardly be other than unnatural, uneconomical, and unlovely.

The architect of tomorrow will have wonderful commissions, but to realize them as true architecture he will also have to acquire—above all—a completely intuitive mastery of structure and full knowledge of construction techniques.

# Design for New Textile Headquarters Deftly Handles Several Problems

*Deering Milliken Co. Building  
New York City*

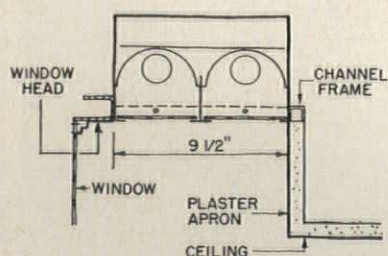
*Carson & Lundin, Architects*

*Interiors by Knoll Planning Unit  
Florence Knoll, Director  
Joseph Whited, Project Designer*

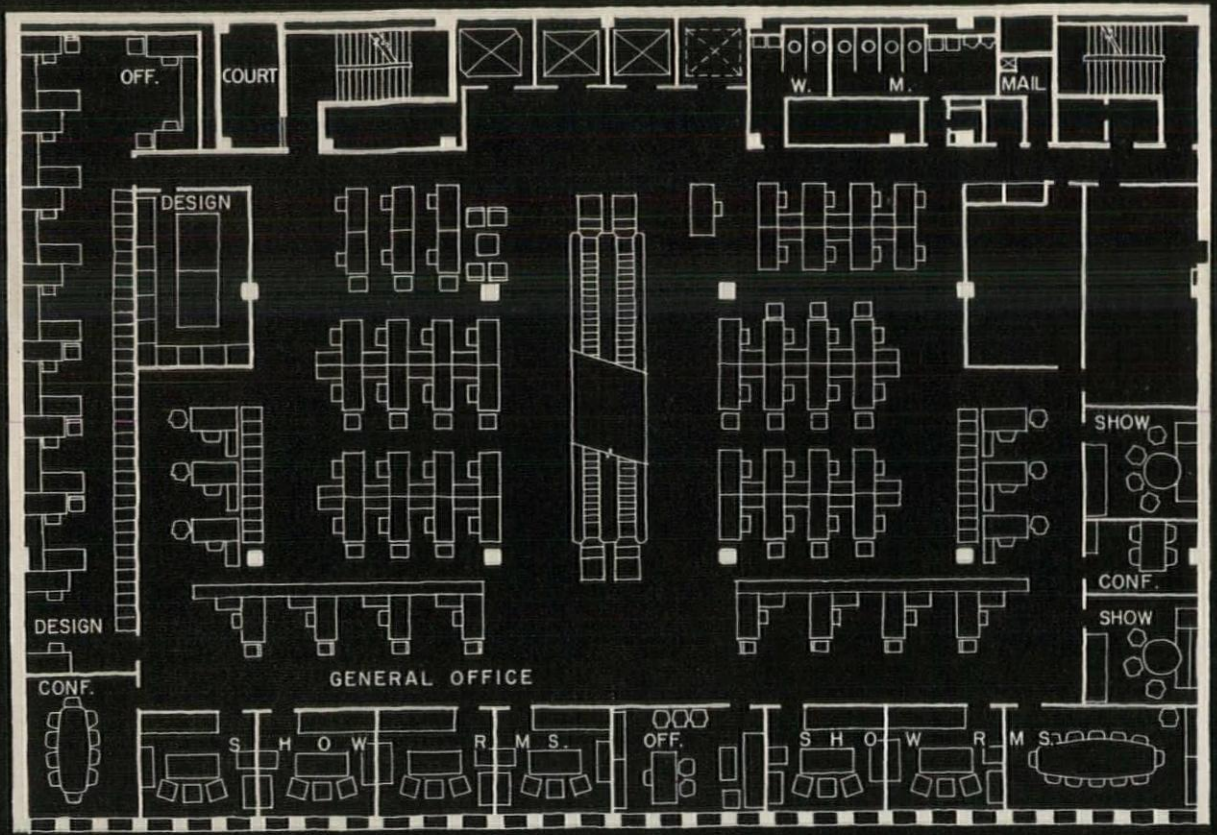
*Jaros, Baum & Bolles  
Mechanical & Electrical Engineers*

*Edwards & Hjorth  
Structural Engineers*

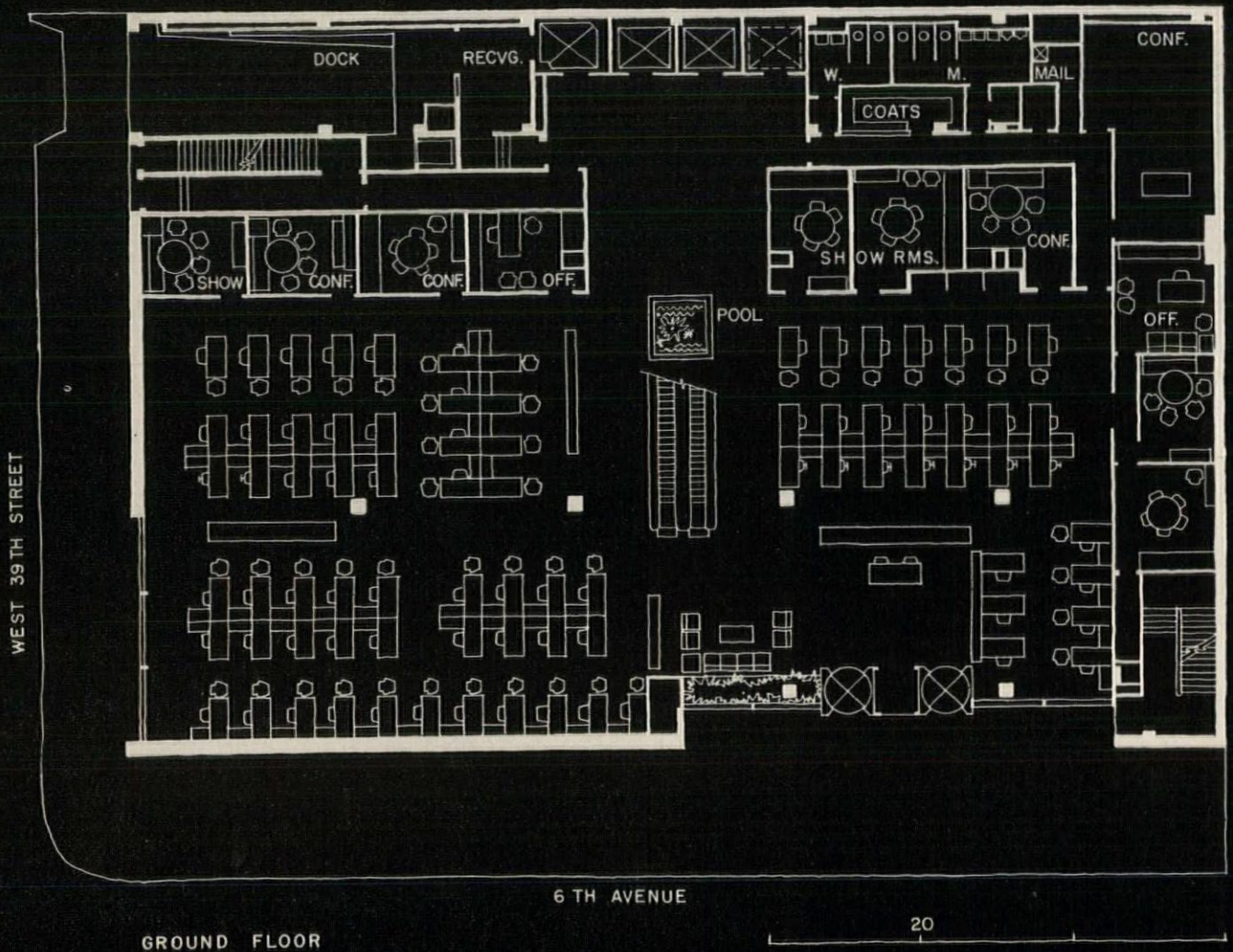
*Turner Construction Co.  
General Contractors*



The pattern above—continuous over the principal façade after dark—results from special soffit lighting in each opening, activated at dusk by a time switch. The 9½ by 37 in. units house two 30 watt, 36 in. lamps in special reflectors; their light is diffused by flush, milky-white plastic shields. The track for the vertical blinds is mounted at the mid-point of each lighting unit



SECOND & THIRD FLOORS



GROUND FLOOR

## Deering Milliken Building

This new 8-story office, sales, and administrative headquarters building for a large textile manufacturer coordinates in deft fashion—by way of a common module of 4 ft 10½ in. by 4 ft 8 in.—the structural and fenestration pattern; combination ceilings for lighting, acoustics, and air conditioning; and a newly designed movable partition system.

The unusual fenestration for the 150 ft wide Avenue façade consists of 1 ft 10 in. square piers set 4 ft 10½ in. on centers, providing 3 ft wide openings which are sealed by clear glass. The sill is a low 14 in., and the head disappears above the suspended ceiling. Aligned as it is with the ceiling pattern, such a system makes possible a variety of office sizes and provides a pleasant interior effect for large and small areas.

The first three floors—connected by electric stairways—are devoted to sales and display; the fourth floor to advertising, promotion, and sales research; there is an executive and customers' dining room, as well as an employes' cafeteria, on the sixth floor; the mail, telephone and teletype center is on the seventh; while the eighth floor houses executive offices.

The building's exterior is faced with white Georgia marble above the second floor line, while at ground level, the base course is of highly polished black granite inset with stainless steel strips.

Typical openings are glazed with fixed, clear plate; daylight is tempered by manually operated vertical Venetian blinds. The spandrels are of ceramic coated glass in a light, warm gray color that matches the blinds.

The structural steel frame was—by subcontractor's choice—welded; and in the case of particularly difficult cantilever conditions, was checked by field X-ray equipment. The cellular steel deck was—for the first time in New York City—fireproofed by spraying rather than by filling formwork.



All photos by Joseph W. Molitor, except page 119, by Eugene Hawley





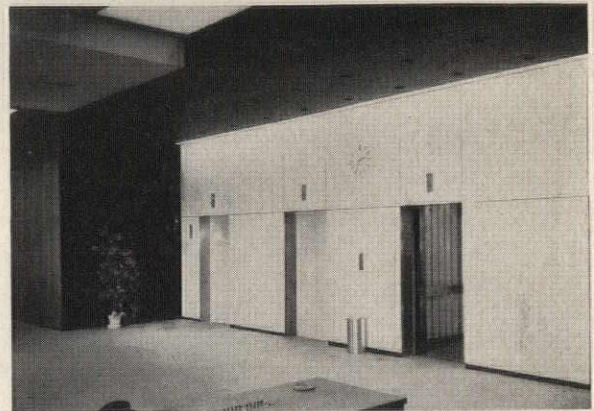
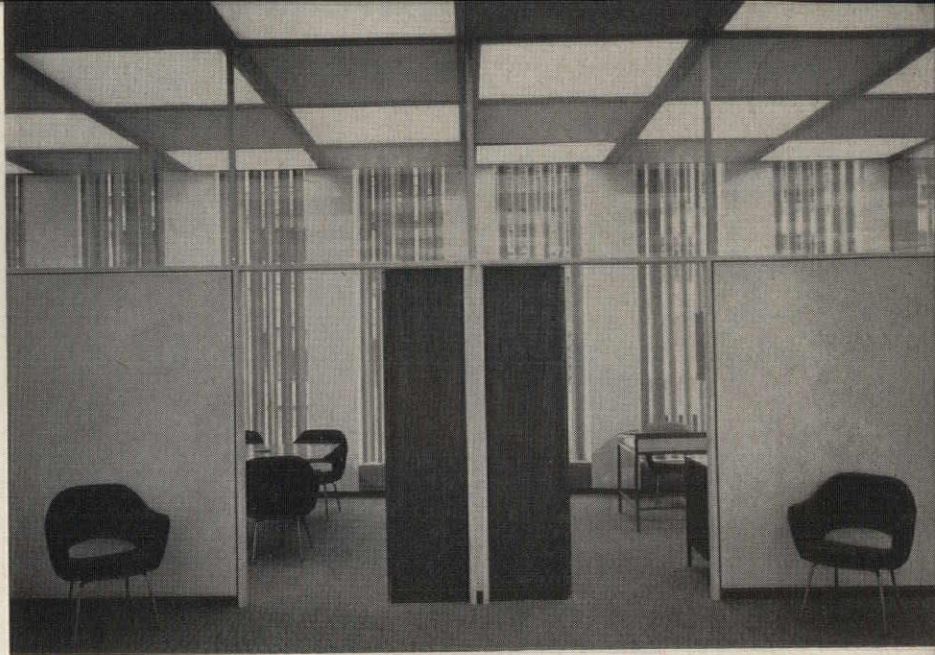
## Deering Milliken Building

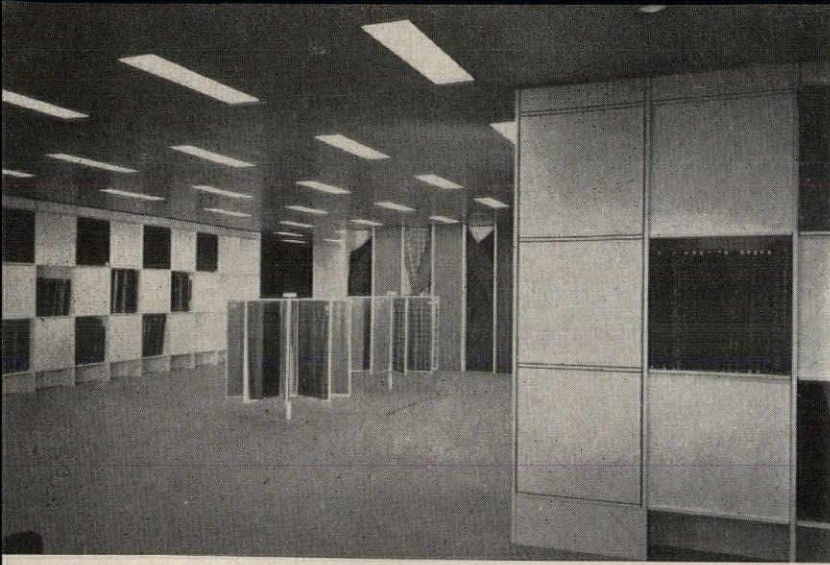
The ceilings for the three sales floors are designed on a modular grid that ties in with the structural and partitioning systems for these floors. The unusually spacious ground floor has a 16 ft finished ceiling; the second and third floors 12 ft ones. These tri-functional ceilings—for sound absorption, air conditioning supply and return air, and lighting—are composed of alternating squares of milky white plastic (to diffuse fluorescent light from above) and perforated, natural finish anodized aluminum sheets backed up by an acoustical material.

The movable partitions, top photo, were especially designed to work with the modular ceilings to provide maximum flexibility of space division. The doors and jamb panels are of natural cherry; the cross partitions are covered with natural, undyed linen; the fronts are baked enamel—in eggshell finish—on the steel panels. Glass above the door-head line serves as sound barrier without destroying the sense of the ceiling continuing through into the office areas.

In the lobby, left page and two lower photos at right, the photo-murals were designed and executed by Herbert Matter. They depict early spinning machinery and were installed on walls covered with Japanese grasscloth. The wood-paneled wall is natural cherry; the pool is of black structural glass with a curb of white Georgia marble; the first three floors are carpeted in beige "Agilon"—a material manufactured by the owners especially for their headquarters. The structural columns—spaced approximately 29 ft north and south and 32 ft east and west—are clad in white plastic with stainless steel binding strips.

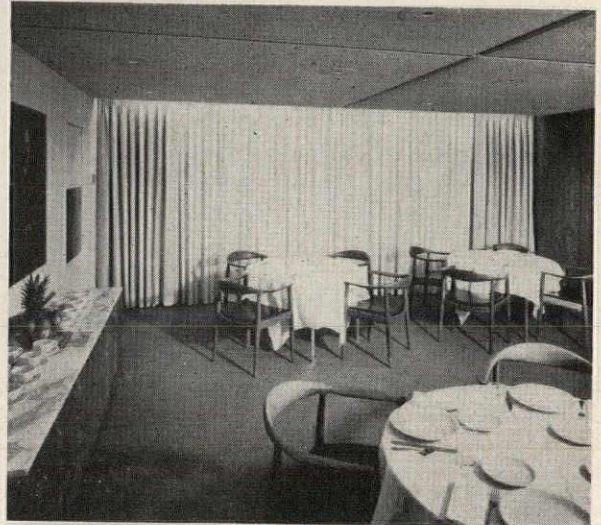
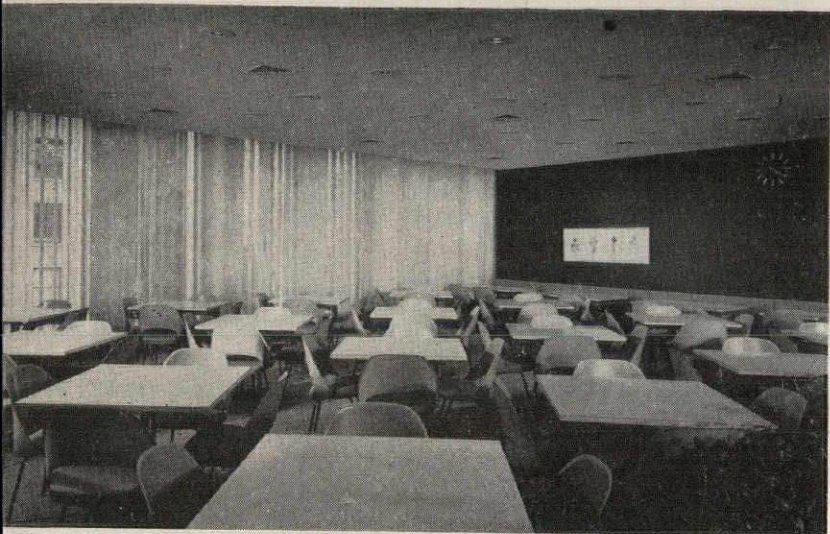
The sales area furniture has, generally, top surfaces of natural cherry and pedestals of dark walnut, supported by an open framework with a brushed chrome finish. The chairs are upholstered in wool in vivid shades of orange-red, blue, and dark brown





## Deering Milliken Building

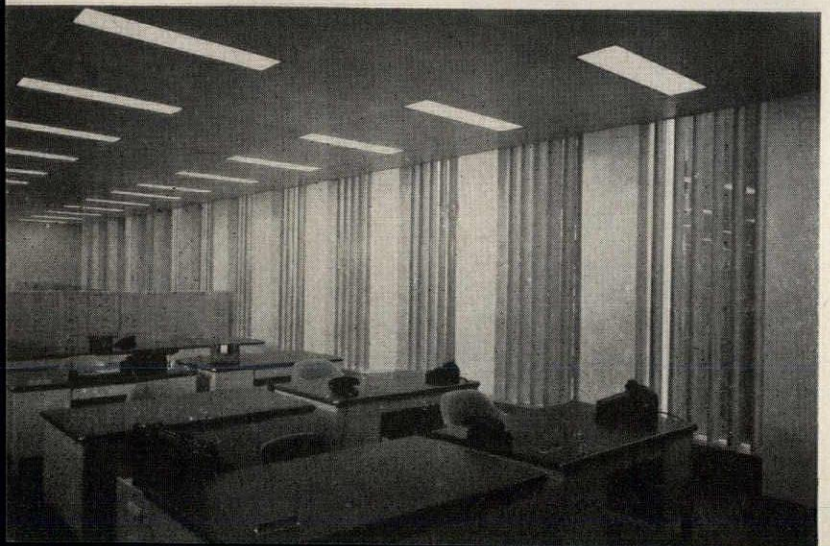
At left, a view of the fourth floor, which is devoted to an experimental sales area wherein the entire line is displayed. The ceiling is of perforated aluminum and the floor carpeted



Second down, left; dining area of the employes' cafeteria. Right: the executive and customer dining room.

Above: a typical reception and secretarial area for the executive offices, one of which is shown to the left.

Bottom, left: a typical general office area. Perforated aluminum ceilings for all floors serve as air diffusers, obviating the need for visible ones





## Spatial Variety Enlarges House

*Residence for Mr. & Mrs. H. F. Spalding.  
West Los Angeles, California.  
Mario Corbett, Architect.  
Pat Hamilton, Contractor.*

*Julius Shulman*

The sameness of spaces and atmosphere throughout is one of the biggest causes of doldrums in a typical three-bedroom house. A number of interesting devices have been used in this scheme to counteract dullness and give variety. In achieving these, great use has been made of a gentle rise toward the rear of the plot.

The section of the house facing the street is low, with a shoji-like wall shielding storage and carport (see plan next page). Beyond this, a short run of steps leads to a walled garden, which serves as actual foyer to the house. A dramatically high-ceilinged family and dining room opens on this area. This room carries through the floor level of the front part of the house, and the higher roof level of the rear section. (See photo at right). The living room is up another few steps, and separated from the family area by a partly open, partly obscured partition. A sliding screen serves as door (photo above). The living room opens out to a second garden on the opposite side.

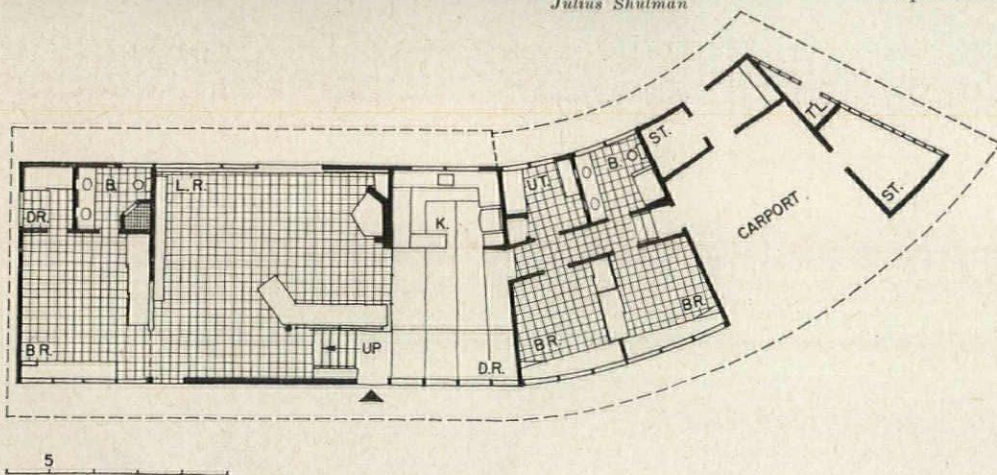




Julius Shulman

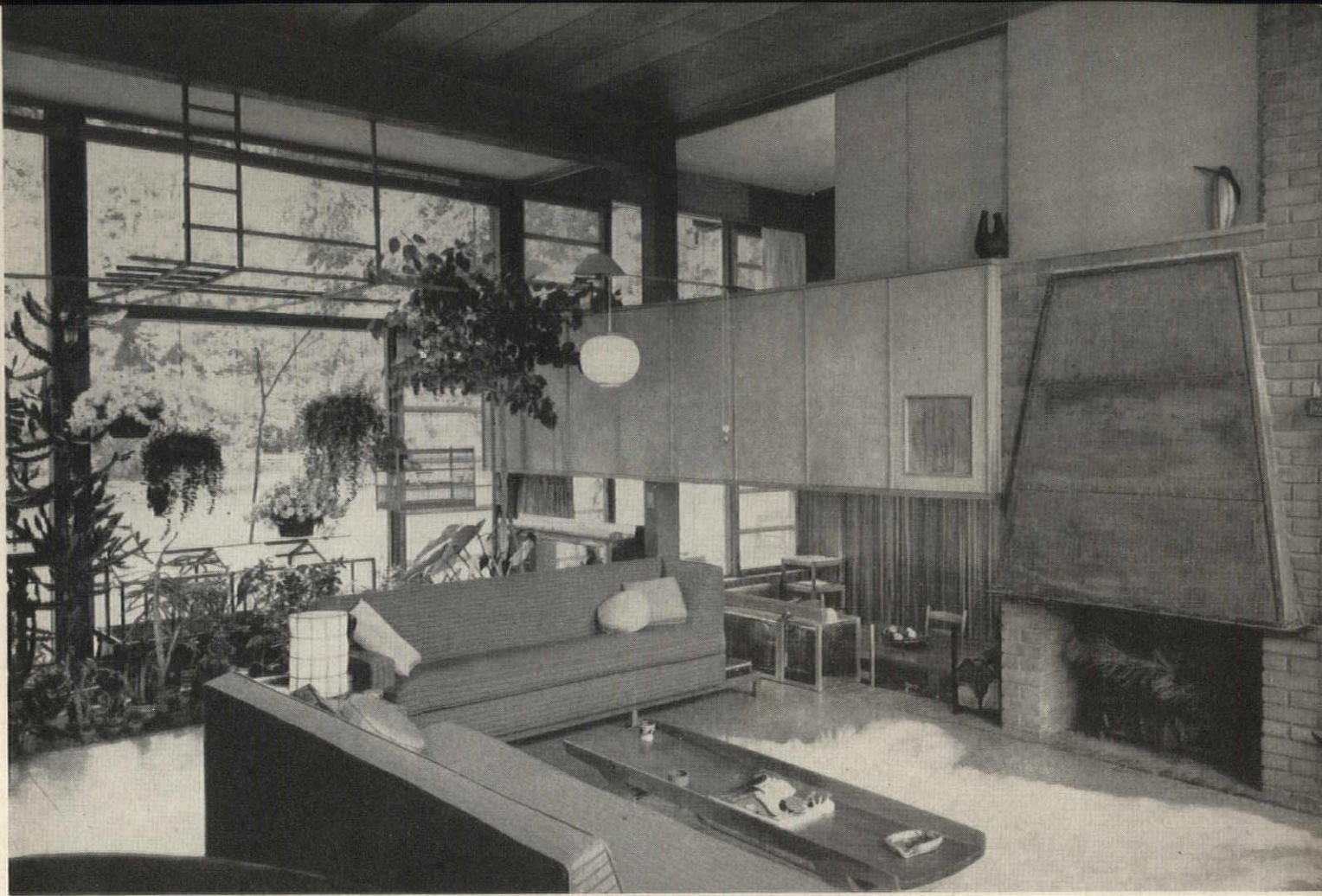
The plan of the house is neatly divided into areas for children and adults, on separate levels. The lower one has children's bedrooms and family room, with an entrance off the carport, play area in view of kitchen. The upper level contains master bedroom and living room, with a separate garden for entertaining (left). Utilities line this side of the house to act as sound buffers for bedrooms when a party is in progress. A long skylight (below) runs along entrance side of living areas.

The house has a concrete foundation, and a frame of posts and studs. Exterior siding is "sealed" redwood over wood sheathing. Interior walls are mahogany plywood, floors are cork except for concrete in family room and kitchen. Ceilings are plasterboard, roofing is composition and gravel



Spalding Residence





*Hedrich-Blessing*

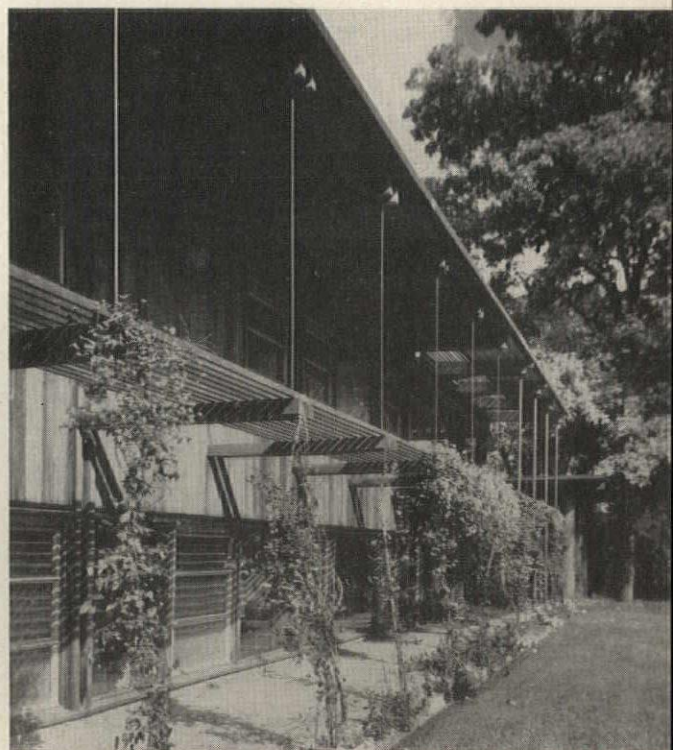
## Tri-Level House Magnifies Space

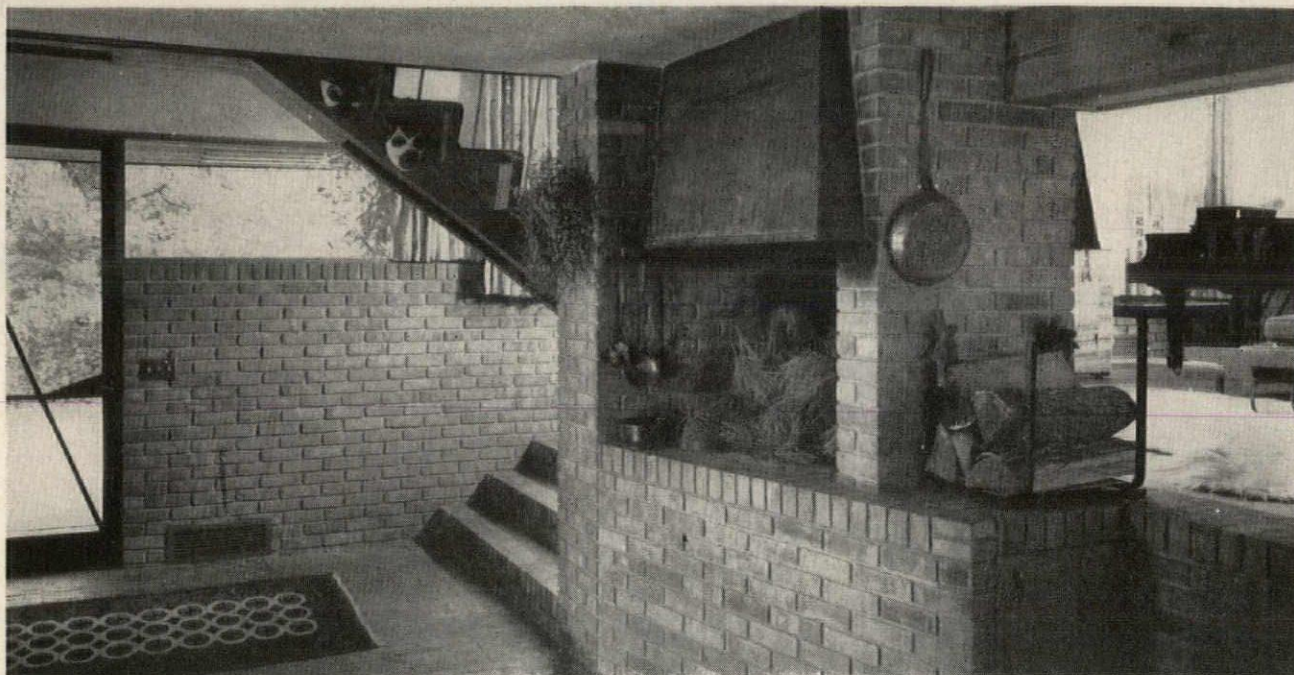
*Residence for Mr. & Mrs. Harris Armstrong.  
Kirkwood, Missouri.  
Harris Armstrong, Architect.  
E. C. Mikkelsen Construction Co., Contractor.*

Spatial by-play is a dominant feature of this house. The three levels open into each other to afford a series of varied vistas and glimpses beyond. The lowest floor has the front entrance at ground level, and is sunken to sill height in a slope at the rear (right). The owner's office is 300 feet from the house at the front of the site.

The kitchen can be joined with the living areas when desired by opening a partition of hinged floor-to-ceiling doors. The study-guest room on the top level has sliding panels which open to give added balcony space to the living areas for large gatherings. Most rooms face south over a large garden landscaped for privacy from neighboring houses. A large screened porch has been added to the east off the living room, and a carport, brick screen and storage wall, and a swimming pool are to the west.

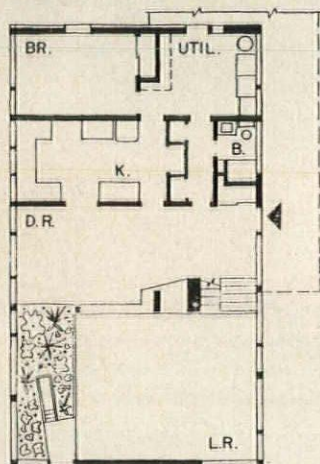
Foundations are concrete, and the structure is conventional wood frame. The exterior is redwood and brick; interior surfaces are various woods and plaster. Floors are cork, linoleum and pecan plank.



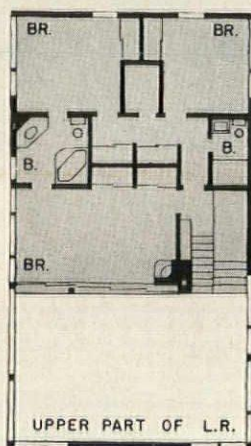


Hedrich-Blessing

Some of the spatial effects of the house can be seen by comparing the photos above and below-left with the interior on the preceding page. In contrast to many split-level schemes, great simplicity is kept in the plan shape and variety of roof levels (see photo below)



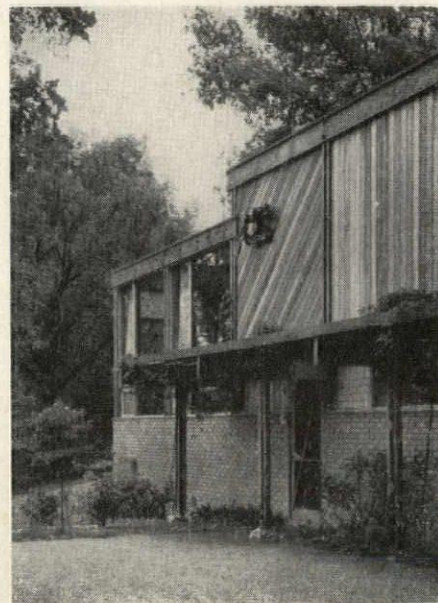
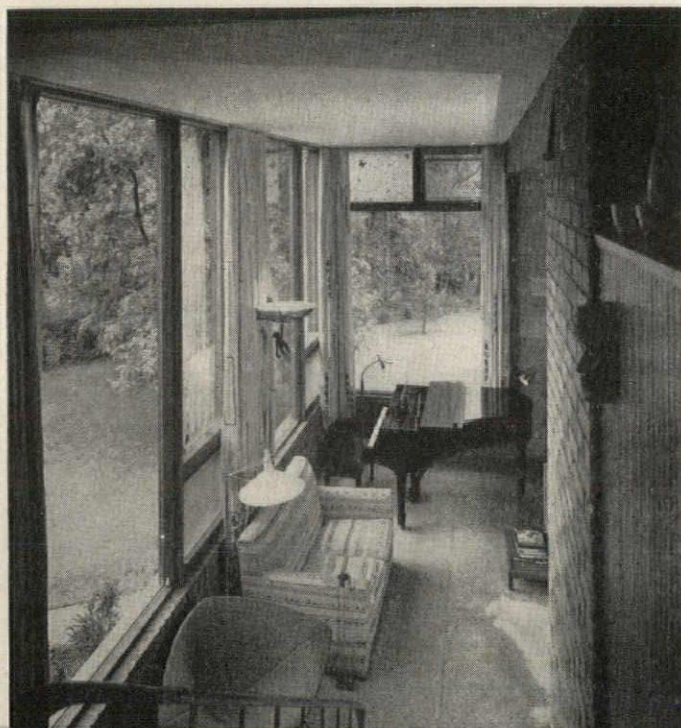
FIRST FLOOR

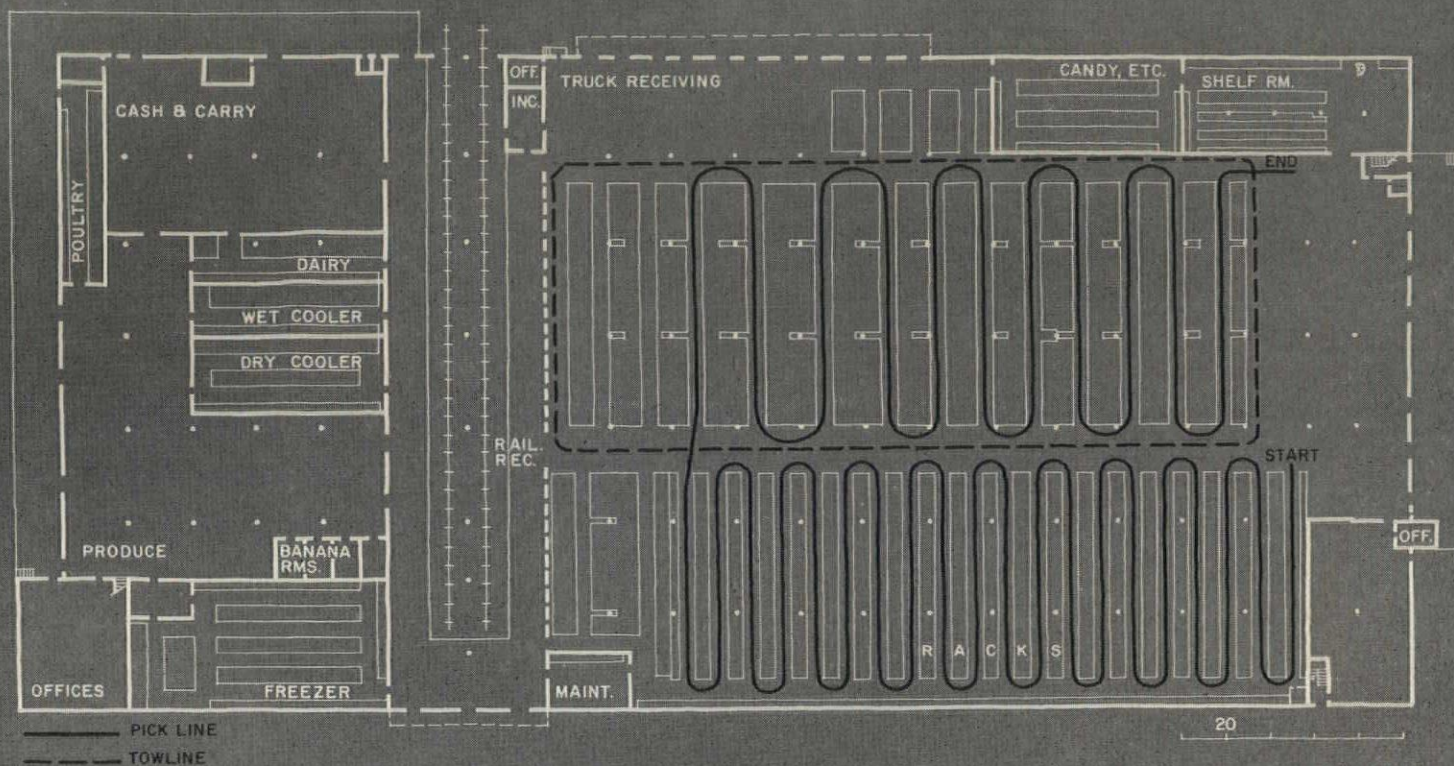


SECOND FLOOR



Armstrong House





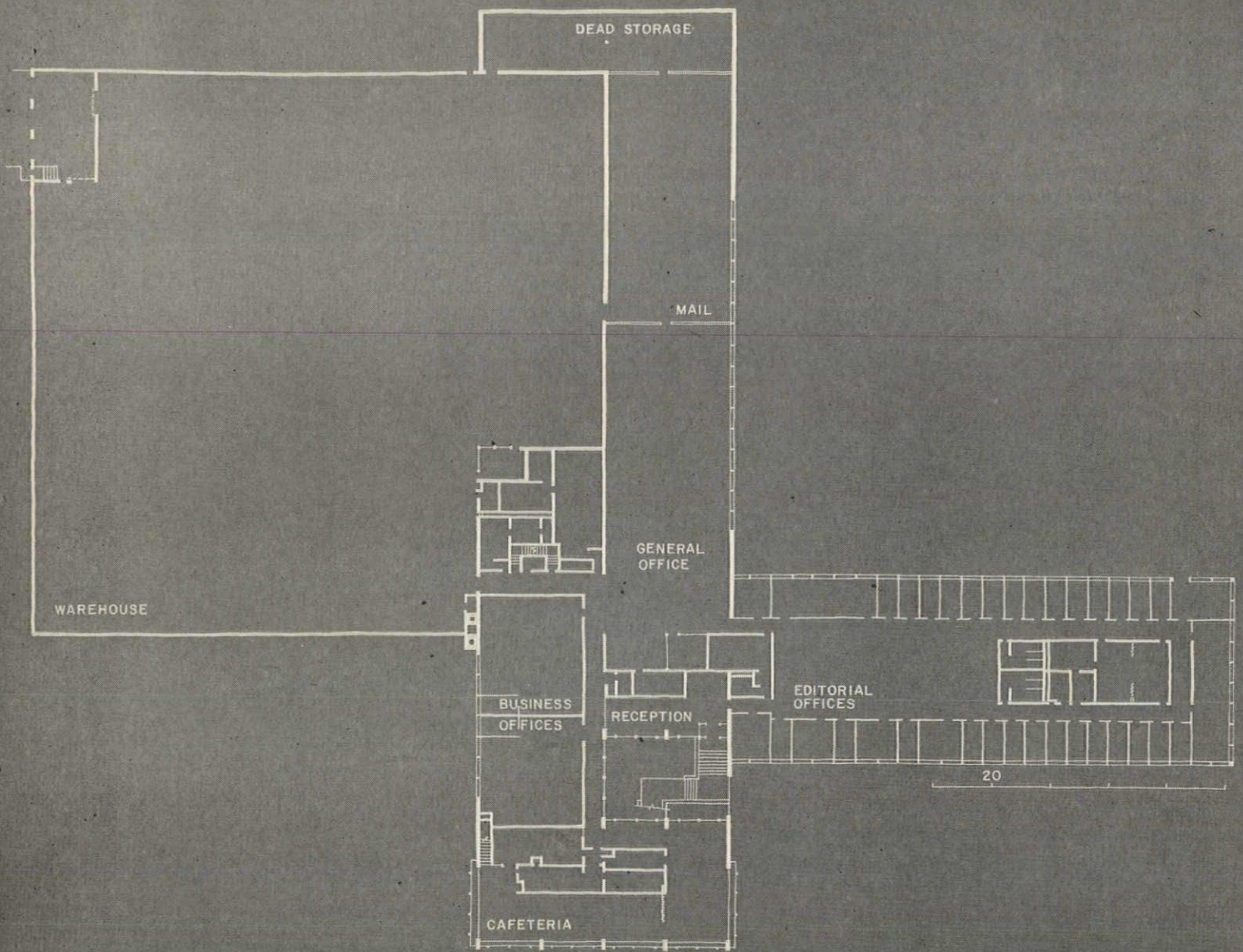
## GROCERY AND PRODUCE STORAGE COMBINED IN FOOD STORE WAREHOUSE



WAREHOUSE FOR RICHMOND FOOD STORES, INC., RICHMOND, VA.; THE BALLINGER COMPANY, ARCHITECTS AND ENGINEERS; DOYLE AND RUSSELL COMPANY, GENERAL CONTRACTORS. In this building may be seen the close relationships between flow lines and design results. Close study of design problems and the use of precast concrete columns and roof panels permit two types of storage in one building. Results include cost savings and maximum use of site

# Warehouses Assume Expanded Roles

While automation of warehouses continues to make news, actually another change—the diversification of warehousing functions—may well be of more importance to the architect and engineer at the present time. The number of warehouses now being constructed for storage purposes alone is on the decline. In their place, an ever increasing number of highly specialized types are being constructed. These new warehouses nearly always combine storage functions with other related operations. The simplest examples add office spaces to the warehousing areas. Others—of even greater complexity—combine office and warehousing functions with sales areas, complete packaging and distribution areas, and other service facilities. One result of the expanded functions now being assigned to warehouse buildings has been a tendency toward greater specialization of types used within particular industries. At the present time, warehousing types vary so greatly between industries that building for each must be approached as separate and distinct problems bearing little or no relation to each other. This specialization of warehouse types, the greatly expanded roles of warehouses, and the ever increasing attention being given to materials-handling, mechanization of processes, and automation in these buildings, have opened up new areas for professional activity and responsibility.



## DISTRIBUTION CENTER AND OFFICES FOR EDUCATIONAL BOOK PUBLISHERS

Bill Engdahl, Hedrich-Blessing



ROW, PETERSON & CO. BUILDING, EVANSTON, ILLINOIS; PERKINS & WILL, ARCHITECTS-ENGINEERS; WESTCOTT ENGINEERING CO., STRUCTURAL ENGINEERS; A & T ENGINEERING CO., MECHANICAL ENGINEERS; L. J. GRAF CONSTRUCTION CO., GENERAL CONTRACTORS. Major operations in the building include editorial and business functions, book storage, and distribution functions. These are zoned into three areas as shown on the plan by combining warehouse-distribution functions and the provision of separate facilities for the editorial and business offices. Composing and printing operations are handled at other locations. The employe cafeteria is located to allow easy accessibility to all departments and is also used as a conference and meeting room. Traffic of vehicles to and from the warehouse area is segregated from other passenger car and pedestrian traffic. The building is located on an irregular, sloping site in a residential neighborhood. Structure is steel frame with open web bar joists; offices are air conditioned

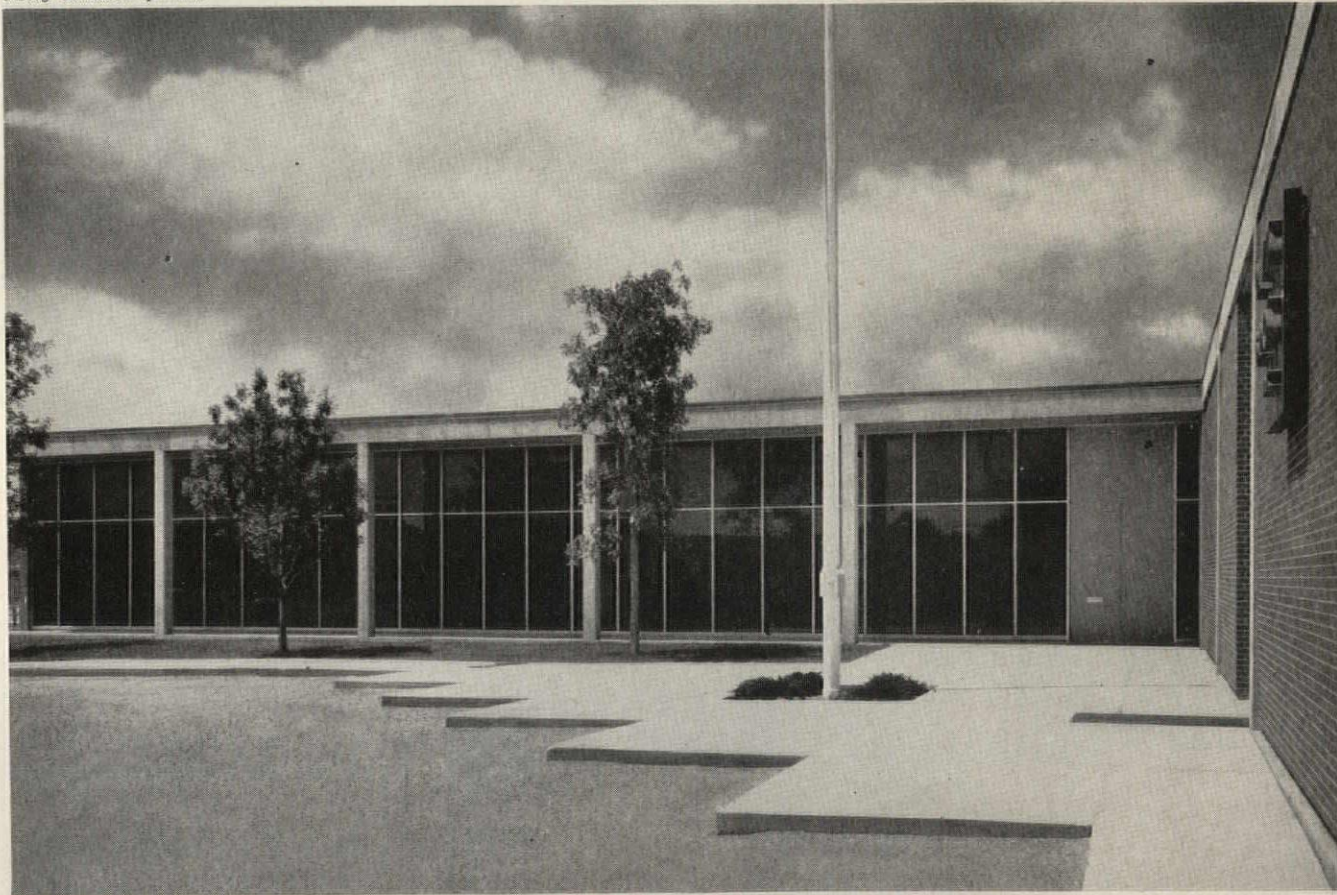


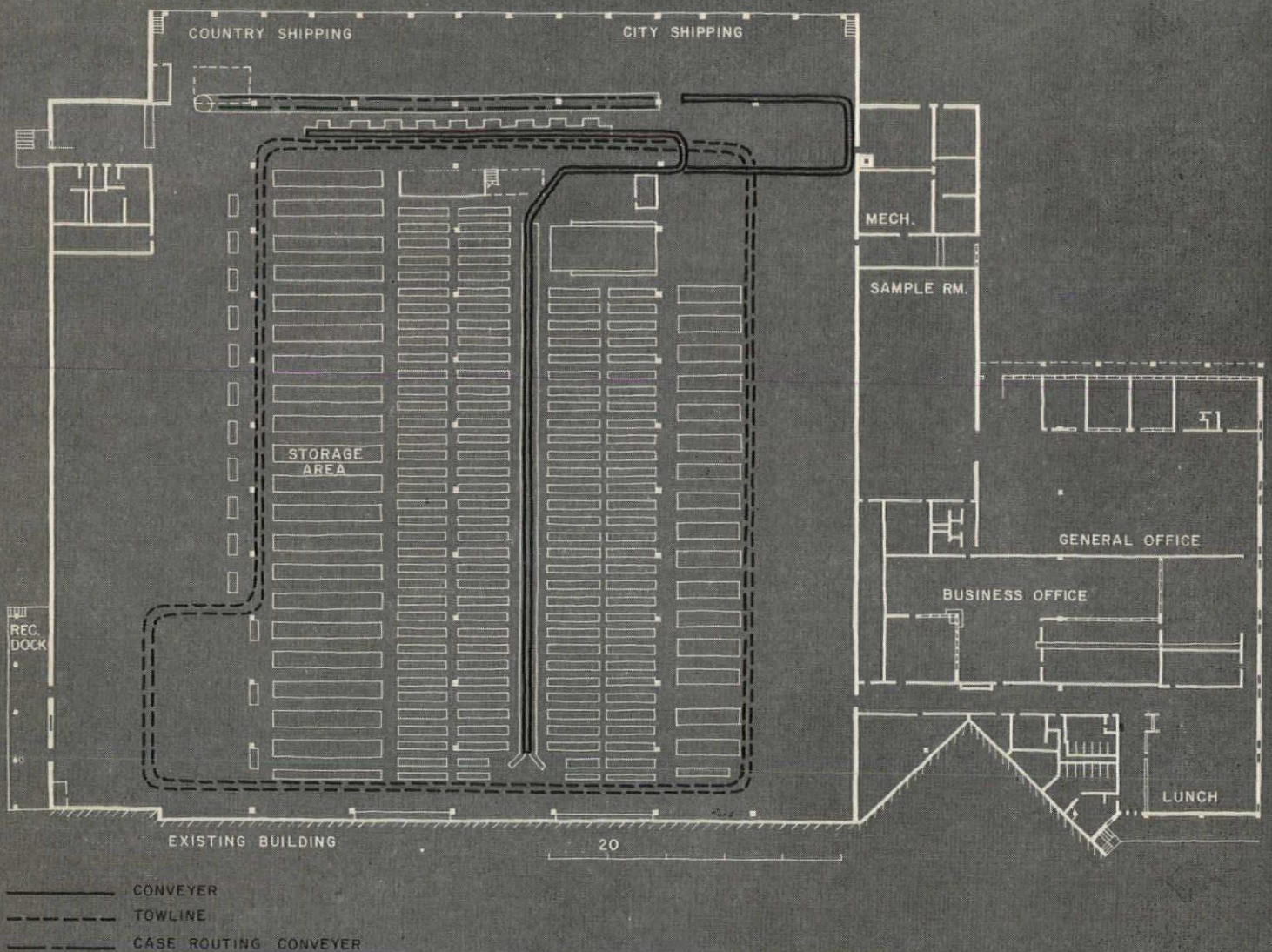
## LARGE SINGLE STORY WHOLESALE DRUG WAREHOUSE AND OFFICE

DAVIS BROTHERS, INC. DRUG WAREHOUSE, DENVER, COLO.; JAMES SUDLER ASSOCIATES, ARCHITECTS; D. R. ROGGENBACH, ASSOCIATE ARCHITECT; KETCHUM AND KONKEL, STRUCTURAL ENGINEERS; STARK AND KONKEL, MECHANICAL ENGINEERS; SWANSON-RINK, ELECTRICAL ENGINEERS; JULIA JANE SILVERSTEIN, LANDSCAPE ARCHITECT. The building combines an executive, accounting, and general office wing with a storage-distribution area. It was constructed adjacent to an existing liquor warehouse. Fireproof and sprinklered (for in-

surance reasons), the precast concrete structure consists of girders spanning 74 ft, on 24-ft centers supported by columns. Precast roof slabs span between girders. The office area structure duplicates that of the warehouse areas to allow for possible future expansion or conversion of the building to other uses. With the exception of main sprinkler lines, all piping is routed on top of or through the girders to permit the greatest possible usable ceiling heights. The architects believe this to be the largest single-story drug warehouse in the U. S. In the past, most were planned as two-story buildings

*Betty Baldwin photos*





Walter Griffith, Jr., photos



## Drug Warehouse and Office

The architects say, "the major problem in the design of a building of this type consists of the flow of goods through the warehouse." Drugs are received in lots at one end of the building. Here they are transferred to a conveyor and sent to the storage areas, where they are kept in case lots. From the cases, individual units are transferred to shelving. When an order comes in, it is conveyed to the machine room for transfer to punched cards and separation into four orders. Two of these are for case lots stored at sides of the building, the remaining two for units stored in the central shelving. All orders are sent by pneumatic tube to the pick line. Case lots are conveyed to the shipping area on carts moved by the under-floor conveyor shown in the upper illustration. Units are picked and conveyed to city shipping on the upper roller conveyor; those for delivery outside the city move on lower rollers. The illustration at bottom of page shows these conveyors in action. City orders, after passing the checking stations, are delivered to Denver drugstores in the same cartons which come off the conveyor. Country orders are packed in cartons for shipping after having been checked. Approximately 33,000 items are carried in the inventory. Almost 98 per cent of these arrive by truck and all are shipped by truck to the retail outlets

# SERVICE BUILDINGS: WAREHOUSES WITH ADDITIONAL FUNCTIONS

By *ERIK P. JOHNSEN*,  
Vice President and Chief Engineer,  
and *RALPH S. CRUMMÉ*,  
Vice President and Director,  
Industrial Division,  
Abbott, Merkt and Company,  
Architects-Engineers

Pure warehouses are becoming scarce. The former concept of a warehouse as a dead storage area for out-of-season merchandise is fast disappearing. For example, in the department store field, warehouse structures are now required to contain a number of additional functions such as workrooms, processing, food preparation and serving, and, most importantly, selling activities.

Buildings of this type have come to be known as Service Buildings, but even this title does not indicate fully their greatly expanded role as an active sales tool. Since 1945 our firm has participated in the engineering, materials-handling and architectural design of some 100 warehouses and service buildings. The majority of these are for department stores and range in size from 100,000 to \$1,300,000 sq ft, the typical building size being 350,000 sq ft.

Some service buildings resemble miniature factories. One recently constructed contains a candy factory, bakery, custom furniture shop, upholstery shop and drapery workroom, and a major appliance repair center for complete reconditioning and repainting of refrigerators, washers, TV sets, dryers, and the like. This is a definite departure from the former conception of a warehouse.

Another primary purpose of service buildings within recent years has been for permanent or special selling of merchandise. Some have a series of window displays not unlike a main or branch store. Others have an interior layout of racks and bins that permit overnight relocation by fork-lift trucks to provide a clear space for warehouse sales.

## SITE SELECTION

Under the new concept of service buildings, two major problems emerge: the first is concerned with the site—finding a location that permits relatively quick movement to and from the main store and any branch stores, the second concerns design of the building to be functional as a materials-handling, engineering tool and architecturally attractive as an adjunct to sales.

Good building sites are scarce near most major cities in the United States. Site location is a science in itself and requires specialists; for that reason our firm has a section of industrial engineers specially trained in this work. The industrial engineer must not only find a site of suitable size and characteristics within a given area, but also must often apply improvements to the land to permit economical construction. Practical engineering and design help guarantee the best use of available land for a given set of circumstances and consideration must always be given to possible future expansion.

Occasionally an owner's downtown facility will permit expansion and layout to obtain satisfactory operating and storage space, but these decisions must be based upon thorough industrial engineering studies of the economic and construction factors.

### TREND TO ONE-STORY BUILDINGS

Service building types include multi-story, two-story, split level and one-story. In the past 15 years, one-story buildings have shown the greatest increase in new construction, particularly in outlying sections where land costs are more favorable. Because of space limitations we will concentrate on the architectural and engineering features of the one-story type.

### APPEARANCE DESIGN VS COSTS

In the department store field, costs are extremely important, and every effort must be made to obtain full value for expenditures. Thus, the attractiveness of the building must be balanced with practical cost considerations in the choice of materials.

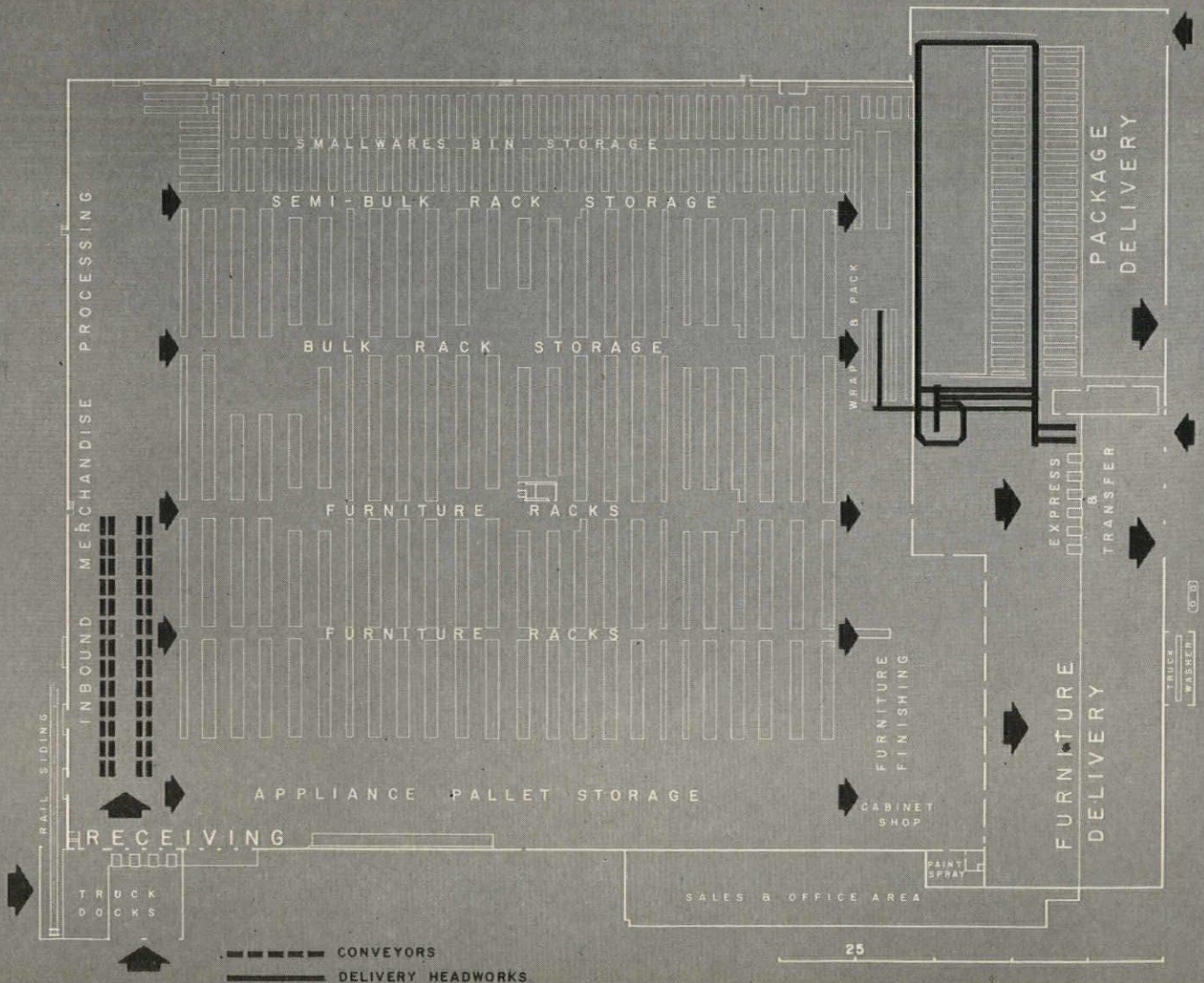
The problem of exterior appearance at reasonable costs is often solved by concentration of attractive, higher grade materials at entrances and in selling

areas with adequate landscaping. This, combined with expansion-type walls at the rear of the building and occasionally on a side of the structure, permits a low overall cost for the exterior.

For example, in the new service building for Stix, Baer & Fuller in St. Louis (shown in the illustration and plan) the upper level is of white-painted concrete block, panelled by a rhythmic pattern of recessed charcoal gray brick, and topped by a harmonizing dark bank of coping. The projecting lower level, containing personnel facilities, offices and sales area, is enclosed in coral-colored porcelain enamel and glass, framed in aluminum, above a base of dark green brick, the color of which is repeated in large letters of a sign against the white wall above. These are the store's regular colors.

Attractive landscaping, combined with the façade, creates an appearance similar to that of a branch store. In fact, a 25,000 sq ft area is currently used for selling, and the owners are very enthusiastic about this additional merchandising space.

STIX, BAER AND FULLER SERVICE CENTER, ST. LOUIS, MO.; ABBOTT, MERKT AND CO., ARCHITECTS-ENGINEERS; HENRY J. REITZ, SOILS CONSULTANT; I. E. MILLSTONE, INC., GENERAL CONTRACTOR



**FLEXIBILITY IS PRIMARY**

Building interiors under the service building concept must have a completely flexible layout that will permit changing usage, often on short notice. A basic structure with bays 24 or 25 ft square, and with a ceiling height of 16 ft, 9 in., is most economical in terms of steel tonnage versus area created. It also adapts well to aisles, bins and racks. Special long spans are needed in truck driveways and delivery areas, to permit quick truck maneuvering and to reduce overtime otherwise encountered in crowded, inflexible buildings.

Interior partitions should also be designed with flexibility in mind. For example, concrete block may be used for its initial low cost as well as for its insulation and sound absorbing qualities. Office areas and workrooms, often subject to expansion or relocation, are frequently partitioned with industrial type panels featuring metal and glass components in modular lengths. All utilities, personnel facilities, toilets and locker rooms should be located with a view to expansion.

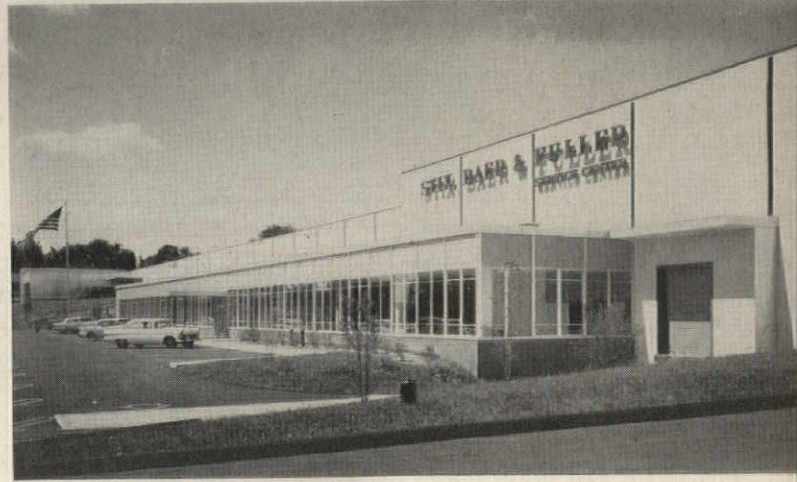
Boiler rooms should be planned with ample space for additional equipment and easily removable walls for enlargement as the entire building expands with increase of business. Lighting runs should be laid out in such a manner that overhead illumination can be relocated easily to conform to new aisle, rack and bin layouts. In several instances our firm has used trolley duct at an angle of 45 degrees with the building walls. Overnight a sales area can be created and sufficient lighting fixtures relocated to illuminate it properly. Furniture finishing workrooms and other locations requiring concentrated lighting can be properly illuminated and the electrical installation will not be a deterrent to relocation of the department.

**INDUSTRIAL ENGINEERS AUGMENT ARCHITECTS**

The interior layout of a modern service building requires the attention of specialized industrial engineers. These men are not architects, but they are familiar with the architect's problems and together they can produce a practical and harmonious building.

Each department store has a character all its own, and this is reflected in the various operations of its service building. In one example, the Stix, Baer & Fuller Service Center illustrated, there exists a definite split in merchandise handling between bulk goods and small wares. This split carries over to delivery operations with package delivery of small wares and bulk delivery of furniture.

The engineers studied flow and movement of several thousand orders and recommended a distinct separation of merchandise from the receiving dock forward through the warehouse process. Accordingly, a two-prong flow was set up. Bulk goods and



furniture flow to their delivery area, while small wares flow independently through wrapping and packing to package delivery. Certain other activities, such as upholstery and drapery workrooms, were located apart from these flow operations, inasmuch as they were little related to them. The workrooms were provided with maximum light and air, not only for the comfort of the skilled operators, but to aid them in proper matching of color and fabrics. One definite result of this separation, gratifying both to management and to the industrial engineers, was a report of an impressive rise in productivity within a very short time.

**PERSONNEL CONSIDERATIONS**

Employee relations are of prime importance with department store managements, as witnessed by the cordial relations between co-workers and by many 25-year clubs and, in some instances, 50-year clubs. In developing the service building concept, thought must be given to the provision of a pleasant environment for personnel. This includes general clerical offices, recreation areas, lounges and cafeterias. In service buildings our firm always tries to provide an attractive air conditioned cafeteria with full-length windows that admit light and also provide a pleasant view. Furniture provided is modern, simple, and attractive and kitchen equipment is of stainless steel.

**MECHANIZATION**

Since the end of the war, materials-handling features of warehouses and service buildings have been given a lot of attention. A modern structure will have some combination of pallets, fork trucks, conveyors of all types, adjustable and movable steel racks and bins; also tractor-trailer trains, electronically guided tractors, overhead conveyors, elevated platforms, and extensive rod systems for handling hanging ready-to-wear items.

Considerable ingenuity and judgment is required in this phase of service building materials-handling,

since department stores are not founded on depth of stock, but, instead, have their chief appeal through extremely wide selection. Standard case sizes, such as 2 by 3 by 3 ft, might work well for other operations, but not for a service building.

A refrigerator manufacturer, for example, may have 15 models of the appliance, and will stock 1000 of each of the types. But a department store service building will seldom, if ever, have 1000 of any one item. Instead, in a furniture department, one might find 200 to 300 types of chairs, each somewhat different from all the others.

Since layouts must have flexibility, equipment must be chosen with great care. Each warehouseman should have maximum payload for lifting ability in both horizontal and vertical transportation. Selection of items must be simple enough so that additional untrained help must be engaged for rush periods such as sales and seasonal peaks. And, too, handling methods must be relatively gentle since much of the merchandise is fragile.

**THE FLOOR**

Floors probably represent the most important single feature in a service building. Considerable controversy exists as to what degree of refinement is necessary in floor construction. Generally speaking, however, money spent on a floor is repaid in time. However, with a constant eye on the cost budget, our firm has found that a monolithic cement floor, constructed with metallic or chemical hardeners and ample steel trowelling produces practical results for clients. Money should be available to add a hard topping; it has always proved to be a wise investment. This extra hard type floor should be urged, at any rate, for shipping and receiving platforms, furniture workrooms, and other areas subject to extreme wear.

**THE ROOF**

A service building roof, of course, has as its primary function the provision of shelter for men and materials. Its secondary but almost equally important service should be insulation.

It has been our experience that low cost and sufficient insulation may be obtained by specifying flat, insulated steel deck, with build-up roofing on exposed steel framing. Insulated reinforced gypsum runs a close second.

**OTHER CONSIDERATIONS**

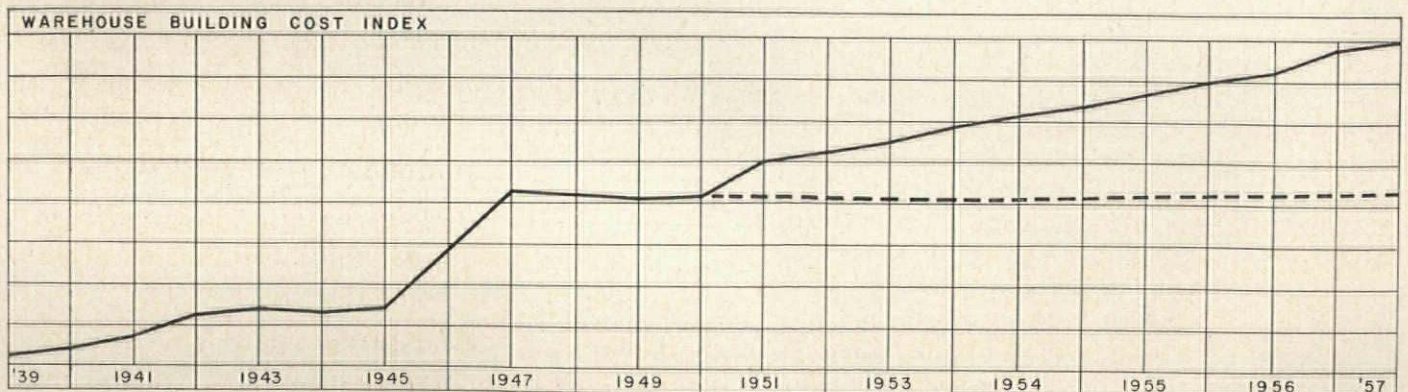
Since fire insurance rates on the service building's contents demand adequate sprinkler protection, the additional cost of fireproof roof construction is not economically warranted. Fire walls are generally recommended, however, between truck areas (which also often serve as garages for the owner's fleet) and the rest of the building. Heating is best accomplished by unit heaters with circulating hot water from a centrally located boiler room or through individual gas-fired units.

In urban areas, owner and architect alike must consider the impact on an existing sewage system of suddenly adding some 200 employes in a new building. Often, comprehensive and rigid codes require extensive sewage facilities to be included in the over-all project.

Considerable thought must also be given to removal of large amounts of trash, crates, cases, excelsior and other materials. Where economics justify the sale of cardboard and other papers, balers should be installed. In areas where paper prices are low or erratic, or where removal services are unreliable, an incinerator should be considered. An incinerator creates problems in architectural design, however, since the stack must often rise like an obelisk 60 ft or more above the roof level. And the weight of such a heavy, tall chimney invariably calls for a massive and costly foundation.

**KEEPING COSTS IN LINE**

In the service building and warehouse fields, building costs are of paramount importance. Means must be established for controlling costs without sacrifice of necessary quality. By the use of principles such as are discussed in this article, our firm has been able to hold building costs down to a low level as shown in the chart reproduced below.



— ENGINEERING NEWS-RECORD INDEX © MCGRAW-HILL PUB. CO., INC.  
 - - - ABBOTT, MERKT & CO CONTRACT COSTS

*For in the time of trouble he shall hide me in his pavilion:  
in the secret of his tabernacle shall he hide me;  
he shall set me up upon a rock. PSALM 27.5.*

The thoughtful architect, aware of the powerful symbolic quality of every part of a temple of worship, is challenged by more difficult problems (many of which are never even defined for him) than are presented by any other form of building. He also makes problems for himself. He regards church design, correctly, as a rare and wonderful opportunity to experiment with newer structural forms. His preoccupation with structural gymnastics, however, sometimes precludes examination of the liturgical function for which he is creating the form. Aims other than structural virtuosity also inspire the architect and prevent him from trying to solve the real liturgical problem each church presents. He may, for instance, impose upon a congregation a church form which has grown from his own religious responses, although these may be of an order quite different from those of the clergy and laity he

# RELIGIOUS BUILDINGS

serves. If he attempts, however, to discover to what degree concepts particular to a certain theology have affected its liturgy, he is likely to find that he cannot always take his precedents from the past. Indeed some of the least successful modern churches are those in which contemporary materials and structure house an obsolete liturgy.

A liturgical form becomes obsolete when the theological concepts which inspired it have altered. These concepts are continually being modified as religion and modern life come to terms. The architect in the end must turn to articulate members of the clergy to help him define his problem, and the latter may change liturgical expression in the act of defining.

Each of the religious buildings which follow was designed by an architect concerned in some degree with the problems just outlined. Some buildings express a still valid liturgical tradition; others represent a fresh approach. All are unpretentious and several have strong symbolic power.

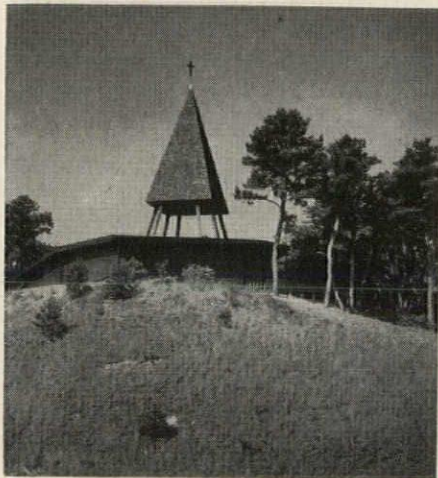
# Chapel of St. James the Fisherman

LOCATION: *Wellfleet, Massachusetts*

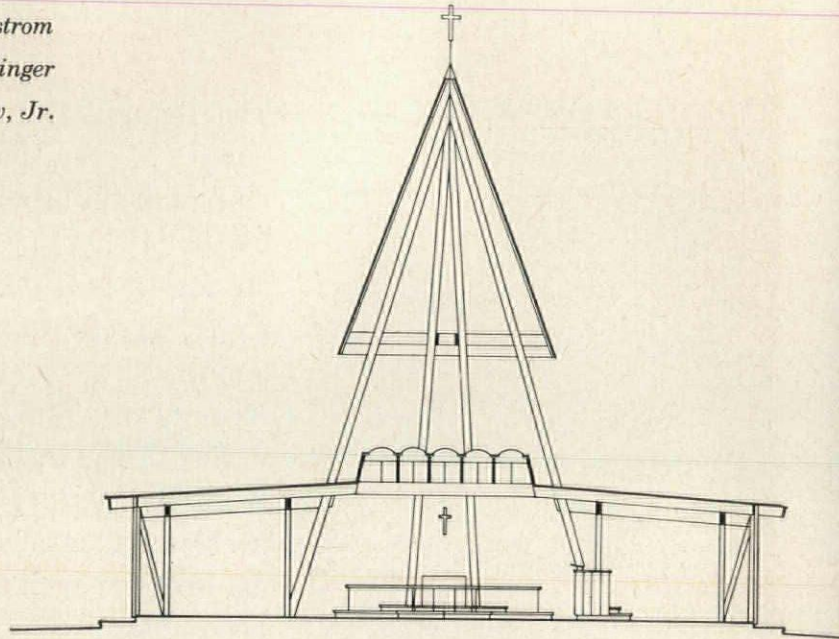
ARCHITECT: *Olav Hammarstrom*

STRUCTURAL ENGINEER: *Paul Weidlinger*

CONTRACTOR: *Everett Winslow, Jr.*



Bell tower directly above altar is covered with cedar shingles. Its bolted wooden supports form an octagonal perimeter repeating the shapes of the central platforms and communion rail. Awning type windows at floor level illuminate the interior from an unexpected source. The altar is dramatically emphasized by light from 25 plastic domes 24 in. by 24 in. set in the roof beneath the bell tower. Walls are vertical spruce boards with a creosote finish. Frame structure is exposed on interior

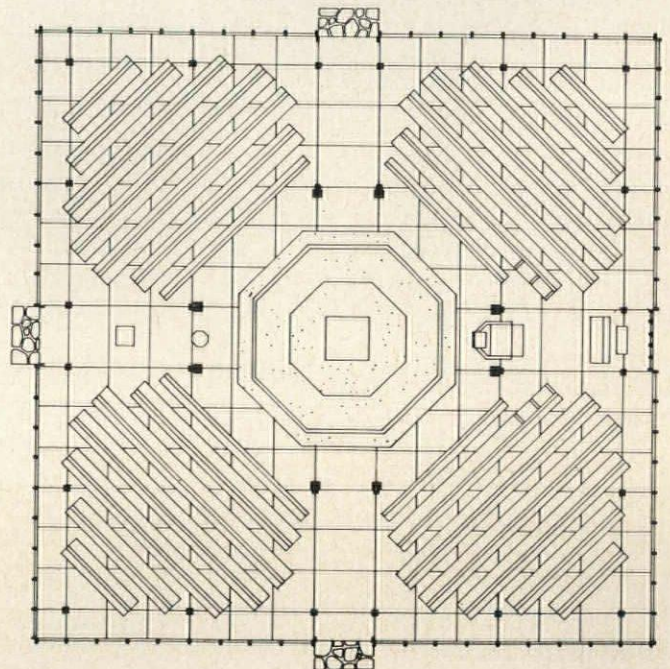


The suspended altar cross, baptismal font, communion rail, pews, lecturn and processional cross were designed by the architect. The base of the font (foreground of interior photograph) is of chiseled wood stained gold. Its top is a scallop shell, the emblem of St. James the Fisherman who was one of Christ's first apostles, and also the emblem of the fishing village of Wellfleet

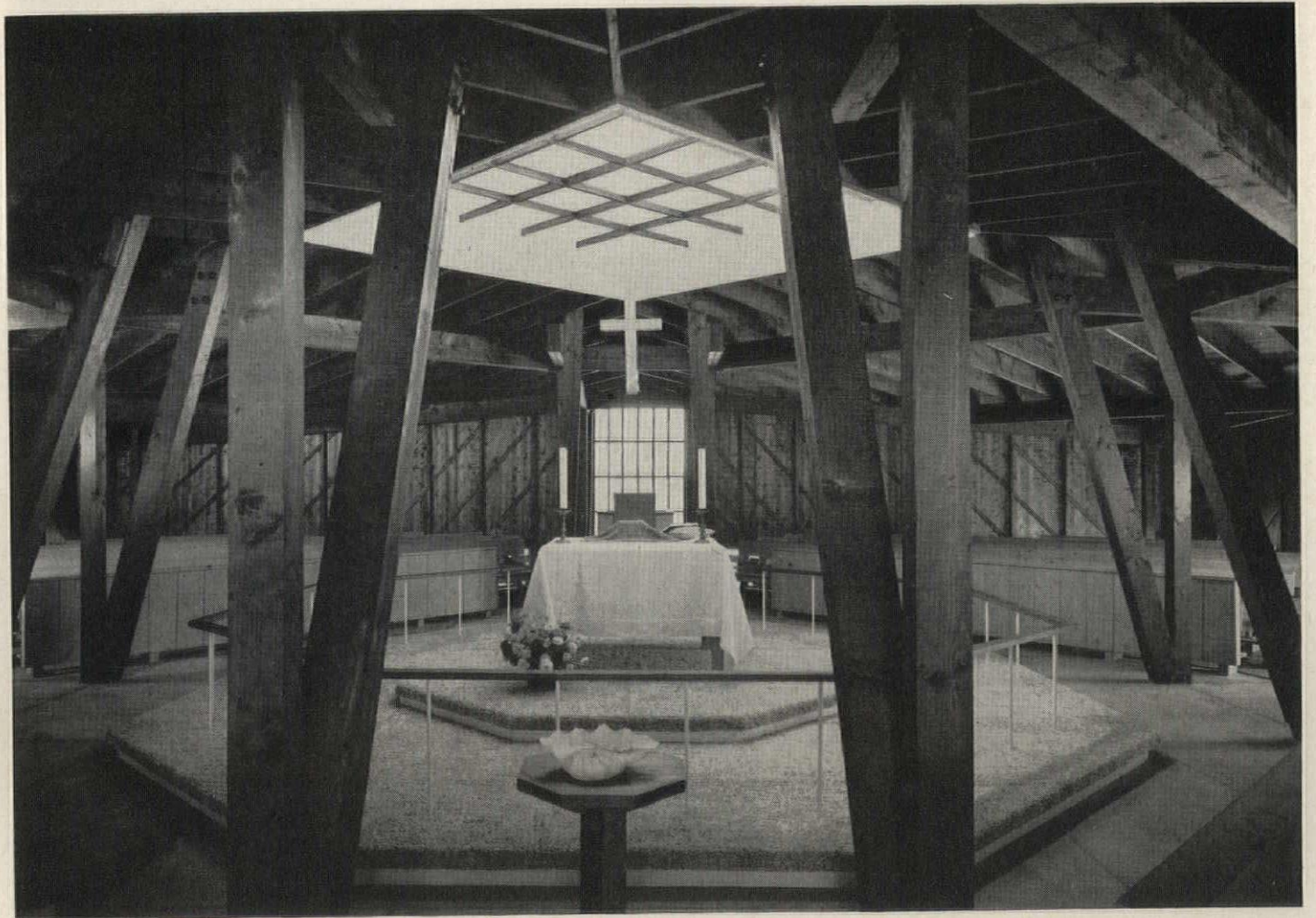
The Protestant Episcopal Chapel of St. James the Fisherman at the top of a small pine covered hill on Cape Cod, is a church for the summer visitors to Wellfleet and Truro who express their worship according to the Book of Common Prayer. The clergy and laity of this group had worshipped together in a Congregational Church before they were able to build a church of their own, and from this experience decided that they wanted an informal church in which lay participation was important. They were able, therefore, to present a well defined program to their architect. They requested a plan which would allow laymen to rise from their seats to read the lessons, to bring the oblations of bread and wine to the altar, and to participate directly in the service in other ways. The seats of the clergy as well as those for the choir are not distinguished from those of other worshippers; indeed performers in the liturgy are able to sit with their families. Choristers do not sing as a group, they lead the congregation in the corporate singing of the service.

Directed by these strongly stated liturgical needs, the architect devised a plan in which no worshipper is more than six seats away from the Holy Table at the center. The celebrants of the service surround the altar instead of standing before it.

It is the hope of the congregation that their mode of worship with its active lay participation may be a stimulus toward a renewal of a simpler liturgical tradition in the Christian Church.

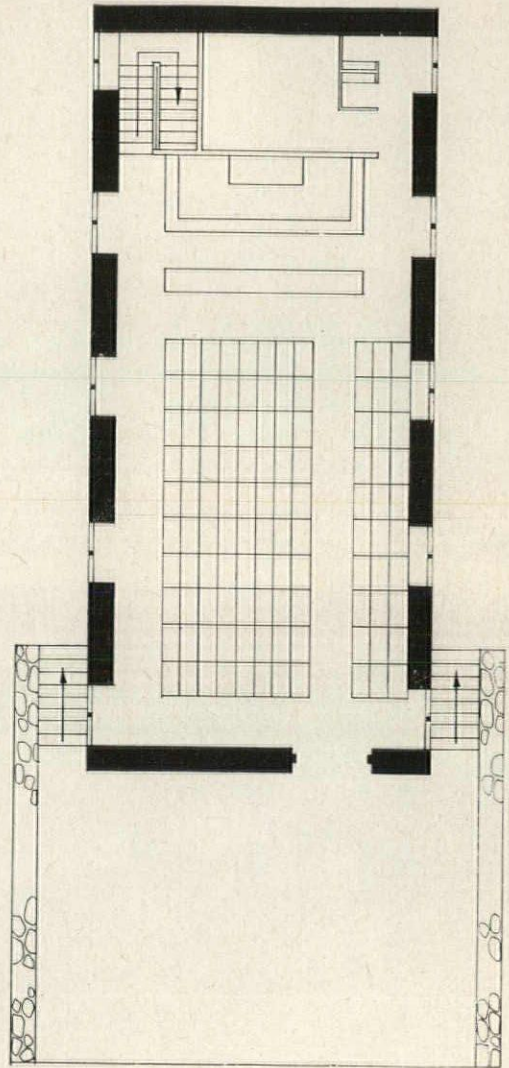






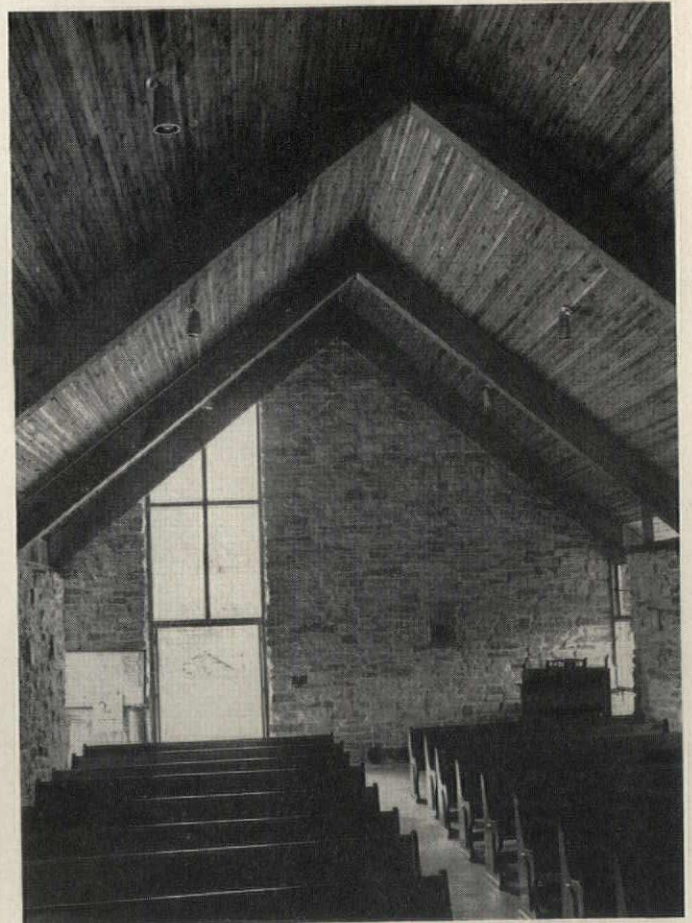
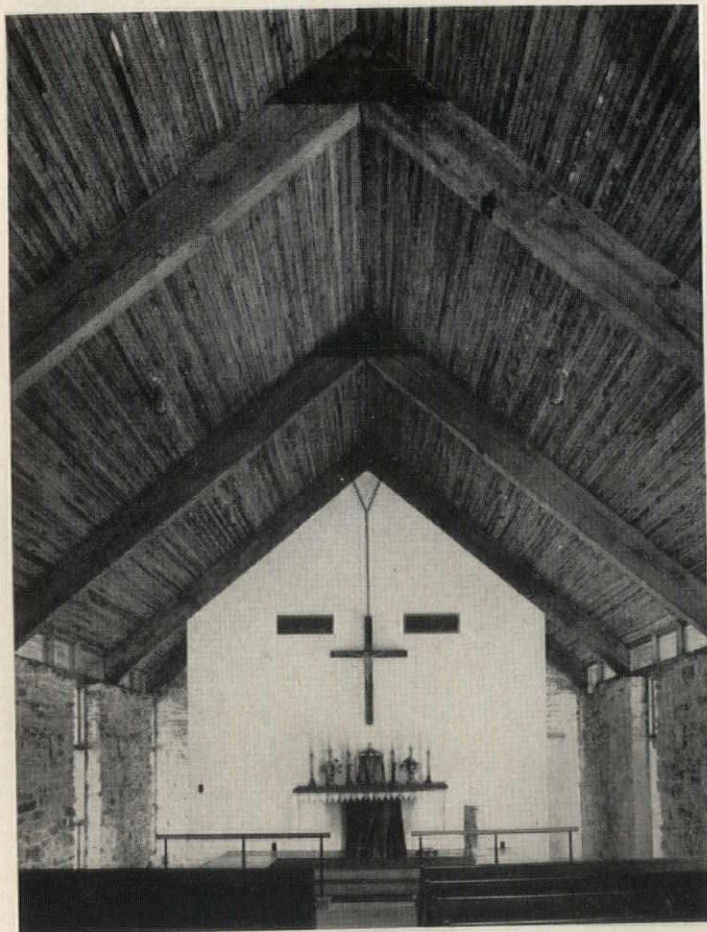
# St. Sylvester's Church

LOCATION: *Eminence, Missouri*  
ARCHITECTS: *Helmuth, Obata & Kassabaum*  
STRUCTURAL ENGINEER: *John P. Nix*  
MECHANICAL ENGINEER: *John D. Falvey*  
CONTRACTOR: *Barton Construction Co.*



St. Sylvester's is a small Roman Catholic church in the Ozark mountains. Its special simplicity exists in part because it was built not only in the materials, but in the manner of the old farmhouses and barns of this part of the South. Walls are of brown-gray stone 2 ft thick. The roof is 2-in. by 4-in. wooden decking in a natural finish laid on heavy timbers and covered with composition shingle. The wooden cross, doors and trim are painted white.

Placed on a steep slope which levels off at the top and becomes a concrete terrace, St. Sylvester's is actually a two story building. The lower story receives its share of daylight as the land slopes downward. An all-purpose room, office, bedroom and storage space occupy the lower floor; at terrace level are the simple nave, altar, sacristy and confessional. Total cost of the project was \$30,000, not including land and fees.

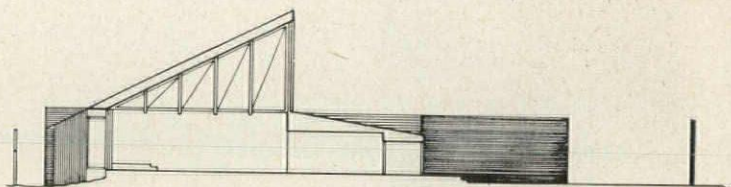


# Chapel in Finland

*Right:* entrance to semi-enclosed forecourt. Main light within chapel comes from high window wall above court, since altar window is to the north

LOCATION: *Tech Town in Otaniemi near Helsinki, Finland*

ARCHITECTS: *Kaija and Heikki Siren*

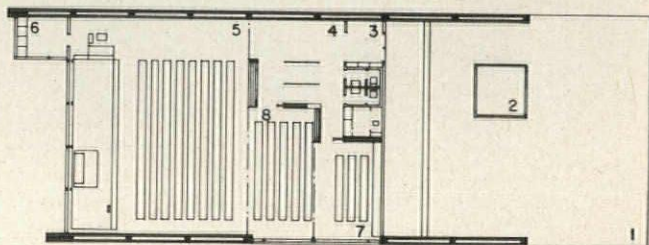


Tower not shown. Transverse cross beam under high window wall helps carry the ceiling construction of the chapel as well as the lower roof

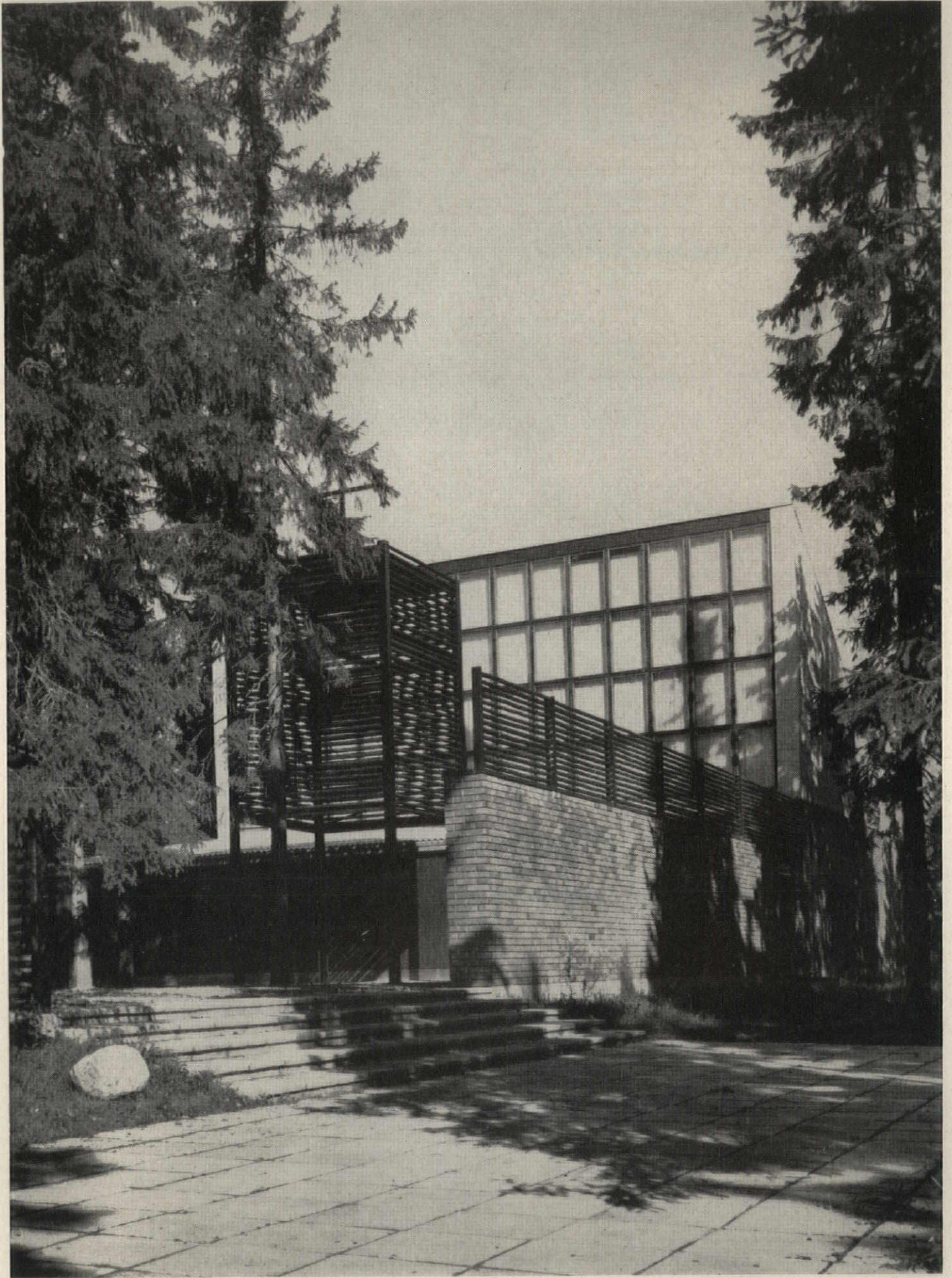
Tech Town is a community in Otaniemi which is composed mainly of students at the Institute of Technology in nearby Helsinki. A Protestant chapel was begun for these students in 1956 and completed in the spring of 1957. It stands on a hill amidst boulders and fir trees.

The building comprises three major spaces: a front court for open air services partially enclosed by brick walls and fencing, a low-ceilinged area which includes a small entrance hall, congregation hall and clubroom, and a chapel room with a steeply rising ceiling and an altar wall of clear glass at its low end. Through the glass is revealed a carefully studied outdoor scene; a mass of fir trees in the near distance and just in front, on the same axis as the indoor altar, a wooden cross placed on a wooden rock both of which vary in color and light in accordance with the seasons. Nature and cross form the key of the solution.

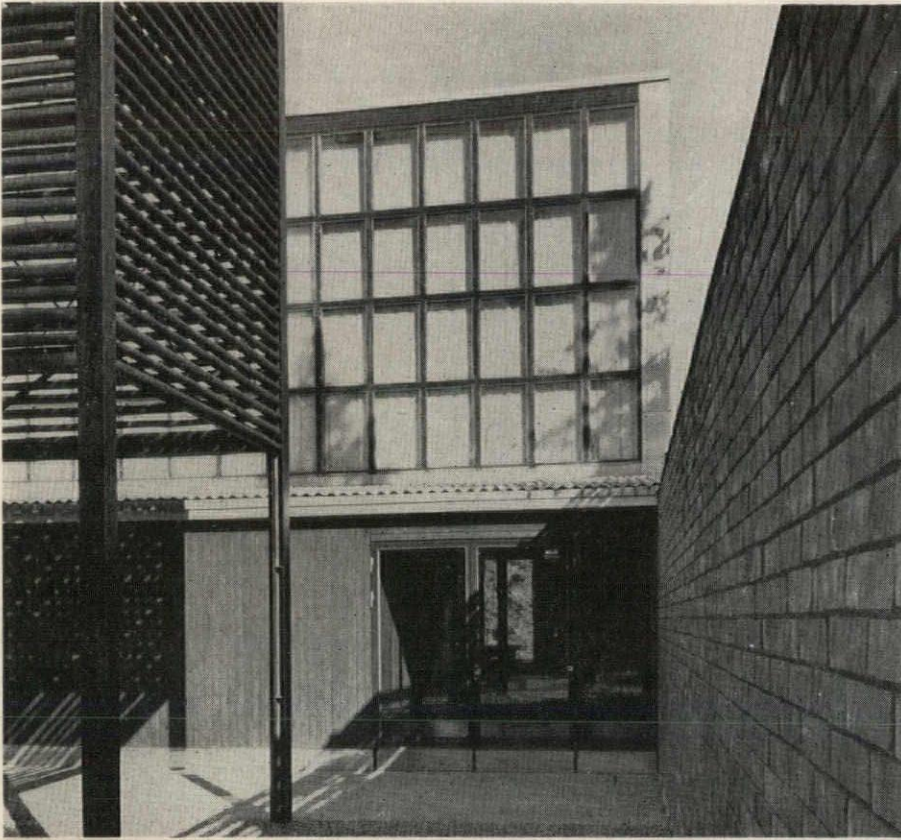
This fine modern chapel has some fundamental features which connect it with the traditions of Finnish architecture. The old stone churches of Finland are ascetic in character. Church builders of the past placed their sanctuaries in the landscape with great skill and sensitiveness, and accented the special quality of the church environment with a semi-enclosed forecourt. In old Finnish wooden churches the ceiling constructions were emphasized as interior features, as here in this contemporary church.



1. court 2. tower 3. entrance 4. hall  
5. chapel 6. sacristy 7. clubroom 8. congregation room. When sliding walls of congregation room and club room are opened, the total seating capacity of the chapel is about 300



*Chapel in Finland*



*Left:* materials of the chapel are red brick and wood, in the character of the other buildings in Tech Town. The roof is of corrugated asbestos



*Left:* this photograph was made to emphasize quality of daylighting within the chapel. Light is from high window wall

*Right:* view toward indoor-outdoor sanctuary. Ceiling downlights are fitted into vertical members of each truss



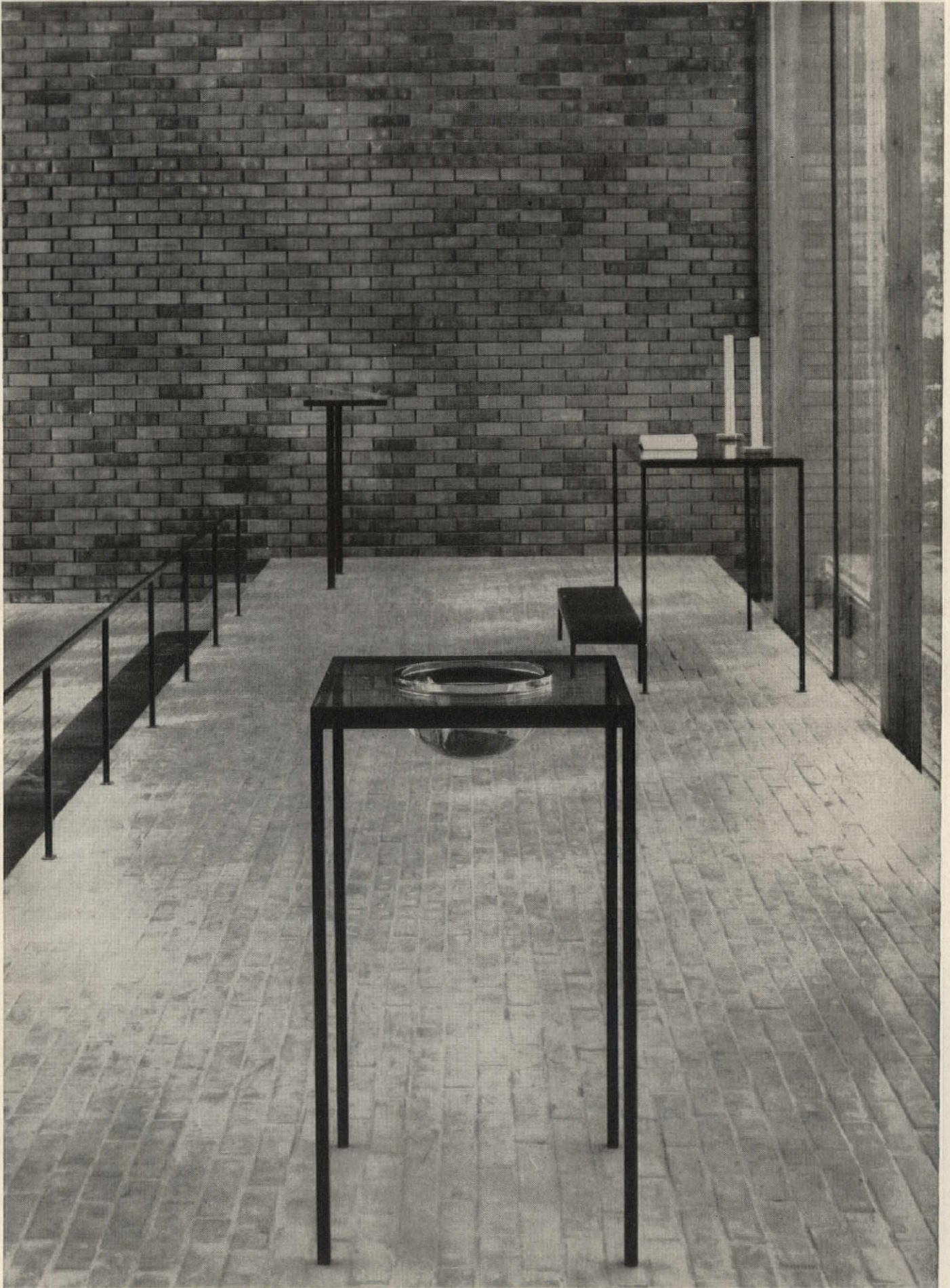
*Chapel in Finland*

*Right: lectern, altar and baptismal font, each detailed with ascetic simplicity, are assembled together on a brick floor with the most precise and sensitive attention to their relationships to each other in space, and to the cross and fir trees beyond the glass wall*



The sanctuary, with its outdoor cross, is the climax of a series of carefully wrought spatial experiences which begin with the front court and tower. The vestments of the clergy provide the only bright color in austere surroundings of red brick, natural finish wood, dark green fir trees and snow





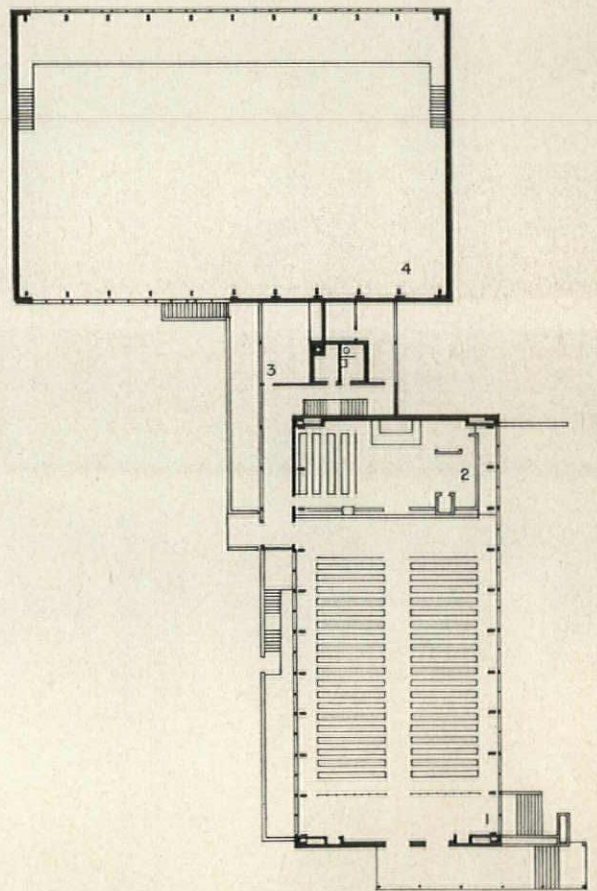
# St. Peter's Lutheran Church

LOCATION: *Norwalk, Connecticut*

ARCHITECTS: *Pedersen and Tilney*

STRUCTURAL ENGINEER: *Henry A. Pfisterer*

CONTRACTOR: *Kocian Construction Co*

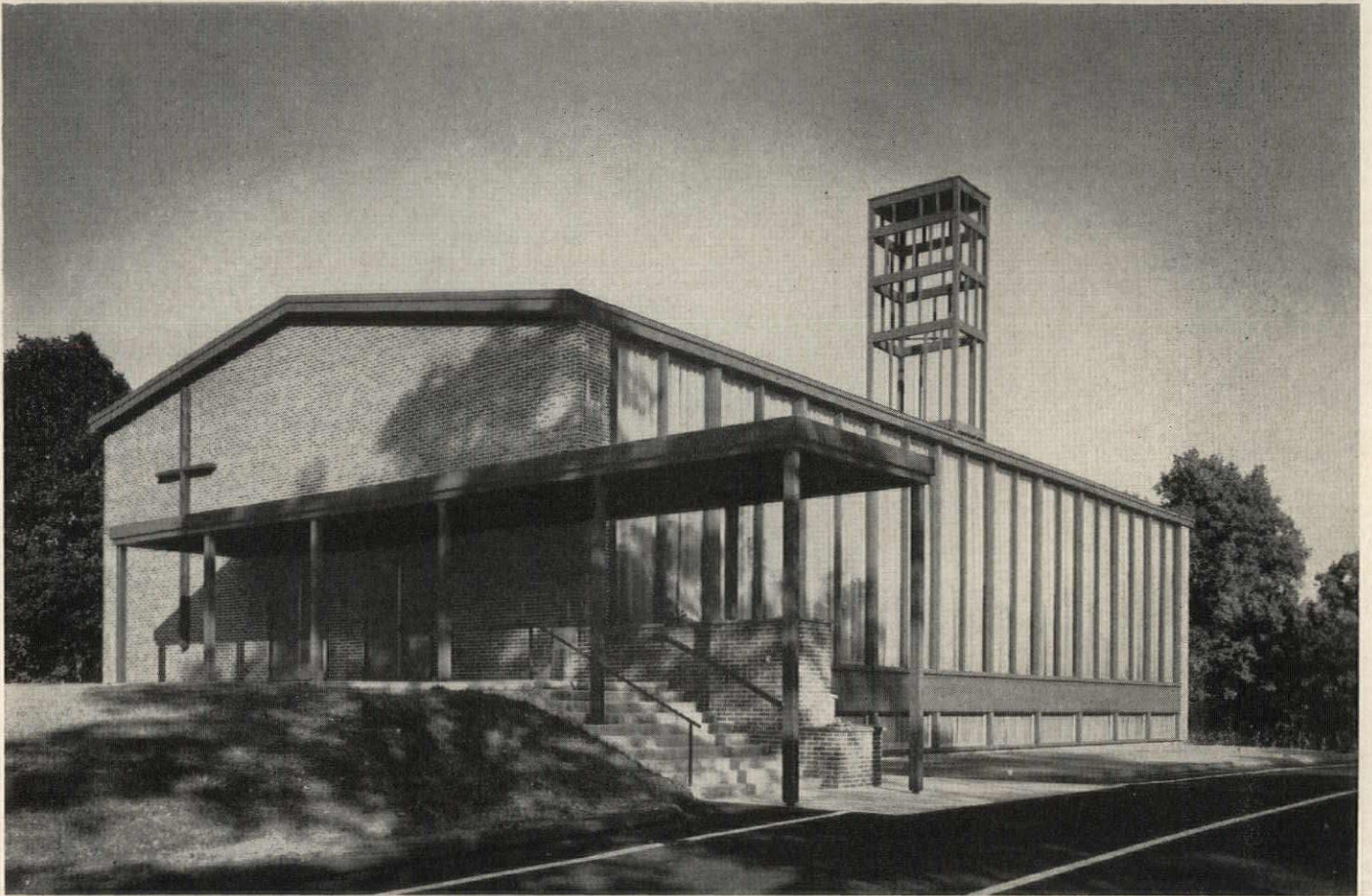


1. narthex 2. sanctuary 3. choir 4. gym

Like many other Protestant congregations, the people of St. Peter's Lutheran Church in Norwalk discovered that the developing emphasis on group activity with its concomitant requirements (assembly room, gymnasium and other features) rendered their white frame old New England church inadequate. The difficult decision to abandon this church was made for them by the state which condemned it to make way for a toll road. The congregation, therefore, was free to seek an architectural expression of their contemporary situation.

They purchased a three-acre site several miles beyond downtown Norwalk, and proceeded to construct a two level church. The nave on the upper level seats 412 persons, while the lower level provides a generous area for an assembly room, a kitchen, toilets and a boiler room. The gymnasium shown in plan will be built in the future.

The church is built of brick, redwood and concrete. The nave roof is supported by timber arches. Since the building is completely air conditioned it was possible to use vertical lights of fixed glass over 18 ft high in the nave. Pews, altar and lecturn are in bleached oak.



# Brentwood Methodist Church

LOCATION: *Denver, Colorado*

ARCHITECT: *W. C. Muchow*

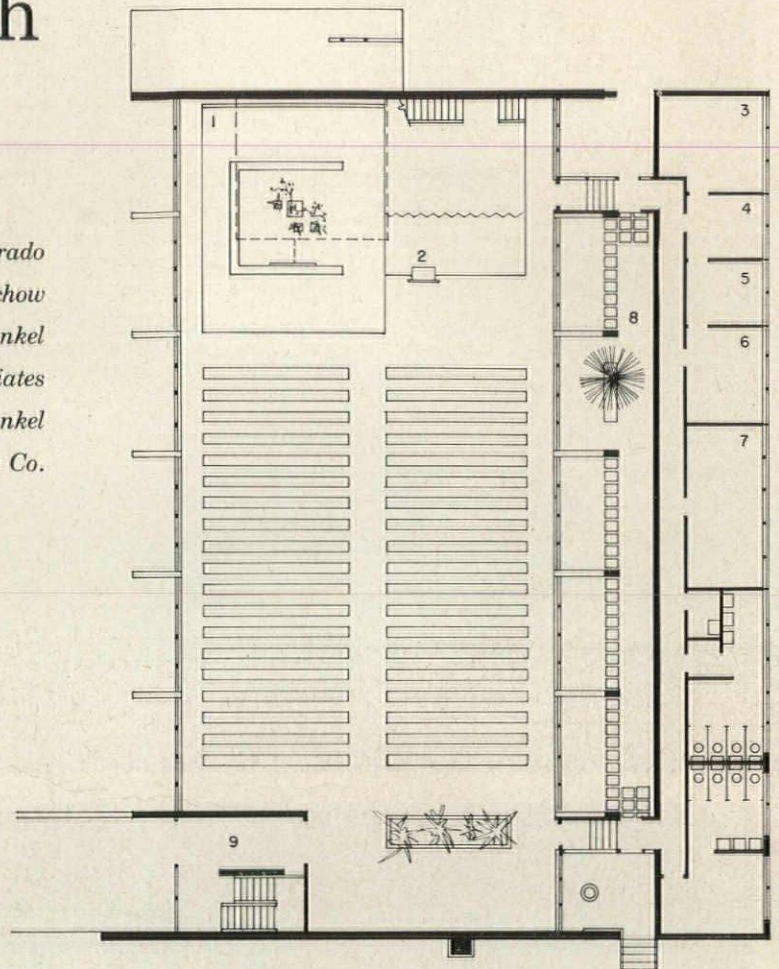
STRUCTURAL ENGINEERS: *Ketchum and Konkel*

ELECTRICAL ENGINEERS: *Swanson-Rink and Associates*

MECHANICAL ENGINEERS: *Stark and Konkel*

CONTRACTOR: *Robert W. Mier Construction Co.*

*Right: top photograph shows main facade. Office wing shown in plan and section has not yet been built. Photograph at bottom left is a view of the chancel with choir loft; at bottom right, the rear of the church showing the raised and glassed in "cry" room for small children over entrance*

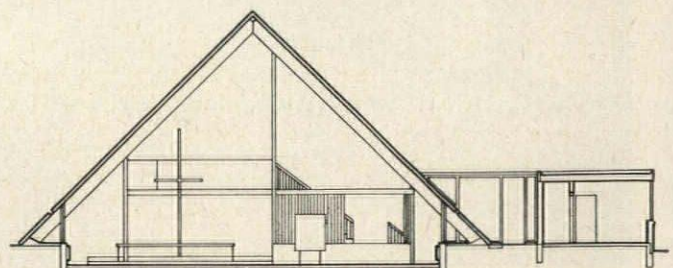


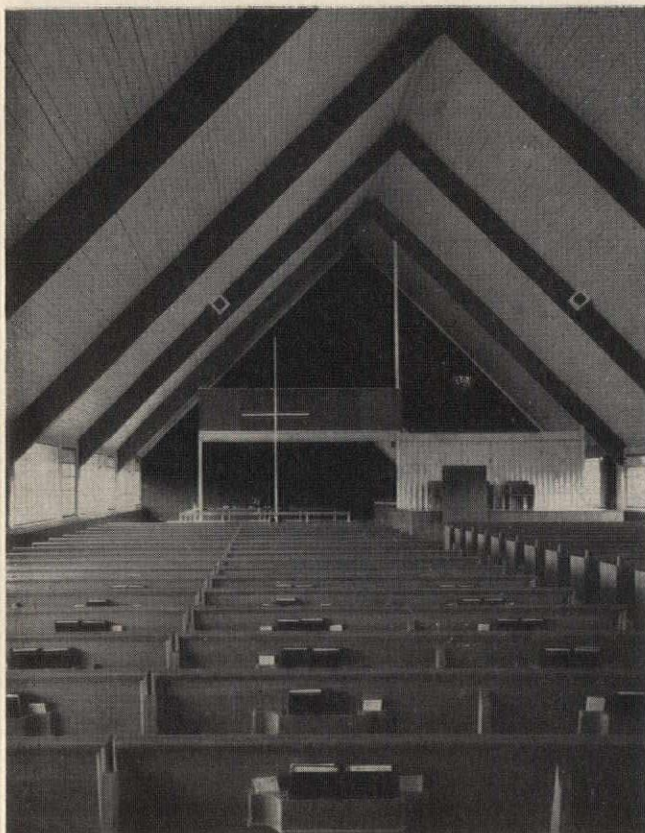
1. communion area 2. pulpit 3. pastor's office 4. secretary's office 5. work room 6. assistant pastor's office 7. choir and music room. 3, 4, 5, 6, 7 will be erected in the future

This new structure, now used as a church, will eventually become an educational wing in an extensive master plan. Its form, however, lends itself well to its present use. The plan provides seating in the nave for 494 persons and a choir loft which seats 40 more.

The three-sided communion rail on a raised platform is a continuous ledge which holds the implements of communion service. Worshippers kneel on both sides of each rail and face each other while participating in communion. A still higher platform holds the lectern and chairs of the clergy.

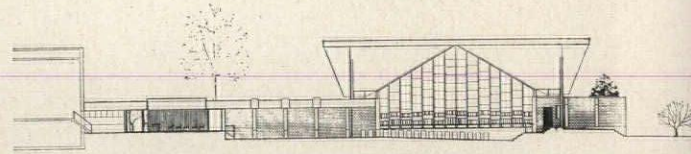
A long narrow garden will separate the nave from a future office and toilet unit. The foundation of the building consists of grade beams on caissons (not shown in section). Laminated wood arches support a 4-in. tongue and groove wood roof decking which is exposed on the interior. The roof is covered with shake shingles. Exterior finish is glass and brick. Vinyl asbestos tile is used on concrete in the nave. The chancel floor is ceramic tile and the floor of the minister's platform is of polished wood. Total cost of this completed portion of scheme is \$101,893.00, or \$10.48 per sq ft.



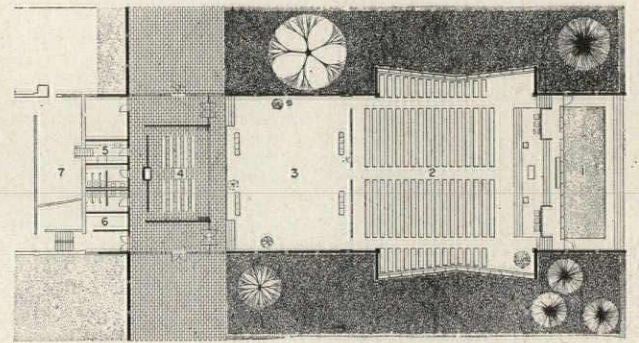


# Synagogue for Congregation Beth El

*Right: view from parking area showing garden platform upon which synagogue rests. Main entrance at right*



LOCATION: *South Orange, New Jersey*  
 ARCHITECTS: *Davis, Brody and Wisniewski*  
 STRUCTURAL ENGINEERS: *Wiesenfeld, Hayward and Leon*  
 MECHANICAL ENGINEERS: *Cosentini Associates*  
 ELECTRICAL ENGINEERS: *Wald and Zigas*  
 ACOUSTICAL ENGINEER: *Cyril Harris*  
 LANDSCAPE ARCHITECTURAL CONSULTANT: *Karl Linn*  
 ARTIST FOR GLASS, TAPESTRIES: *Samuel G. Weiner, Jr.*  
 SCULPTOR FOR ETERNAL LIGHT: *Judith Brown*  
 CONTRACTOR: *Max Drill, Inc.*



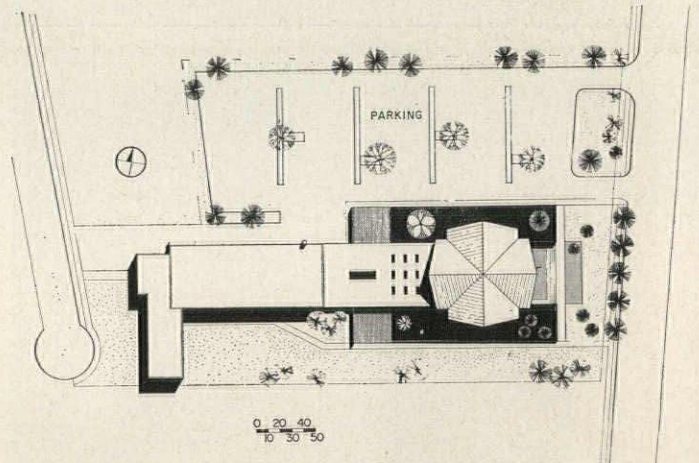
0 5 10 15 20

1. Memorial court 2. Sanctuary 3. Lounge 4. Chapel 5. Pantry 6. Storage 7. original building

This synagogue is an addition to an existing structure which contains classrooms, small meeting rooms and a large social hall. In order to emphasize the religious portion of this community center in contrast to the social and recreational parts, the synagogue was designed as a distinct element and set on a garden platform. The three plazas provide not only entrances and exits, but generous gathering places for worshippers to meet before and after services. The east plaza, facing the street, will eventually have symbolic sculptures.

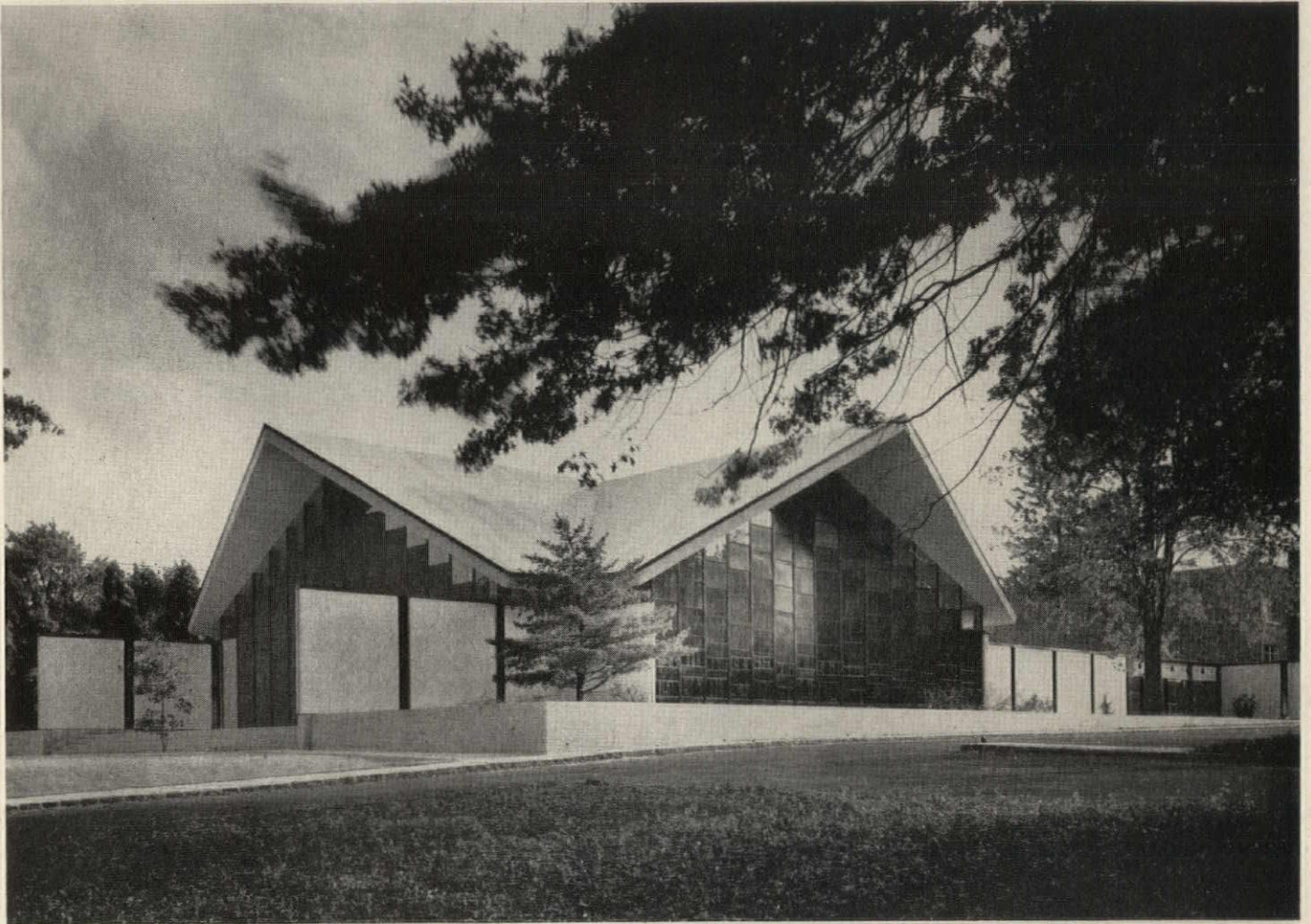
The synagogue, lounge and chapel are arranged in sequence so that folding wood doors at the chapel and synagogue can be opened to provide an expanded seating area for High Holidays. Reasonable sight lines are obtained by placing the level of the chapel higher than the lounge, and by sloping the synagogue floor down to the "Bema" which again rises.

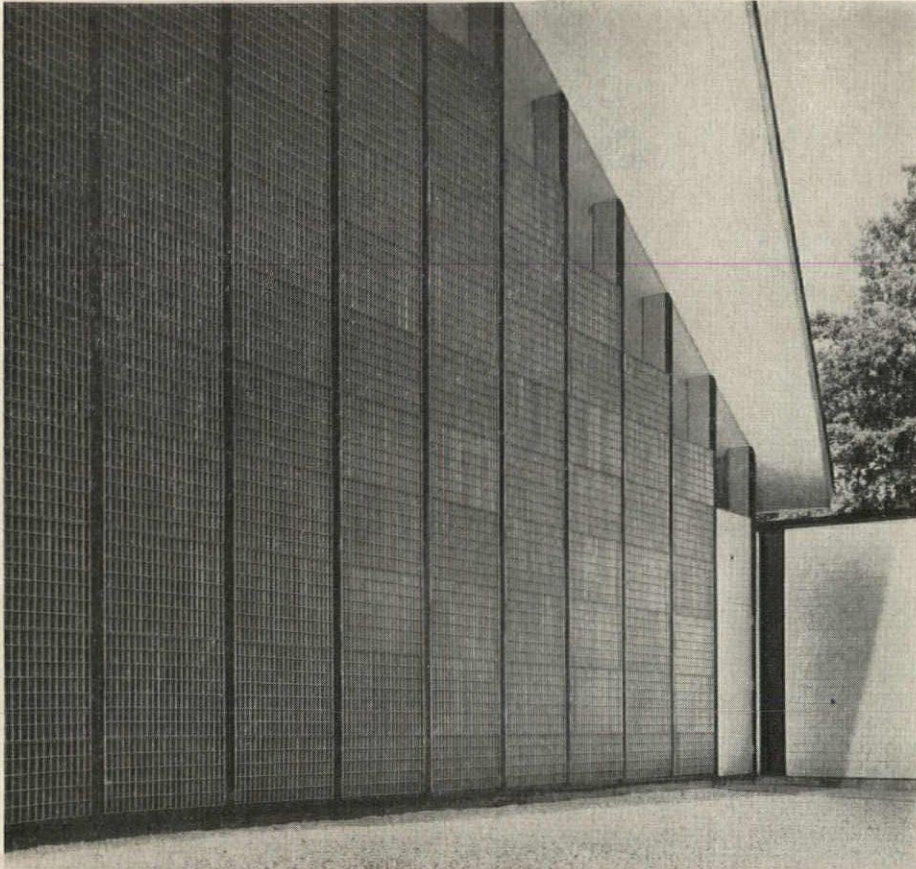
The synagogue roof structure is framed in steel, with four major supports at the corners. The mullions in the four gabled walls are structural I-beams and also provide support. They are finished on the inside with acoustic material and perforated metal pans between the flanges, and provide vertical acoustic baffles where necessary. Tie rods within the roof planes remove the thrusts of the gables.



Plot plan. Building to the west of north and south entrance plazas existed prior to the construction of new synagogue

*Right: secondary entrance and plaza. Wall to right of entrance encloses lounge. These walls and those defining exterior courts are cavity brick panels separated by colored glass slots. The brick is a glazed oversize type.*





*Synagogue for  
Congregation Beth El*

*Left:* front wall is made of porcelain enameled metal insulating panels with anodized aluminum grilles on the exterior and painted steel grilles on the interior . . . in both cases separated from the panels. Rear wall at edge of lounge is similar

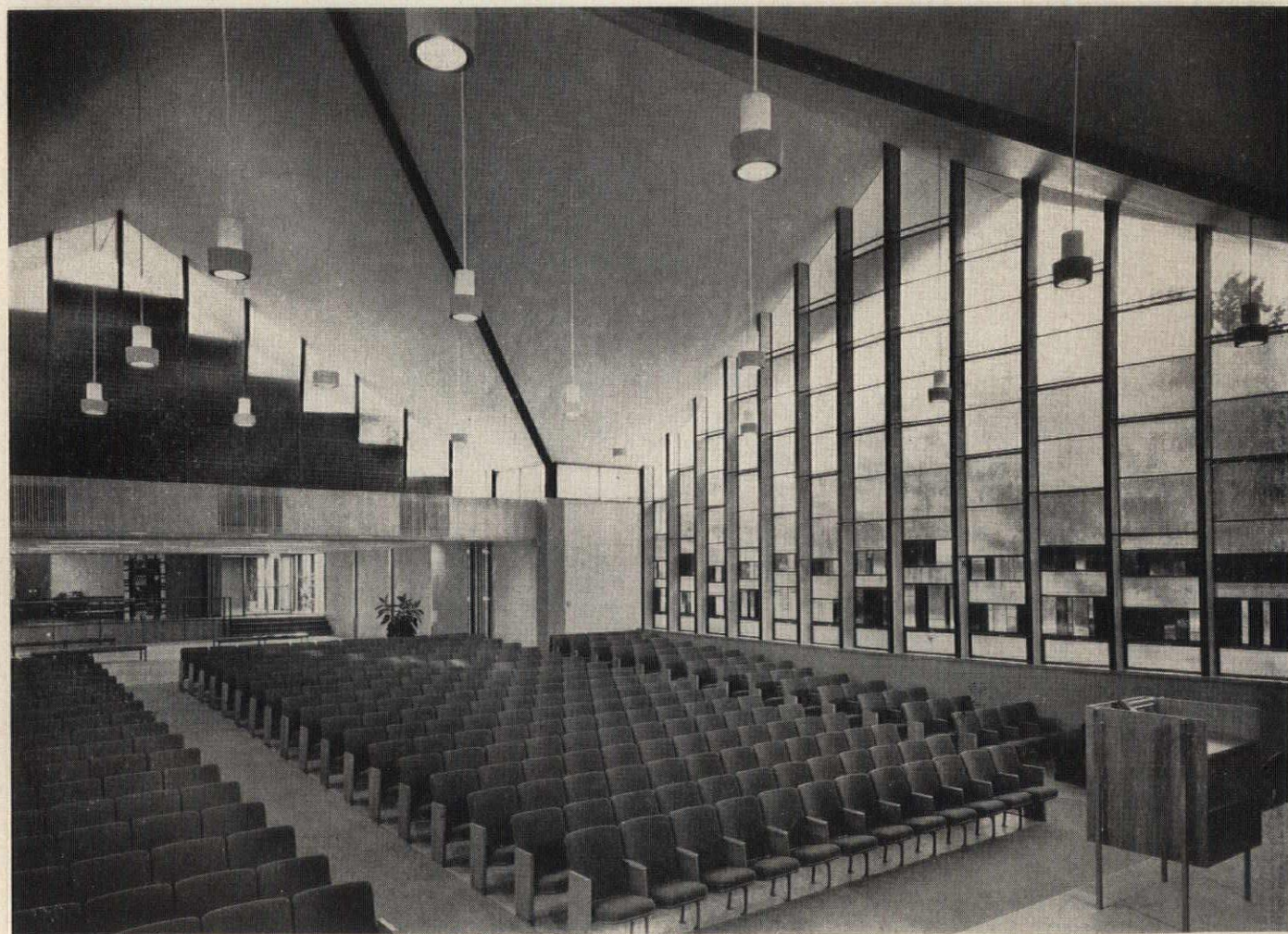
*Right top:* raised "Bema." Clear glass runs entirely around synagogue at the intersection with the roof. Finished ceiling surfaces throughout are plaster

*Right bottom:* the side walls of the synagogue are of combinations of colored and tinted glass. Structure encloses an unbroken sweep of space from the "Bema" through the synagogue and beyond the lounge to the small chapel

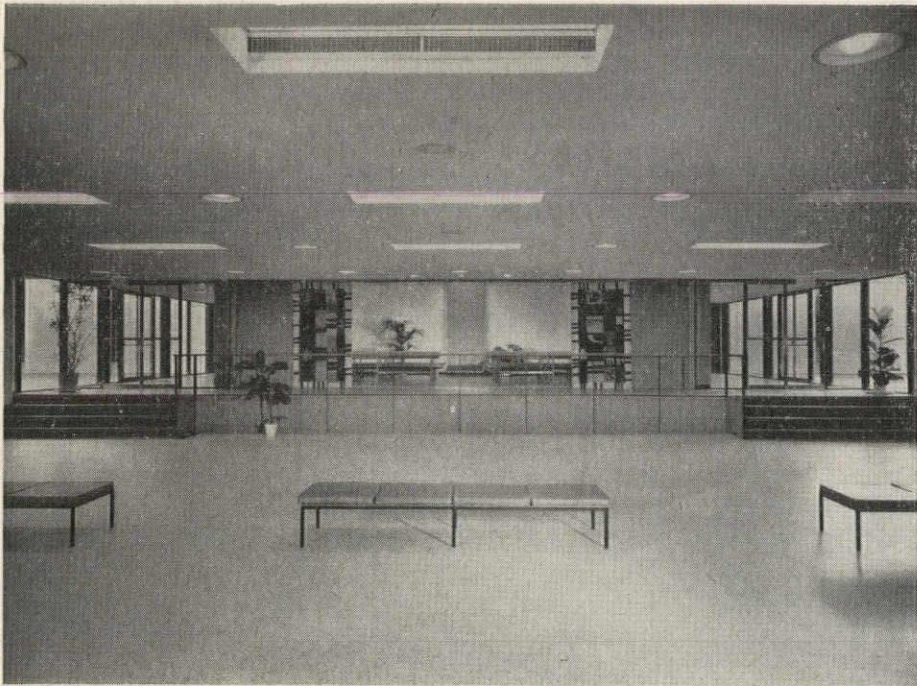
*Below:* main entrance. Small chapel is beyond wooden screen. Lounge is four steps lower to the left







*Synagogue for Congregation Beth El*



*Left: small chapel as seen from lounge. Below: chapel ark (visible at edge of picture) is illuminated by skylight. Tapestries cover folding doors*



# Architectural Engineering

**SCHOOL COSTS: EVERY LITTLE BIT HELPS.** The way to significant economies is through accumulated small savings in construction, greater care in financing and timing of bids, and more attention to features which affect maintenance and operating costs, according to a report for the N. Y. State Education Department by the School of Architecture at Rensselaer Polytechnic Institute. Some construction aspects cited: *Modular Planning*—"... probably offers more promise than any other current technological concept" (repetitive bay dimensions, beam lengths, window locations, mechanical service units, etc.). *Prefabrication*—casework is more economical to build off site. Better to use repetitive stock items instead of repetitive custom items (e.g., stock windows). *Thermal Insulation*—can result in an annual savings of 10 per cent (fuel saved less insulation cost).

A survey of 461 central schools in New York showed that of the total annual cost, 12.1 per cent goes for debt service, 2.8 per cent for maintenance and 8.1 per cent for operation; the rest is teachers' salaries and administrative costs. Since maintenance and operation cost almost as much as the building, materials should be chosen for easier maintenance, and the building designed for most efficient operation.

Codes and state regulations are far less restrictive than is often implied, the report suggests (little or no adverse effect on costs in N. Y.). On the matter of insurance, sampling of opinion indicated feeling that rates are higher than necessary and that some forms of construction are unduly penalized.

*Specifications and Plans*—lower bids through better plans and specs may save 5 per cent or more.

*Bids*—if contractor is not given ample time to prepare his bid, cost may increase by as much as 5 per cent.

From a list of 29 possible means of economy, architects and engineers participating in a round-table discussion picked these as top eight: (1) more objective research on real needs of schools, (2) re-examination of fire insurance rates, (3) minimizing length of exterior walls, (4) more time for architectural planning, (5) fewer arbitrary requirements by school authorities, (6) more receptive attitudes by building trades, (7) greater use of prefabricated components, (8) more attention to proper timing in asking bids.

From a list of 34 means of economy, a contractors' round-table picked these eight: (1) elimination of "feather-bedding" practices by labor, (2) better preparation of architectural plans and details, (3) better architectural specs, (4) avoidance of structural overdesign, (5) better cooperation by architects and engineers, (6) more research on the question of real needs, (7) more offsite fabrication of components, (8) minimizing number of alternates required in bidding.

**AR PENETRATES THE IRON CURTAIN WITH "THIN SHELLS."** Thumbing through foreign periodicals, RECORD editors caught something familiar on the cover of the August issue of *Architektura*, from Warsaw, Poland. Sure enough it was an illustration that appeared in the first of Professor Mario Salvadori's AR articles on thin shells in July, 1954. Inside, the article itself led off an 8-page feature on shells. Well, after all, Mario Salvadori is not Boris Pasternak.

**PLASTIC SANDWICHES.** A three-year study of the architectural potential of lightweight plastic sandwich panels at M.I.T. has culminated in a 116-page book, in part covering structural analysis, materials technology, fabrication methods, handling operations and erection techniques. According to M.I.T.'s Marvin E. Goody who headed the project for the Monsanto Chemical Co., this construction material can (1) be lightweight, (2) be formed into doubly curved surfaces, (3) perform structurally, yet remain transparent or translucent, (4) have durable wearing surfaces, integral color, texture and insulation, all in one. The report can be bought from The Monsanto Chemical Co., Springfield, Mass. \$3.00.

**IMPLICATIONS OF THE NEW ACI BUILDING** as seen by its collaborators (AR, May 1957). Editors of the *Journal of the American Concrete Institute* spruced up their October issue with a four-color cover to commemorate dedication of the new ACI headquarters in Detroit, October 29. In the first article, Minoru Yamasaki says he thinks this building was a turning point in his firm's use of concrete; that it has made him intensely interested in precast concrete. He feels precasting offers an escape from flat, boxy architecture; that the concrete industry lags behind in its awareness of the potential . . . that the industry has scarcely begun to imagine what it can offer architecturally through the advantages of shop control in producing fine texture.

In the next piece Charles Whitney, of Ammann and Whitney, the engineers, concludes that, "the basic concept is so simple and direct that very little need be said about the structural design . . . there appears to be little to be learned from it structurally except how satisfactorily a folded plate without external insulation may serve as a roof of an office building in a northern location."

John Strang of Pulte-Strang, Inc., the general contractor, says somewhat plaintively that although construction "leaned on good, conventional construction practices . . . there were some unusual and difficult problems for the contractor. Concerning the fluted corridor wall, "In spite of the high quality form material and careful form workmanship, careful casting and vibrating, it was impossible to meet the architects' finish requirements without much hand labor . . . Architects who desire fine surface and sharp corners . . . might cut finishing costs by planning structures so that decorative wall areas can be precast horizontally."

## THIS MONTH'S AE SECTION

"CHARACTERISTICS OF CLASSROOM HEATING AND VENTILATING SYSTEMS" pp. 158-162

BUILDING RESEARCH AROUND THE WORLD pp. 163-164

TECHNICAL ROUNDUP starting on page 165

REVIEWS OF TECHNICAL PERIODICALS, page 166

PRODUCT REPORTS starting on page 167

OFFICE LITERATURE starting on page 168

TIME-SAVER STANDARDS, Checking a Prestressed Concrete Beam pp. 171, 173, 175

# CHARACTERISTICS OF CLASSROOM HEATING AND VENTILATING SYSTEMS

From a report by Slocum & Fuller, Consulting Mechanical and Electrical Engineers

for the Joint School Research Program of ALCOA and Eggers & Higgins, Architects

The most casual study will show that school heating and ventilating is unlike any other heating and ventilating. The buildings are occupied for only three-quarters of the year, the occupants are divided into two groups of widely differing metabolism, and for the greater part of even the coldest day, there is more need for cooling than heating. There are many more of these little anomalies which, added to the usual strong emotions and weak budget attendant on school matters, makes heating and ventilating design for schools the challenge that it is.

In general, any school equipment must be first of all strong, simple and foolproof, and long-lasting. It appears that, whenever possible, school boards expect the janitor (custodian) to do the mechanical maintenance and it is easier to get a janitor to do maintenance than to get a maintainer to sweep floors. Certain characteristics of schools in general are apt to work against an easy heating and ventilating solution. One of them is the large glass areas inherent in today's designs, making it difficult to counteract drafts and the "cold radiant" temperature of windows. Also a classroom full of kids busily studying will have enough heat gain from normal metabolism to more than offset the heat loss

through the walls in all but the coldest days, making it only necessary to heat the classrooms just before school in the morning, during the lunch hour and at reduced temperature (cutback) with no ventilation at night. While this is only fully true for the Temperate and North Temperate zones, the fact serves as emphasis on the need for good ventilation in any zone.

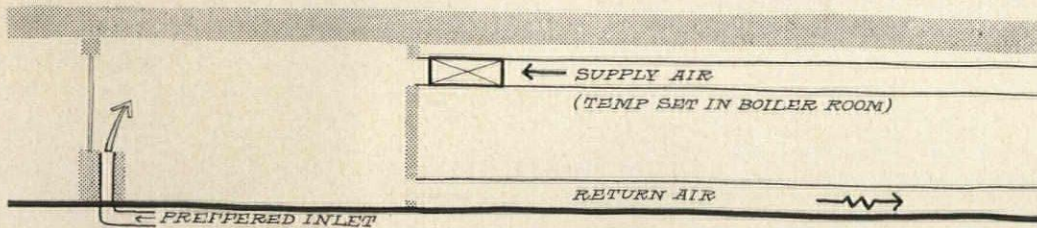
Each heating system has its own private set of advantages and limitations which must be planned for in any application. The more significant of them are itemized below.

## Warm Air Systems

The first and most important part of design for warm air heating is the study of distribution within the conditioned space. Air distribution is, for the most part, built into the fabric of the building and impossible to change subsequently. Warm air has little heat storage capacity and takes much more space to carry an equivalent amount of heat than steam—35 times as much—or water—140 times as much—(when delivering one million Btu per hr at conventional velocities). This handicap is reduced greatly by the fact that a warm air system includes a ventilating system in itself and therefore takes up not much more room than a good venti-

lating system. Duct arrangements for the individual room vary in cost with the amount of trenching involved in the case of a slab-on-grade structure, and in any case with the length of run used to insure proper distribution. In order of increasing cost, representative systems are: (1) sidewall supply and corridor return, (2) sidewall supply and return, (3) sidewall supply and underwindow return, (4) underwindow supply and wall return. The first two always involve a compromise in air distribution in that the sidewall supply is ineffective in preventing drafts and stratification; in addition there are possible fire code troubles and acoustic difficulties with the large louvers between room and corridor. The third involves a trench plenum which will swallow up the worst of the window downdrafts and is one of the better compromises in distribution of warm air. The last scheme has the best distribution of air but, like all duct systems, involves expensive ductwork with the usual troubles accompanying responsibility that is limited in time and scattered among subcontractors.

A concept that has served a long apprenticeship in commercial buildings and might now be adaptable to schools is the high-velocity air system. Ducts are smaller in this system



**CENTRALLY-CONTROLLED WARM AIR**

### Installation

Poor—supply and return at corridor  
 Acceptable—return air at window  
 Best—supply at window  
 No separate ventilation system needed  
 Unobtrusive, no protrusion in room  
 "Acceptable" and "best" solutions could make trenching necessary  
 Return air can be in plenum

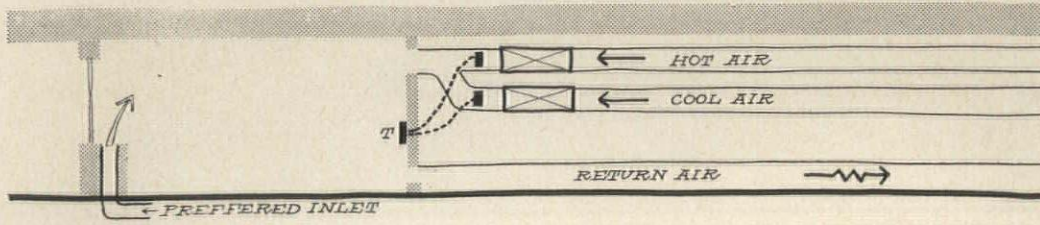
### Maintenance

Easy to clean  
 All maintenance outside classroom  
 Little vandalism risk  
 Low noise with proper design

### Remarks

No provision for individual room control  
 A "minimum" system

## WARM AIR DUAL DUCT



### Installation

Acceptable—supply and return at corridor  
 Better—return at window  
 Best—supply at window  
 No separate vent system needed  
 Unobtrusive, some protrusion under window with “better” and “best” arrangements  
 Twice the supply duct space as in simple systems; high-velocity ducts would take less space but use more equipment

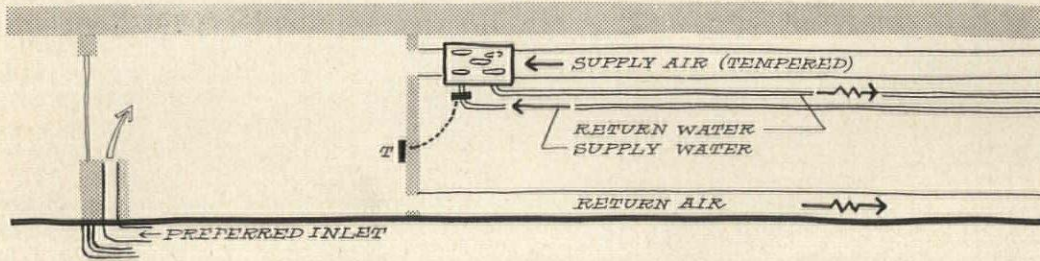
### Maintenance

Easy to clean, little local maintenance  
 Little vandal risk  
 Careful design will minimize duct and fan noise

### Remarks

Individual room control, rapid response  
 Potential air conditioning system

## WARM AIR BOOSTER COIL



### Installation

Acceptable—supply and return at corridor  
 Better—return air at window  
 Best—supply at window  
 No separate vent system needed  
 Unobtrusive, chance of some protrusion into room with “best” above if booster coil is put below window  
 Duct space comparable to simple warm air system

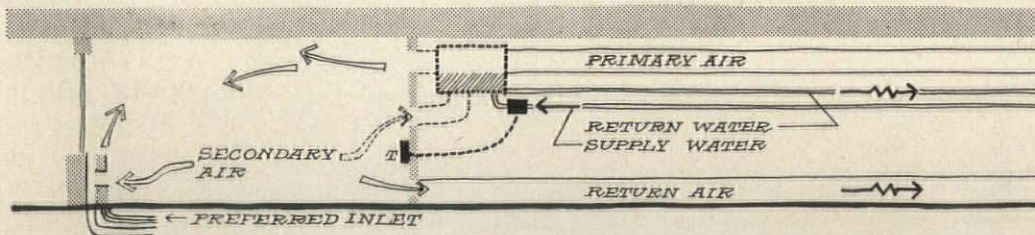
### Maintenance

Easy to clean, little local maintenance  
 Little vandal risk

### Remarks

Individual room control with rapid response  
 Potential air conditioning system

## INDUCTION SYSTEM



### Installation

Possible—supply and return at corridor  
 Better—return at window  
 Best (and usual)—supply at window  
 No separate ventilation system needed  
 “Best” system makes for protrusion under window  
 Usually uses high-velocity primary air supply system (small one since only ventilating quantities are supplied)  
 “Better” and “best” uses may use trenches

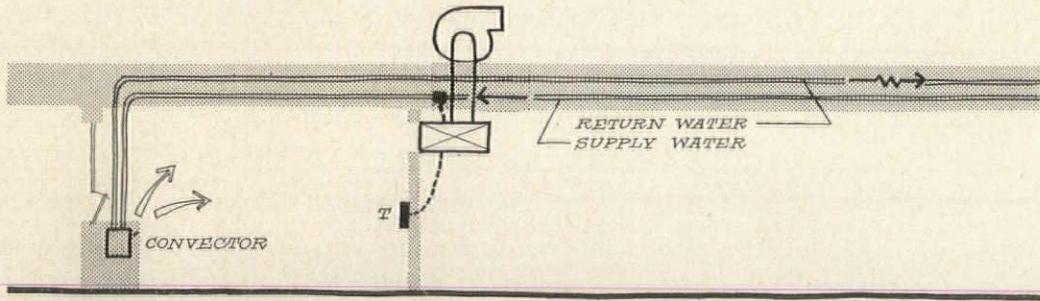
### Maintenance

Some inside maintenance on “best” arrangement  
 Some vandal risk  
 Some risk of noise

### Remarks

Individual room control, rapid response  
 Can be used for air conditioning

**SIMPLE CONVECTOR OR RADIATOR**



**Installation**

Usually on outside wall  
Usually combined with exhaust fan system  
Protrudes into room, but convector can be incorporated into furniture  
If steam is used, trench may be needed

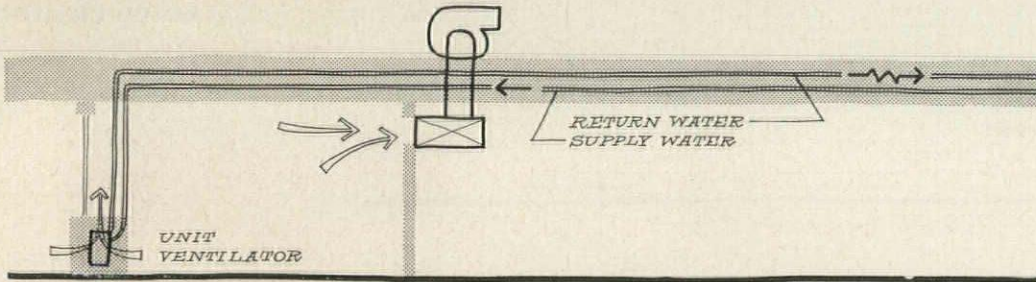
**Maintenance**

No local maintenance except for rare valve troubles  
Exposed radiators and convectors  
Not vandal proof

**Remarks**

Individual control, fairly fast response  
A favorite inexpensive system  
Can be electric if rates are favorable

**UNIT VENTILATOR**



**Installation**

Usually installed under window or in outer wall  
Uses supplementary exhaust system  
Protrudes into room, some manufacturers minimize this by combining with shelving and storage cabinets  
If steam is used for heat, trench may be needed for condensate return

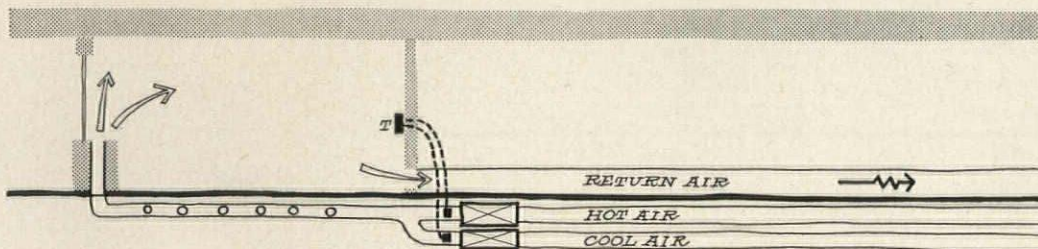
**Maintenance**

Most maintenance is local, fan motors, filter changing, etc.  
Not vandal proof  
May get noisy with age

**Remarks**

Some degree of cooling possible with water systems. With refrigeration, air conditioning possible  
Individual room control, rapid response  
A favorite "good" system

**RADIANT FLOOR AIR SYSTEM**



**Installation**

Outlet at window advisable  
No separate vent needed  
Slight protrusion into room at window  
This arrangement takes twice the usual supply duct space though high-velocity supplies could be used, saving some of it

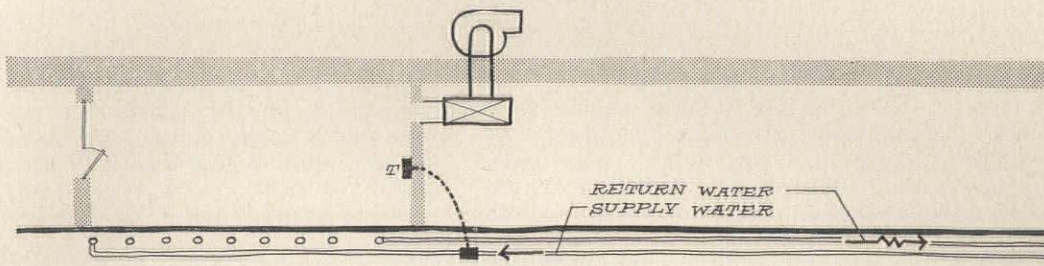
**Maintenance**

No local maintenance  
Vandal proof

**Remarks**

Individual room control, some floor lag  
Good for kindergarten rooms  
Construction costs high

## RADIANT FLOOR WATER SYSTEM



### Installation

Separate ventilation system needed, usually an exhaust fan  
Does not show in room  
Necessitates great care in floor slab design and construction supervision

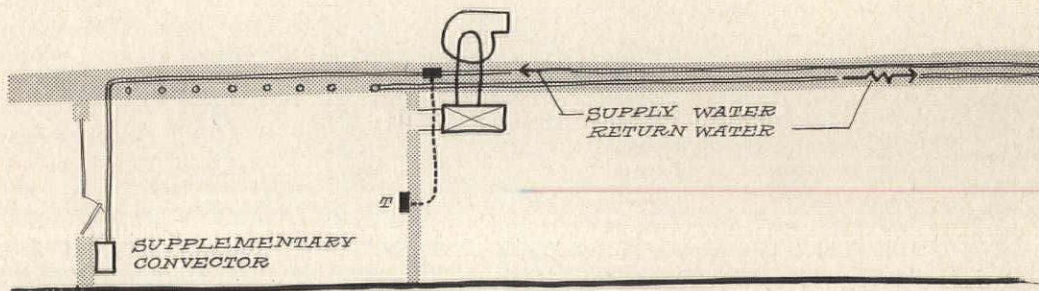
### Maintenance

Little or no local maintenance  
Vandal proof  
Repair quite difficult

### Remarks

Individual room control, sluggish response reduces possible night cut-back  
A strong possibility for kindergartens

## RADIANT CEILING WATER SYSTEM



### Installation

In some applications, a supplementary convector under the window cuts downdrafts  
Separate ventilation system needed  
Does not show in room  
Traditionally pipe is plastered in, systems available using metal pan ceiling

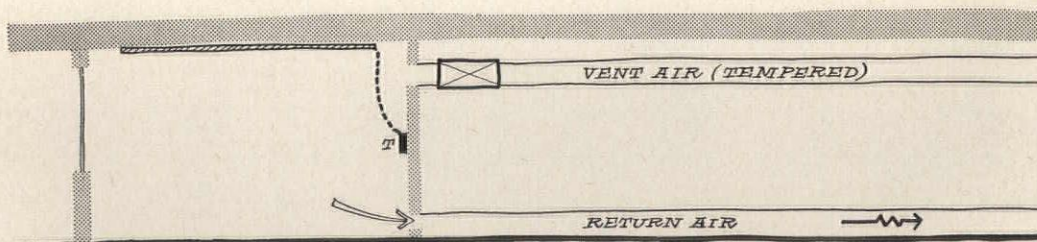
### Maintenance

Little or no local maintenance  
Vandal proof  
Difficult to repair if plastered in

### Remarks

Individual room control, rapid response for metal pan ceiling, less so for plastered-in types  
Cooling a possibility  
Acoustic treatment built-in with metal pan

## RADIANT CEILING ELECTRIC



### Installation

Separate vent system needed  
Invisible in room  
Several systems available, area or line-element types predominate

### Maintenance

Practically no maintenance  
Repair easy in some systems  
Vandal proof

### Remarks

Individual room control, rapid response  
Economical only with favorable rates  
Modulated control expensive

and air circulation in the room can be much more effective. Duct design and construction are more expensive and special room equipment must be used to reduce the pressure of the air and absorb any associated noise. This equipment raises the cost of such a system to the extent that careful study of equipment costs versus the savings in building cube must be made before it is specified.

## Steam Systems

Steam heat distribution takes up less room per Btu than warm air, but of course needs a supplementary ventilating system. While steam is not as popular as it once was, most engineers are familiar with steam and none will cavil at designing a system as they might with more sophisticated schemes. Structurally, a steam system requires a trench for condensate return in all slab-on-grade buildings and a condensate trap on every radiating unit. Of two steam heating methods, the two-pipe pumped return, and two-pipe vacuum return, only the vacuum system has the range of temperature and consequent flexibility of control that warm air and hot water have. Warm air with a 70 deg range and water with 130 deg contrast with the "open" steam system having maximum range of 28 deg and the vapor system with a range of 80 deg. The two pipe vacuum return arrangement is quite economical and flexible and though the pumps are expensive, savings in pipe can sometimes make up the difference.

## Hot Water Systems

Hot water now has pretty much taken the place of steam. Designers no longer fear unfamiliar "bugs" and the danger of winter freezeup. There is less equipment involved (no traps for instance), than in a steam system of comparable performance and trenching is not a requirement as all piping can be run in the ceiling or above the baseboard. Hot water is the most economical and efficient Btu carrier of the three, air, steam and water, and with a temperature range in everyday use of 130 deg, it is the easiest to control flexibly.

## Electricity

Increasing attention is being paid to the possibilities of electricity as a temperature-control medium, either directly or indirectly. In the greater part of the United States electricity still is too costly to use as fuel. If heating is done by heat-pump methods, approximately double the efficiency of direct radiation, electric heating can be possible with higher energy costs. Power companies have been known to give special rates for heating uses to encourage consumption. There is a saving in installation costs over coal and oil only if the furnace room and its equipment can be eliminated, then the saving may amount to as much as 10 per cent.

## Ventilating Systems

During most of the class time, as explained above, the heating problem is a negative one, heat must be re-

moved. The job normally must be accomplished by the ventilating system which, many times, consists of an open window and a corridor ventilator or exhaust fan. This traditional system, though it actually was fairly effective in yesterday's high-ceilinged rooms, nevertheless becomes inadequate in today's buildings with fewer cubic feet given to each pupil. The next step up the line in effectiveness, to unit ventilators, is a big one. These ventilators are effective in all types of weather (windows must be closed on windy, rainy days when ventilation is most needed to dry wet coats for instance) and, while they seem expensive in that most of the system cost per room is paid to one manufacturer, the undivided responsibility and single-package purchasing make them quite attractive in the right circumstances.

The potentially most effective ventilator is a central system where outlets can be effectively placed and the system tailor-made for the space. It must be carefully designed and detailed as with all duct systems and if proper provision in duct size and supply grill placement is made, such a system can be converted to air conditioning. Here let it be said that the last statement is quite expensively untrue if the said provisions have not been made. In any other context the central system for ventilation alone is too expensive for most school budgets, for classroom use. Large rooms, assembly halls and gymnasiums, however, must use some form of central system.

CENTRAL DISTRIBUTION METHODS

Type System	First Cost	Operation & Maintenance	Ease of Control & Fuel Economy	Speed of Response	Depressed Boiler Room	Trench or Crawl Space	Number of Piping or Duct Systems	Corridor Duct & Pipe Space Required	Danger of Freeze-up	Danger of Hot Surfaces	Danger of Noise
TWO PIPE STEAM OPEN PUMPED RETURN	Medium	Medium to High	Good	Good	Pump Pit Only	Always	2	Low to Medium	Some	Some (210-228°)	Little Water Hammer
TWO PIPE STEAM VACUUM RETURN	Medium to High	Medium to High	Very Good	Very Good	Pump Pit Only	Always	2	Low to Medium	Some	Some (160-210°)	Little Water Hammer
TWO PIPE FORCED HOT WATER	Low to Medium	Low to Medium	Excellent	Very Good	Not Needed	Not Needed	2	Low	Some	Small (80-270°)	Very slight
FORCED WARM AIR HOT WATER OR STEAM Heat Control	High	High	Excellent	Excellent	Depends on reheat medium	Depends on reheat medium	4*	High	Some	None	Fan and air noise
FORCED WARM AIR FURNACE WITH MIXING DAMPER CONTROL	Low to Medium	Low	Excellent	Excellent	Not Needed	May not be needed	3*	Very High	None	None	Fan and air noise
ELECTRIC CONDUCTORS	Low	Very High	Excellent	Excellent	Not Needed	Not Needed	1	Very Low	Done	Some	Some

\*No additional ducts are required for ventilation.



# BUILDING RESEARCH AROUND THE WORLD

By R. F. Leggett, Director, Division of Building Research  
National Research Council, Ottawa, Canada

*In his post as a director of building research for the past 10 years, the author has visited the major national building research organizations of the East and West. Here he shows how broadly building research has taken hold in this decade by summarizing the main efforts of some 20 countries. He excepts building research in the U.S. which has such complicated interrelationships among industry, trade groups, professional organizations, commercial laboratories and universities, that it is a vast subject in itself that must be treated separately.*

Ten years ago "building research" was to most people just a name, a mystical blending of the wonder word of the age—"research"—and "building", one of the most widespread of human activities. There were many who expected miracles to follow immediately upon the mere establishment of a building research organization—certainly so in Canada.

Clearly there are no miracles to be expected in the way of new building materials or processes, but only steady progress in improving building.

Building research should not be concerned just with the properties of single materials (important though such work is for manufacturers) but with the integration of varied materials and components into completed structures and with the performance of completed buildings, of their constituent materials and of their components.

What is the position today? What have other countries done in this field? What is the pattern of development in building research?

*[Note: The author has personally visited many of the building research facilities described hereafter. Members of the staff of the Division of Building Research have visited other stations; these are marked (\*). Stations which have not been visited at all are marked (\*\*)]*

Although a few modest starts on organized building research had been made ten years ago, there was then only one well-established agency outside of the United States, the *British Building Research Station* at Watford near London. It was a pioneer not only in 1947 but for a quarter of a century before that!

The *British Road Research Laboratory* and *British Joint Fire Research Station* were offsprings of the *Building Research Station*, as are al-

so, in a less direct way, so many of the other building research stations existing today. The Station is a part of the *British Department of Scientific and Industrial Research*, obtaining its funds from government, working very closely with industry, and publishing the results of its work for public benefit. Its "Building Science Abstracts" have long been world renowned and justly so. Today under the leadership of Dr. F. M. Lea, it holds a unique place not only as the pioneer of all building research stations but as the largest such organization today with a staff of over 600.

In *Canada* we have a completely equipped building research center, whose capital investment is about 4½ million, and a new fire research building. Headquarters are in *Ottawa* and there are regional stations in *Halifax*, *Saskatoon*, *Vancouver* and *Norman Wells* (almost on the *Arctic Circle*). Staff numbers about 200. The organizational pattern is similar to other *Commonwealth* stations, funds being supplied by the government, although the privileged position of the *National Research Council of Canada*, under which the *Division of Building Research* was organized in 1947, gives an enviable degree of freedom and flexibility.

*Australia* with an area of almost 3,000,000 square miles and a population of 9,000,000, contains within its boundaries most varied climatic conditions, ranging from temperate to tropical, and therefore has many building problems. It is served by two building research organizations. The *Commonwealth Experimental Building Station* was started in 1944 in order to deal with pressing post-war housing problems, but its functions have gradually taken on a broader aspect. It is located at *Sydney* and has a staff of about 40.

A second building research agency with its headquarters in *Melbourne*, *Victoria*, the *Division of Building Research Organization*, is concerned mostly with relating to building materials and their use. Its staff numbers about 45.

*New Zealand* is a little country with an area of only about 100,000 square miles and a population of about 2,000,000. It has, however, a *Department of Scientific and Industrial Research*, located in *Auckland*, and within this organization are two divisions which include many functions normally carried out by a building research station.

The island country of *Japan* \*\* with its fantastic population density of 3200 per square mile of cultivated land, has, naturally, a very special interest in seeing that its building is carried out as efficiently and economically as possible. Located in *Tokyo*, the *Japanese Building Research Institute* was established in 1946 as part of the *Ministry of Construction of the Central Government*. There are five research divisions and two sections. Present staff numbers about 50, but its production of valuable papers, many of them in English as well as in Japanese, has been notable. Work includes town planning, as well as research into the more usual fields of building materials, structures, soil mechanics and fire protection.

To the southwest is one of the traffic junctions of the world, the tiny island of *Singapore*. One would not expect to find here anything unusual in the way of building research activity. But in 1956, I saw remarkable public housing which in itself represented building research at its best. Public housing has been developed in a steadily increasing volume, each new development being improved on the basis of studies of the development last built.

While thinking of this far-distant part of the world, special reference must be made of the *Regional Housing Center of Indonesia* \*\*, which was established by the government in *Bandung* in 1955. Its main function is to help solve the great housing problems in humid tropical areas not only in *Indonesia* but in adjacent countries, through laboratory research and general studies. Supported by the *Indonesian Government*, the Center has been assisted by the *United Nations*, particularly through the loan of experts in various fields of housing.

*India* with its 360,000,000 people, most of them living at a level of bare subsistence, in itself presents perhaps the greatest building research

From a paper before the Building Research Institute in Washington, D. C., April 1953

challenge of the entire world. This country is tackling its research problems through a central Council of Scientific and Industrial Research of which Professor M. Thacker is directing head. The Central Building Research Institute at Roorkee, U.P. was established in 1950. It now has a staff of about 100. The present Director is Lt.-Gen. Sir Harold Williams, K.C.B., aided by two Indian Assistant Directors.

The Union of South Africa is in keeping with other Commonwealth countries in having a South African Council for Scientific and Industrial Research. One unit within this Council is the National Building Research Institute. Its staff numbers about 100. The Institute occupies its own building in Pretoria, under the leadership of its Director, Mr. N. Stutterheim, and is putting emphasis on problems of buildings in hot weather and low-cost housing for African workers having high priority.

Journeying north to one of the newest of all countries of the world, Ghana, we find a small research unit, the West African Building Research Institute.\*\* Started on 1952, it serves the governments of Nigeria, Ghana (then the Gold Coast), Sierra Leone and Gambia. The Institute will have two centers, one at Accra in Ghana and the other at Zaria in Nigeria.

Although Portugal is one of the smallest countries of Europe, it has one of the most extensive and best equipped building research establishments of the old world, the Laboratório Nacional de Engenharia Civil\*, the Director of which is Dr. Manuel Rocha. Located not far from the center of Lisbon, it began its work in 1947 and receives its funds from the central government and from receipts for work done for public and private bodies. Staff totals 320 and the buildings, with an area of over four acres, are located on a site of about 60 acres.

Although other European countries are not all so fortunate with their physical facilities, there is some organization dealing with building research problems in every major country of Europe. In France, are the Centre Scientifique et Technique de Bâtiment\* which is a semi-public organization and, closely parallel to it, Les Laboratoires du Bâtiment et des Travaux Publics\* both in Paris.

In Holland will be found a number of research units dealing with various phases of building research. All are part of one of the oldest of national research bodies, the justly famous T.N.O.—The Central Organization for Applied Scientific Research, established in 1932. The Institute

T.N.O. for Building Materials and Building Construction\* was formed in 1954 in Rotterdam. The Paint Research Institute and the heat and acoustics sections of the Central Technical Institute\* serve special branches of building research. The well-known Bouwcentrum\* is a separate organization, also government sponsored, for the dissemination of the results of research and other information on building.

There is considerable activity in the building research field in Germany. Much of this work is being carried out in the technical universities of Western Germany, most of which have engineering research institutes and material testing laboratories attached to them. Noteworthy among the technical universities are the University of Stuttgart, the Institute for Technical Physics\*, and the Universities of Darmstadt\*, Hannover and Munich\* with their respective engineering institutes. A small field station\* near Holzkirchen has various small pilot buildings for study of various constructions in relation to the weather. In addition there is an Institute for Building Research in Hannover and also, as a central co-ordinating agency for the building industry, the German Bauzentrum (or Building Center). This organization collects, evaluates and disseminates research results and disseminates research results and practical experience in the construction field, and consists of an information service in Cologne and a documentation center in Stuttgart.

Over the border in Switzerland the well-known Swiss genius in technical work is reflected in the remarkable organization to be found in Zurich, officially called the Federal Material Testing Institute but which is, in many ways, a building research organization as well.

In Europe there are now two international agencies which contribute to liaison of building research information, primarily for European countries but each with world-wide membership. The International Union of Testing and Research Laboratories for Materials and Structures, more commonly called RILEM, was founded in 1947 and is a private organization. The International Council for Building Research Studies and Documentation, more commonly called CIB, was formed in 1954, under the auspices of the United Nations, by the combination of some existing international and European organizations. Headquarters of RILEM are in Paris and of CIB in Rotterdam.

In Denmark, the Danish National Institute for Building Research has its headquarters in Copenhagen. Be-

cause of the existence of active laboratories, this Institute has concentrated upon a vitally important, but often neglected, activity which can best be described as "desk research." The staff of this Institute is therefore small but its work is notable.

Across the Sound into Stockholm, Sweden, is The State Institute for Building Research under the leadership of its director, Dr. M. Jacobsson with a staff of about 40. This building research organization chiefly operates via the means of committees. Sweden also has a high regard for "desk research" and has much of its experimental work carried out in universities and in the well-known Government Testing Laboratory. Perhaps the most unusual feature of Swedish building research (as well as that in Norway) is that the financing of operations comes from a small tax on the income of contractors engaged in the building industry.

Across the Baltic Sea in Finland still another pattern is found. A singularly active State Council for Technical Research, under the direction of Dr. E. Wegelius is located now in the center of Helsinki. The Technical University and the State Council are jointly developing a modern research and industrial center on the outskirts of the city which, even today, must be the envy of almost all who visit it. The thermal test building was already in operation there in 1957. The building for cement and concrete research work was under construction.

Across the border to the east, the Soviet scene includes a Building Research Station as a constituent part of the Academy of Architecture of the U.S.S.R.\*\*

In the opposite direction is Norway, a sea-girt country, with close affinity to Finland, and its full share of building problems. The fact that the Gulf Stream maintains open water along its entire coast throughout the year, far to the north of the Arctic Circle—to give just one example—leads to quite unusual problems of rain penetration.

Building research is, therefore, a long-standing tradition in Norway. Some of the first "test huts" known to the writer were constructed at the Technical University as early as 1919 in the ancient city of Trondheim. Here the Norwegian Building Research Institute has its present laboratory facilities, a new building approaching completion in the campus of the Technical University. Headquarters of the Institute, headed by Director O. Birkeland, are, however, in Oslo. The Institute was started in 1953 and the staff now numbers 40.

# Plastics Materials for Lighting

From a paper by William Demarest, Director, Plastics in Construction, Manufacturing Chemists' Association

Plastics industry chemists are only half-joking when they say "Tell us just what molecule you want and we'll develop it for you." After thousands of years of making do with natural materials for building purposes, we are now entering a new era in construction technology in which the designer may, for the first time, work outside the limitations imposed by traditional materials. Already such synthetics as plastics have found a ready market in building—though still mostly in inconspicuous roles—simply because of their excellent performance.

The features of plastic materials which have carried them so rapidly to an important position in building are obvious: light weight, with a high strength-to-weight ratio; resistance to corrosion, wear and fungi; ease of forming; heat, moisture and electrical resistance; complete color-penetration and excellent light-controlling properties. Because of these characteristics, plastics are particularly suitable for use in the lighting of buildings. However, all plastics are not alike, and their usefulness in illumination depends on the degree to which they possess the above-mentioned properties.

The materials currently used can be grouped into six types:

- acrylics
- cellulosics
- reinforced polyesters
- styrene
- vinyl
- ureas and melamines

The charts on this page show the relative positions of these materials with regard to those features which affect their use in illumination. Since plastics materials going under one generic label are actually capable of quite a range of properties, depending upon the particular formulation employed, the figures shown are only approximate.

**Light transmittance.** There are certain properties that are more or less common to all the plastics materials we are considering. For instance, except for the ureas and melamines, their light transmittance can be so high as to compare favorably with that of clear glass. Stated in terms of the maximum possible percentage of light transmittance of which the plastic is capable, the cellulosics, acrylics, and styrene show

about the same rating as glass. When they are compounded properly with a standard white pigment in order to change the material from a clear to a diffusing medium, very little of this high transmission is sacrificed (in practical thicknesses). Transmissions of thermoplastics are also relatively independent of changes in thickness. Thus, thickness variations as large as 15 mils frequently result in only a three to five per cent change in transmission.

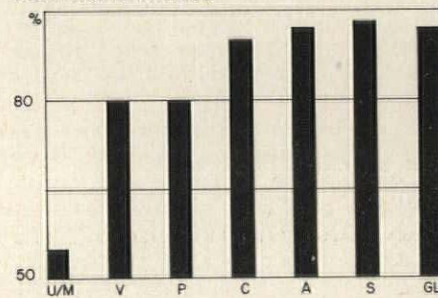
**Relative costs** shown are in terms of cost per unit weight of the basic material. Installed costs will of course depend on the application, but the chart will serve to sort out the plastics according to their cost in the form in which they are originally

produced. In this instance, the polyester was considered alone, without taking into account the cost of the glass fiber reinforcement. The higher of the two polyester costs is for the flame-retardant type.

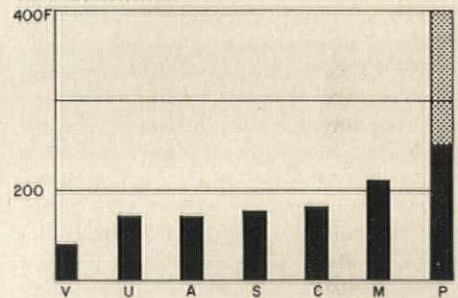
**Rigidity** of the four thermoplastics is about the same, their moduli of elasticity in flexure ranging from roughly 150 to 500 thousand psi. Although this is not very high for structural materials, it is ample for properly designed lighting applications. The thermosetting plastics of course have much greater rigidity, with the reinforced polyesters approximating the stiffness of structural lumber.

**Weather resistance.** If plastics are *continued on page 178*

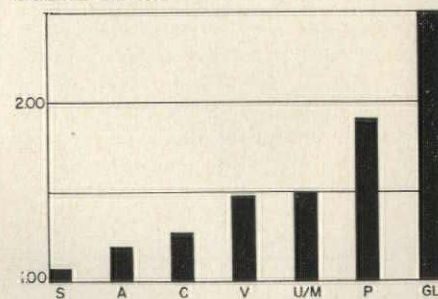
LIGHT TRANSMITTANCE



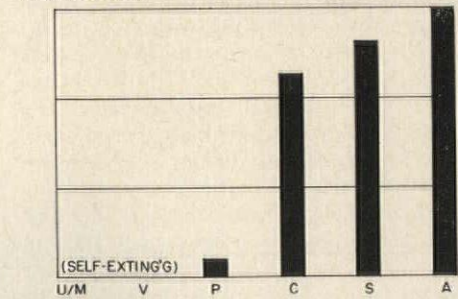
HEAT RESISTANCE



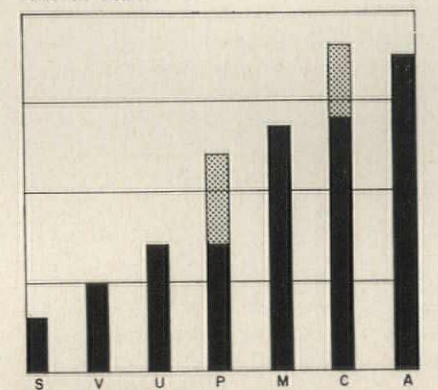
SPECIFIC GRAVITY



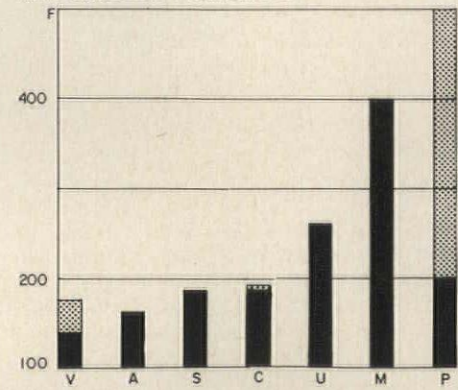
FLAMMABILITY



COST OF RESIN



HEAT-DISTORTION TEMPERATURE



KEY

- A—Acrylic
- C—Cellulosics
- M—Melamine
- P—Polyester (reinforced)
- S—Styrene
- U—Urea
- V—Vinyl
- GL—Glass

## Buildings at Brussels

Now that the Brussels World Fair is history and press coverage of the event has dwindled from a deluge to a trickle, a leisurely second look at the architecture it produced is perhaps in order. Among the foreign periodicals which have viewed the Fair in some detail are two—both published in English—that approach it from a more utilitarian standpoint than has the American press, emphasizing the “how” as well as the “what” of the included buildings.

The July-August issue of *Acier-Stahl-Steel*, for example, places heavy emphasis on the Atomium, reporting fully on its design, erection and testing, and the stability of its structure, in articles well-seasoned with detail drawings and construction photographs. The balance of the issue is devoted to a roundup of the more noteworthy steel-framed structures at the Fair (about 80 per cent of the buildings fall into this category), and a “picture tour” of some of the small industry-sponsored buildings that elsewhere have been covered glancingly if at all.

Expanding the tour theme, *The Architects' Journal*, May 29, 1958, sets up an itinerary with exhibits arranged in descending order of architectural significance, and allots space and lineage accordingly. The Fair has of course been done and done, but the *Journal's* critique characteristically probes somewhat deeper into the essentials of both the buildings and the exhibits they house than do most of the accounts which have appeared in this country, and the relatively full coverage of structures and materials includes a generous sprinkling of plans and details in addition to the by now familiar photographs.

## Trends in Lighting Equipment Design

by Berlon C. Cooper  
*Electrical Construction and Maintenance*, October 1958

A detailed analysis and roundup of current trends in lighting equipment design includes “the products and opinions” of all segments of the lighting industry. Among the types of equipment described and depicted are: in-room luminaires, both fluorescent and incandescent; louver ceilings; diffuser ceilings; troffers; recessed incandescents; lighting

components (lenses, ballasts and transformers); residential lighting fixtures; fixtures which either produce colored light or are themselves colored; industrial lighting fixtures; outdoor lighting fixtures; street and highway lighting fixtures; light sources (incandescent, fluorescent, mercury and electroluminescent lamps); and power systems. Each is discussed in the context of present and projected developments in lighting.

## New Footcandle Tables

The October '58 issue of *Electrical Construction and Maintenance* also includes a partial list of the recommended illumination levels recently adopted by the Illuminating Engineering Society. These new lighting levels, which are based on the results of an eight-year project sponsored by the Illuminating Engineering Research Institute and carried out by the University of Michigan's Vision Research Laboratory under the direction of Dr. Richard H. Blackwell, are in almost every instance higher than those formerly recommended by the Society. (See ARCHITECTURAL RECORD, July 1958, p. 200) Those listed here include the footcandle levels adopted for industrial areas, institutions, offices and stores. Recommendations for several other types of visual tasks, including those performed in schools, are still pending.

## Printing Machine Isolation

by Laymon N. Miller and Ira Dyer  
*Noise Control*, July 1958

The case history of “a particular problem in the transmission of structure-borne noise and vibration from a printing shop to an adjoining engineering office” offers pointers that are applicable to many similar situations in which noise of manufacturing or processing operations may interfere with other activities.

## Recent ASHAE Papers

Items of interest from the ASHAE Journal Section of *Heating, Piping & Air Conditioning*:

“Solar Energy Utilization for Heating, Cooling, Distillation and Drying,” June 1958, a discussion and decimal-divided outline prepared by the ASHAE Technical Advisory

Committee on Solar Energy Utilization, is intended “to show broadly the technical information needed in the solution of solar energy problems.”

“Winter Infiltration Through Swinging-Door Entrances in Multi-Story Buildings,” February 1958, presents results of a study of infiltration based on field and laboratory tests under winter heating conditions. A procedure and the necessary data for calculating entrance filtration are included.

“A Water-Cooled Luminaire in a Panel-Air System,” June 1958, reports on the investigation of a panel-cooling system in which water-cooled panels form the reflector and extensions of a fluorescent luminaire. Data found to be accurate within the range required for sound air conditioning load analysis shows the heat transfer mechanisms and the performance of these luminaires operating as cooling panels in a suspended metal ceiling.

*An Annotated Bibliography on Permeability and Waterproofing of Concrete*, compiled by F. Kocataskin and published by the National Research Council, Ottawa, Canada, lists and briefly reviews the contents of available literature on hydrostatic permeability, capillarity, evaporation and vapor permeability of concrete, and the effects of integral and surface waterproofers. The 151 references included have been divided into eleven sections to distinguish between the various types of permeability (saturated, unsaturated and vapor), between integral and surface waterproofing, and between such subjects as efflorescence, moisture and damp-proofing.

*How MPS's Will Affect You*  
*JOURNAL of Homebuilding*, Sept. 1958

The first of a series on the FHA's new Minimum Property Standards (published this fall) points out their advantages over the Minimum Property Requirements they supplant via the effective and simple device of an item-by-item comparison. Topics dealt with in this issue include plot planning, building planning, storage, ceiling heights, finish elevations, light and ventilation, insulation and vapor barriers.

## MINIATURE DIMMER LOOMS BIG IN PERFORMANCE

A tiny first cousin to the transistor has made it possible to reduce the size of dimming controls to the point where even the most complex system can be stowed away in a space no bigger than one—or at most two—ordinary suitcases. Single dimmers for house or office will fit into a 4 in. stud space with only a small face plate exposed.

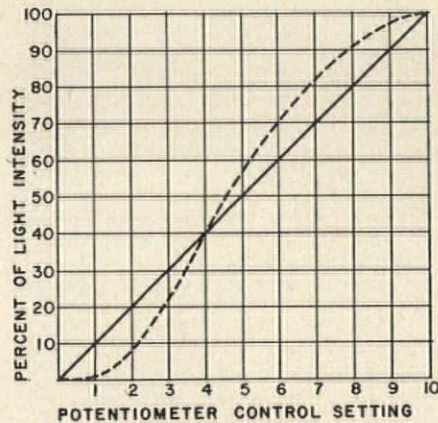
The secret is the newly developed "silicon controlled rectifier," a miniature electrical component for which the *S.C.R. Dimmer* is the first commercial application. Its principal advantage over the dimmer components now in common use is, of course, its greatly reduced size and weight. (The 4000 watt *S.C.R. Dimmer* weighs about five pounds and occupies  $\frac{1}{8}$  cubic foot, complete with control potentiometer.) However, data supplied by the manufacturer indicates that its performance characteristics equal or surpass those of its bulkier counterparts.

Like other types of boards, the *S.C.R. Dimmer* can be mastered and sub-mastered, preset, or used as a remote. And unlike other methods of control, it can be produced so that the light curve adheres closely to the true straight line graduation. Thus a potentiometer setting of 5 will give a lumen level of about 50 per cent of the total intensity, a setting of 8 about 80 per cent, and so forth.

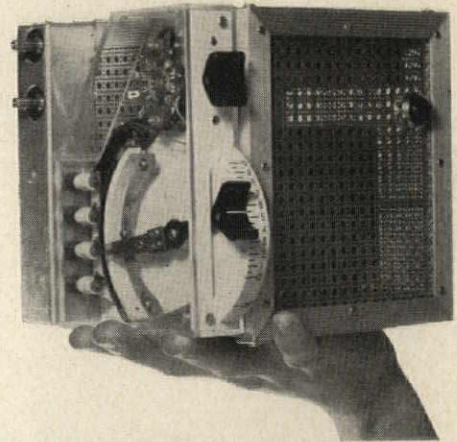
A 4000 watt dimmer is currently available, with 5, 10 and 12 thousand watt models scheduled for production in the near future. *Kliegl Bros., 321 West 50th St., New York, N. Y.*

RELATIVE PERFORMANCE CHARACTERISTICS OF AVAILABLE DIMMING CONTROLS

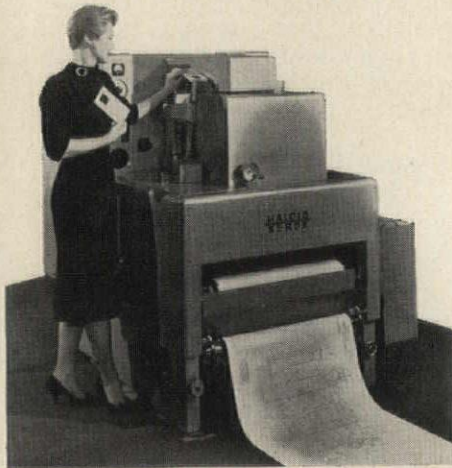
TYPE OF DIMMER	Motor Driven Autotransformer	Magnetic Amplifier	Electron (Thyratron)	S.C.R. Dimmer
WEIGHT OF DIMMER COMPONENT PER KW OF LOAD CAPACITY	10 to 15 lbs	15 to 25 lbs	8 to 10 lbs	1¼ lbs
SIZE OF DIMMER COMPONENT PER KW OF LOAD CAPACITY	¼ to ½ cu ft	½ to ½ cu ft	¼ to ½ cu ft	½ cu ft
EFFICIENCY	95 to 97%	90 to 95%	90%	98.5%
RESPONSE ON-OFF	Selected speeds available from 6 to 45 seconds	0.4 to 1¼ sec lag, depending on loading	virtually instantaneous	virtually instantaneous
LOADING	essentially infinite	from 30 to 1 to 100 to 1	infinite	infinite
AUXILIARY APPARATUS	none	booster transformer	auxiliary or booster transformers	none
NOISE	60 cycle hum	60 cycle and 120 cycle hum	tube conduction	none
APPROXIMATE DIMMER BANK COST RATIO (less controls)	100%	200%	175%	200%



--- S.C.R. DIMMER  
— STRAIGHT LINE LEVEL OF TRUE CONTROL



## MICROFILM PRINTER-ENLARGER FOR VOLUME REPRODUCTION



A continuous printer that turns out black and white copies of microfilmed drawings at the rate of 20 feet a minute offers a promising solution for a reproduction problem that is ever-present in architectural and engineering practice. Although the advantages of microfilm copies over original drawings are widely recognized, there has been no practical way of enlarging the film into workable prints on a volume basis. The new *Xerox Copyflo 24* does just that, forming the final link in an efficient, unitized microfilm system.

Such systems have three basic steps: the microfilming of original drawings; the mounting of the frames in data processing cards;

and the enlargement and reproduction of the filmed drawings. With the continuous printer, the last step is done by xerography, a dry electrostatic copying process. From one to 400 copies of each inserted microfilm card can be automatically transferred to 24 in. wide rolls of plain, unsensitized paper.

The equipment is expensive. However, depending on the volume of drawings reproduced, its use may result in substantial savings in the time required for print delivery, the space required for storage of original drawings, and in the cost per copy of reproductions. *Haloid Xerox, Inc., Rochester 3, N. Y.*

more products on page 192

**Finishes for Maple Floors**

Revised specifications establish standards for finishes for both heavy duty and gymnasium floors of Northern Hard Maple; include developments and improvements made since previous specs were issued. *Maple Flooring Manufacturers Assn.* 35 East Wacker Drive, Chicago 1, Ill.

**Thinner Vault Door**

Six page brochure explains functional advantages, engineering and operating features of *Diebold-Basic* 3½ in. vault door for banks. *Diebold, Inc., Bank Div., Canton, Ohio\**

**Insulation Adhesives**

Bulletin I-C 58 contains information on applications, properties, temperature ranges, coverage etc. of *Insul-Coustic* insulation adhesives, weatherproofing, coatings, vapor barriers, and sealing compounds. *Insul-Coustic Corp., 42-23 54th Rd., Maspeth 78, N. Y.*

**Movable Wall System (A.I.A. 36-H-6)**

Reference guide gives product information; general and type specifications for *Richland* movable interior walls. 4 pp. *GR Products Inc., 2417 Eastern Ave., S. E., Grand Rapids, Mich.\**

**Visualization Made Easier**

Catalogues *Chart-Pak* line of pressure-sensitive printed tapes, easels, templates and other charting materials. 32 pp. *Chart-Pak, Inc., Leeds, Mass.*

**Monarch Wall Color Guide Folder**

(A.I.A. 15-M-1) Reproduces 26 colors available in the *Monarch Wall* line of architectural porcelain panels. *Davidson Enamel Products, Inc., 1123 East Kibby St., Lima, Ohio\**

**Control Center Bulletin**

Outlines features and specifications of new line of electrical control centers. 4 pp. *Federal Pacific Electric Co., 50 Paris St., Newark 1, N. J.\**

**Fluoresign Outdoor Luminaire**

Describes outdoor luminaire designed for very high output lamps. Bulletin 300-21, 4 pp. *Revere Electric Mfg. Co., 7420 Lehigh Ave., Chicago 48, Ill.*

**Southern Pine Manual**

Gives design data on laminated lumber and heavy timber roof decking. New Tables, additional formulas, and information on lumber construction standards are included. \$2.00. *Southern Pine Association, Box 1170, New Orleans 4, La.*

**Brick in Sanitation Structures**

(A. I. A. 5) Surveys the application of clay masonry to sewers, and appurtenances such as traps, inlets and manholes; storm drainage canals; sedimentation tanks; and filters. 4 pp. *Structural Clay Products Institute, 1520 18 Street N.W., Washington 6, D. C.\**

**Aluminum Conduit**

Outlines advantages of aluminum rigid conduit and gives installation instructions and table of dimensions and weights of conduit, couplings and elbows. 12 pp. *Aluminum Company of America, 1501 Alcoa Building, Pittsburgh 19, Pa.*

**Lupton Aluminum Curtain Walls**

Gives general design data, construction details and specifications for *Lupton* exterior wall framing system. 14 pp. *Michael Flynn Mfg. Co., 51 East 42nd St., New York 17, N. Y.\**

**Dry-Type Transformers**

Buyers' Guide gives complete information on specifying and ordering dry-type transformers for commercial and industrial building applications. Ratings, sizes, applications and basic descriptions for each unit are included. Bulletin GEC-1600. *General Electric Co., Schenectady 5, N. Y.\**

**Roll-Kleen Air Filter**

Discusses the characteristics, operation and maintenance of the *Far-Air Roll-Kleen* automatic renewable media air filter. 8 pp. *Farr Company, P. O. Box 45187, Airport Station, Los Angeles 45, Calif.*

**Roof and Sidewall Ventilators**

(A.I.A. 30-D-1) Contains engineering drawings, performance data, capacity ratings and information about accessories for power ventilators. 34 pp. *Carnes Corp., Verona, Wis.*

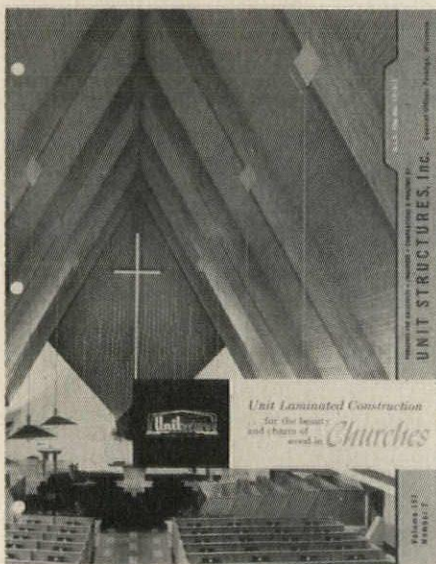
**Industrial Refrigeration**

Describes the applications and specifications of heavy-duty compressors for all types of industrial refrigeration service. Bulletin 116-J, 18 pp. *Frick Co., Waynesboro, Pa.\**

**Structural Bearing Pads**

(A.I.A. 14-J) Includes brief descriptions and general information on *Neosorb* and *Sorbtex* bearing pads, with diagrams of typical applications. 6 pp. *Preformed Pad Div., Voss Belt-ing & Specialty Co., 5645 N. Ravenswood Ave., Chicago 26, Ill.*

\*Additional product information in *Sweet's Architectural File, 1958* more literature on page 220



UNIT LAMINATED CONSTRUCTION for the beauty and charm of wood in CHURCHES, A.I.A. 19-B-3, illustrates the use of laminated timber in church construction. Brief descriptions of framing systems for the churches illustrated are supplemented by pertinent sections and details. A three-page technical section includes details of typical connections, a safe load table for laminated purlins, a simplified design procedure for arch frames, and specifications for glued-laminated arches and beams. 8 pp. *Unit Structures, Inc., Peshtigo, Wisconsin*

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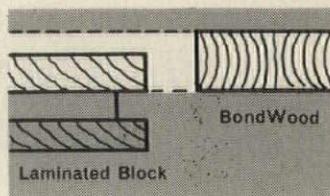


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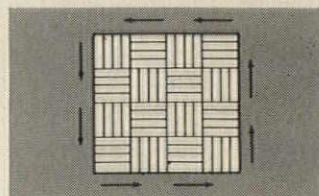
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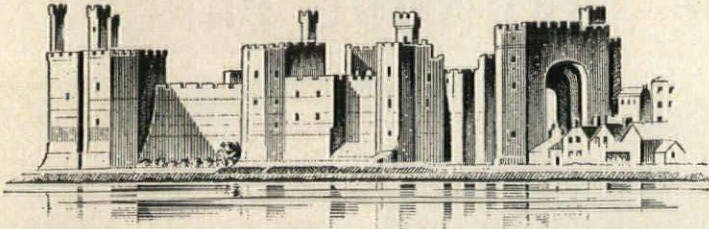


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# JOHNS-MANVILLE





## CHECKING A PRESTRESSED CONCRETE BEAM: 1\*

by Elwyn E. Seelye

\* Adapted from material soon to be published in a new edition of "Design, Data Book for Civil Engineers" by John Wiley & Sons, Inc.

### BASIC FORMULAS

#### Flexure:

Stress due to dead, live and impact loads

$$= \frac{My}{I}$$

Stress due to

$$\text{prestressing} = \frac{P}{A} \pm \frac{Pe y}{I} \text{ (initial)}$$

$$= \frac{NP}{A} \pm \frac{NPe y}{I} \text{ (final)}$$

#### Shear:

$$\text{Principal tensile stress} = \sqrt{v^2 + \frac{c^2}{4}} - \frac{c}{2}$$

#### Ultimate strength:

$$pb = .23 \times \frac{0.8 f'c}{f's}$$

For p less than or equal to pb

$$Mu = .9 \text{ as } f's d$$

For p greater than pb

$$Mu = .9 \sqrt{\text{as } a_{bs} f's d}$$

### NOMENCLATURE

A = cross sectional area

Ac = effective area of concrete under bearing plate

Ap = area of bearing plate

a<sub>bs</sub> = steel area for a balanced section (sq in.)

as = steel area (sq in.)

c = unit compression

d = depth of section from compression face to centroid of steel

e = eccentricity of prestressing group from neutral axis (in.)

f<sub>c</sub> = allowable stress in concrete

f'c = ultimate 28 day strength of concrete

f'ci = ultimate strength of concrete at time of prestress

f<sub>s</sub> = allowable stress in prestressing steel

f's = ultimate stress of prestressing steel

I = moment of inertia

M = bending moment

Mu = ultimate moment

<sup>1</sup>N = proportion of P remaining permanently

NP = permanent prestress force

<sup>1</sup> NOTE: The loss in the prestress force P is due to the shrinkage in the concrete, plastic flow of the concrete due to stress and the creep in the concrete and steel. This loss (percentage-wire) = 1-N

P = initial prestress force

p = as/wd

pb = value of p for a balanced section

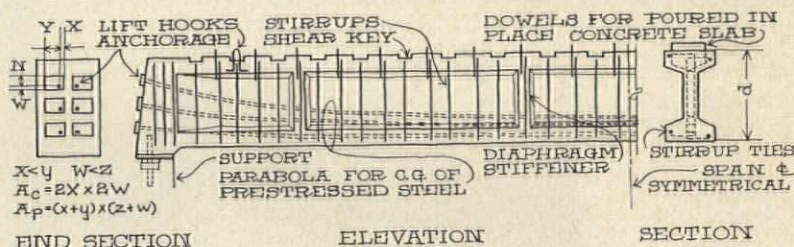
a<sub>bs</sub>/wd

v = unit shear

w = average width of the compression area (in.)

<sup>2</sup>y = distance from neutral axis to point at which stress is to be computed

<sup>2</sup> Subscripts: b = bottom fibers; t = top fibers



### ALLOWABLE STRESS IN PRESTRESSED CONCRETE<sup>3</sup>

		Temporary Stresses <sup>4</sup>	Permanent Stresses <sup>5</sup>
<b>Flexure</b>	Extreme fiber stress in compression	Prestensioned 0.60 f'ci	0.40 f'c
		Postensioned 0.55 f'ci	0.40 f'c
	Tension (without conventional reinforcement to resist tension)	0.05 f'ci	0
	Tension (with conventional reinforcement to resist tension)	0.05 f'ci	0.08 f'c
<b>Shear</b>	At distance "X" from support ("X" being distance equivalent to 1/2 x depth of beam) without stirrups		0.03 f'c
<b>Bearing</b> (between prestressing anchorage and concrete)	Use f <sub>b</sub> = .4 f'c $\sqrt[3]{\frac{Ac}{Ap}}$ if less than f'c	1.00 f'c	1.00 f'c

### ALLOWABLE STRESS IN STEEL REINFORCEMENT<sup>4</sup>

	Temporary Stresses	Permanent Stresses
<b>Tension</b>	Use 0.80 f'sy if less than .6 f's(f'sy = stress at .2% of plastic set)	0.60 f's <sup>1</sup>

### ULTIMATE STRENGTH<sup>3</sup>

The ultimate strength must be able to withstand the greater of a or b

a = Dead load plus three times live plus impact loads

b = Twice the sum of dead, live and impact loads

<sup>3</sup> All material based on "Criteria for Prestressed Concrete Bridges" U.S. Department of Commerce, Bureau of Public Roads, 1954

<sup>4</sup> Before creep and shrinkage

<sup>5</sup> After creep and shrinkage due to dead, live, impact loads and any combination thereof.

# Neoprene gaskets seal panel joints...speed erection of Thinlite Curtain Wall

According to Owens-Illinois, their new Thinlite\* Curtain Wall system provides all the structural components needed to enclose a building . . . yet offers the architect a maximum of design freedom. To insure a weatherproof, trouble-free seal, this new system was designed with double neoprene gaskets at all vertical and horizontal joints.

These gaskets come to the construction site already installed on individual panels, struts and sills. As the building is erected, the mating of these components automatically forms a weatherproof seal that has proved to be completely watertight when exposed to simulated 80 mph winds.

The neoprene gaskets used in the Thinlite system can be counted on to do their job effectively for many years. They won't crack or dry out, get hard, soft or take a "set" and lose their sealing pressure.

Neoprene gaskets have the additional advantage of long-term resistance to sunlight, oxygen and ozone. In an early curtain wall structure, they are still providing a maintenance-free seal after five years' exposure to the elements. For more information and a list of gasket suppliers, send the coupon today.

*\*Patent pending*

The Thinlite Curtain Wall System includes jamb and head members, struts, sills, panels (in a wide choice of materials), and all standard erection accessories. After framing and struts are set, the panels are stacked vertically between the struts. Horizontal joints are sealed by neoprene gaskets that come attached to the top and bottom of each panel. Vertical joints are sealed by two neoprene gaskets on each strut and by neoprene sponge on the screw-in batten strip.



**NEOPRENE**

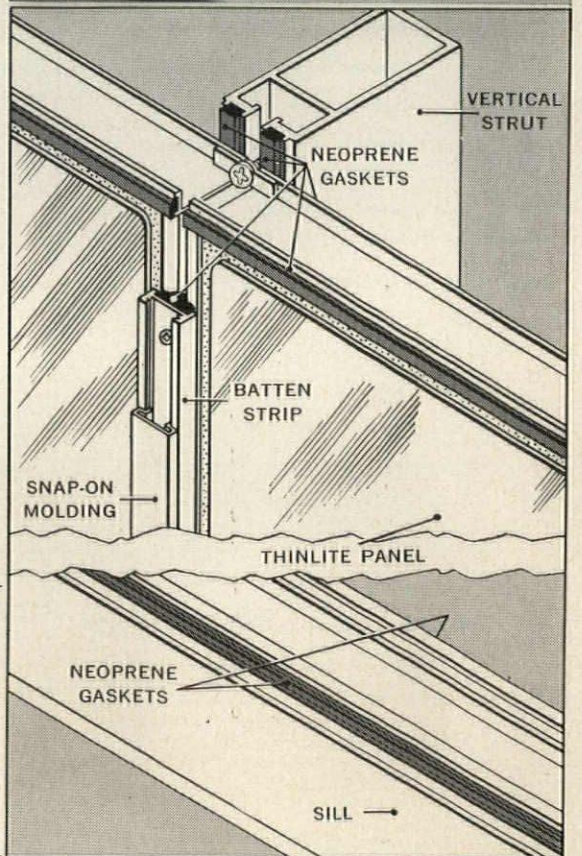
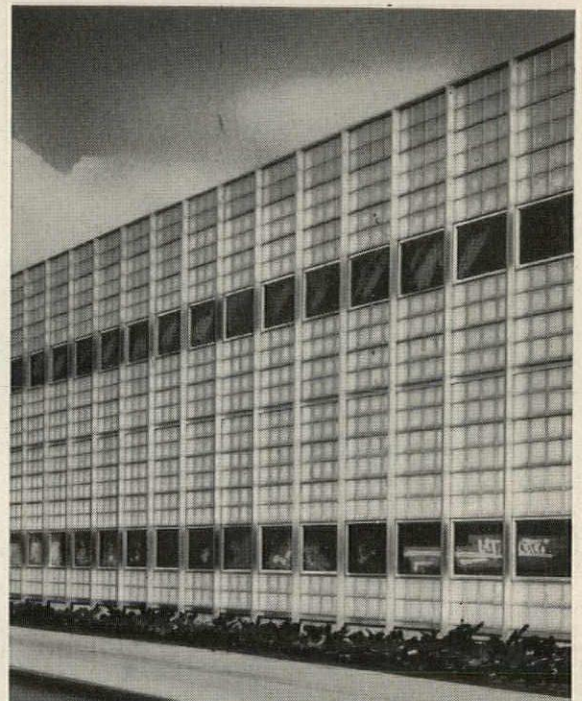
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Please send a list of neoprene gasketing suppliers and a copy of your new booklet, **NEOPRENE GASKETS FOR CURTAIN WALLS**.



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**CHECKING A PRESTRESSED CONCRETE BEAM: 2\***

by Elwyn E. Seelye

\*Adapted from material soon to be published in a new edition of "Design, Data Book for Civil Engineers" by John Wiley & Sons, Inc.

**LOSSES IN PRESTRESS<sup>6</sup>**

Decrease in prestress (psi) due to creep, shrinkage and deformation

Pretension:  $6000 + 16 fcs + 0.04 fsi$

Post-tension:  $3000 + 11 fcs + 0.04 fsi$

$fsi$  = initial prestress (psi)

$fcs$  = concrete stress at c.g. of prestressing steel (psi)

(average concrete stress between support)

NOTE: loss in prestress may be taken as 0.15  $f's$  as an approximation for preliminary design.

**PRESTRESS STEEL SIZE, SPACING, COVER<sup>6</sup>**

(1) for beams where tension in the prestressing steel is maintained by bond

(a) When single wires are used, maximum size 0.2 inches.

(b) When wires are used in seven wire strands the maximum strand size is  $\frac{3}{8}$  inch.

(c) Minimum spacing vertically and horizontally for prestressed steel shall be 3 times the diameter of wire or strand used measured from center to center. The clear distance shall not be less than  $1\frac{1}{2}$  times the maximum size of coarse aggregate.

(d) The minimum cover shall be  $1\frac{1}{2}$  in. or one diameter of bar strand or duct whichever is greater.

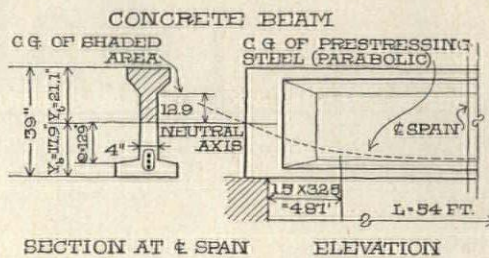
(2) For beams where tension in the prestressing steel is maintained by adequate end anchorage the above limitations are not applicable except that a clear spacing horizontally of  $1\frac{1}{2}$  times the maximum size of coarse aggregate shall be maintained.

**STIRRUPS<sup>6</sup>**

Stirrups are recommended whether or not computations show they are needed. Maximum spacing no greater than  $\frac{1}{4}$  of depth of beam. The sum of the cross-sectional area of the stirrups should not be less than .08% of the cross-sectioned area.

<sup>6</sup> All material based on "Criteria for Prestressed Concrete Bridges" U.S. Department of Commerce, Bureau of Public Roads, 1954.

Example



Note: point "A" in Step 2 is located 4.87 ft from support (see elevation)

**CHECK OF PRESTRESSED CONCRETE BEAM<sup>7</sup>**

$f'c = 5000$  psi      $f's = 145,000$  psi

Moment exclusive of beam wt = 165 ft K Dead Load  
200 ft K Live Load  
365 ft K

Moment due to beam wt = 102 ft K

Initial prestress force (P) = 284 K

Losses due to shrinkage & creep = 15%

Final prestress force (after 15% loss) = 242 K

**ALLOWABLE STRESSES**

Concrete: Compression  $0.40 \times 5000 = 2000$  psi

Tension = 0

Steel: Initially = 100,000 psi

After losses = 85,000 psi

**FLEXURE FORMULAS**

Stress due to dead, live and impact loads

$$\frac{M \times y(t \text{ or } b)}{I}$$

Stress due to prestressing force =  $\frac{P}{A} +$

$$\frac{P e y(t \text{ or } b)}{I}$$

Compression +

Tension -

**CHECK FOR BENDING AND DIAGONAL TENSION**

**Step 1**

Compute top and bottom fiber stresses due to beam weight, applied moment and prestressing force before and after losses using basic formulas. Results are shown and tabulated on page 175.

**Step 2**

• Check diagonal tension at point "A", 1.5 x

<sup>7</sup> Based on "Criteria for Prestressed Concrete Bridges" U.S. Department of Commerce, Bureau of Public Roads, 1954.

depth of beam, from support (BPR Code) =  $1.5 \times 3.25 = 4.87$  ft.

• At point "A" compute vertical shear due to beam weight and applied loads =  $(34.6 - 1.28 \times 4.87) = 28.4$  K.

• Vertical component of prestressing force for parabolic curve =  $\frac{4 P h}{[L - 2(1.5d)]}$  where

$h = \frac{(27 - 4.87)^2}{27^2} \times 12.9 = 8.62$  in.; vertical

component =  $\frac{4 \times 242 \times 8.62}{(52 - 2 \times 4.87) 12} = 15.7$  K

(upward)

• Total shear at section V =  $28.4 - 15.7 = 12.7$  K

• Principal tensile stress at neutral axis of section; unit vertical shearing stress =  $v =$

$$\frac{VQ}{It} = \frac{12700 \times 1675}{495000 \times 4} = 107 \text{ psi; unit com-}$$

pression stress at neutral axis =  $c = \frac{P}{A} =$

$$\frac{242,000}{270} = 896 \text{ psi.}$$

## Should a Church Roof be



# curved?

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3. Three full layers of protection with 5" exposure.
4. For use on slopes as low as 2" in 12".
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# peaked?

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**SHINGLES**

**TERMITES AND MOISTURE A PROBLEM?** Write for details on Bird Termibar combination Termite Killer and Vapor Barrier.

by Elwyn E. Seelye

**CHECKING A PRESTRESSED CONCRETE BEAM: 3\***

\* Adapted from material soon to be published in a new edition of "Design, Data Book for Civil Engineers" by John Wiley & Sons, Inc.

● Principal tensile stress =  $\sqrt{v^2 + \frac{c^2}{4} - \frac{c}{2}}$

$\sqrt{\frac{(107)^2}{4} + \frac{(896)^2}{4} - \frac{896}{2}} = 13 \text{ psi}$

Allowable stress = 0.03  $f'_c$  = 150 psi — O.K.

● Principal tension stress should be investigated at other critical points, these being the points of change in section.

**Step 3**

Check ultimate strength of member. According to the BPR specifications the ultimate strength of the beam must exceed the greater of

(a) D.L. + 3 (L.L. + Imp) = 164 + 102 + 3(200) = 866 ft kips

(b) 2(D.L. + L.L. + Imp) = 2 (164 + 102 + 200) = 932 ft Kips. This value governs.

● The percentage of steel for balanced design

(pb) =  $.23 \times \frac{0.8 f'_c}{f'_s} = \frac{.23 \times 0.8 \times 5000}{145,000} = .635\%$

● The actual percentage of steel (p actual) =  $\frac{A_s}{W_d}$

● The depth of the compressive area approximates .23 d = .23 x 34 = 7.82 and the section area corresponding to this depth = 74.9 sq in. Therefore the average compression

width (w) =  $\frac{74.9}{7.87} = 9.58$

● p actual =  $\frac{3 \text{ sq. in.}}{34 \times 9.58} = .915\%$

$a_{b_2} = pb \times wd = .00635 \times 9.58 \times 34 = 2.07$  sq in. Since p actual is greater than pb (.915 greater than .635) the ultimate moment (Mu) =  $.9 \sqrt{a_s a_{b_2}} f'_s d = .9(\sqrt{3 \times 2.07}) \times 145,000 \times 34 = 11,200,000 \text{ in. lb.}$

$M_u = \frac{11,200,000 \text{ in. lb.}}{12 \times 1000} = 933 \text{ ft Kips}$

933 ft Kips is greater than 932 ft Kips — O.K.

NOTE: Before beam is considered satisfactory check following: curvature of prestressing elements so that stresses at all sections are within allowable values; requirements of ultimate strength in diagonal tension, end block stresses and anchorage.

FIBER STRESSES (PSI)

Loading	INITIAL (Immediately After Prestressing)		FINAL (All Loads—After Losses)	
	Top Fiber	Bottom Fiber	Top Fiber	Bottom Fiber
Beam Wt Only	$\frac{102 \times 12 \times 1000 \times 21.1}{49,5000}$	$\frac{102 \times 12 \times 1000 \times 17.9}{49,5000}$	$\frac{102 \times 12 \times 1000 \times 21.1}{49,5000}$	$\frac{102 \times 12 \times 1000 \times 17.9}{49,5000}$
Dead + Live Loads (Exclusive of Beam Weight)			$\frac{264 \times 12 \times 1000 \times 21.1}{49,5000}$	$\frac{364 \times 12 \times 1000 \times 17.9}{49,5000}$
Prestress Force	$\frac{284,000}{270}$	$\frac{284,000 \times 12.9 \times 17.9}{49,500}$	$\frac{242,000}{270}$	$\frac{242,000 \times 12.9 \times 17.9}{49,500}$
Total Stress (Sum of Values above)	+ 522	- 442	+ 522	- 442
	+ 12	+ 2372	+ 1860	- 1580
			- 433	+ 2026
			+ 1949	+ 4

Check stresses in prestressing steel: before losses =  $\frac{284,000}{3} = 94,610 \text{ psi}$ ;  
after losses =  $\frac{242,000}{3} = 80,667 \text{ psi}$ —O.K. (less than allowable values as "given".)

Stresses are found to be less than allowable values as given above—O.K.

# Another Department Store Says NEW WESTINGHOUSE ELEVATORS GET



**1** "Operatorless elevators in department stores give real, tangible benefits not only to store managements, but also to its customers," says Betty Furness. "First of all, just having a

Westinghouse operatorless system in a store means the most modern, efficient elevator service available.



**2** "Everything is automatic. The entire system is electronically controlled to serve passengers quickly, yet courteously. Traffic Sentinel Doors open automatically as car arrives. The

doors remain open and motionless as long as necessary for passengers to leave or enter.



**3** "Note the absence of elevator operators. For department stores, this means a savings in wages, uniforms, training, insurance, and freedom from personnel problems. Economy,

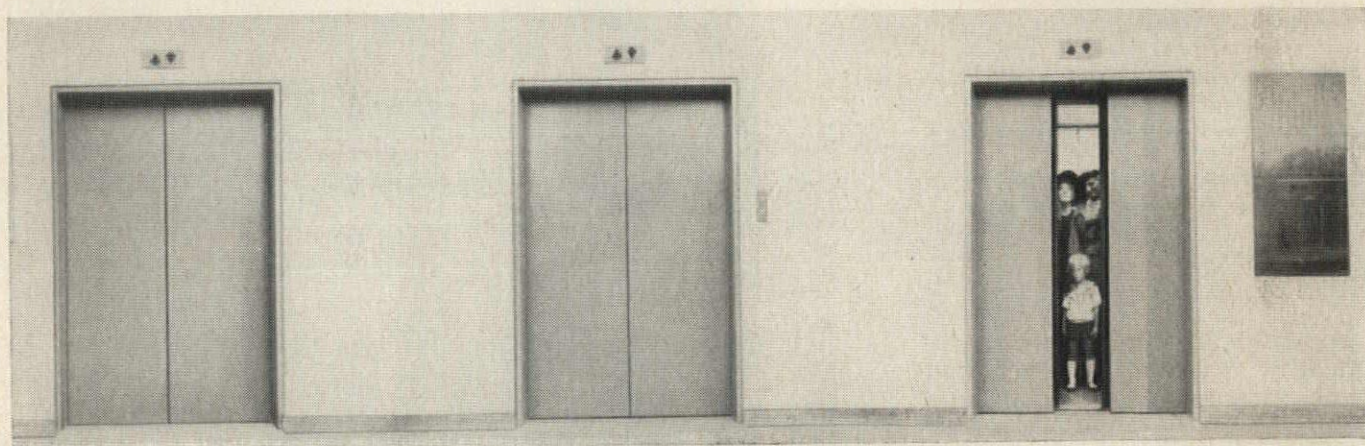
however, is but part of the full Westinghouse operatorless elevator story.

# "YES" to Operatorless Elevators!

## DENVER SHOPPERS' ENTHUSIASTIC APPROVAL



**4** "Superior service and customer convenience are primary considerations, too. Traveling time is reduced to a minimum because operatorless elevators have an electronic intelligence attuned to everchanging traffic demand."



**5** "When the car is substantially filled, a weighing device discourages overloading by closing the doors automatically, and dispatches the car to the next floor. For shopper convenience, a store directory above the doors in the car indicates what merchandise can be found on each floor." "For more reasons why operatorless elevators are gaining greater acceptance in department stores, write to: Store Planning and Service Department, Westinghouse Electric Corporation, Elevator Division, 150 Pacific Avenue, Jersey City 4, New Jersey—and we'll mail you a free copy of the booklet 'The Operatorless Elevator in the Department Store'."

### MAY-D&F DEPARTMENT STORE • DENVER, COLORADO

This new and spectacular building, in the heart of downtown Denver, is designed for shopping ease and convenience. Three underground parking levels accommodate 1160 cars at a time. Extra important then are the smooth, operatorless Westinghouse Elevators to speed passengers from garages to shopping floors. For complete, balanced vertical transportation, May-D&F also in-

stalled eight beautifully styled Westinghouse Electric Stairways. When in Denver, plan to ride and experience for yourself the politeness and timesaving features of Westinghouse Operatorless Elevators and Electric Stairways.

Architect: I. M. Pei & Associates  
Associate Architect: Ketchum & Sharp  
General Contractor: Webb & Knapp Construction Corp.

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# Westinghouse



J-98763AA

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WESTINGHOUSE ELEVATORS AND ELECTRIC STAIRWAYS

to be used in natural illumination, a vital consideration (and one that is difficult to evaluate) is permanence under exposure to weather. Tests have shown that sunlight does not of itself seriously deteriorate any of the plastics except vinyl, which may ultimately darken. Beyond this, on exposure to all-around weather conditions, the acrylics are outstanding and the thermosetting materials can be said to be good. The rest of the plastics used in building illumination do not stand up when exposed to weather.

**Heat resistance**, in degrees F, presents the maximum recommended continuous service temperature. Because plastics will begin to discolor after years of service as lighting diffusers, this property is an important consideration in the design of fixtures incorporating these materials. It can become critical when incandescent rather than fluorescent lighting is employed. For this reason, such thermosetting materials as the ureas and melamines, which generally have higher heat resistance than do the thermoplastics, are widely used in incandescent fixtures.

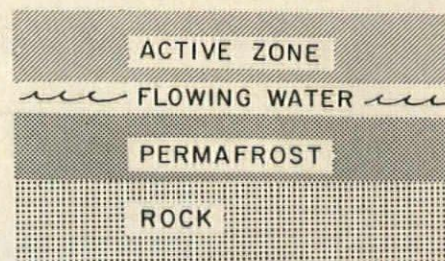
**Relative flammability** is determined by the rate at which a standard sample of a plastic material will continue to burn by itself once it has been set afire. Conventional acrylics, styrene and celluloseics will continue to burn of themselves, as will the reinforced polyesters. However, special formulations are being developed to present greater flame resistance, and there is already a special polyester material which—like vinyl, urea and melamine—is self-extinguishing.

**Heat distortion temperature** is stated in degrees F at which a standard sample of plastic will yield a specified amount while subjected to a standard stress and heated. Low heat-distortion temperature may be intentionally built into plastics used for lighting so that, in the event of a fire, certain safety measures, such as the exposure of hidden sprinklers above a luminous ceiling, will take place automatically. The plastic simply wilts and falls to the floor before a high enough temperature has been reached to actuate the sprinklers. Even when there is no sprinkler system, this same characteristic may be used to cause a flammable plastic incorporated in overhead illumination to drop down onto the floor where the likelihood of ignition and flame-spread is less. Plastics used for natural illumination, particularly in skylights, may also be developed with a heat-distortion temperature suitable to provide automatic venting of a blaze within a building.

## Permafrost: The Biggest State's Biggest Building Problem

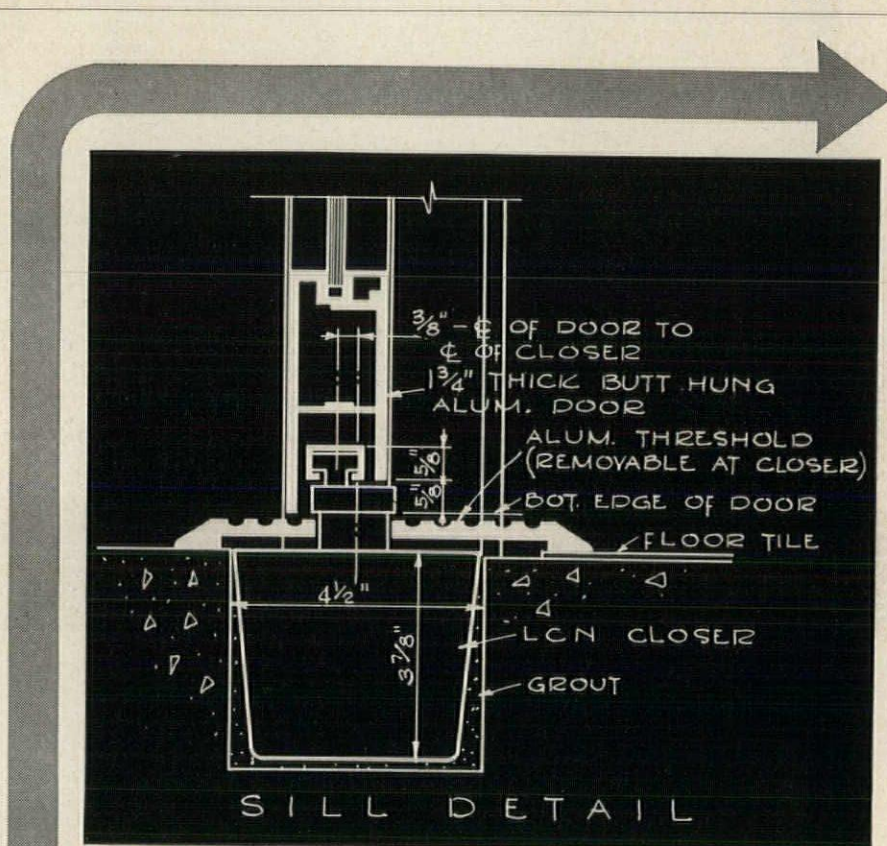
One big problem facing builders in Alaska is permafrost: permanently frozen ground, varying in depth from a few inches to 1300 ft. Above the permafrost is an "active zone," where alternate freezing and thawing takes place in winter and summer. Water can seep through this zone, affecting the permafrost surface. Too cold water will build it up and buckle the surface; too hot water will melt it, causing the ground to collapse.

Construction failures on perma-



frost usually result from the heat of buildings penetrating the ground and melting the permafrost below. Obviously the solution is to build down

continued on page 182



## CONSTRUCTION DETAILS

for LCN Floor Type Door Closer, Shown on Opposite Page

The LCN Series 2-4-6 Closer's Main Points:

1. Full rack-and-pinion, two-speed control of the door
2. Mechanism concealed; lever arm disappears under door
3. Door hung on regular butts, its weight carried independently of closer
4. Closer easily adjusted or serviced without taking door down
5. Installed with or without threshold; may be flush with threshold or with floor
6. Used with wood or metal doors and frames

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**LCN CLOSERS, INC., PRINCETON, ILLINOIS**

Canada: Lift Lock Hardware Industries, Ltd., Peterborough, Ontario



MODERN DOOR CONTROL BY *LCN* • CLOSERS CONCEALED IN FLOOR

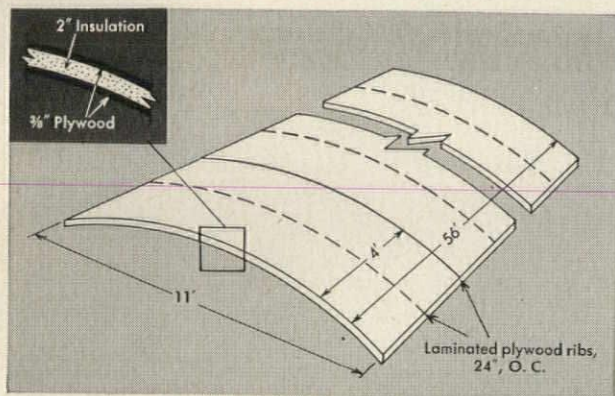
CONCORDIA SENIOR COLLEGE, FORT WAYNE, INDIANA

LCN CLOSERS, INC., PRINCETON, ILLINOIS

Construction Details on Opposite Page



# new approaches to structural design with fir plywood



Prefabricated roof vaults are 11 feet wide at the chord, and 56 feet long (40 foot span plus 8 foot cantilever both ends). Key to system is the outstanding shear strength of the stressed fir plywood skins.

## FIR PLYWOOD

**ARCHITECT:** Theodore T. Boutmy, A. I. A.  
George Kosmak, Consultant  
John E. Brown, Structural Engineer

**PLYWOOD VAULTS** designed and engineered  
by Berkeley Plywood Co., Oakland

THESE lightweight fir plywood stressed skin barrel vaults designed for a California yacht club provide large clear floor areas at low cost plus an attractive profile and interior.

Combining roof decking, insulation and ceiling, the prefabricated vaults span 40 feet from front to rear and 11 feet from valley to valley, without use of beams or trusses. Vaults are cantilevered 8 feet front and rear; spouts which join units at the spring lines extend an additional 10 feet to act as gargoyles in carrying off water.

The roof system provides complete freedom in interior arrangements. Additions can be made simply by adding new vaults or extending the existing ones.

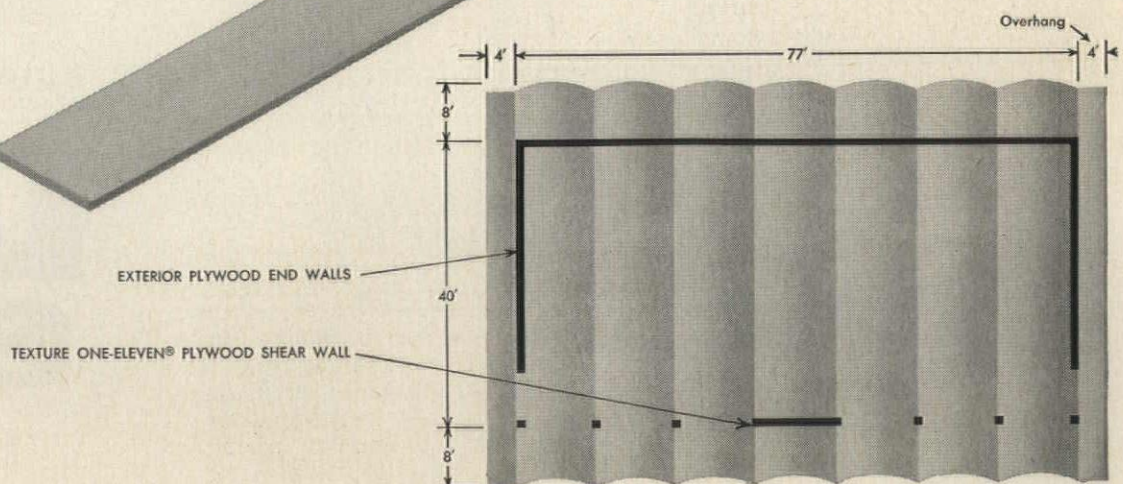
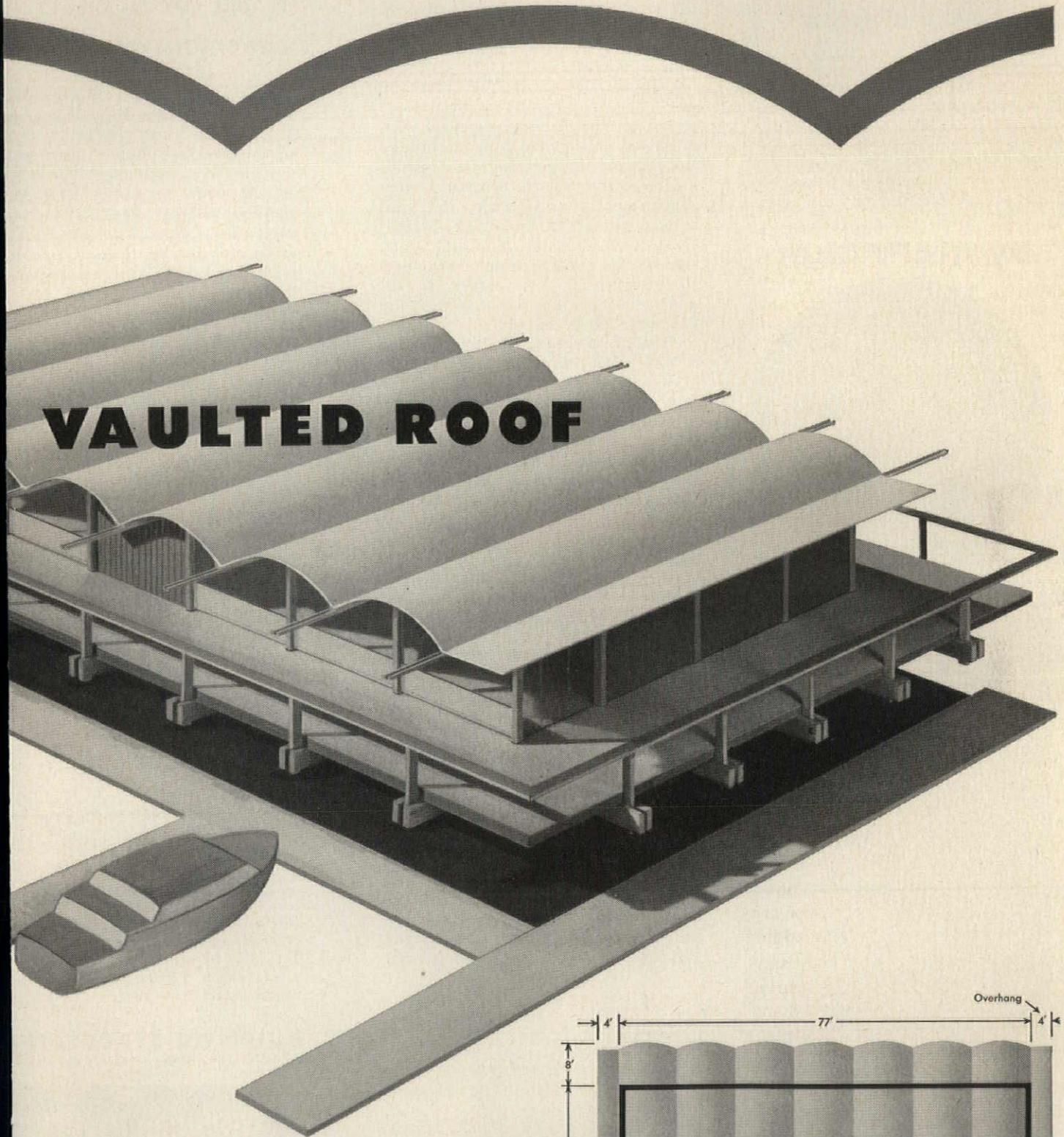
Structurally, the entire roof acts as a rigid plywood diaphragm in transferring lateral loads to the plywood end and shear walls. Two test vaults were successfully used at the San Francisco Arts Festival. Berkeley Plywood is contemplating mass producing the vaults as a standard construction component.

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... a portfolio collection of outstanding designs by six leading architectural firms. Includes 10-page booklet on fir plywood diaphragm construction. For your free copy, write (USA only) Douglas Fir Plywood Association, Tacoma, Washington. Also write for information about DFPA design and engineering consultation services.

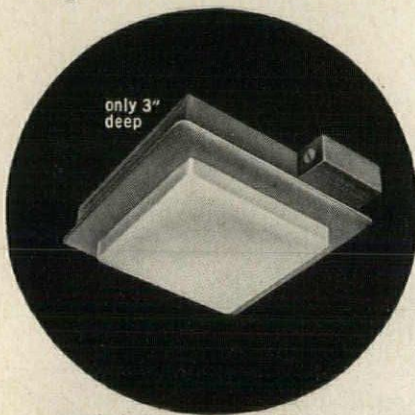


# VAULTED ROOF

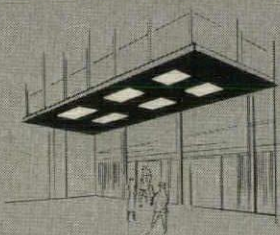


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## Technical Roundup

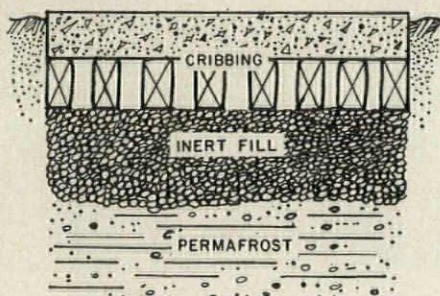
on solid rock or to insulate the building so that no heat goes downward. Unfortunately, a site cannot usually be selected that way, and no insulation is perfect.

Instead, the permafrost must be used. The cover can be removed down to the permafrost and replaced with non-frost-acting material, or pilings can support the building, or a combination of the two can be used. Cover-replacement is satisfactory if the fill is deep enough to insulate the permafrost from heat, but it is difficult to remove the cover without disturbing the permafrost. In summer, it will melt, making it necessary to wait for winter to finish the job.

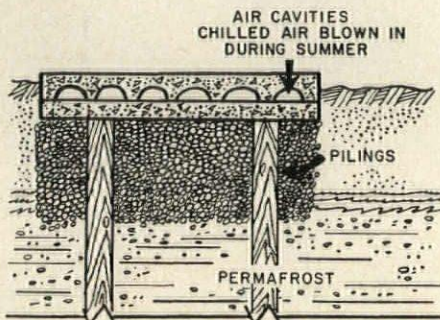
Piles are placed by drilling at least 3 ft into the permafrost, placing the piles, and filling around them with a slurry of sand, crushed rock and water, and allowing it to freeze.

There should be at least 18 in. of air space between the insulated sub-floor and the sub-base. Both the air space and the sub-base should be protected from the sun during the summer by a screen or light wall that can be removed in the winter.

Only two types of foundations should be used: a kind of cribbing, consisting of two sets of heavy mem-



bers (concrete beams, metal structural shapes or timbers) laid one on top of the other at right angles; or a heavy concrete slab poured on the sub-structure. On this are placed



large pipes or forms resembling tunnels, over which a second slab is poured. Chilled air can be circulated through the tunnels in the summer, reducing heat loss into the ground.

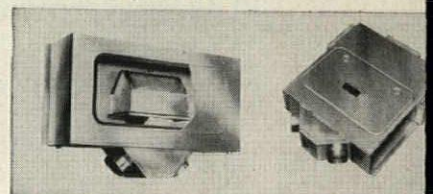
more roundup on page 187

## BUENSOD DUAL-DUCT UNIT NOTED FOR FLEXIBILITY, CONDITION YEAR-AROUND

In the photograph on the facing page, the familiar tools of your profession symbolize the heart of one of the most flexible air conditioning systems ever developed. The system is the high pressure Dual-Duct method. Simply and efficiently cools, heats, humidifies or dehumidifies a building. And it provides widely varying temperature and humidity conditions, where desired from room to room.

The problem was to make such a system *stable*. Buensod engineers invented *direct, automatic volume control*. As pressures in the system change, each mixing unit automatically adjusts to maintain a constant quantity of air.

The action is something like to compass in our photograph on the adjacent page. That's how simple it is—but this is inspired simplicity for the automatic volume control permits quick balancing of an entire system merely by adjusting spring tension at the time each unit is installed. Or we can pre-balance an entire system at our factory, saving time on your job.



Type V3 Air Mixing Unit for under window or wall mounting.

Type H unit for overhead installation.

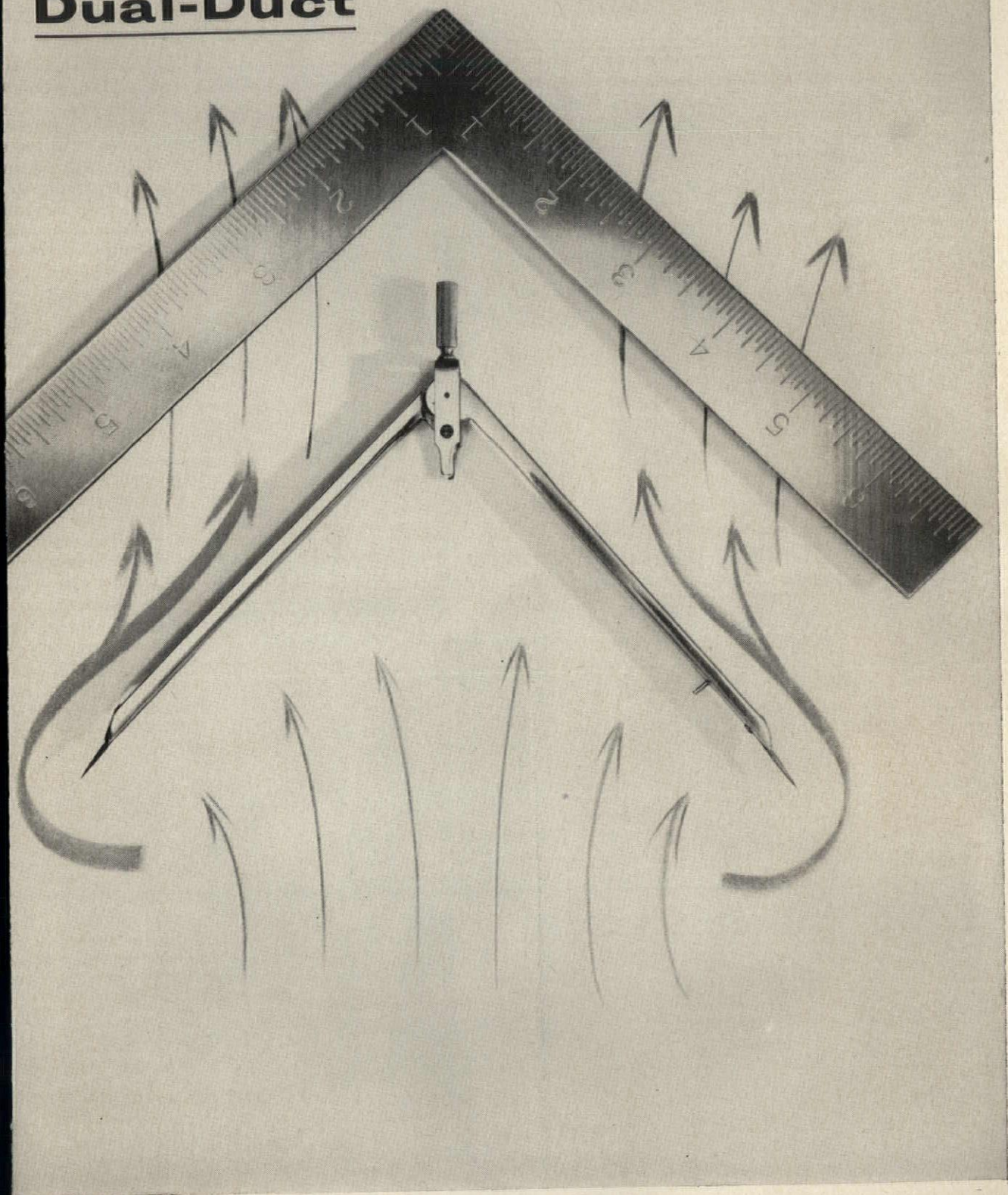
Buensod Dual-Duct Air Mixing Units offer true simplicity in air conditioning. We'd like to provide you with full technical details. Please contact our local representative, or write us directly.

**BUENSOD-STACEY, INC.**  
45 West 18th Street • New York 11, N.Y.

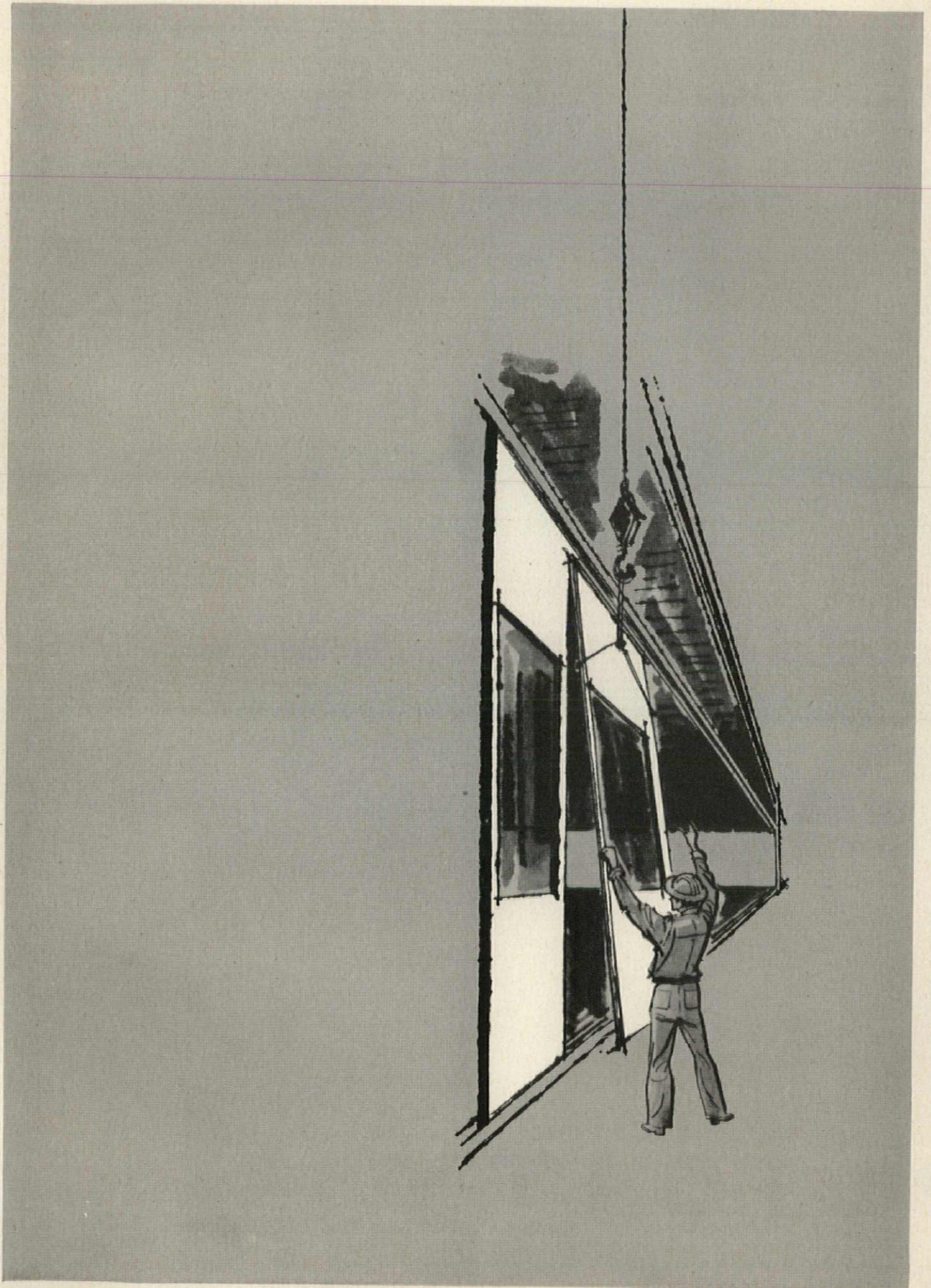
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**S I M**  
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# Dual-Duct



# PLICITY conditioning DESIGN



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grid-type, self-mullioning design . . .  
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single responsible source for frame,  
sash, doors, panels—Fenestra®.

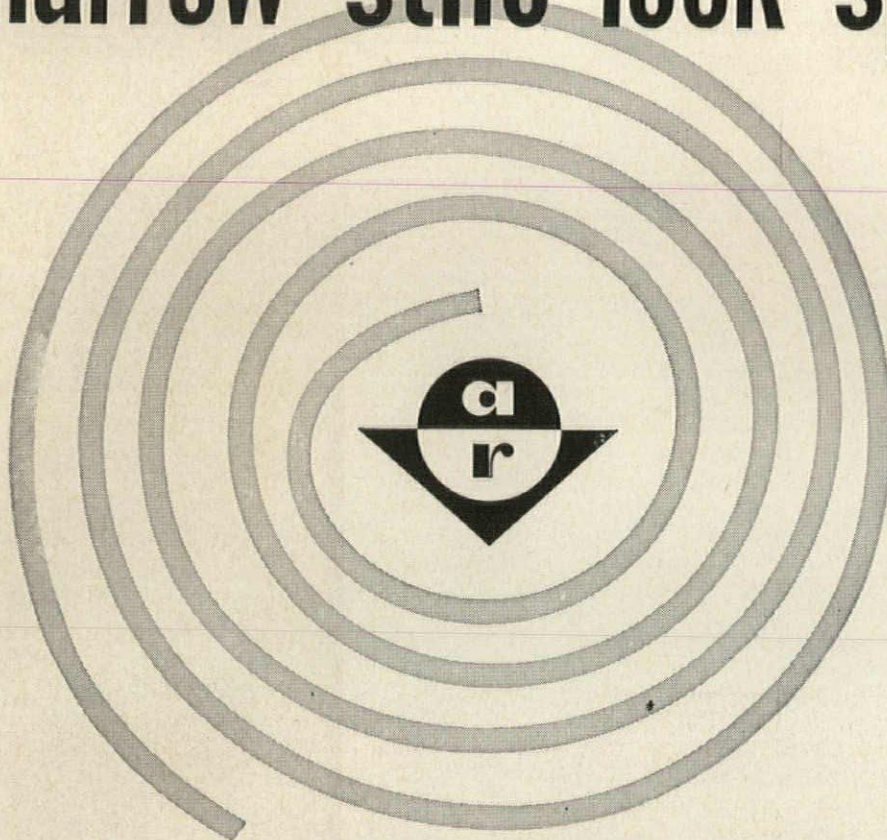
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*Fenestra* INCORPORATED

2250 EAST GRAND BLVD., DETROIT 11, MICHIGAN

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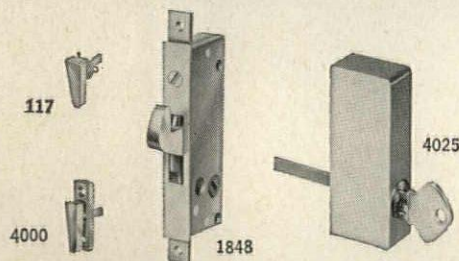
# narrow stile lock specialists



...at the service of the sliding-door industry

ADAMS-RITE established the concept that sliding glass doors can and should be secured with locking devices as modern and as functional as the doors themselves. Only ADAMS-RITE locking devices fulfill the most rigid requirements—heavy, hooked-shaped deadbolts that are adjustable, that fit *inside* the door rail, that are operated by positive turn action and, when necessary, controlled by standard cylinders. Residential front door keying or commercial master systems are optional.

The ADAMS-RITE 1848 Deadlock provides each of these important features to satisfy the needs of architect, manufacturer, contractor and final user alike.



The 1848 Sliding Wall Deadlock shown above measures only  $3\frac{3}{4}'' \times 1\frac{1}{8}'' \times \frac{1}{2}''$ , has a collapsible bolt for protection of door and lock, and operates with positive "feel appeal". To compensate for possible misalignment of door and jamb, bolt projection can be adjusted a full  $\frac{3}{16}''$  by simply turning a screw in the lock face. The 4025 cylinder group is a clean-lined outside pull, offering key control that can be keyed-in with most popular cylinder systems.

Specialists in  
Narrow Stile  
Locking Devices  
for Sliding  
and Swinging  
Glass Doors

**ADAMS-RITE**  
MANUFACTURING COMPANY

Dept. AR-128, 540 West Chevy Chase Drive, Glendale 4, California

In addition to being the leading manufacturer of narrow stile sliding and swinging door locking devices, ADAMS-RITE also supplies virtually all the locking devices and handles for commercial and military aircraft in the United States—an overwhelming testimonial to the superiority of ADAMS-RITE design and the lasting strength of ADAMS-RITE products.

The sliding door manufacturers listed below are representative of those in the industry who provide ADAMS-RITE extra quality locking devices as standard equipment.

**ABC SLIDING GLASS DOORS**

Adams Engineering Company, Dept. G2  
P. O. Box 875  
Ojus, Florida

**ADOR**

**ADOR THERMODOOR**

Ador Sales, Inc.  
2345 W. Commonwealth Ave.  
Fullerton, California

**CUSTOM-G**

The Alumiline Corporation  
Pawtucket, Rhode Island

**ALUMINAIRE**

Aluminaire Company  
1743 No. Country Club Drive  
Mesa, Arizona

**PATI-DOR**

Aluminum Metals Company  
1733 Sebastopol Road  
Santa Rosa, California

**CRESTVIEW**

Aluminex, Inc.  
2408 Forney Street  
Los Angeles 31, California

**VACOL**

V. E. Anderson Mfg. Co., Inc.  
P. O. Box 430  
Bradenton, Florida

**NU-VU**

Bailey-Kelleher Company  
500 Bellevue  
Detroit 7, Michigan

**BELLEVUE DELUX STEEL**

**BELLEVUE DELUX ALUMINUM, RAMONA**

Bellevue Metal Products  
1314 E. First Street  
Los Angeles 33, California

**GULFSPRAY LONE STAR**

Binswanger & Co. of Texas  
P. O. Box 3051  
Houston 1, Texas

**BRITT DELUXE**

Britt Sliding Door Corporation  
2501 Wroton Road  
Houston 5, Texas

**BELLA VISTA, BELLA'S CHAMP**

Bur-Val Mfg. Co., Inc.  
1012 No. Lake Street  
Burbank, California

**FLEETLITE**

Fleet of America, Inc.  
2015 Walden Avenue  
Buffalo 25, New York

**G. S. D.**

Glass Shower Door Co., Inc.  
105 W. Wacker Drive  
Chicago 1, Illinois

**CORONA**

H & D, Inc.  
6515 Highway 99 So.  
Everett, Washington

**ARTDOR BY BASCO**

Hecker Mfg. Co.  
758 Clementina Street  
San Francisco, California

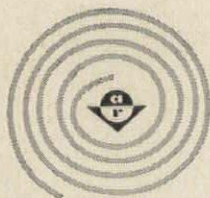
**THE HELLER DOOR, EL PATIO**

The Heller Company  
715 Francis Street  
Houston, Texas

**CAPISTRANO, MALIBU**

Malibu Mfg. Corporation  
P. O. Box 413  
El Monte, California





CONTINUED . . . listing of major sliding door manufacturers who provide ADAMS-RITE locking devices as standard equipment:

**MARSHALL PRESTIGE**

Marshall Aluminum Products  
3400 Fowler Street  
Los Angeles, California

**ARISLIDE**

Michel & Pfeiffer Iron Works, Inc.  
212 Shaw Road  
South San Francisco, California

**MODERNVIEW**

Modern Shower Door Company  
1804 E. 40th Street  
Cleveland 3, Ohio

**NUDOR, d'COR**

Nudor Mfg. Corporation  
7326 Fulton Avenue  
North Hollywood, California

**PITTCO**

Pittsburgh Plate Glass Company  
One Gateway Center  
Pittsburgh 22, Pennsylvania

**ROMAN, CHALLENGER**

Roman Metal Products, Inc.  
P. O. Box 4477  
Tucson, Arizona

**RUSCO DELUXE, RUSCO THERMODOOR**

F. C. Russell Company  
P. O. Box 26  
Columbiana, Ohio

**TODA VISTA**

Samuels Glass Company  
221 Newell Avenue  
San Antonio 6, Texas

**VUE LUME, BON AIR, DE VILLE  
and EL DORADO**

Shower Door Company of America  
1 Permalume Place, N.W.  
Atlanta 18, Georgia

**SLIDEVIEW**

Slideview Door & Window Company  
P. O. Box 409  
El Monte, California

**CUSTOM, CUSTOM INSULATED**

Smithcary Corporation  
P. O. Box 596  
Magnolia, Arkansas

**IMPERIAL, SENIOR & JUNIOR**

Sun Valley Industries, Inc.  
8354 San Fernando Road  
Sun Valley, California

**SPECIALUME**

Specialume Products, Inc.  
P. O. Box 126  
Sarasota, Florida

**ALL STEEL QUALITY, STEEL  
FRAME ALUMINUM**

Steelbilt, Inc.  
18001 So. Figueroa  
Gardena, California

**SILVERNAIL**

St. Petersburg Glass & Mfg. Co.  
2201 First Avenue So.  
St. Petersburg, Florida

**VISTA**

Vista Sliding Doors  
7052 Laurel Canyon  
North Hollywood, California

**CAPRI CONTINENTAL**

T. V. Walker & Son, Inc.  
217 No. Lake Street  
Burbank, California

**AER-LITE**

Wood-Land Mfg. Co.  
1510 W. Broadway  
Phoenix, Arizona

**ADAMS-RITE**  
MANUFACTURING COMPANY

*Technical Roundup*

**ASCE-IABSE Joint Meeting Reviews  
Structure Here and Abroad**

The annual convention of the American Society of Civil Engineers was this year highlighted by the joint sessions of the ASCE's Structural Division and the International Association of Bridge and Structural Engineering. Speakers were drawn from eight European countries as well as from the United States; and, as might be expected, their papers covered the full range of recent advances and future trends in structural engineering on two continents. Attention was divided almost equally between steel and concrete, with discussions of plastic design and stability considerations for steel structures countered by papers on ultimate strength and limit design of reinforced and prestressed concrete and folded plate structures, as well as on shells. Emphasis was also placed on research on such topics as the effects of ductility, creep and fatigue; model and theoretical analysis of dams and shells; and the effects of earthquake, blast and other dynamic forces on steel and concrete structures.

**Report Evaluates Commercially  
Available Glazing Compounds**

According to the Pittsburgh Plate Glass Company's Research Laboratory, extensive studies of commercial glazing materials, accompanied by a careful evaluation of field experiences, have revealed that dissatisfaction with glazing seal performance can usually be traced to misapplication of sealers, to loading them beyond their capacity, or to overestimating the life expectancy of a sealer in a particular application. Hence the company's Suydam Division has issued a report (Bulletin A-3) which seeks to outline the properties and limitations of glazing compounds and to suggest application procedures that have proved favorable to their satisfactory performance.

Specific materials are considered in two groups: those with general performance potential (Pittsburgh Plate's *Duribbon* vulcanized butene tape sealer, and the *Thiokol* polysulfide rubber compounds); and those of limited performance potential (conventional putties and elastic glazing compounds, and non-vulcanized extruded tapes). The report also includes a listing of rules of thumb for proper sash detailing and proper glazing procedure.

**MOSAIC**  
designed by Pierre Millous  
**STAINED**  
produced in Chartres, France  
**GLASS**



Trinity College Chapel, Burlington, Vt.  
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Burlington

Mosaic Glass 1" thick,  
chipped and set in reinforced  
cement . . . vibrant and colorful.

Designs and samples on request

The Studios of  
George L.

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**Now . . . recessed "ribbons of light"**

**that fit all modern ceiling systems:**

## **Sylvania's Shallow Troffer Series**

**in both 1-foot and 2-foot widths**

**N**OW YOU CAN SPECIFY recessed "ribbons" of light with nearly every type and make of ceiling material used today. That's because each model in Sylvania's new Shallow Troffer Series is available with one of *three* different types of housing (see closeups below). All units are carefully engineered for quick installation with a clean, neat, light-tight fit.

Both one-foot and two-foot widths measure only 5 1/2" from top to bottom—slicing inches off old depths yet providing full illumination efficiency and needed heat dispersion. In many cases, no additional plenum depth is needed for mounting. Units are fully recessed. Latches and hinges don't show . . . only the clean lines of the outer framing and shielding.

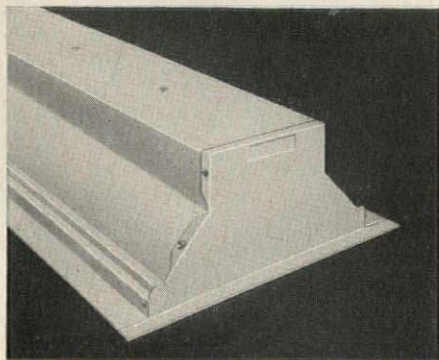
In short, the Sylvania Shallow Troffer Series

has a unique ability to meet many of the latest architectural requirements. It gives the creative lighting designer a new opportunity for freedom of expression, a medium for more effectively translating original decorative concepts into realities.

Lay-in type troffers are now provided for Z-spline and inverted-T ceilings. Exclusive *snap-up hanger* provides quick, secure mounting for most other types of acoustical ceilings. Contact your Sylvania Fixtures Specialist for further details. Or write to Lighting Headquarters for folder V-700 with complete specification data.

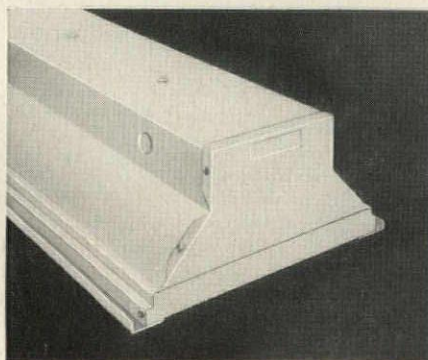
SYLVANIA ELECTRIC PRODUCTS INC.  
Dept. M20, Lighting Division—Fixtures  
One 48th Street, Wheeling, W. Va.

### **All it takes are these 3 Sylvania housing types**



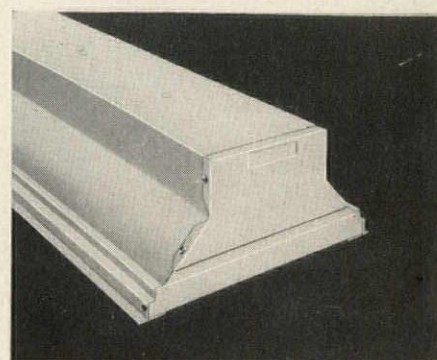
**Exposed Flange Housing**

For most acoustical tile and plaster ceilings. For appearance, wide side flanges and flange-type end caps trim the ceiling opening. Choice of Snap-Up Hanger, Hanger-Strap, or End-Support Bracket Mounting, depending on ceiling type.



**Fit-in Flange Housing**

For use with metal pan acoustical ceilings. Has straight ends for proper functioning of metal pans. To facilitate installation, turned-up lips do not actually engage in the T-bar, but *do* provide appearance of complementing metal pan.

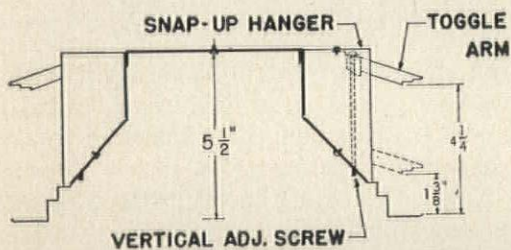


**Concealed Flange Housing**

For inverted T-grid acoustical ceilings. Used with Inverted-T acoustical ceilings or exposed Z-Splines running parallel to troffers, it always employs Lay-In mounting. Narrow side flanges, "cut-back" ends fit modular ceiling dimensions.

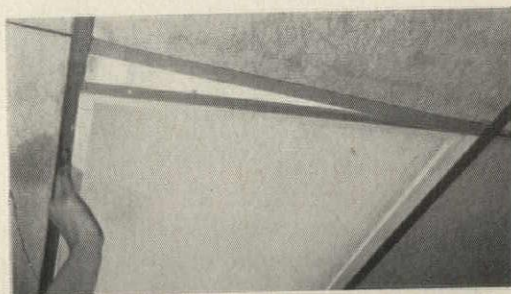


**New Sylvania 2' Wide Troffers**—only 5½" deep—used with suspended ceiling system for combined eye-interest and good lighting. Shown: the new offices of Hagan Chemicals & Controls, Inc., Parkway West, Pittsburgh, Pa.



**5½" high troffers utilize full plenum space**  
 Exclusive new Snap-Up Hanger eliminates wasted plenum depth; toggle springs out, rests on ceiling supports when fixture is pushed into position. Leveling is accomplished with adjusting screw.

*Best fixture value in every price range*



**Easy access cuts maintenance time, costs**  
 Simple push upward releases hidden latch. Concealed hinging swings shielding down, holds it throughout cleaning and lamp changes. Each fixture is individually fused.

**Sylvania's standard troffer shieldings include—**

- Corning #71 Crystopal Flat Glass Lens
- Corning Flat Albalite (diffuse opal glass)
- Skytex
- Patterned Clear Plastic Lens
- Dished Acrylic Plastic (diffuse panel)
- Plastic Louver—43° x 43°
- Metal Louver—35° C x 45° L
- Metal Louver—45° C x 45° L

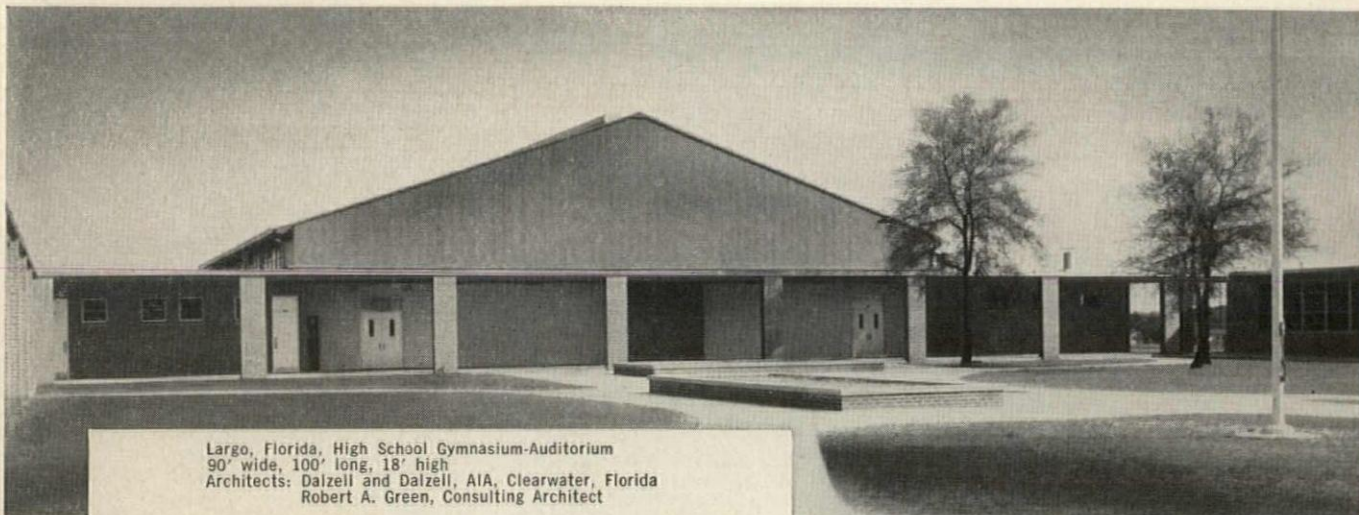
**Other shielding types will be provided on request.**



**SYLVANIA**

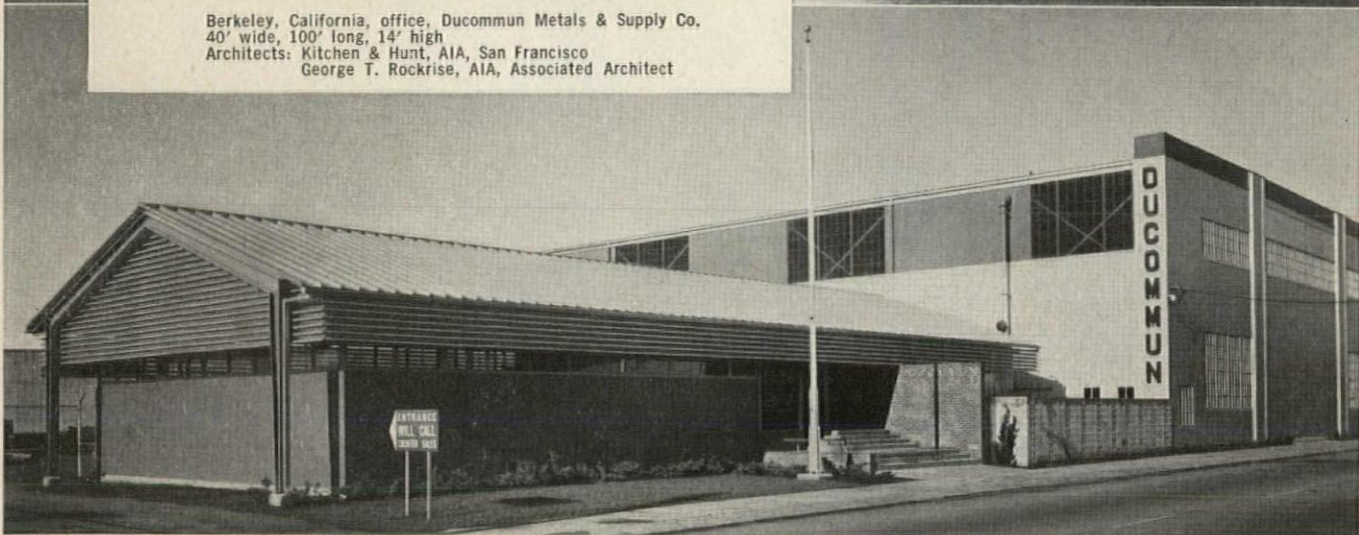
*Fluorescent Lighting Fixtures and Systems*

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Largo, Florida, High School Gymnasium-Auditorium  
 90' wide, 100' long, 18' high  
 Architects: Dalzell and Dalzell, AIA, Clearwater, Florida  
 Robert A. Green, Consulting Architect

Berkeley, California, office, Ducommun Metals & Supply Co.  
 40' wide, 100' long, 14' high  
 Architects: Kitchen & Hunt, AIA, San Francisco  
 George T. Rockrise, AIA, Associated Architect



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money. Yet you gain wide freedom in the variety of Armco Building types: clear, clean rigid frame designs, efficient, wide truss framing, or smaller frameless buildings. Clear-span widths range from 5'-4" to 100'. Write us for details. Armco Drainage & Metal Products, Inc., 6178 Curtis Street, Middletown, Ohio.

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*Subsidiary of Armco Steel Corporation*

OTHER SUBSIDIARIES AND DIVISIONS: Armco Division • Sheffield Division • The National Supply Company  
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- self-priming
- gives up to 500 square feet of coverage per gallon
- remarkable one-coat hiding efficiency . . . on plaster walls, woodwork, wallpaper and interior masonry

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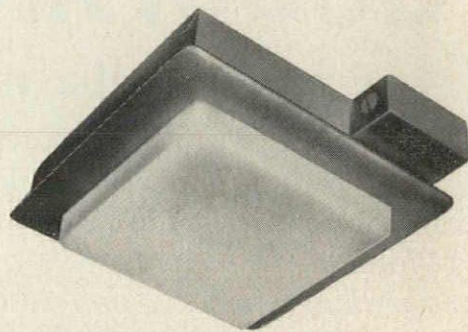
City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

## Product Reports

continued from page 167

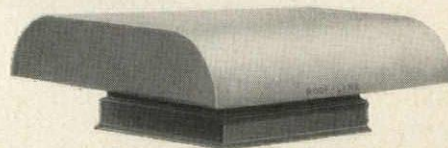
### Compact Packaged Water Chillers

Three recently-introduced lines of packaged water chillers for air conditioning and process cooling applications feature a 50 per cent size reduction compared to previous models of equal capacity. Advantages attributed to their smaller size and lighter weight include less floor space and headroom, more freedom in placement, reduced floor loadings, and greater ease in handling. The units are also said to be less costly to install, support and operate. They are available in sizes from 3 to 125 tons. *Acme Industries, Inc., Jackson, Mich.*



### Watertight Light Fixture

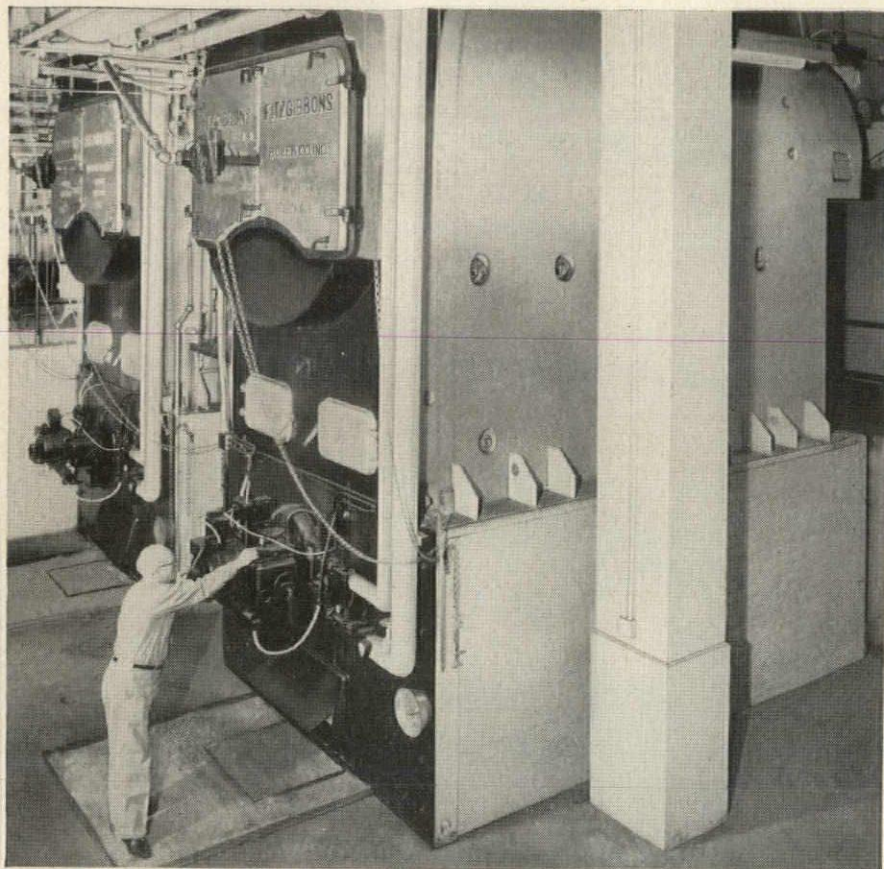
A recessed downlight designed for use in wet locations features a watertight steel housing that can be used as a pouring form in concrete ceilings. Three inches deep, the unit can be fitted with two 100 watt lamps or one 150 watt lamp. An external splice box facilitates wiring in continuous installations. *McPhilben Lighting Inc., 1329 Willoughby Ave., Brooklyn 37, N. Y.*



### Roof-Hugging Gravity Ventilators

Designed to relieve pressure and provide efficient weatherproof ventilation over areas where positive exhaust exists, *VANCO Roof-Line* gravity ventilators feature an unobtrusive low silhouette. Aluminum, copper or galvanized sheet metal units are available in square and rectangular models with throat sizes ranging from a minimum of 12 in. to a maximum of 60 in. on a side. *E. Van Noorden Co., 54 Magazine St., Boston 19, Mass.*

more products on page 198



## Fitzgibbons Boilers working at Standard-Vacuum Oil Company



Standard-Vacuum Oil Company's sparkling new office building in White Plains, New York, features the latest in office layout and architecture, and the best in materials and equipment.

Part of this equipment—the heart of the heating system—is two Fitzgibbons "D" Type Boilers. These two DM 425, oil-fired boilers each supply 42,500 square feet of steam to provide economical, dependable heat and air conditioning.

Fitzgibbons "D" Type Boilers were selected for this installation because of their proved high efficiency, their strong, durable construction, and their ease of cleaning and maintenance.

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Eggers and Higgins, N.Y.C.  
Consulting Eng: The Firm of  
Edward E. Ashley, N.Y.C.  
Heat. & Air Cond. Contr's:  
Wolff & Munier, Inc., N.Y.C.

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on this and other  
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write Fitzgibbons or  
contact your local  
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 Address: 1900 Fourteenth Ave. Bid to: A.B.C. Mfg. Co.  
 City: Chicago, Illinois Address: (Same)  
 Architect: Miller & Young City: (Same)

ANNUAL SAVINGS										
QUANTITY	WIDTH	HEIGHT	HEAT	HEALTH	TIME	WEAR & TEAR	TOTAL	INITIAL INVEST	ANNUAL EXPENSE	
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1	10'	10'	\$ 22				\$ 22	\$ 35		
DUE TO WEATHER-KING FLUSH SECTIONS instead of panel sections										
			\$ 8				\$ 8	\$ 14		
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					\$ 250					
1	10'	10'	\$ 35	\$ 100	\$ 10		\$ 395	\$ 400	\$ 12	
Barber-Colman Company Rockford, Illinois							Totals	\$ 423	\$ 449	\$ 12
							Less Annual Cost	102	x 205	
							Net Gain per year	\$321	\$89.50	Cost of Invest
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NEW WEATHER-KING  
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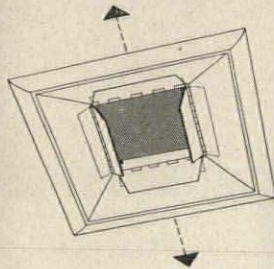
City \_\_\_\_\_ State \_\_\_\_\_

THE MARK OF QUALITY

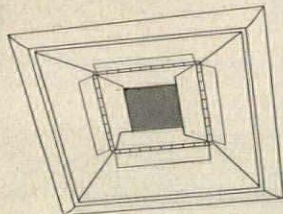


**Uni-Flo**

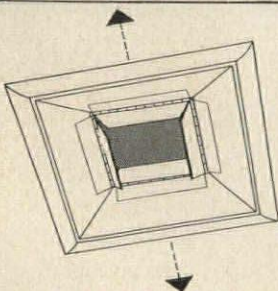
ENGINEERED AIR  
DISTRIBUTION



**ADJUST AIR PATTERN**  
(2-way opposite pattern  
illustrated)

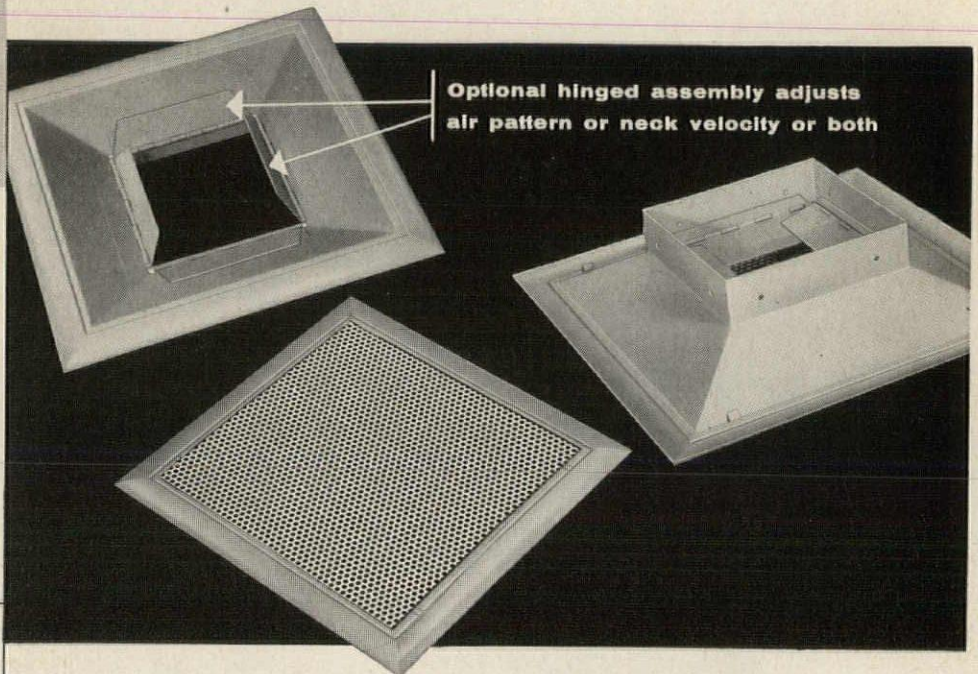


**ADJUST NECK VELOCITY**  
(Adjustment for  
maximum velocity illustrated)



**ADJUST AIR PATTERN  
AND NECK VELOCITY**  
(Adjustment for maximum  
velocity with 2-way opposite  
air pattern illustrated)

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**. . . hinged adjustment assembly saves time and trouble; provides correct air distribution to meet any conditions**

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Adjustment of the blades to the horizontal position provides maximum neck velocity and throw. Adjustment of one or more of the blades downward provides 1-way, 2-way, or 3-way air patterns. Correct positioning of the blades will control both air pattern and neck velocity.

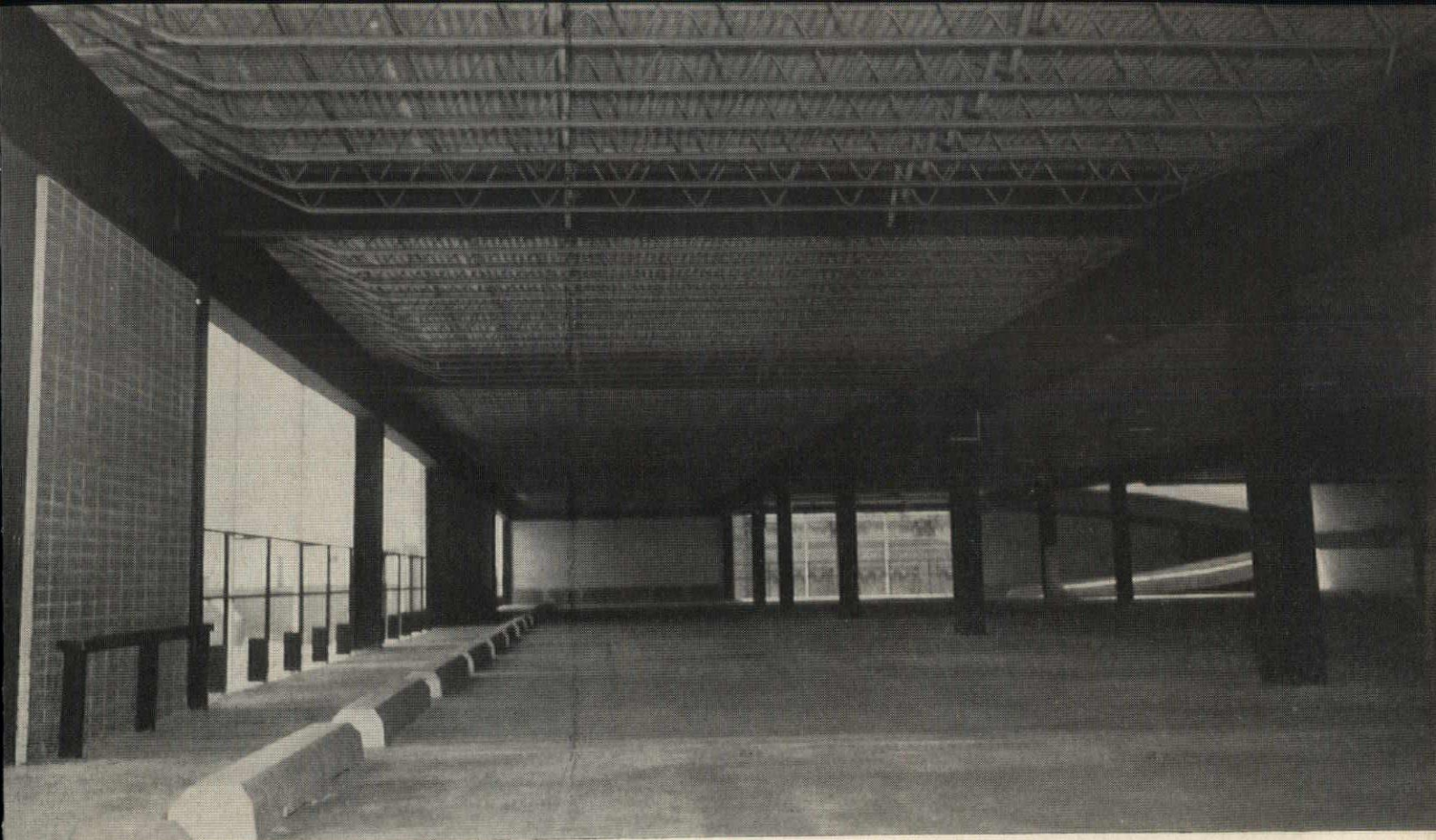
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safely support 118,125 sq. ft. of parking space!

**T**HIS new 9-level parking garage in downtown Gary, Indiana, is a good example of all-weather construction.

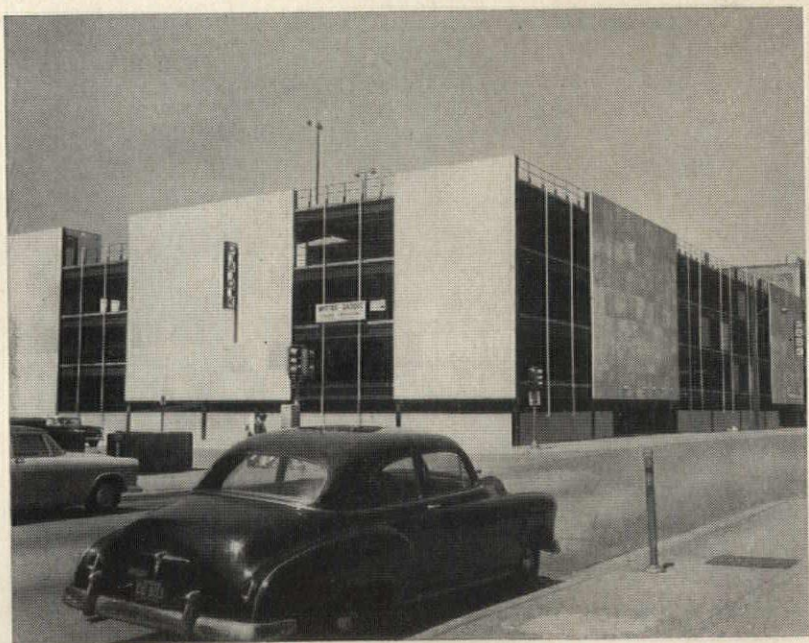
Erection of the 340-car, 125' x 210' x 45' steel-frame building proceeded without interruption right on through the winter. Cold weather did not interfere with the construction of 118,125 sq. ft. of floors, since AmBridge Standard Steel Joists could go up independent of the flooring. Thus, concrete could be poured immediately after each level was completed, or at any convenient time.

This carport was designed by Beine, Hall & Curran, Architects and Engineers, and constructed by Witter-Gaddis Corporation, both of Gary. American Bridge fabricated and erected 189 tons of AmBridge Standard Steel Joists and erected 500 tons of structural steel.

USS AmBridge Steel Joists provide rigid, lightweight and economical construction for any type of floor, roof and ceiling.

**FREE 40-PAGE CATALOG** contains complete design information for spans up to 120 feet. For free copy, write to American Bridge, 525 William Penn Place, Pittsburgh, Pa. Or get in touch with any of the offices listed below.

*USS and AmBridge are registered trademarks*



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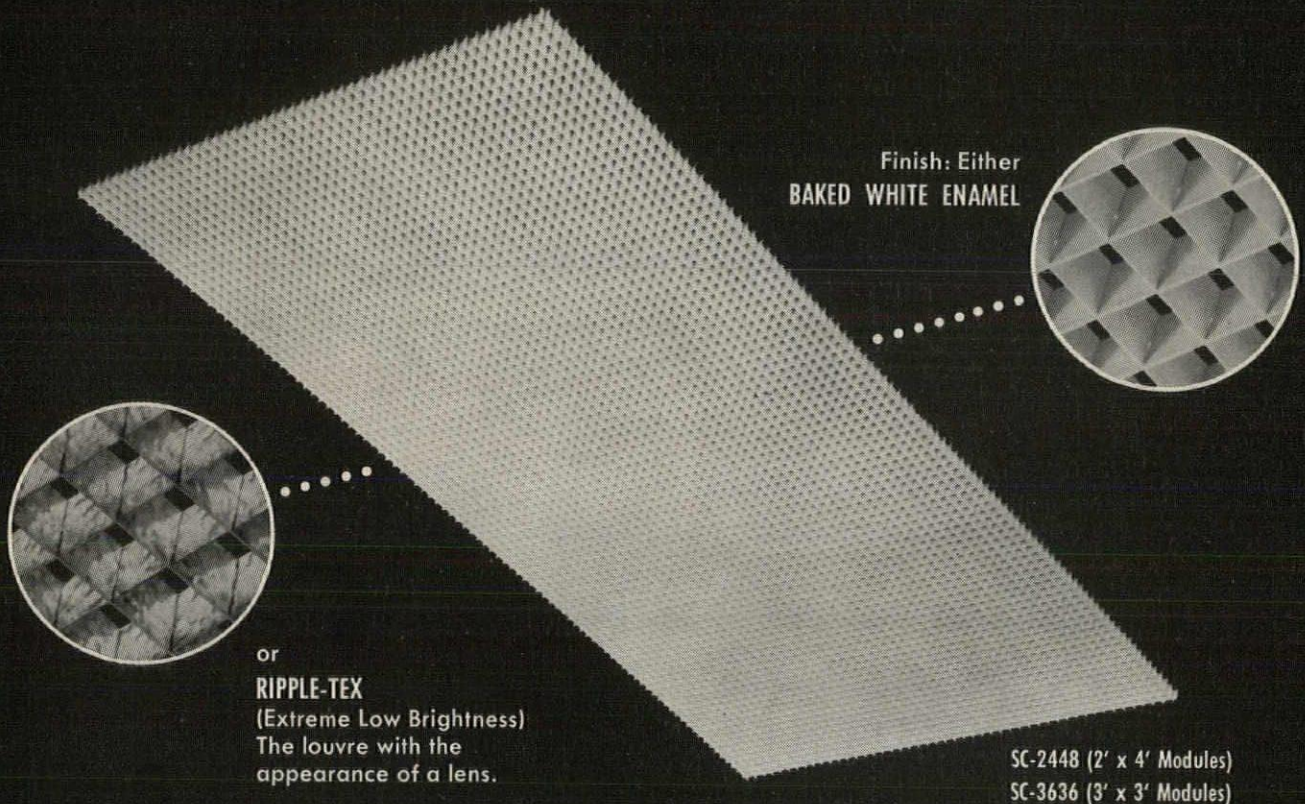
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(with  $\frac{1}{2}'' \times \frac{1}{2}'' \times \frac{1}{2}''$  cells)

(exclusive CEL-LOK PROCESS)



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SC-2448 (2' x 4' Modules)  
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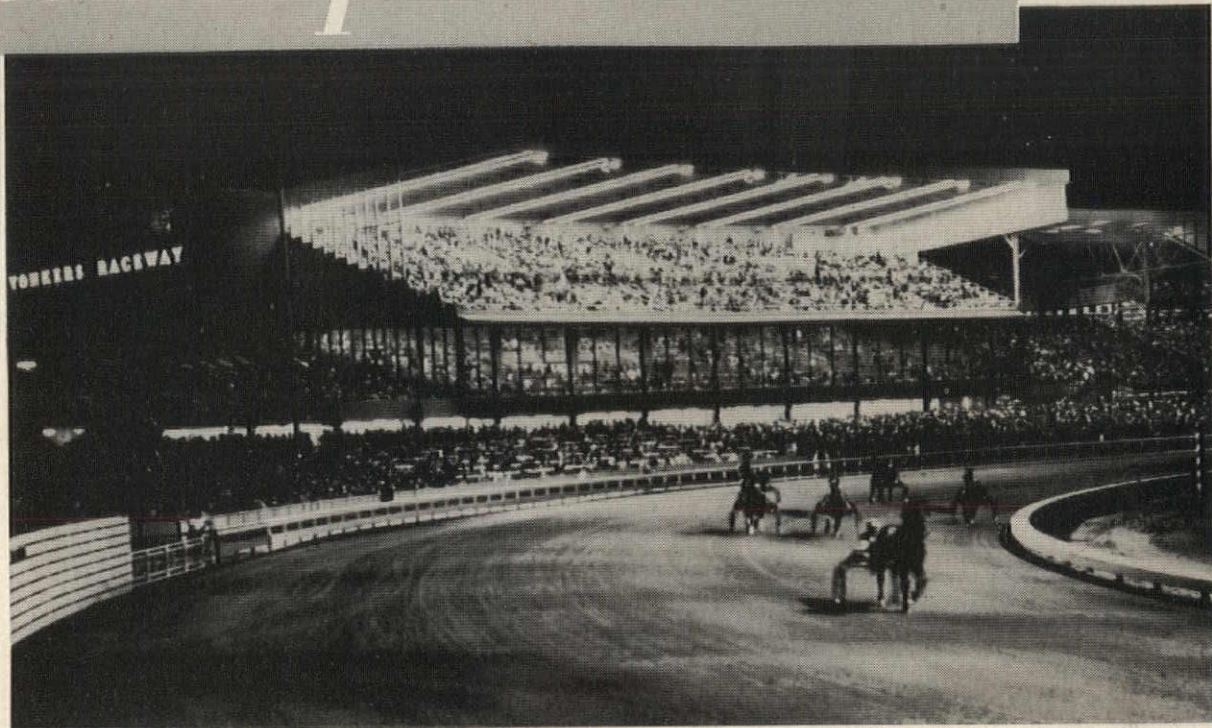
NEW — DIFFERENT — ECONOMICAL — LASTING

Now available — Metal louvres (Aluminum or Steel) with  $\frac{1}{2}'' \times \frac{1}{2}'' \times \frac{1}{2}''$  cells. Neo-Ray MINI-CELL metal louvers now make possible overall luminous ceilings in 2' x 4' or 3' x 3' modular grid systems (or to specification) with the following advantages:

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Architect: Lionel K. Levy  
 Elec. Eng.: Guy B. Panero  
 Elec. Cont.: Fischbach & Moore, Inc.  
 Builder: Yonkers Contracting Co.

...and no wonder!

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**NEVER  
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a line so functional!

**NEVER  
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a line so modern!

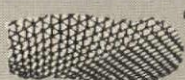
**NEVER  
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a line so easy to specify!

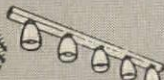
See our catalog in Sweet's Architectural File sec. 32a  
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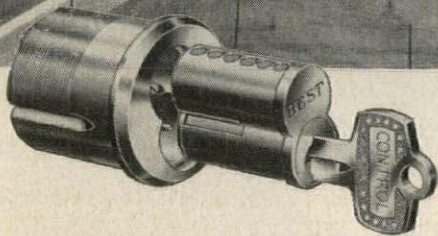


Troffers

**NEO-RAY PRODUCTS, Inc.**  
 315 East 22nd St. • New York 10, N. Y.



Architect: Everett I. Brown  
Indianapolis, Indiana



## SPECIFIED

### In Indiana's New North Central High School— **BEST** Locks with the *interchangeable core*\*

Handsome, new North Central High School, in Washington Township near Indianapolis, harmoniously blends design beauty with functional service. In planning the school's locking system, attention was focused not only on physical security and appearance, but also upon future maintenance ease and economy.

An all-BEST locking system was decided upon because it minimizes cost and time required for lock changes . . . also provides *one* simplified masterkey system throughout the school and *entire Township school system*. Future buildings can easily be added to this single masterkey system. The BEST system reduces total number of keys needed, allows instant, economical lock changes and assures maximum physical security.

\*The *interchangeable core* is a patented, key-removable pin-tumbler lock which can be locked or unlocked with a regular operating key. This core may be removed with a special "Control Key" (used only to remove and replace cores), effecting instant change of locks. For complete details, see Sweet's Architectural File <sup>18e</sup> or write



Dept. A-3

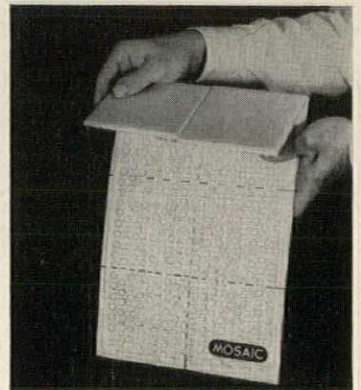
**Best Universal Lock Co., Inc.**  
10 N. Senate Ave., Indianapolis 4, Indiana

## Product Reports



### Tilt-In Monumental Window

The *Monumen-tilt*, a new double-hung window for use in monumental buildings, features heavy aluminum construction and tilt-in glass frames that permit washing from the inside or hopper ventilation. Both the hinged glass-sash and the vertical sliding sash which carries it are double weather-stripped and will take any type of glass up to 1/2 in. insulating glass. Maximum window sizes are 4 1/2 ft wide and 8 ft high. The *Monumen-tilt* design also provides continuous heads and sills for horizontal banks of windows directly connected with splines or mullioned around load-bearing columns. *Fleet of America, Inc.* 2015 Walden Ave., Buffalo 25, N. Y.



### Pre-Mounted Wall Tile

Glazed ceramic wall tile is now available in a new form called *Swif-Way* in which eight 4 1/4 in. square tiles are mounted on a sheet of strong, latex impregnated paper that is perforated to allow 51 per cent of the tile to bond securely to the setting bed. The paper itself bonds firmly to all standard setting materials and, because it is thinner, requires less adhesive in the setting bed. *Swif-Way* may be used with thin-set or conventional setting methods. *The Mosaic Tile Co., Zanesville, Ohio.*

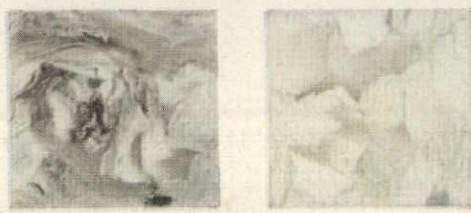
more products on page 204



# LUXURIOUS NEW VINYL TILE LETS YOU DESIGN WITH MARBLE IN MIND!

Now you can create luxurious interiors that are every bit as practical as they are beautiful. New B. F. Goodrich "Corinthian" is a translucent vinyl tile with three dimensional marble veining that runs clear through. Elegant? Yes . . . but also so tough it will outlast the building itself. Stains, oils, greases and detergents can't hurt its glistening "anti-slip" surface—wipes clean and bright with a damp mop. And is amazingly resilient and soft underfoot.

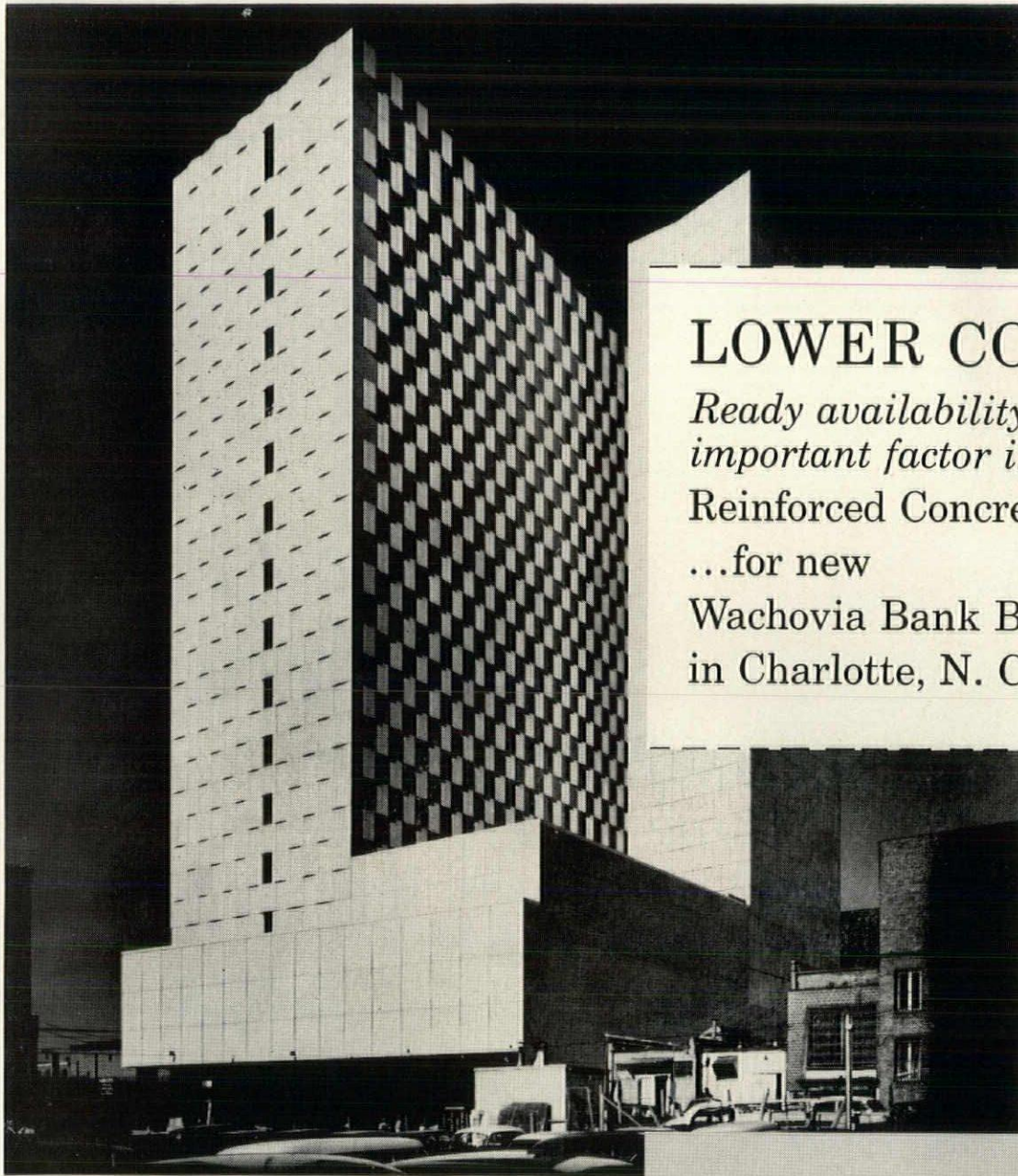
Use on or above grade. Tile 1/8" thickness, 9" x 9", 12" x 12", also 36" x 36" untrimmed. For further information, write The B. F. Goodrich Company, Flooring Products, Watertown 72, Mass., Dept. AR-12.



"CORINTHIAN"  
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Wachovia Bank and Trust Company Building, Charlotte, N. C.  
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 and Associates, Charlotte  
 Contractor: J. A. Jones Construction Co., Charlotte  
 Structural Engineering: Severud-Elstad-Krueger, New York City

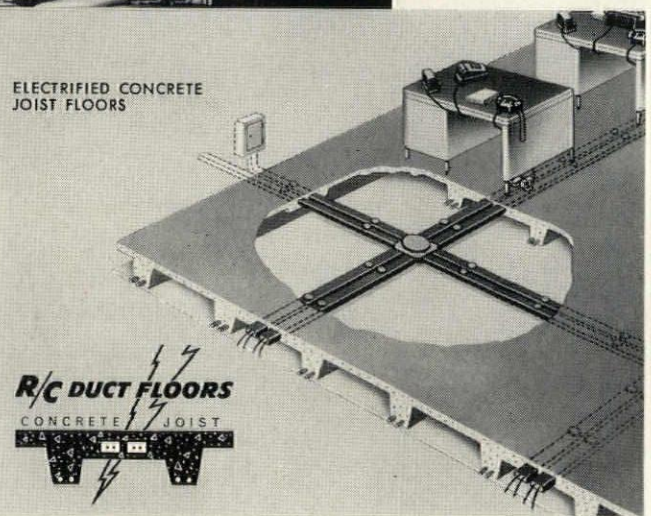
## LOWER COST...

*Ready availability of materials  
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 Wachovia Bank Building  
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**R/C Duct Floors provide complete flexibility of electrical outlets** for the new Wachovia Bank Building. On many other important projects reinforced concrete and R/C Duct Floor construction is providing better structures for less money, maximum fire safety, and low annual maintenance. A pacesetter in banking architecture, the building itself is a 15-story reinforced concrete structure of "long-span" construction supported on a foundation of 829 concrete and steel piles. The "long-span" construction results in office space which is entirely free of interior columns. The Wachovia Bank Building is the first in the Nation to use prismatic cast stone panels which reflect sunlight, cut down glare, and form an unusual and striking exterior design.

Before you build, investigate this economical and flexible medium of construction. Compare . . . and you will design for Reinforced Concrete.

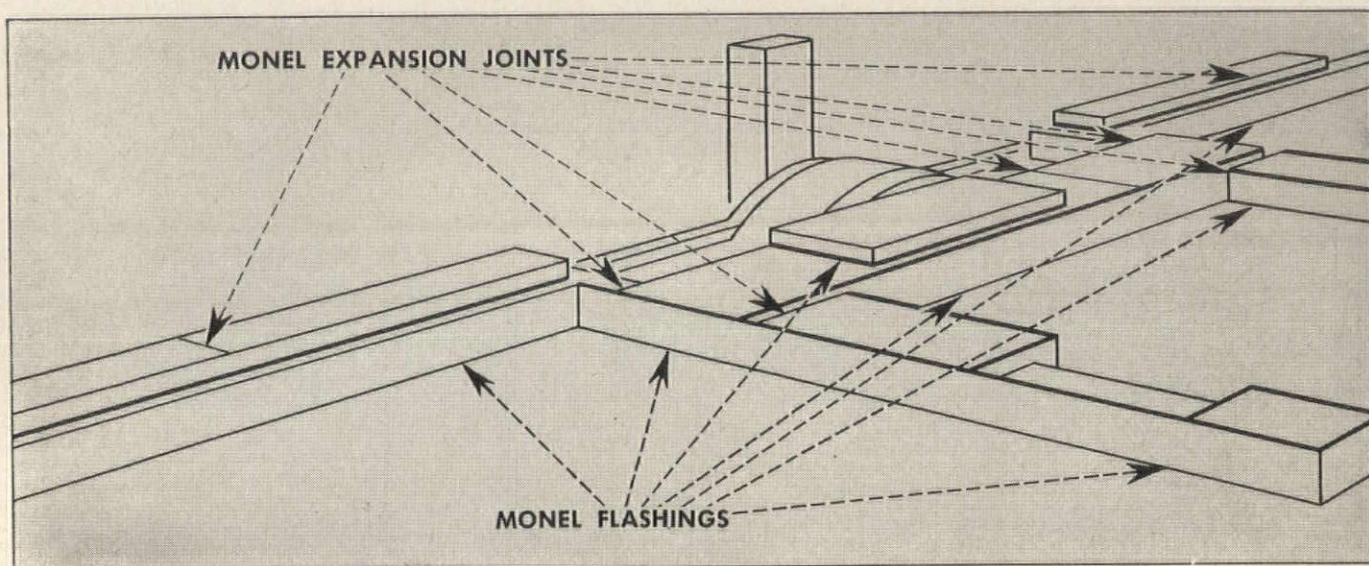
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## Designed with Monel roofing



## for the life of the building

**Corrosion resistance . . . coefficient of expansion almost identical to concrete . . . cited as principal reasons.**

The architects had extra good reasons for writing Monel alloy into the specs for the monumental International Arrivals Building at New York International Airport\*.

**First**, corrosion-resisting Monel\*\* nickel-copper alloy can withstand the corrosive ocean air that sweeps across the airport . . .

**Second**, Monel alloy is almost identical in coefficient of expansion to concrete. Where buried, it works *with* concrete and masonry. Virtually eliminates cracking and destructive leakage.

Consider these other benefits. The strength of Monel alloy permits gauges lighter than most other metal roofing materials . . . particularly new crimped Monel sheeting, which is stronger still. Crimped Monel practically eliminates the need for expansion joints because it is, in effect, one continuous expansion joint. What's more, Monel alloy bends and trims readily . . . solders and welds easily . . . facilitates easy construction.

**Readily available.** Monel alloy is in plentiful supply from warehouse stocks throughout the country. Don't hesitate to write to Inco for advice on roofing problems.

\*Sheet-metal contractor—A. Munder & Son  
Architects—Skidmore Owings & Merrill

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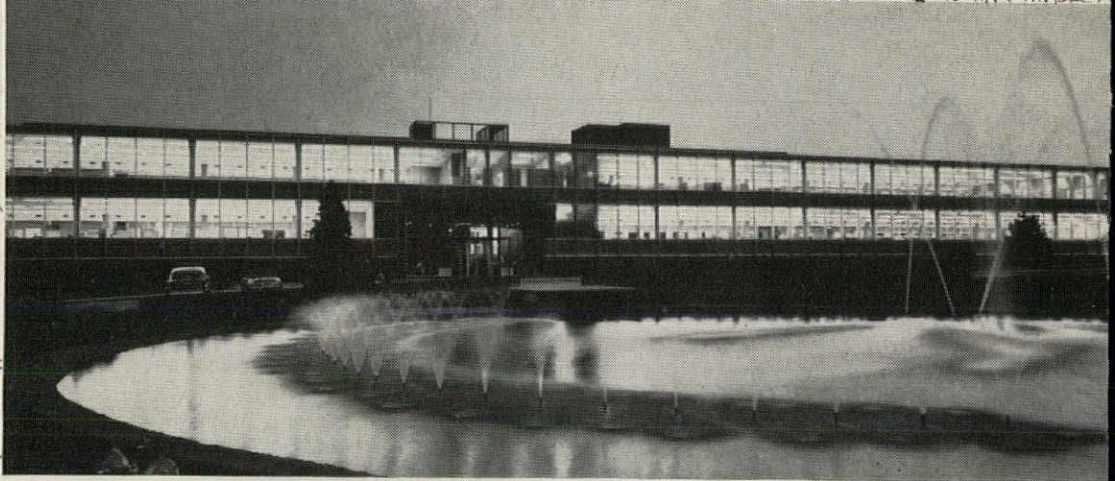
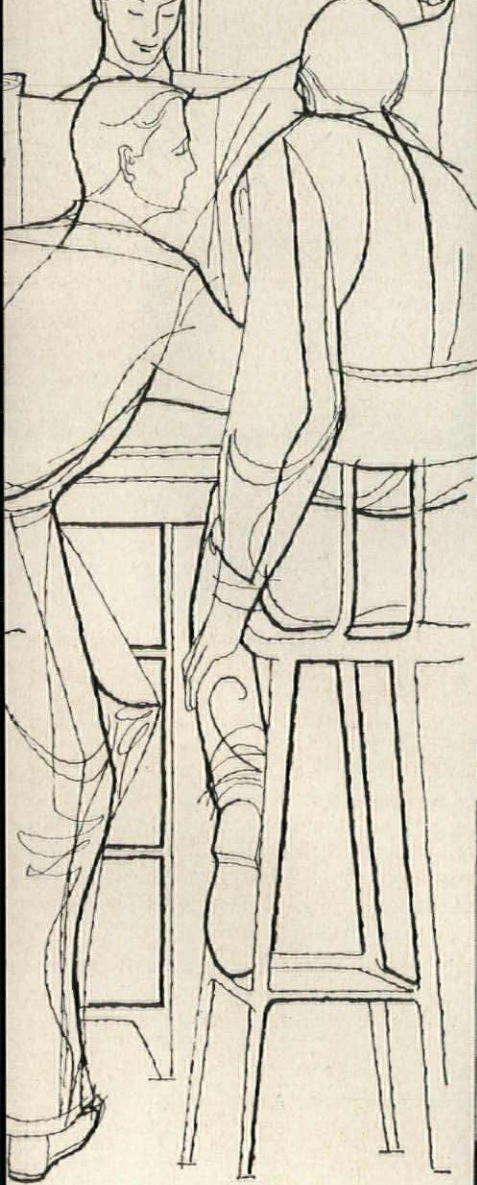
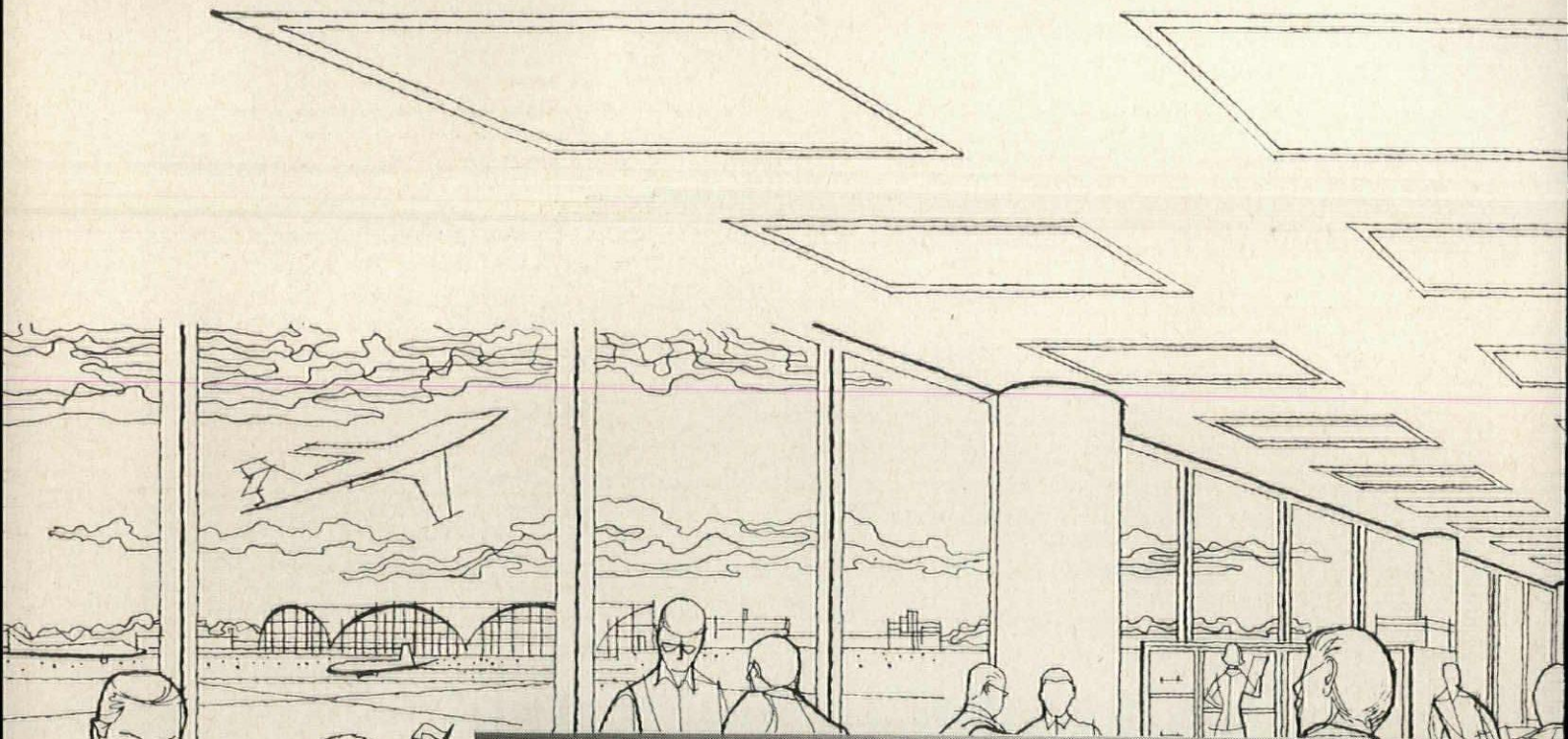
**THE INTERNATIONAL NICKEL COMPANY, INC.**  
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# MONEL ROOFING

## FOR THE LIFE OF THE BUILDING



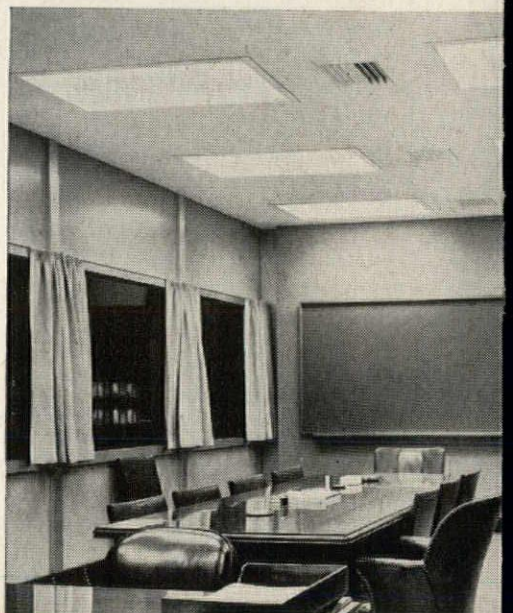
ENGINEERING CAMPUS at McDonnell Aircraft Corp., St. Louis, HARRIS ARMSTRONG, F.A.I.A. Architect; GAMBLE CONSTRUCTION CO., General Contractor; JOSEPH A. MAYER, Electrical Engineer.

# Design for the Jet Age

RECESSED TROFFERS, supplied by Day-Brite as 8-foot units, accent the width of this corridor.



MOBILEX shown here as single units, can also be used in rows, patterns or as luminous ceiling.





MODULAR MOBILEX® by Day-Brite offers unusual freedom of design . . . adapts to all plaster and acoustical ceilings . . . in choice of glass, plastic or louvered enclosures.



# sparked by Day-Brite Lighting

Z-82 ©1958



High-level comfort lighting reduces eye-strain and fatigue . . . speeds work . . . helps spark bright ideas.

At McDonnell Aircraft's new Engineering Campus where many of the most deadly weapons in America's air arsenal are designed, critical visual tasks demanded the use of the most effective lighting obtainable.

This obviously was no place for lighting of "or equal" caliber. Day-Brite was the *logical* choice.

For architects, too, Day-Brite lighting can help stimulate "jet-age" ideas. Call your Day-Brite representative (listed in the Yellow Pages) and see how much Day-Brite designs can contribute to your proudest efforts.

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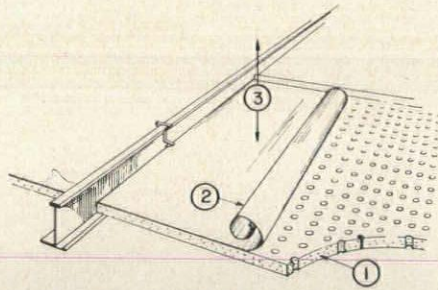
*Day-Brite Lighting, Inc., of Calif.*  
530 Martin Ave., Santa Clara, Calif.



**ATION'S LARGEST MANUFACTURER OF COMMERCIAL AND INDUSTRIAL LIGHTING EQUIPMENT**

**Repaintable Ceiling Tile**

*Cavity Tile*, a low cost acoustical ceiling tile which can be repainted without loss of sound absorption efficiency, is said to also represent the first commercial application of the cavity resonance principle. The tile itself consists of a 3/8 in. perforated gypsum board (1) backed by a porous membrane (2). The space above the suspended tile (3) provides a spring-like action of air that dissipates sound waves as they are forced back and forth through the special mem-

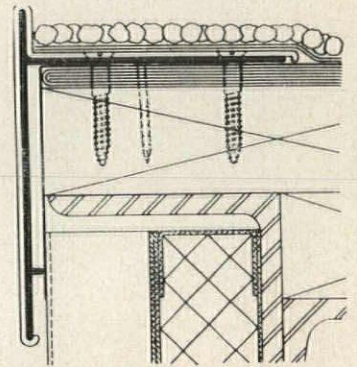


brane. Because its sound absorption coefficients maintain a high level throughout the normal frequency range regardless of the pitch of the

noise, the new tile is said to be especially effective in areas requiring uniform sound absorption across the frequency scale. *The Celotex Corp., 120 S. La Salle St., Chicago 3, Ill.*

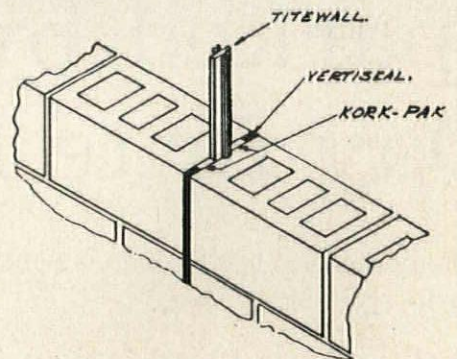
**"Pilot-Light" Indicating Switch**

Without altering the basic principles of REMCON low-voltage remote-control switching, another set of contacts has been added to the relay to operate a tiny 6 volt lamp that indicates "on" and "off." The pilot-light circuit employs the same wires used for wiring the switch to the relay, eliminating the need for additional wiring or transformers. *Remcon Div., Pyramid Instrument Corp., Lynbrook, N. Y.*



**Architectural Aluminum Extrusions**

New additions to Kaiser Aluminum's line of architectural extrusions include gravel stops and window sills with straight drip edges designed to provide a clean line appearance in keeping with contemporary architectural styling. *Kaiser Aluminum & Chemical Sales, Inc., 919 N. Michigan Ave., Chicago 11, Ill.*

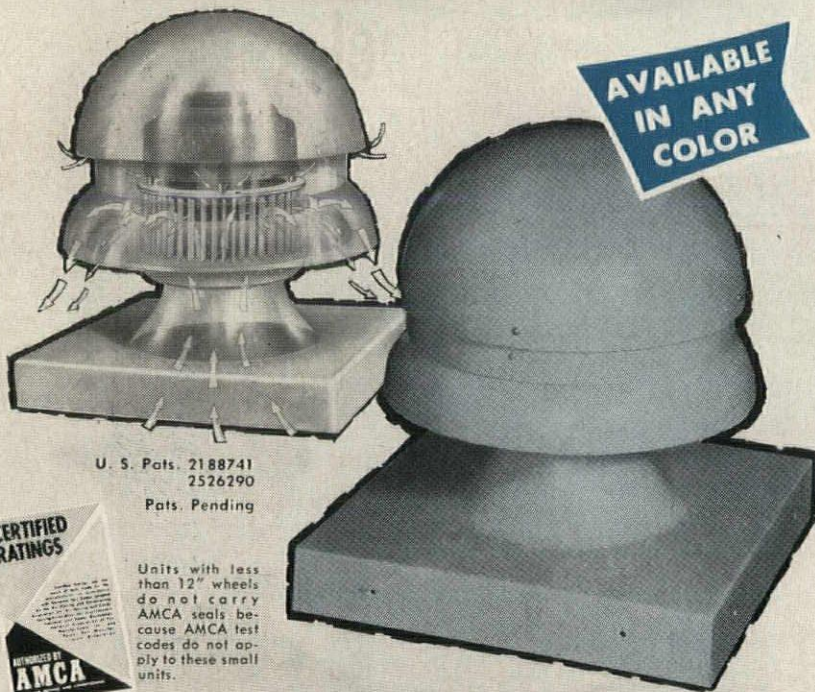


**Rubber Control Joints**

*Titewall* rubber control joints are said to protect against water leakage when used in expansion joints in masonry walls. Made from a synthetic rubber compound which is durable and elastic, *Titewall* is available in lengths up to 10 ft. *AA Wire Products Co., 714 East 61st St., Chicago 37, Ill.*

more products on page 212

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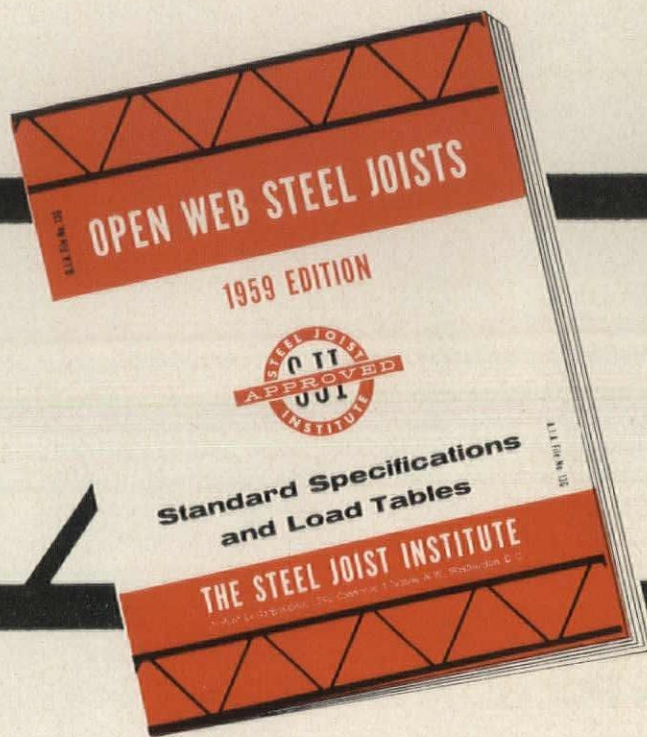
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# SJI publishes **NEW** steel joist **COMBINED SPECIFICATIONS and LOAD TABLES**

Combined specifications and load tables for all types of open web steel joists have been published by the Steel Joist Institute, providing a handy reference for the designing architect and engineer. "S" series and "L" series joists uniformly designed are covered in this one over-all standard specification.

While open web steel joists to be manufactured under the new SJI standard will not be available from member companies before January 1, 1959, the combined specifications and load tables have been published at this time to permit incorporation

of the new joists into many structures now in the planning stage.

In other new developments, the SJI now offers all SJI-approved "S" series steel joists based upon 20,000 psi working stress, and has increased the number of SJI-approved "S" series steel joist types from 17 to 25.

These improvements by the Steel Joist Institute make SJI-approved "S" series joists a better investment than ever before!

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Standard Specifications and Load Tables.

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U.S. Naval Academy Field House.  
Architects: Harbeson, Hough, Livingston & Larson, Philadelphia,  
and Von Storch, Evans, & Burkavage, Philadelphia



Today's design becomes tomorrow's showplace  
*when Natco building products are in the picture*

Architects of the new United States Naval Academy Field House have employed a unique combination of bas relief and a blended pattern of Natco Speckled Ceramic Glaze Face Brick to complement the exterior design features of the structure. "Annapolis Blend," as this tri-shaded brickwork mix is known today, was developed through close cooperation of the architects and Natco's sales representative.

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# Re-roofing Stadium High School, Tacoma, calls for 12½ tons of Chase® copper



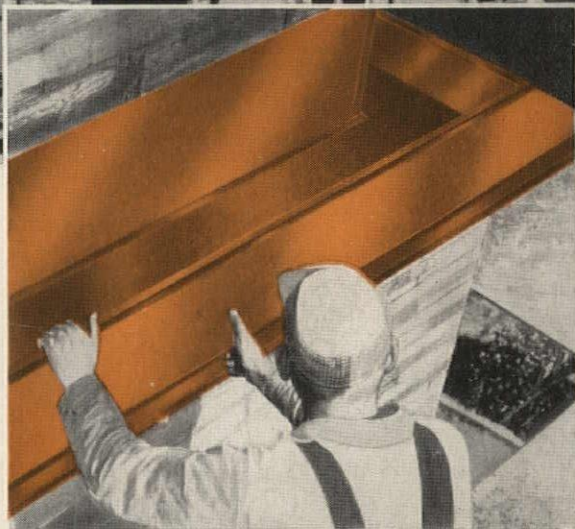
Architect: E. J. Bresemann Sheet Metal Contractor: Coleman Sheet Metal Company  
Associate Architect: Gilbert M. Wojohn General Contractor: Woodard Construction Co.

## 100 finials, copper gutters and cornices supplied for remodeling contract for historic school

Replica of an old French Chateau in Chaumont, Tacoma's Stadium High School overlooks Puget Sound. After over 50 years of service to the community, it was recently re-roofed.

The contract required more than 25,000 lbs. of copper for flashing, gutters, cornices and the covering of more than 100 finials. All copper used was 20 oz. copper, supplied by Chase.

Your nearest Chase Representative can help you with the many Chase products for builders, including architectural shapes; screening; roofing products; flashing, downspouts and gutters—and, of course—water and drainage LIFELINES® of Chase Copper Tube. Or write directly to Chase headquarters at Waterbury 20, Connecticut.



Coleman Sheet Metal Co. worker installing gutter and cornice of Chase copper on \$168,000 roofing job for Tacoma, Washington's Stadium High School.



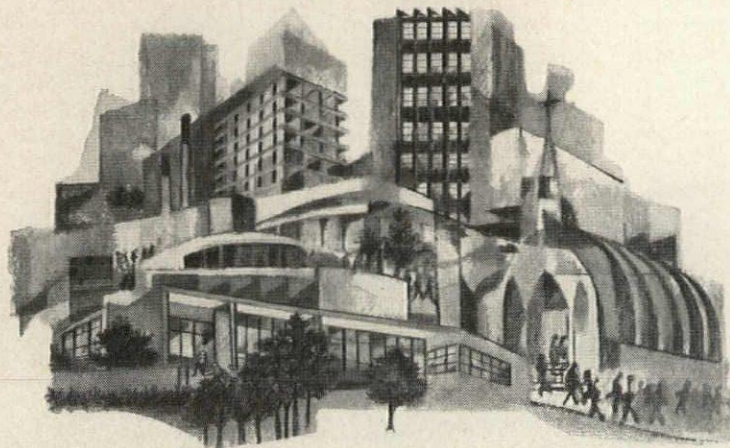
# Chase

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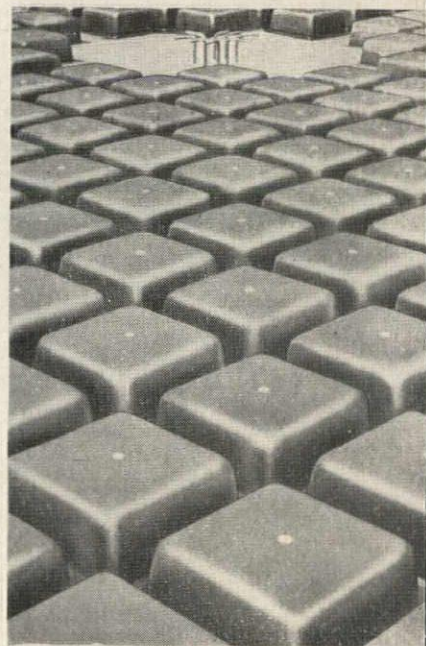


## How Ceko teamwork helps architects shape the skyline of America

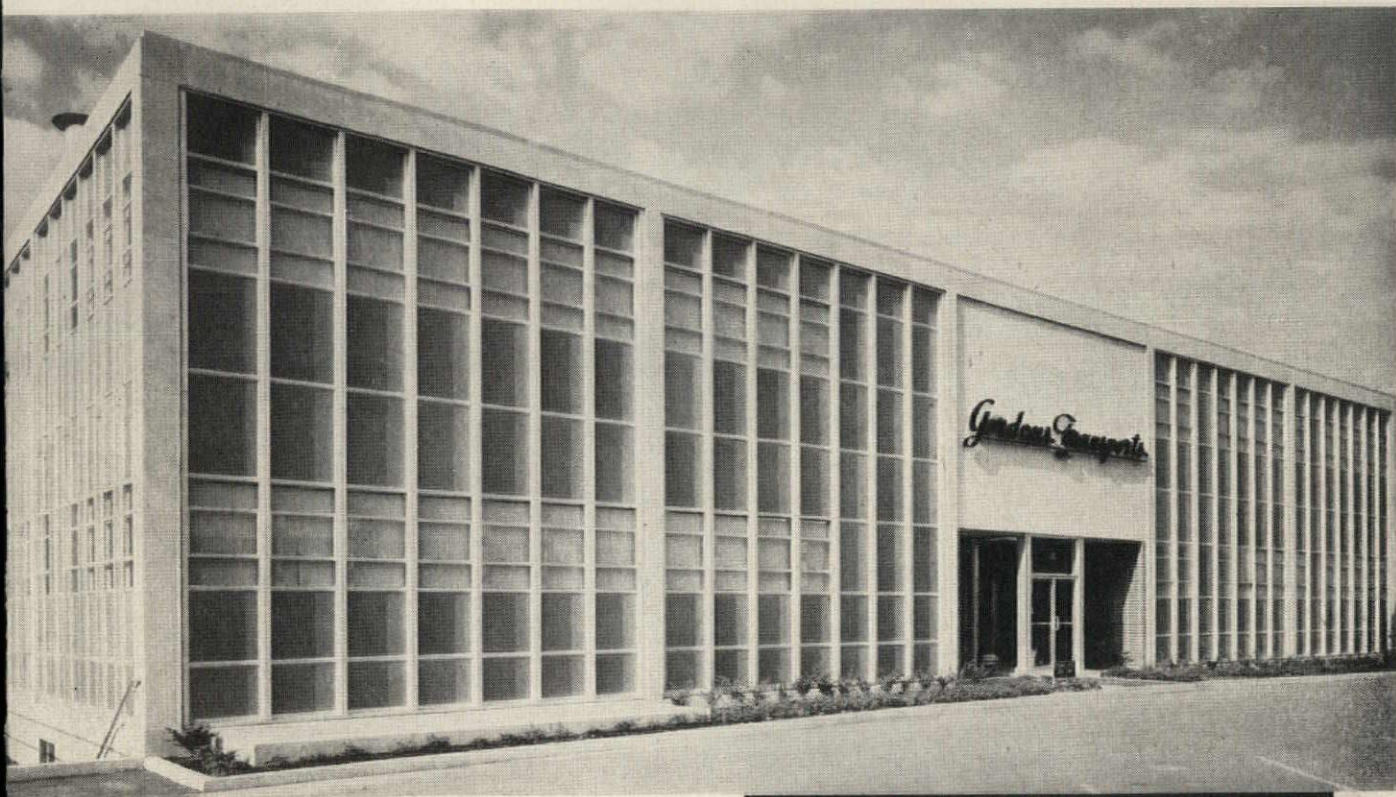
STEELDOMES . . . STEEL JOISTS . . . CECOFRAMES . . . CURTAINWALLS  
Only Ceko has the variety to allow architects the fullest freedom

Every architect should have freedom in design—freedom to make best use of knowledge and imagination. He needs building materials which will give him that freedom. And here is where Ceko provides welcome assistance, especially when called in before plans are drawn. Result: almost every skyline in the U.S.A. reflects Ceko teamwork with architects. Yes, from Littletown to Middletown to Metropolis, Ceko products are specified by architects in creating the building face of the nation. Ceko Steel Products Corporation. General offices: 5601 West 26th Street, Chicago 50, Illinois. Offices, warehouses and fabricating plants in principal cities.

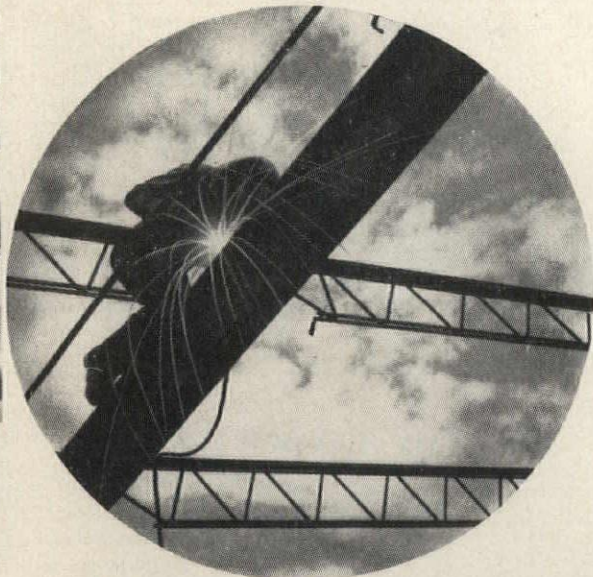
*Consider  
these 4  
engineering  
concepts:*



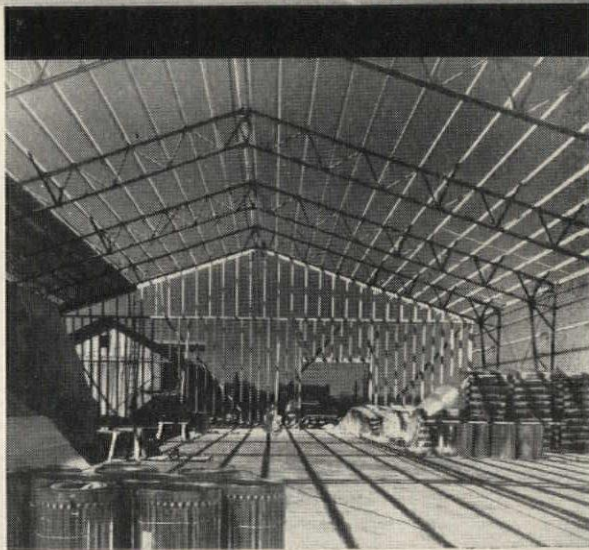
■ If open floor area is wanted in reinforced concrete, the answer is waffle-type flat slab construction formed with Ceko Steeldomes. Wide column spacings are easily achieved with Steeldomes, because of (a) the basic economy of two-way construction, and (b) the savings of dead-load through use of a joist framing system. Projecting beams are eliminated—story heights kept to the minimum. Splayed heads and drop panels can be eliminated, too. Your client saves on concrete, steel and labor . . . gets, in return, wide open spaces he can convert to profit. R/C duct underfloor electrification is readily installed, allowing electrical and telephone outlet flexibility for the life of the building.



■ If you want to exercise your architectural imagination, turn to *Ceco Aluminum* or *Steel Curtainwalls*. Using experience and sound engineering principles, Ceco can accommodate almost any architectural design. This frees you of limitations. Ceco mullions and windows are proven to be sound in engineering, practical in application and pleasing in appearance. So to achieve your artistic goal in a practical way, see your Ceco man for his engineering advice before you sit down at the drawing board.



■ If lightweight open floors are wanted in structural steel, the most practical and economical solution can be found in *Ceco Open-Web Longspan* and *Shortspan Steel Joists*. Light weight but rigid construction with Ceco Steel Joists reduces weight of supporting beams, columns and footings, saving materials throughout the building. Pipes and ducts are easily placed through the open webs of Ceco Joists, making it unnecessary to increase story heights. This saves materials, permits low silhouette exteriors. Construction time is kept to the minimum when steel joists are used. An exclusive feature: Low cost quality underfloor electrification is obtained by using Ceco Electro-Channel Steel Joists in combination with Ceco standard joists.



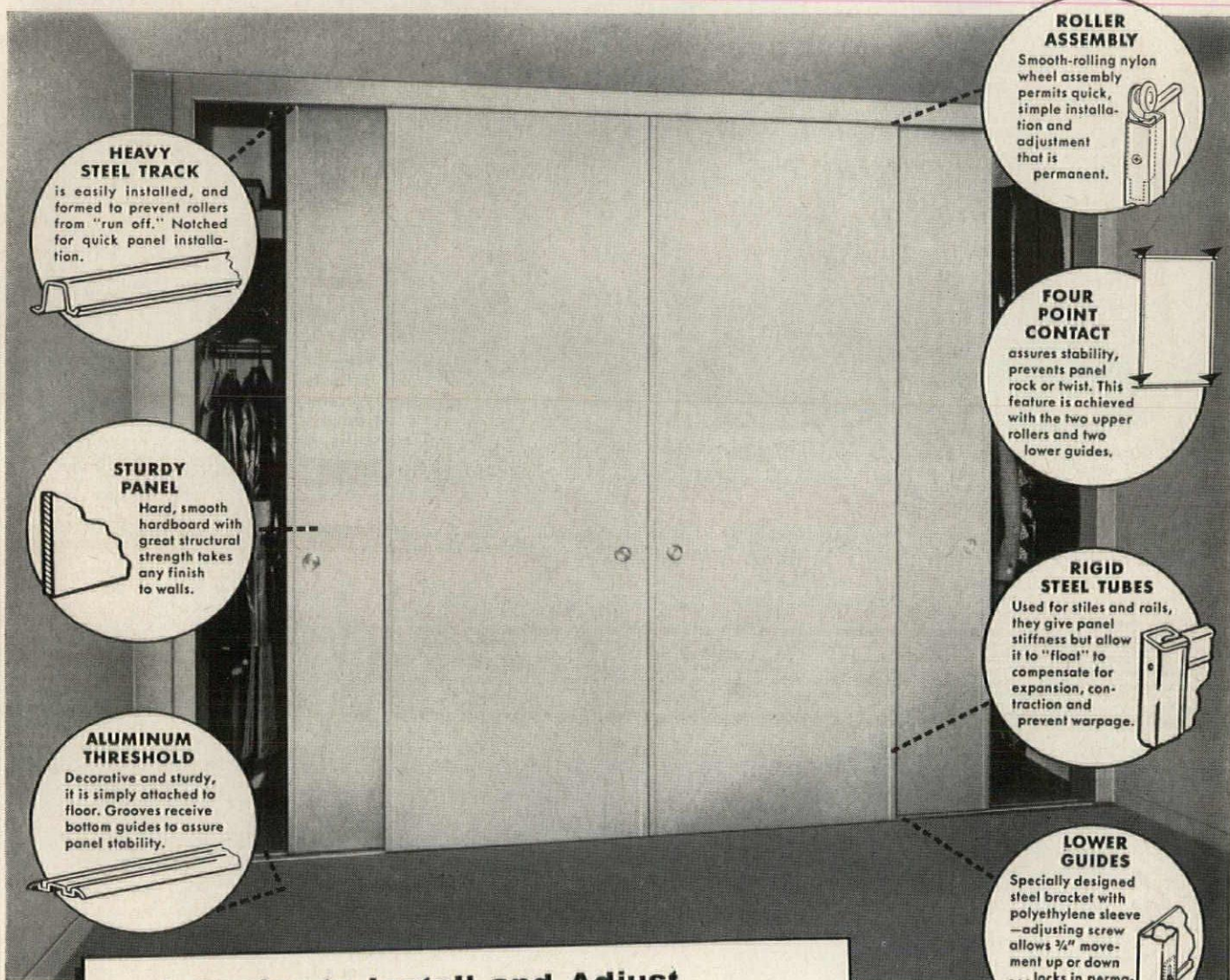
■ If standard clearspan design in one-story construction is wanted, *Cecoframe Steel Buildings* fill the need. Durable Cecoframe structures are ideal for warehousing and manufacturing—for machine shops and utility buildings—can also serve a variety of light-occupancy commercial and industrial purposes. Complete freedom is offered by Cecoframes because they can be enclosed with any material—such as walls of windows, engineered Cecoroll galvanized steel roofing, steel panels, brick, block or wood, with hollow-metal or overhead doors. Cecoframes are designed on open-web steel joist principles for great rigidity. You have freedom in layout because Cecoframe structures can be placed side by side or in L shapes.

**CECO  
STEEL**

IN CONSTRUCTION PRODUCTS CECO ENGINEERING  
MAKES THE BIG DIFFERENCE

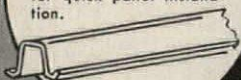
Ceco Steelforms / Concrete Reinforcing / Steel Joists / Roofing  
Products / Cecoframe Buildings / Curtainwalls, Windows, Screens  
Hollow-Metal Doors / Metal Lath

# These **GLIDE-ALL** Features Offer **YOU** More\* in Sliding Door Panels



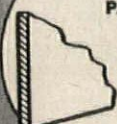
### HEAVY STEEL TRACK

is easily installed, and formed to prevent rollers from "run off." Notched for quick panel installation.



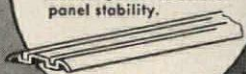
### STURDY PANEL

Hard, smooth hardboard with great structural strength takes any finish to walls.



### ALUMINUM THRESHOLD

Decorative and sturdy, it is simply attached to floor. Grooves receive bottom guides to assure panel stability.



### ROLLER ASSEMBLY

Smooth-rolling nylon wheel assembly permits quick, simple installation and adjustment that is permanent.



### FOUR POINT CONTACT

assures stability, prevents panel rock or twist. This feature is achieved with the two upper rollers and two lower guides.



### RIGID STEEL TUBES

Used for stiles and rails, they give panel stiffness but allow it to "float" to compensate for expansion, contraction and prevent warpage.



### LOWER GUIDES

Specially designed steel bracket with polyethylene sleeve—adjusting screw allows 3/4" movement up or down... locks in permanent position.



- ★ Easier to Install and Adjust
- ★ More Storage Space
- ★ Lower First and Final Cost
- ★ Lasting Quality
- ★ Smooth, Quiet Operation

*GLIDE-ALL Doors are available in principal cities throughout the United States and Canada. For complete information write Plant nearest you.*

**GLIDE-ALL DOORS** are packaged, ready to install, with built-in adjustment features... in 8' and 6'8" heights, flush or recessed types... and in special sizes for custom jobs. See "Sweets" or write for complete details.

**GLIDE-ALL®** Sliding Doors

ARE A PRODUCT OF  
**WOODALL INDUSTRIES INC.**  
DETROIT 34, MICHIGAN

CHICAGO, 3500 Oakton St., Skokie, Ill.  
EL MONTE, Calif., 801 West Valley Blvd.  
LAUREL, Miss., P. O. Box 673  
SANTA CLARA, Calif., 1020 Bayshore Blvd.



# INSTALLATION COSTS LESS ...

with fixtures using

## Certified CBM Ballasts

**KEEPS LABOR COSTS DOWN, TOO.** (Low power factor can boost these costs as much as 65%.) CBM Ballasts mean fewer circuits, fewer man-hours needed.

**SAVE ON WIRE COSTS**—for High Power Factor in Certified CBM Ballasts saves your customers from expensive oversize wiring needed by low power factor equipment. Guards against penalty charges on light bills, too!

**PROTECTION FOR YOUR CUSTOMERS** because CBM Ballasts are made to exacting performance specifications; then checked and certified by ETL. And they're also listed by UL.

**LONGER LIFE FOR CBM BALLASTS**—because CBM specifications set a limit for temperature rise. This helps provide more efficient, longer, trouble-free service.

**WRITE FOR CBM BOOKLET**  
"Why High Power Factor ballasts cut your lighting costs"

### CERTIFIED BALLAST MANUFACTURERS

2116 KEITH BUILDING

CLEVELAND 15, OHIO

Participation in CBM is open to any manufacturer who wishes to qualify

CBM-4-E

## Product Reports

### Many TV Sets, One Antenna

According to the manufacturer, a community system of up to 500 TV sets can be operated on one antenna by using the *Javex MI-50 Multi-TV Isolator* at each outlet and a booster or signal amplifier at the antenna. *Javex Electronics, P.O. Box 646, Redlands, Calif.*

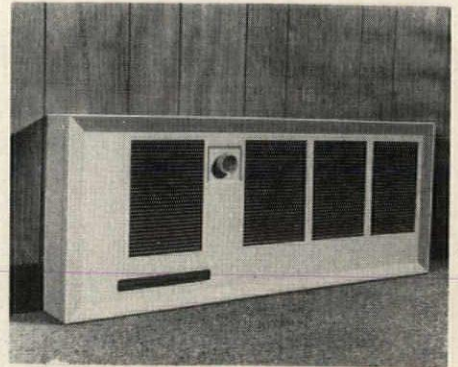
### Safety Glass Shields Against Sun

*Fade-Shield*, a new laminated safety glass designed to guard furnishings, display merchandise, valuable docu-

ments and paintings, etc. against sun damage, is said to screen out over 98 per cent of the ultra violet rays that cause fading. It is available in sizes up to 60 by 108 in., and thicknesses of 1/4 in. or more. *Dearborn Glass Co., 6600 S. Harlem Ave., Bedford Park, Ill.*

### Forced Air Baseboard Heater

A new *R&M-Hunter* electric heating unit combines the advantages of baseboard and forced air heating in a compact unit only 33 in. long by 13 in. high. Installed at floor level,



the unit distributes tempered air in an ascending fan pattern while the quiet centrifugal fan gives rapid recovery of floor level air, thus pulling warmed ceiling air down into the living zone. Individual thermostat control is recommended, though units may be operated from a central thermostat. Only 3 3/8 in. thick, they may be recessed or mounted against the finished wall. *Hunter Division, Robbins & Myers, Inc., Memphis 14, Tenn.*

## QUAKER OATS COMPANY



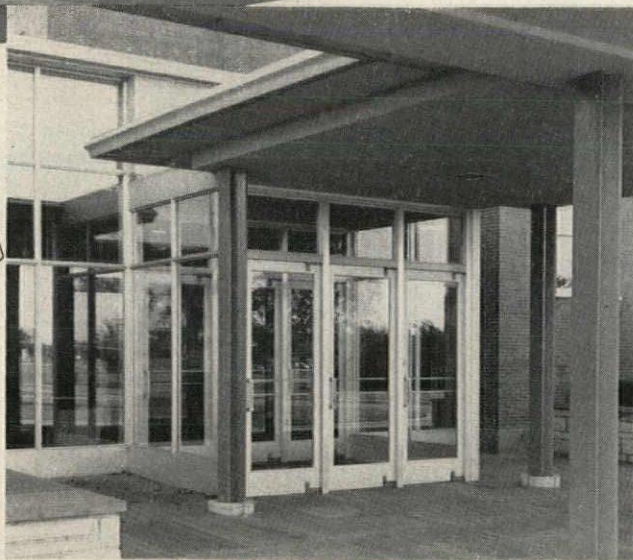
Barrington, Ill.

ARCHITECT:

Voorhees, Walker,  
Foley & Smith



6 Balanced Doors in the entrances to Quaker Oats Co., Barrington, Ill.



The Door that lets  
TRAFFIC through QUICKLY

ELLISON BRONZE CO.

Jamestown, New York

representatives in 72 principal cities in the  
United States, Canada and Puerto Rico

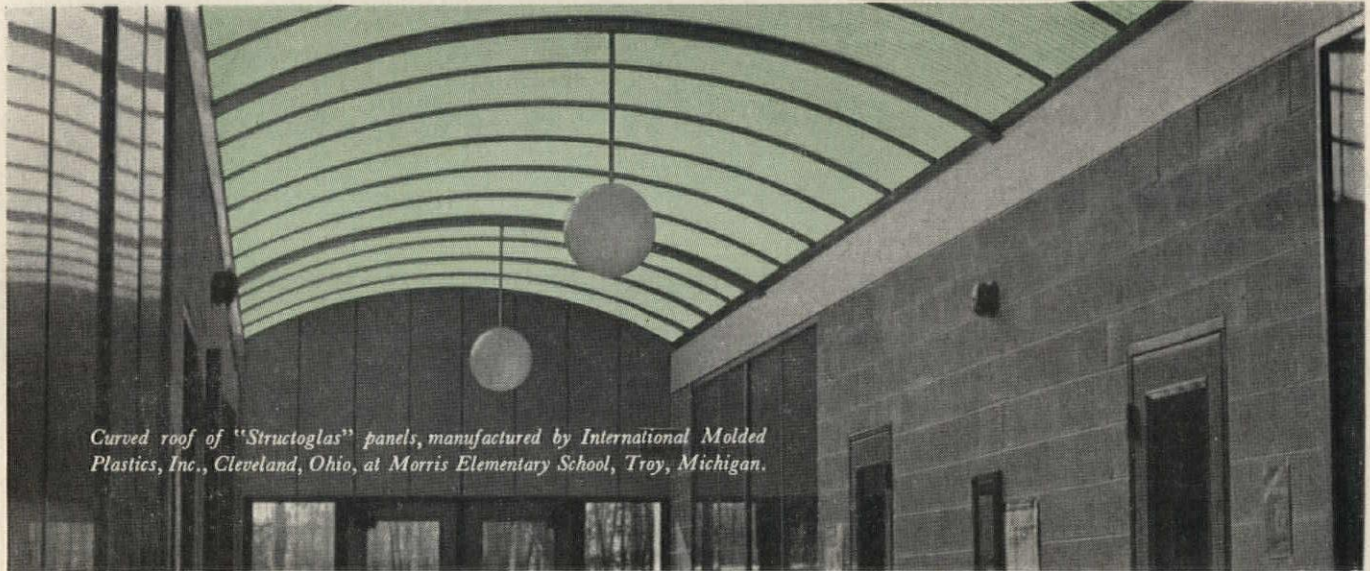
*Ellison*

the **BALANCED DOOR**



### One-Piece Egg-Crate Louvers

A new *Lumenated Ceiling* consisting of large (48 by 24 in.) one-piece egg-crate plastic louvers permits free flow of air through a 76 per cent free ceiling area. Panels are suspended from a standard grid with main supporting tracks running in the 24 in. direction. According to the manufacturer, the louvers give maximum light cut-off with minimum glare and shadow. *Thermotank, Inc., 11191 Lappin Ave., Detroit 34, Mich.*



*Curved roof of "Structoglas" panels, manufactured by International Molded Plastics, Inc., Cleveland, Ohio, at Morris Elementary School, Troy, Michigan.*

## NO WEATHERING WORRIES HERE!

These glass-fiber reinforced panels are made with PARAPLEX® P-444

The superior weather resistance of glass-fiber reinforced panels made with acrylic-modified PARAPLEX P-444 polyester resin is shown in the photomicrographs below. After THREE years of continuous outdoor exposure in Florida, PARAPLEX P-444 test panels show virtually no discoloration or fiber evidence. But notice the progressive degradation of the conventional light-stabilized resin!

For highest quality and durability in glass-fiber reinforced panels, insist on panels made with PARAPLEX P-444.



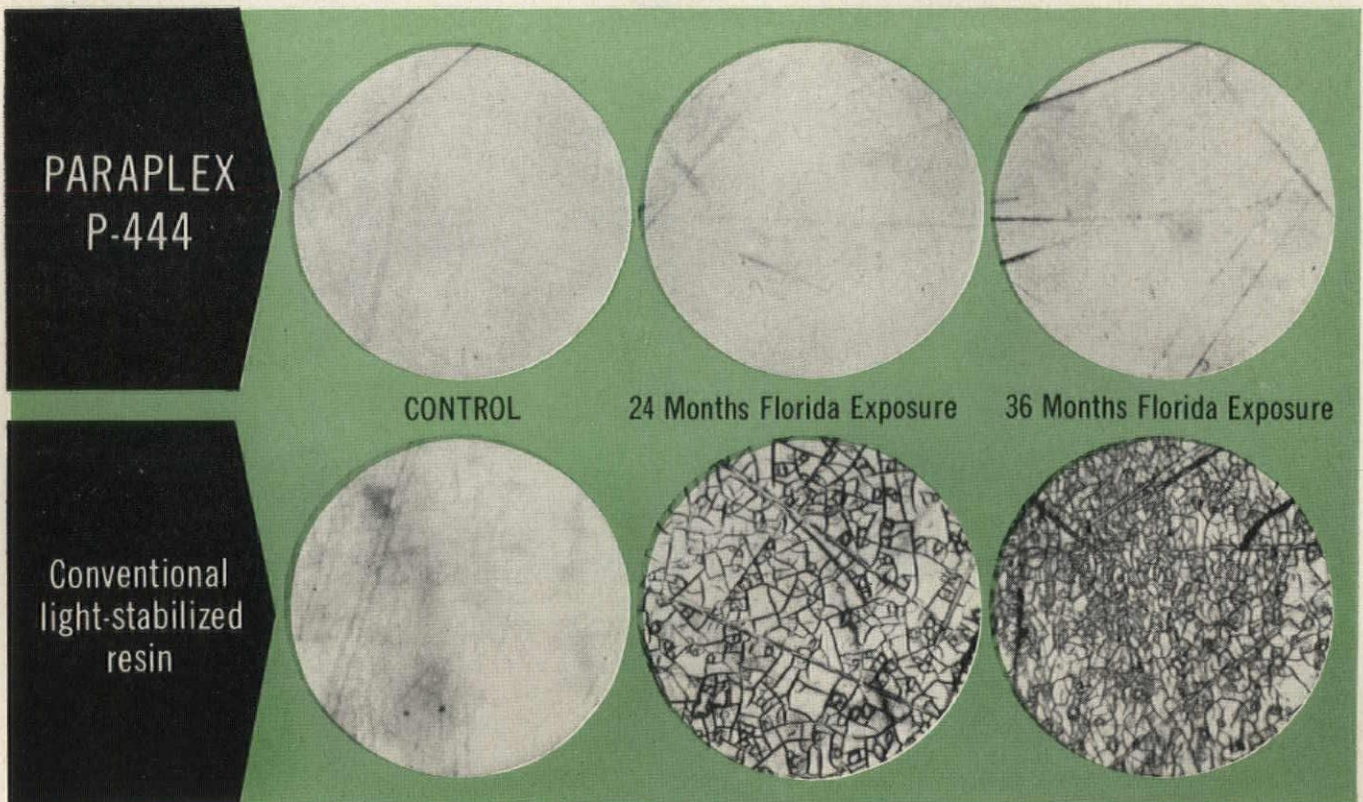
*Chemicals for Industry*

**ROHM & HAAS  
COMPANY**

WASHINGTON SQUARE, PHILADELPHIA 5, PA.

*Representatives in principal foreign countries*

### 36-MONTH FLORIDA EXPOSURE TEST



PARAPLEX  
P-444

CONTROL

24 Months Florida Exposure

36 Months Florida Exposure

Conventional  
light-stabilized  
resin

**These lines for beauty . .**



The new John Wanamaker Suburban Store in Jenkintown, Pa. *Architect:* Massena and DuPont, Wilmington, Del. *Associate Architect:* Edward C. Cooper, Wilmington, Del. *Mechanical Contractor:* W. M. Anderson Company, Philadelphia. *Pipe Jobber:* C. J. Rainear & Company, Inc., Philadelphia.

# These lines for service

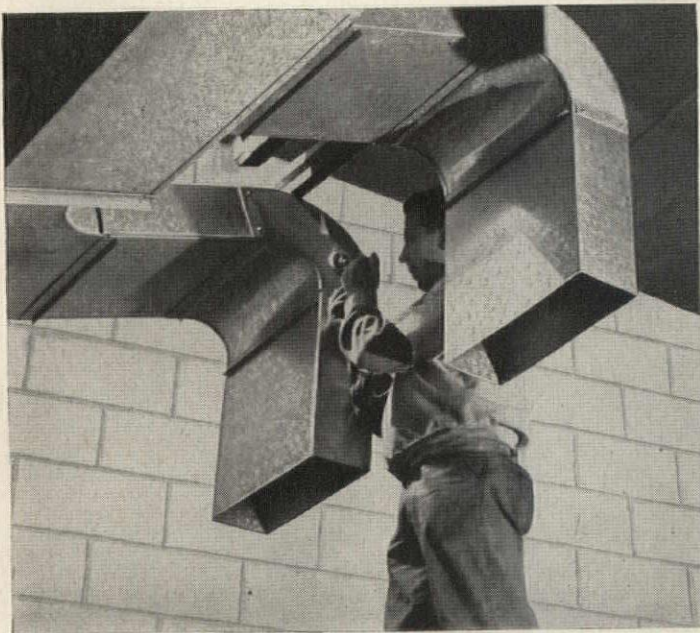
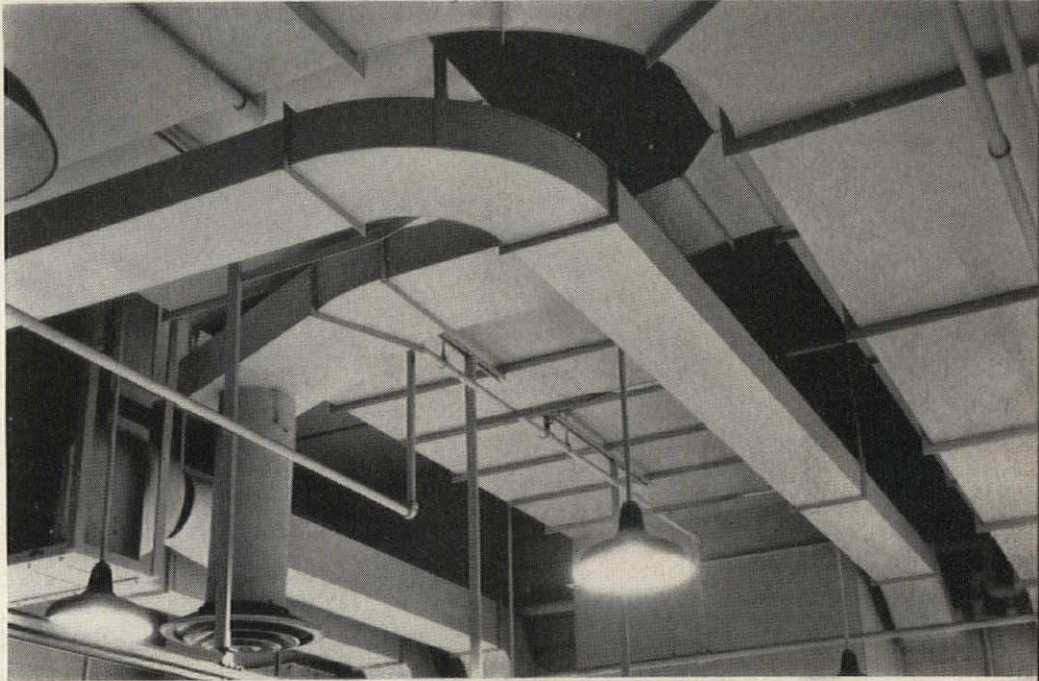
*Bethlehem steel pipe and galvanized sheets lend permanence and economy to heating and air conditioning facilities*

**Beth-Co-Weld continuous-weld steel pipe** is a popular choice for air-conditioning systems and sprinkler lines—and for all general purpose piping—because it's easy to work, goes up fast, and gives years of low-maintenance service.

There's no pipe more dependable than steel—and it's still the lowest-cost pipe you can buy!

Beth-Co-Weld pipe is available in standard and extra-strong weights in sizes from 1/2 in. to 4 in. Black or galvanized, it is supplied in uniform 21-ft lengths, or can be specified in random or cut lengths.

Clean lines of well-constructed pipe and ductwork bring functional beauty to the basement of the John Wanamaker Suburban Store in Jenkintown, Pa.



**Bethcon continuously galvanized steel sheet** is neither too hard nor too soft. That's because Bethlehem's continuous galvanizing process includes a special annealing cycle which gives the basic steel an ideal blend of strength and ductility.

The zinc coating on a Bethcon sheet is as tight as any coating you can find. Even when a Bethcon sheet is doubled back on itself, the galvanized coating does not flake or peel off. Hence ductwork made of Bethcon pays off in long service life without maintenance.

Specify Bethcon galvanized sheet steel on jobs that require sheet metal ductwork. It is available in a wide variety of gages, with a base metal of either plain open-hearth or copper-bearing (Beth-Cu-Loy) steel for extra corrosion resistance. Call our nearest office for more details.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

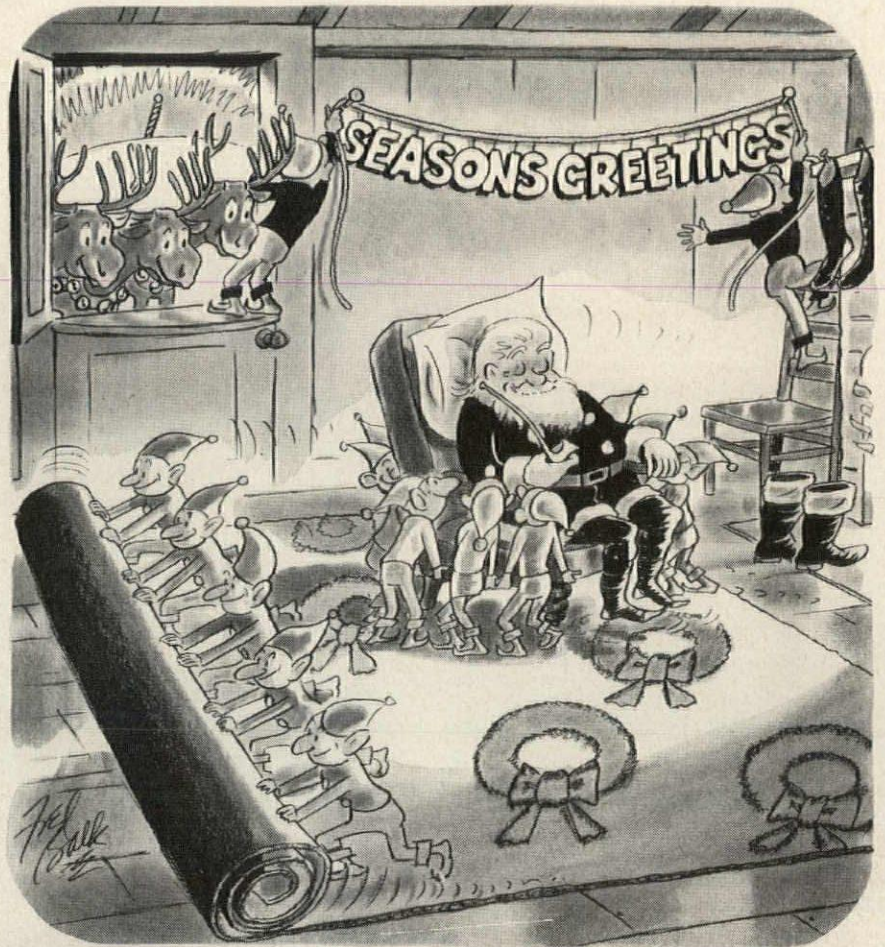
On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

## BETHLEHEM STEEL



a V.I.P.'s decor ...  
rates a Bigelow on the floor

"And all through the house..." restful, quiet, beautiful Bigelow Carpets for Christmas! Your client will appreciate your suggestion that the ideal gift for a home is a carpet chosen from Bigelow's unlimited variety of patterns, colors, textures and prices. To insure the perfect choice for the happy occasion . . . take advantage of the services of the Bigelow Carpet Counsel, a group of experienced commercial carpet specialists unmatched in the industry. Bigelow Rugs and Carpets, 140 Madison Ave., New York 16, N. Y. The new ideas in carpet begin with BIGELOW.



Available as your  
consultants:

more than **300**  
sound system experts

No matter where the job, or how complex, DuKane's nation-wide network of more than 300 distributors—supervised by factory district managers—is available to you for solving your most difficult sound system problems.

DuKane Corporation, Dept. AR-128s, St. Charles, Illinois

Please send me full information on DuKane sound systems. I am especially interested in

schools  hospitals  industrial buildings  churches

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Firm \_\_\_\_\_

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DuKane sound systems are sold and serviced  
by a nation-wide network of engineering distributors.

**DUKANE**

air patterns unlimited without blank-offs

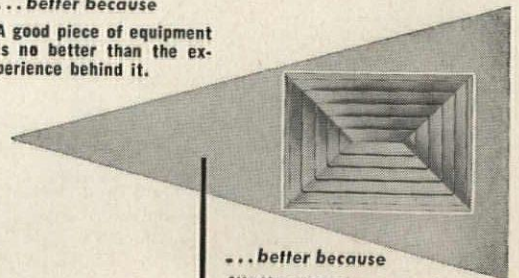
**AGTAIR**® Custom Made

AIR DIFFUSERS with DIFFUSING VANES



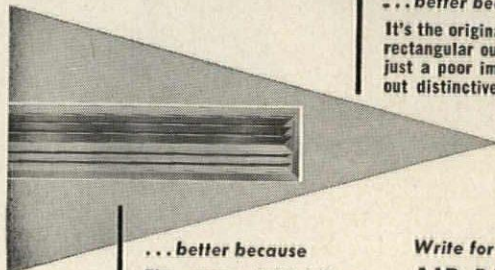
... better because

A good piece of equipment  
is no better than the ex-  
perience behind it.



... better because

It's the original square and  
rectangular outlet ... not  
just a poor imitation with-  
out distinctive features.



... better because

The company behind these  
diffusers has a history for  
doing things right and  
guaranteeing results.

Write for Complete Catalog

**AIR DEVICES INC.**

185 MADISON AVE., N. Y. 16

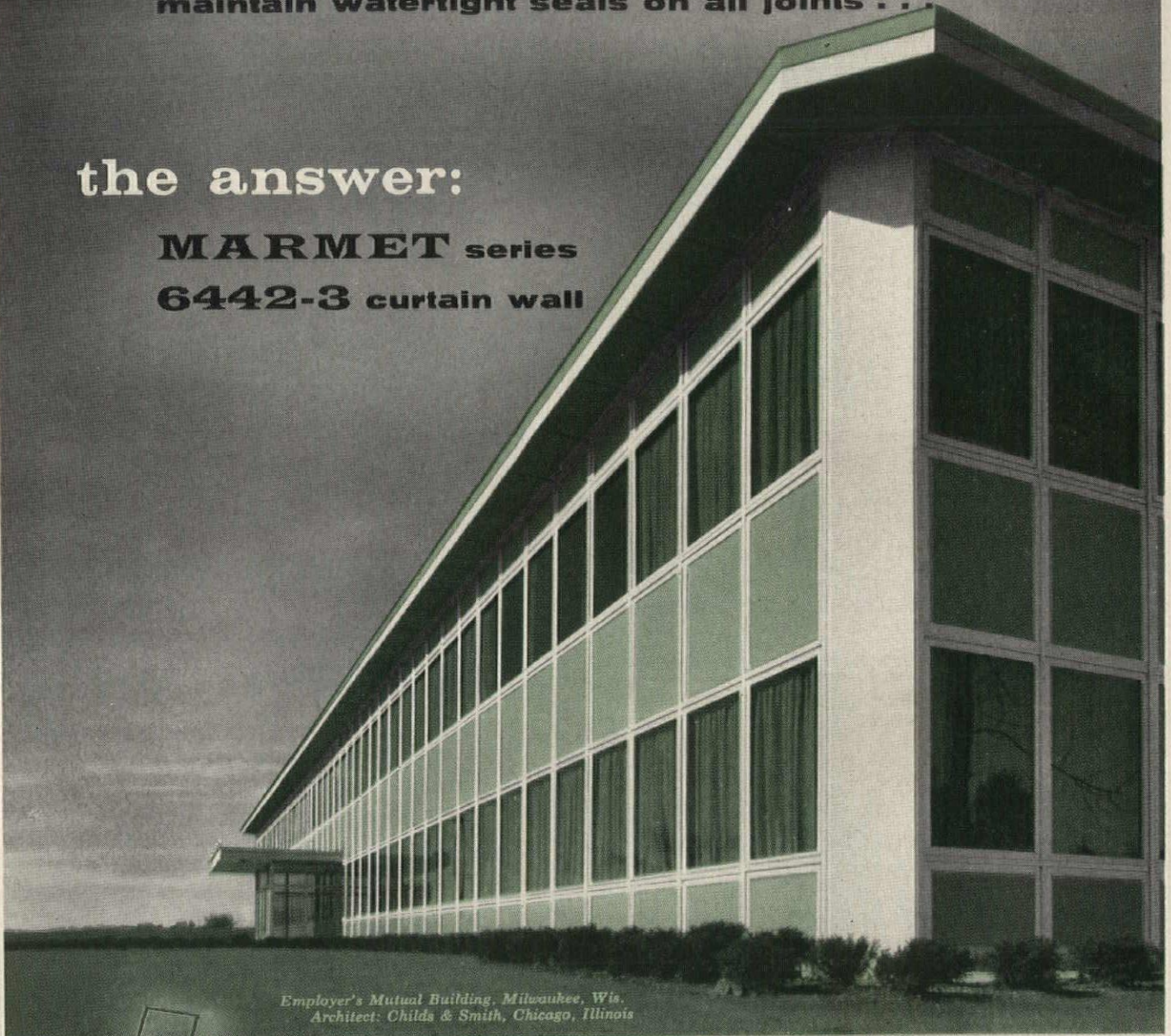
Air Diffusers Filters Exhausters

# problem:

as 224 ft. of window-wall expands and contracts,  
maintain watertight seals on all joints . . .

# the answer:

**MARMET series**  
**6442-3 curtain wall**



*Employer's Mutual Building, Milwaukee, Wis.  
Architect: Childs & Smith, Chicago, Illinois*



*look how fast it goes up... look at the results!*

Typical of the single and double level buildings for which the 6442-3 series is designed, this office building has large horizontal dimensions in which the cumulative effect of expansion and contraction is considerable.

Its glistening sheath is a group of interlocking frame sections, each of which can be quickly erected by two men.

Mortise and tenon joints are connected with bolts, carefully concealed by the glass race (or snap-on glazing bead where specified), to provide a flush plane and tubular appearance. These mating sections are

weatherstripped where feasible, and all peened joints are internally sealed with a special compound injected under a pressure of 800 lbs. per square inch.

With single or double weatherstripping, this window wall has proven watertight and structurally sound in winds of hurricane velocities. Special expansion joints at the proper intervals absorb the cumulative effects on the long horizontal span. Whatever your curtain wall problem may be . . . structurally or esthetically . . . Marmet design engineers have the answer . . . just write or call.

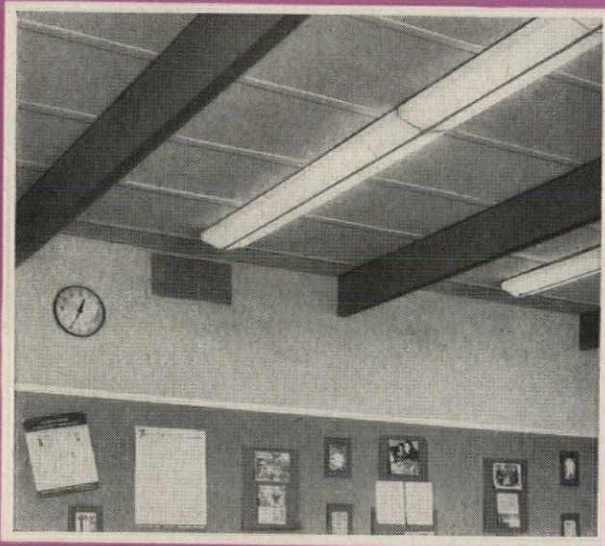
For detailed specifications on the complete line of MARMET products — consult Sweet's Catalog File No. 3a or write to MARMET for Catalog 59a, 59c, and 59d. Mar

**MARMET** Corporation

300-Z Bellis Street, Wausau, Wisconsin



Use Insulrock for better roof decking . . .



to get handsome, acoustical exposed ceiling.



Build sound-absorbing, rugged walls of Insulrock, too.

*All these franchised, Flintkote  
give you complete*

**INSULROCK**<sup>®</sup>

**KEEPS ITS PROMISE**

**INSULROCK IS RESPONSIBLE**

for making America's most modern building material, uniquely bonded with portland cement for superior, lasting strength, with the excellent insulating and acoustical properties your jobs require.

**INSULROCK DISTRIBUTORS ARE RESPONSIBLE**

as business leaders in their communities, whose experience and reputation back up every Insulrock job from start to finish. Anywhere, in any climate, Insulrock men and material promise the right results.

**INSULROCK COMPANY**

**DIVISION OF THE FLINTKOTE COMPANY**



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Cincinnati—Nourse Company  
Cleveland—The George P. Little Co., Inc.  
Columbus—The George P. Little Co., Inc.  
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Madison—Edward T. Ver Halen, Inc.  
Milwaukee—Edward T. Ver Halen, Inc.  
(Duluth, Minnesota)—Northwest Roofing & Heating Co.  
(Minneapolis, Minnesota)—Curran V. Nielsen Co.

### WYOMING

Cheyenne—Powers Building Supply

insulrock distributors  
insurance that

PERFORMANCE

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Manufacturers of  
America's Broadest  
Line of Building Materials

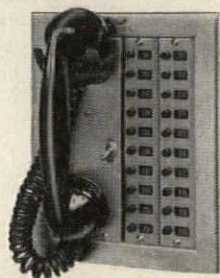


When the  
SIGNAL LIGHT  
*shines . . .*

The busy nurse . . . giving constant dedicated service . . . finds her tasks simpler, easier with the Couch Audio-Visual Nurses Call System.

New . . . initiate calls by the merest touch of a finger on a button . . . no dial-to-call. Fully automatic . . . pick up handset to answer . . . no press-to-talk . . . initiating switch in patient's room resets automatically as call is answered. The priority call . . . answered at once without disconnecting others.

Peace of mind for both patient and nurse results from the split second communication provided by the Couch Nurses Call System.



*Simplified Systems of Communication*

**S.H. Couch** CO., INC.

3 ARLINGTON STREET  
NORTH QUINCY 71, MASSACHUSETTS

## Office Literature

*continued from page 168*

### Educational Science Laboratories

(A.I.A. 35-E) Seventy-six page catalog and planning manual includes an analysis of activities conducted in secondary school science rooms; 26 suggested layouts for science laboratories, with perspective, floor plan and equipment list for each; and dimensional and mechanical service roughing-in drawings for each item of equipment. *Kewaunee Mfg. Co., 5046 S. Center St., Adrian, Mich.*

### Aluminum Sliding Glass Doors

(A.I.A. 16-E) Offers complete information on two lines of aluminum sliding glass doors. Half-size detail sheet, perforated for easy removal, contains suggested specifications. 8 pp. *Miller Sliding Glass Door Co., Inc., 3216 Valhalla Dr., Burbank, Calif.*

### Standard Welding Symbols

Revised standard includes symbols which cover new processes and types of welds, and offers a new system for designating welding and cutting processes by means of letters. The Chart of Welding Symbols has also been redesigned to incorporate new developments. AWS A2.0-58, \$3. *American Welding Society, 33 West 39th St., New York 18, N. Y.*

### Incombustible Acoustical Tile

(A.I.A. 39-B-1) Technical Bulletin contains complete description and details of installation, design dimensions, NRC ranges and architectural specifications for *Gold Bond Acousti-tiroc* incombustible acoustical tile. 8 pp. *Technical Literature Dept., National Gypsum Co., 325 Delaware Ave., Buffalo 2, N. Y.\**

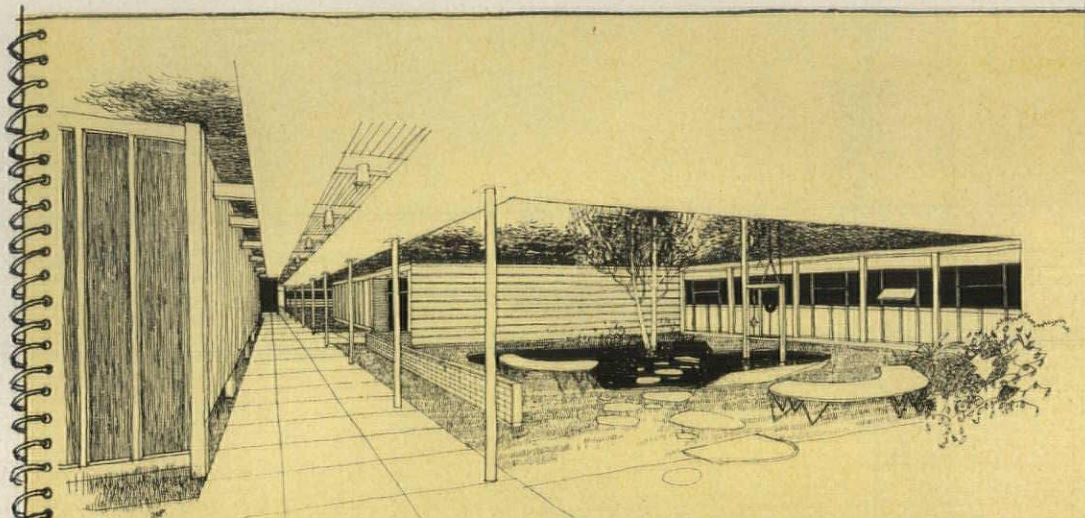
### Erie Porcelain Enamel (A.I.A. 17-A)

Gives complete data, including details, illustrated case histories and specifications, on Erie porcelain enamel curtain wall and veneer panels. 12 pp. *Erie Enameling Co., Erie, Pa.\**

### Boiler Feed Systems

Revised and expanded Catalog 55-C summarizes product features and acts as a convenient selection guide for a complete line of condensation drainage and automatic boiler feed systems for industrial and heating requirements. 20 pp. *Fred H. Schaub Engineering Co., 2110 S. Marshall Blvd., Chicago 23, Ill.*

*\*Additional product information in Sweet's Architectural File, 1958 more literature on page 228*



Masonite Contemporary Studies



Design Series No. 101M — Exterior Elevations

It is in the field of contemporary design that the architect can most fully exploit the versatility inherent in Masonite® exterior products.

Here is variety of appearance: a revolutionary lap siding with vented aluminum mounting strip, a panel with shallow striations that either paint or stain, a hidden-

joint panel with vertical grooves, and other equally effective sources of design inspiration.

To learn more of these enduring panels—suitable for residential, commercial and institutional work—refer to Sweet's Architectural File, ask a Masonite representative, or send the coupon.



© Masonite Corporation—manufacturer of quality panel products.

Masonite Corporation, Dept. AR-12, Box 777, Chicago 90, Illinois  
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Please send a copy of your free, illustrated booklet "For Modern Exteriors."

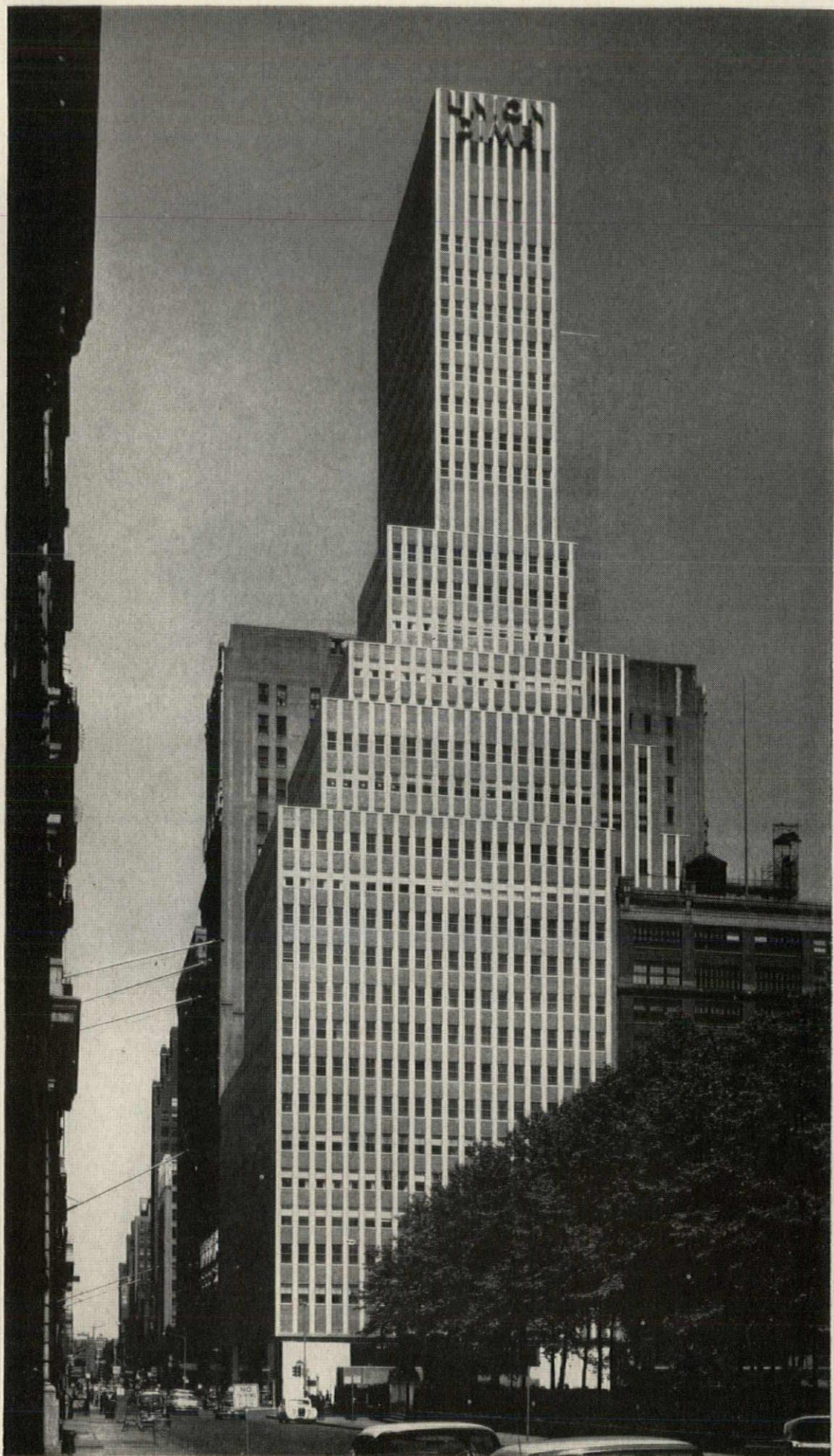
Name.....

Firm.....

Address.....

City..... State.....

Zone..... County.....



**Architects:** Carson & Lundin  
(Bank portion only)  
Sydney Goldstone, & Kahn &  
Jacobs (rest of building)

**Structural Engineer:** Charles  
Mayer

**General Contractor:** George A.  
Fuller Company

**Concrete Contractor:** Rizzi Con-  
struction Corporation

**Distributor:** Fireproof Products  
Company

In the new Textile Building . . .

## Short-span floor slabs reinforced with **USS** American Welded Wire Fabric

THE Textile Building, at 111 West 40th Street in Manhattan, was completed early this year. This office building reflects progressive design and construction techniques. As in so many other new buildings, a key construction feature is the short-span floors and roofs, reinforced with USS American Welded Wire Fabric.

*Short-span floors and roofs* consist of closely spaced beams supporting concrete slabs of minimum thickness. Such a design makes them light in weight, yet very strong. They are extremely economical, too, because less concrete, less time, and less labor are required to install short-span construction. But you couldn't have these savings without welded wire fabric reinforcement.

USS American Welded Wire Fabric makes short-span construction economical because the mesh can be draped continuously over supporting beams

and higher working stresses are allowed than for mild-steel reinforcing bars. This is true not only of buildings designed in accordance with the New York City building code, but also anywhere the ACI Building Code is used. The New York skyline reveals many short-span slab skyscrapers such as the Empire State Building, the RCA Building, and the new Socony-Mobil Building. All of these buildings are reinforced with USS American Welded Wire Fabric.

*Specify USS American Welded Wire Fabric.* It's available in a wide variety of styles, sizes, lengths, widths, and finishes . . . in wire gauges from #7/0 to 16 and in longitudinal or transverse wire intervals of 2" to 16". To get complete technical data on USS American Welded Wire Fabric, send for our free catalog. Write today. American Steel & Wire, 614 Superior Ave., N.W., Cleveland 13, Ohio.

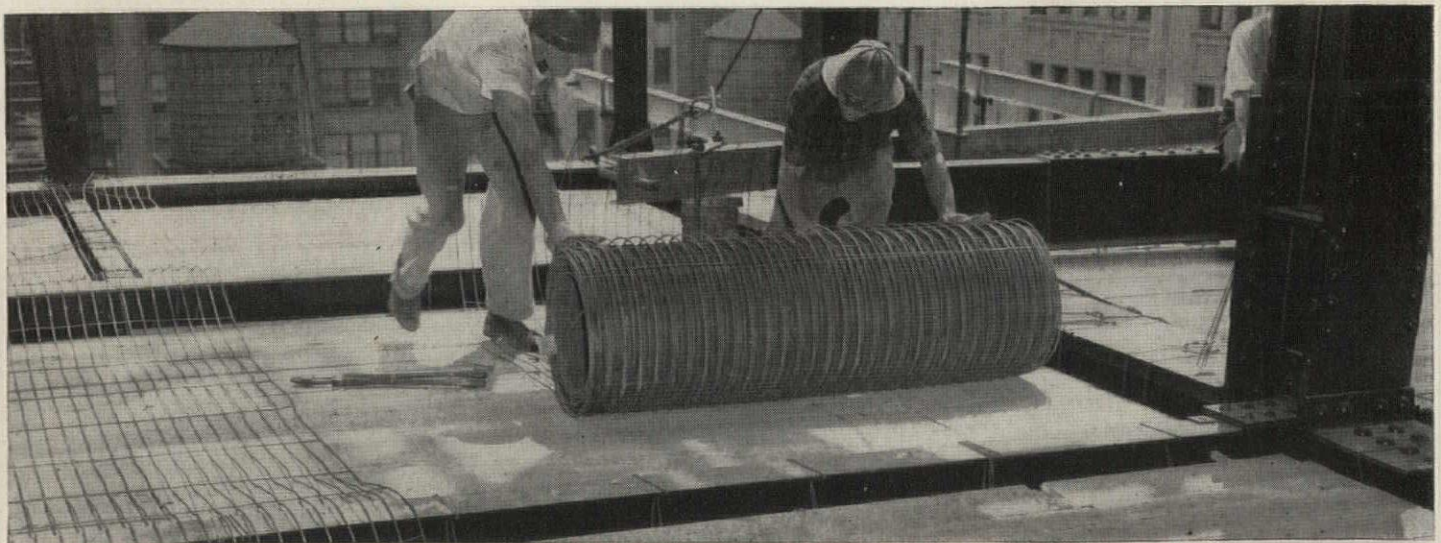
*USS and American are registered trademarks*

American Steel & Wire  
Division of



United States Steel

Columbia-Geneva Steel Division, San Francisco. Pacific Coast Distributors • Tennessee Coal & Iron Division, Fairfield, Ala., Southern Distributors • United States Steel Export Company, Distributors Abroad



Short-span slabs, reinforced with USS American Welded Wire Fabric, are an important construction feature of the Textile Building. USS American Welded Wire Fabric is prefabricated for quick, easy, economical installation in any permanent concrete work.

Remember, buyers will ask, *"is it Reinforced"*

# New underwood Add-Mate

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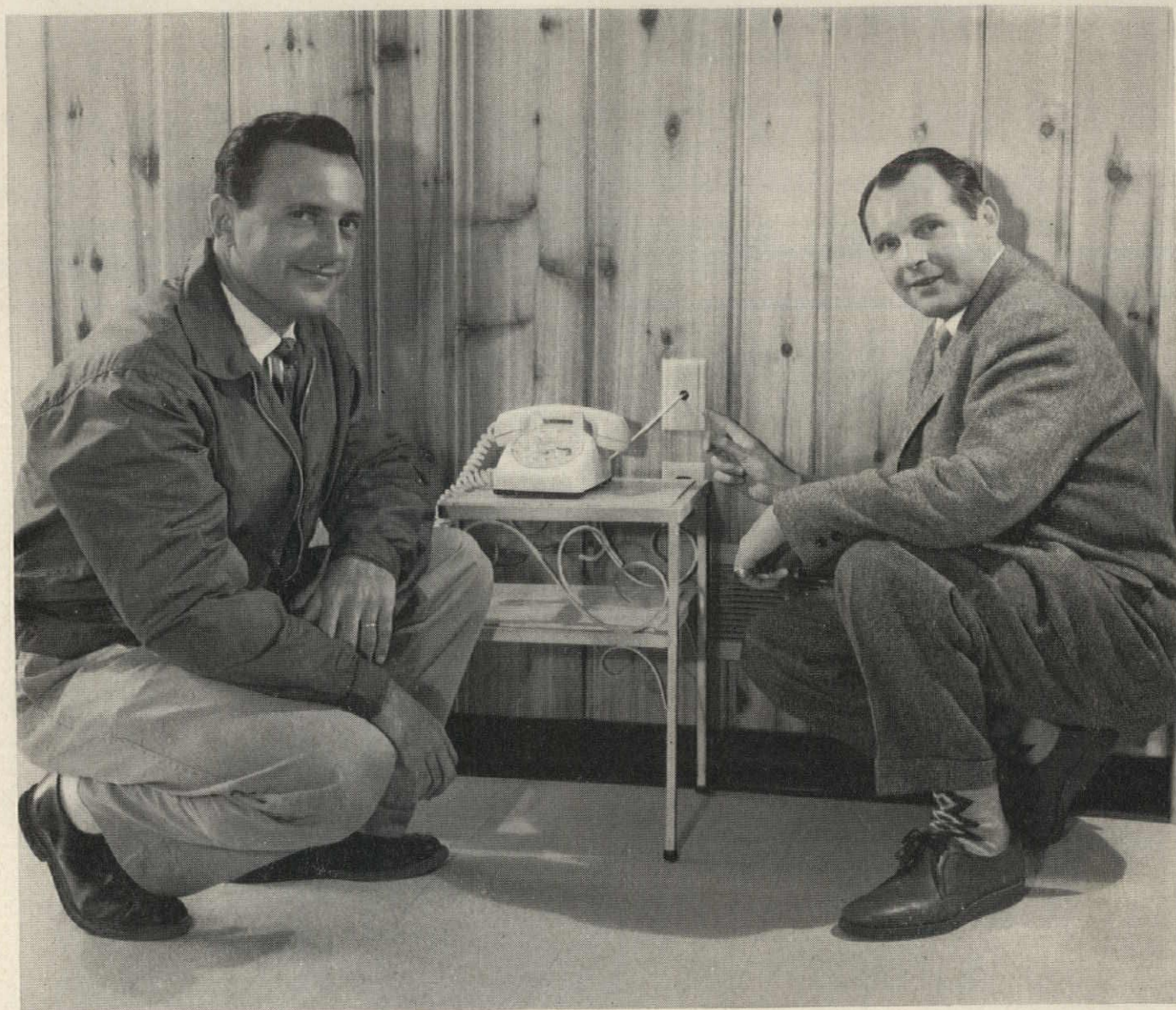
# underwood

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Sam (right) and Morty Gorn have built over a thousand homes since they teamed up ten years ago. Each of the 226 "Wellwood" homes they're now constructing near Baltimore contains 4 built-in telephone outlets like the one above.

## "We feature concealed telephone wiring in all our homes"

—says Sam Gorn, Gorn Brothers, Inc., Baltimore, Maryland

"Prospects naturally look for convenience and smart planning in a new home," says Sam Gorn. "That's why we always give special attention to interior details—and why we feature concealed telephone wiring in all our homes."

"It's a touch people appreciate," adds Morty Gorn. "They're quick to see how it will eliminate unsightly, exposed wiring, particularly when extension phones are installed. What's more, it costs

little and requires little effort on our part, thanks to the telephone company.

"And it *does* help sell homes."

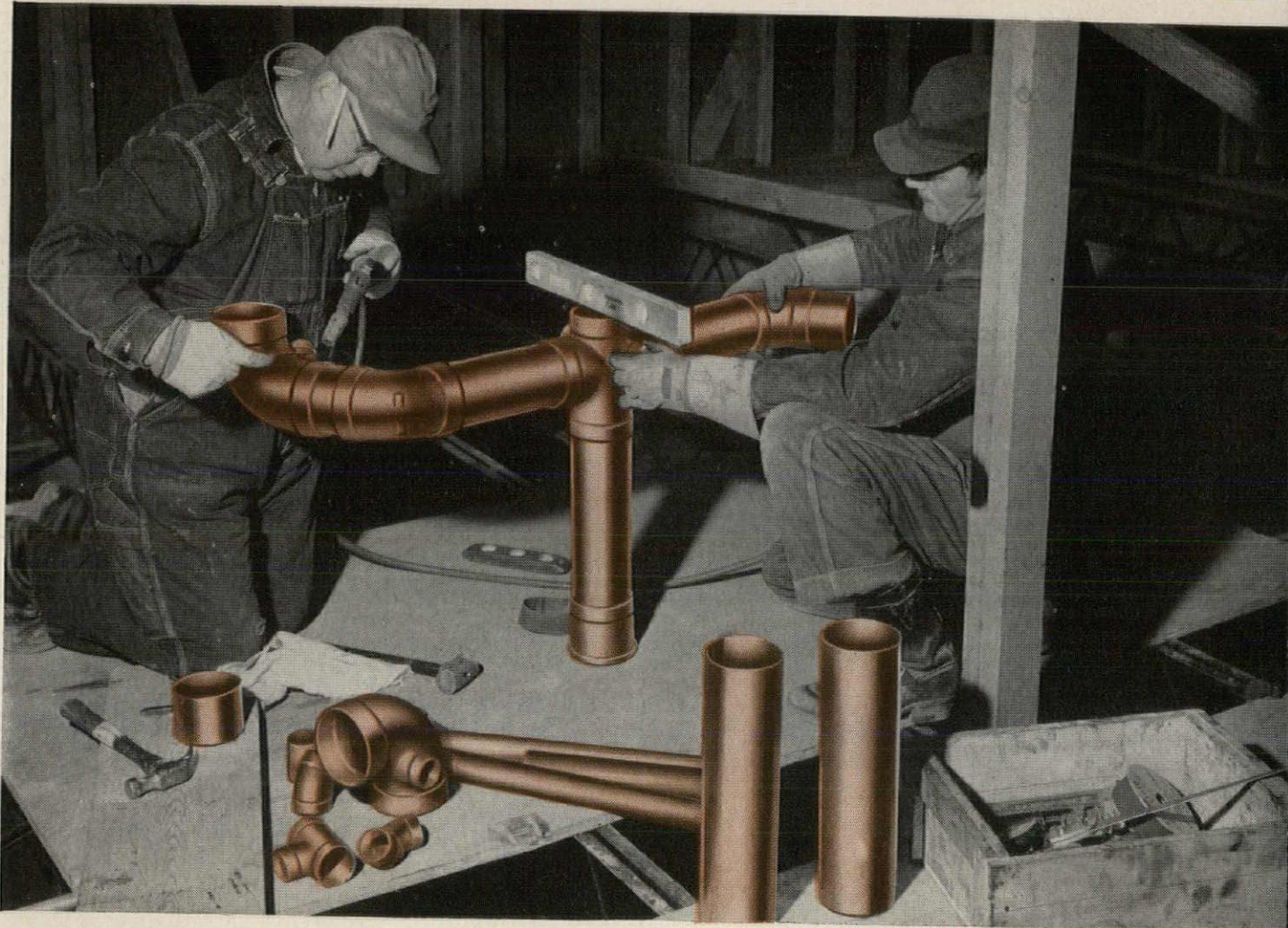
\* \* \*

Your local Bell Telephone business office will gladly help you with concealed wiring plans. For details on home telephone wiring, see Sweet's Light Construction File, 8i/Be. For commercial installations, Sweet's Architectural File, 32a/Be.

**BELL TELEPHONE SYSTEM**



# USE *Streamline*<sup>®</sup> DWV FOR QUALITY LOW-COST



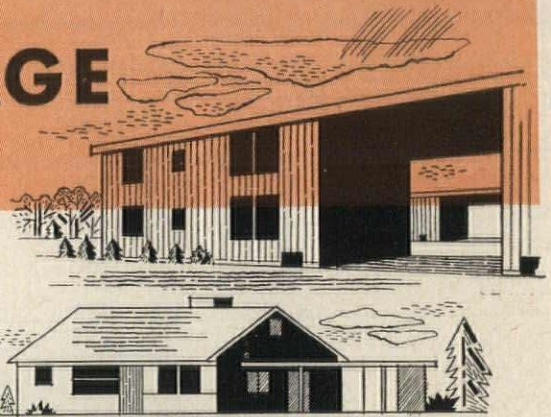
These two men are preparing a DWV prefabricated assembly for a multiple bath sanitary drainage system. With the variety of fittings available, the use of fittings especially designed for the job saves many joints in the fabrication. The strong, rigid assembly may be placed into position with a minimum number of connections needed to complete the installation. Contractors report DWV copper tube and fittings can be installed in half the time normally required when using cumbersome caulked or threaded piping materials.

**IN ADDITION TO A COMPLETE LINE OF DWV TUBE AND FITTINGS,** the Mueller Brass Co. also manufactures a wide range of solder-type wrought fittings, cast valves, and K, L and M tube for every piping need . . . always available from better wholesalers everywhere.












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  DWV copper tube and fittings can be prefabricated in the shop or on the job to cut time and costs to a minimum.
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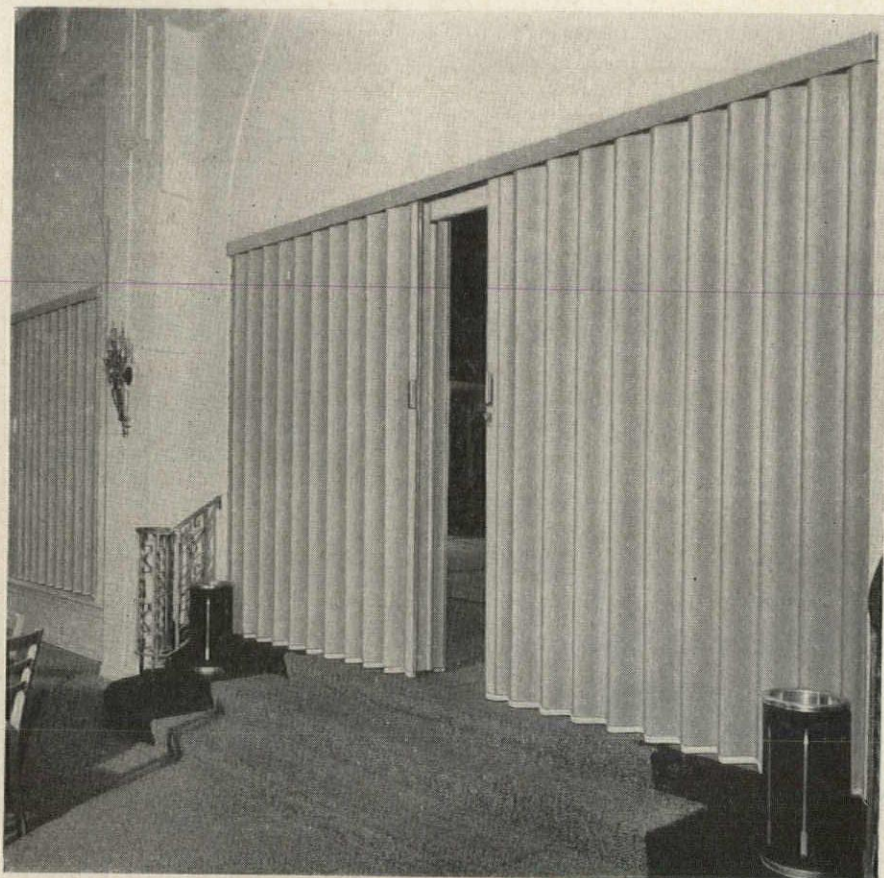
All Streamline tube is color coded for your convenience . . . in a flash you can tell size and type, BUT more important, it's your guarantee of quality. Genuine Streamline tube is made to the highest American standards and it never varies. Type "M" is coded Red . . . Type "L", Blue . . . Type "K", Green . . . and DWV is coded Yellow.



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## Office Literature

**The Residential Wiring Handbook**  
... of the Industry Committee on Interior Wiring Design has been approved as American Standard C91.1-1958. When used in conjunction with the National Electrical Code, it provides a complete guide for wiring single and multi-family dwellings. 25¢ American Standards Assn., Dept. PR28, 70 East 45th St., New York, N. Y.

### Metal Grating (A.I.A. 14-P)

Data and Specification Manual contains safe load tables for welded and riveted gratings; data on new aluminum gratings; panel width constant charts; methods of anchoring; comprehensive tables on stair treads and methods of ordering grating. 20 pp. Klemp Metal Grating Corp., 6601 S. Melvina Ave., Chicago 38, Ill.

### G-P Plywood (A.I.A. 23-L)

Offers brief descriptions of, and specifications for, the G-P line of plywood products. 8 pp. Georgia-Pacific Corp., 600 N. Capitol Way, Olympia, Wash.

### Steel Joist Standards

New specification and load tables include data on eight recently approved Series "S" open web steel joists. Steel Joist Institute, Dupont Circle Bldg., Washington, D. C.

### Roof Insulation (A.I.A. 37-B-2)

Gives selection and application data, and specifications for Fiberglas roof insulation. 8 pp. Owens-Corning Fiberglas Corp., Toledo 1, Ohio

### High Pressure Laminated Plastics

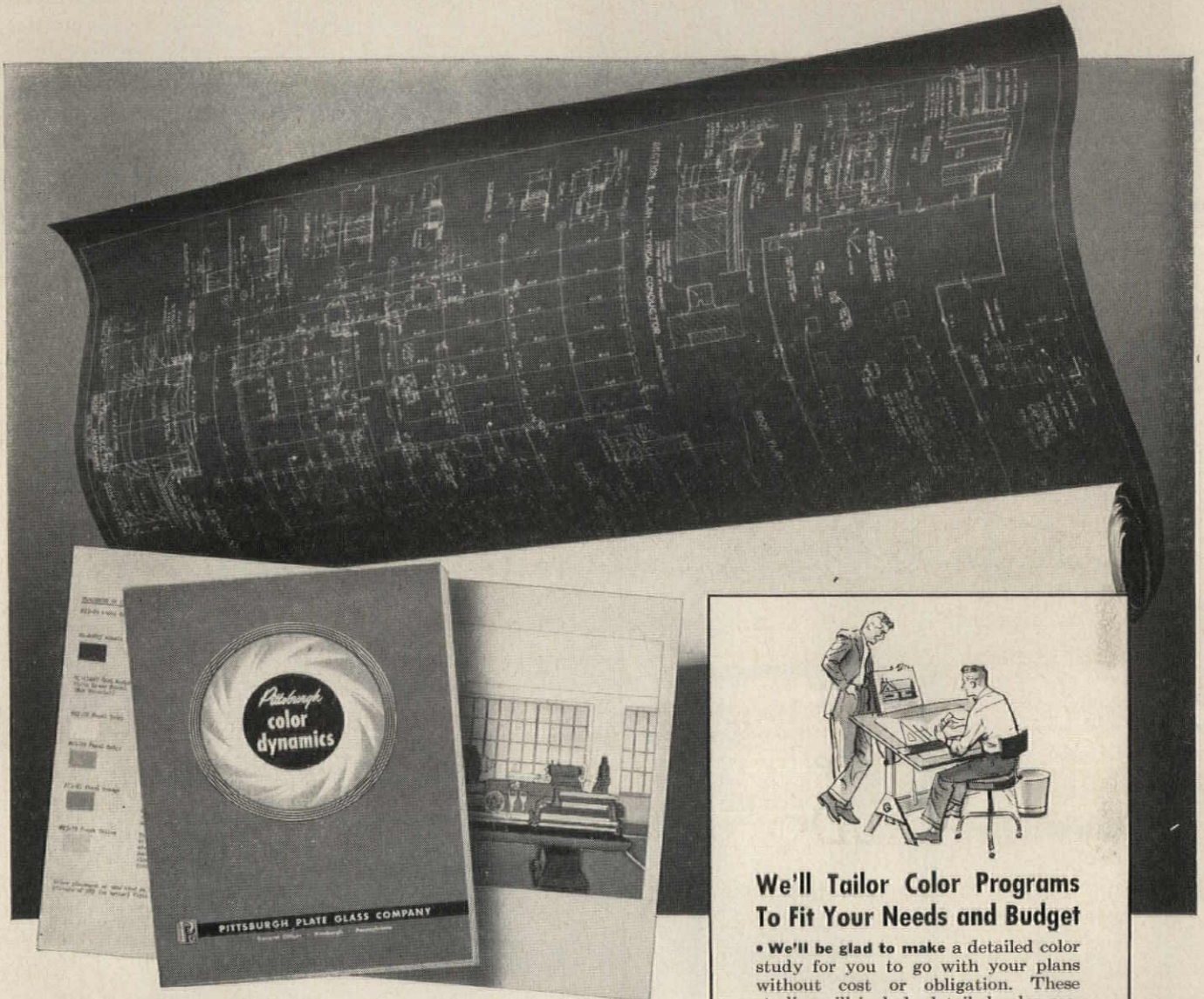
Describes, illustrates and gives specifications for Farlite line of high pressure laminated plastics. 8 pp. Farley & Loetscher Mfg. Co., Dubuque, Iowa

### New Fire Protection Standards

*Standard on Incinerators*, NFPA No. 82, covers important changes in the design, construction and installation of domestic and commercial incinerators. *Standard for Air Conditioning and Ventilating Systems of other than Residence Type*, NFPA No. 90A, accepts duct materials other than metal, including flexible ducts and vibration isolation connectors; and contains provisions applicable to the installation of ducts for high velocity systems. Each 24 pp., 50¢ National Fire Protection Assn., 60 Batterymarch St., Boston 10, Mass.

\*Additional product information in Sweet's Architectural File, 1958

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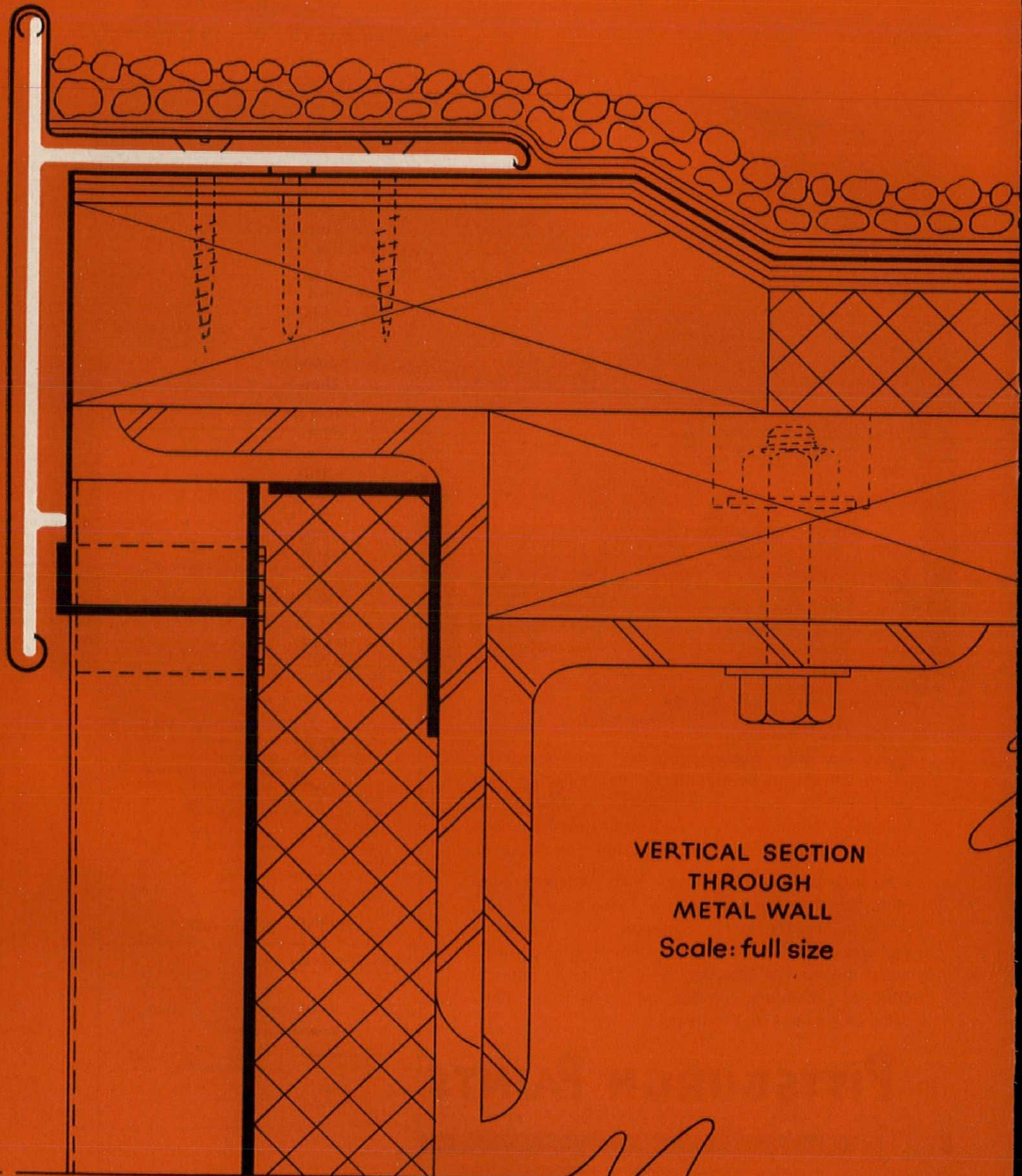
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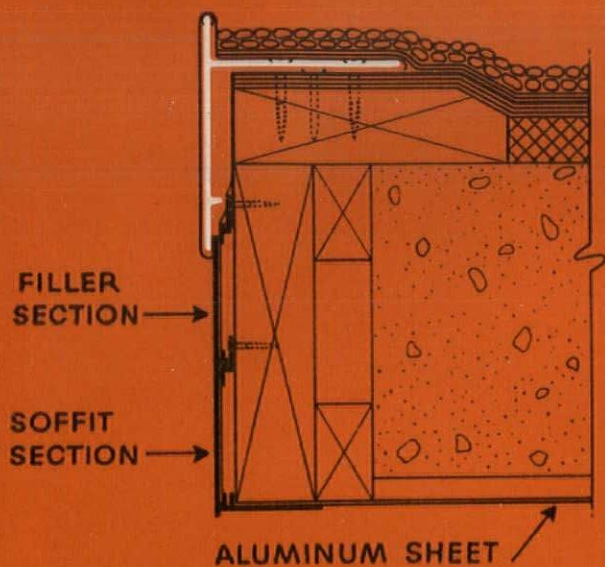


# New! Kaiser Aluminum grave

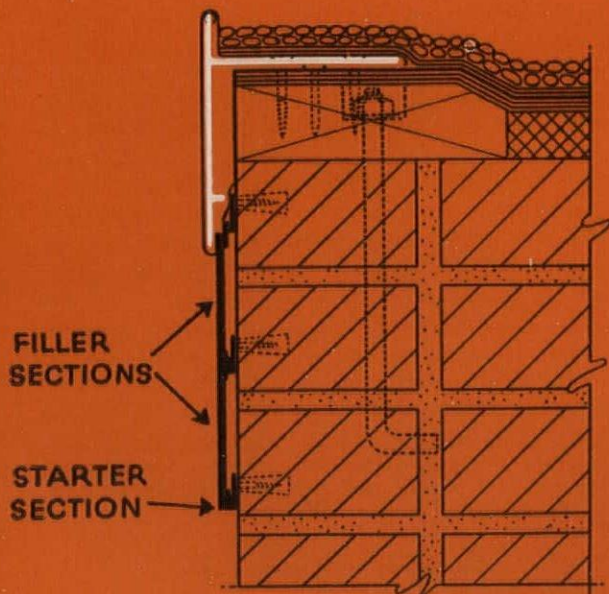


VERTICAL SECTION  
THROUGH  
METAL WALL  
Scale: full size

# top of simplified design



**TYPE K-1 GRAVEL STOP  
WITH FASCIA  
EXPANDERS**  
Scale: 3"=1'-0"



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Now — as part of a new line of *readily available* standard architectural extrusions — Kaiser Aluminum offers the type K-1 gravel stop for adaptation to your contemporary building designs.

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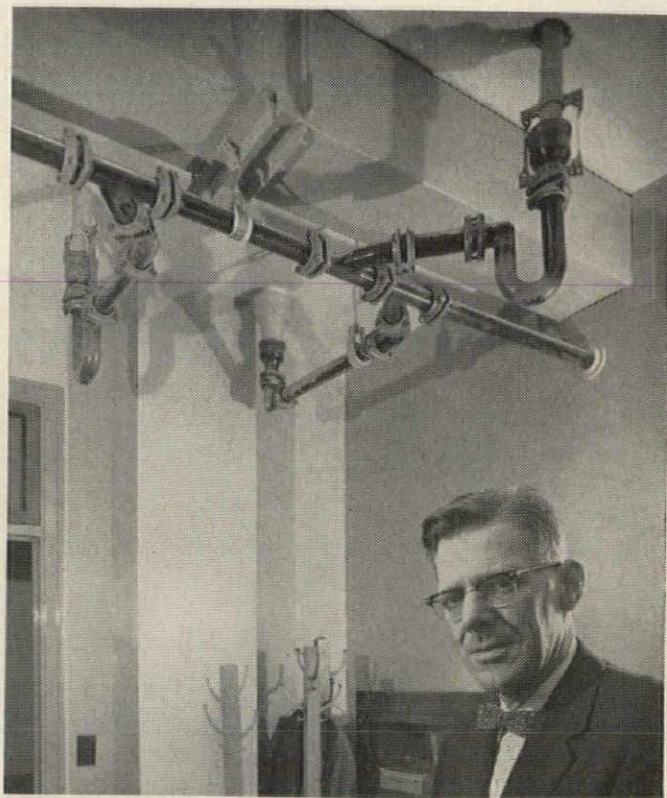
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"Until we installed *glass* drain pipes, acid drippings were beginning to menace our personnel and equipment.

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"Then three years ago we installed corrosion-resistant PYREX<sup>®</sup> pipe. Since then there have been absolutely *no* leaks, and maintenance men have *not once* been called in for pipe mending.

"Installation of this 250-foot system, including ripping out the old system, was a quick job—with a two-man crew working about 60 hours. That's only *about 1/3 the time* required for installation of other types of pipe.

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"Now our *glass* drainline is carrying a continuous flow of highly corrosive acids and alkalis—from 8:00 A.M. to 5:00 P.M. daily—absolutely free from costly, patchwork mending."

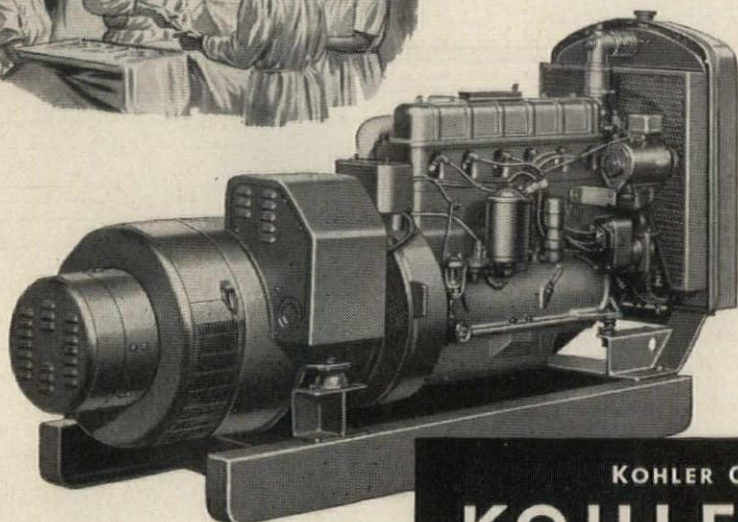
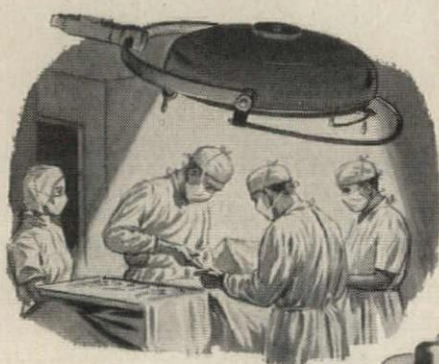
Find out more about PYREX pipe for your drainline. If you handle corrosives, you'll never know how little you can spend for maintenance and installation until you install PYREX pipe. Write for Bulletin PE-30 for all the details.



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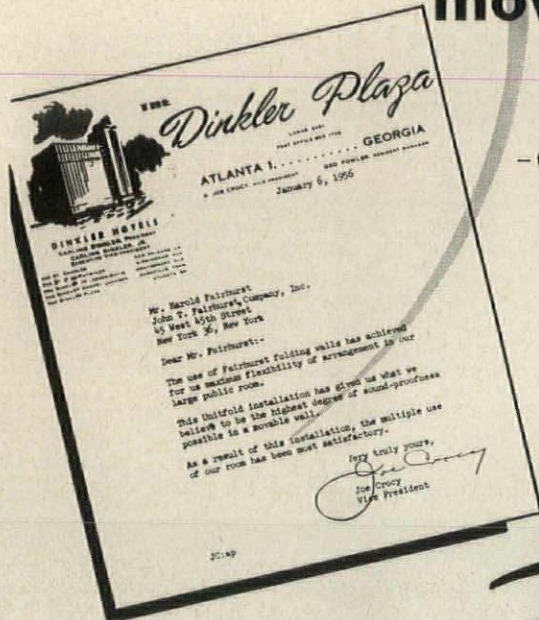
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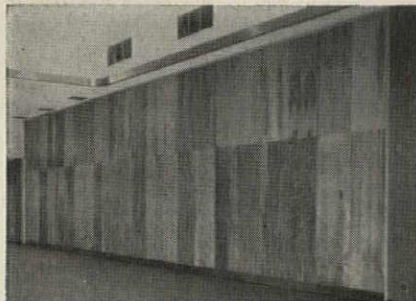
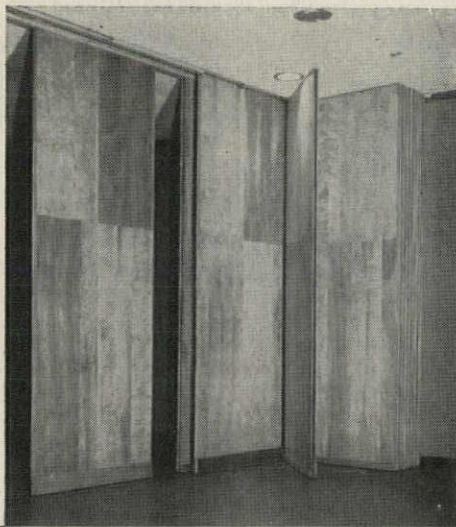
— from a letter by A. Joe Cracy, Vice-President, The DINKLER-PLAZA, Atlanta. Alexander & Rothschild, Arch.

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↑ Units fold compactly to one side at the Dinkler-Plaza. Possible variations allow complete concealment of wall in special pockets.

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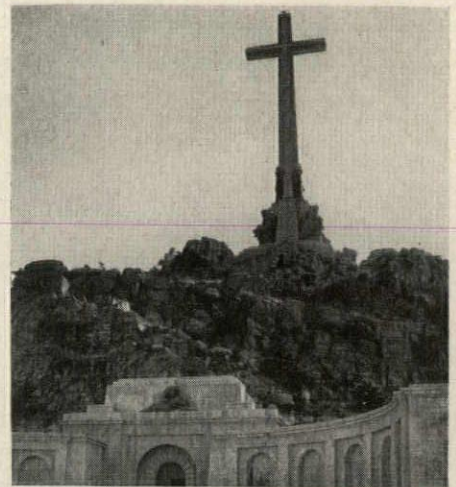
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*The Record Reports*



**Underground Basilica in Spain Is Part of Huge Monument**

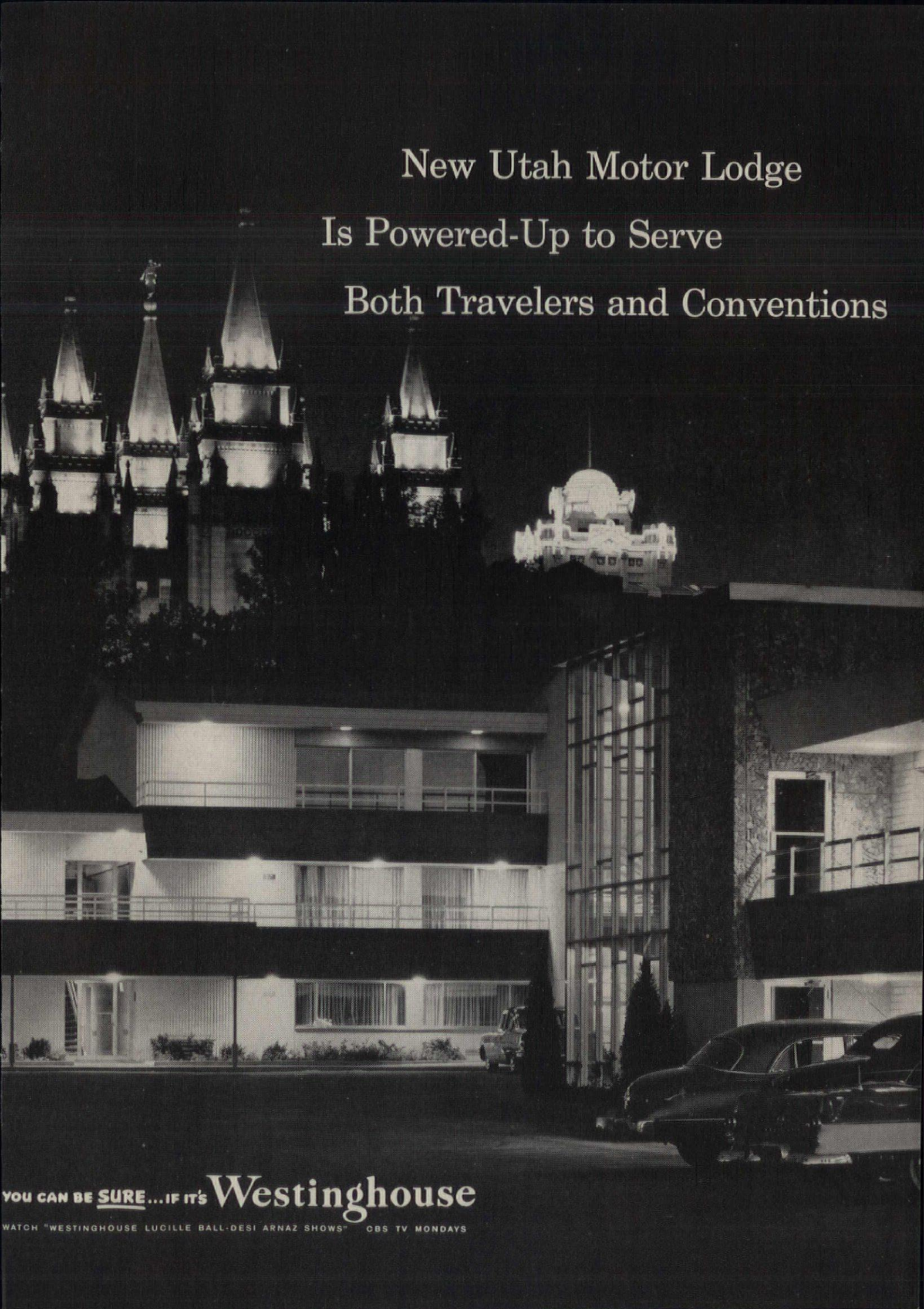
The Valley of the Fallen, 36 miles from Madrid, a monument to the dead of the Spanish Civil War, was opened last August. Under construction for 16 years, the vast project cost at least \$200 million. The original designer was the late Pedro Muguruza, Spanish architect; his work has been carried out by a young colleague, Diego Mendez.

The entrance to the underground basilica, hollowed out of a granite mountain, is above. The reinforced concrete cross is 492 ft high. Below is part of the polychrome mosaic scene by Santiago Padrós on the dome (138 ft high, 134 ft across) above the basilica's high altar. At bottom is the 853-ft underground corridor leading to the altar.



Homer McK. Fees photos





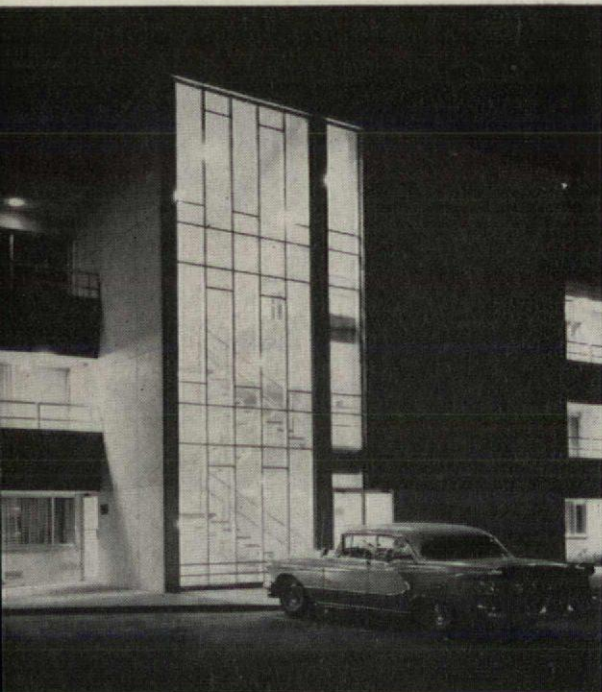
New Utah Motor Lodge  
Is Powered-Up to Serve  
Both Travelers and Conventions

YOU CAN BE SURE ... IF IT'S **Westinghouse**

WATCH "WESTINGHOUSE LUCILLE BALL-DESI ARNAZ SHOWS" CBS TV MONDAYS

Front Cover—Night photo of Hotel Utah Motor Lodge innercourt parking area shows spires of Salt Lake City's famed Mormon Temple in background. Just right of center above motor lodge is beehive top of Hotel Utah.

Close-up of entranceway to Salt Lake City's new motor hotel—the Hotel Utah Motor Lodge. ▶



Parking area entrance to the main building of motor lodge.

Dowd Leiter, Executive Assistant Manager, Hotel Utah; J. J. Nielsen, Westinghouse Sales Engineer; Don Black and Max Waddoups, Partners, Midwest Electric Co.; and Van Livingston, Assistant Manager, Hotel Utah, look at construction plans and architect's rendering of the new motor lodge.

J-94084-2



# Hotel Utah Motor Lodge is conventioneered

The new motor lodge, recently constructed by the Hotel Utah in Salt Lake City at a cost of approximately three and one-half million dollars, provides important supplementary facilities to the hotel's services.

Besides the 158 additional rooms now available to Salt Lake City visitors, the motor lodge includes an auditorium capable of seating 1500, an exhibition hall, a 175-seat restaurant known as "The Crossroads" with an all-electric kitchen and a large outdoor swimming pool capable of accommodating all the guests at both the hotel and the motor lodge. Located just across Temple Square from the Hotel Utah, the new motor lodge is comprised of four buildings, three of which are devoted to guest accommodations and one for administration and offices. The largest single building also houses the auditorium and exhibit hall, as well as the restaurant and multiple shops to take care of the guests' needs. Because of the multiple functions combined in this new motor

lodge, electrical requirements are large. The average amount of electrical current being used at any one time is estimated to be equivalent to that required to power 800 homes.

Westinghouse electrical equipment was specified for the new motor lodge as a result of the hotel's previous experience of excellent performance of Westinghouse electrical distribution equipment.

Design of the system was based on the possible interchangeability of parts and equipment between the motor lodge and hotel, so that it is unnecessary to deal with two different types of systems in ordering replacement parts or performing any necessary maintenance work.

J-94084-3

YOU CAN BE SURE...IF IT'S

## Westinghouse

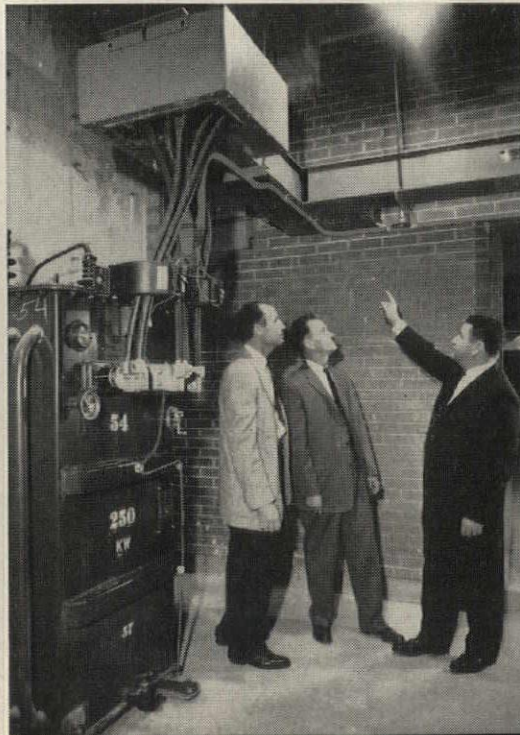
WATCH "WESTINGHOUSE LUCILLE BALL-DESI ARNAZ SHOWS"  
CBS TV MONDAYS

**S** Over 275 Pages Westinghouse Data in Sweet's Architectural File

W. H. Tuckett, WESCO Salesman, directs the attention of Max Wad-doups and Gerald B. Smith, Building Superintendent, Hotel Utah, to the Westinghouse 2000-amp, low-impedence bus duct in transformer vault. The transformer shown is single phase, 250 kva, oil-filled, which steps down the incoming 4160 volts to 120/240 volts for distribution throughout the motel.

Five (one not shown in this view) Westinghouse 75-kva, single-phase, Inerteen® transformers, 4160/7200 volts to 120/240 volts lined up for the inspection of J. J. Nielsen. These transformers provide low-voltage power for all-electric kitchen area.

Interior view of one of the second floor guest units shows Van Livingston seated at writing desk. Each unit is supplied with recessed incandescent and fluorescent lighting. Spotlights accent the color and material decor.





Gerald B. Smith and Max Waddoups look into cubicle of Westinghouse control center as Don Black reviews specifications. This control center and building type switchboard provide centralized control and protection of all important lighting feeder and motor circuits.

**Motor Lodge is conventioneered** *(continued)*

Westinghouse is prepared to help you in the solution of any Powering-Up problems you may have in the planning of new or modernization construction. See the Westinghouse Electrical Construction Engineer nearest you, or write Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania.

- OWNER:** Hotel Utah, Salt Lake City
- ARCHITECT:** L. Robert Gardner, Cedar City, Utah
- CONSULTING ENGINEERS:** Blomquist & Brown, Salt Lake City
- GENERAL CONTRACTORS:** Jensen Construction Co., Salt Lake City
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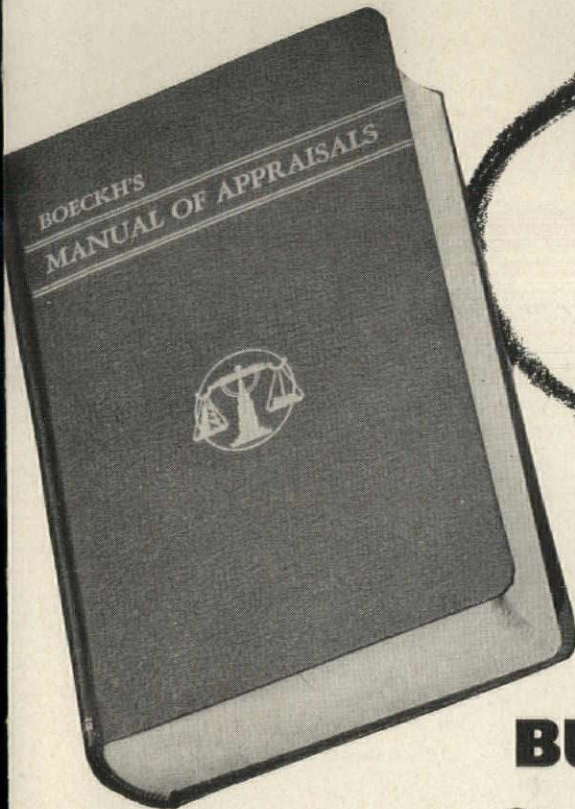
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Swimming pool at the Hotel Utah Motor Lodge is provided to accommodate guests of both the hotel and the motor lodge.



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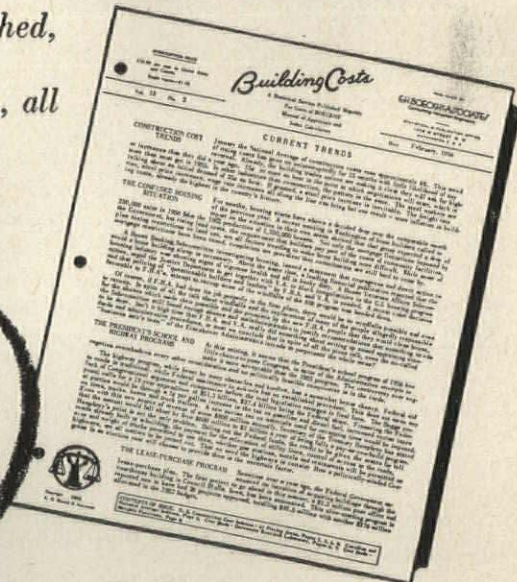
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## On the Calendar

### December

- 3-4 Building Research Institute Conference on Field Applied Paints and Protective Coatings, co-sponsored by National Paint, Varnish & Lacquer Association and Painting & Decorating Contractors of America—Shoreham Hotel, Washington
- 8-10 Winter Meeting, American Nuclear Society—Sheraton-Cadillac Hotel, Detroit

- 10-11 "Creative Trends in Urban Building," fourth annual National Construction Conference, co-sponsored by American Institute of Architects, American Society of Civil Engineers, Armour Research Foundation of Illinois Institute of Technology, Building Research Institute, Associated General Contractors of America—Hotel Sherman, Chicago
- 17ff "20th Century Design," first exhibition of entire Design Collection; through Feb. 23—

Museum of Modern Art, New York

### January

- 14-15 Building Research Institute Conference on Acoustical Design in Buildings—Hotel New Yorker, New York
- 18-22 15th Annual Convention and Exposition, National Association of Home Builders—Chicago
- 26-29 65th Annual Meeting, American Society of Heating and Air-Conditioning Engineers, and 14th International Heating and Air-Conditioning Exposition, sponsored by A.S.H.-A.E.—Bellevue-Stratford Hotel and Convention Hall, Philadelphia
- 26-29 10th Plant Maintenance and Engineering Show and Conference (26-28)—Public Auditorium, Cleveland
- 29-31 Annual Meeting, Society of Architectural Historians—Cleveland

### February

- 4-6 Home Improvement Products Show—The Coliseum, New York
- 8-13 National Convention (first of three in 1959), American Society of Civil Engineers—Los Angeles
- 9ff "The New Architecture" exhibition; through April 19—Museum of Modern Art, New York
- 15-18 Ninth Annual Convention and 1959 Show, Mason Contractors Association of America—Chase-Park Plaza Hotels, St. Louis

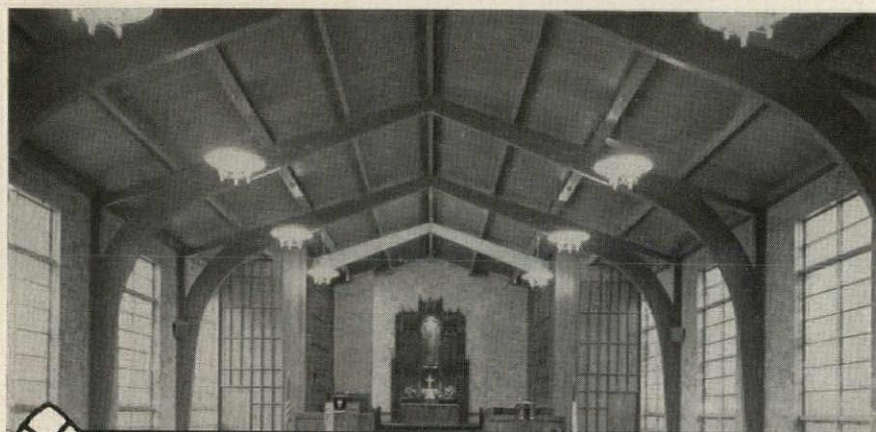
## Office Notes

### Offices Opened

Alvin Fromme and Zorab Vosganian have started practice as



Above are, left to right, Ralph T. Walker, Perry Coke Smith, Stephen F. Voorhees, Benjamin Lane Smith, and Charles Haines, who have announced the continuation of their architectural practice under the new firm name of Voorhees Walker Smith & Haines; the firm's address is 101 Park Ave., New York 17



**"We specify RILCO wherever we can"**

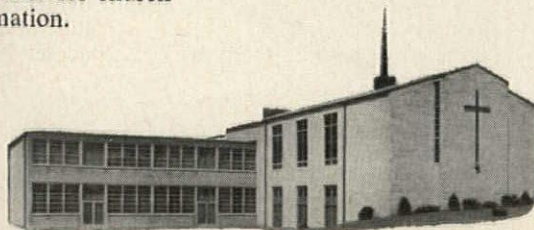
The above is based on the architect's own words: "Concerning the Rilco laminated arches and wood deck in the Salem Evangelical and Reformed church in Fort Wayne, we are pleased to state we consider the Rilco products to be very satisfactory. We have had Rilco products on several of our jobs and the quality of material inclines us to continue specifying them wherever they can be used."

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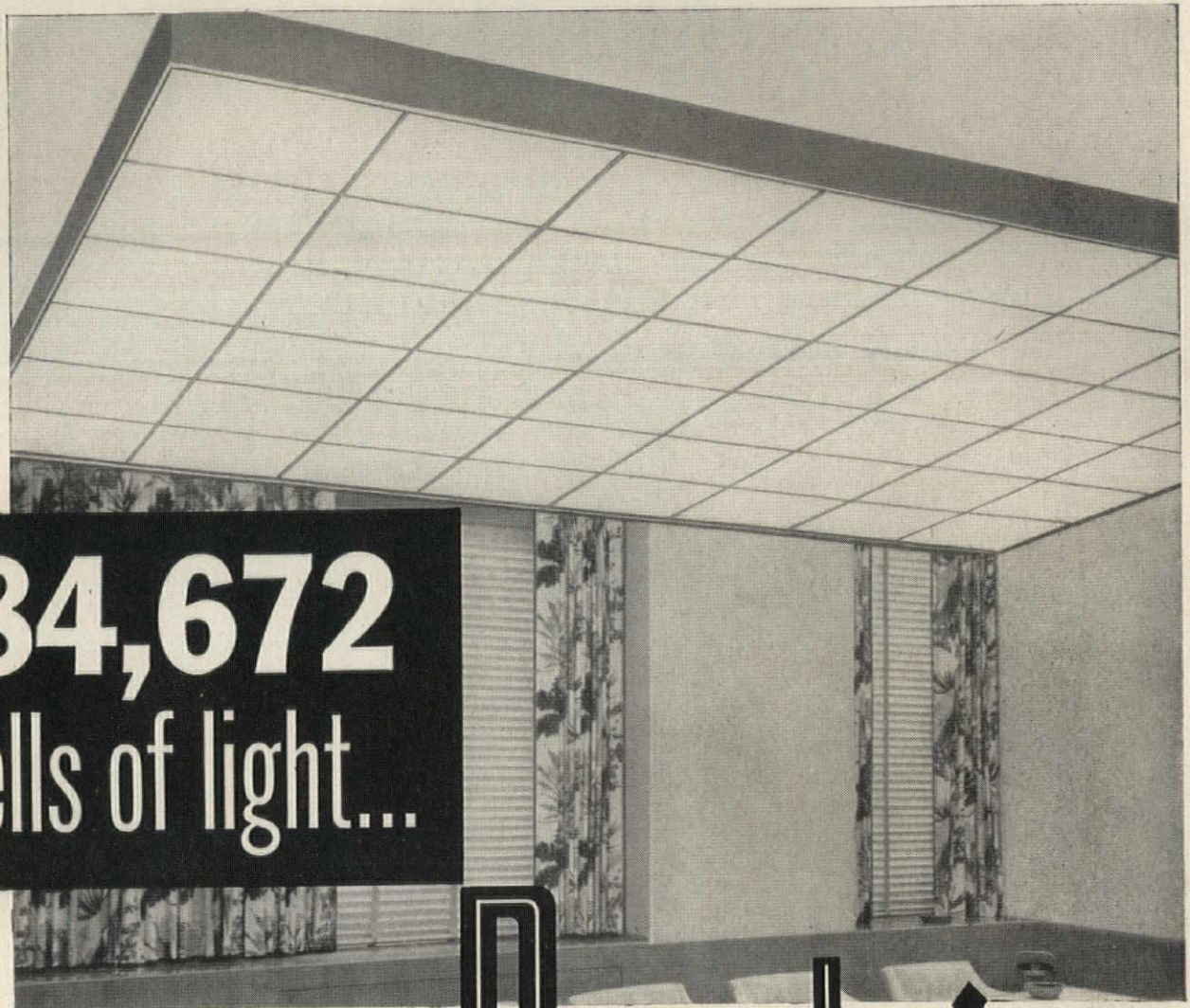
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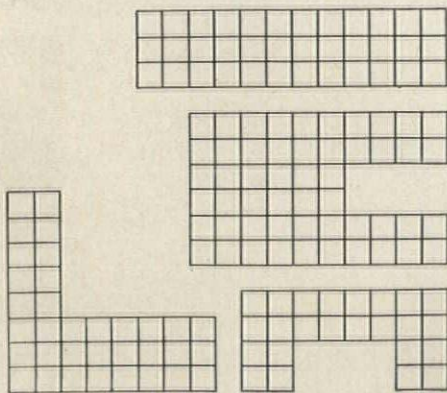
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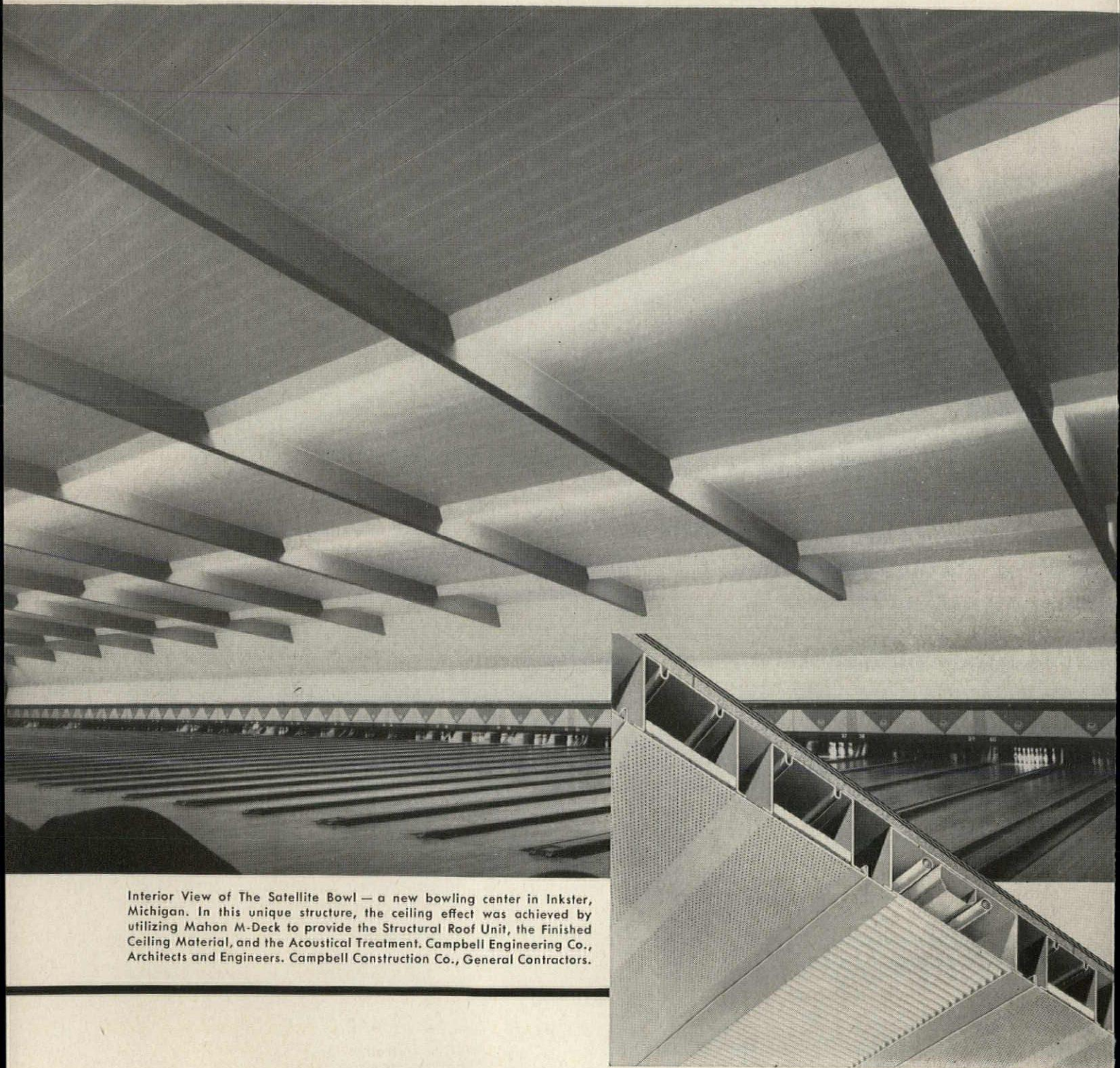
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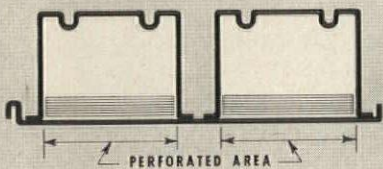
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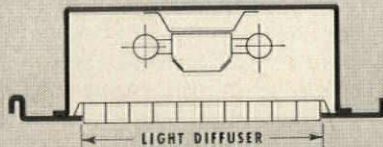
SECTION M1-OB

OPEN BEAM DEPTH 3", 4½", 6" or 7½"



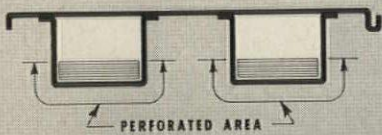
SECTION M2SR (Acoustical)

CEL-BEAM DEPTH 3", 4½", 6" or 7½"



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The architectural, engineering, and surveying offices of O'Neal, Obst & Brady have been opened in Palm Beach. Harold A. Obst, A.I.A., Thomas W. Carey, P.E., and Emily V. Obst, A.I.A., are at 289 Hibiscus Ave. David H. Brady, P.E., and Ben F. O'Neal, P.E., are at 214 Royal Palm Way.

James T. Swanson, Jr., A.I.A., an-

nounces the opening of his office at 3215 W. Alabama, Houston 6.

**Firm Changes**

Clark, Daily & Dietz, Consulting Engineers, 211 Race St., Urbana, Ill., announce the addition of W. D. Painter as a partner. Also, the following have been made associates: H. W. Byers, P. W. Clinebell, B. C. Conklin, D. R. Smith, M. Fuat Tigrak, Jamison Vawter, A. G. Cox, D. J. Henry. Dr. Painter manages the Memphis office. The firm recently established a third office in Carlyle, Ill.

Frederick Johnson and Joseph J. Yohanan have been named junior associates of the Chicago architectural firm of A. J. Del Bianco & Associates.

Marshall & Brown, Architects and Engineers, 1016 Baltimore Ave., Kansas City, announce that Charles C. Campbell and Robert B. Jarvis are now members of the firm.

John A. Scribbins, A.I.A., 504 Bondi Bldg., Galesburg, Ill., announces that he has taken into his firm two associates, John H. Feldman and Louis C. Klusmeyer, and that he has formed a corporation under the name of Scribbins-Feldman-Klusmeyer, Inc., Architects and Engineer.

Skidmore, Owings & Merrill, 425 Park Ave., New York 22, announce that David H. Hughes, A.I.A., has been elected a general partner.

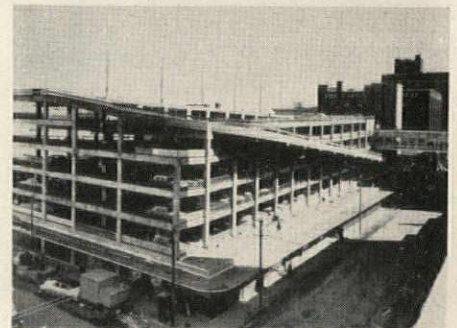
**New Address**

Pomerance & Breines, Architects, 630 Third Ave., New York 17.

**Corrections**

The RECORD deeply regrets an error on page 212 of the October issue. The credits for the May Company D & F Store, Denver, should have read: I. M. Pei and Associates, Architects; Ketcham, Giná and Sharp, Associated Architects; Ketchum and Sharp, Interior Architects.

The RECORD also deeply regrets an error on page 13 of the October issue. The credits in the caption accompanying the rendering of the United States Mission to the United Nations building should have read: Kelly & Gruzen-Kahn & Jacobs, Associate Architects; Structural Engineers—Harwood & Gould; Mechanical Engineers—Slocum & Fuller.



The RECORD also regrets that an incomplete credit was given on page 185 of our September issue, in connection with the photograph shown again above. The picture (supplied by the National Parking Association, as was indicated) illustrates the Calgary Parkade of the Hudson Bay Company. This facility was planned and construction was supervised by National Garages, Inc., Detroit; Smith, Hinchman & Grylls, Detroit, were engineers and architects, and Stevenson-Dewar, Calgary, were associate architects.

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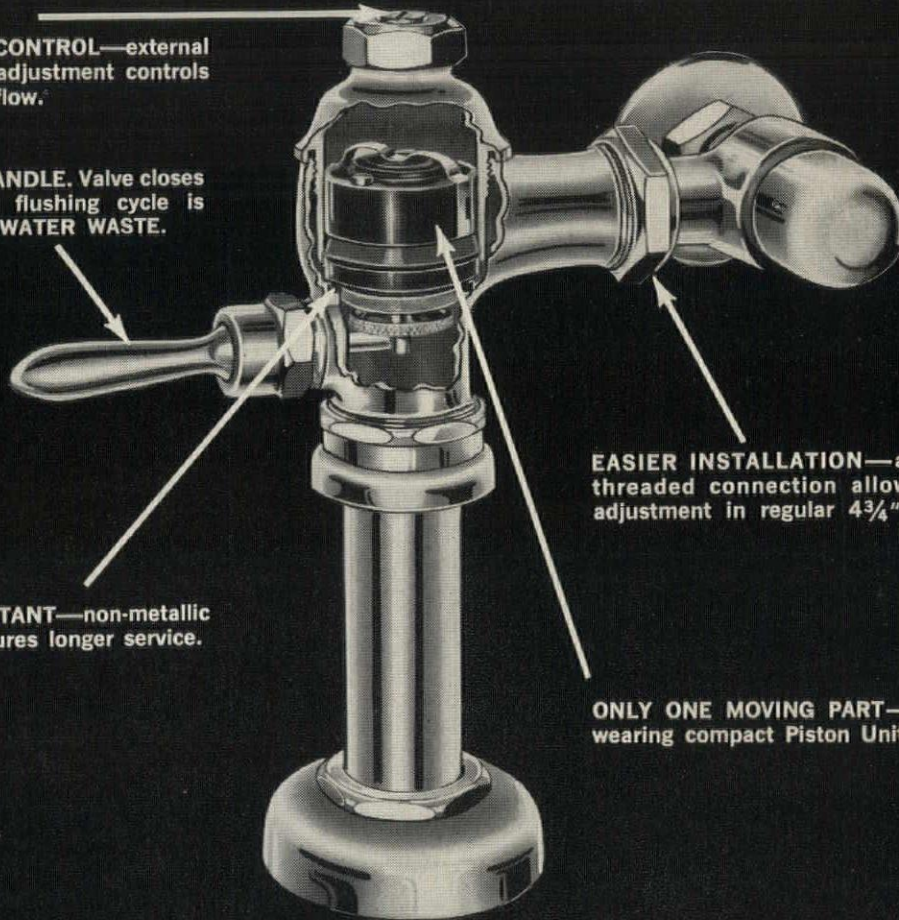
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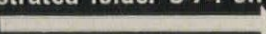
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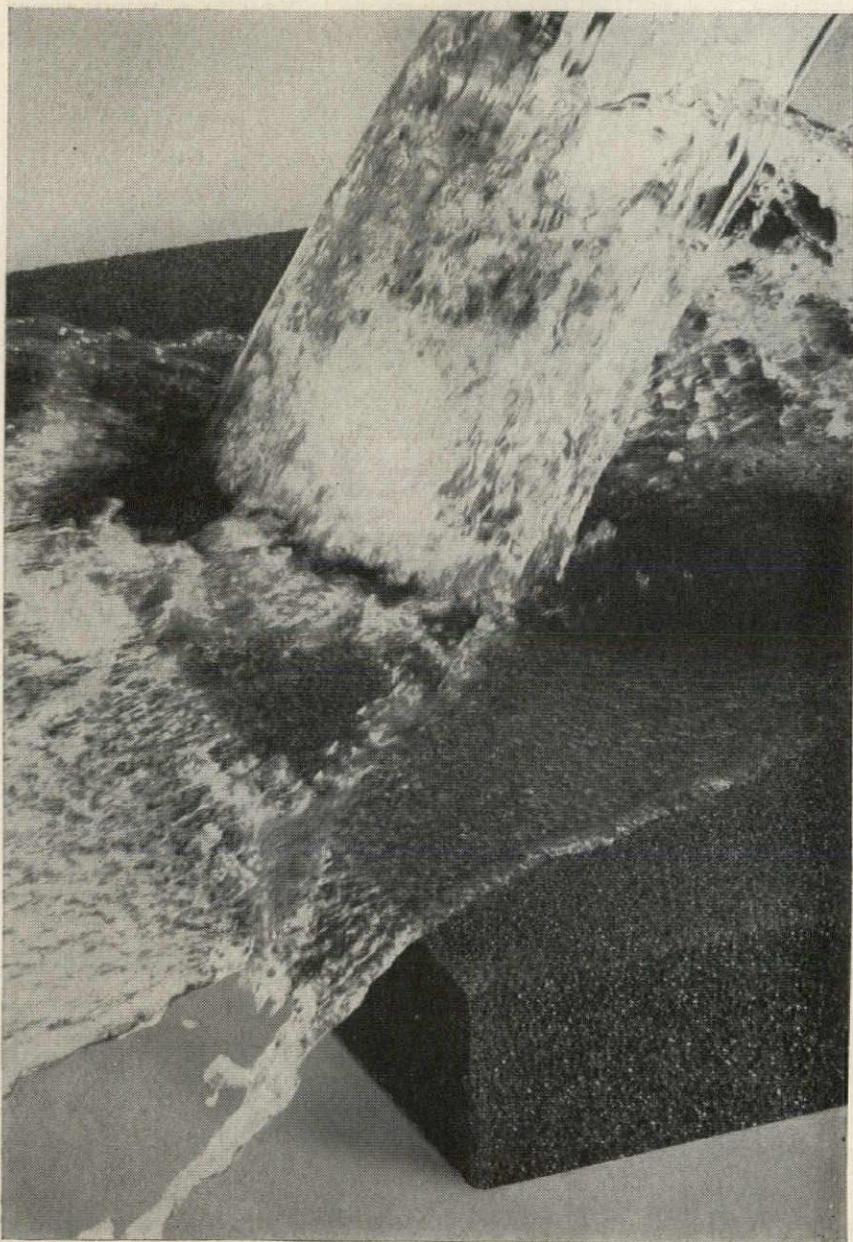
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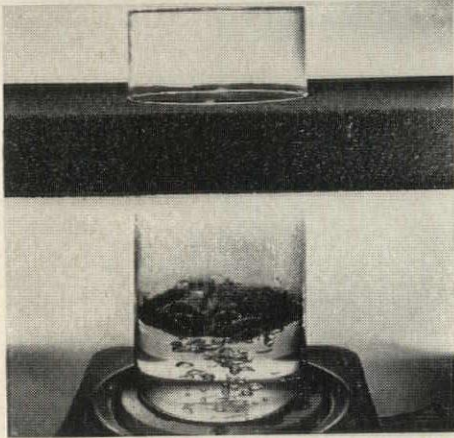
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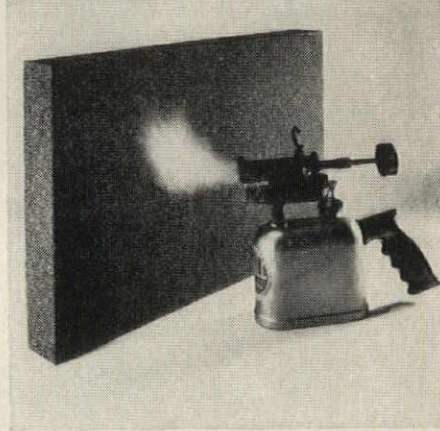
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gives you all these key benefits

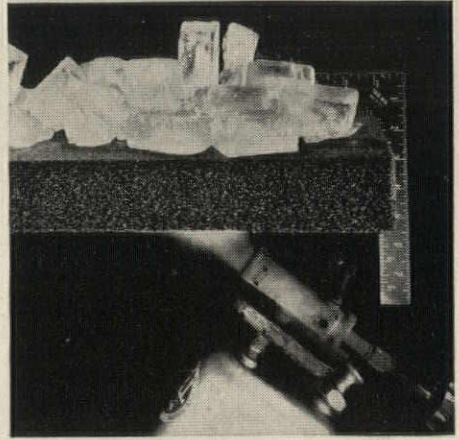
# CELLULAR GLASS INSULATION



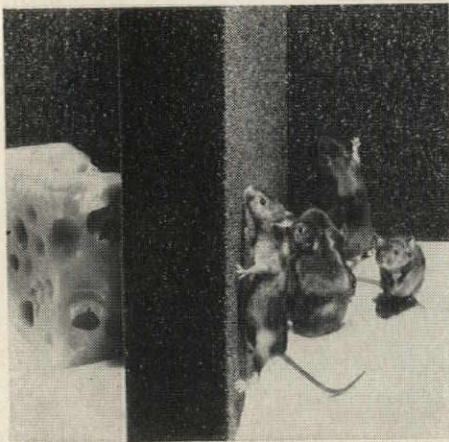
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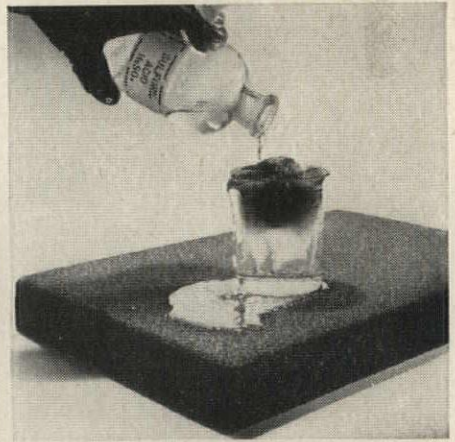
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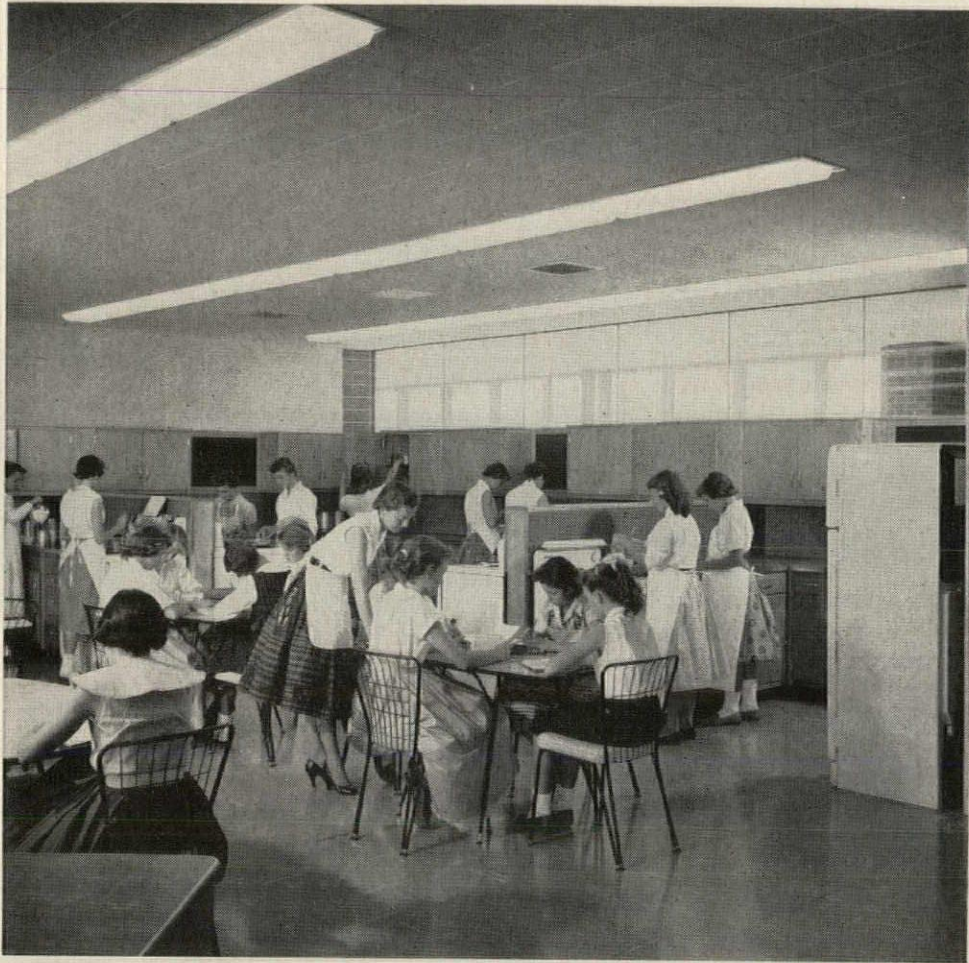
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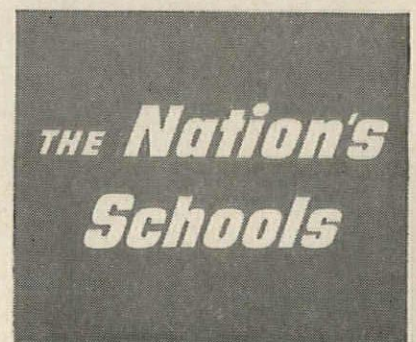


## SCHOOL ADMINISTRATION BY SCHOOL ADMINISTRATORS

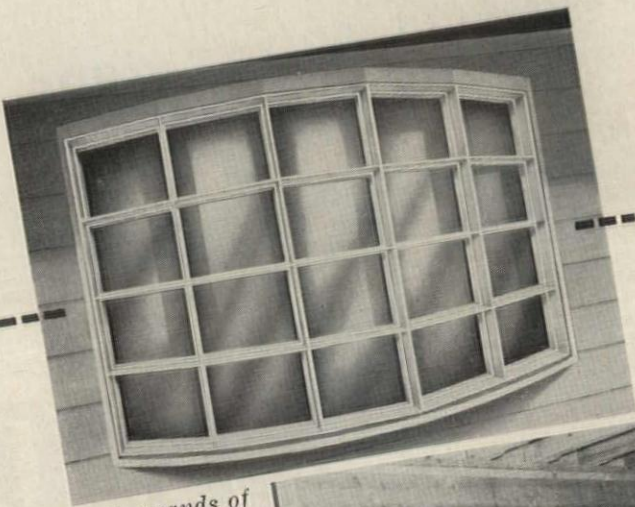


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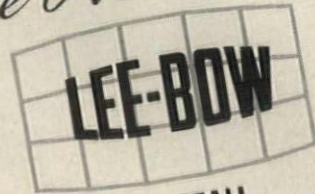
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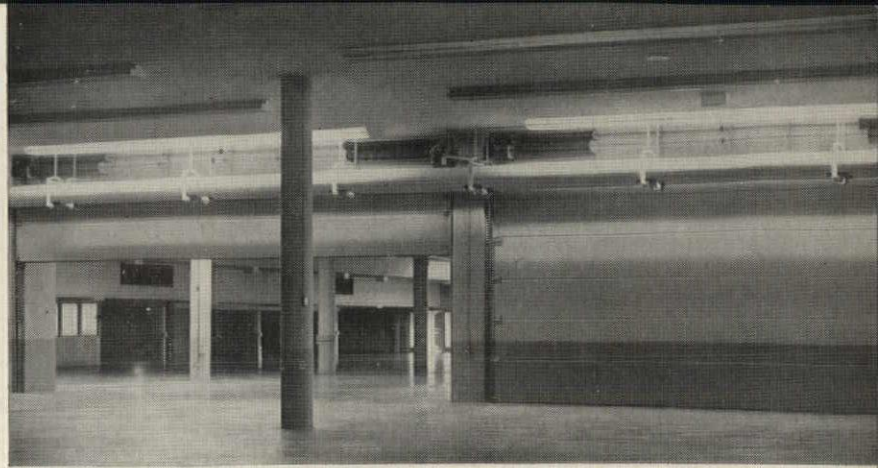
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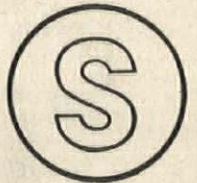
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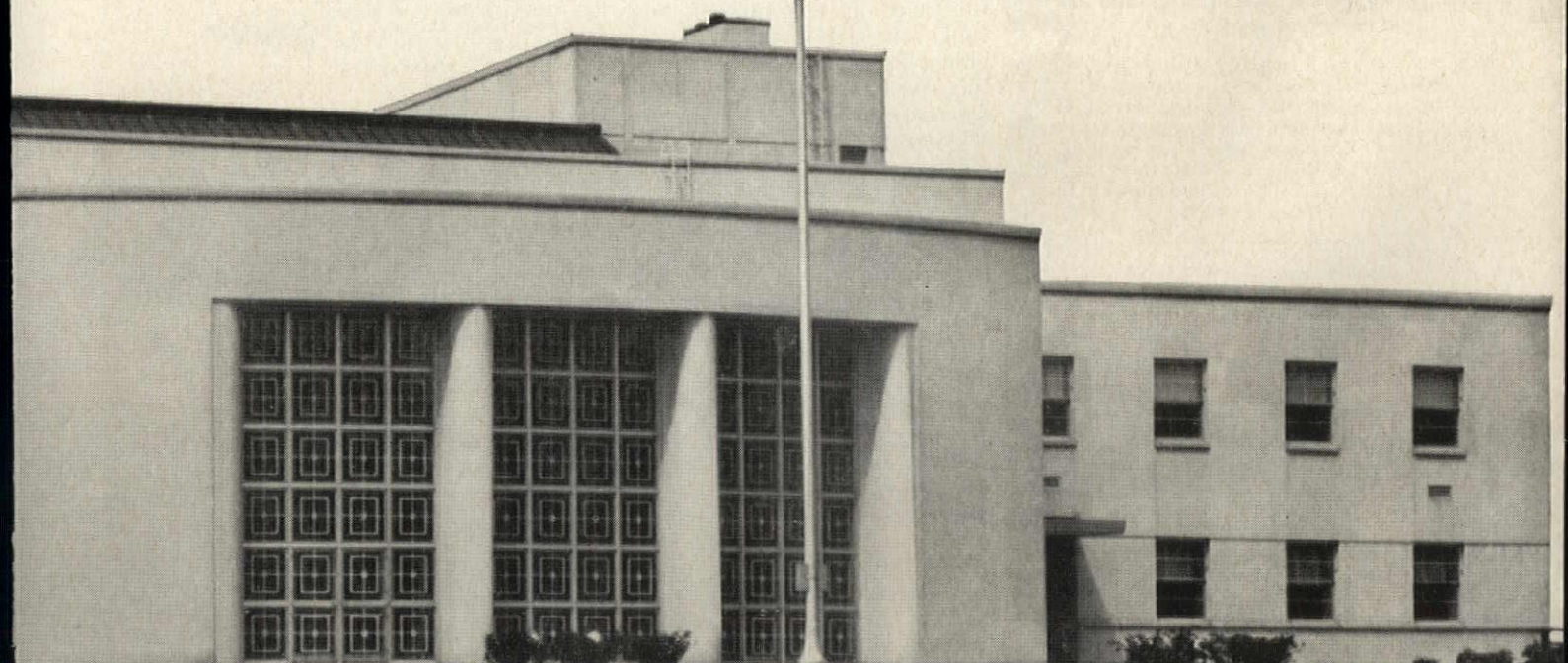


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## ELECTRIC PLANT NEWS



# Power outages can do no harm in this hospital

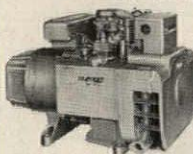
**Onan Electric Plant supplies emergency power for lighting and all vital electrical equipment**

An Onan Emergency Power System protects patients and personnel. Supplies current for lighting corridors, operating rooms, delivery rooms, stairways; provides power for heating system, ventilators, elevators, X-Ray machines, and other vital equipment.

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**D. W. ONAN & SONS INC.**  
2656-A University Avenue S. E.  
Minneapolis 14, Minnesota

## Washington Topics

continued from page 52

cy, AMB, noted that currently millions of dollars are being spent for the construction of new runways and the improvement of existing ones. But prior to this location and design study for taxiways there had been no authoritative criteria as an aid to airport capacity expansion.

### CAA Issues Runway Standards

Just prior to release of AMB's study, the Civil Aeronautics Administration, now also part of the Federal Aviation Agency, brought out its final revised standards for the design of airport runways to meet the requirements of both conventional and turbine-powered aircraft.

The new standards reduced the number of airport classifications for air carrier service from six to four. Here are the new categories of runways with revised maximum lengths: local, 4,200 ft; trunk, 6,000 ft; continental, 10,500 ft. Temperature corrections are specified.

The new criteria set 150 ft as the standard runway width except for the local category, where this was reduced to 100 ft. This represents a 50-ft reduction from the former 200-ft criteria for the larger fields. Elevation and gradient corrections remain unchanged.

These are: runway lengths must be increased at the rate of seven per cent for each 1,000 ft of elevation above sea level. And lengths will be increased at the rate of 20 per cent for each one per cent of effective runway gradient.

The criteria appear in CAA's Technical Standard Order N6b entitled, "Runway Strength and Dimensional Standards for Air Carrier Operations."

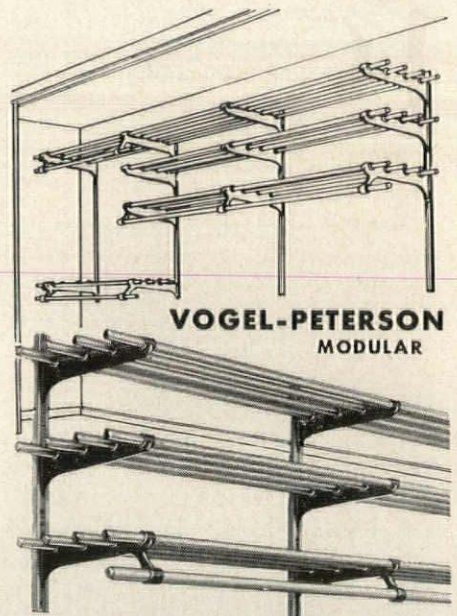
The new categories are defined as follows:

**Local**—Airports to serve on local service routes providing service in the "short-haul" category normally not exceeding 500 mi.

**Trunk**—Airports to serve on airline trunk routes and engage in intermediate length hauls normally not exceeding 1,000 miles.

**Continental**—Airports for serving long nonstop flights, exclusive of coast to coast, normally entirely within the confines of the continental United States. These airports serve nonstop flights up to 2,000 miles.

**Intercontinental**—Airports slated to serve the longest range nonstop flights in the transcontinental, transoceanic and intercontinental categories.



**VOGEL-PETERSON MODULAR**

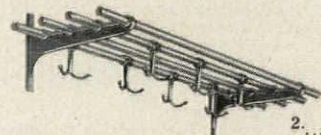
## CUSTOM-LINE

### Aluminum HAT and COAT RACKS

Tailored to fit any given wall area. Die cast aluminum brackets adjustable to exact centers . . . also adjustable as to height without removing from wall.

#### 3 BASIC SHELVES

1. Hat shelves with hanger bar for coat hangers.



2. Hat shelves with staggered cast aluminum coat hooks.

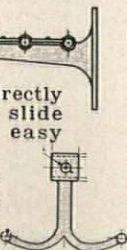


3. Hat or utility "plain" shelves for stacked tiers for general use.

#### RIGID OR ADJUSTABLE MOUNTING

Brackets mount with standard fasteners directly on wall or in extruded slide mountings that permit easy change of heights.

Cast aluminum coat hooks can be staggered along the bottom shelf to give great capacity in small space.



#### MODERN ANODIZED FINISHES

Tubing comes in clear, or gold color, deep etched anodized finishes . . . with closed ends. Cast aluminum brackets and hooks come in black, silver luster or brass hammertone finishes. All combinations available.

#### FLOOR LAYOUT SERVICE

Let our cloakroom and checkroom specialists suggest equipment requirements and efficient layout. Just send outline of available space, capacity desired and nature of load. No obligations, of course.

Write for Catalog CL52

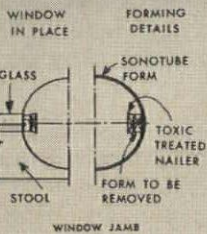
113

**VOGEL-PETERSON CO.**  
1121 W. 37th St. • Chicago 9, Ill.

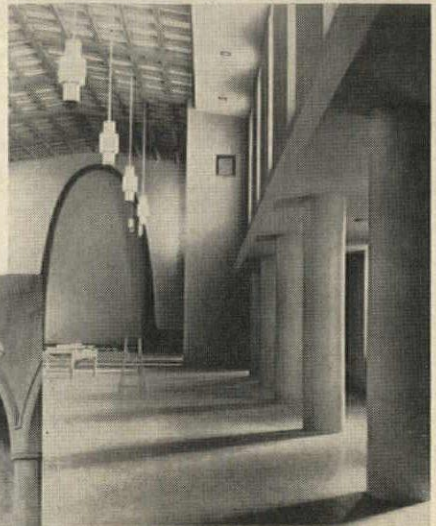
# FOR churches...

## TYPICAL FORMING DETAILS

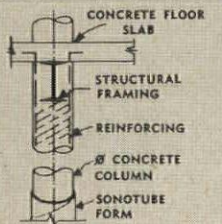
(not to scale)



round concrete columns add quiet dignity...



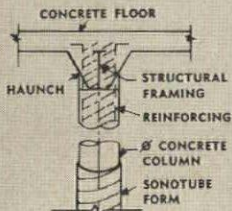
Our Lady of Fatima Church  
Albuquerque, N.M.



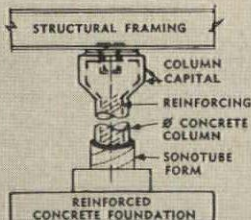
Round concrete column with structural framing and reinforced concrete slab



First Lutheran Church  
Seattle, Wash.



Round concrete column with haunched structural steel beams



Tie between round concrete column with capital and structural steel framing

...and save construction time and money when they're formed with

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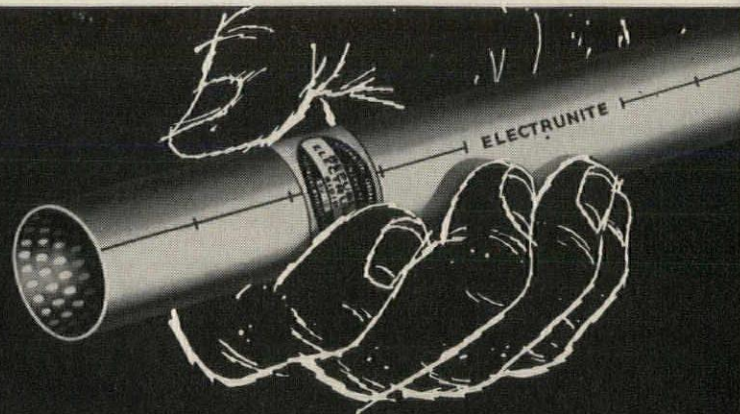
**ELECTRUNITE E.M.T.** is economical for contractors to install, too. "INCH-MARKED"® for easy measuring, "GUIDE-LINED" for accurate bending, "INSIDE-KNURLING" that makes wire-pulling up to 30% easier, are installation economies that permit architects to specify larger electrical raceways and more outlets for future expansion, all within the original budget.

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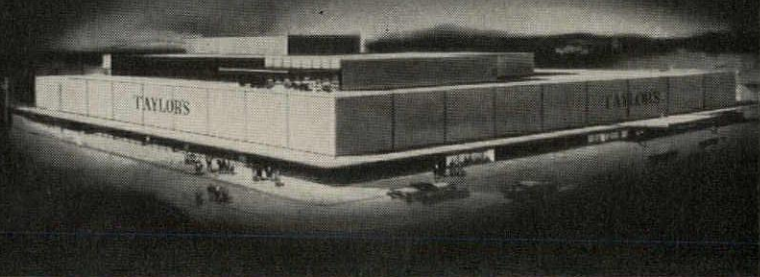


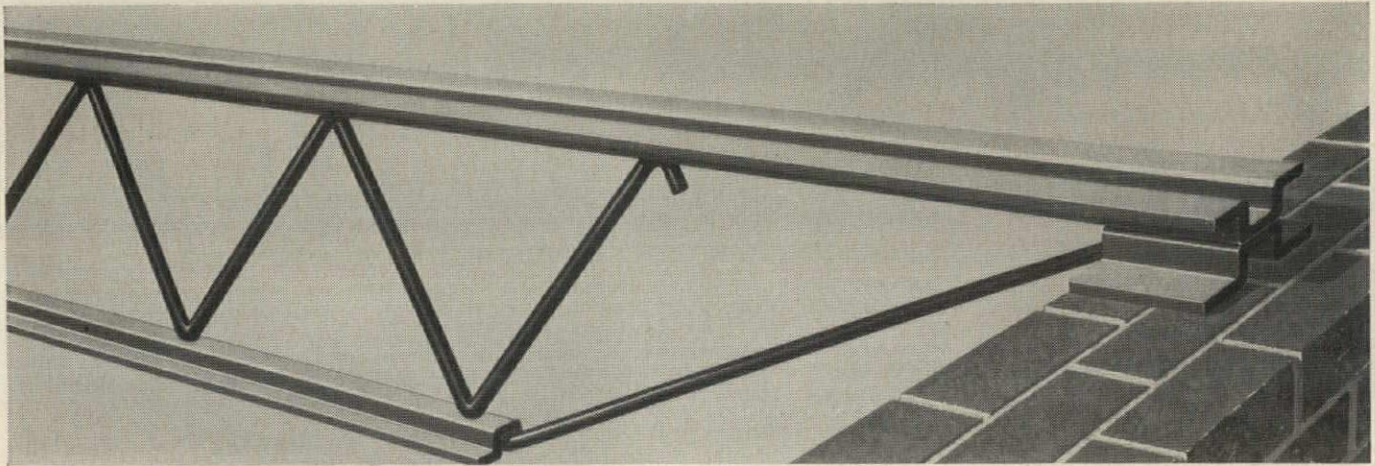
Apartment Building: Carlton Plaza, Kansas City, Missouri  
Architect: Herbert E. Duncan, Kansas City, Missouri  
Electrical Contractor: Twin City Electric Company  
Kansas City, Missouri



Department Store: Wm. Taylor Son & Company, Cleveland, Ohio  
Architect: Welton Becket, F.A.I.A. and Associates, Los Angeles, California

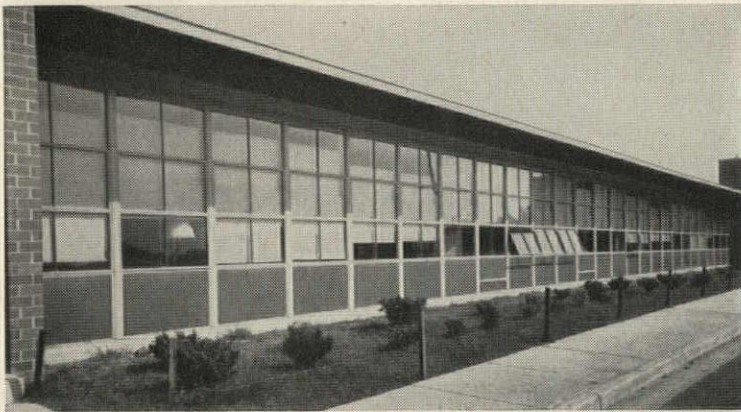
Junior-Senior High School: Hampton Township School  
District, Allegheny County, Pennsylvania  
Architect: Celli-Flynn, McKeesport, Pennsylvania  
General Contractor: Perry J. Dick, Inc.,  
Large, Pennsylvania  
Electrical Contractor: Reno Electric Company,  
Pittsburgh, Pennsylvania





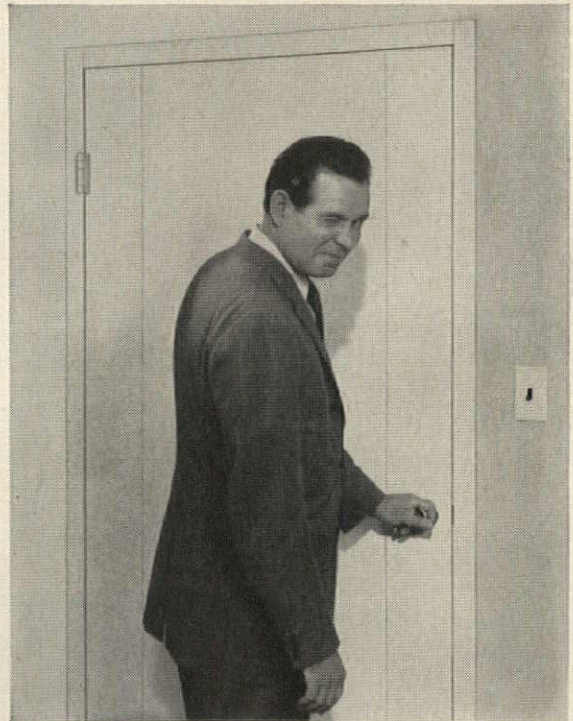
**NEW TRUSCON "O-T" STEEL JOIST** in a new design to meet your building ideas. The new Truscon "O-T" Steel Joist is a Warren Truss fabricated of accurately cold-formed top and bottom chords and a plain round web member. Cold formed steel sections not only make an exceptionally strong joist, but also add a pleasing appearance. The new joist offers a straight bottom chord to carry spandrels and columns with an economically extended end. Truscon,

in co-operation with the Steel Joist Institute, has increased the number of "S" Series sizes from 17 to 25. Again, in co-operation with the SJI, Truscon will market this new "O-T" Joist designed to 20,000 psi. working stress as of January, 1959. This Truscon Series "S" Joist will be available in the longer 40- to 48-foot range. Send coupon for specifications, design data, do's and don'ts. Write today.



**TRUSCON VISION-VENT® WINDOW WALLS** offer an exciting type of fast, economical wall construction. Designed as a wall with the window already in place, Truscon Vision-Vent Window Walls offer many advantages in all types of single story and multi-story applications. Truscon window engineers will be glad to work with architects and engineers in developing design details and costs. Call your Truscon representative, or send coupon for facts.

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# IN Stainless STEEL

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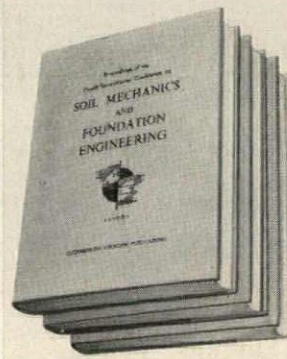
"Electro-Sheet" is pure thin copper produced by electro-deposition in long, wide rolls—in weights of from 1 to 7 ounces per sq. ft.

**Durable and Economical**—When bonded to other materials, for flexibility and easy handling, it provides a lasting product for concealed flashing and damp-proofing uses at relatively low cost.

**In a Variety of Forms**—"Electro-Sheet" is furnished to manufacturers who bond it to high-grade building papers and fabrics, or coat it with asphaltic compounds. The finished products are available in long lengths, and widths to 60". For names of manufacturers, write: The American Brass Co., Waterbury 20, Conn. In Canada: Anaconda American Brass Ltd., New Toronto, Ont.

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**ANACONDA**® "Electro-Sheet"  
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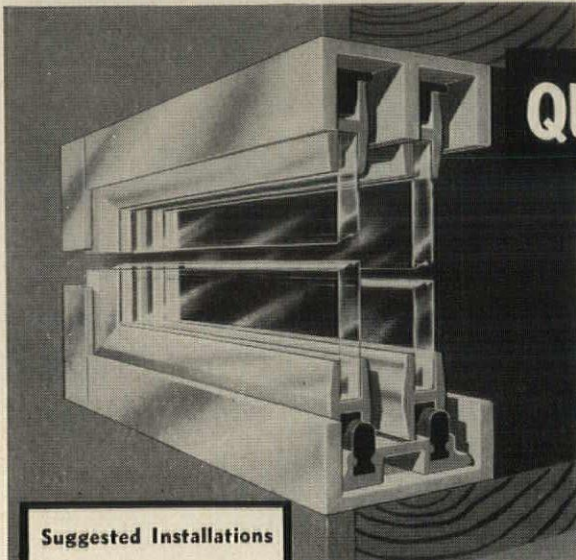
### Proceedings of the Fourth International Conference on SOIL MECHANICS AND FOUNDATION ENGINEERING

*Edited by the Organizing Committee,  
London, August 1957.*

Here, in three giant volumes, are a total of 184 technical studies, papers, and treatises, prepared by over 200 leading engineers, physicists, chemists, and other experts in soil mechanics from all over the world. The papers appear verbatim in the first two volumes. The third volume contains a record of the proceedings of the two-week London conference, and of the discussions at each session. The set contains approximately 1,400 pages in large 8½ x 11¼" size, and over 1,500 illustrations.

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## E-Z Glide #700 Aluminum Track Assembly For all sliding Glass and Panel Doors

Now fine cabinetry such as display cases, trophy cases and counter display cases, and all fine furniture can boast a strikingly beautiful appearance, as well as superbly smooth and quiet gliding action.

EPCO #700 provides its own attractive fascia that frames the opening with a slender band of satin-smooth extruded aluminum that will never corrode or tarnish.

EPCO #700 rides fibre glides on a fibre track to provide a most desirable sliding track . . . even large glass doors slide easily and quietly . . . but with a controlled action that saves mashed fingers and door "bounce-back."

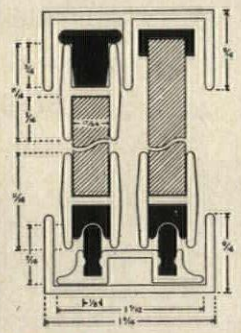
EPCO #700 track has no moving parts to wear out or become clogged . . . no wheels, balls or bearings to corrode or go flat.

*Here are features superior to any other track:*

- Perfect for all sizes of sliding cabinet doors.
- Provides its own handsome fascia.
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- No moving parts to cause trouble or wear.
- Installation is quick and easy.
- Wide variety of mountings are possible.
- Extruded Aluminum will not corrode or tarnish.
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**NEW EPCO CATALOG AVAILABLE**  
Full information on the complete line of E-Z Glide track, friction and magnetic catches, drawer-pulls and door pulls will be sent on request.

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Installation is amazingly simple and quick, whether for surface or flush mount, partially or fully recessed. Extruded Aluminum parts are available in mill finish or satin smooth anodized finish. Stock lengths are 4, 6, 8, 12 feet. Special finishes available.

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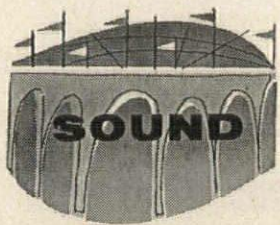
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12-23

## Washington Topics

The requirements are applied to all airfields constructed or repaired with Federal funds. One of their purposes was said to be an indication to aircraft manufacturers and operators of the maximum effective airport runways which normally will be available for present and future aircraft.

### Heliport Data Sought

Another phase of air travel had the new industry-government committee charged with establishing criteria for design and development of heliports visiting several leading helicopter manufacturers to learn more of the present and future performance of these aircraft.

CAA said the group was spending about a week with manufacturers in an effort to acquaint itself with performance characteristics of present and planned helicopters. The angle of landing and take-off, for example, can have important bearing on the design of runways and landing pads. CAA will publish the design criteria later.

### Space Agency Announces Rules On Contracting Procedures

The National Aeronautics and Space Administration has begun to issue press releases of interest to the construction industry. Among the first of these was an announcement that contracting procedures of the "space agency" would be handled in accordance with the Armed Services Procurement Act.

"This decision should be welcomed by potential NASA contractors," NASA chief T. Keith Glennan asserted, "since industry has become quite familiar with the ASPR in the past 10 years. They will not be required to learn how to operate under widely divergent NASA regulations, nor will this change procedures for those contractors now engaged in projects which have recently been transferred from the Department of Defense to NASA."

NASA said it would have a major procurement and contracting program in connection with its activities in space flight and exploration. While continuing to purchase services, materials and equipment usually associated with laboratories, it will develop and use contractual sources capable of designing, developing, producing and testing space vehicles and the supporting services and products related to launching and operation of such vehicles.

The agency explained it intends to advertise for competitive bids on supplies, materials and equipment when-

## Problem Solving at Huntington



HE:  
**What?  
Wax a  
Conductive  
Floor?**



US:  
**We'll try to  
develop a  
conductive  
floor wax!**



HE:  
**If you can,  
a fortune  
in pearls  
is yours!**



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**Huntington C-2C  
Conductive Wax!**  
Designed specifically for conductive floors. Listed by Underwriters' as safe. It's the only wax for conductive floors that is!

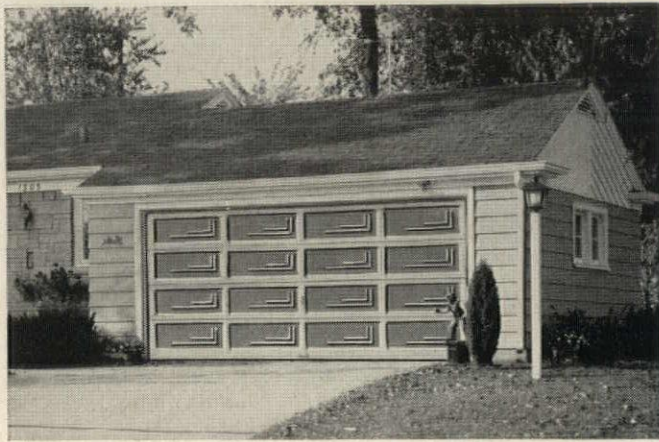
We don't want a fortune in pearls for every problem we solve. But we would like a chance to help you solve your maintenance and sanitation problems. Write for the name of the Man Behind the Drum nearest you. He's your Huntington representative. His advice won't cost a cent. And he could save you money.

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*there's a Ro-Way for every Doorway!*

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FOR MAXIMUM UTILITY  
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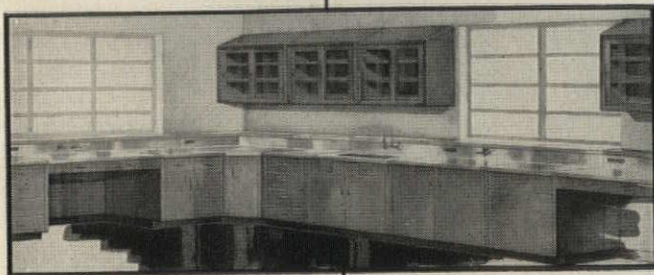
SPECIFY

**moduline**

INSTITUTIONAL-QUALITY  
CASEWORK

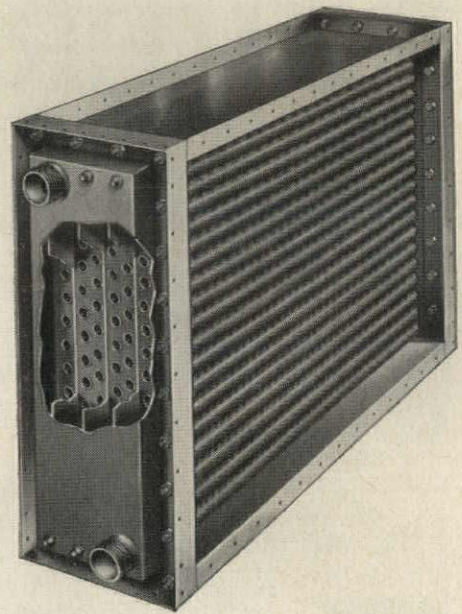
Flexibility . . . permanence . . . economy. These are prime reasons Aloe MODULINE unitized steel furniture finds so much favor with architects and builders. Aloe MODULINE is *flexible* in function and arrangement, *permanent* in its all-welded construction, *economical* in initial cost and upkeep. Made in the modern Aloe factory, devoted exclusively to the manufacture of hospital and laboratory equipment.

For laboratories, hospitals, schools . . . wherever the best in cabinets and casework is called for . . . more and more builders specify Aloe MODULINE. Write for free brochure. Dept. 100.



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Completely drainable and easily cleaned, Aerofin Type "R" coils are specially designed for installations where frequent mechanical cleaning of the inside of the tubes is required.

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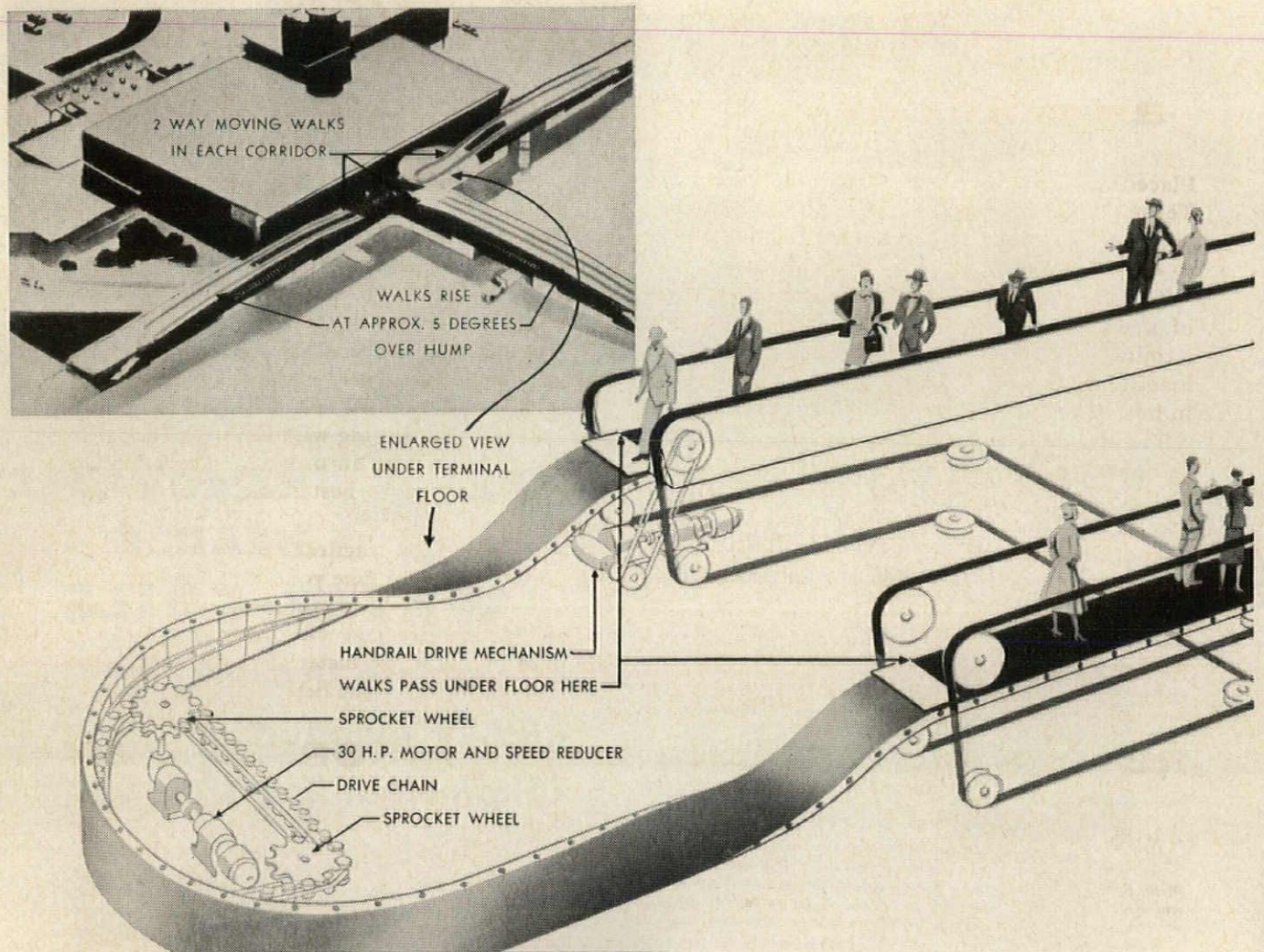
The finned tubes are staggered in the direction of air flow, resulting in maximum heat transfer. Casings are standardized for easy installation. Write for Bulletin No. R-50.

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# REVERE ALUMINUM



(ABOVE)

Schematic drawing showing the "Glide-Ride" moving sidewalk designed, manufactured and installed by HEWITT-ROBINS, INC., at the Love Field Air Terminal, Dallas, Texas.

(Opposite page)

Detail of balustrade with some of the various Revere Aluminum Extrusions used in the conveyors. The unseen track on which the hand-rail operates is extruded from Revere Bronze shape shown at bottom.

(LEFT)

"Much better than walking," say users of this moving sidewalk that has been a big hit ever since the day it was put into operation.

# and BRONZE TEAM UP

to help make the world's longest

*"Moving Sidewalk"*

an attractive, dependable operation

Placed in operation at the Dallas Love Field Air Terminal, Texas, early in 1958, the world's longest passenger conveyor system has proved the answer to efficient transportation of pedestrians.

The three units which total more than a quarter of a mile in length extend out from the main terminal over three separate bridges to the first loading gate of each finger, carrying passengers in both directions.

These new Glide-Ride conveyors were designed, manufactured and installed by HEWITT-ROBINS, INC. Playing 2 important roles in these conveyors are 22,000 lbs. of Revere Aluminum Extruded Shapes and 22,000 lbs. of Revere Extruded Bronze. The aluminum extrusions were used as floor cove molding, handrail molding, spoon molding between balustrades and rubber carpet, and as a wall cove between handrail and wall. Not only are these Revere Aluminum extrusions attractive and

decorative but their satiny finish will remain so for years with an occasional soap and water cleaning the only maintenance required.

Hidden under the moving rail is the track extruded from Revere Bronze, taking constant daily rugged wear in its stride.

The selection of Revere Aluminum and Bronze Extrusions was not a mere matter of specification. It was the result of HEWITT-ROBINS Engineers and Designers consulting with Revere's Technical Advisory Service men in order to determine the alloys and the shapes best suited to do the job required.

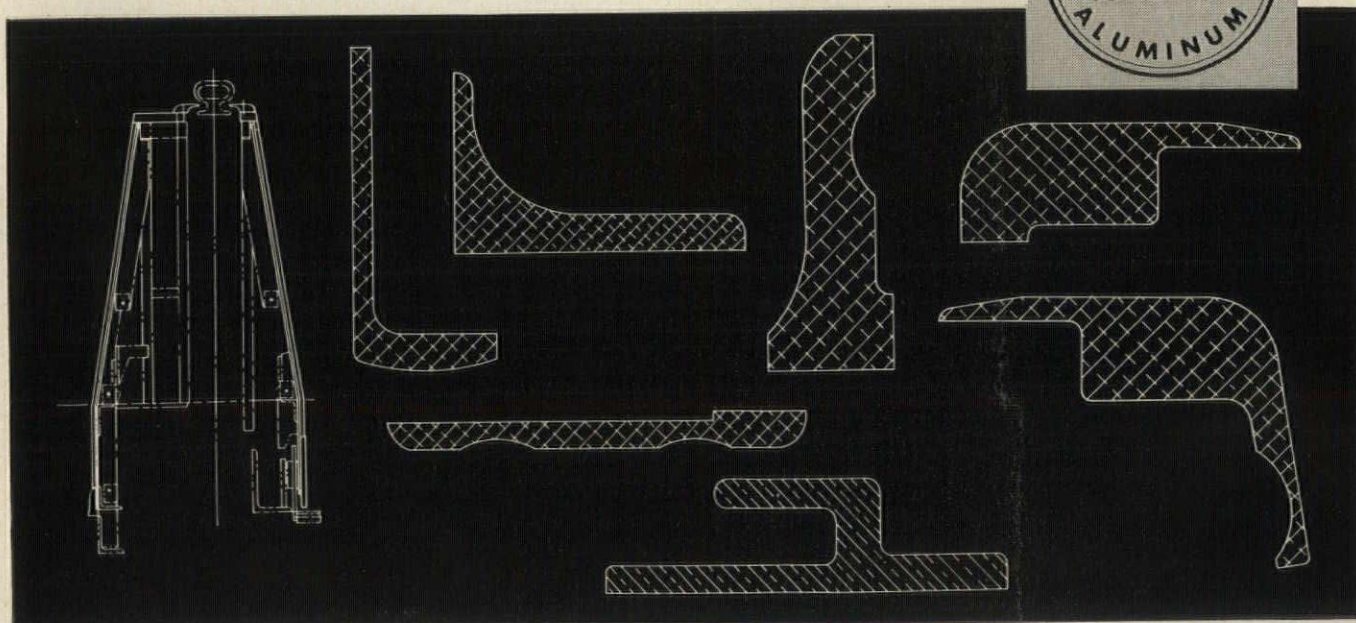
And so it is with practically every industry you can name. When you take your supplier into your confidence, discuss your problems with him, you invariably are rewarded with a better product at less cost, because the material finally selected is the *exact* material for the best job.

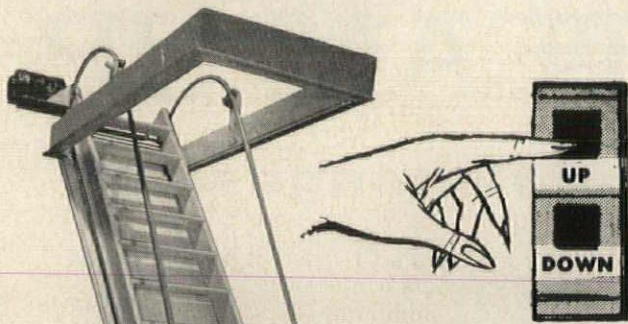
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*Founded by Paul Revere in 1801*

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Mills: Rome, N. Y.; Baltimore, Md.; Chicago, Clinton and Joliet, Ill.; Detroit, Mich.; Los Angeles and Riverside, Calif.; New Bedford, Mass.; Brooklyn, N. Y.; Newport, Ark.; Ft. Calhoun, Neb.  
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electric  
STAIRWAY**

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**SOLVES PROBLEMS**

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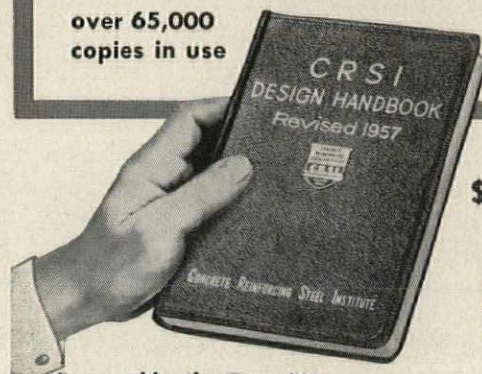
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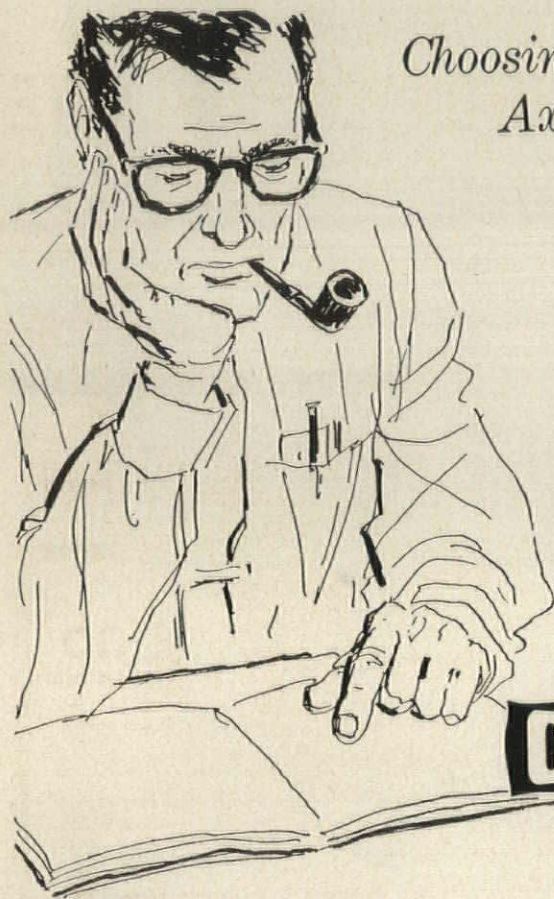
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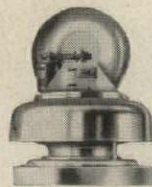
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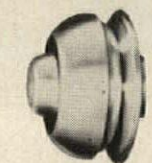
TYPE "CB"  
Belt drive  
centrifugal  
to 13,939 cfm



TYPE "CD"  
Direct drive  
centrifugal  
to 10,263 cfm



TYPE "FD"  
Direct drive  
propeller  
to 4,020 cfm

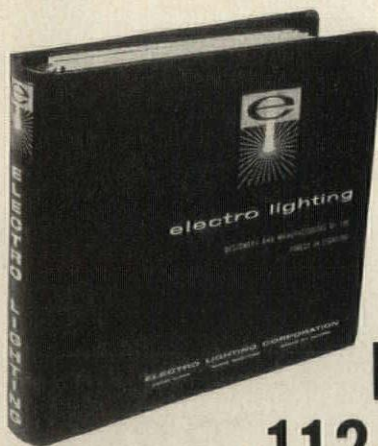


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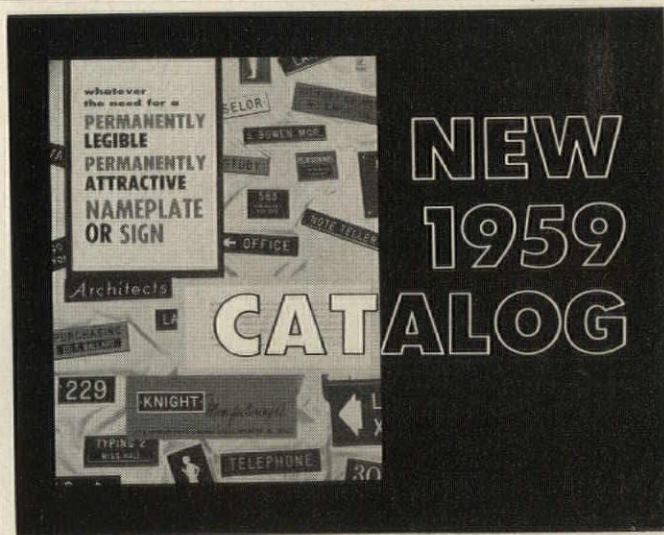
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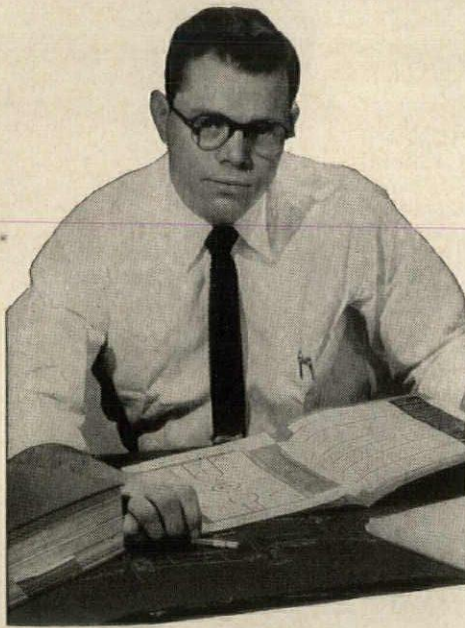
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## Washington Topics

ever its requirements can be clearly defined. Contract awards on a fixed price basis will be made to the lowest responsible bidder. Where product or service requirements cannot be precisely defined, awards generally will be made following competitive negotiation with qualified firms, it said. This would involve research and development contracts. Such awards will be either at a fixed price or at actual cost plus fixed fee.

Finally, the agency said that small business firms would be given the opportunity to participate in supplying NASA procurement needs to the maximum extent practicable, consistent with accomplishment of the purposes of the National Aeronautics and Space Act of 1958.

### 7091 Veterans Qualify to Get "Wheelchair House" Grants

More than 5400 veterans seriously disabled in service are living in or soon will occupy one of the specially designed "wheelchair houses" built under the Veterans Administration program.

Federal grants totaling more than \$51 million have been paid out, with the average cost of a house \$9468.

As of September 30, 7091 veterans had established eligibility for the special grants. Of these, 5415 had already received the money. VA pays 50 per cent of the cost up to a maximum of \$10,000.

The homes are specially designed for veterans required to use wheelchairs, crutches, braces, or the like.

### 1958 Develops Little Change in Housing Vacancy Rate

Surveying the vacancy picture in American housing, the Bureau of the Census has found virtually no change during 1958. The available vacancy rate for the third quarter of this year was 2.8 per cent of all units, just about the same as the 2.9 per cent for the second quarter and identical with the first quarter figure.

Of the 2.8 per cent in the third quarter, 2.2 per cent were units for rent and only 0.6 per cent units for sale. Compared with the same period of 1957, the supply of available vacancies increased. In the third quarter of 1957, it was 1.9 per cent for rent and 0.5 per cent for sale.

Inside metropolitan standard areas, the rate of 2.5 per cent for the third quarter was substantially lower than the 3.2 per cent for non-metropolitan regions when all available vacancies were considered.

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## HOTEL CLEVELAND

### Cleveland Room

Dine in the splendid old world setting of a grand dining room. The menu is varied, the service unexcelled.

### Bronze Room

One of the brightest of the city's supper clubs. Dancing nightly from 9:00 p.m. Air conditioned, of course.

### Rib Room

A true specialty restaurant For Fabulous Roast Beef, roasted, carved and served to your order.

### MEN'S BAR

Strictly stag — is this all male haven for good drinks, good food and good talk. Plus sports events on TV.

### TRANSIT BAR

For rapid service in the most unique bar in the country . . . decorated with an outstanding collection of miniature trains.

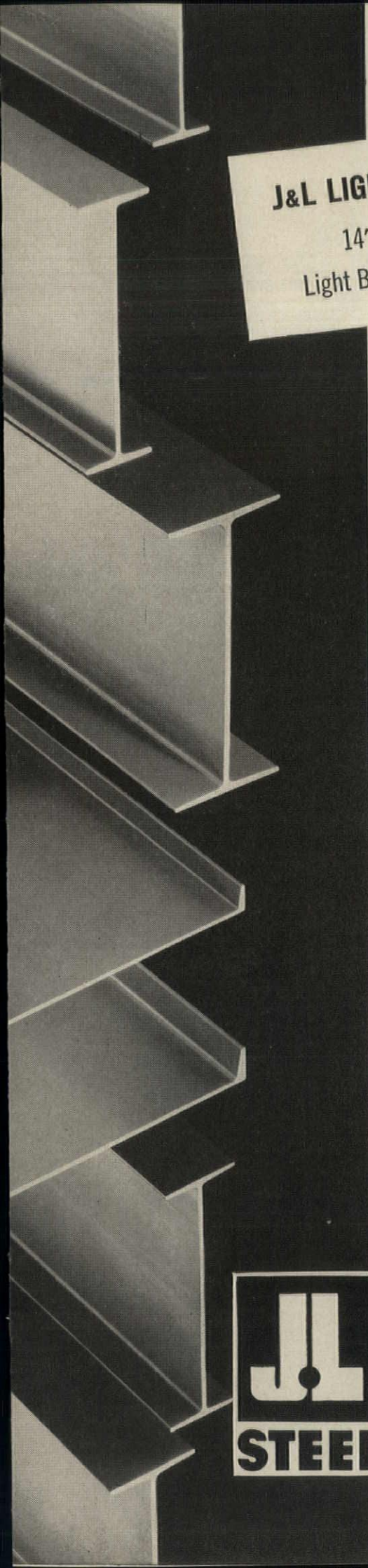
### the PATIO

Pause — in the relaxing, informal atmosphere of the gayly decorated Patio. It's a Cleveland habit to say — "Meet me at the Patio."

### Coffee Shop

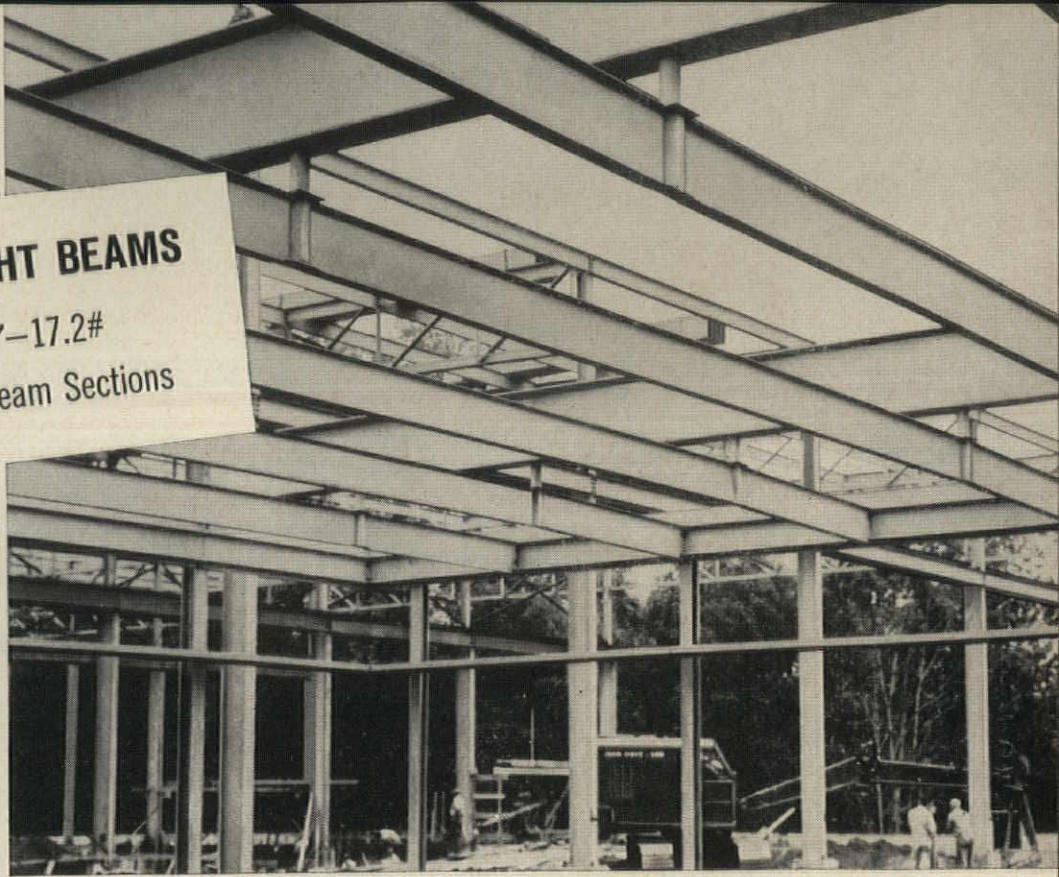
Service is brisk and decor cheerful in the modern, air-conditioned coffee shop. Enjoy a tasty sandwich or a moderately priced meal.





## J&L LIGHT BEAMS

14"—17.2#  
Light Beam Sections



J&L Light Beams are used in this suspended beam construction for The Standard Structural Steel Company's modern office building. Results: interior columns are eliminated; use of floor space is more efficient.

**14" J&L Light Beams are twice right—  
right depth for rigidity,  
right design for appearance**

...reports The Standard Structural Steel Co.

In an interesting departure from conventional design, The Standard Structural Steel Company, Newington, Conn., utilized J&L 14-inch Light Beams in roof construction to help achieve more efficient use of floor space in their new office building.

The new design provides a full-supported ceiling without interior columns. The J&L Light Beams, weighing 17.2 pounds per foot, are suspended from main bents by pipe hangers and bolts. An acoustical steel roof deck is welded to top flanges of the Light Beams between bents. The construction exposes the bents on the outside of the building and the Light Beams on the inside.

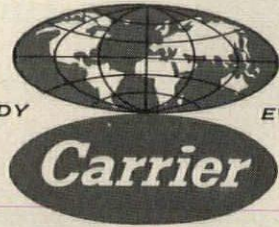
Take full advantage of these economical Light Beams in your next project design. They are available in regular carbon and high tensile grades. Other readily available lightweight J&L structurals are hot rolled Junior Beams and Junior Channels; for information, write to Jones & Laughlin Steel Corporation, 3 Gateway Center, Pittsburgh 30, Pennsylvania.



**Jones & Laughlin Steel Corporation**

PITTSBURGH, PENNSYLVANIA

BETTER AIR CONDITIONING FOR EVERYBODY

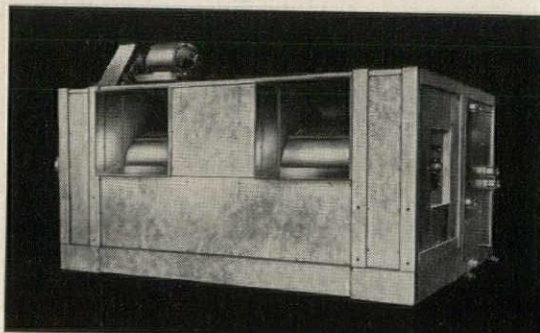


EVERYWHERE

## Save hours of design time with this one Weathermaker that solves scores of air conditioning problems!

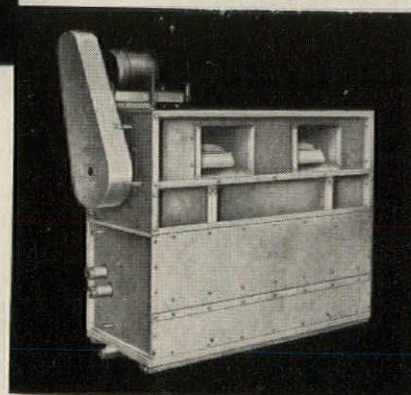
Just study the opposite page for a moment. See how easy it is to tailor the new Carrier 39AC Single-Zone Weathermaker\* to your central station air conditioning jobs. "Building-block" flexibility simplifies unit selection and location; enables you to satisfy all system requirements quickly and precisely. Another big timesaver is the new 72-page Carrier Catalog 39ACW-55—so complete it is the only reference you need to use. Chilled water or direct expansion coils may be selected either from entering and leaving conditions or by using apparatus dewpoint. No basic data calculations required. For your copy of the catalog, phone the Carrier office nearest you. Or write Carrier Corporation, Syracuse 1, New York.

\*Reg. U.S. Pat. Off.



←  
Typical horizontal arrangement

Typical vertical arrangement ↓



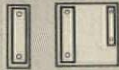
**39AC Single-Zone Weathermakers.** For conventional systems. Choice of direct expansion or chilled water cooling coils; steam or hot water heating coils. Eight sizes, from 2400 to 40,750 cfm; coil face velocities from 300 to 700 fpm; static pressures up to 4 inches. Carrier also offers 39W Multi-Zone Weathermakers for simultaneous independent cooling or heating in up to 14 different zones. 8 sizes; same cfm range, coil face velocities and static pressures as 39AC.



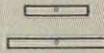
## THESE BUILDING-BLOCK COMPONENTS FIT TOGETHER IN SCORES OF DIFFERENT WAYS



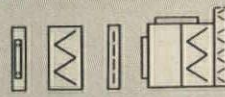
**FAN SECTION.** This component is the cornerstone of all 39AC arrangements. It provides a choice of discharge directions as well as fan motor locations.



**COOLING COIL SECTIONS.** Short type assures extreme compactness; standard cooling coil section permits cooling with reheat. Or you may use both coils.

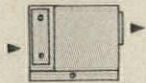


**DRIP PANS.** Two are available—one long, one short. Note in typical examples below how this choice of pan sizes increases freedom of arrangement.

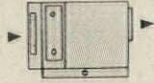


**ACCESSORIES.** Over a dozen matching accessories make available every function of year-round air conditioning in one compact central station unit.

### TYPICAL HORIZONTAL ARRANGEMENTS



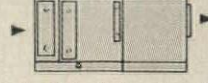
1. Short cooling coil section, fan section and long drip pan. For summer cooling only (DX); or summer cooling and winter heating with water.



2. Auxiliary heating coil section, short cooling coil section, fan section, long drip pan. For summer cooling, winter heating, each with its own coil.

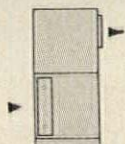


3. Standard cooling coil section fitted with cooling and heating coils, fan section, short drip pan. For summer cooling with reheat, winter heating.

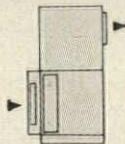


4. Short and standard cooling coil sections, fan section, long drip pan. Extra cooling surface for summer cooling with reheat, winter heating.

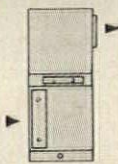
### TYPICAL VERTICAL ARRANGEMENTS



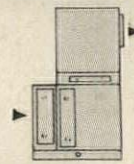
5. Standard cooling coil section, fan section, short drip pan. For summer cooling only (DX); or summer cooling and winter heating with water.



6. Auxiliary heating coil section, standard cooling coil section, fan section, short drip pan. Summer cooling, winter heating, each with its own coil.

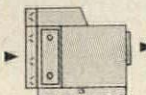


7. Standard cooling coil section, auxiliary heating coil section, fan section, short drip pan. For summer cooling with reheat, winter heating.

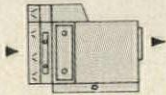


8. Short and standard cooling coil sections, auxiliary heating coil section, long drip pan. Extra cooling surface for same service as Number 7.

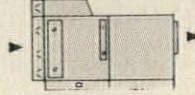
### HORIZONTAL (WITH BYPASS)



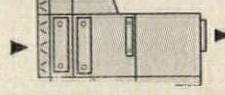
9. Same arrangement and functions as Number 1, but with face and bypass dampers and external duct added to provide this control.



10. Same arrangement and functions as Number 2, but with face and bypass dampers. Note duct permits bypass of both heating, cooling coils.

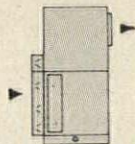


11. Same arrangement and functions as Number 3, but with face and bypass dampers. Duct permits bypass of cooling coil but not heating coil.

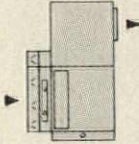


12. Short and standard cooling coil sections, heating coil, long drip pan. Duct permits bypass of cooling coils but not heating coil.

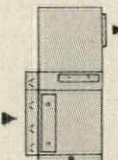
### VERTICAL (WITH BYPASS)



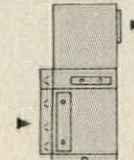
13. Same arrangement and functions as Number 5, but with face and bypass dampers. Note in this setup no external bypass duct is needed.



14. Same arrangement and functions as Number 6. Here a small sheet metal adapter is required to complete the installation of the bypass.

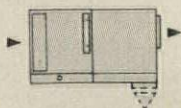


15. Same arrangement and functions as Number 7. Here a special "bypass heating coil section" is required to provide inlet for the bypass air.

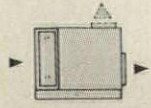


16. Same arrangement and functions as Number 15, except heating and coil position is changed so air will bypass both heating and cooling coils.

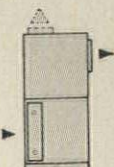
### FAN DISCHARGES



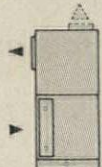
17. Fan section may be rotated about the shaft, or end for end. Drawing here shows top horizontal discharge or alternate downblast.



18. Another variation with short coil section permits either horizontal discharge from bottom of fan section, or alternate true upblast.

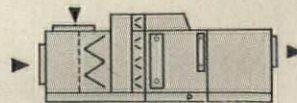


19. Either truly horizontal or truly upward discharges may also be attained with the vertical arrangement of 39AC components, as illustrated.

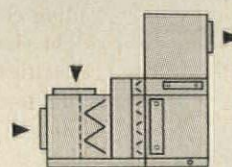


20. In this arrangement of the fan section, the vertical unit provides horizontal discharge and at the same time reverses direction of the air.

### ACCESSORIES



21. Typical horizontal arrangement featuring these standard accessories: mixing box assembly with interconnected double acting damper blades and low velocity filters; plenum section; face and bypass damper section and bypass duct assembly. As in all arrangements, spray humidifier section can be inserted ahead of cooling coil.



22. This vertical arrangement features these accessories: mixing box assembly with damper blades and filters; plenum section; face and bypass damper section; auxiliary heating coil section. Note this setup provides full year-round service with excellent control in a package that makes economical use of valuable floor space.

# WEATHER STRIPPING

by

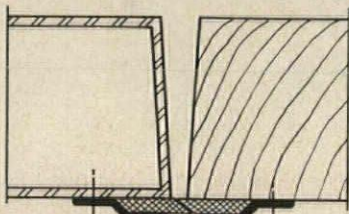


for meeting stiles of double doors

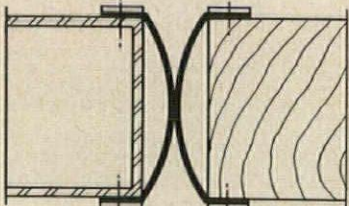
Shown below are three of the fourteen ZERO methods for weather stripping a pair of Hollow Metal, Kalamein or wood doors.

Meeting stiles are available in: Extruded aluminum, extruded bronze and spring bronze.

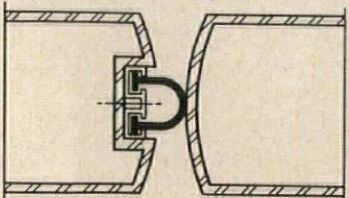
Wool pile, felt and looped neoprene in a bronze or aluminum housing.



50M neoprene (or wool pile) in bronze or aluminum housing



51M neoprene secured with bronze or aluminum retaining strips



53M neoprene in aluminum housing

## Weather stripping for:

- doors
- windows
- thresholds
- thresholds for floor-hinged doors
- lightproofing
- soundproofing
- sliding doors

see our 28 page catalog in Sweet's

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**ZERO** WEATHER STRIPPING CO., INC.

451 East 136th St., N. Y. 54, N. Y., LUdlow 5-3230

## Required Reading

Churches . . . cont. from page 60

ground plan is a parabola, symbolically entering at one portal and circling clear around from nave to east end and back to exit at the other portal. The sixth form is a return to the "ring," only this time the "dome of light" of a "transformed Gothic" such as that shown in the Church of the Fourteen Saints in Neresheim.

The perceptive and sometimes dazzling or transfiguring description of each of these types is a tour de force at once literary, psychological, devotional, structural, and historical. Much of the prose is like poetry, with delicate and intelligible diagrams aptly illuminating the text. The whole treatment centers on the Sacrament, life and attention in the church flowing about this one key feature. Many a non-Roman Catholic could ask here for consideration of preaching values, focus on the Word, or on Baptism as one of the two basic sacramental claims. But even with his occasional dismissal of an idea or design, Schwarz places church design in a vast and creative spiritual perspective. His volume, even in this edition of 1500 copies, sets a new landmark in our contemporary quest for meaningful syntheses of classical archetypes.

Dr. Scotford's book, by contrast, is by far the most down-to-earth, common-sense handbook any architect or pastor could hand to a building committee—or which any of these three could hand to each other. Treating each step of the process, it gives photographs of two dozen well-known American churches, and could conceivably be used even to translate the mystical visions of Mr. Schwarz into the budgets and bricks and bride's-rooms of suburbia.

Houses . . . cont. from page 63

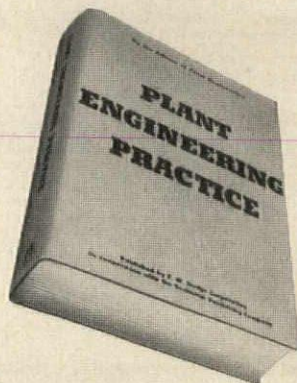
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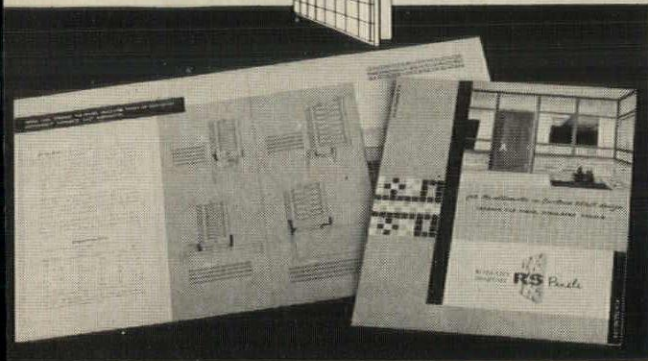
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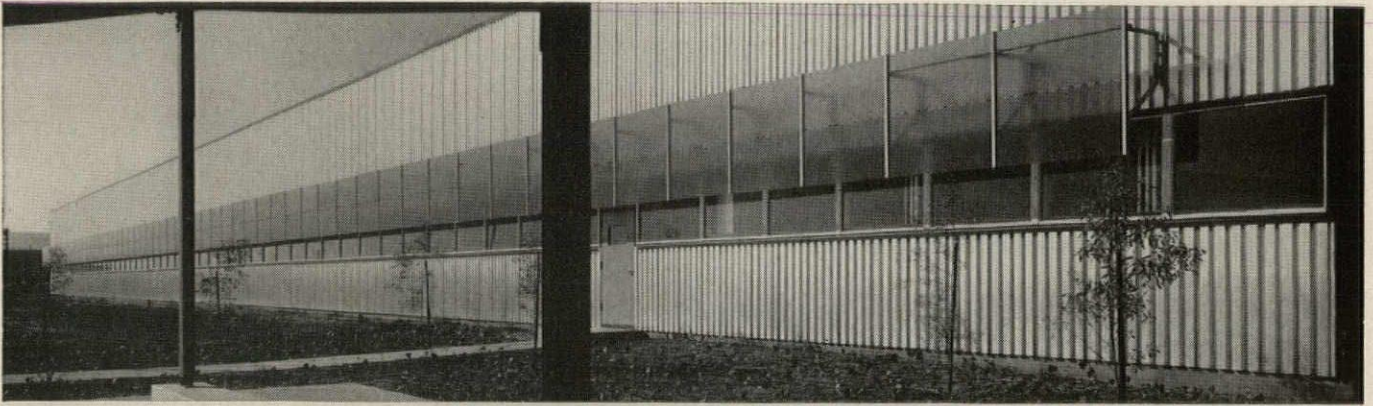
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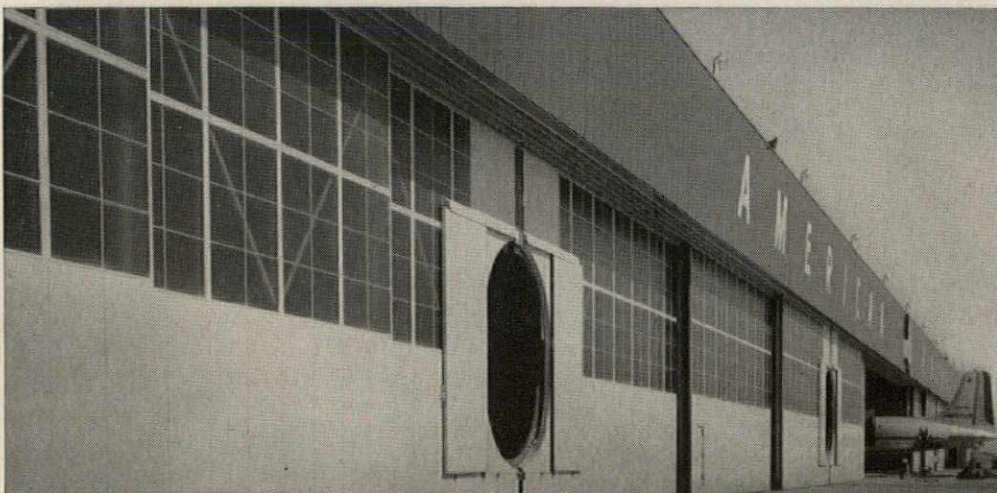
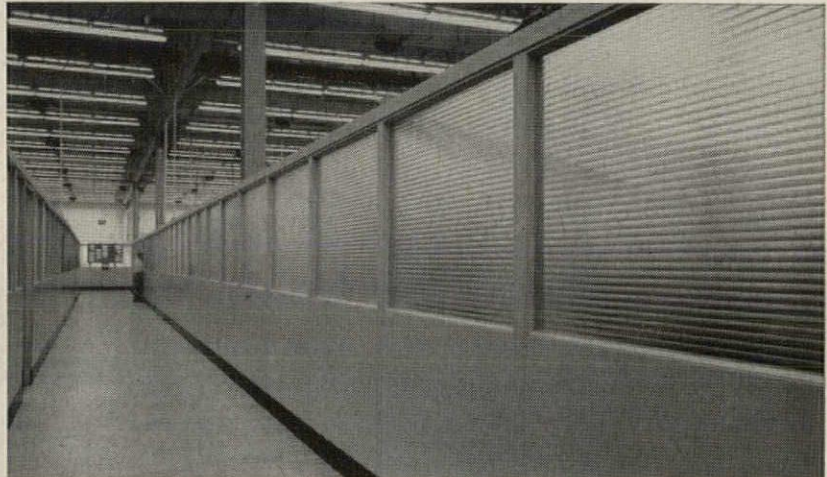


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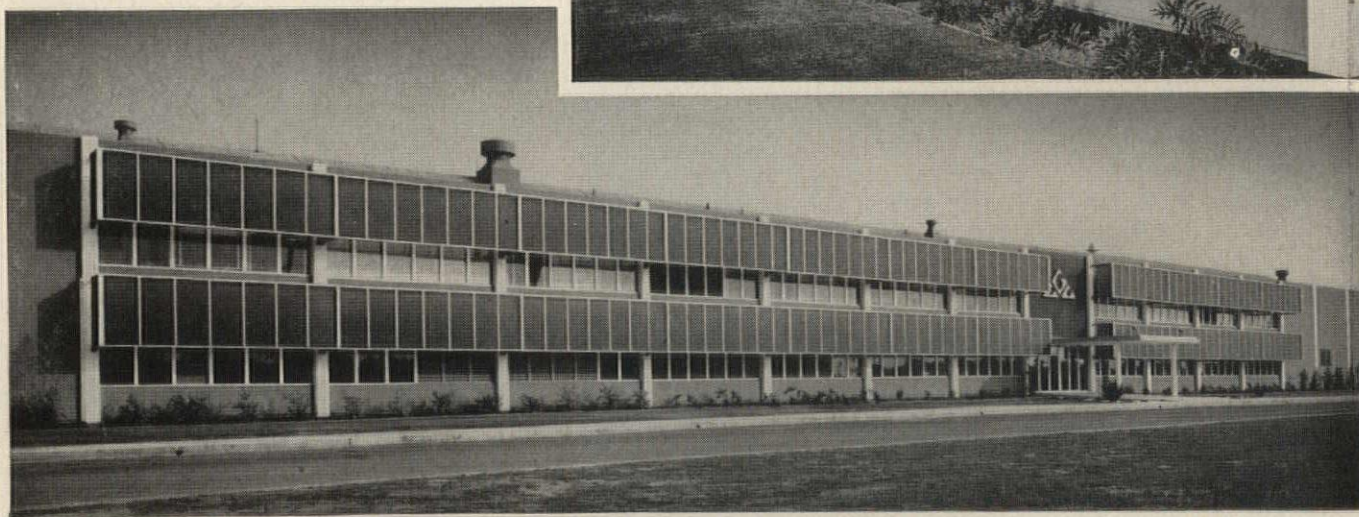
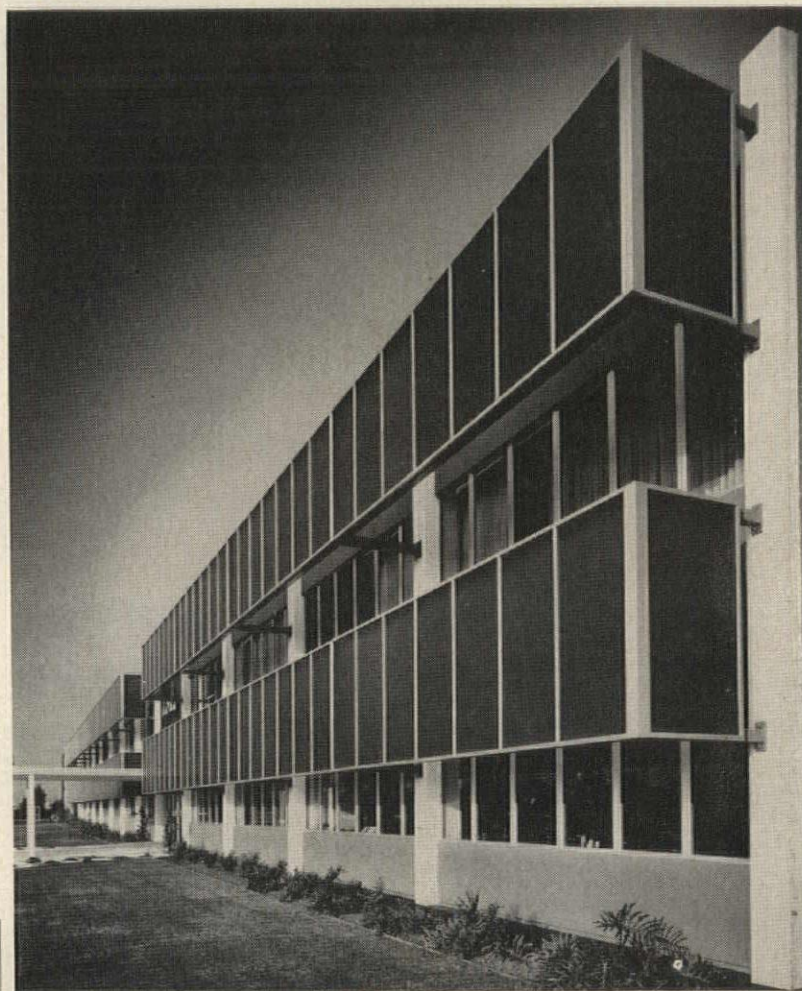
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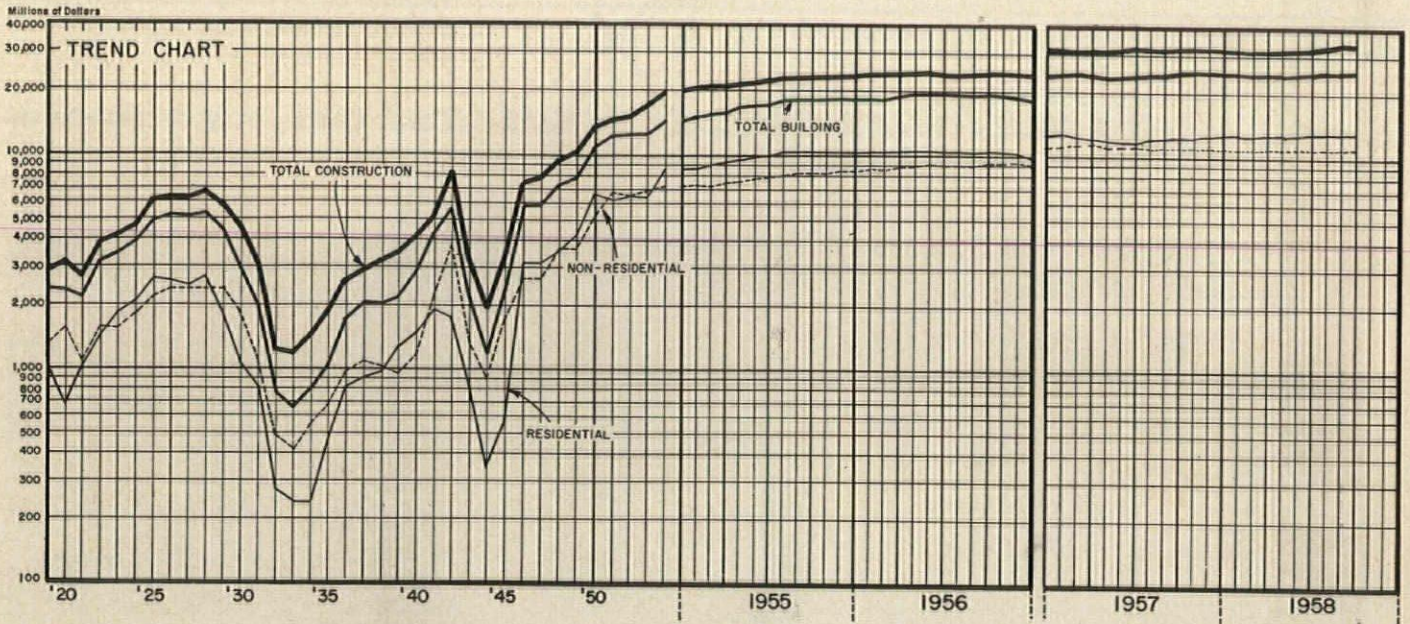
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# Current Trends in Construction

As Reflected in Contracts for Future Construction in the U. S. Reported and Tabulated by F. W. Dodge Corporation.



## OCTOBER PASSES \$3 BILLION FOR FIRST TIME

Construction contracts in October exceeded \$3 billion for the first time in any October, F. W. Dodge Corporation reported. The actual total, \$3,309,024,000, represented a 27 per cent rise over October 1957. The October figures pushed the cumulative total for the first ten months of the year to \$30,279,846,000, up nine per cent over the same period in 1957. October was also the sixth successive month in which contracts set new monthly records; the six months together were the highest such period in history.

Residential contracts were responsible for the largest dollar increase over last year. They totaled \$1,595,041,000 in October (\$430 million, or 37 per cent, above October 1957). The number of dwelling units put under contract in the month was 123,553, up 38 per cent from a year ago. Most of the increase in both dollars and numbers of residential units was in single-family houses.

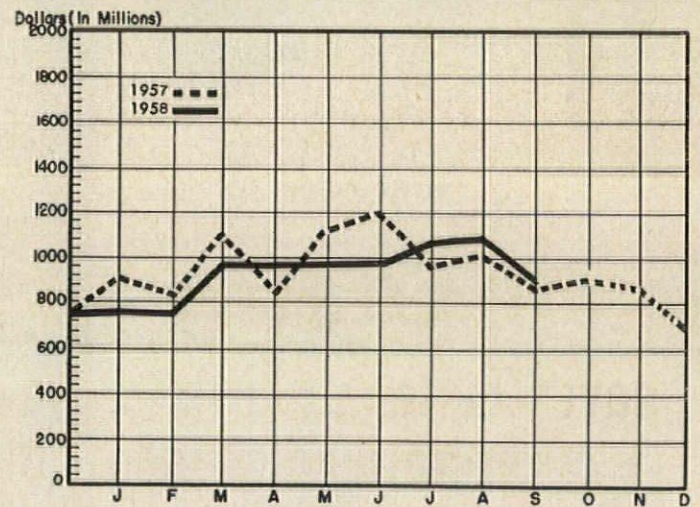
In percentage terms, however, apartment building contracts and units showed a much greater rise, Dr. George Cline Smith, Dodge vice president and economist, pointed out. "Emphasis on apartments has been steadily increasing for the past two years," Dr. Smith said. "In 1956, only 10 per cent of all the units under contract were in apartments. In 1957, the proportion rose to 14 per cent, and in the first ten months of this year it reached 17 per cent."

Among the three major categories of construction, the greatest percentage increase, according to the Dodge data, was in heavy engineering. Its October total was \$759,190,000, up 41 per cent from the same month last year. Dr. Smith noted that highways and electric power projects, as in other recent months, produced most of the increase.

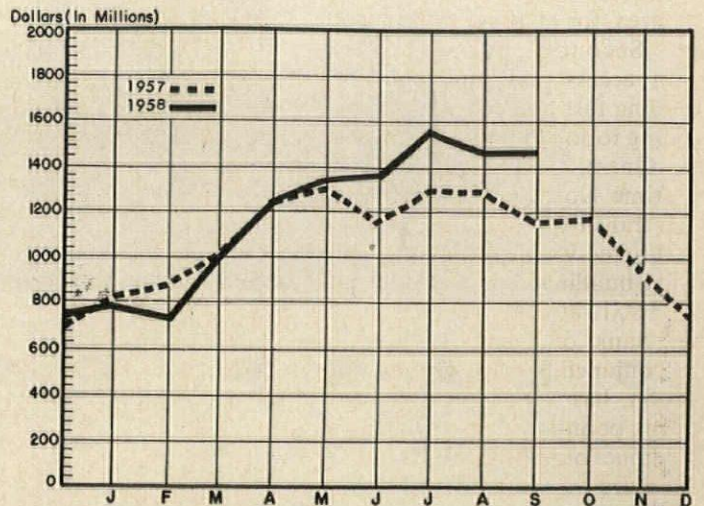
Nonresidential building in October produced its principal increases in commercial, public, religious, and social and recreational buildings. There were offsetting declines, however, in other groups, with the sharpest decrease showing up in manufacturing buildings. The month's total for the group was \$954,793,000—five per cent over October 1957.

Cumulative totals for the first ten months, by categories, were: nonresidential, \$9,452,320,000 (down three per cent); residential, \$12,534,797,000 (up 10 per cent); heavy engineering, \$8,292,729,000 (up 23 per cent).

## NONRESIDENTIAL BUILDING



## RESIDENTIAL BUILDING





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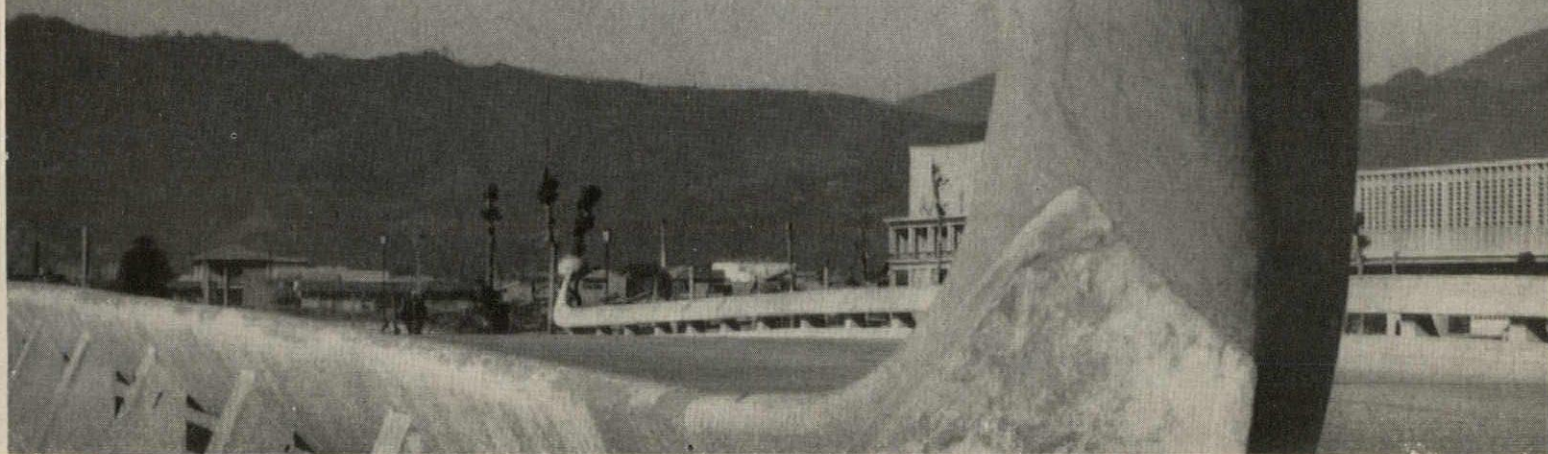
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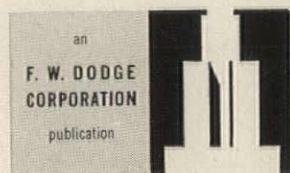
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## SEMI-ANNUAL INDEX VOLUME 124 JULY-DEC. 1958

ABBREVIATIONS: BTS—Building Types Study; AE—Architectural Engineering; TSS—Time-Saver Standards.

### A

Abbott, Merkt & Co., archts.; Service Center, Stix, Baer & Fuller, St. Louis—Dec. 1958, pp. 133-136

Abramson, Louis Allen, archt.; Long Island Jewish Hospital, New Hyde Park, N. Y.—Sept. 1958, BTS, p. 228

"Accent on Better Living," by Thomas S. Holden—July 1958, BTS, pp. 163-165

Acoustics. "Folding Partitions Appraised for Noise," by Howard C. Hardy—Oct. 1958, AE, pp. 220-223

Adams, Bruce, and Harry Weese, John van der Meulen, archts.; Davis Medical Foundation, Marion, Ind.—Nov. 1958, pp. 181-186

Adult Education. IBM Education Center, Poughkeepsie, N. Y.; Eliot Noyes, archt.—Nov. 1958, pp. 168-169

Aging. Housing the Aged in Sweden: Munkedal Home, Vifolka Home, Frandefors Home; Boustedt and Heineman, archts.—Oct. 1958, pp. 179-186

Air Conditioning. Cooling Loads Due to Sol-Air Temperatures, Parts 1, 2—Aug. 1958, TSS, pp. 211, 213. "Heating and Cooling a Shopping Center," by R. J. Bush; Garden State Plaza, Paramus, N. J.—July 1958, AE, pp. 196-198. Texas Instruments, Inc., Semi-Conductor Building, Dallas; O'Neil Ford and Richard Colley, archts., A. B. Swank and S. B. Zisman, assoc. archts.—Sept. 1958, AE, pp. 238-241. Technical Roundup: "Heating, Air Conditioning Industry Asks for New Look in Automatic Controls"—July 1958, AE, p. 199

Air Force Academy. "New Buildings Ready at Air Force Academy Site"; Skidmore, Owings & Merrill, archts.—Sept. 1958, News, pp. 12-13

All Star Bowling Alleys, Skokie, Ill.; Barancik, Conte & Assocs., archts.—Aug. 1958, pp. 159-160

American Institute of Architects. Annual convention, Cleveland—Aug. 1958, News, pp. 9, 12-13, 16

American President Lines, Office Building, San Francisco; Anshen & Allen, archts.—Sept. 1958, pp. 174-177

Anderson, M.D., Hospital and Tumor Institute, University of Texas, Houston; MacKie and Kamrath, archts., Schmidt, Garden & Erickson, archts.—Sept. 1958, BTS, pp. 226-227

Anshen & Allen, archts. Current Works: Visitor Center, Dinosaur National Monument, Vernal, Utah; Chemistry Building, University of California, Berkeley; American President Lines Office Building, San Francisco; Passenger Quarters for S.S. President Washington—Sept. 1958, pp. 165-180

Apartments. See Housing, Building Types Study No. 260—July 1958, pp. 163-190

"Architect's Part in School Economy, The," by Kenneth Reid and James D. Fessenden—Aug. 1958, BTS, pp. 170-173

Architects Collaborative, The, archts.; Neighborhood Housing Project, Mehringplatz, Berlin, Germany—July 1958, BTS, pp. 180-181

Architectural Education. A Record Special Report on Nantucket meeting of the American Institute of Architects and the Association of Collegiate Schools of Architecture, by Albert Bush-Brown—Sept. 1958, News, pp. 10 et seq.

Architectural Engineering. "Building Re-

search Around the World," by R. F. Leggett—Dec. 1958, pp. 163-164. "Cavity Walls at a Refined Stage," by Gannett Herwig—Sept. 1958, pp. 242-244. "Characteristics of Classroom Heating and Ventilating," from a study by Slocum & Fuller, consulting engineers—Dec. 1958, pp. 158-162. "Codes Ease Up on Curtain Walls"—Aug. 1958, pp. 202-204, 278. "Custom Lighting with Standard Equipment"; Ketchum & Sharp, archts.—Aug. 1958, pp. 197-201, 282. "Fans Replace Tall Chimneys," by George Nash—Oct. 1958, pp. 224-225. "Folding Partitions Appraised for Noise," by Howard C. Hardy—Oct. 1958, pp. 220-223. "Heating and Cooling a Shopping Center," by R. J. Bush; Garden State Plaza, Paramus, N. J.—July 1958, pp. 196-198. "Lighting: A Key to Spatial Character," by John Flynn and Wilbur Riddle—Nov. 1958, pp. 232-242. Texas Instruments, Inc., Semi-Conductor Building, Dallas; O'Neil Ford and Richard Colley, archts., A. B. Swank and S. B. Zisman, assoc. archts.—Sept. 1958, pp. 238-241. "Understanding the Hyperbolic Paraboloid," Part I, by Felix Candela—July 1958, pp. 191-195; Part II, "Stress Analysis for Any Hyperbolic Paraboloid"—Aug. 1958, pp. 205-207, 215. "Why Composite Construction for Buildings"—Sept. 1958, pp. 245-246, 320. Technical Roundup: "British-Made 'Mushrooms' at Brussels Fair," British Industries Pavilion, Brussels Worlds Fair, Belgium; Edward D. Mills and Partners, archts., Felix Samuely and Partners, engs.—Nov. 1958, p. 243. Technical Roundup: "Concrete in Europe and Russia"—Oct. 1958, pp. 226-229. Technical Roundup: "Heat Pumps Give Virginia School Low Cost Heating, Bonus Air Cooling"—July 1958, p. 200. Technical Roundup: "Heating, Air Conditioning Industry Asks for New Look in Automatic Controls"—July 1958, p. 199. Technical Roundup: "Hook Knurls Add Body-Bound Fit to High Tensile Bolts"—Nov. 1958, p. 243. Technical Roundup: "Pier Slab Foundation System Prevents Failures, Cuts Construction Costs"—July 1958, p. 200. Technical Roundup: "Plastics Materials for Lighting"—Dec. 1958, p. 165. Technical Roundup: "Reactor for Industrial Research," Columbia University and AMF Atomics Inc.; Skidmore, Owings & Merrill, archts.—Oct. 1958, pp. 230, 240. Technical Roundup: "Research Shows Need for Step-Up in Recommended Lighting Levels"—July 1958, p. 200

"Architecture and the Individual," by Joseph Hudnut—Oct. 1958, pp. 165-170

Armstrong, Harris, archt.; Architect's House, Kirkwood, Mo.—Dec. 1958, pp. 127-128. With Hellmuth, Obata & Kassabaum, archts.; St. Louis Plaza Project, St. Louis—July 1958, BTS, pp. 188-189

Articles. "Accent on Better Living," by Thomas S. Holden—July 1958, BTS, pp. 163-165. "Architecture and the Individual," by Joseph Hudnut—Oct. 1958, pp. 165-170. "Environment and Industry," by Charles Moore, a report on the Princeton Conference—July 1958, pp. 159-162. "Housing Patterns and What Makes Them," by Harry M. Weese—July 1958, BTS, pp. 171-174. "Onward & Upward: Growth Trends Resumed," by Thomas S. Holden, George Cline Smith, Clyde Shute, Edward W. Magee Jr.—Nov. 1958, facing p. 8. "Row House Vernacular and High Style Monument," by William W. Wurster—August 1958, pp. 141-150

Atomic Reactors. Technical Roundup: "Re-

actor for Industrial Research," Columbia University and AMF Atomics Inc.; Skidmore, Owings & Merrill, archts.—Oct. 1958, AE, pp. 230, 240

Auditoriums. See Recreational Buildings.

Ault House, New Canaan, Conn.; Eliot Noyes, archt.—Nov. 1958, pp. 174, 176-177

Awards. "Four Buildings Get South Atlantic A.I.A. Awards of Merit"—July 1958, News, p. 20. "Seven 'Wonders of Architecture' Named in Special Survey"—Oct. 1958, News, p. 15. Gulf States Region, A.I.A., Annual Awards of Merit—Dec. 1958, News, pp. 12-13.

Aydelott, A. L., & Assocs., archts.; Sears, Roebuck & Co., Memphis, Tenn.—Oct. 1958, BTS, pp. 213-215. Sears, Roebuck & Co., Pine Bluff, Ark.—Oct. 1958, BTS, pp. 216-218

### B

Babbitt, Thomas C., archt.; Architect's House, Litchfield, Conn.—Nov. 1958, pp. 190-191

Ballinger Co., The, archts.; Warehouse, Richmond Food Stores, Inc., Richmond, Va.—Dec. 1958, p. 129

Banks. Wachovia Bank Building, Charlotte, N. C.; Harrison & Abramovitz, archts., A. G. O'Dell, assoc. archt.—Sept. 1958, pp. 189-196

Barancik, Conte & Assocs., archts.; All Star Bowling Alley, Skokie, Ill.—Aug. 1958, pp. 159-160

Becket, Welton, and Assocs., archts.; Habana Hilton Hotel, Cuba—Aug. 1958, pp. 161-164. With Albert Kahn Associated Architects and Engineers, Inc., archts.; General Office Building, Ford Division, Ford Motor Company, Dearborn, Mich.—Nov. 1958, pp. 203-206

Berkeley, Cal., Apartment Building; Roger Lee, archt.—July 1958, BTS, pp. 178-179

Beth El Synagogue, South Orange, N. J.; Davis, Brody & Wisniewski, archts.—Dec. 1958, BTS, pp. 152-156

Blatner, Henry L., Office of, archts.; Southgate Elementary School, Colonie, N. Y.—Nov. 1958, BTS, pp. 220-222

Bolts, High-Strength. Technical Roundup: "Hook Knurls Add Body-Bound Fit to High Tensile Bolts"—Nov. 1958, AE, p. 243

Boustedt and Heineman, archts.; Housing the Aged in Sweden: Munkedal Home, Vifolka Home, Frandefors Home—Oct. 1958, pp. 179-186

Brentwood Methodist Church, Denver; W. C. Muchow, archt.—Dec. 1958, BTS, pp. 150-151

Breuer, Marcel, Bernard Zehrfuss, archts., Pier Luigi Nervi, eng.; UNESCO House, Paris, France—Nov. 1958, News, pp. 14-15

Briggs House, Redding, Conn.; Eliot Noyes, archt.—Nov. 1958, pp. 172-173

Brown, Leon, & Thomas W. D. Wright, archts.; Thomas W. D. Wright House, Washington, D. C.—Aug. 1958, pp. 167-168

Brubaker, Charles William; "Planning for Student Dining"—Nov. 1958, BTS, pp. 208-210, 212

Brussels World Fair. British Industries Pavilion, Belgium; Edward D. Mills and Partners, archts., Felix Samuely and Partners, engs.—Nov. 1958, AE, p. 243. IBM Pavilion, Belgium; Eliot Noyes, archt.—Nov. 1958, pp. 166-167

Buckholz House, Poughkeepsie, N. Y.; Eliot Noyes, archt.—Nov. 1958, p. 175

Building Codes. "Codes Ease Upon Curtain Walls"—Aug. 1958, AE, pp. 202-204, 278

Building Research. "Building Research

Around the World," by R. F. Leggett—Dec. 1958, AE, pp. 163-164  
Bush, R. J.; "Heating and Cooling a Shopping Center," Garden State Plaza, Paramus, N. J.—July 1958, AE, pp. 196-198  
Butler, Borgia, Houses, Bronx, N. Y.; Joseph & Vladek, archts.—July 1958, BTS, p. 187

## C

Cafeterias. See Schools, Building Types Study No. 264—Nov. 1958, pp. 207-230  
Calderon House, Santurce, Puerto Rico; Toro & Ferrer, archts.—Oct. 1958, pp. 189-190  
California, University of, Chemistry Building, Berkeley; Anshen & Allen, archts.—Sept. 1958, pp. 172-173  
Campbell and Wong, archts.; Ondine Restaurant and Lounge, Sausalito, Cal.—Oct. 1958, pp. 171-174  
Candela, Felix, "Understanding the Hyperbolic Paraboloid," Part I—July 1958, AE, pp. 191-195; Part II, "Stress Analysis for Any Hyperbolic Paraboloid"—Aug. 1958, AE, pp. 205-207, 215  
Carson & Lundin, archts.; Deering Milliken Co., New York City—Dec. 1958, pp. 119-124  
Caudill, Rowlett, Scott and Assocs., archts.; Garber High School, Garber, Okla.—Aug. 1958, BTS, pp. 190-193. Underwood Elementary School, Andrews, Texas—Nov. 1958, BTS, pp. 216-219. As assoc. archts., Hellmuth, Obata & Kassabaum, archts.; Warson Woods Elementary School, Warson Woods, Mo.—Nov. 1958, BTS, pp. 226-230  
Cavity Walls. "Cavity Walls at a Refined Stage," by Gannett Herwig—Sept. 1958, AE, pp. 242-244  
Chapel of St. James the Fisherman, Wellfleet, Mass.; Olav Hammarstrom, archt.—Dec. 1958, BTS, pp. 138-139  
Chuquicamata Hospital, Chile; Kiff, Colean, Voss & Souder, Office of York & Sawyer, archts.—Sept. 1958, BTS, pp. 225-226  
Churches. See Religious Buildings.  
City Halls. See Public Buildings.  
City and Regional Planning. Capitol Mall, Salem, Ore.; Wilmsen and Endicott, archts.—July 1958, p. 148. Harvard Square Development, Cambridge, Mass.; Jose Luis Sert, archt.—July 1958, p. 149. Metropolitan Opera House, Lincoln Square, New York City; Harrison & Abramovitz, archts.—July 1958, p. 148. "Architecture, and Architects, Spark Urban Renewal Project in Memphis"—July 1958, News, p. 36. "A.S.P.O. Hears Report on Brasilia and New Ways to the City Beautiful"—July 1958, News, pp. 34, 290. A Special Report on the University of Pennsylvania Conference on Urban Design Criticism, by David A. Crane—Dec. 1958, News, p. 10  
Cleveland Clinic Hospital, Cleveland; Ellerbe and Co., archts.—Sept. 1958, BTS, pp. 224-225  
Clinics. See Medical Buildings.  
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Passano House, Easton, Md.; Wilson and Christie, archts.—Aug. 1958, pp. 165-166  
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Pei, I. M., & Assocs., archts.; Kips Bay Park Apartments, New York City—July 1958, BTS, p. 175  
Perez, August, & Assocs., archts.; Louis G. Roussel House, New Orleans—July 1958, pp. 150-151  
Perez House, Santurce, Puerto Rico; Toro & Ferrer, archts.—Oct. 1958, pp. 191-192  
Perkins & Will, archts.; Row, Peterson & Co., Warehouse, Evanston, Ill.—Dec. 1958, p. 130. With J. & G. Daverman Co., assoc. archts.; East Grand Rapids Junior High School, East Grand Rapids, Mich.—Nov. 1958, BTS, p. 211. With J. & G. Daverman, assoc. archts.; Forest Hills High School, Kent County, Mich.—Aug. 1958, BTS, pp. 186-189. With Eliot Noyes, archt.; Elementary School, Salisbury, Conn.—Nov. 1958, p. 169  
Pfeuger, Milton T., archt.; Herbert C. Moffitt Hospital, University of California Medical Center, San Francisco—Sept. 1958, BTS, pp. 222-223  
Piacentini, Marcello, and Pier Luigi Nervi and Gino Parolini, engs.; Sports Palace for Olympic Games 1960, Rome, Italy—Dec. 1958, pp. 114-117  
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## R

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- Roussel House, New Orleans; August Perez & Assocs., archts.—July 1958, pp. 150-151.
- "Row House Vernacular and High Style Monument," by William W. Wurster—Aug. 1958, pp. 141-150.
- Row, Peterson & Co., Warehouse, Evanston, Ill.; Perkins & Will, archts.—Dec. 1958, p. 130.
- Rudolph, Paul, archt.; J. V. Taylor House, Venice, Fla.—Nov. 1958, pp. 188-189.
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- St. Sylvester's Church, Eminence, Mo.; Hellmuth, Obata & Kassabaum, archts.—Dec. 1958, BTS, pp. 140-141.
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- Schacker House, Beverly Hills, Cal.; Rex Lotery, archt.—July 1958, pp. 156-158.
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- Schultess House, Havana, Cuba; Richard J. Neutra, archt.—Oct. 1958, pp. 187-188.
- Seagram Building, New York City; Ludwig Mies van der Rohe and Philip Johnson, archts.—July 1958, pp. 139-147.
- Sears, Roebuck & Co., Memphis Tenn.; A. L. Aydelott & Assocs., archts.—Oct. 1958, BTS, pp. 213-215. Pine Bluff, Ark.; A. L. Aydelott & Assocs., archts.—Oct. 1958, BTS, pp. 216-218.
- Sert, Jose Luis, archt.; Harvard Square Development, Cambridge, Mass.—July 1958, p. 149.
- "Service Buildings: Warehouses with Additional Functions," by Erik P. Johnsen and Ralph S. Crummé—Dec. 1958, pp. 133-136.
- Shepley, Bulfinch, Richardson & Abbott, archts.; Rhode Island Hospital, Providence—Sept. 1958, BTS, pp. 216-217.
- Sherlock, Smith & Adams, archts.; Harlan Memorial Hospital, Harlan, Ky.—Sept. 1958, BTS, p. 212.
- Showrooms. Deering Milliken Co., New York City; Carson & Lundin, archts.—Dec. 1958, pp. 119-124.
- Siren, Kaija and Heikki, archts.; Chapel, Otaniemi, near Helsinki, Finland—Dec. 1958, BTS, pp. 142-147.
- Skidmore, Owings & Merrill, archts.; Elmendorf Hospital, Elmendorf Air Force Base, Anchorage, Alaska—Sept. 1958, BTS, pp. 229-236. Warren Petroleum Building, Tulsa, Okla.—Aug. 1958, pp. 151-158. With James A. Nolen, archt.; Temple University Medical Center, Philadelphia—Sept. 1958, BTS, p. 213. "New Buildings Ready at Air Force Academy Site"—Sept. 1958, News, pp. 12-13. Technical Roundup: "Reactor for Industrial Research," Columbia University and AMF Atomics Inc.—Oct. 1958, AE, pp. 230, 240.
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## S

Saarinen, Eero, and Assocs., archts.; David S. Ingalls Hockey Rink, Yale University, New Haven, Conn.—Oct. 1958, pp. 151-158.

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Memorial Hospital, Harlan, Ky.; Sherlock, Smith & Adams, archts.—Dec. 1958, BTS, p. 212. Long Island Jewish Hospital, New Hyde Park, N. Y.; Louis Allen Abramson, archt.—Sept. 1958, BTS, p. 228. Herbert C. Moffitt Hospital, University of California Medical Center, San Francisco; Milton T. Pfeuffer, archt.—Sept. 1958, BTS, pp. 222-223. The National Institutes of Health, Bethesda, Md.; Kiff, Colean, Voss & Souder, Office of York & Sawyer, archts.—Sept. 1958, BTS, pp. 214-215. Ochsner Foundation Hospital, New Orleans; Ellerbe & Co., archts.—Sept. 1958, BTS, pp. 219-220. Rhode Island Hospital, Providence; Shepley, Bulfinch, Richardson & Abbott, archts.—Sept. 1958, BTS, pp. 216-217. Stuyvesant Pavilion, St. Luke's Hospital, New York City; Kiff, Colean, Voss & Souder, Office of York & Sawyer, archts.—Sept. 1958, BTS, p. 218. Temple University Medical Center, Philadelphia; Skidmore, Owings & Merrill and James A. Nolen, archts.—Sept. 1958, BTS, p. 213. "Planning the Surgical Suite," by Aaron N. Kiff and Mary Worthen—Sept. 1958, BTS, pp. 210-212.

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Synagogues. See Religious Buildings.

**T**

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Taylor House, Weston, Conn.; Designers and Builders, archts.—Nov. 1958, pp. 198-199.

Taylor House, Venice, Fla.; Paul Rudolph, archt.—Nov. 1958, pp. 188-189.

Temple University Medical Center, Philadelphia; Skidmore, Owings & Merrill and James A. Nolen, archts.—Sept. 1958, BTS, p. 213.

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Theaters. See Recreation Buildings.

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Todd House, Berkeley, Cal.; Henry Hill, archt.—Nov. 1958, pp. 200-201.

Tokyo Metropolitan City Hall, Japan; Kenzo Tange, archt.—July 1958, pp. 134-135.

Toro & Ferrer, archts.; Cesar A. Calderon House, Santurce, Puerto Rico—Oct. 1958, pp. 189-190. Jose L. Perez House, Santurce, Puerto Rico—Oct. 1958, pp. 191-192.

Toronto City Hall Competition—Nov. 1958, News, pp. 10 et. seq.

**U**

Underwood Elementary School, Andrews, Texas; Caudill, Rowlett and Scott, archts.—Nov. 1958, BTS, pp. 216-219.

UNESCO House, Paris, France; Marcel Breuer and Bernard Zehrffuss, archts., Pier Luigi Nervi, eng.—Nov. 1958, News, pp. 14-15.

U.S. Department of State, U.S. Embassy, Bangkok, Thailand; John Carl Warnecke, archt.—Oct. 1958, pp. 159-164.

U.S. Embassy, Bangkok, Thailand; John Carl Warnecke, archt.—Oct. 1958, pp. 159-164.

Urban Redevelopment. See City and Regional Planning.

**V**

Van der Meulen, John, and Harry Weese, Bruce Adams, archts.; Davis Medical Foundation, Marion, Ind.—Nov. 1958, pp. 181-186.

Vassar College, Faculty House, Poughkeepsie, N. Y.; Eliot Noyes, archt.—Nov. 1958, p. 170.

**W**

Warehouses. Davis Brothers, Inc., Denver; James Sudler Assocs., archts., D. R. Roggenbach, assoc. archt.—Dec. 1958, pp. 131-132. Richmond Food Stores, Inc., Richmond, Va.; The Ballinger Co., archts.—Dec. 1958, p. 129. Row, Peterson & Co., Evanston, Ill.; Perkins & Will, archts.—Dec. 1958, p. 130. Service Center, Stix, Baer and Fuller, St. Louis; Abbott, Merkt and Co., archts.—Dec. 1958, pp. 133-136. Service Buildings: Warehouses with Additional Functions," by Erik P. Johnsen and Ralph S. Crummé—Dec. 1958, pp. 133-136.

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Wichita, University of, Juvenile Cultural Center, College of Education, Kan.; Frank Lloyd Wright, archt.—July 1958, p. 149.

Williams, Leigh, assoc. archt., Mann & Harrover, archts.; Richland Elementary School, Memphis—Aug. 1958, BTS, pp. 178-181.

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Wilson and Christie, archts.; Edward M. Passano House, Easton, Md.—Aug. 1958, pp. 165-166.

Worthen, Mary, and Aaron N. Kiff, "Planning the Surgical Suite"—Sept. 1958, BTS, pp. 210-212.

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**Y**

Yale University, David S. Ingalls Hockey Rink, New Haven, Conn.; Eero Saarinen

and Assocs., archts.—Oct. 1958, pp. 151-158.

Yamasaki, Leinweber and Assocs., archts.; Wayne State University, McGregor Memorial Conference Center, Detroit—Aug. 1958, News, p. 20.

## Z

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# Index to Advertising

PRE-FILED CATALOGS of the manufacturers listed below are available in the 1958 Sweet's Catalog Files as follows: (A) Architectural File (green), (IC) Industrial Construction File (blue), (LC) Light Construction File (yellow).

- A Adams-Rite Manufacturing Company ..... 186-187
- Aerofin Corporation ..... 259
- Air Devices, Inc. .... 216
- A Alberene Stone Corporation .... 48
- A-IC Allegheny Ludlum Steel Corporation ..... 38
- A-IC Allen Cooler & Ventilator, Inc. . 94
- A-IC-LC Allied Chemical Corporation ... 85
- A Aloe, A. S. Co. .... 259
- A-IC Altec Lansing Corp. .... 258
- A-IC Aluminum Company of America ..... 90-91
- A-LC American Brass Company ..... 256
- A-IC American Bridge Division ..... 195
- American Laundry Machinery Co. .... 40
- American Steel & Wire Div. 222-223
- A-LC American Telephone & Telegraph Co. .... 225
- A-LC American Window Glass Division Am. Saint-Gobain ..... 257
- A-LC Andersen Corporation ..... 104-105
- A Anemostat Corp. of America ... 39
- Architectural Record ..... 274-275
- A Armo Steel Corp. .... 50-51, 190
- A-LC Armstrong Cork Company ..... 31
- A-IC Barber-Colman Company ... 193-194
- A-IC-LC Barrett Division, Allied Chemical Corp. .... 85
- A-LC Bell Telephone System ..... 225
- A-IC Best Universal Lock Co., Inc. . 198
- A-IC Bethlehem Steel Company ... 214-215
- A Bigelow Rugs & Carpets ..... 216
- A-LC Bird & Son, Inc. .... 174
- Bituminous Coal Institute ..... 103
- Boeckh, E. H. & Associates ..... 239
- A-IC Borden Metal Products Co. . 32A-32B
- A-LC Briggs Manufacturing Company 70
- Buensod-Stacey, Inc. .... 182-183
- Bulldog Electric Products Company ..... 78
- A-IC Butler Manufacturing Co. .... 42
- A-IC Byers, A. M. Company ..... 4
- A-LC California Redwood Association 88
- A-IC-LC Carrier Corporation ..... 266-267
- A-IC Ceo Steel Products Corporation ..... 208-209
- Certified Ballast Manufacturers . 211
- A Chase Brass & Copper Co. .... 207
- Cipco Corporation ..... 44
- A-IC Concrete Reinforcing Steel Institute ..... 200, 262
- A Connor Engineering Corporation 18
- A Connor Lumber & Land Co. .... 233
- A Cook, Loren Company ..... 263
- A Corning Glass Works ..... 232
- Couch, S. H. Co., Inc. .... 220
- A Crawford Door Company ..... 89
- A-IC Day-Brite Lighting, Inc. .... 202-203
- A-LC Devoe & Reynolds Co., Inc. .... 191
- Dodge Books ..... 256, 268
- Donley Brothers Co. .... 29
- A-IC-LC Douglas Fir Plywood Association ..... 180-181
- A-IC DuKane Corporation ..... 216
- A Dunham-Bush, Inc. Brunner Division ..... 284
- Du Pont, E. I. De Nemours & Co., Inc., Elastomer Chemicals Dept. .... 172
- A-LC Dur-O-Wal Products, Inc. .... 45
- Electro Lighting Corporation .. 263
- A Ellison Bronze Co. .... 212
- Engineered Products Co. .... 257
- A-IC Facing Tile Institute ..... 106
- A Fairhurst, John T. Co., Inc. ... 234
- A Fenestra, Incorporated ..... 184-185
- Fitzgibbons Boiler Co., Inc. .... 192
- A Follansbee Steel Corporation ... 79
- Gallaher Company, The ..... 204
- A General Bronze Corporation .... 83
- A Goodrich, B. F. .... 199
- A-IC Granco Steel Products Co. .... 2-3
- A-IC Grinnell Company, Inc. ... 2nd Cover
- Hager & Sons, C. Hinge Mfg. Co. .... 77
- A-LC Harris Manufacturing Co. .... 169
- A Haws Drinking Faucet Company 52
- A Holcomb & Hoke Manufacturing Co., Inc. .... 228
- Hotel Cleveland ..... 264
- A Huntington Laboratories, Inc. .... 258, 264
- A-IC Imperial Brass Mfg. Co. .... 69
- A Independent Lock Co. .... 82
- Infra Insulation, Inc. .... 11
- Inland Manufacturing Div. .... 37
- A-IC-LC Inland Steel Products Company 86-87
- A-IC-LC Insulrock Company .....218-219
- International Nickel Co., Inc. . 201
- A-LC Iron Fireman Mfg. Co. .... 93
- A Jamison Cold Storage Door Co... 70
- A Jenn-Air Products Co., Inc. .... 33
- A-IC-LC Johns-Manville ..... 170
- Jones & Laughlin Steel Corp. ... 265
- A-IC-LC Kaiser Aluminum & Chemical Sales, Inc. .... 98-99, 230-231
- Kelley Company, Inc. .... 249
- A Kimble Glass Co., subsidiary of Owens-Illinois ..... 72-73
- A Knight Manufacturing Co. .... 263
- Kohler Co. .... 233
- Koppers Company, Inc. .... 53, 75
- A LCN Closers, Inc. .... 178-179
- Lee Millwork Corporation .... 249
- A-IC Lennox Industries, Inc. .... 26-27, 97
- A-IC-LC Libbey Owens Ford Glass Co. 65 to 68
- Lighting Products, Inc. .... 241
- Linen Supply Association of America ..... 54
- A Lockwood Hardware Mfg. Co. . 82
- Loire Imports, Inc. .... 269
- Lone Star Cement Corporation.. 7
- A-IC Macomber, Inc. .... 58
- A-IC Mahon, R. C. Company .... 242-243
- A-LC Marlite ..... 80
- A-IC Marmet Corporation ..... 217
- A-IC-LC Masonite Corporation ..... 80, 221
- A Mastie Tile Corp. of America ... 57
- A-IC McKinley Iron Works ..... 283
- A McPhilben Lighting Co. .... 182
- A Medart, Fred Products Co., Inc. 81
- A-IC-LC Mississippi Glass Company . 270-271
- A-IC Montgomery Elevator Company. 232
- A Mosaic Tile Company ..... 101-102
- A Moutile, Inc. .... 76
- A-LC Mueller Brass Co. .... 226-227
- A-IC-LC Nateco Corporation ..... 206
- National Supply Company ..... 273
- IC National Tube Division, U.S. Steel Corp. .... 64
- Nation's Schools, The ..... 248
- A Neo-Ray Products, Inc. .... 196-197
- A New Castle Products, Inc. .... 21
- A Norton Door Closers ..... 46
- North American Aviation Inc. 22-23
- A Onan, D. W. & Sons, Inc. .... 252
- A Otis Elevator Company ..... 59
- A-IC-LC Overhead Door Corporation.. 250-251
- A-IC Peelle Company ..... 32
- A Penn Metal Company, Inc. .... 100
- A-IC Pittsburgh Corning Corp. ... 246-247
- Pittsburgh Plate Glass Co., Paint Div. .... 229
- A-LC Pittsburgh Plate Glass Co. ... 43, 96
- A-IC Portland Cement Association . 34
- A Powers Regulator Co. .... 8
- A Pratt & Lambert, Inc. .... 269
- A-LC Precision Parts Corp. .... 262
- R.L.M. Standard Institute ..... 257
- A-LC Republic Steel Corp. .... 254-255
- A-IC-LC Revere Copper and Brass, Inc. 260-261
- A Rileo Laminated Products, Inc.. 240
- A Rixson, Oscar C. Company ... 92
- A Robbins Flooring Company .... 262
- Roebbing's Sons Corp., John A... 74
- A Rohm & Haas Co. .... 47, 213
- A Rowe Manufacturing Co. .... 259
- Russell & Erwin Division, The American Hardware Corporation ..... 95
- Saran Yarns Company ..... 16-17
- A Sargent & Greenleaf, Inc. .... 256
- A-IC Schundler, F. E. & Company, Inc. .... 3rd Cover
- A Sedgwick Machine Works ..... 244
- A-IC Sloan Valve Company ... 4th Cover
- A-IC-LC Sonoco Products Company .... 253
- Spang-Chalfant ..... 273
- A Speakman Company ..... 245
- Square D Company ..... 49
- Staedtler, J. S., Inc. .... 63
- A Stanley Works ..... 61
- A-IC Steel Joist Institute ..... 205
- Studios of George L. Payne, Inc. 187
- A-IC Sunbeam Lighting Company ... 24
- Sweet's Catalog Service ..... 283
- A Sylvania Electric Products, Inc. 188-189
- Thiokol Chemical Corporation.. 1
- A Tile Council of America, Inc. ... 62-63
- A-IC Timber Structures, Inc. .... 19
- Underwood Corporation ..... 224
- A United States Ceramic Tile Company ..... 269
- A-LC United States Plywood Corp. ... 35
- A-IC United States Steel Corporation (Subs.) ..... 55, 64, 195, 222-223
- A Universal Atlas Cement ..... 55
- Vance Industries, Inc. .... 249
- A Vogel-Peterson Co. .... 252
- Vogt Machine Company, Henry 262
- Weirton Steel Company ..... 41
- A-IC Westinghouse Electric Corp. 176-177, 235 to 238
- Wheeler Reflector Company .... 94
- A-IC Wheeling Corrugating Co. .... 71
- A Wilkinson Chutes, Inc. .... 233
- A-LC Woodall Industries, Inc. .... 210
- A Zero Weatherstripping Co., Inc. 268

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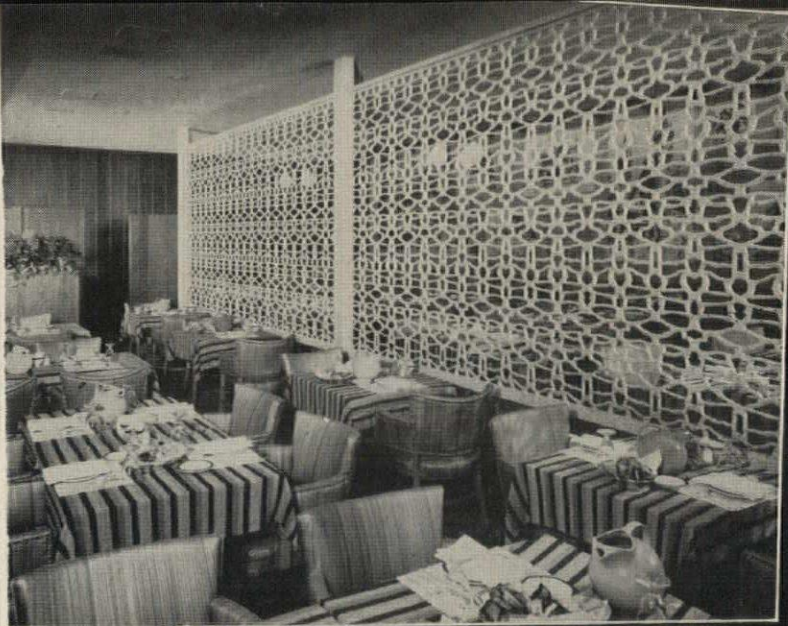
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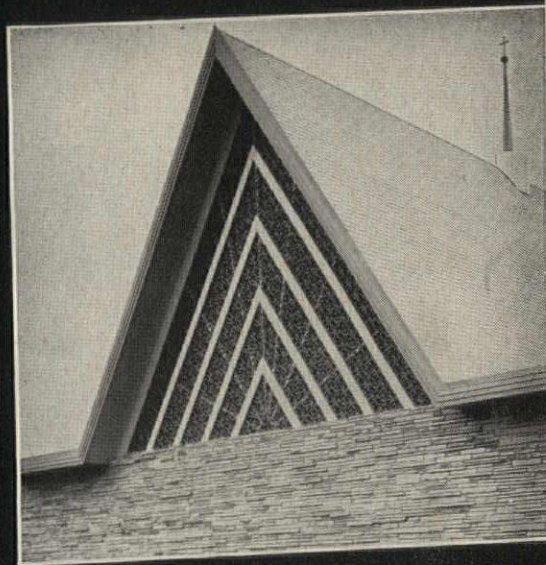
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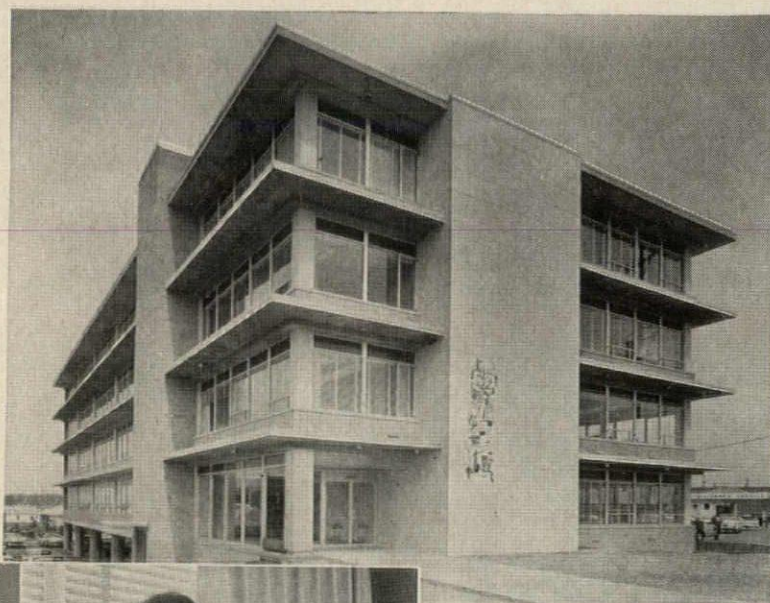
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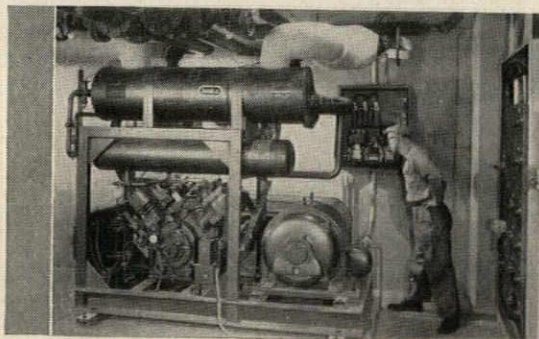
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