



# ARCHITECTURAL RECORD

**8** August 1960

*Building Types Study: Schools*

*Office Building by Yamasaki*

*Medical Research Building by Louis Kahn*

*The Building Business in the Sixties*

*Full Contents on Page 5*

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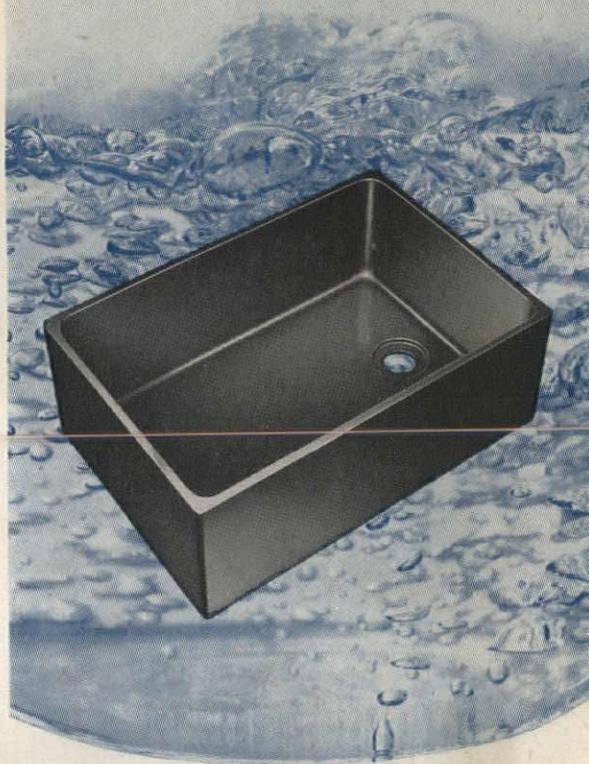
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*Windward City Shopping Center*, Honolulu, Hawaii. Wimberly & Clark, Architects; Richard R. Bradshaw, Structural Engineer. Photo by R. Wenkam

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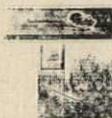
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## PERIPATETIC THEATER SEATS

At least three basic types of performance can be accommodated in the new Loeb Drama Center for Harvard—the Elizabethan, the proscenium and the theater in the round. For the seats simply move around as the show demands. Similarly lighting reaches new heights of flexibility, can be preset in advance for a whole performance. Altogether a new high in facilities for the theater. Hugh Stubbins, architect.

## CHURCHES UNCLASSIFIED

The three churches grouped together in this feature will not be kind to the architectural historian who likes his categories neat and orderly. About the only quality they all share is competence. None of them will set any deathless pattern in all probability, but all will be closely studied in architectural circles.

## BIG BUILDINGS FOR BIG BUSINESS

As business gets bigger, so do the buildings that house it; and the skyscraper now is seen virtually around the world. Our Building Types Study for next month focuses on big office buildings. And there is a special presentation on big business machines, and what they require in housing facilities.

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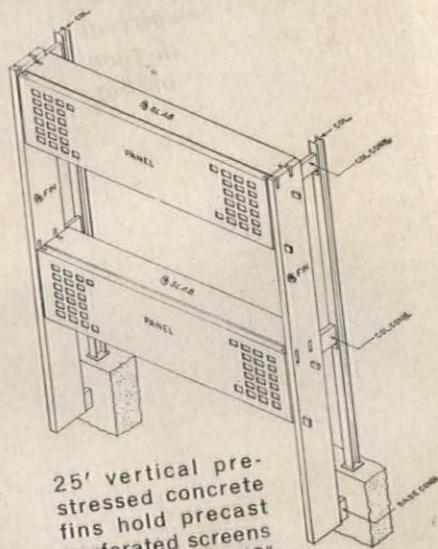
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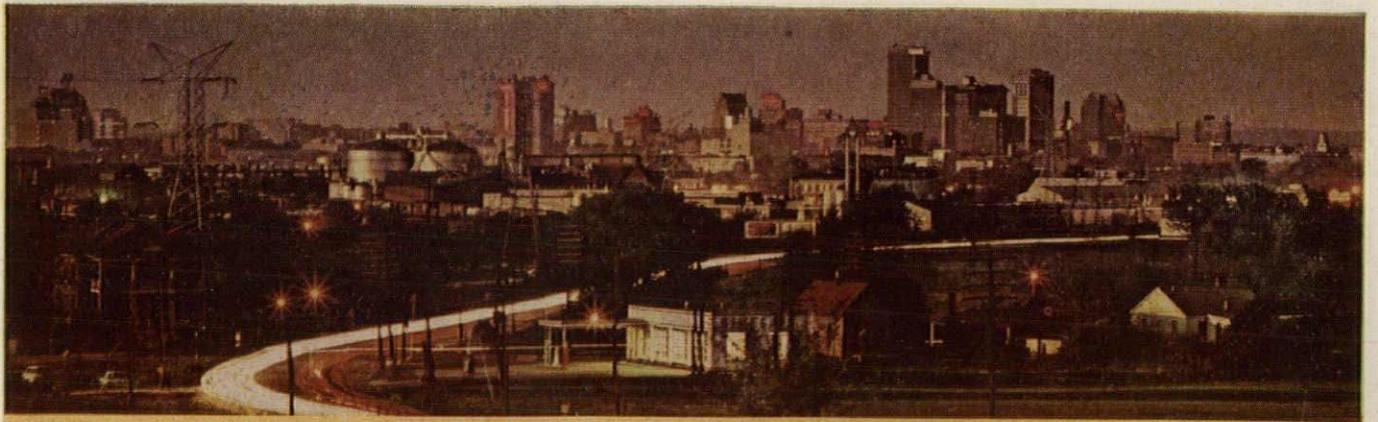


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ARCHITECTURAL RECORD August 1960



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### What to Do with Freedom?

The size and complexity of the problems confronting the would-be competitors (some 1900 of them registered) in the Franklin Delano Roosevelt Memorial Competition are rather formidably outlined in an article by Albert Bush-Brown in a recent issue of *The Reporter*. Nothing more overwhelming than the freedom of its program: "The competition," Mr. Bush-Brown points out, "has a single, deceptively simple requirement: that the essential Roosevelt be commemorated by a memorial in West Potomac Park, between the Lincoln and Washington Memorials. Nothing is said about how this should be done, and the competitor has complete freedom to interpret the theme. What in this complex man was truly essential? How should it be expressed? What will stand well on a difficult site, the featureless, traffic-ridden southwest quadrant left by formidable axes; what will survive the powerful monuments to Lincoln, Washington and Jefferson? Moreover, what is meant by the request for any appropriate form, provided it be harmonious in design with its classical neighbors?" Mr. Bush-Brown is worried both about the ability of artists to produce, and the willingness of Congress and the public to accept, "an environment expressive of modern science and humanism." He makes a strong plea for a new, not a traditional, monument; and adds: "If, as I suspect, the public taste may still prevent a fine design from being built, the competition is nonetheless worthwhile, for it may serve . . . to provoke a climate receptive to admirable national art."

### Specification

We're too self-satisfied with the materials available to us, an industrial designer told a recent meeting sponsored by the Owens-Corning Fiberglas Corporation. And by way of challenge to materials suppliers Robert Hose of the Henry Dreyfuss organization provided a description of a "universal material" which could be used to make all the na-

tion's mass-produced hard-goods. It should, as an Owens-Corning news release describes Mr. Hose's requirements, shape as easily as clay, be as mar-resistant as porcelain, wear-resistant, weather-resistant, shock-resistant, fireproof and as chemically stable as gold. It should be possible to change the material's weight without altering its dimensions. "We should be able to specify any conceivable color or finish," Mr. Hose said. "We should be able to control opacity as we do with glass, and resilience or lack of it, as we do with rubber. Like wood, the material should conduct a minimum of heat or cold. We should even be able to control its odor, impregnating it with any fragrance we choose. . . . This ideal material must be self-fastening, like a heat-seal, but without heat. Above all, this universal material must cut costs. It must be inexpensive to begin with, simple to stock and ship, simple to tool for. And it must encourage low-cost manufacture."

### Improvers, Not Architects

The new Board of Directors of an organization known as the Home Improvement Council is described as embracing "all segments of the improvement industry including manufacturers, wholesalers, utilities, building materials dealers, contractors and others." Hopeful of finding our favorite improvers were represented—however modestly—among those "others," we perused the list of some 30 names with anxious care. "Others," it developed, included some editors of trade and consumer magazines, some representatives of trade associations, a banker and even a newspaperman: but not one architect.

### 100 Ladies on Houses

The annual gatherings of "home-makers" in Washington to advise "manufacturers, dealers, builders and others concerned with products for home and family use" have by now expanded far beyond the scope of the initial Women's Housing Congress

sponsored by the Housing and Home Finance Agency in 1956. At the McCall's third "National Congress on Better Living," food, cosmetics and cars all were on the agenda along with home equipment and homes. The McCall's summary of the consensus of the 100 delegates on the "ideal home": "traditional two-story design with one bedroom on the first floor; two baths at least, one with a tub and the other a stall shower; bright, airy kitchen planned only for the woman of the house—a place where she will do everything connected with food but no other activities will intrude; a separate laundry room which will have lots of counter space, storage space, television set and telephone as well as washer, dryer and ironing equipment; much storage space throughout—perhaps an old-fashioned 'walk-in' pantry and specialized storage areas for various purposes; fireplaces; no terrace unless the terrace has a roof; glare-proof glass in picture windows and glass walls; television sets anywhere but in the living room; a custom-look exterior—delegates were willing to pay up to \$1000 more for a house which doesn't look like all its neighbors. Its location would be further away from suburban developments and the neighbors, ideally in a country-like 'acreage', with schools and cultural facilities nearby, and shopping centers and churches not necessarily close."

### Vive les Pompiers!

"Just before and after the First World War," says a letter recently received, "some American students had come to do their studies in Paris at the 'Atelier Umdenstock' (U.M.B.D.). The French U.M.B.D. Old Students would have been very happy to have some news from their American fellows: especially Penington, Pearce, Holybird, Jenks, Frazier, Parrot, Kramer, etc. (Sorry, but we have forgotten their initials.) At the same time we should be glad too to have some pictures of their works and their 'bonnes vieilles gueules.' Please write to: Guy Derevoige, Architecte D.P.L.G., 20 rue du Dragon, Paris (XIV), France."

# A Record Special Report

## CANADIAN ARCHITECTS HOLD ANNUAL ASSEMBLY AT WINNIPEG



At the annual dinner, principal Assembly speaker was the Prime Minister of Canada, the Right Honorable John G. Diefenbaker. From left, Maurice Payette, retiring president of the R.A.I.C., the Prime Minister, and Mrs. Diefenbaker



The group mainly responsible for R.A.I.C. report into Residential Environment. From left, Alan Armstrong, Peter Dobush, James Murray, John C. Parkin, and C. E. Pratt



Robert Cerny of Thorshov & Cerny, Minneapolis, featured Assembly speaker, with John Noble Richards, James Strutt, and Sir Basil Spence



Honorary Fellowships were conferred upon the Right Honorable John G. Diefenbaker, Prime Minister of Canada, and John Noble Richards of Toledo, by College of Fellows Chancellor, A. T. Galt Durnford

*This report was prepared for the Record by Robbins Elliott, Executive Director of R.A.I.C.*

When Canadian architects met at Winnipeg, Manitoba, from June 1-4 for the 53rd Annual Assembly of the Royal Architectural Institute of Canada, the outstanding feature of the week was the official unveiling by the Institute of a formal report prepared during the past year by a Committee of Inquiry into the Design of the Residential Environment. Hailed as a "significant document" outside the profession, the report was approved and authority voted to the R.A.I.C. to move quickly toward carrying out the 32 basic recommendations.

Two hundred and twenty-nine architects and their wives registered for the four-day convention, and attendance was spurred by the first alumni reunion of the School of Architecture of the University of Manitoba, which attracted members from all parts of western Canada. Convention headquarters was the Fort Garry Hotel.

Theme of the Assembly was "Professional Responsibility," and the keynote address was delivered on June 2 by Basil Spence, designer of the new Coventry Cathedral, and retiring president of the Royal Institute of British Architects. Spence (now Sir Basil) received a knighthood in the Queen's birthday honors early in June. He was a major factor in the success of the convention, sparking animated discussion throughout the week, and making an excellent contribution to the all-day seminar on "Professional Responsibility" held at the new School of Architecture building on June 3.

Following completion of a two-year term of office, Maurice Payette, F.R.A.I.C., of Montreal, was succeeded as president of the Royal Institute by Harland Steel, F.R.A.I.C., of Toronto.

At the College of Fellows convocation, held at the Fort Garry Hotel on June 4, Chancellor A. T. Galt Durnford of Montreal presented Honorary Fellowships to the Right Honorable John G. Diefenbaker, Prime Minister of Canada, who made a special flight to Winnipeg from Washington for the occasion; to Basil Spence, R.I.B.A. president; and to John Noble Richards of Toledo, immediate past president of the A.I.A.

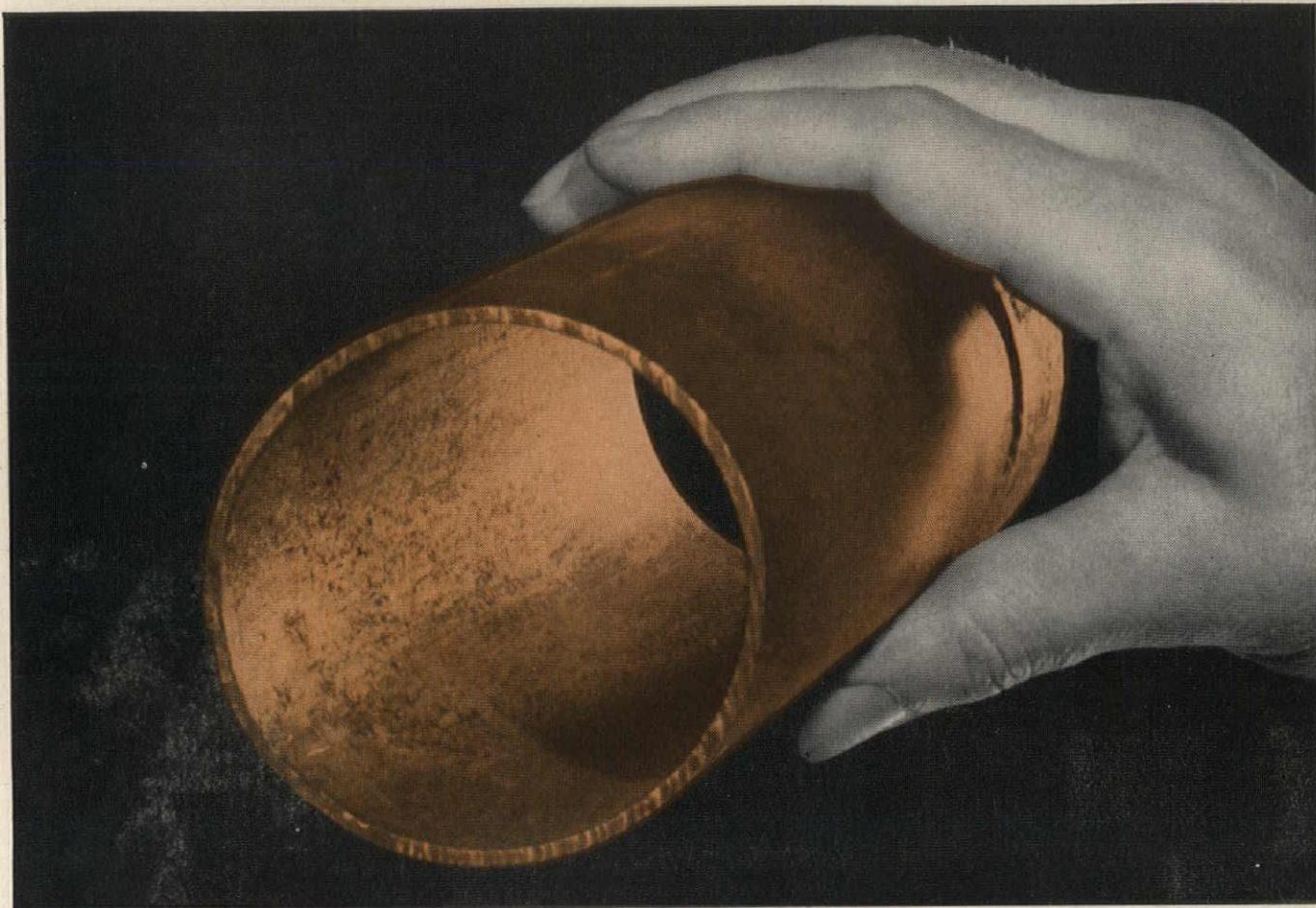
Prime Minister Diefenbaker ad-

ressed the closing dinner of the R.A.I.C. Assembly on June 4 and praised the Institute for the leadership given by the new R.A.I.C. Committee on the Preservation of Historic Buildings in taking action to establish a national inventory of buildings possessing architectural and historic merit. He also called upon the architects of Canada to "make no small plans," and to present proposals to the federal government to aid the planning of appropriate celebrations to mark the 100th anniversary of the Dominion's founding by 1967. The Institute had urged formation of a national centenary committee in 1959, and at the Winnipeg convention established a national committee to develop long-term centennial plans.

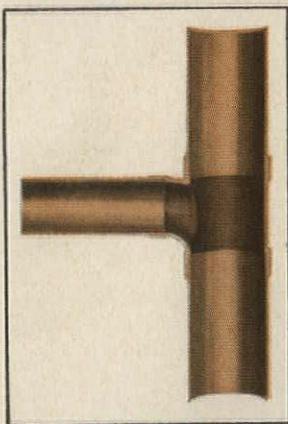
At the business sessions of the Assembly on June 2 and 4, delegates were informed that the Federal Works Department had adopted a revised fee schedule governing the work of private architectural consultants, and the convention recorded approval of the revised tariff. Resolutions were presented to the convention, and adopted, calling for a review of provincial codes of ethics and the fee schedules of the nine provincial associations, with a view to establishing a uniform fee structure for the profession in Canada. Another resolution called upon the Institute to investigate the possibility of establishing some form of permanent liaison with other professional societies in Canada—for example, the Canadian Medical Association, and the Canadian Bar Association.

As a result of several months of investigation and study, the Institute reported that a joint committee had been established between the Royal Institute and the manufacturers and suppliers section of the Canadian Construction Association. The committee, to be called the Joint Committee on Building Materials, will be modeled to some extent on the Producers' Council, Inc., and will consist of five architects and five manufacturers. Purpose of the new organization will be to establish standards for the design and preparation of quality product literature, to provide for architect-manufacturer consultation at the national level, and for seminars, product demonstrations, lectures, etc., in major building centers throughout Canada. The propo-

*continued on page 298*



Unretouched photo of 3" dia. copper tube removed after 13 years' service in a soil line.



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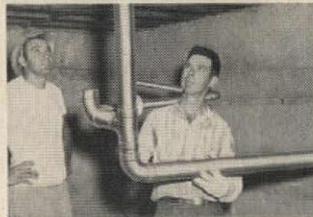
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Preassembly—Saves Time



Lightweight Copper—Easier Installation

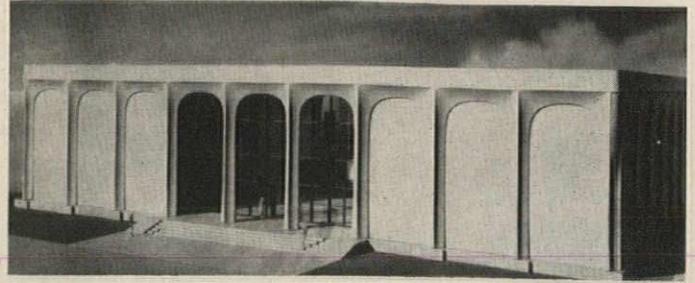


Compact Connections—Save Space





Hube Henry, Hedrich-Blessing



Construction starts later this year on the Sheldon Art Gallery to be erected on the city campus of the University of Nebraska in Lincoln. Designed by Philip Johnson, the building will house the University's growing art collections, accommodation for temporary exhibitions, a 300-seat auditorium, a print study, a board room for the Nebraska Art Association, and full complementary storage and preparation areas. The gallery is a gift of Frances and Bromley Sheldon of Lincoln and Lexington, Neb. A major feature will be the two-story central hall which will contain two monumental sculptural reliefs as memorials to the donors

Ludwig Mies van der Rohe's design for the One Charles Center Building, first structure in Baltimore's 22-acre Charles Center, was chosen from those of six competing developers by an Architectural Review Board—Dean G. Holmes Perkins, School of Fine Arts, University of Pennsylvania; Dean Pietro Beluschi, School of Architecture and Planning, M.I.T.; and Joseph Hudnut, former dean of Harvard's Graduate School of Design. Metropolitan Structures, Inc., of Chicago start construction of the 23-story aluminum and glass tower in 1961. A \$127 million project, Charles Center will include eight office buildings, retail space, parks, garages, transit facilities, and a new hotel

Joseph W. Molitor



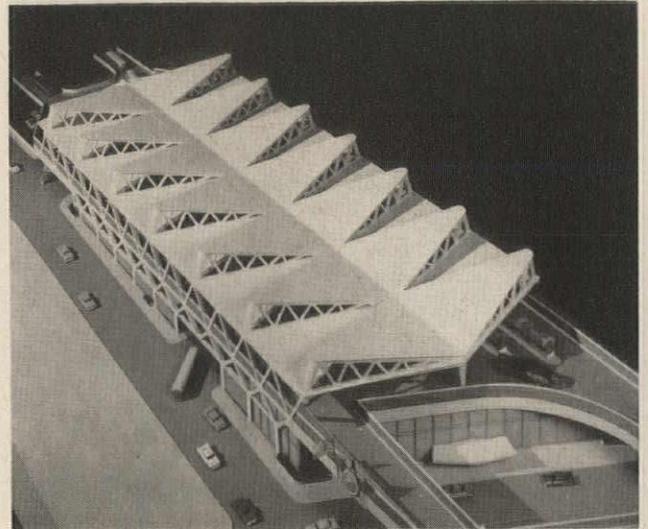
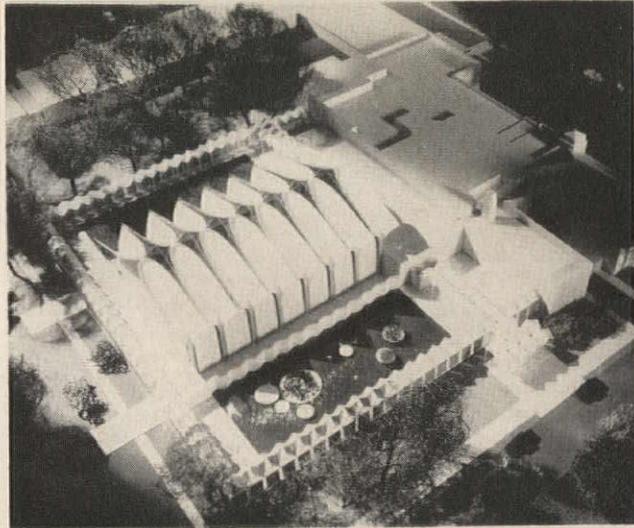
HONOR AWARD: Sanford Brick & Tile Company, Office Building, Colon, N. C. Thomas T. Hayes, Jr. & Associates, Architects

## SIX AWARDS MADE AT SOUTH ATLANTIC CONFERENCE

The recent South Atlantic American Institute of Architects' conference held in Winston-Salem, N. C. (see June, p. 25) was the source of six architectural awards. The awards jury

was composed of Gordon Bunshaft of New York, Ralph Rapson, head of the School of Architecture, University of Minnesota, and Hugh Stubbins of Cambridge, Mass.

Sculptured concrete "fan vaults" rise from a walled garden in this model of a synagogue designed by Architect Minoru Yamasaki. The religious sanctuary, which will seat 1800, will be built this year in Glencoe, Ill., for North Shore Congregation Israel at a cost of \$2 million

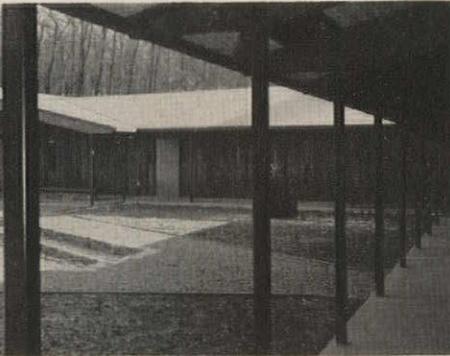


Italian Engineer-Architect, Dr. Pier Luigi Nervi's first building in this country will be the \$13 million George Washington Bridge Bus Station for the Port of New York Authority. The three-level station will be about 400 ft long and 185 ft wide. Its concrete roof will comprise 26 triangular sections, 14 of which slope upward from a row of columns in the center of the building. Each triangular 92 by 66 ft section will be made of 36 precast concrete panels. The sides of the raised roof sections and of the station itself will be exposed precast concrete structural members forming openings for ventilation of bus platforms and lower expressway. The bus station will handle 2000 buses carrying 50,000 passengers daily

*Edward L. Dupuy*



1



*Joseph W. Molitor*

2

*Joseph W. Molitor*

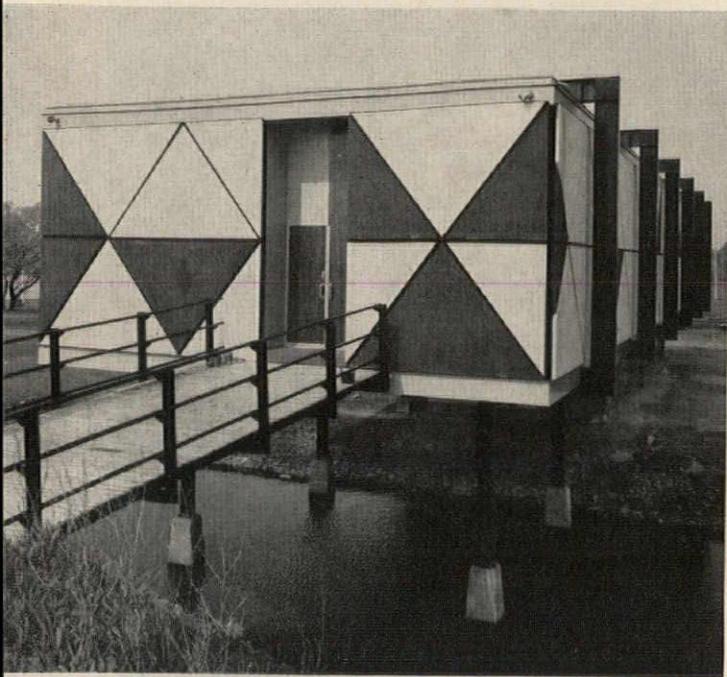


3

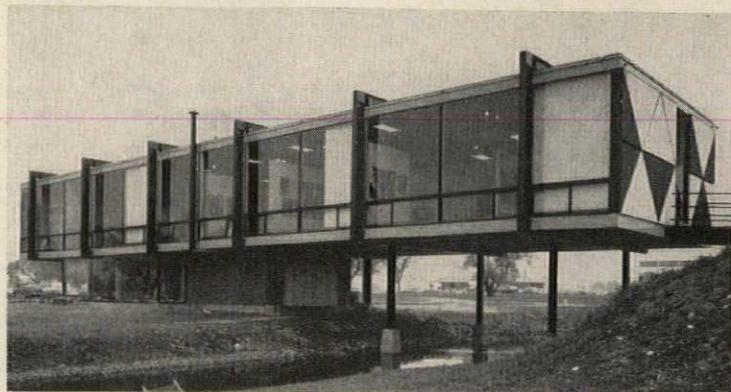


4

**AWARDS OF MERIT**—1. Country Day School, Asheville, N.C., J. Bertram King, Architect, C. M. Sappenfield, Associated Architects. 2. Lipman residence, Richmond, Va.; George Matsumoto, Architect, Wayne F. Koontz, Associated Architect. 3. Julian Residence, Chapel Hill, N.C.; George Matsumoto, Architect, Kenneth M. Scott, Associate Architect. 4. Coggins Medical Center, Marietta, Ga., Edwards and Portman, Architects



Robert D. Harvey Studio



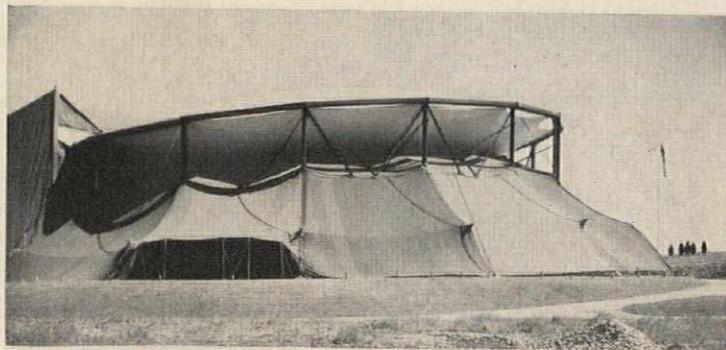
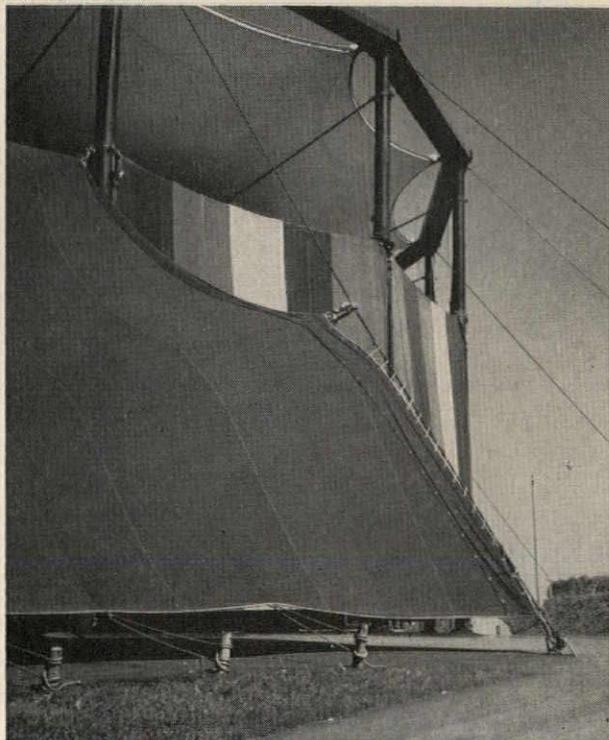
Institute of Contemporary Art by Saltonstall and Morton, architects, was completed in May. All-glass façade faces the Charles River. Solid exterior walls, black triangles on white ground are formed from exposed aggregate slab made of concrete

## INSTITUTE OF CONTEMPORARY ARTS COMPLETED IN BOSTON

The second building to be completed in the Boston Arts Center, which is situated on 16 acres along the banks of the Charles River in the Cambridge area, was opened in May. Designed by architects Saltonstall and Morton, the Institute of Contemporary Art features an exhibition area 88 ft long and 33 ft wide. The gallery's design provides for several stages of expansion. At present it is less than a third of its ultimate size. Raised on steel supports, it spans a moat connecting to the mainland the islanded tent

theater, which was finished last year. The last phase of the Boston Arts Center, still in the planning stage, is the Opera House (Shepley, Bullfinch, Richardson and Abbott, architects, with Pietro Belluschi as consultant.) When entirely completed, the Center will be the senior link in a metropolitan art center circuit, envisioned as stretching across the nation, operating in close cooperation with Washington, D. C., where the National Cultural Center is taking form, and with New York's Lincoln Center.

Barney Burstein

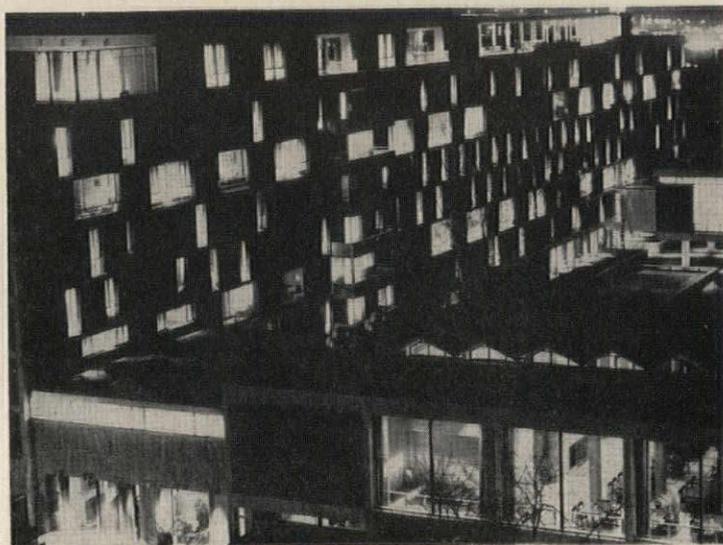


Tent theater by Carl Koch & Associates, Architects, is in its second summer of operation. Vinyl-coated, air-supported nylon roof will form for concrete dome applied later by gunnite process. Vertical canvas back (left) has been replaced by steel structure



1

*"Compact, economical . . . sound architectural thinking, sympathy for nature of materials"*



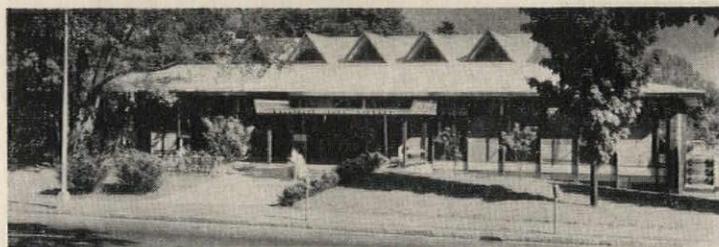
2

*"Courageous, successful attempt to prove a well designed modern building can live in Georgian environment with dignity, grace"*

## ARCHITECTURE AWARDS ARE GIVEN AT BOSTON ARTS FESTIVAL

Architectural awards at the 1960 Boston Arts Festival were given to five projects chosen from a New Englandwide competition: a public library, a temple, business headquarters, college dormitory and commons, and a private beach house. The projects, which must have been executed and completed within the last five years, were chosen by a three-man jury composed of Pietro Belluschi, Dean of Architecture and City Planning, M.I.T.; Morris Ketchum, Jr., F.A.I.A., New York; and George Stout, Director of the Gardner Museum, Boston. Models and photographs of the winning projects were displayed in the Boston Public Gardens. The exhibition is conducted in cooperation with the New England Regional Council of the A.I.A., the Massachusetts State Association of Architects, and the Boston Society of Architects. Beneath the photographs of the architectural winners are jury comments.

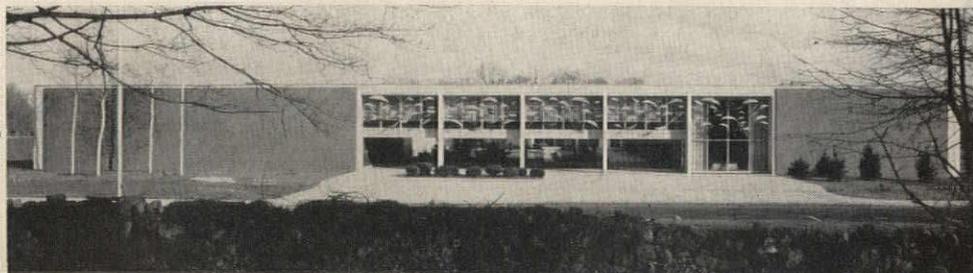
Fern Stoller



3

*"Elegant, logical solution for small-town library beautifully detailed . . . a public building but reserves residential scale"*

Joseph W. Moititor



4

*"Beautifully conceived, simply executed, fine feeling of space"  
Jury admired originality of floating sculpture over entrance*

Joseph W. Moititor



5

*"Simple, dignified contemporary solution for religious building . . . carries its message in way it is designed and placement on site"*

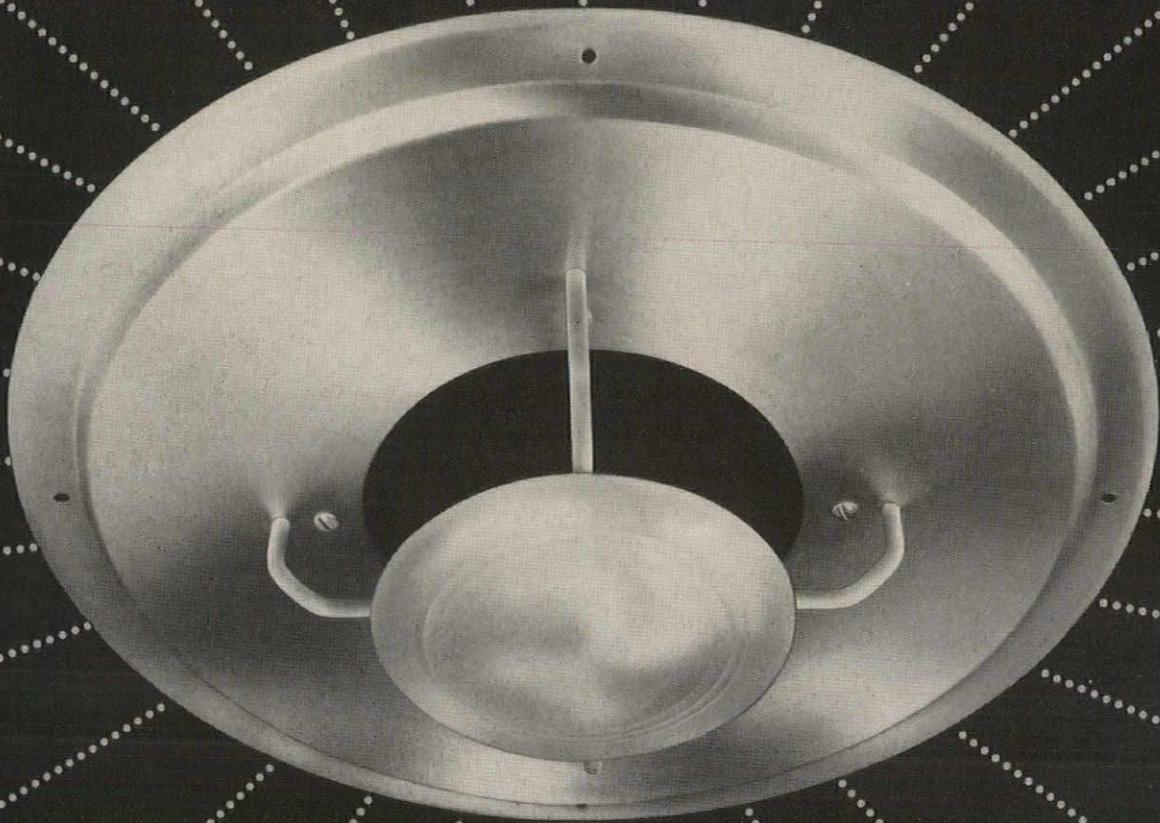
1. Residential—Beach House for L. W. Spear, Gloucester, Mass. Architects: Hamilton & Goody, Cambridge, Mass.

2. Educational—Quincy House, Harvard, Cambridge, Mass. Architects: Shepley, Bulfinch, Richardson & Abbott, Boston

3. Public Use—Wellesley Free Library, Wellesley, Mass. Architects: Carl Koch & Associates, Inc., Cambridge, Mass.

4. Commercial—Dorr-Oliver Building, Stamford, Connecticut. Architect: Sherwood, Mills & Smith, Stamford, Conn.

5. Religious—Temple Reyim, Newtown, Massachusetts. Architects: The Architects Collaborative, Cambridge, Mass.



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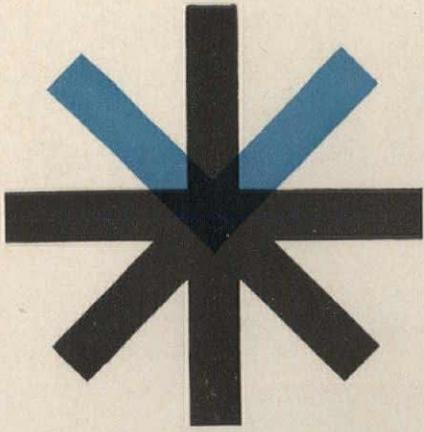
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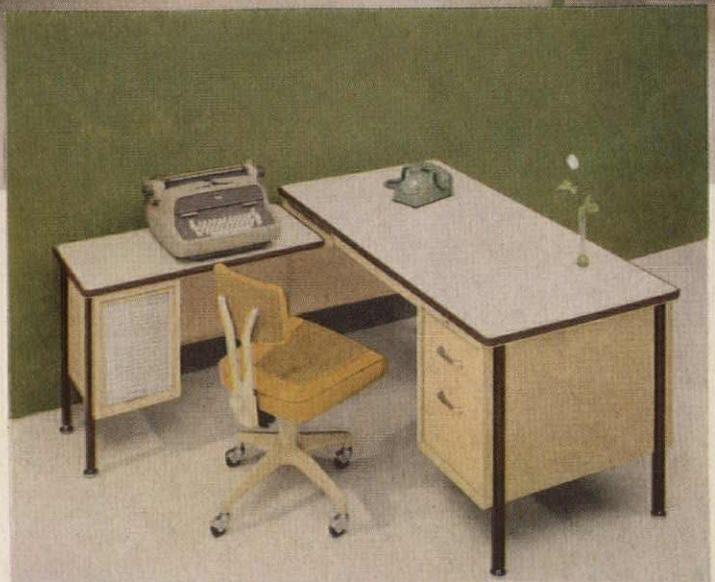
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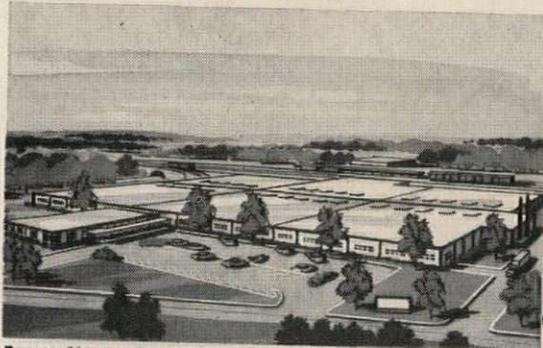


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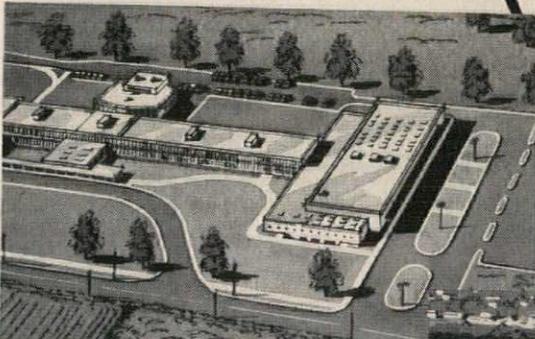


# Solve Time and

## By Specifying Zonolite® Insulating



**Ferry Morse Seed Co., Fulton, Ky.** Zonolite concrete 2" thick over galvanized metal deck. Area involved 253,000 sq. ft. Substantial cost savings over competitive systems. Arch.: Thomas Faires & Assoc., Memphis, Tenn.; Gen. Contr.: Forcum-Lannom; Applicator: Drury Tile & Plastering Co., Cape Girardeau, Mo.

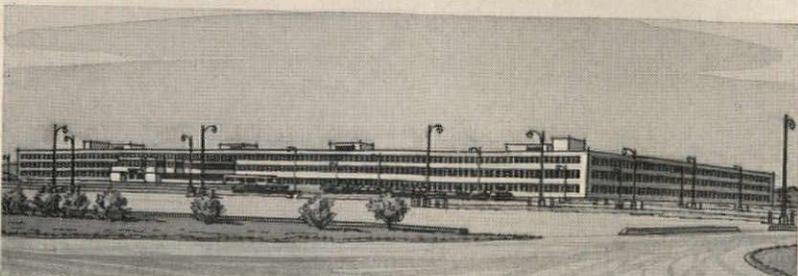


**J. Frank Faust Junior High School, Chambersburg, Pa.** Roof area 78,000 sq. ft. Arch.: Lawris & Green, Harrisburg, Pa. Gen. Contr.: R. S. Mowrey & Sons, Carlisle, Pa.; Roof Applicator: Nitterhouse Concrete Products Co., Chambersburg, Pa.

**Janaf Shopping Center, Norfolk, Va.** Zonolite concrete poured over galvanized metal for roof decking. Arch. & Cons. Engrs.: Lublin McGaughey & Associates, Norfolk, Va.; Gen. Contr.: Shopping Centers Construction, Inc., Pittsburgh, Pa.; Applicator: W. F. Magann Corporation, Portsmouth, Va.



**Shoppers Haven Shopping Center, Pompano, Fla.** Zonolite concrete over galvanized steel deck. Roof area, 120,000 sq. ft. William Vaughn, Arch., DeBritt & Assoc. Engr. Roof deck sub-contractor: Commercial Roof Decks, Inc.



**Finance Center, Fort Benjamin Harrison, Lawrence, Ind.** Zonolite concrete poured over existing deck to provide positive drainage to sumps, plus added insulation of deck. Arch.: Ralph Manning, Post Engineer; General Contr.: Brown & Kerr, Evanston, Ill.



## Remember -

Zonolite Insulating Concrete may be used two ways: (1) Poured as insulation over an existing roof deck such as structural concrete; (2) as an insulating roof deck when combined with galvanized steel, paper-backed welded wire mesh, formboard, or other supporting forms. For further details, mail coupon.

# Cost Problems

## Concrete over galvanized steel decks!

THE ROOF DECK SYSTEM PROVIDES 7 PLUS BENEFITS



Right now, all over the country, architects are confidently specifying Zonolite vermiculite concrete. (Page at left shows just a few recent jobs.) Reason is, Zonolite systems of roof construction do solve "time-and-cost" problems. But, above all, they provide seven very special plus benefits: (1) *Speedy To Erect*, (2) *Fire Safety*, (3) *Lightweight*, (4) *Flexibility In Design*, (5) *Monolithic*, (6) *Insulating*, and (7) *Permanent*.

They not only go on fast, but in many instances actually save thousands of dollars when compared to alternate systems. Why not consider a Zonolite system of roof construction on the project you're working on *now*?

### Zonolite offers a program of practical assistance

There's a national network of concrete specialists and experienced roof deck applicators, made available to architects by Zonolite Company to help you with practical assistance. Mail coupon for details.



MAIL COUPON TODAY for complete file reference and information, including design data, section drawings, specifications.

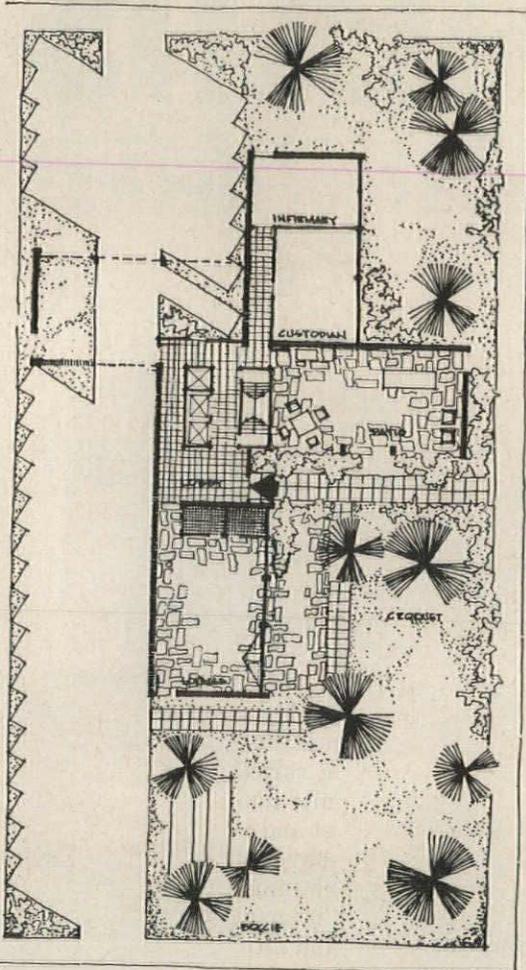
# ZONOLITE COMPANY

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Chicago 3, Illinois

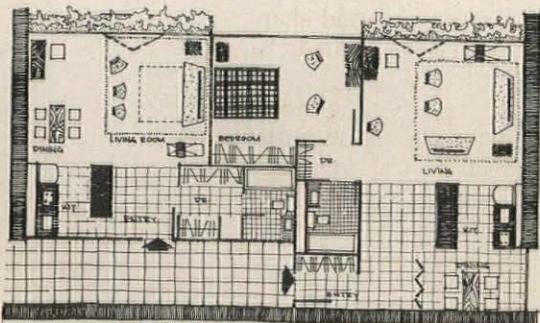
ZONOLITE COMPANY, Dept. AR-80  
135 South LaSalle Street, Chicago 3, Illinois

Please send me your new booklet, CA-50, on firesafe, insulating roof systems.

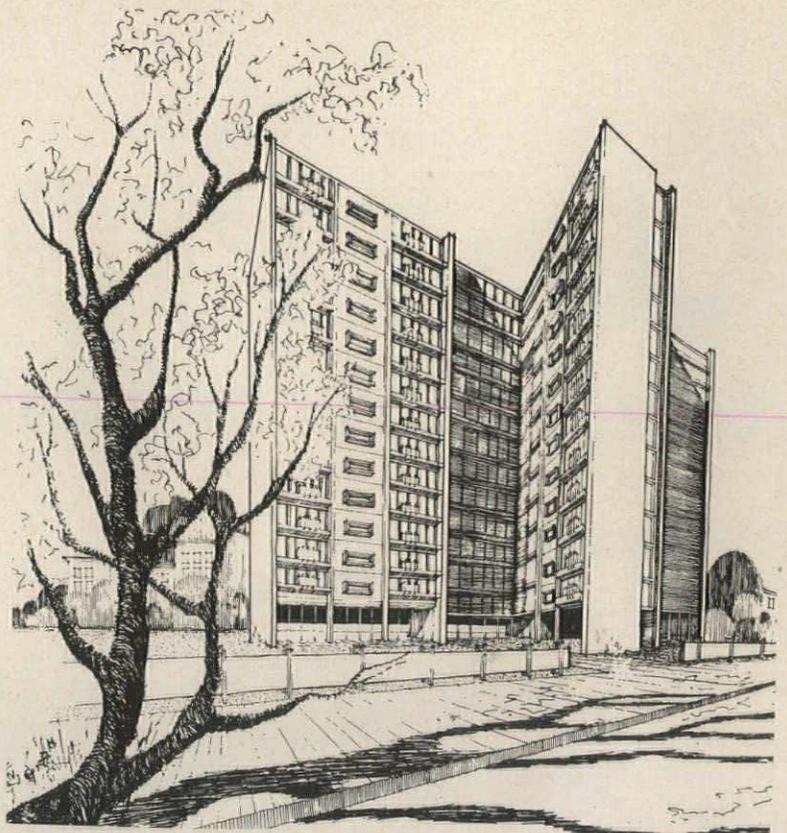
Name \_\_\_\_\_  
Firm \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_



By placement of the building at the extreme north end of the lot, half the site is free for a community garden. An infirmary on the lobby floor accommodates four beds, medical equipment and supplies. Full-time staffing by a registered nurse, a physician on call, and a telephone intercom system which connects the infirmary with all apartments makes immediate medical aid available when necessary.



Typical apartments use room dividers in place of interior partitions whenever possible. All rooms, including bathrooms, are accessible from the entry; and kitchen and dining areas are arranged to insure a minimum of walking in meal preparation and service.



The 14-story structure, containing 104 two- and three-room units, is built in the shape of an irregular cross. The rear wall of each wing is solid masonry, without windows; as visual contrast, the front walls are almost entirely of glass, relieved by the horizontal lines of balconies containing planters.

## VLADECK PRIZE DESIGN FAVORS MEDICAL CARE FOR AGED

First prize in the William Charney Vladeck Memorial Competition for a public housing development for elderly New Yorkers was awarded the design of Michael Gordon, fourth-year student at Pratt Institute of Architecture.

Sponsored by the Citizens' Housing and Planning Council of New York, the competition singled out Gordon from 36 entrants for his design of a 14-story apartment building, "outstanding for its site planning, provision for tenants' privacy and independence and facilities for community living and emergency medical care."

The jury consisted of Olindo Grossi, dean of the School of Architecture, Pratt Institute; Percival Goodman, F.A.I.A., associate professor of architecture at Columbia University; and Samuel Ratsensky, executive assistant, New York City Housing and Redevelopment Board.

Seymour Renen, a student at Cooper Union, won second prize. Four other contestants, cited for honorable mention, were Samuel J. De Santo, Alan Gurarye, Yoshiro Hashimoto, all students at Pratt Institute; and Ronald Spivak, a student at Cooper Union.

Directing the council's choice for this, its first competition, was the urgency of creating appropriate housing to meet the specialized needs of older people, an ever-increasing part of the population. Roger Starr, Executive Director of the Council, said: "There is an acute shortage of housing planned with the aging in mind, and much of the little housing for them which exists has been severely criticized by leading architects and planners as failing to provide adequately for community and health-care needs."

## *What variations from tested floor-ceiling assemblies are permissible?*

Armstrong Acoustical Fire Guard—the first time-designated acoustical ceiling tile—will meet the nation's strictest building codes. And it will do it in a wide variety of floor-ceiling assemblies.

*most popular constructions have been tested*

Since the elements of a floor-ceiling assembly (such as the tile, the slab, the air space in the plenum, and the structural steel supporting the slab) can be varied and these variations can be combined in an infinite number of assemblies, it is virtually impossible to test and report every one. The more popular assemblies have been tested. Variations from tested assemblies which maintain or improve the fire-retardant rating have been accepted by local code officials, building inspectors, and rating agencies.

*slab construction may vary*

A thicker slab logically improves fire retardance of the assembly. Equivalent thicknesses of poured or precast lightweight concrete or gypsum may be substituted for structural grade concrete. The National Board of Fire Underwriters—sponsoring agency for U. L.—has listings in its fire-resistance rating booklet that state alternate fills of equivalent thickness are permissible in rated assemblies.

*modification in structural steel*

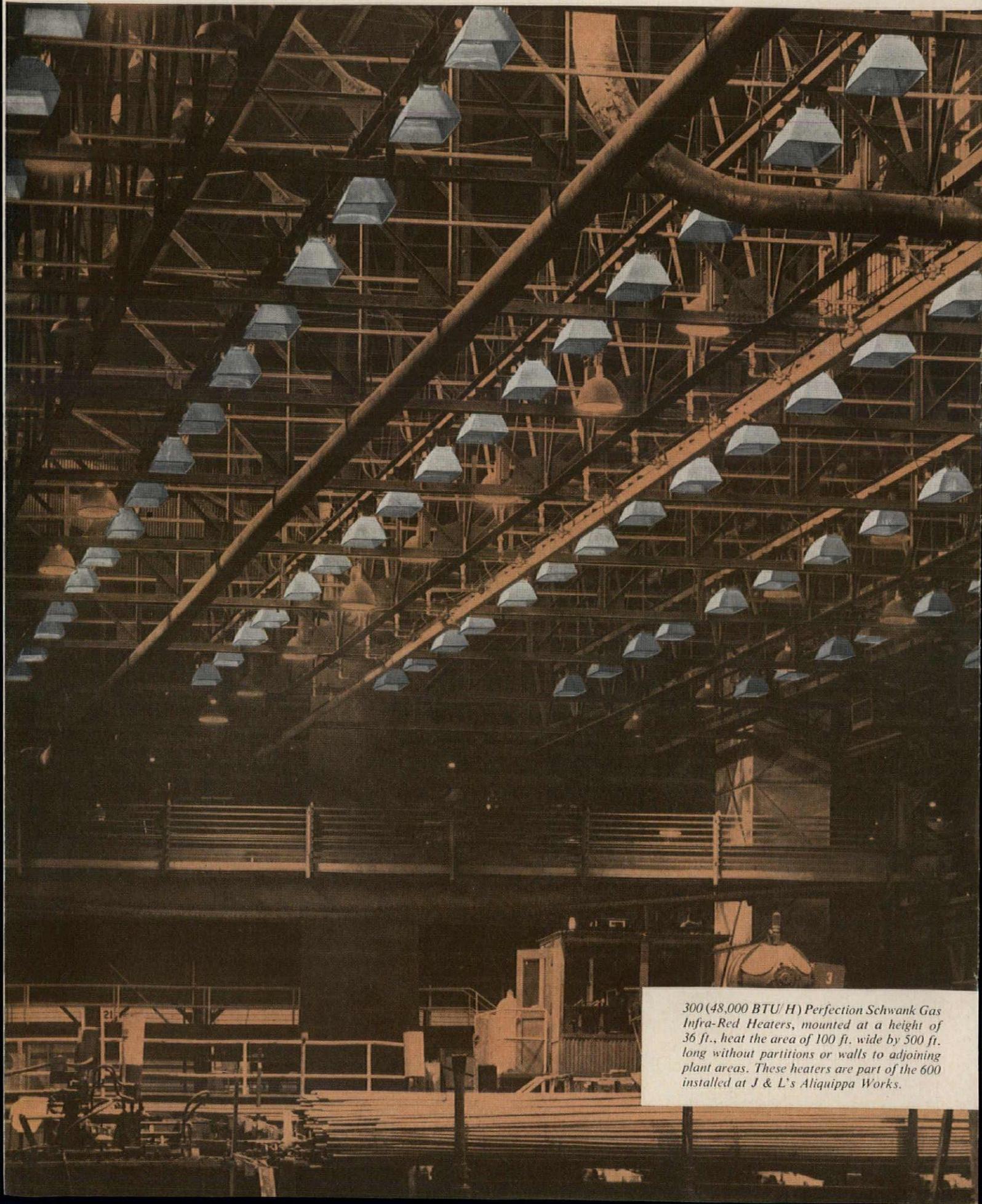
Acoustical Fire Guard forms a tight fire-retardant membrane which blocks passage of dangerous heat and flame. Structural steel, regardless of its size and shape, will not fail so long as it does not become overheated.

*depth of plenum chamber*

In the official U. L. test assemblies, the metal members supporting the tile were in direct contact with the structural member—the most critical construction possible. Suspension of the ceiling to create a deeper plenum would not impair the fire retardance of the assembly.

Before you specify your next ceiling, consider Armstrong Acoustical Fire Guard. It will help you give your client a safer building—often at a savings in cost. For more information, contact your Armstrong acoustical contractor or your nearest Armstrong district office. Or write to Armstrong Cork Company, 4208 Rock St., Lancaster, Pa.

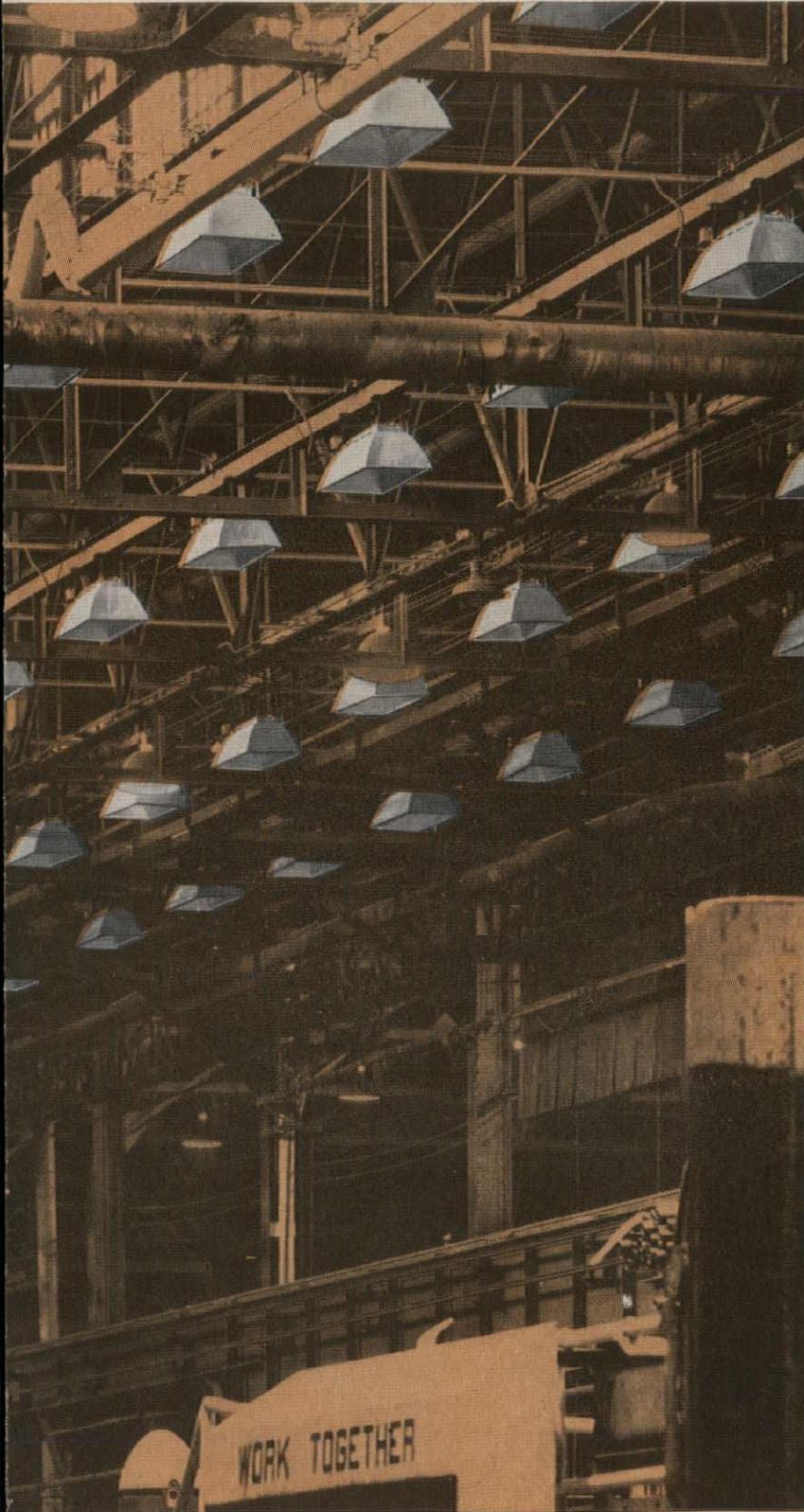
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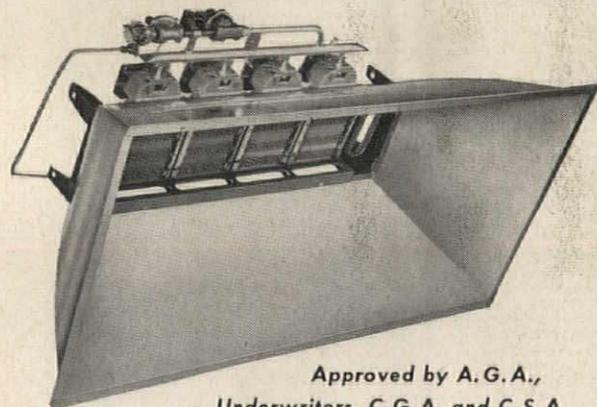
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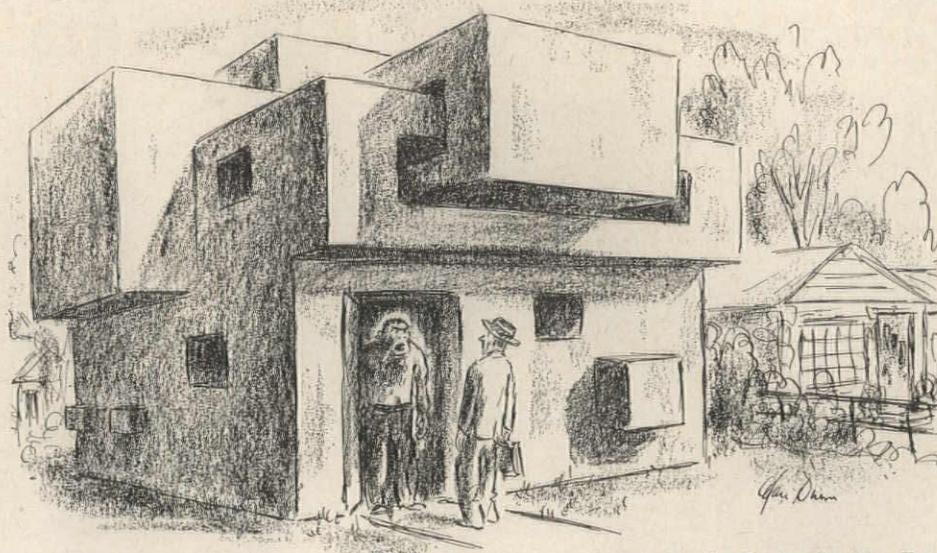


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"You knocked?"

## Burnham Kelly Named Dean at Cornell Architecture School

Burnham Kelly, associate professor of architecture at M.I.T., is now Dean of the College of Architecture at Cornell. Mr. Kelly succeeds Thomas W. Mackesey, who resigned the post to teach full-time. A member of the Department of City Planning at M.I.T. since 1945 and previously a lecturer at the University of Michigan, Mr. Kelly was educated at Williams College, Harvard Law School, and M.I.T., where he received a Master of City Planning degree in 1941. He practiced law in Rhode Island until 1938, and worked during the War for the National Research Council and the Office of Scientific Research and Development. His professional experience includes city planning and housing consultant since 1945. He is the author of many articles and several books on housing and design, among them "The Prefabrication of Houses."

## AIA-NAHB Honor Award to Go to Architect-Builder Team

Architect-builder teams that have completed a project within the last five years are invited to compete for the second annual Award of Honor sponsored by the A.I.A. and Nation-

al Association of Home Builders. The award's purpose is to encourage the design and construction of the best communities and homes for the American people by promoting collaboration between architects and builders.

The Jury will consider the following factors important: Community planning, the use of the site, individual house design, architect-builder relationships, improvement of the techniques of the building, service to the community, as well as active participation in the affairs of the Institute or N.A.H.B.

Presentation of the Award of Honor will be made to the winning team at the N.A.H.B. convention next January and at the A.I.A. convention in Philadelphia next April.

Entries may be submitted by the builder, the architect, by the local or national A.I.A. or N.A.H.B. chapters. They must be received at A.I.A. headquarters postmarked not later than November 14, 1960.

## World Fountain Competition Sponsored by Seattle

The City of Seattle announces an international competition for the design of a fountain using "lifted and moving water, form and illumination" in unique and non-traditional

ways. To be completed in time for the Century 21 Exposition, "international space-age spectacular" being held April through October 1962, the \$250,000 project will become a permanent part of Seattle's Civic Center.

From preliminary entries, which must be submitted by Nov. 28, 1960, five contestants will be selected, each to be awarded \$2000. Winning designer from the five finalists will be awarded a contract with the city to complete and supervise the fountain, receiving ten per cent of the cost.

Entries are invited from all architects, designers, landscape artists and sculptors, world-wide, who may register by September 16, 1960. For information and registration application, write: Professional Adviser, Seattle Civic Center Fountain Competition, Third Avenue North and Mercer Street, Seattle 9.

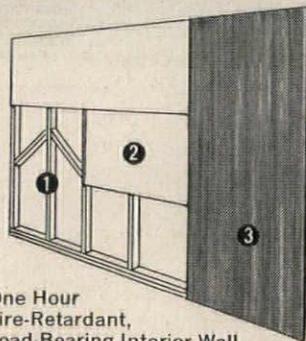
## Entenza Appointed Director of Graham Foundation

John Dymock Entenza, publisher of *Arts and Architecture* since 1938, has been appointed director of the Graham Foundation for Advanced Studies in the Fine Arts. The Foundation's aim is to further work in architecture and allied arts and to en-

Another Roddis "First!"

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One Hour  
Fire-Retardant,  
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Official tests prove FR Architectural Craftwall, in combination with U.L. labeled gypsum wallboard and wood studs, will form a wall that affords one hour protection against the passage of flame or dangerous heat transmission.

- 1 Wood studs: 2" x 4", 16" on center
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(Complete construction details available. Write for new Roddis Fire Retardant Bulletin)

Find out more about FR Architectural Craftwall or other Roddis products. Write: Roddis Plywood Corporation, Marshfield, Wisconsin.

*Roddis does such wonderful  
new things with wood*

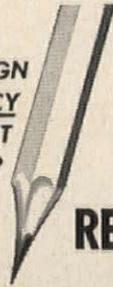
Now all the richness and beauty of genuine wood paneling, plus amazing new fire safety, can be yours with Fire-Retardant Architectural Craftwall. Because its unique, new center core is Roddis' man-made board—Timblend—treated with special fire-retarding chemicals. It's the first particle-core paneling to be listed and labeled by Underwriters' Laboratories!

New FR Architectural Craftwall is designed particularly for offices, or for schools, hospitals, public buildings — anyplace where fire safety is of vital concern. Choose from a wide range of hardwoods. Available prefinished the exclusive Roddis way for lasting beauty and durability. And at a considerable savings over ordinary fire-retardant plywood  $\frac{3}{4}$ " paneling.

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There are many reasons why *Permaglas* gas-fired boilers are... now more than ever... ideally suited for use with these modern types of radiation. We'd like you to know some of these reasons, and have incorporated them into a convenient **PERMAGLAS ENGINEERS' MANUAL**, available to you without charge.

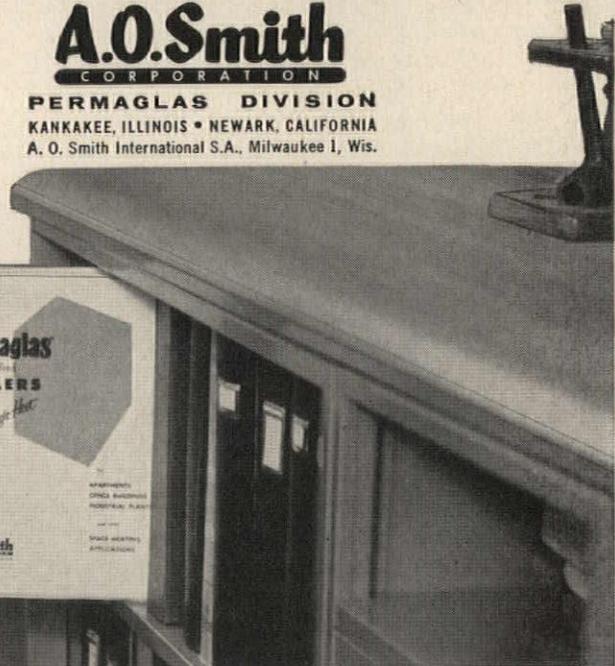
In addition, the **ENGINEERS' MANUAL** contains a wealth of valuable information on hydronic systems design and sizing, as well as complete specifications on many types of space heating accessories.

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Low-bulk, lightweight *Permaglas* gas-fired boilers feature quick-heating copper-coil construction — to perfectly match the high heat transfer efficiencies designed into modern hydronic systems. Units are available in capacities up to 420,000 BTU/hr. (roughly equivalent to a 10 HP boiler), and may be installed singly or in multiple—or "spotted" around the building. All are A.G.A., C.G.A., and C.S.A. approved and all bear the A.S.M.E. emblem.

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continued from page 25

able persons with high creative talent to have advanced opportunity in these fields.

The program's panel includes well-known educators, architects, artists, art critics and psychologists, the chairman being John Ely Burchard, Dean of Humanities at M.I.T. and Consulting Editor to ARCHITECTURAL RECORD.

## Are Crafts Goals Understood? Exhibit Raises Question

Over one thousand American craftsmen answered the call to open competition from the Museum of Contemporary Crafts in a Designer-Craftsmen Exhibition in May. Objects numbering 114, "designed and handcrafted for use," were chosen by a jury which included Alexander H. Girard, architect and designer of Santa Fe, New Mexico; John A. Kouwenhoven, author of "Made in America," Professor of English, Barnard College, Columbia University; and Charles H. Sawyer, Director, Museum of Art, Professor of Fine Arts, University of Michigan.

Entries were divided into five classes, two focusing on work designed for "organic architectural use" and for "interior architectural spaces." The judges reported textiles and ceramics strongest in quality, furniture the weakest. They concluded: "... many craftsmen are still not clearly aware of their goal perhaps in part because society, as represented by such potential users as architects, designers, and ultimate consumers, are not completely aware of the contribution which the crafts can make."

## Non-Academic Research Grants From Ford Foundation

A limited number of fellowships to assist persons not regularly associated with academic institutions to undertake or complete studies in the creative arts is being offered by the Ford Foundation. They were instituted to help meet the need of persons in the arts interested in carrying out research who are not regularly part of the academic community. For not less than three months nor more than one year, the fellowships will vary in amount in relation to the applicant's estimate of cost,

but in general will not exceed \$7500 for a year.

The first group of awards were announced in June. Applicants for the program's second phase should submit letters before Nov. 15, 1960. Address: Ford Foundation, Fellowship Program for Studies in the Creative Arts, 477 Madison Ave., New York 22.

## Election Returns

The Illinois Society of Architects at its 63rd Annual Meeting elected the following architects to office: president, Michael F. Gaul; first vice president, Clarence J. Bonnevier; second vice president, David Clarence Wilson; executive vice president, Gerald L. Palmer; treasurer, Chester A. Stark; secretary, Alfred F. Schimek; directors for three years, Richard J. Carlson and Arnold J. Kreugel.

Newly elected officers of the Washington State Chapter, A.I.A., were: president, John M. Morse; first vice president, Frederick M. Mann Jr.; second vice president, Donn L. Rothe; secretary, Gayne L. Jones; treasurer, Gene G. Martenson; Board of Directors, Aaron Freed, Hugo Osterman, Stephen H. Richardson, and Lawrence G. Waldron.

At the annual meeting of the Council for the Advancement of the Negro in Architecture, John Louis Wilson, A.I.A., was re-elected president. Newly elected to the Board of Trustees were: Prof. Howard H. Mackey, A.I.A., Head of School of Architecture, Howard University, Washington, D.C.; Richard C. White, R.A. of Brooklyn, N.Y.; Victor D. Gruen, A.I.A.; Louis Edwin Fry, A.I.A.; and Henry Steinhardt, A.I.A. Others on the Board are Thomas H. Creighton, F.A.I.A., and editor of *Progressive Architecture*; Hilyard R. Robinson, A.I.A.; Richard Roth, A.I.A.; Simon Breines, A.I.A.; Henry Wright, architectural consultant and Percy Ifill, architect and interior designer.

## Small Town Planning is Canadian C.P.A. Program Theme

The 1960 National Planning Conference of the Community Planning As-

sociation of Canada, scheduled October 23-26 at the Sheraton Connaught Hotel in Hamilton, Ont., will have as its theme "Planning for the Smaller Communities." It is hoped that deliberations of the conference will result in a policy statement which can be used to guide future activities of C.P.A.C., an organization devoted to maintaining communication between "interested citizens" and "elected officials and professional planners" to "further the cause of town planning in Canada."

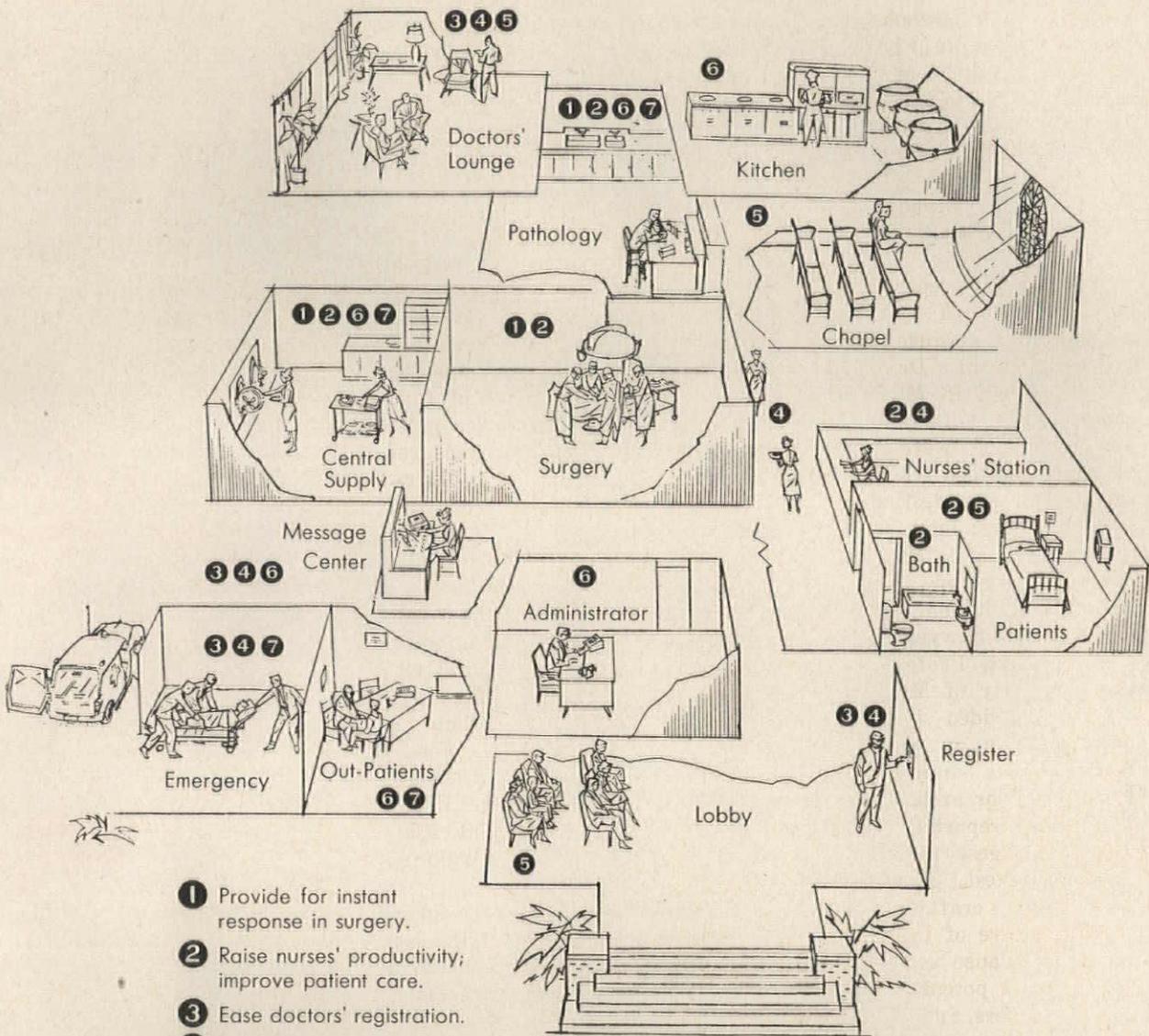
## Program for Architects Upped in Craft Research Service

A Rockefeller Foundation Grant of \$101,000 boosts the program for architects in the Craft Research Service, latest addition to the activities of the American Craftsmen's Council. Serving as a source library stocked with files of craftsmen's names, information on how they work, and in what materials, and photographs and slides of their work, the program aims to aid architects planning to use murals, woodwork, or other crafts in their design. Being increased are the number of craftsmen (now 600) and also photographs and slides. For information on how to use this program, write to: Craft Research Service, American Craftsmen's Council, 29 West 53rd Street, New York 19.

## Pickard Heads U.L.I. Research

Appointed to head the expanded research program of the Urban Land Institute of Washington is research economist Dr. Jerome P. Pickard. As U.L.I. head, the former Fulbright Scholar will be in charge of its expanded study of those dynamic factors in urban land use which make for the creation, preservation, deterioration and recovery of urban neighborhoods. The program will also study the instruments of public policy that may be used to guide, restrain or stimulate these forces.

The initial project consists of five related studies to be conducted over several years. They are: a comparison of land uses in declining and stable areas, real estate taxation, the use of power of eminent domain, zoning and subdivision regulations, and urban expressways.



- 1 Provide for instant response in surgery.
- 2 Raise nurses' productivity; improve patient care.
- 3 Ease doctors' registration.
- 4 Increase versatility of doctor-paging systems.
- 5 Make the environment more congenial.
- 6 Keep telephone lines free.
- 7 Expedite emergency services.

# 7 ways to use functional sound and communications... to improve patient care and hospital efficiency

On the following pages, you will find the benefits listed above explained in greater detail . . . plus an unusual offer of assistance in planning sound and communication systems . . . with single-source responsibility from . . . . . **Executone** ➔

## How to get the most out of communications and sound in HOSPITALS

Well-planned Executone sound-communication systems can perform heroic labors in the hospital. More than 30 different applications have been designed. Seven broad areas are detailed here. They are capable of lifting many burdens that high costs and personnel shortages impose on patients, administrators and staff.

### 1. Provide for instant command-response in surgery



Lives can be saved by immediate response to doctors' commands in the Surgical Suite. It is vital that a surgeon obtain assistance from remote departments with as much dispatch as he receives an instrument from his Operating Nurse. He may, for instance, have to suspend an operation until a report on a specimen can be obtained from Pathology . . . until Blood Bank or Sterile Surgical Supply can fill an unforeseen need.

Executone's intercom systems put these services at the surgeon's immediate disposal. They fulfill special requirements of the Operating Room—explosion-proofing . . . foot-operation . . . extremely well-modulated voice reproduction. They can, in addition, be used to transmit 2-way voice communication between the surgeon and students.

In other than surgical areas where urgent situations arise, action can almost always be expedited by properly-specified Executone communications. Recovery Rooms, Obstetrical Suites, Emergency Department, Central Supply, mechanical service areas—all require the high degree of dependable contact for which Executone equipment is designed.

### 2. Raise nurses' productivity; improve bed-patient care ... In new and existing hospitals



Time and motion studies have proved repeatedly that nurses' foot travel can be reduced by as much as 65%. At the same time, more bed-care duties can be assumed by orderlies, aides and Practical Nurses. The source of these skilled-labor-savings is the Executone audio-visual nurse call system. It can make a reduced nursing staff more responsive to the patients' needs.

In most cases, it can be installed using existing nurse call wiring . . . avoiding the inconvenience and loss of income that would result from closing a nursing floor. An effective audio-visual system will incorporate the following factors:

- a. ability of patients, including those unable to move or speak normally, to use the system effortlessly.
- b. operation of the system with all its

advantages regardless of the location of nurses at any given moment, or the number of calls registered.

c. provisions to eliminate the possibility of a patient's being without means of signalling.

d. psychological reassurances—of the proper registration of a patient's call, and the maintenance of his privacy.

e. foolproof, urgent-priority call registration from bathroom stations.

f. use of the system to monitor sounds in post-operative cases, polio or seclusion wards, nurseries, etc.

A demonstration of Executone's advanced nurse call equipment will show you how all these functions and safeguards can be implemented, and an optimum system designed for new or existing construction.

### 3. Ease doctors' registration and message problems



In-out registration and message collection duties are so burdensome to doc-

tors that many frequently neglect these essentials. Confusion and delays result. Executone, however, makes available a variety of systems designed to relieve this condition. One notable advance—especially in medium-sized and large hospitals—is Executone's simplified, one-stop register-and-message facility.

This facility is made available to the doctor at all habitually used entrances. Each register is tied in to a central compact "memory" unit at the hospital message center. The doctor need only punch

his own 3-number code into the nearest register and indicate whether he is entering or leaving. This information is stored in the "memory" unit and is instantly available at any register—merely by punching the same code number. If there are messages for a doctor when he uses a register, a blinking light alerts him, and he may speak to the message center by 2-way intercom right at the spot. System is designed for simultaneous registration to save doctors' time. The use of a central "memory" unit makes possible significant economies in wiring.

#### 4. Increase the versatility of doctor-paging systems



The paging facilities in today's hospital can offer a far greater range of service—thanks to Executone's multi-purpose systems. Not only does this equipment make possible a variety of interchangeable paging methods, but it will accommodate background music and alarm functions as well.

In addition to the conventional all-hospital page, the Executone-equipped paging center may use:

**zoned paging.** A doctor's activities are generally confined to specific floors and departments. A sequence of zoned pages will usually locate him without disturbing the entire hospital. A typical sequence might be: obstetrical suite . . . maternity ward . . . doctors' lounges and dining rooms.

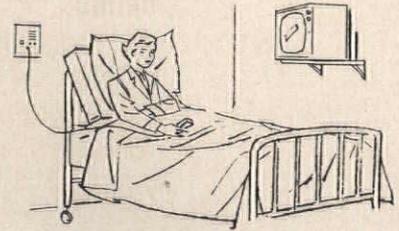
**localized paging.** This system operates as above—with this exception: On floors or wards served by nurses' stations, paging is restricted to the duty area. The duty nurse, who knows if a certain doctor is on the floor, completes the page by selective use of the nurse call system. This method offers maximum quiet in patient areas.

Executone implements either or both of these functions with advanced circuit-selection, amplification and reproduction components. Voice quality is unusually true and well-modulated.

#### 5. Make the hospital environment more congenial

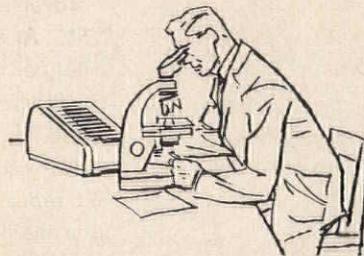
Sound can be genuinely therapeutic. Leading administrators attach great importance to its use for diversion and entertainment. They favor the availability of music—in wards and labor rooms, for example, as well as waiting rooms and visitors' facilities. Chapel services can be transmitted to the rooms of patients who so desire. Radio broadcasts can be made available at each bed.

Executone's versatile paging and nurse call systems readily handle these additional functions. For example, each patient can be supplied with an Executone Pillow Speaker and controls. This



remarkably compact instrument is a high quality sound reproducer . . . radio station and TV channel selector . . . volume control . . . and nurse-call cord set—all in one. No radios are needed in the rooms. Programs—and transmissions of records or tapes—originate at a central control rack. This facility helps keep rooms uncluttered.

#### 6. Speed internal action; keep telephone lines free

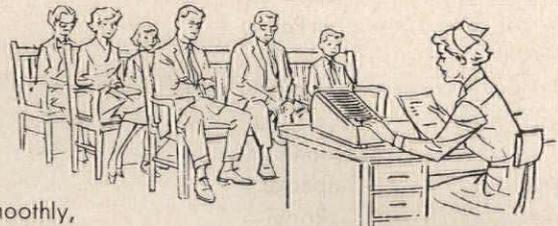


Reliance on the telephone for internal communication in the hospital often results in delay and switchboard congestion. Efficiency requires a channel of communication independent of the tele-

phone . . . in order that administrators may have direct contact with heads of departments . . . that medically related departments be in instant touch with one another . . . that there be adequate intercom facilities within departments, parts of which may be physically separated.

Executone's advanced intercom systems have proved their worth in hundreds of hospital applications—in terms of vastly increased staff productivity, time savings, and freeing switchboards for rapid response to emergency calls.

#### 7. Expedite out-patient, clinic and emergency service



Traffic can be made to flow smoothly, and doctors' time conserved, by effective communications in departments serving ambulatory patients. These include out-patient waiting and examining rooms, clinics, X-ray suites, etc. Increase in the number of patients processed daily can regularly be achieved. Emergency admissions, too, can be handled with dispatch and efficiency . . . day and night.

Executone intercommunication — between nurses' duty stations and the medical facilities they serve—is the key to improved operation in these areas. An

ambulance entrance which is not regularly staffed at night can be made functional around the clock—by the use of an outdoor Executone ambulance intercom station to summon proper personnel upon arrival of an emergency case.

**On the next page . . . an offer of unusual benefit to you and your client**

# Executone



How to get the most out of communications and sound

**Executone** OFFERS YOU SIX STAGES OF SERVICE...

WITH SINGLE-SOURCE RESPONSIBILITY



**STAGE 1 DESIGN STANDARDS**

Executone's service-tested design standards—mechanical, electronic and acoustical are your assurance of trouble-free system performance. Design ingenuity—resulting in simplification, miniaturization and increased capability—keeps the cost of an Executone installation competitive . . . reduces maintenance costs.

**STAGE 2 CONSULTATION OR SURVEY**

To help you plan an optimum system, your local Executone Systems Engineer will assist in a comprehensive study of your client's needs . . . recommend the equipment designed to meet them within his budget . . . suggest ways of implementing a system through modular purchases where funds are severely limited . . . provide you with full information on a professional level. You will find him thoroughly conversant with specialized practices in your client's field.

**STAGE 3 INSTALLATION AND SUPERVISION**

Your Executone distributor will assume full responsibility for the final and satisfactory operation of the system—whether installed by a contractor or by a factory-trained Executone crew. An Executone Field Engineer will co-ordinate and supervise all phases of the installation, and check it out thoroughly on completion.



**STAGE 4 PERSONNEL INSTRUCTION**

Executone representatives will train and—when necessary—re-train your client's personnel in the proper operation of the system. This planned program assures maximum benefits through full utilization and correct care of the equipment.

**STAGE 5 MAINTENANCE ON THE PREMISES**

To assure uninterrupted performance from any Executone system, prompt and reliable maintenance service and complete stocks of factory replacement parts are always available locally. Each distributor is staffed with skilled technicians trained on a continuous basis at Executone's Factory Technical School . . . to provide your client with expert service on his own premises . . . for the life of the building.

**STAGE 6 FULL YEAR FACTORY GUARANTEE**

Every Executone system and component is guaranteed by the Executone factory for a full year.

**EXECUTONE offers single-source responsibility**

One organization responsible for *all* sound and communication systems . . .

- planning coordinated
- purchasing simplified
- installation expedited
- systems easily integrated

One phone call for service . . .

- local personnel immediately available who know *all* systems in the hospital.

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**Executone, Inc., Dept. R-5, 415 Lexington Avenue New York 17 N. Y.**

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I would like detailed literature on intercom and sound systems for the following building types:

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| <input type="checkbox"/> existing hospitals | <input type="checkbox"/> plants   | <input type="checkbox"/> retail stores | <input type="checkbox"/> other _____              |
| <input type="checkbox"/> schools            |                                   |  |   |

Name \_\_\_\_\_ Title \_\_\_\_\_

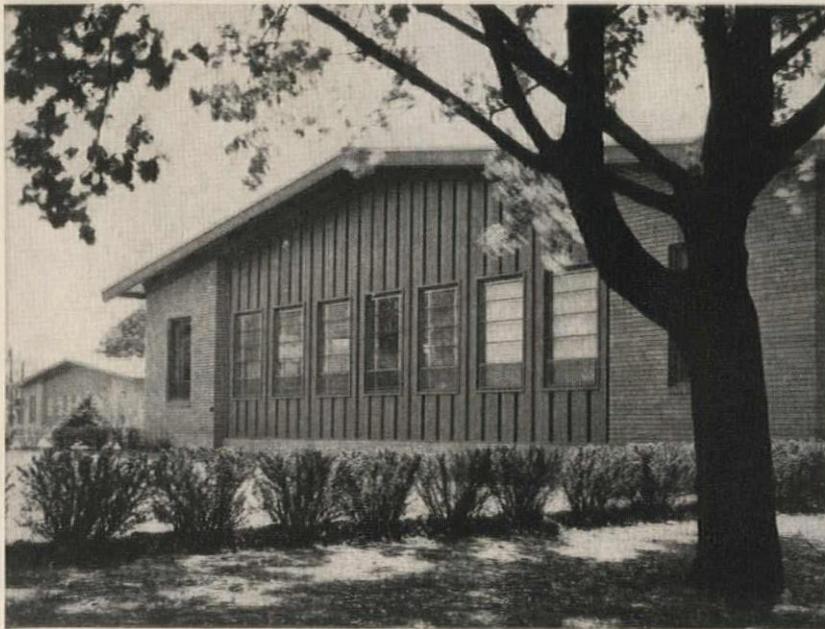
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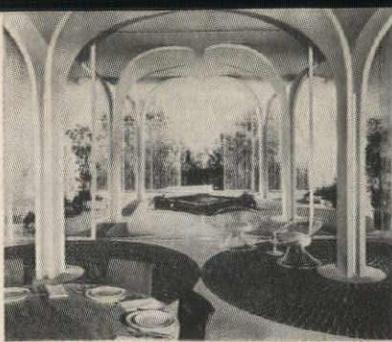
**"CERAMIC TILE...FOR BEAUTY, COLOR, DESIGN AND DURABILITY"**

The increasing use of ceramic tile for exterior areas is keynoted in this serene home entrance courtyard by noted architect Paul Rudolph. Look from the living room out on the graceful tile deck, the flanking tile walls and the tiled sun screens in the background.

A bright new idea, the screens (tile set on sheet glass) cut down sun glare and filter light pleasingly into the courtyard.

*Paul Rudolph*

**THE MODERN STYLE IS . . . .**



Design for a Home Entrance Courtyard  
by Paul Rudolph, A.I.A.

Inside or outside the home, ceramic tile surfaces give your clients *more* beauty, *less* work, *negligible* maintenance. Improved, lower cost installation methods are leading the way to even wider use of this quality product.

The many benefits of ceramic tile will make sense for both you and your clients in any residential, institutional or commercial project you undertake. See your local tile contractor for up-to-date information, including all the details on the new lower cost installation methods and the new dry-set portland cement mortar.

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## The Record Reports

### Architect-Designer Teams Get Ford Foundation Grants

Eight architect and designer teams have received grants from the Ford Foundation for the purpose of developing "their own ideal concepts of the stage." The teams and their programs are:

—Paul Rudolph, A.I.A., and Ralph Alswang, theater designer—development of a theater using new film production techniques and live stage action simultaneously.

—Edward D. Stone, A.I.A., and Eldon Elder, theater designer—design of a 2000 seat outdoor theater.

—Seth Hiller, A.I.A., and Barrie Greenbie, theater designer—design of an ideal theater for the modern dance.

—Peter Blake, A.I.A., and David Hays, theater designer—design of a 229 seat open-stage theater.

—Paul Schweikher, A.I.A., and George C. Izenour, designer-engineer—development of theater complex comprising one theater convertible to proscenium, Elizabethan, and arena-stage forms, and an experimental space controlled by an analogue and digital computer.

—Frederick J. Kiesler, architect and designer, working with playwrights and mechanical engineers—design of a flexible urban theater adaptable to both classical and experimental plays.

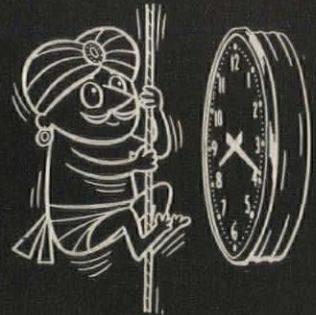
—Edward L. Barnes, A.I.A., and Jo Mielziner, theater designer—design of an ideal theater to house "intimate music-drama" outside the traditional operatic and musical-comedy forms.

—Ben Schlanger, architect, and Donald Oenslager, theater designer—efficiency study and design of a theater form-and-space concept in the proscenium, and of a non-proscenium technique producing a maximum number of desirable viewing positions.

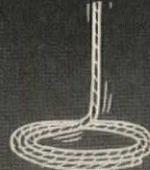
The funds supplied by the grant, approximately \$150,000, "are to be used to free the time of the architect and the designer so that, working together and perhaps with other theater artists, they may carry their ideas beyond the drawing phase to that of actual designs and models, though not to the final phase of completed working drawings."

*more news on page 50*

## NO MORE LADDERS!\*



### NEW ... Two wire MINUTE IMPULSE System with



### 12 HOUR CORRECTION

\*ELIMINATES HAND SETTING OF  
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combines the reliability and simplicity of a 2 wire minute impulse clock and program system with the full 12 hour correction range of a wired synchronous system!

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Look up to the Burgess-Manning Radiant Acoustical Ceiling at the International Minerals & Chemical Corporation, Skokie, Illinois. Here, maximum employee comfort and operating efficiency are assured by the ultimate in radiant heating, cooling and noise control.

With the Burgess-Manning Radiant Acoustical Ceiling, all offices in the modern design and construction of six connected buildings—designed by Perkins and Will, Chicago—have:

- Complete uniform heat distribution with essentially no temperature variations from floor to ceiling.
- Equally efficient cooling—the Ceiling absorbs radiant energy from the rooms, furniture and occupants to reduce the sensible room heat.

- Sound levels are reduced through the highly efficient acoustical qualities of the Ceiling.

The Burgess-Manning Radiant Acoustical Ceiling offers new design flexibility in layout, ventilation and lighting systems. Too, many additional important installation savings are achieved... with maximum usable floor space—no radiators,

convectors, registers, etc. are needed. Standard hot water heating or water chilling equipment together with standard controls are utilized.

Ideally suited to both new and remodeling requirements... the Burgess-Manning Radiant Acoustical Ceiling is unequalled in comfort conditioning, versatility, and maintenance-free performance.

Write for Bulletin No. 138-3J, complete with specifications, etc. No obligation.



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# HOPE'S CHURCH WINDOWS

1818

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ST. PETER'S LUTHERAN CHURCH, EDINA, MINNESOTA

*Ralph Rapson, A. I. A., Architect*

*J. L. Crouse, Contractor*

In this church the auditorium is octagonal, the congregation seated on all sides of the altar. Above, the eight large gable windows give the feeling of space within and a gem-like quality to the exterior.

The engineering of the gable windows was complicated by the decision to have them incline inward from the vertical to obtain exactly the effect desired. The windows are custom built to most carefully prepared plans and specifications. Engineers at Hope's worked closely with the architect in the structural design.

The building also has large wall areas using Hope's custom rolled-steel sub-frames with Hope's Heavy Inter-

mediate Projected Windows, glass and insulated panels. In still other locations Hope's pressed-steel sub-frames hold glass and doors.

Such a building benefits especially from the availability, in Hope's Engineering Department, of a large, trained staff, thoroughly experienced because it is a permanent organization, continuously occupied with the problems of fenestration of important buildings in all architectural styles, traditional and modern. The lasting quality and the satisfaction given by Hope's Windows come also from the skill of experienced craftsmen working with the best materials.

*Write for Bulletin No. 152*

**HOPE'S WINDOWS, INC., Jamestown, N. Y.**

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Glass House Restaurant, Will Rogers Turnpike, Okla.  
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Interior Designer: Fred Schmid & Associates, Los Angeles, Calif.



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- ▲ Finally, Vina-Lux performance is guaranteed by its maker.

*For complete specification data and color chart, consult Sweet's Architectural File or write us.*



**AZROCK FLOOR PRODUCTS DIVISION**  
Specialists in the manufacture of vinyl asbestos tile and asphalt tile flooring  
UVALDE ROCK ASPHALT CO. • 515A FROST BANK BLDG. • SAN ANTONIO, TEXAS



*New*

# *Lightfast*

*Anodic  
Colors*

*for architectural  
aluminum*

*Now—anodic colors  
that are lightfast to  
a degree never before  
possible...*

*achieved by the  
revolutionary new*

## *Kalcolor\**

*architectural  
anodizing process*

*Kalcolor is a new anodic finishing process for architectural aluminum developed and licensed by Kaiser Aluminum. Lightfast colors of classic beauty are produced by the spontaneous response of selected architectural aluminum alloys to the new anodizing process. No dyes are used.*

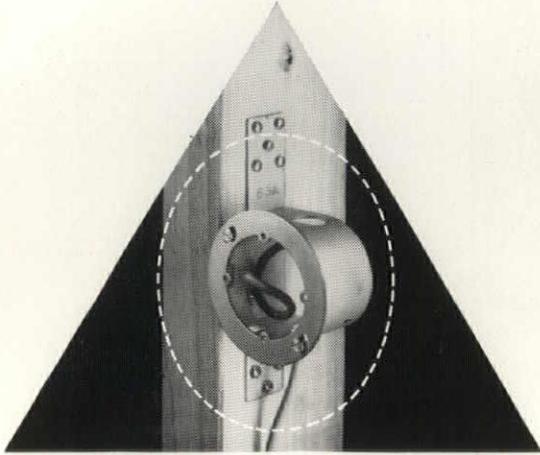
*What the architect conceives ... aluminum achieves!*

\*KALCOLOR is a proprietary name of Kaiser Aluminum & Chemical Corporation for a special anodizing process, the products and materials intended for use therein, and the products produced thereby.

## ***STRATEGICALLY LOCATED***

*telephone outlets add  
a new degree of livability  
to the homes you design.*

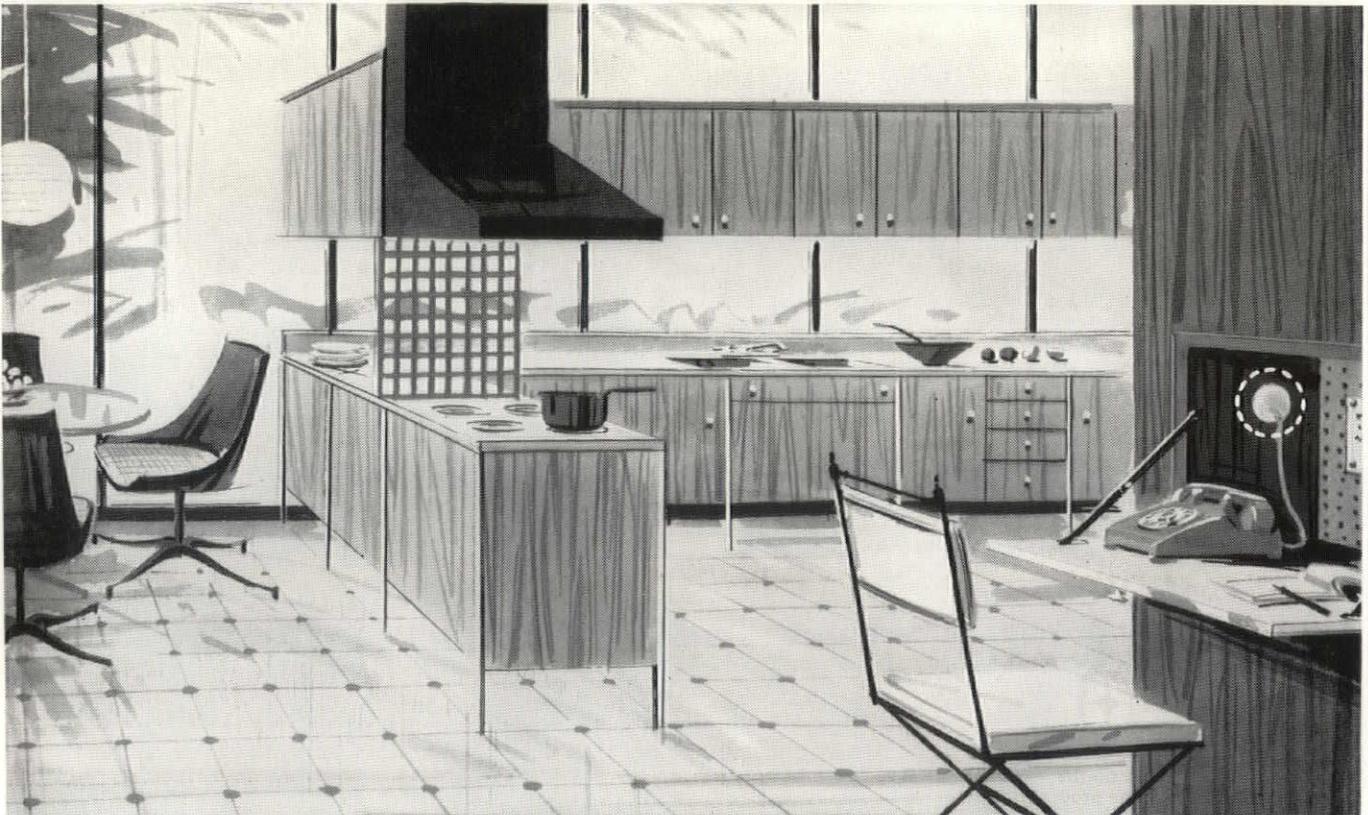
*Wiring is concealed  
within walls, preserving room  
beauty. This is telephone  
planning...modern...  
practical...wanted.*



**Bell Telephone System**



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



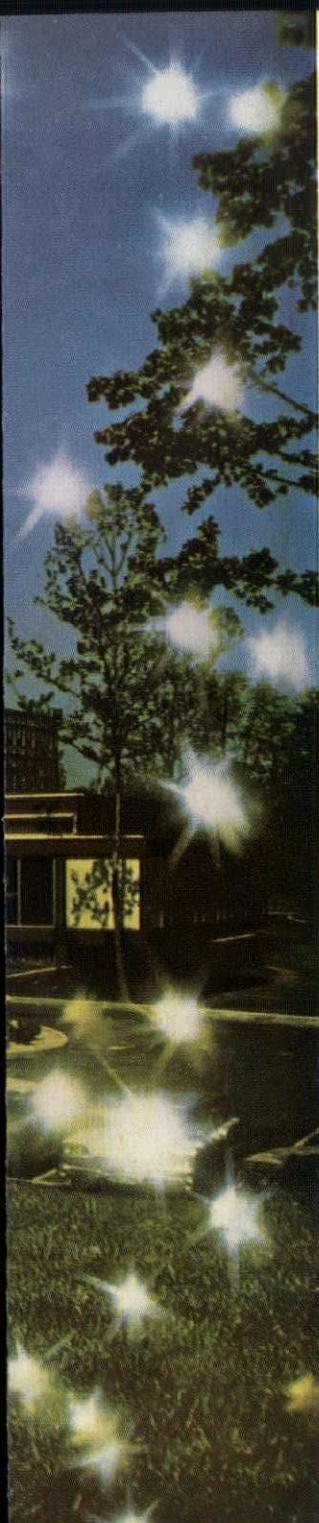


*Color, comfort, security...for GEICO'S Operations Building...through*



## **GLASS BY AMERICAN-SAINTE GOBAIN**

Pictured above: The Government Employees Insurance Company's new office building in Chevy Chase, Maryland. The structure's form was dictated by strict considerations of utility and efficiency. Its unusual distinction comes from the grace and integrity with which these functional requirements have been expressed — in steel, concrete and glass. The building's jewel-like appearance derives in large part from Architect Kling's use of A-SG's topaz plate glass for all fenestration. It contributes a unique blend of virtues: light balance and glare control . . . undistorted color transmission . . . increased privacy . . . subtle architectural color. American-Saint Gobain Corporation.



Vincent G. Kling F.A.I.A.  
 serves function  
 and the amenities  
 by creative use  
 of A-SG glasses

The installations and samples pictured here suggest the variety of ways in which American-Saint Gobain glasses can contribute to your plans. Every important type of flat glass — in the widest range of characteristics, sizes and designs — is available to you from this one source.

For detailed information, see the following Sweet's files: *Architectural*: 7a/Am . . . 16d/Am . . . 3e/Am. *Industrial Construction*: 6a/Am . . . 3b/Am. *Light Construction*: 2e/Am. *Plant Engineering*: 5b/Am.

For other information, call the American-Saint Gobain district office nearest you . . . or write:

AMERICAN-SAINT GOBAIN CORPORATION  
 Dept. AR-40, 625 Madison Ave., N. Y. 22



**NUWELD® MESH.** A-SG's polished, wired glass of modern design is extensively used in the GEICO building. It was specified because of its fire-retarding properties—for enclosures around computer installations and other valuable equipment, and for corridor partitions. Its unobtrusive linear pattern complements the distinctive interior decor.

General Contractor: Turner Construction Company  
 Glazing Contractor: Hires Turner Glass Company



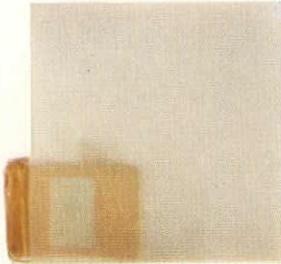
**TOPAZ PLATE GLASS.** Fine, integrally tinted plate was specified for all windows in GEICO's main building. This glazing takes full advantage of the wooded and landscaped site . . . transmits remarkably true color, yet cuts glare appreciably. From the exterior, the topaz tint becomes more apparent, the fenestration more opaque. The effect is rich and pleasing, helps to unify the window areas.



**AKLO®**  
 heat absorbing glass  
 Dissipates most solar heat. Maximum light transmission in portion of the spectrum most restful to the eyes. Resists thermal shock. Many combinations of patterns, finishes, thicknesses.



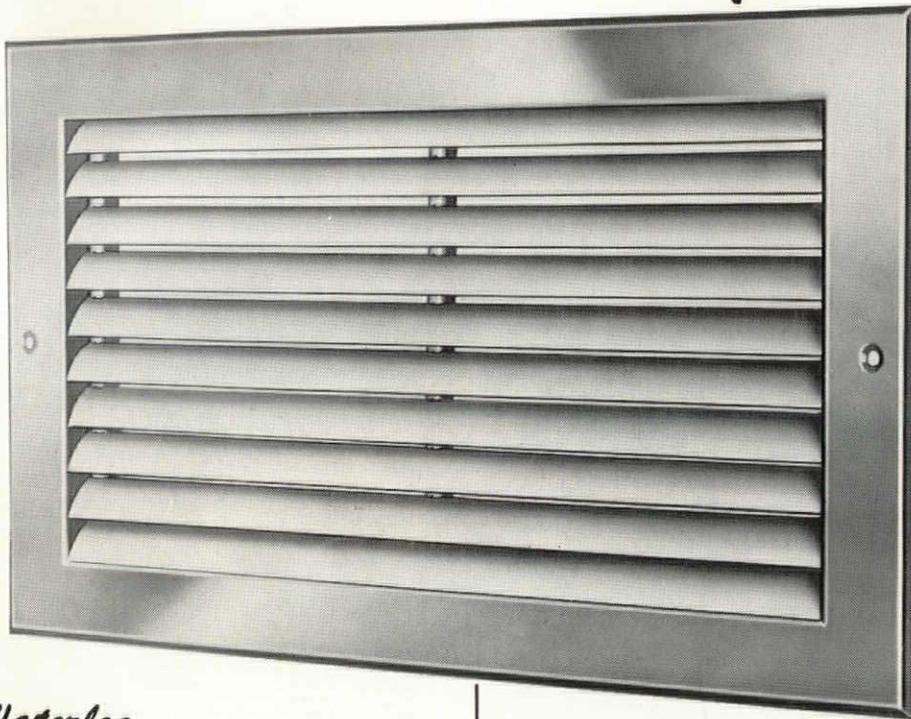
**LUSTRAGRAY®**  
 gray tinted window glass  
 Reduces glare approximately 50% without sacrificing vision. Exterior opacity contributes to privacy. Neutral shade does not restrict decor. Thicknesses: 3/16" . . . 1/4" . . . 3/32" . . . 1/4".



**HUEWHITE®**  
 glare reducing glass  
 For light diffusion with true color transmission. Non-directional surfaces are easy to clean. For day lighting or partitioning. Thicknesses: 1/4" . . . 5/16" . . . 3/8" . . . 1/2" . . . 5/8" . . . 3/4" . . . 7/8" . . . 1" . . . 1 1/8" . . . 1 1/4" . . . 1 1/2" . . . 1 3/4" . . . 2" . . . 2 1/4" . . . 2 1/2" . . . 2 3/4" . . . 3" . . . 3 1/4" . . . 3 1/2" . . . 3 3/4" . . . 4" . . . 4 1/4" . . . 4 1/2" . . . 4 3/4" . . . 5" . . . 5 1/4" . . . 5 1/2" . . . 5 3/4" . . . 6" . . . 6 1/4" . . . 6 1/2" . . . 6 3/4" . . . 7" . . . 7 1/4" . . . 7 1/2" . . . 7 3/4" . . . 8" . . . 8 1/4" . . . 8 1/2" . . . 8 3/4" . . . 9" . . . 9 1/4" . . . 9 1/2" . . . 9 3/4" . . . 10" . . . 10 1/4" . . . 10 1/2" . . . 10 3/4" . . . 11" . . . 11 1/4" . . . 11 1/2" . . . 11 3/4" . . . 12" . . . 12 1/4" . . . 12 1/2" . . . 12 3/4" . . . 13" . . . 13 1/4" . . . 13 1/2" . . . 13 3/4" . . . 14" . . . 14 1/4" . . . 14 1/2" . . . 14 3/4" . . . 15" . . . 15 1/4" . . . 15 1/2" . . . 15 3/4" . . . 16" . . . 16 1/4" . . . 16 1/2" . . . 16 3/4" . . . 17" . . . 17 1/4" . . . 17 1/2" . . . 17 3/4" . . . 18" . . . 18 1/4" . . . 18 1/2" . . . 18 3/4" . . . 19" . . . 19 1/4" . . . 19 1/2" . . . 19 3/4" . . . 20" . . . 20 1/4" . . . 20 1/2" . . . 20 3/4" . . . 21" . . . 21 1/4" . . . 21 1/2" . . . 21 3/4" . . . 22" . . . 22 1/4" . . . 22 1/2" . . . 22 3/4" . . . 23" . . . 23 1/4" . . . 23 1/2" . . . 23 3/4" . . . 24" . . . 24 1/4" . . . 24 1/2" . . . 24 3/4" . . . 25" . . . 25 1/4" . . . 25 1/2" . . . 25 3/4" . . . 26" . . . 26 1/4" . . . 26 1/2" . . . 26 3/4" . . . 27" . . . 27 1/4" . . . 27 1/2" . . . 27 3/4" . . . 28" . . . 28 1/4" . . . 28 1/2" . . . 28 3/4" . . . 29" . . . 29 1/4" . . . 29 1/2" . . . 29 3/4" . . . 30" . . . 30 1/4" . . . 30 1/2" . . . 30 3/4" . . . 31" . . . 31 1/4" . . . 31 1/2" . . . 31 3/4" . . . 32" . . . 32 1/4" . . . 32 1/2" . . . 32 3/4" . . . 33" . . . 33 1/4" . . . 33 1/2" . . . 33 3/4" . . . 34" . . . 34 1/4" . . . 34 1/2" . . . 34 3/4" . . . 35" . . . 35 1/4" . . . 35 1/2" . . . 35 3/4" . . . 36" . . . 36 1/4" . . . 36 1/2" . . . 36 3/4" . . . 37" . . . 37 1/4" . . . 37 1/2" . . . 37 3/4" . . . 38" . . . 38 1/4" . . . 38 1/2" . . . 38 3/4" . . . 39" . . . 39 1/4" . . . 39 1/2" . . . 39 3/4" . . . 40" . . . 40 1/4" . . . 40 1/2" . . . 40 3/4" . . . 41" . . . 41 1/4" . . . 41 1/2" . . . 41 3/4" . . . 42" . . . 42 1/4" . . . 42 1/2" . . . 42 3/4" . . . 43" . . . 43 1/4" . . . 43 1/2" . . . 43 3/4" . . . 44" . . . 44 1/4" . . . 44 1/2" . . . 44 3/4" . . . 45" . . . 45 1/4" . . . 45 1/2" . . . 45 3/4" . . . 46" . . . 46 1/4" . . . 46 1/2" . . . 46 3/4" . . . 47" . . . 47 1/4" . . . 47 1/2" . . . 47 3/4" . . . 48" . . . 48 1/4" . . . 48 1/2" . . . 48 3/4" . . . 49" . . . 49 1/4" . . . 49 1/2" . . . 49 3/4" . . . 50" . . . 50 1/4" . . . 50 1/2" . . . 50 3/4" . . . 51" . . . 51 1/4" . . . 51 1/2" . . . 51 3/4" . . . 52" . . . 52 1/4" . . . 52 1/2" . . . 52 3/4" . . . 53" . . . 53 1/4" . . . 53 1/2" . . . 53 3/4" . . . 54" . . . 54 1/4" . . . 54 1/2" . . . 54 3/4" . . . 55" . . . 55 1/4" . . . 55 1/2" . . . 55 3/4" . . . 56" . . . 56 1/4" . . . 56 1/2" . . . 56 3/4" . . . 57" . . . 57 1/4" . . . 57 1/2" . . . 57 3/4" . . . 58" . . . 58 1/4" . . . 58 1/2" . . . 58 3/4" . . . 59" . . . 59 1/4" . . . 59 1/2" . . . 59 3/4" . . . 60" . . . 60 1/4" . . . 60 1/2" . . . 60 3/4" . . . 61" . . . 61 1/4" . . . 61 1/2" . . . 61 3/4" . . . 62" . . . 62 1/4" . . . 62 1/2" . . . 62 3/4" . . . 63" . . . 63 1/4" . . . 63 1/2" . . . 63 3/4" . . . 64" . . . 64 1/4" . . . 64 1/2" . . . 64 3/4" . . . 65" . . . 65 1/4" . . . 65 1/2" . . . 65 3/4" . . . 66" . . . 66 1/4" . . . 66 1/2" . . . 66 3/4" . . . 67" . . . 67 1/4" . . . 67 1/2" . . . 67 3/4" . . . 68" . . . 68 1/4" . . . 68 1/2" . . . 68 3/4" . . . 69" . . . 69 1/4" . . . 69 1/2" . . . 69 3/4" . . . 70" . . . 70 1/4" . . . 70 1/2" . . . 70 3/4" . . . 71" . . . 71 1/4" . . . 71 1/2" . . . 71 3/4" . . . 72" . . . 72 1/4" . . . 72 1/2" . . . 72 3/4" . . . 73" . . . 73 1/4" . . . 73 1/2" . . . 73 3/4" . . . 74" . . . 74 1/4" . . . 74 1/2" . . . 74 3/4" . . . 75" . . . 75 1/4" . . . 75 1/2" . . . 75 3/4" . . . 76" . . . 76 1/4" . . . 76 1/2" . . . 76 3/4" . . . 77" . . . 77 1/4" . . . 77 1/2" . . . 77 3/4" . . . 78" . . . 78 1/4" . . . 78 1/2" . . . 78 3/4" . . . 79" . . . 79 1/4" . . . 79 1/2" . . . 79 3/4" . . . 80" . . . 80 1/4" . . . 80 1/2" . . . 80 3/4" . . . 81" . . . 81 1/4" . . . 81 1/2" . . . 81 3/4" . . . 82" . . . 82 1/4" . . . 82 1/2" . . . 82 3/4" . . . 83" . . . 83 1/4" . . . 83 1/2" . . . 83 3/4" . . . 84" . . . 84 1/4" . . . 84 1/2" . . . 84 3/4" . . . 85" . . . 85 1/4" . . . 85 1/2" . . . 85 3/4" . . . 86" . . . 86 1/4" . . . 86 1/2" . . . 86 3/4" . . . 87" . . . 87 1/4" . . . 87 1/2" . . . 87 3/4" . . . 88" . . . 88 1/4" . . . 88 1/2" . . . 88 3/4" . . . 89" . . . 89 1/4" . . . 89 1/2" . . . 89 3/4" . . . 90" . . . 90 1/4" . . . 90 1/2" . . . 90 3/4" . . . 91" . . . 91 1/4" . . . 91 1/2" . . . 91 3/4" . . . 92" . . . 92 1/4" . . . 92 1/2" . . . 92 3/4" . . . 93" . . . 93 1/4" . . . 93 1/2" . . . 93 3/4" . . . 94" . . . 94 1/4" . . . 94 1/2" . . . 94 3/4" . . . 95" . . . 95 1/4" . . . 95 1/2" . . . 95 3/4" . . . 96" . . . 96 1/4" . . . 96 1/2" . . . 96 3/4" . . . 97" . . . 97 1/4" . . . 97 1/2" . . . 97 3/4" . . . 98" . . . 98 1/4" . . . 98 1/2" . . . 98 3/4" . . . 99" . . . 99 1/4" . . . 99 1/2" . . . 99 3/4" . . . 100" . . . 100 1/4" . . . 100 1/2" . . . 100 3/4" . . . 101" . . . 101 1/4" . . . 101 1/2" . . . 101 3/4" . . . 102" . . . 102 1/4" . . . 102 1/2" . . . 102 3/4" . . . 103" . . . 103 1/4" . . . 103 1/2" . . . 103 3/4" . . . 104" . . . 104 1/4" . . . 104 1/2" . . . 104 3/4" . . . 105" . . . 105 1/4" . . . 105 1/2" . . . 105 3/4" . . . 106" . . . 106 1/4" . . . 106 1/2" . . . 106 3/4" . . . 107" . . . 107 1/4" . . . 107 1/2" . . . 107 3/4" . . . 108" . . . 108 1/4" . . . 108 1/2" . . . 108 3/4" . . . 109" . . . 109 1/4" . . . 109 1/2" . . . 109 3/4" . . . 110" . . . 110 1/4" . . . 110 1/2" . . . 110 3/4" . . . 111" . . . 111 1/4" . . . 111 1/2" . . . 111 3/4" . . . 112" . . . 112 1/4" . . . 112 1/2" . . . 112 3/4" . . . 113" . . . 113 1/4" . . . 113 1/2" . . . 113 3/4" . . . 114" . . . 114 1/4" . . . 114 1/2" . . . 114 3/4" . . . 115" . . . 115 1/4" . . . 115 1/2" . . . 115 3/4" . . . 116" . . . 116 1/4" . . . 116 1/2" . . . 116 3/4" . . . 117" . . . 117 1/4" . . . 117 1/2" . . . 117 3/4" . . . 118" . . . 118 1/4" . . . 118 1/2" . . . 118 3/4" . . . 119" . . . 119 1/4" . . . 119 1/2" . . . 119 3/4" . . . 120" . . . 120 1/4" . . . 120 1/2" . . . 120 3/4" . . . 121" . . . 121 1/4" . . . 121 1/2" . . . 121 3/4" . . . 122" . . . 122 1/4" . . . 122 1/2" . . . 122 3/4" . . . 123" . . . 123 1/4" . . . 123 1/2" . . . 123 3/4" . . . 124" . . . 124 1/4" . . . 124 1/2" . . . 124 3/4" . . . 125" . . . 125 1/4" . . . 125 1/2" . . . 125 3/4" . . . 126" . . . 126 1/4" . . . 126 1/2" . . . 126 3/4" . . . 127" . . . 127 1/4" . . . 127 1/2" . . . 127 3/4" . . . 128" . . . 128 1/4" . . . 128 1/2" . . . 128 3/4" . . . 129" . . . 129 1/4" . . . 129 1/2" . . . 129 3/4" . . . 130" . . . 130 1/4" . . . 130 1/2" . . . 130 3/4" . . . 131" . . . 131 1/4" . . . 131 1/2" . . . 131 3/4" . . . 132" . . . 132 1/4" . . . 132 1/2" . . . 132 3/4" . . . 133" . . . 133 1/4" . . . 133 1/2" . . . 133 3/4" . . . 134" . . . 134 1/4" . . . 134 1/2" . . . 134 3/4" . . . 135" . . . 135 1/4" . . . 135 1/2" . . . 135 3/4" . . . 136" . . . 136 1/4" . . . 136 1/2" . . . 136 3/4" . . . 137" . . . 137 1/4" . . . 137 1/2" . . . 137 3/4" . . . 138" . . . 138 1/4" . . . 138 1/2" . . . 138 3/4" . . . 139" . . . 139 1/4" . . . 139 1/2" . . . 139 3/4" . . . 140" . . . 140 1/4" . . . 140 1/2" . . . 140 3/4" . . . 141" . . . 141 1/4" . . . 141 1/2" . . . 141 3/4" . . . 142" . . . 142 1/4" . . . 142 1/2" . . . 142 3/4" . . . 143" . . . 143 1/4" . . . 143 1/2" . . . 143 3/4" . . . 144" . . . 144 1/4" . . . 144 1/2" . . . 144 3/4" . . . 145" . . . 145 1/4" . . . 145 1/2" . . . 145 3/4" . . . 146" . . . 146 1/4" . . . 146 1/2" . . . 146 3/4" . . . 147" . . . 147 1/4" . . . 147 1/2" . . . 147 3/4" . . . 148" . . . 148 1/4" . . . 148 1/2" . . . 148 3/4" . . . 149" . . . 149 1/4" . . . 149 1/2" . . . 149 3/4" . . . 150" . . . 150 1/4" . . . 150 1/2" . . . 150 3/4" . . . 151" . . . 151 1/4" . . . 151 1/2" . . . 151 3/4" . . . 152" . . . 152 1/4" . . . 152 1/2" . . . 152 3/4" . . . 153" . . . 153 1/4" . . . 153 1/2" . . . 153 3/4" . . . 154" . . . 154 1/4" . . . 154 1/2" . . . 154 3/4" . . . 155" . . . 155 1/4" . . . 155 1/2" . . . 155 3/4" . . . 156" . . . 156 1/4" . . . 156 1/2" . . . 156 3/4" . . . 157" . . . 157 1/4" . . . 157 1/2" . . . 157 3/4" . . . 158" . . . 158 1/4" . . . 158 1/2" . . . 158 3/4" . . . 159" . . . 159 1/4" . . . 159 1/2" . . . 159 3/4" . . . 160" . . . 160 1/4" . . . 160 1/2" . . . 160 3/4" . . . 161" . . . 161 1/4" . . . 161 1/2" . . . 161 3/4" . . . 162" . . . 162 1/4" . . . 162 1/2" . . . 162 3/4" . . . 163" . . . 163 1/4" . . . 163 1/2" . . . 163 3/4" . . . 164" . . . 164 1/4" . . . 164 1/2" . . . 164 3/4" . . . 165" . . . 165 1/4" . . . 165 1/2" . . . 165 3/4" . . . 166" . . . 166 1/4" . . . 166 1/2" . . . 166 3/4" . . . 167" . . . 167 1/4" . . . 167 1/2" . . . 167 3/4" . . . 168" . . . 168 1/4" . . . 168 1/2" . . . 168 3/4" . . . 169" . . . 169 1/4" . . . 169 1/2" . . . 169 3/4" . . . 170" . . . 170 1/4" . . . 170 1/2" . . . 170 3/4" . . . 171" . . . 171 1/4" . . . 171 1/2" . . . 171 3/4" . . . 172" . . . 172 1/4" . . . 172 1/2" . . . 172 3/4" . . . 173" . . . 173 1/4" . . . 173 1/2" . . . 173 3/4" . . . 174" . . . 174 1/4" . . . 174 1/2" . . . 174 3/4" . . . 175" . . . 175 1/4" . . . 175 1/2" . . . 175 3/4" . . . 176" . . . 176 1/4" . . . 176 1/2" . . . 176 3/4" . . . 177" . . . 177 1/4" . . . 177 1/2" . . . 177 3/4" . . . 178" . . . 178 1/4" . . . 178 1/2" . . . 178 3/4" . . . 179" . . . 179 1/4" . . . 179 1/2" . . . 179 3/4" . . . 180" . . . 180 1/4" . . . 180 1/2" . . . 180 3/4" . . . 181" . . . 181 1/4" . . . 181 1/2" . . . 181 3/4" . . . 182" . . . 182 1/4" . . . 182 1/2" . . . 182 3/4" . . . 183" . . . 183 1/4" . . . 183 1/2" . . . 183 3/4" . . . 184" . . . 184 1/4" . . . 184 1/2" . . . 184 3/4" . . . 185" . . . 185 1/4" . 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# WATERLOO

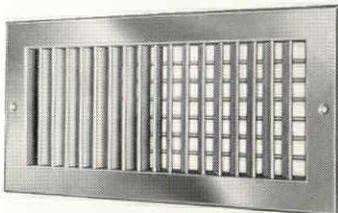
## Return Air Grilles



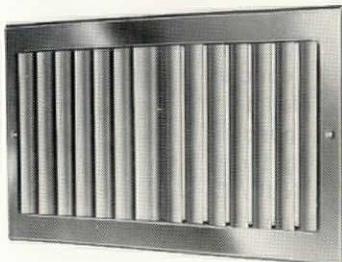
MODEL  
3HD

*Waterloo  
Offers a Complete Line*

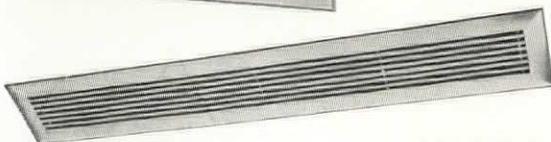
**TYPICAL WATERLOO UNITS:**



WATERLOO  
SUPPLY  
GRILLES  
★  
MODEL  
2V



WATERLOO  
CURVED  
LOUVER  
GRILLES  
★  
MODEL  
1CV2



WR-118  
WATERLOO  
AIRLINE GRILLES  
MODEL AL1

### Rugged Construction Smooth Contoured Fins

Waterloo Series 3 *return air grilles* are ruggedly constructed for commercial installations. The smooth contour of the fin results in a nearly sight-proof grille without decreasing the free area. Where straight deflection is desired, the fins are also hemmed at the edge for added protection. Waterloo *return air grilles* are available with either horizontal or vertical fins.

Series 3 *return air registers* feature the same rugged construction and incorporate the use of the opposed blade damper. This may be snapped on or off the unit and is adjustable from full open to closed for balancing of the air system.

**WATERLOO**  
*Air Diffusion*  
**EQUIPMENT**



*Write for the  
comprehensive  
catalog  
which gives  
complete data.*

**WATERLOO REGISTER COMPANY, INC.**

P.O. BOX 72, WATERLOO, IOWA



Harris BondWood Flooring—Eagle Red Oak, Finished dark

Many combinations of Oak, Maple, Walnut and Cherry are available.

## ADDS HAND-CRAFTED RICHNESS AT NO EXTRA COST

and sometimes at less cost than ordinary parquet

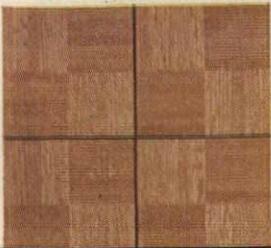
The beauty of Harris BondWood is centuries old — yet the cost of this distinguished hardwood flooring is often *less* than the cost of the common, the usual.

Recreated here is the craftsmanship of the old masters in Harris BondWood — an example of the beautiful geometric patterns in parquet. Sturdy Oak . . . durable Maple . . . fashionable Walnut . . . and distinctive Cherry are easily and perma-

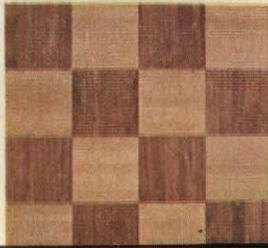
nently installed in adhesive on concrete or wood sub-floor. And the beauty is deep — a lifetime of service — slats are 5/16" of solid hardwood, not tongued and grooved.

Write for booklet illustrating the possibilities. See our catalog in Sweets'. HARRIS MANUFACTURING COMPANY, Dept. AR-80, Johnson City, Tenn. The Finest in Flooring since 1898.

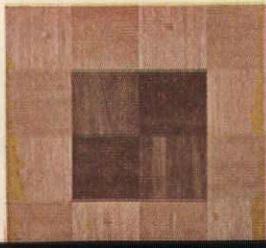
WITH DIVIDER STRIPS



CHECKERBOARD DESIGN



INSETS

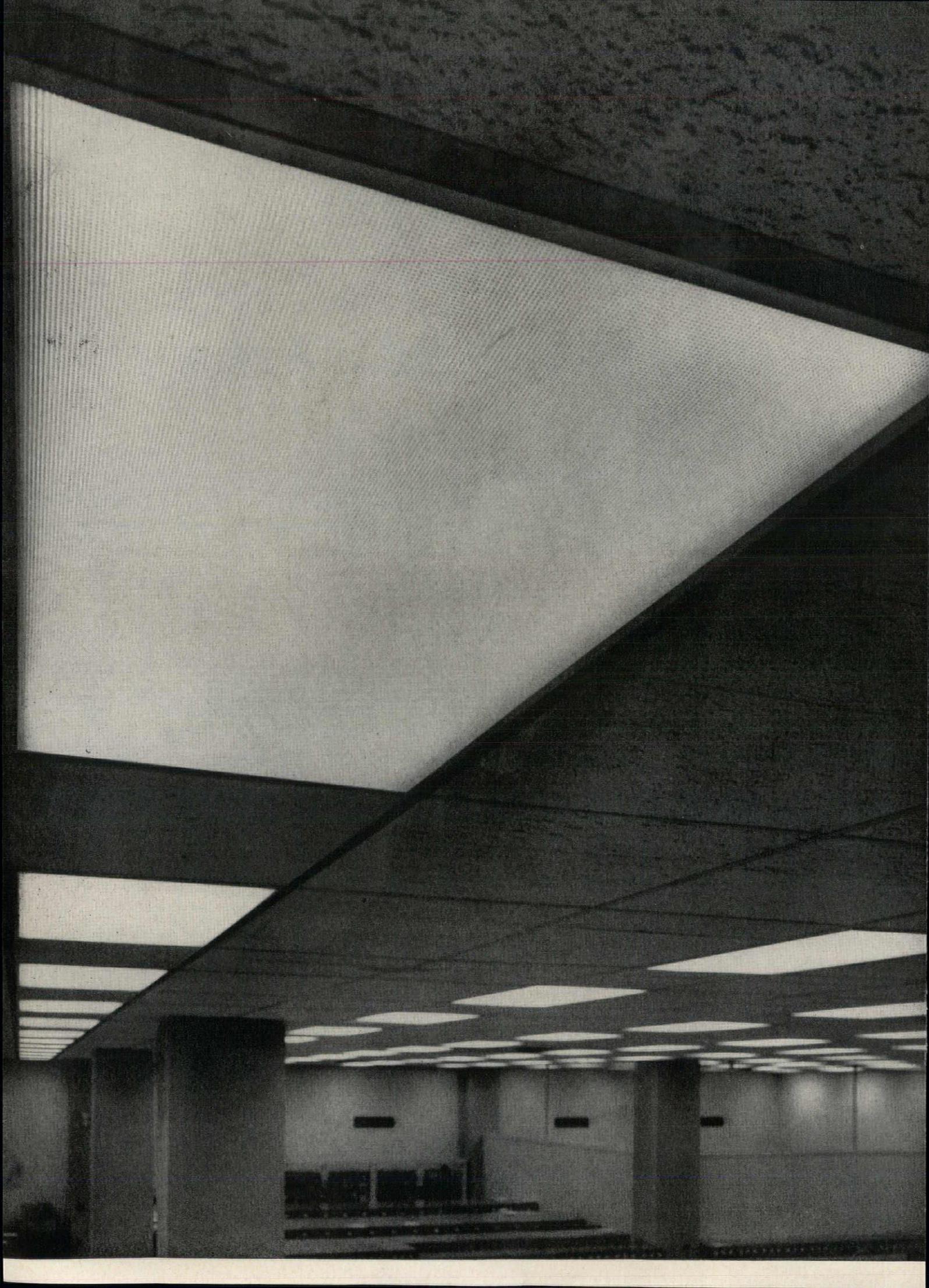


# HARRIS



**BondWood® Hardwood Floors**

*A new concept of flooring beauty*



# “Extensive testing proved that we should specify prismatic shields cast by The Polycast Corporation”

Says Gunnar Anderson, Manager of Newark's beautiful new Mutual Benefit Life Insurance Building: “Achieving the finest and most efficient lighting system possible was so important to the architects, design engineers and electrical contractors that a special ‘mock-up’ room was created. All types, shapes and makes of lighting designs were installed and carefully analyzed. The unanimous selection was to use acrylic prismatic shields\* made from Du Pont's methyl methacrylate monomer and cast by The Polycast Corp. of Stamford, Conn.

“We've had absolutely no problems with any of the more than 3,500 fixtures made from cast acrylic sheet since they were installed in 1957. And we don't anticipate any for a long, long time. These fixtures provide us with virtually glare-proof lighting—soft illumination that gives maximum efficiency to eliminate eyestrain. Also, our maintenance problem is at a minimum with acrylic shields. When the fixtures need cleaning, lukewarm water and mild soap keep them spotless and free from yellowing or streaking. I'd say that this lighting system with acrylic shields has contributed greatly to the beauty of the building.”

It will pay you to find out how Du Pont's customers are using Du Pont methyl methacrylate monomer to produce lighting-fixture shields that will give you outstanding service with a minimum of maintenance. Write to: E. I. du Pont de Nemours & Co. (Inc.), Dept. B-8, Room 2507L, Nemours Building, Wilmington 98, Delaware. In Canada: Du Pont of Canada Limited, P.O. Box 660, Montreal, Que.

\*Polycast acrylic R-14 diamond-pattern shields.

**POLYCHEMICALS DEPARTMENT**



BETTER THINGS FOR BETTER LIVING...THROUGH CHEMISTRY



The Mutual Benefit Life Insurance Building, Newark, N. J., is one of the city's most modern landmarks. (Architects, Eggers & Higgins, New York City; Design Engineers, Syska & Hennessy, New York City; Fixture Manufacturer, Gruber Lighting Inc., Brooklyn, N. Y.; Installation, The Beach Electrical Company, East Orange, N. J.)

### FHA Raises Interest Rates for Nursing Home Construction

The Federal Housing Administration last month raised the permissible mortgage interest rate on insured loans for nursing homes to its 5½ per cent legal ceiling in an attempt to stimulate more interest in financing projects of this type.

The one half per cent increase was needed, said FHA Commissioner Julian H. Zimmerman, to attract

money for the construction of new nursing homes and the rehabilitation of existing structures.

Congress legislated the new mortgage insurance program last year, and FHA implemented it with directives last February. The result was widespread interest in the development of nursing home projects, the agency said, but the 5½ per cent interest rate under which the program was launched proved inadequate to attract sufficient capital.

FHA's field offices have revealed widespread interest in developing nursing home projects, it was reported in Washington. Proposals have been coming in from commercial and medical sources, labor, religious and civic groups.

The larger return allowed July 1 is expected to stimulate many suggested projects that would not have gone forward under the lower rate.

### Center for Nursing Home Research Planned for Washington

A new nursing home research center, said to be the world's first, is scheduled for construction in Washington, D. C.

Known as the International Nursing Home Education, Research and Service Center, it is being planned to include a school to train nursing home administrators and personnel, the most extensive library on care of the aging in existence, a model nursing home, and permanent displays of nursing equipment along with the research facilities.

With Senator John J. Sparkman (D.-Ala.), serving as chairman of its board of advisers, the Center will study and publish materials on all phases of nursing home activities, including statistics.

### Aircraft Noise and Its Control Concern of New Organization

The National Aircraft Noise Abatement Council (at 1145 19th St., N.W., Washington, D. C.) hopes to become eventually a clearing house for information on airport noise control.

Like the Building Research Institute, the N.A.N.A.C. will do no research itself but will encourage studies by industry and other groups in the field of noise abatement, coordinate the work and report it in depth.

Now in its early months of formation, the council is concentrating on aircraft industry research on airplanes. It expects later on to broaden this to include research coordination in allied fields. It will be hesitant to tell owners or architects how they should soundproof their structures, but it certainly can give guidance on sound levels at airport locations and thus assist the designer in criteria needs.

The council was established in  
*continued on page 310*



Aquinas College  
Grand Rapids  
Michigan

Sister M. Angus, O.P.  
Manager, Cafeteria

Architect  
D. A. Bohlen  
Indianapolis



## Aquinas College "delighted" with Van help and equipment

★ When Aquinas College and its architect were confronted with the problem of modernizing the inadequate cafeteria, they made use of Van's experience. They now have efficient food service for 300 at one time . . . could serve 400.

★ The College is "delighted with the new Van equipment" . . . found Van "most helpful in planning cafeteria kitchen and serving counter . . . in keeping down cost."

★ When you have food service equipment needs . . . new, expansion or modernization such as Aquinas College . . . use Van's century of experience.

# The John Van Range Co.

EQUIPMENT FOR THE PREPARATION AND SERVING OF FOOD

Branches in Principal Cities

429 CULVERT STREET

CINCINNATI 2, OHIO



## EGSCO® Metal Wall Panels for structural versatility....

Wall panels are tan Shadowall® with aluminum channel mullions projected from window jambs.

Band of gray Shadowall® is a monitor, set back about 25 feet.

Site: New Transistor Plant, Philco Corporation, Lansdale Division, Lansdale, Pa.

General Contractor: Wallace Engineering & Construction Co., Philadelphia.

EGSCO metal wall panels provide the building designer with maximum selection. Their versatility and adaptability to all types of construction are virtually without limit. Their variety of color and configuration lead to design innovations where used alone, but also are compatible and easily adapted to other wall components of masonry, metal or glass.

EGSCO panels are made of aluminum or steel in contemporary structural colors, of baked-on epoxy enamels scientifically bonded to the metal. Together with their ample insulation, concealed fasteners and structural strength, EGSCO wall panels assure sound construction of enduring appearance.

Modest in material price to begin with, EGSCO panels are designed for a specially developed erection technique that reduces erection man-hours substantially below the norm, further contributing to overall construction economy.

EGSCO erection crews have the experience and know-how to erect any of these metal wall combinations quickly, soundly and at a realistic cost.



For complete specifications on EGSCO products, see Sweet's Files: 3a/Sm, 8b/Sm, 8b/Smi, 2a/Sm, 2c/Sm, or write direct to:

**ELWIN G. SMITH & CO., INC.**

WILLIAMS ST.

PITTSBURGH 2, PA.

Manufacturers of

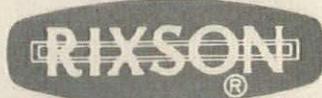


**EGSCO® Metal Wall Products**

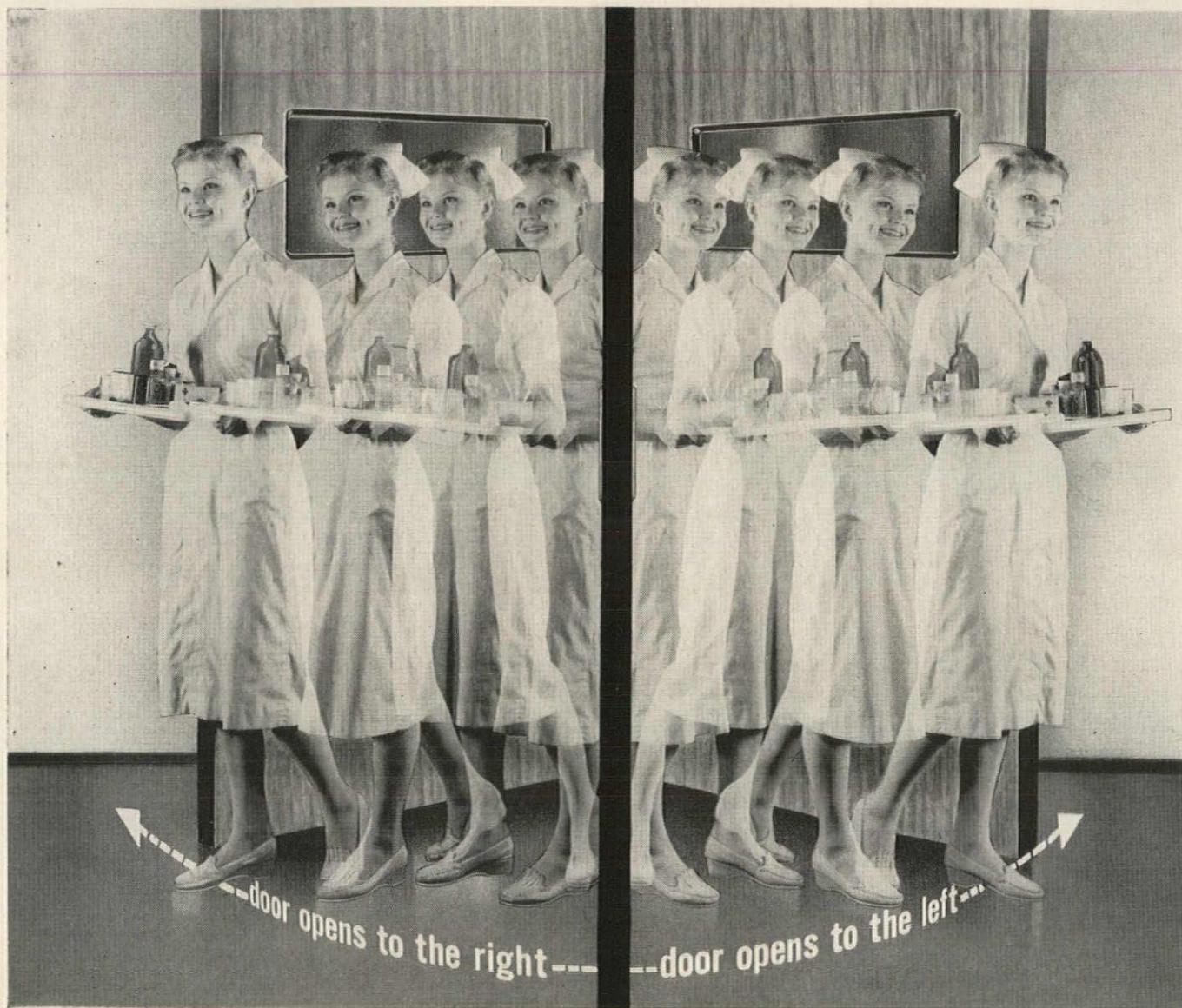
Boston • Chicago • Cleveland • Detroit • New York • Philadelphia • Pittsburgh • Toledo

# TWO-WAY TRAFFIC through ONE INTERIOR DOOR

with

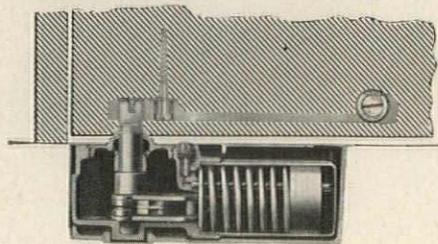


**DUO-CHECK** door closers



## ALWAYS RETURNS

*to exact closed position – gently, quietly without FLIP-FLAP*



Firmly and easily installed in the floor, Duo-checks are completely concealed, have no exposed hinges, arms or mechanisms.

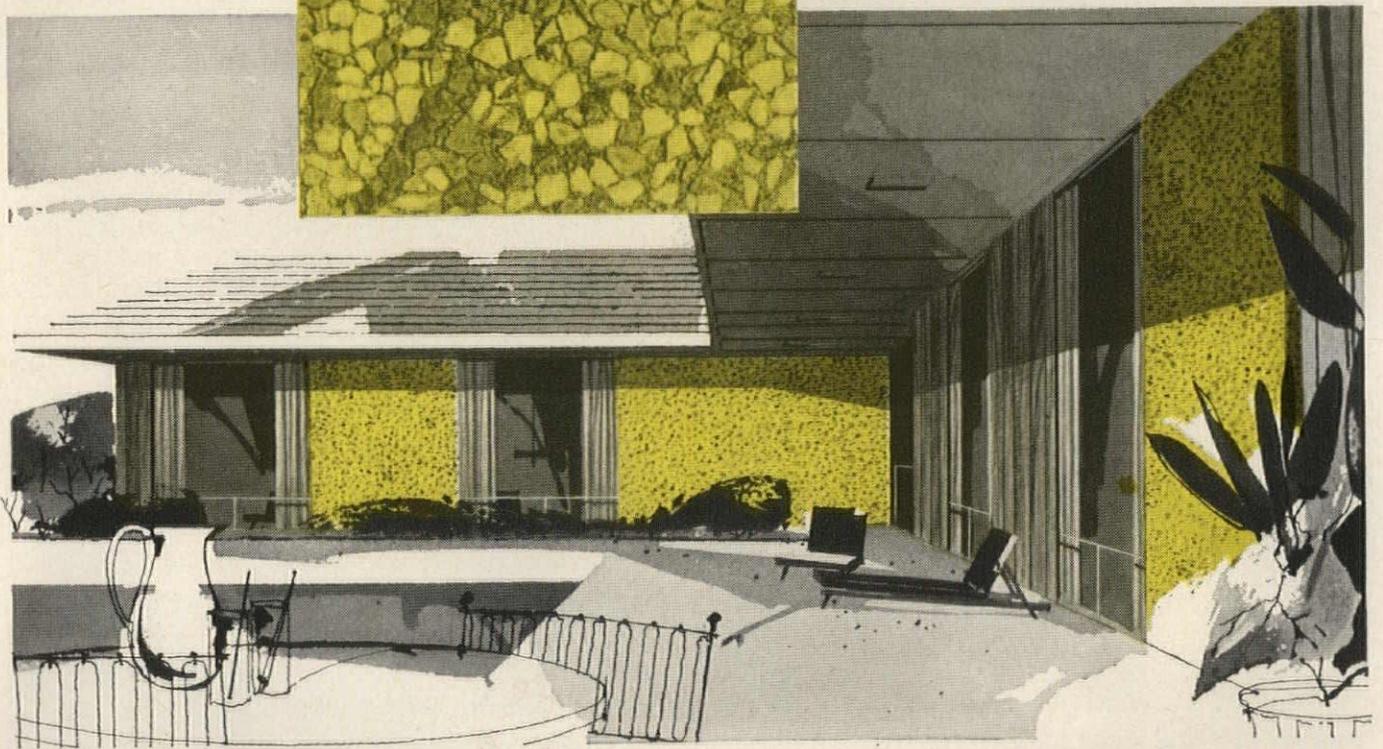
With the spring power always under hydraulic check, a RIXSON Duo-check offers the safest control for a double acting door . . . never a violent opening swing . . . never a violent closing swing. Ideal for doors where persons pass through carrying loaded trays or carts. Widely used on hospital supply or utility room doors and kitchen doors in institutions, restaurants and homes. Available with 90° hold-open to hold door at right or left swing or both.

*For single acting interior doors, RIXSON UNI-CHECKS offer the same desirable features of permanent, concealed installation and Rixson dependable door control.*

See Sweets File 18e/Ri or write for complete details

**THE OSCAR C. RIXSON COMPANY** • 9100 west belmont avenue • franklin park, illinois  
CANADIAN PLANT: 43 racine rd. (rexdale p.o.) toronto, canada

# PATTERNED PANELS OF EXPOSED AGGREGATE...



*fresh dimension in form, color and texture!* For the architect, exposed aggregate panels of precast concrete offer new, unlimited opportunity for giving design distinction to walls. Textures, colors, light-and-shadow effects possible are broad as nature itself—from mottled fist-size rocks to pea pebbles and brilliant mineral chips. And to this, the concrete matrix adds any desired color contrast. Decorative panels of exposed aggregate are just one of many evidences of concrete's infinite versatility and its growing contribution to progress in residential design. This is *living* concrete—material for modern living!

*For the newest in homes . . .*

**LIVING  
CONCRETE**

**PORTLAND CEMENT ASSOCIATION**

*. . . a national organization to improve and extend the uses of concrete*

BE SURE . . . SPECIFY SPEAKMAN®

# EASY PUSH®

water-saver *metering* shower and wash-up fitting

- Self-Closing
- Non-Dripping
- Non-Hammering
- Renewable Operating Units

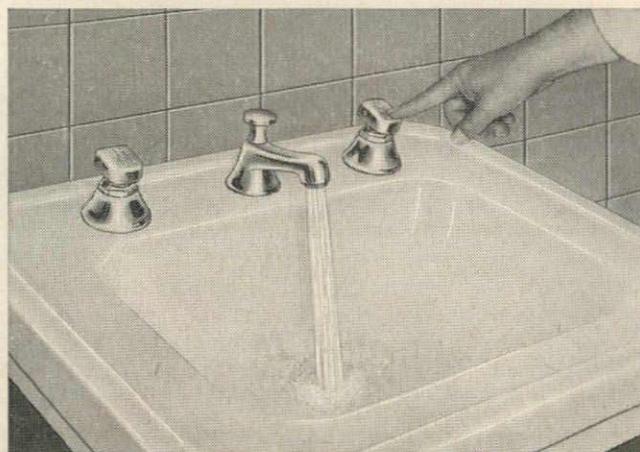
You can specify Speakman EASY-PUSH metering showers and fittings with the confidence that they are especially engineered for water-saving efficiency—designed for modern architecture—made for low maintenance operation. Ideal for schools, institutions, motels, factories, public and semi-public buildings.



Speakman EASY-PUSH Shower S-1185 (Exposed Type)

Built to save water. Meters water accurately and permits bathing in tempered water. Integral stop in valve controls volume. Equipped with Anystream self-cleaning shower head. Vandal proof.

S-1180 (Concealed Type)

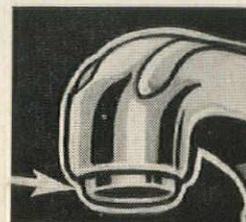


Speakman EASY-PUSH Lavatory Fitting S-4171

Water saver. Self-closing metering combination with VANDL-RATOR® (see below). Permits washing in running tempered water. Volume adjustment which can be regulated after installation. Self-cleaning by-pass. Non-hammering renewable operating unit. Valves will fit any lavatory with standard 1¼ inch diameter openings.

Speakman Concealed VANDL-RATOR®

Built-in aerator with non-splash features for lavatory and sink faucets. Discourages vandalism and malicious removal. Takes special tool to remove.



Investigate these Speakman products for proven performance and functional design



Send for EASY-PUSH folder S-94

**SPEAKMAN COMPANY**  
WILMINGTON 99, DELAWARE



Entrance area in the new Indian Head Elementary School at Kings Park, N.Y. Right Wall:  $\frac{3}{4}$ " Squares in Dark Gray, Light Gray, Buff, Ivory, Yellow and Black. Back Wall: Scored Design SD-1 in 307 Crystal Sunlight. Architect: George J. Dippell ARA, Tile Contractor: R. L. Leonardi, Inc. Color Plate 417.

## New Mounted Tile cuts installation costs!

In installing ceramic tile in these school corridors, as well as in washrooms, American Olean's new back-mounted tile was used exclusively: Master-Set\* glazed wall tile and Perma-Bak\* mesh-mounted ceramic mosaics.

The result—substantial savings in labor costs and in bonding materials over conventional installation methods.

Similar savings have been reported wherever Master-Set and Perma-Bak have been used. These two new products bring new economy to tile installations . . . put the matchless beauty, permanence and easy maintenance of tile within reach of school building budgets.

\*Trademarks

*write for descriptive folders on Perma-Bak and Master-Set.*

CERAMIC TILE  
**American Olean**

AMERICAN OLEAN TILE COMPANY • EXECUTIVE OFFICES: 1511 CANNON AVE., LANSDALE, PA. • FACTORIES: LANSDALE, PA., OLEAN, N. Y., LEWISPORT, KY. • MEMBER: TILE COUNCIL OF AMERICA, PRODUCERS' COUNCIL  
 A SUBSIDIARY OF NATIONAL GYPSUM COMPANY

# 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
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
1958	328.0	315.1	348.6	365.4	357.3	243.9	239.8	255.7	261.9	262.0
1959	342.7	329.0	367.7	386.8	374.1	252.2	247.7	266.1	272.7	273.1
Mar. 1960	348.8	335.1	374.0	391.1	379.7	258.1	252.8	273.1	279.9	279.6
Apr. 1960	348.8	335.1	374.0	391.1	379.7	258.1	252.8	273.1	279.9	279.6
May 1960	348.8	335.1	374.0	391.1	379.7	257.9	252.6	272.8	279.7	279.4
			% increase over 1939					% increase over 1939		
May 1960	182.4	173.8	186.1	193.2	191.8	198.8	204.0	186.8	187.2	195.0

## ST. LOUIS

## SAN FRANCISCO

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
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	273.0	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
1958	297.0	278.9	304.9	318.4	313.8	289.8	274.9	311.5	326.7	320.8
1959	305.4	296.4	315.0	329.8	323.9	299.2	284.4	322.7	338.1	330.1
Mar. 1960	310.5	300.2	320.3	335.1	330.1	304.9	289.4	331.2	346.6	338.7
Apr. 1960	310.5	300.2	320.3	335.1	330.1	304.9	289.4	331.2	346.6	338.7
May 1960	312.5	302.3	323.5	338.6	333.0	308.1	291.2	335.9	353.6	344.3
			% increase over 1939					% increase over 1939		
May 1960	183.6	182.5	172.5	182.6	179.8	191.8	193.2	186.1	190.1	195.5

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.

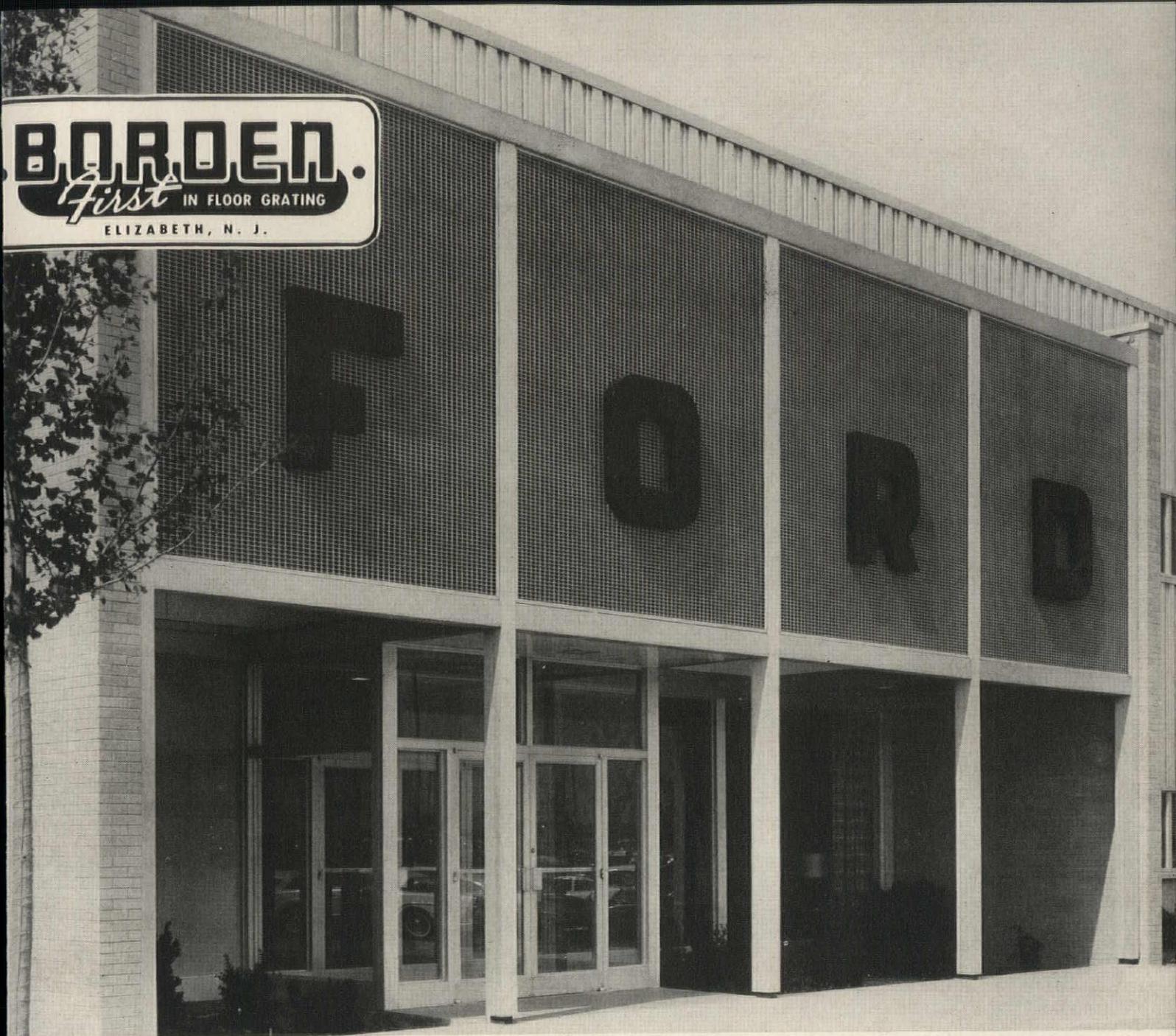
$$\frac{110-95}{95} = 0.158$$

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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# Required Reading

## A Wright Anthology

FRANK LLOYD WRIGHT: WRITINGS AND BUILDINGS. *Selected by Edgar Kaufmann and Ben Raeburn. Published simultaneously by Horizon Press, Inc., 156 Fifth Ave., New York 10 (cloth bound), and Meridian Books, Inc., 12 E. 22nd St., New York 10 (paper bound). 346 pp., illus. Cloth bound: \$3.95; paper bound: \$1.95.*

Even the passionate devotee is without simple access to all the published work of Frank Lloyd Wright. By 1940 the complete collection consisted of eighty-six separate offerings including books, articles and the texts of addresses. The 'forties and 'fifties produced another literary outpouring which culminated in *A Testament* published in 1957. This new collection of the great architect's writings should be an important addition to the libraries of the many who would like such a generous anthology to put on the shelf beside *Frank Lloyd Wright on Architecture*, a collection of writings first published in 1941 and edited by Frederick Gutheim with thoroughness and precision.

Editors Kaufmann and Raeburn are leading authorities on Wright, the former in his capacity as author, critic and one time staff member of the Museum of Modern Art, the latter in his role as editor and publisher of many Wright books. They have carefully selected much that is most important, but instead of arranging the writings chronologically, have fitted them in a chronological framework based on seven major divisions of time with a brief introduction to each. Thus the first time sequence called *Roots*, which covers his early career to 1893, comprises a passage from *A Testament* written and published more than six decades later.

In addition to a generous but badly reproduced selection of drawings and photographs (everybody who has ever peered at a Wright drawing in reproduction knows how badly most of them fare unless they are given a special four-color production, but why need the photographs have been

so dully printed?), the editors have thoughtfully added a map which gives the general location of Wright buildings in the U.S.A., and a list with addresses of his completed works which are still standing. Map and list alone make the book an invaluable source of reference.

—Mildred F. Schmertz.

## Modern Architecture Analyzed

THEORY AND DESIGN IN THE FIRST MACHINE AGE. *By Reyner Banham. The Architectural Press. Distributed by Frederick A. Praeger, Inc., 64 University Place, New York 3. 338 pp., illus. \$12.50.*

The great changes that have occurred in the realm of architecture in recent years have been paralleled by comparable innovations in the field of architectural history. Where the old-style art critic relied principally on his own judgment and experience in assessing works of art, today's art historian makes increasing use of the theoretical and critical writings of the artist and his contemporaries to enlarge his understanding of the context in which the work of art was produced.

Reyner Banham's *Theory and Design in the First Machine Age* is one of the first works to bring the full battery of modern art-historical scholarship to bear upon the history of modern architecture. The result seems to be an effective demolition of the concept of "functionalism"—that is, the idea that the forms of modern architecture arose simply as the inevitable, rational result of the needs of modern building. The relationship that emerges is far more complex than that, and far more intimately connected with the history of nineteenth century architecture than some of the apologists for the modern movement have wanted us to believe.

In fact, some of his conclusions are so unexpected that Mr. Banham is put in the interesting position of having them imperil the premises upon which the book was written. When Mr. Banham suggests that the International Style was little more

than the Berlin style of the late 'twenties, he calls into question the concept of the "mainstream" of modern architecture to which all the material of his study is related. One is then led to ask why Frank Lloyd Wright, for example, should appear only as an influence on the European "mainstream" and not as a theorist of independent stature.

Apparently the concept of the First and the Second Machine Age is presented as the answer to this and other questions raised by this study. Such a concept, however, despite the title of the book, does not seem to be of central importance. Far more important is the establishment of the principle that modern architecture can be subjected to sober and sceptical analysis. Far more important also is the organization and presentation of a mass of material gathered from diverse sources, much of which has until now only been available to a few specialists. As such, this book is a landmark, and will be read with profit for many years to come.

—Jonathan Barnett

## Synergetics Made Easy, Almost

THE DYMAXION WORLD OF BUCKMINSTER FULLER. *By Robert W. Marks. Reinhold Publishing Corp., 430 Park Ave., New York 22. 232 pp., illus. \$12.*

Much of Bucky Fuller's popularity is doubtless due to the picture he evokes as the archetype of American tinkerer-inventors, raised to the level of high science. Though both industry and the military have recently been making much of his geodesic results, not many, apart from highly enthusiastic student groups, have made the effort or had the chance to grasp the mathematical and geometric principles which lie behind these results. The reason for this failure probably is due partly to the difficulty of the principles, partly to the legendary complexity of the Fuller semantics.

Mr. Marks, understandably, has not been able to make "energetic-  
*continued on page 88*



Plate No. 1091

## Beauty that's more than skin deep

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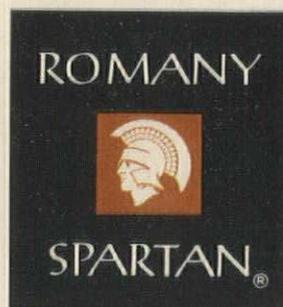


Plate No. 1092



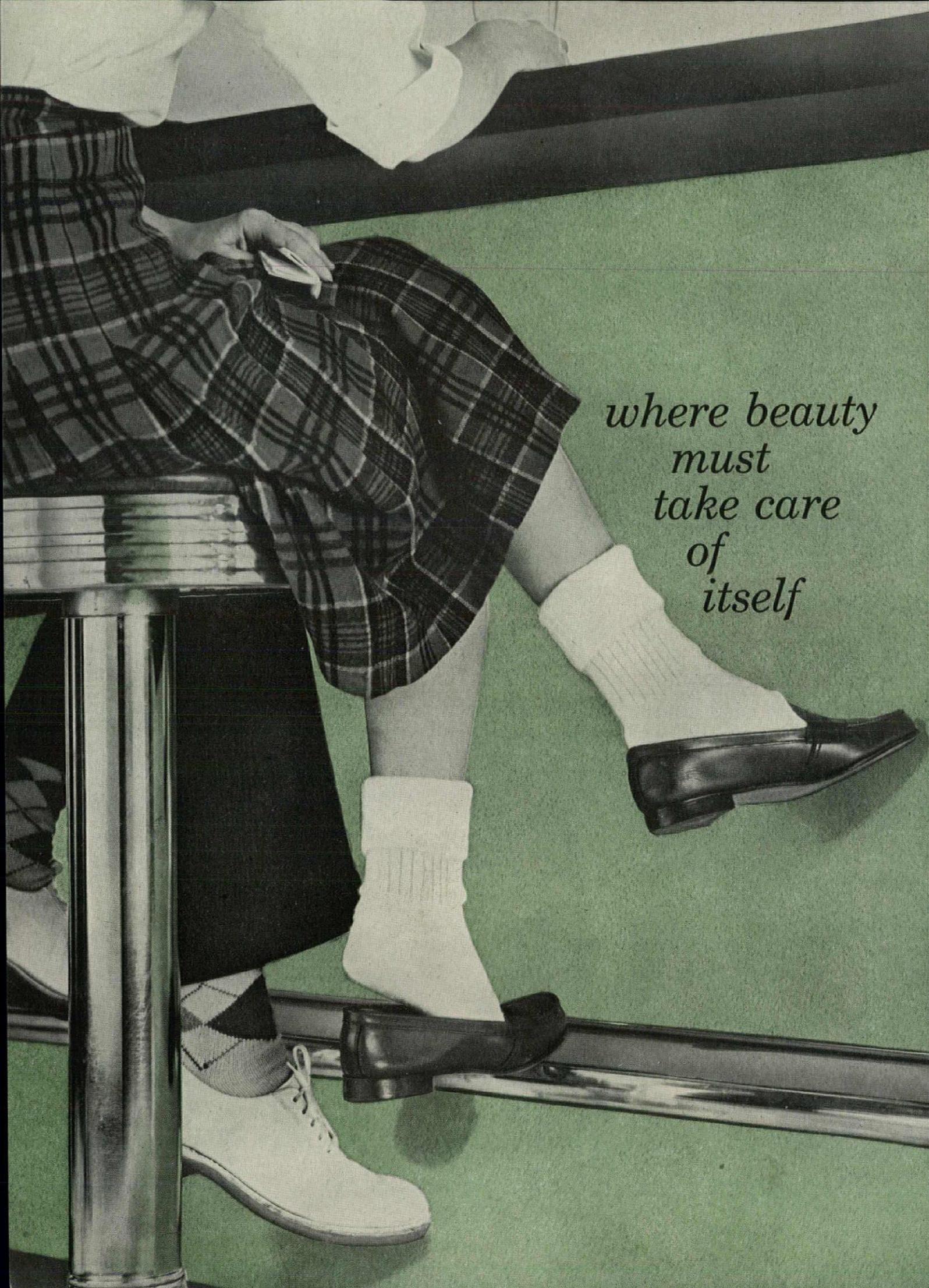
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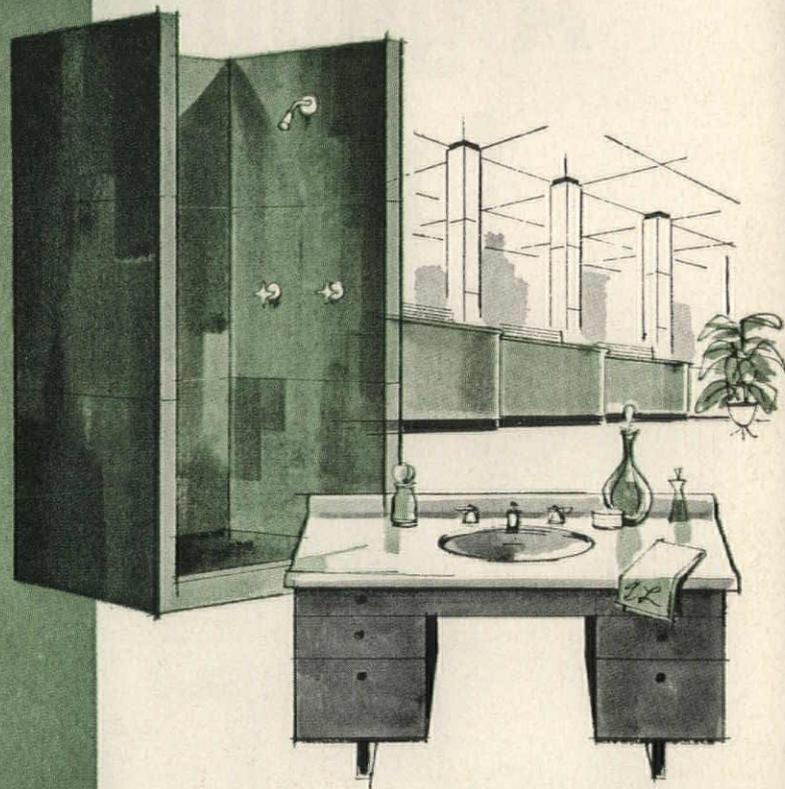
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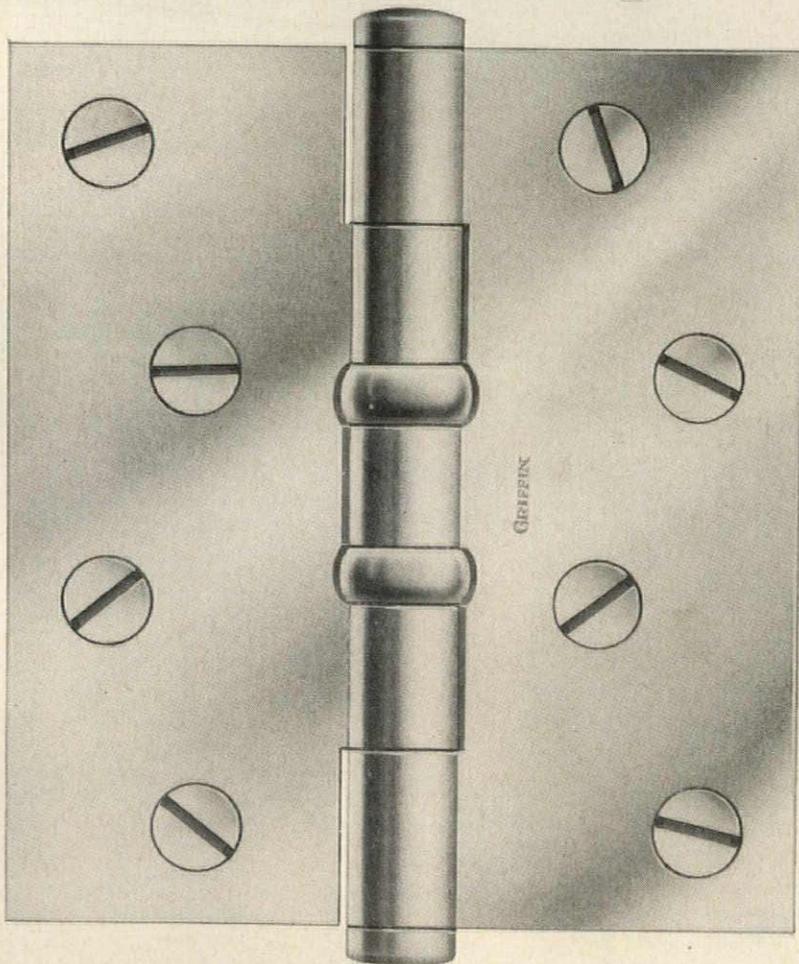
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## Required Reading

continued from page 84

### Synergetics...

synergetic geometry" really simple, but he has succeeded in making the vocabulary comprehensible without losing the Fuller flavor.

The book also contains material on the design problems, and solutions, of many of Fuller's projects and prototype constructions. Extremely generous and detailed captions accompany all the illustrations.

A service has been rendered both to Fuller and to readers.

### The Golden West

**BUILDINGS OF THE BAY AREA.** By John Marshall Woodbridge and Sally Byrne Woodbridge. Grove Press, Inc., 64 University Place, New York 3. Approx. 150 pp., illus. \$1.95.

As its subtitle says, this is "A Guide to the Architecture of the San Francisco Bay Region." It is definitely a working guide for visitors to the city, and not a pretty picture book. Minimal architectural information is given for the buildings included, but the number of buildings is so great that no visiting architect is likely to miss one through absent-mindedness.

### Technical Books

**ELECTRICAL EFFICIENCY IN INDUSTRIAL PLANTS.** By Edwin S. Lincoln. F. W. Dodge Corporation, 119 W. 40th St., New York 18. 235 pp., illus. \$9.50.

A "practical guide" for identifying and dealing with power loss.

**PRIMER OF LAMPS AND LIGHTING.** By Willard Allphin. Chilton Co., Book Division, 56th and Chestnut Sts., Philadelphia 39. 241 pp., illus. \$10.

As the title indicates, a very basic book describing lighting types and characteristics, and computing methods for lighting levels.

**ELEMENTS OF REINFORCED CONCRETE.** By Sylvan P. Stern. Prentice-Hall, Inc., 70 Fifth Ave., New York 11. 444 pp., illus. \$10.60.

A standard engineering text covering design and detailing of concrete structures.

continued on page 346

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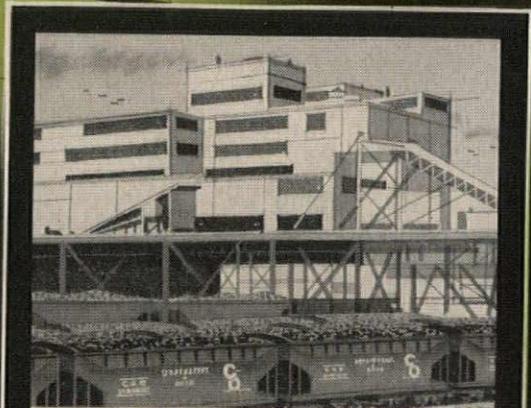
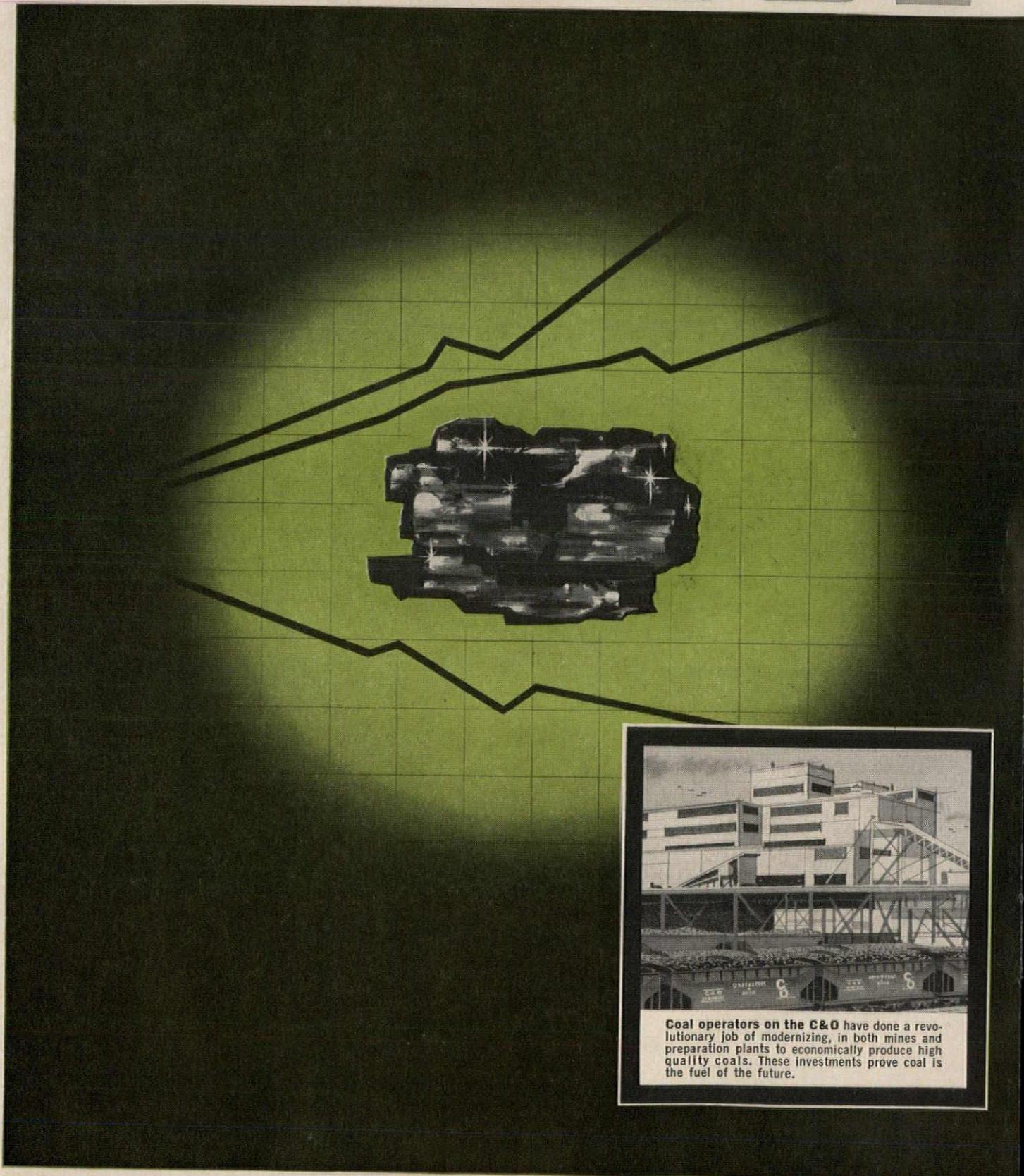


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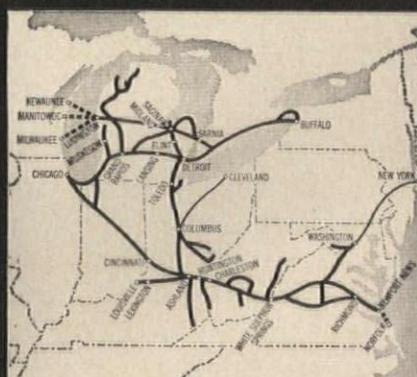
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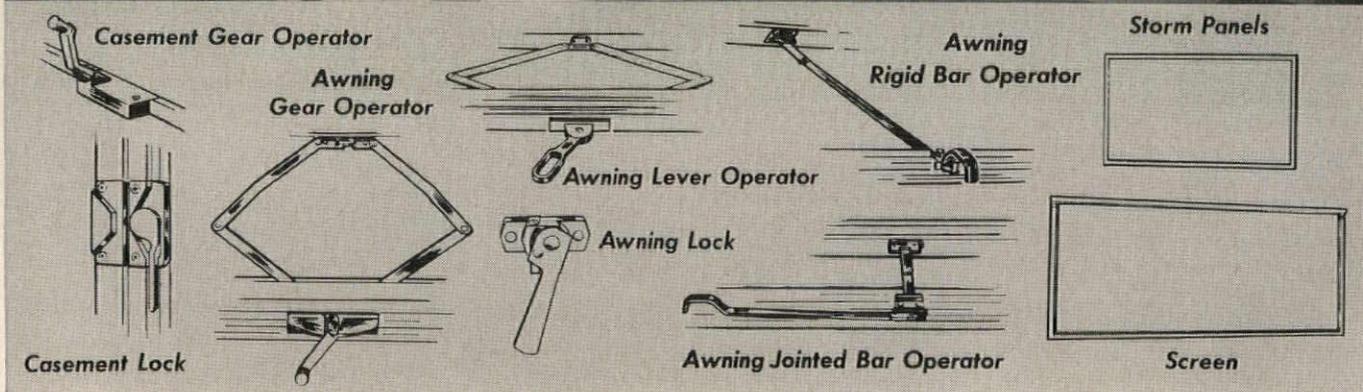
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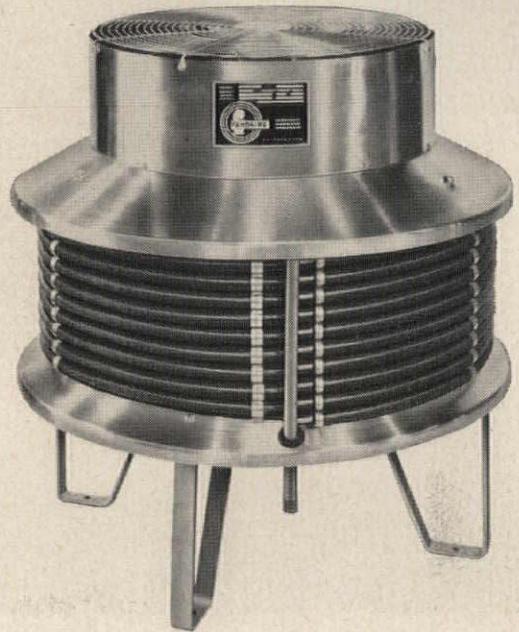
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Coated Fab-Form's red oxide coating shields the base steel from corrosive elements in concrete. Here, on the roof of Looman Associates Office Building in Trenton, N. J., coated Fab-Form was installed by a four-man crew in just one day.

Architect, Kramer, Hirsch & Carchidi; Structural Engineer, Leonard Busch; Contractor, Belli Co.; all of Trenton. On this job, Fab-Form was distributed by American Steel Engineering Co., Philadelphia.

## HOW TO SEE RED—AND LIKE IT

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When a builder gets blood in his eye, you can bet he's scowling at a cost sheet.

But many a contractor, architect and builder is seeing red these days—and liking it.

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They were quick to see these Fab-Form benefits:

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- **Deeper corrugation**—full  $\frac{5}{8}$  inch in high-tensile (90,000-100,000 psi), 27-gage cold-rolled steel.

- **Case in Point**—G&H Steel Service of Drexel Hill, Pa., has laid 200,000 square feet of Fab-Form on two jobs designed for poured floors and roofs over steel joists.

G&H installed about 100,000 square feet of coated Fab-Form in the seven-story Looman Associates Office Building at Trenton, N. J.

Selected over other types of corrosion-resistant, permanent steel forms, coated Fab-Form lengths were engineered to the structural layout. Special 27-foot, 3-inch lengths saved the contractor—Belli Company of Trenton—material, time and installation costs.

Joseph H. De Vido, Belli job superintendent, said:

"Fab-Form's extra-long length and wider width certainly helped to get these floors and roof poured faster. Its protective coating definitely makes a cleaner job. I'm convinced the red oxide finish has better corrosion resistance than other coated sheet material.

"Weather and rough handling don't seem to have any effect on the coating."

- **Easier, Faster**—G&H Foreman Bob Tindall agrees that longer, wider Fab-Form—with fewer end and side laps—"goes down faster" than other steel forms.

Using self-tapping screws to fasten Fab-Form to bar joists, Tindall and



Extra-long lengths of coated Fab-Form, 27 feet, 3 inches, were specially commended by job superintendent on Looman Building job. "Fab-Form's extra-long length and wider width certainly helped to get these floors and roof poured faster," he declared. "I'm convinced the red oxide finish has better corrosion resistance than other coated sheet material."

his three-man crew averaged a day and a half to install each floor on the Looman Building. Installing the obstruction-free roof deck took just a day.

Tindall said installation was easier and faster because Fab-Form's corrugations lined up precisely on end laps. No extra fitting effort was needed.

Fab-Form comes in plain steel, too, for applications where corrosion resistance is not a major factor.

G&H Steel Service first got Fab-Form's benefits when it installed 100,000 square feet of plain Fab-Form for floor and roof of Snellenburgs Department Store's new suburban branch in the Lawrence Park Center near Philadelphia.

• **Time, Material Saved**—Sizes on this engineered Fab-Form layout ranged from standard 12-foot, 3-inch lengths through special lengths up to 19 feet, 9 inches. This gave maximum savings of material with minimum installation time.

As with the Looman Building, Fab-Form was laid over steel joists with self-tapping screws to support a three-inch poured concrete roof and floor. Pittsburgh Steel's welded wire fabric was laid to give the slab reinforcement.

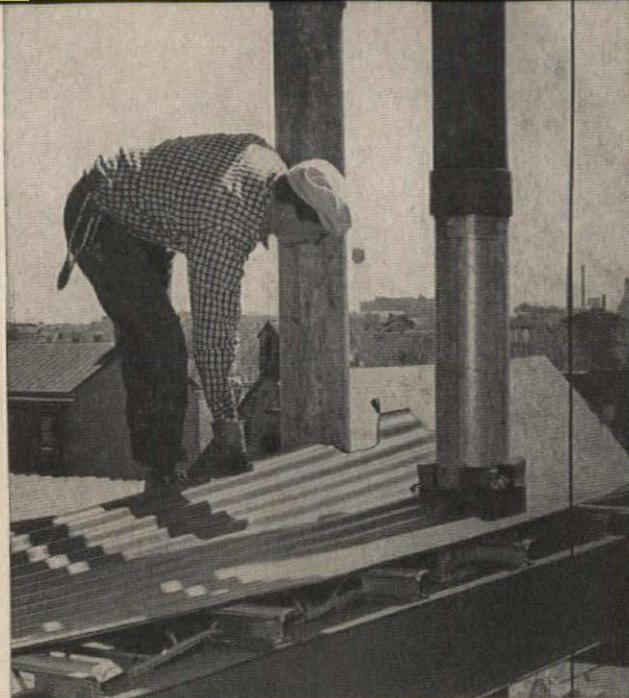
Job Superintendent Smith Harris of G&H Steel Service reported that installation was fast. Work crews had less trouble fitting side laps and matching end laps with Fab-Form

than normally is encountered with other types of steel forms. He said:

"We ordered Fab-Form in lengths engineered to the job. Fab-Form's 32-inch cover width means fewer side laps and its longer lengths, fewer end laps. That adds up to less waste material and speedier installation—which means more money in our pocket."

If you, too, have blood in your eye from studying floor and roof deck costs, look to Pittsburgh Steel's new Fab-Form. Its built-in benefits will go to work for you. Write today for Fab-Form literature that shows how. Or, contact the nearest Pittsburgh Steel Products Division district sales office listed below.

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Precision-manufactured, Fab-Form easily fits around obstructions such as columns and pipes. Installation was easier and faster because corrugations line up precisely on end laps.



Self-tapping screws fasten uncoated Fab-Form sheets at Snellenburgs suburban store near Philadelphia. Architects and Engineers, Thalheimer and Weitz; Contractor, McCullough-Howard & Co., Inc., all of Philadelphia.

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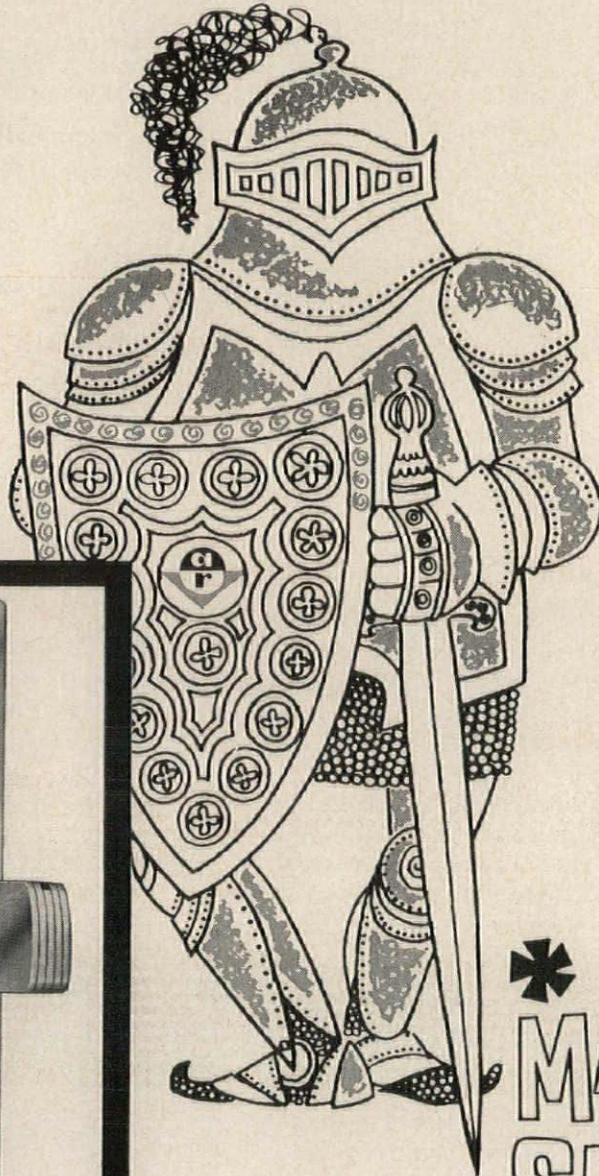
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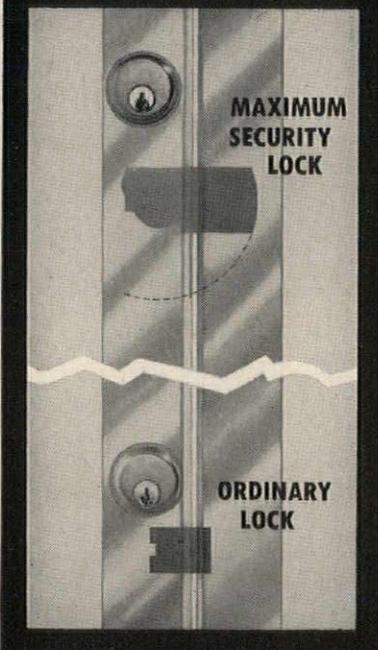
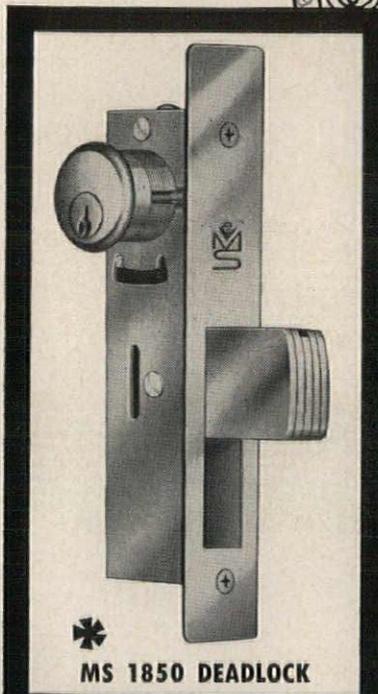
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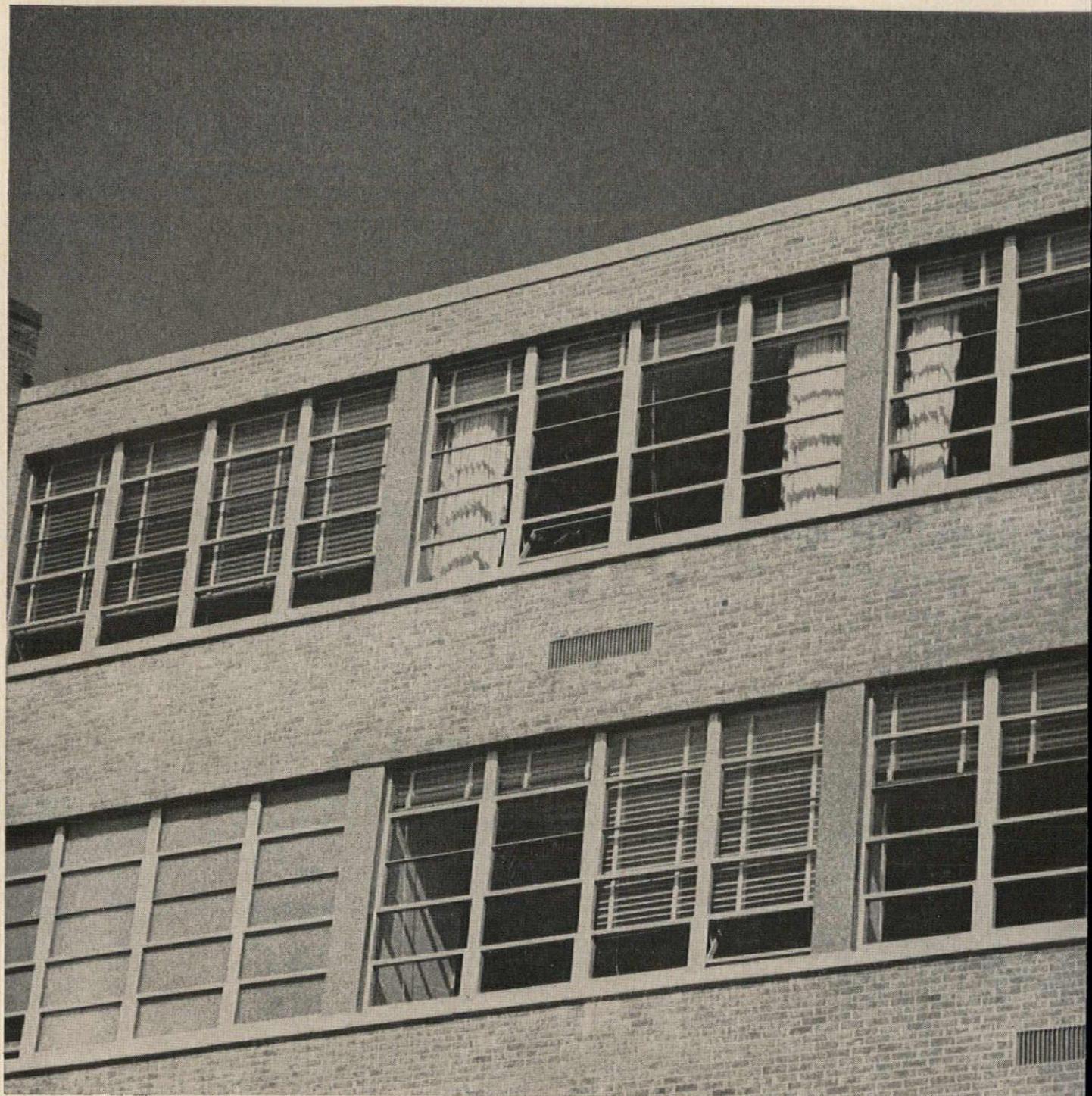
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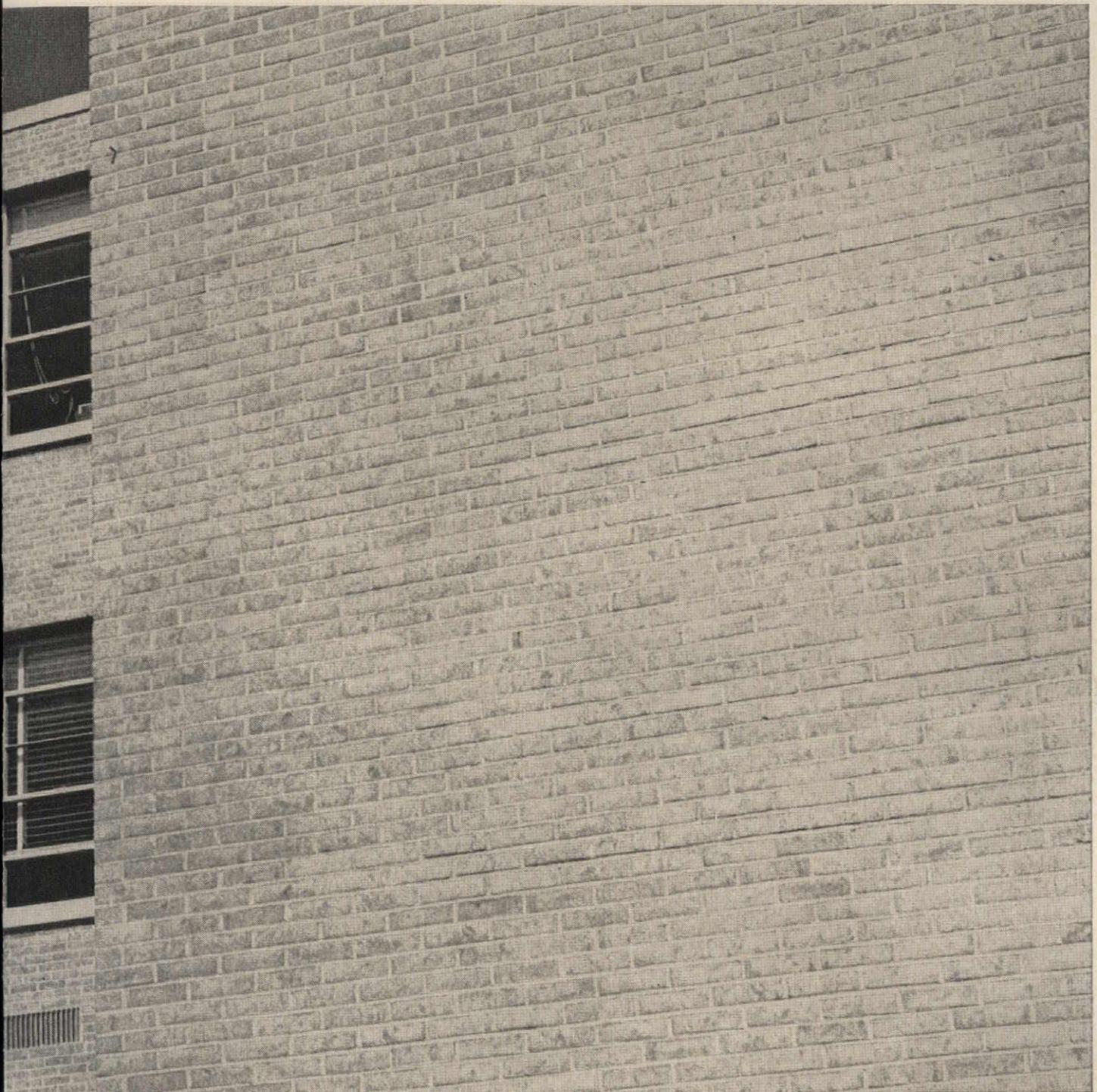


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Schools, private homes, clubs, government buildings, industrial plants... all types and sizes of buildings in Washington... use Lo-BLAST Power Gas Burners for top heating efficiency. With the unbeatable fuel economy of *gas*, operating costs average 10% less than with comparable

burner units. And the original cost is lower, too. Versatile Lo-BLAST burners adapt easily to any boiler or furnace. With their "inshot" design, all components are outside the firebox for easy access. The *gas*-fired burners operate automatically with forced air injection, independently of vari-



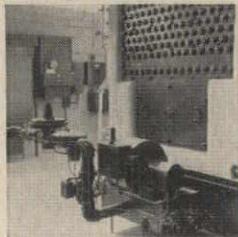
*Burner keeps the entire building comfortably warm, at unusually low cost.*

## managers heat with LO-BLAST GAS burners

able chimney drafts. You get greater combustion efficiency with all the convenience, economy and safety of modern *gas* heating.

Heat for less with *gas*! For information on Lo-BLAST Gas Burners—and their small counterpart, the Econo-

*Economite and Lo-BLAST Power Gas Burners operate silently, cost less to install, are well suited for down-draft boilers, and are available in capacities from 70,000 to 20,000,000 BTU.*



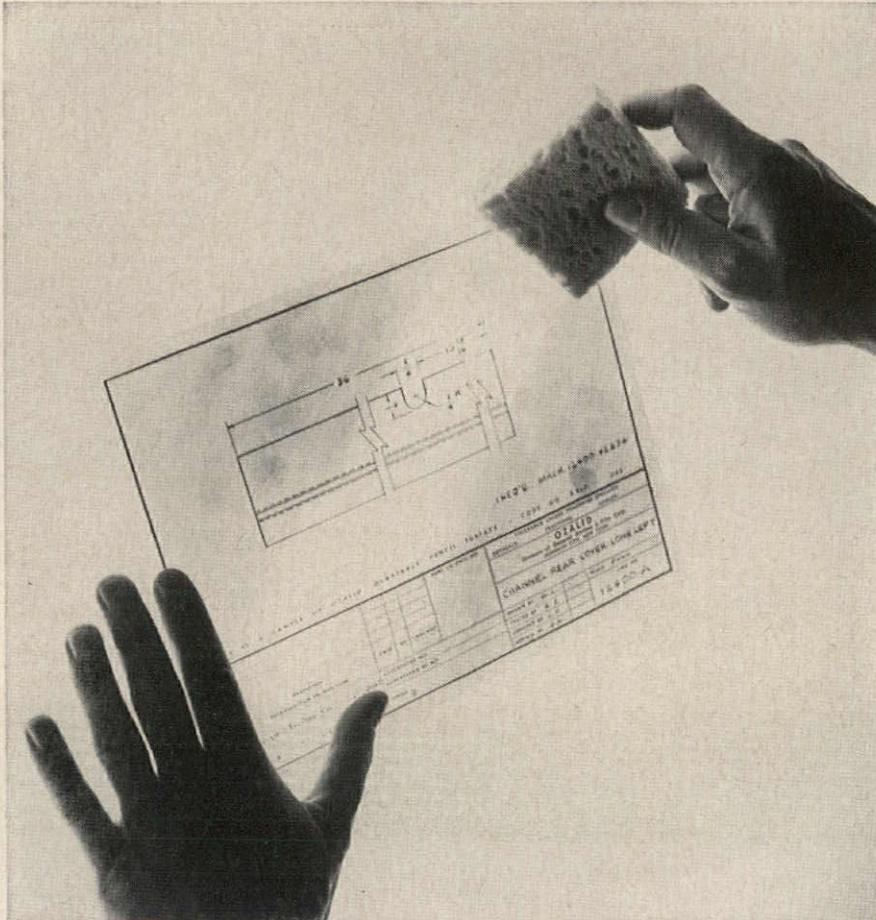
mite—contact your local Gas Company, or write to Mid-Continent Metal Products Company, 1960 North Clybourn Avenue, Chicago 14, Illinois.

*American Gas Association*

**FOR HEATING  GAS IS GOOD BUSINESS!**

# OZALID NEWSLETTER

NEW IDEAS TO HELP YOU WITH ENGINEERING REPRODUCTION AND DRAFTING



A simple sponge with new Duratrace is your quickest way to renew soiled drawings.

## New washable, scrubbable Duratrace® gives you indestructible masters you can sponge new!

If ever there was a drafting film that "is forever," Duratrace is it. New Ozalid Duratrace, when used with modern plastic pencils, can be wiped clean and thereby restored to new condition at the sweep of a sponge. Drawings, originally done in regular pencil or India ink, can also be cleaned, although a bit more care might be necessary.

Just combine this cleanability with

the fact that Duratrace never yellows or ghosts, and you've got a winner that's hard to match on any count. And how about *this?* Duratrace either exceeds or equals any other tracing material as far as dimensional stability is concerned!

Want even more? Just check Duratrace on acceptability of a pencil image! Never has a drafting film equaled New Ozalid Duratrace on

pencil acceptability. But the proof is really in the doing. There are intangibles that exist between a draftsman and his materials that are hard to fully describe. Only your own experience with Duratrace can completely convince you. We think that Duratrace has a certain "feel" that makes it a delight and a joy to work with. Hundreds of draftsmen agree with us. Why not try Duratrace today? Someday, someone might improve on this. Bet we'll be the ones to do it. On every count, doesn't it make sense to try Duratrace?

### If you like 'em stacked for speed...

Just check our Ozalid Streamliner 200 Direct Copy Machine.

Fast? A neat 14 feet per minute. Perfect for medium-sized operations and easy feeding.

Wide? A roomy 42 inches that takes four 8½ x 11 sheets in a row, does them as fast as smaller machines do a single sheet.

And the new close-up controls of the 200 cuts operator fatigue; means anyone can learn to operate it in minutes.

New stacking system cuts work time considerably while the new cooling system means greater comfort for everyone in the office.

But these are just the basic facts of operation. How about versatility? The Streamliner 200 is specifically designed as a double-duty unit equally suitable for both engineering and general office work.

Just invest in one Streamliner 200 and get both an engineering *and* an office unit in one. You get the benefits of engineering speeds and width in your technical work *plus* a super high-efficiency unit for office copying and order invoicing.

One last plug. The Streamliner 200 costs a lot less than you would imagine. It costs less to operate and virtually nothing to maintain. Sold? Just contact your local Ozalid representative for a demonstration.

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NEW  
Sand Flash

one of  
a new line of  
FLASHTILES\*  
by  
**murray**

**Here is a new kind of burnished-buff beauty** that gives floors an interesting shaded effect. Its subtle flashed shading is just right to bring out the full warmth of the underlying color. **Also new Sand Flash**—a new kind of burnished-buff beauty that gives floors a lovely soft-textured visual effect.

**Murray V-Bak® for Uniform Size, Better Installations.** All Murray quarries are ground *after* firing, for more uniform size. Joints as narrow as  $\frac{1}{8}$ " can be specified with Perfected Grade tile. And Murray's exclusive V-Bak design has more bonding area, yet requires less bonding material, than conventional quarry tile.

WRITE FOR complete information about the full line of Murray Quarry Tile.

Sand Flash and Ember Flash are now available in 6" x 6" x  $\frac{1}{2}$ " size. Other sizes on special order.

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100 Melanie Drive, Lewisport, Ky.

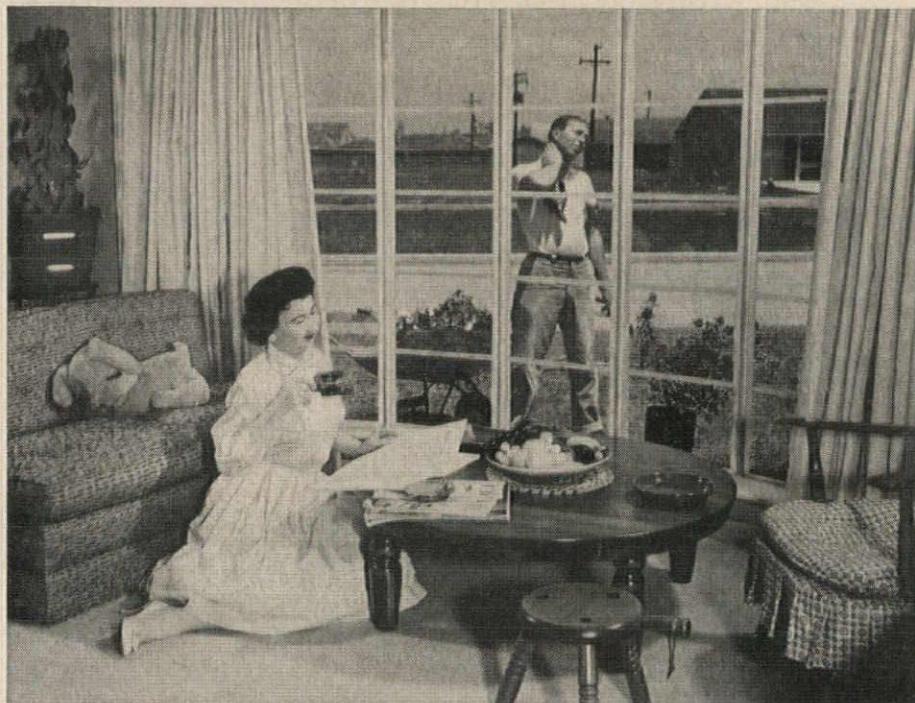
DIVISION OF **American  
Olean**



## Read why builders are

From coast to coast, builders, like the four shown here, are discovering exciting new sales allure in Medallion Homes equipped by General Electric. Here's what makes a Medallion Home: 1. At least four major electric appliances; 2. Eye-saving lighting properly located throughout the

home; 3. Full housepower with wiring planned for all present and future electrical needs; 4. And in addition, Gold Medallion Homes have electric heating. You'll find this foursome adds up to the biggest selling combination since plumbing moved indoors.



### HOUSTON, TEXAS

"Naturally a home like the Steiningers' is easier to sell," says John D. Townshend, the builder of the Don Steiningers' house shown here. "Down here, air conditioning is a must. But when you take a home like this one, with its Weathertron heat pump, you've got a natural. People go for a one unit heating-cooling system like the General Electric Weathertron." Mr. Townshend has found that a Gold Medallion Home simplifies financing, too. "Because they know it isn't about to go out of style, bankers are favorably impressed by these homes."



### ROSLYN, LONG ISLAND

"Women just can't resist a house with a kitchen like this one," says Kalman Klein, builder of more than 7000 Long Island homes. He has found the highest public response to General Electric products. "And once they've moved in, people like Mrs. Simon (shown with her daughter) appreciate the dependability of General Electric equipment. That's why we started using General Electric appliances," he says, "and believe me, that's why we've stayed with them. People just naturally want a name they know and trust."

# building Medallion Homes everywhere



## SANTA ROSA, CALIFORNIA

Lewis Meyers, who began to use General Electric equipment more than six years ago, explains why he continues to build General Electric equipped homes: "It couldn't be simpler," he says. "I stay with them because they're up to date, because they have the best service and because my customers like their reliability." The living room of Dr. and Mrs. Walter Weber shown here is part of a model home built by Mr. Meyers to illustrate light for living. "It was so successful," he says, "I'm starting another model home next week."



## DELMONT, PENNSYLVANIA

The warm comfort of General Electric ceiling heat is illustrated here by the family of Mr. and Mrs. Adam Ardisson. Louis Meneghin, who built the Ardissons' Gold Medallion Home almost two years ago is presently building several more in the Delmont, Pennsylvania region. "I see it as the coming thing all over the country," he says. "More people are becoming more aware of electric heating every day. I expect to build a lot more Gold Medallion Homes around here. And one thing, for sure . . . they'll be equipped by General Electric."

For your copy of "Design and Installation Manual," Pub. No. 49-512 (AIA file no. 30-C-44) write: The General Electric Company, Electric Comfort Heating Section, Appliance Park, Louisville 1, Kentucky.

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. . . sure safe operation.

They're all yours in the Von Duprin 66, the exit device that introduced the industry to the practical beauty of stainless steel.

Available in rim, mortise lock and vertical rod models (in bronze as well as stainless steel) with a smart new series of matching outside trims.

Write for your copy of Bulletin 581 . . . full details on construction, function and accessory items.

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# STRAN-STEEL simplicity means speed and savings

A \$4,000,000 multiple-dwelling project in Memphis, Tennessee, proves the advantages that can be yours with Stran-Steel lightweight steel framing.

- Easy on-site assembly and hand construction eliminates need for crane rental, speeds job completion.
- Field sub-assembly brings factory economies to the job site.
- Practical Stran-Steel nailable floor joists were installed without cutting or detailed shop drawings. Joists for 90' buildings were installed in one day.
- Corrugated steel deck was nailed directly to joists in less than half the time—and cost—of welding.
- Sub-assembly of wall sections permitted the raising by hand and plumbing of second-story walls for 90' building in just 90 minutes.
- Strong lightweight trusses were raised manually and welded in place—one every five minutes.

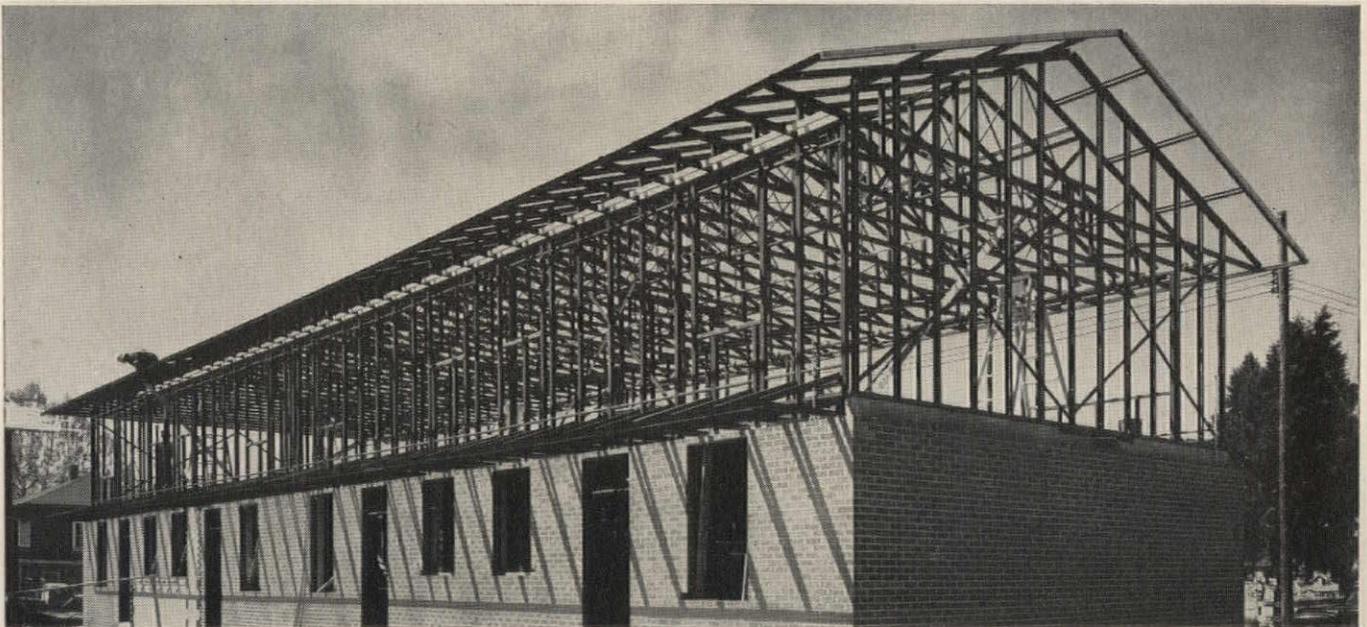
Want production building economies like these? They're yours in noncombustible Stran-Steel structural components. Easily adaptable to your own requirements, they'll save you time and material. Your Stran-Steel dealer, a light steel specialist, will give you personal service and on-the-spot delivery. Get specifications on the complete line of Stran-Steel architectural products. Mail the coupon or phone the Stran-Steel Architectural Products dealer near you. He's listed in the Yellow Pages under Steel.



Eason, Anthony, McKinnie & Cox designed 31 Memphis project apartment buildings with Stran-Steel components. Sidewalls and trusses were assembled on wood jigs near building sites.



Every five minutes, workers lifted 31' trusses weighing only 140 pounds into place—including welding to the top channel of the load-bearing wall.



Perfect alignment of trusses shows straight roof eave. No shims were used. Hood houses lead pipes for radiantly heated floor. All steel in this 90' building was erected in three days.

Stran-Steel Corporation, Dept. AR-8, Detroit 29, Michigan

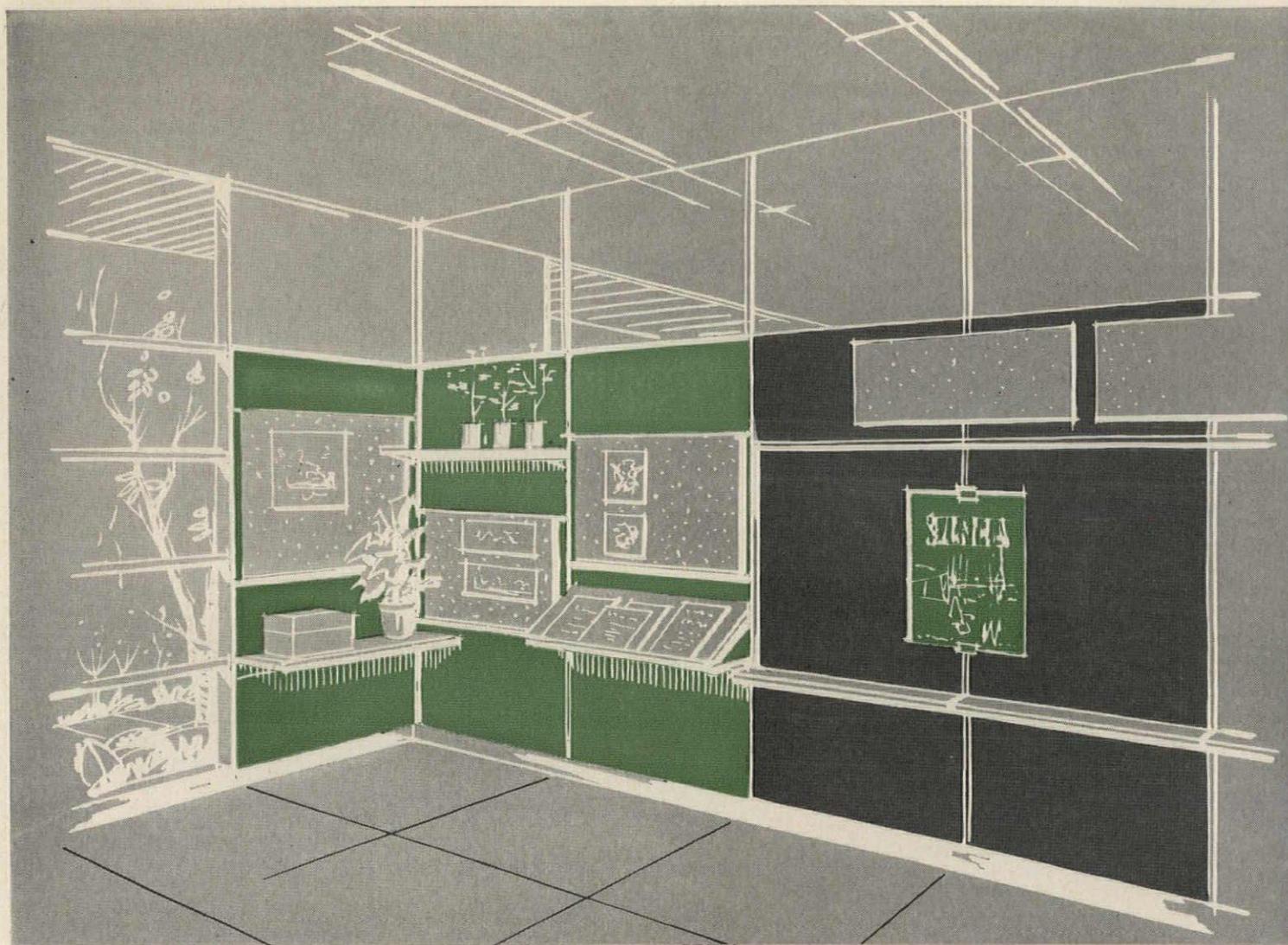
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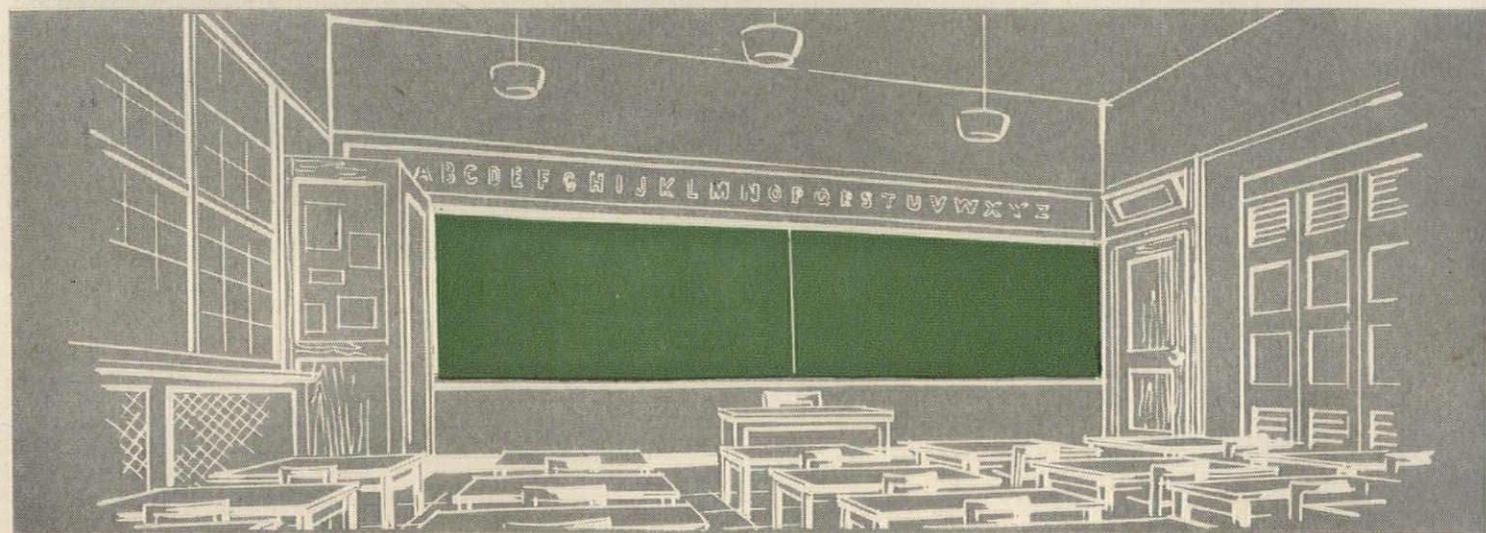


STRAN-STEEL IS A DIVISION OF NATIONAL STEEL CORPORATION

# Exciting new directions in classroom design



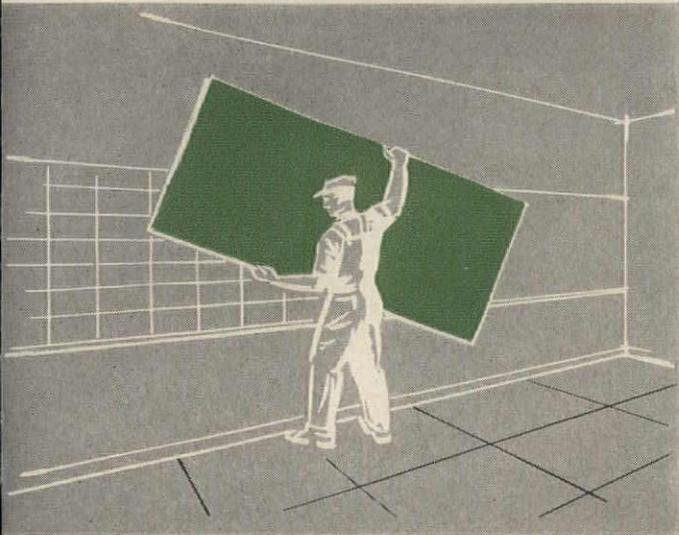
COLORLITH CHALKBOARD AS DUAL-PURPOSE CLASSROOM PARTITION



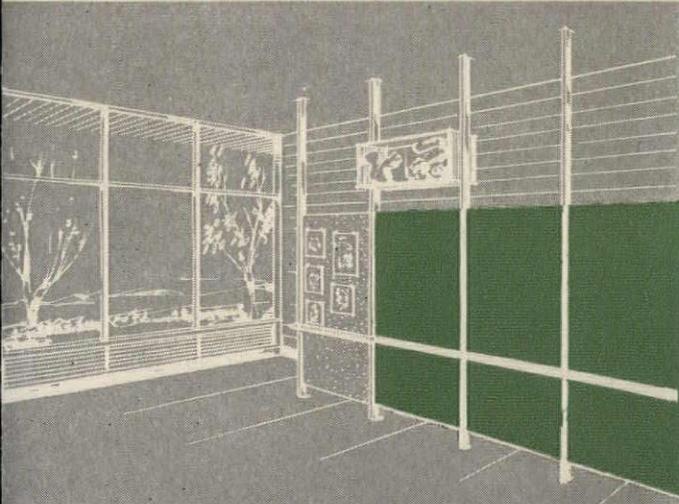
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now possible with

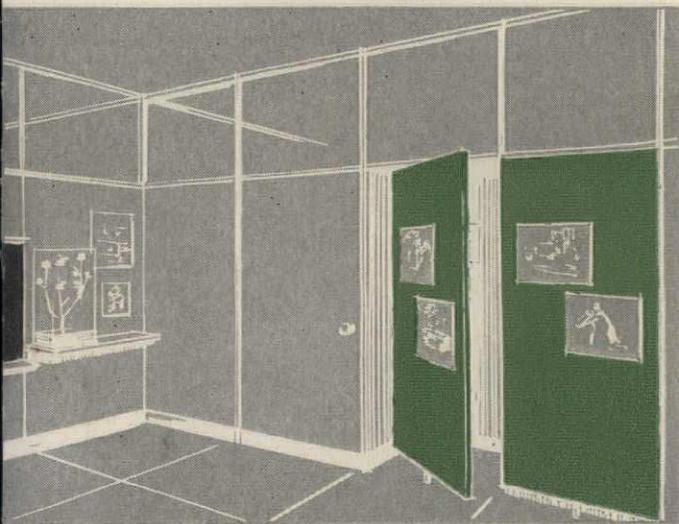
# J-M COLORLITH® CHALKBOARD!



LARGE, INTEGRALLY-COLORED SHEETS



AS CURTAIN PANEL WARDROBE



AS WARDROBE DOORS

*At last...an ideal writing surface that offers structural strength and decorative appeal!*

Let imagination be your guide in finding exciting new uses for versatile J-M Colorlith Chalkboard! The integral color and structural strength of this unusual asbestos-cement material make possible such novel constructions as partitions...doors...wardrobe panels...movable storage units...convertible and easel-reversible units. Yet it costs less than other quality boards!

Colorlith is available in three eye-pleasing colors: Cyprus Green, Cameo Brown and Charcoal Gray. Panels in Projection White are also available for use as a screen for slides and films. The 4' x 8' panels are light in weight, easy to handle and install.

Colorlith affords good "tooth" without "drag." Chalk glides smoothly over the surface in a full, unbroken line of greater intensity. Colorlith chalkboards are easy to clean. Their clear, dark background permits erasure without "ghosting," requires no "chalking-in."

A few of the exciting new classroom uses for Colorlith are shown in a new brochure, "New Directions In Chalkboards," which is yours for the asking. Detailed schematics show how Colorlith can be installed with or without trim, using tack-board and snap-on chalk trays. You will find this brochure an exciting take-off point in discovering the advantages of J-M Colorlith—the most versatile chalkboard material you've ever seen!

## JOHNS-MANVILLE



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Please send me J-M brochure IN-295A,  
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*the palace that*  
*replaced "the barn"*

The people of New Orleans opened a new era at Moisant International Airport when they replaced out-grown terminal buildings with this handsome new structure. The strikingly modern architecture faithfully reflects the new spirit of the city and the carefully chosen colors convey the gracious welcome for which New Orleans is famous. We are proud that hundreds of gallons of Devoe paints were used to decorate and protect this beautiful building.

Devoe architect representatives will be glad to assist you in the specification of the proper paints and painting procedures and will provide you with color schedules you may submit to your clients. Whether you are designing commercial, residential or institutional buildings, our recommendations, you will find, are appropriate to the function of the structure. Just write to Devoe Color Consultant Service, Devoe & Raynolds Company, Inc., Louisville, Kentucky.



**FREE** a paint reference guide for every surface job! Plus special color guides for practically every type of building. Write today for your copy.

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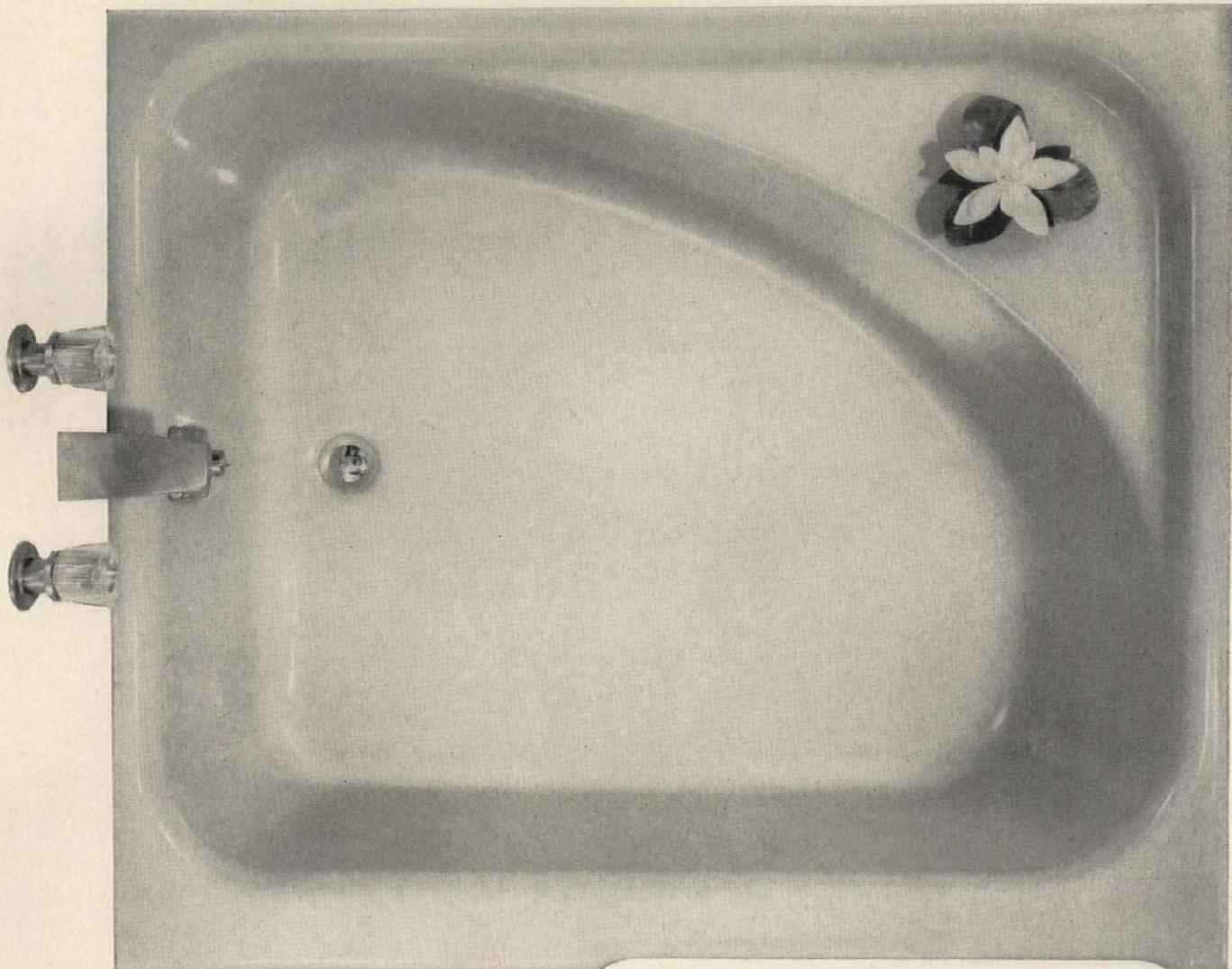
# DEVOE

**DEVOE & RAYNOLDS COMPANY, INC.**

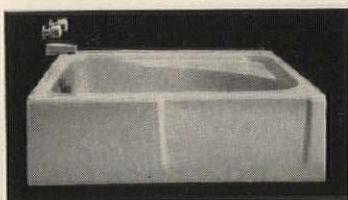
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Clean, modern styling. 48" long, 42" wide, 14" high. Six pastel colors and snowy white.



Straight apron floor line minimizes tile cutting and installation costs—back and ends flanged for wall tiling.

Distinctive beauty—generous bathing area—integral corner seat and wide rim seat . . . these are just some of the *preferred* features found in the new *Delray* square recess bath by Eljer. Nationally advertised to help *presell* your customers, the new *Delray* is currently featured in full-page, four-color ads in *House Beautiful* and *Living for Young Homemakers* magazines.

**ELJER**  
Division of The Murray Corporation of America

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*Estate de luxe* siphon jet toilet is styled and color-matched to complement other fine Eljer Fixtures.

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# Frame it with steel to keep work

Other trades can move in quickly when you build with steel. Fabricated in the shop, structural steel arrives at the site *ready to go into place*. No expensive, time-wasting extra field operations. No form work. No new skills during construction.

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Your structural steel fabricator can get you all the structural steel shapes you need. And fabricate them just the way you need them. Let him show you what he can do. You'll be glad you did.

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Export Distributor: Bethlehem Steel Export Corporation

## BETHLEHEM STEEL



moving



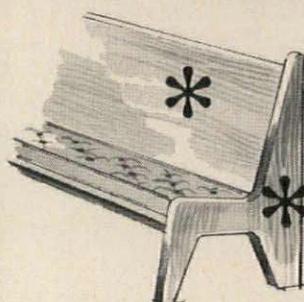
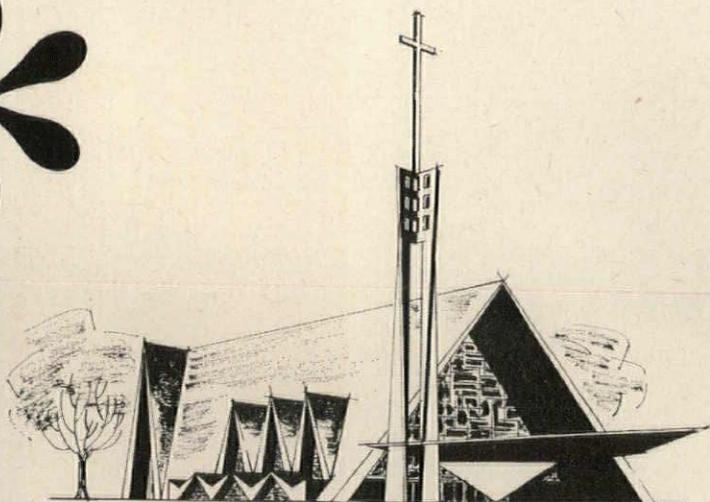
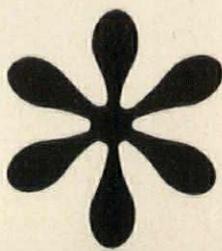
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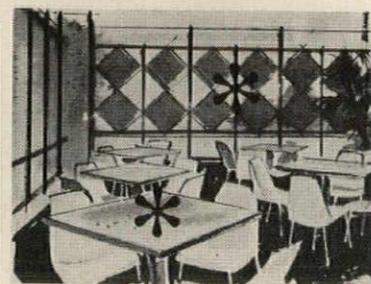


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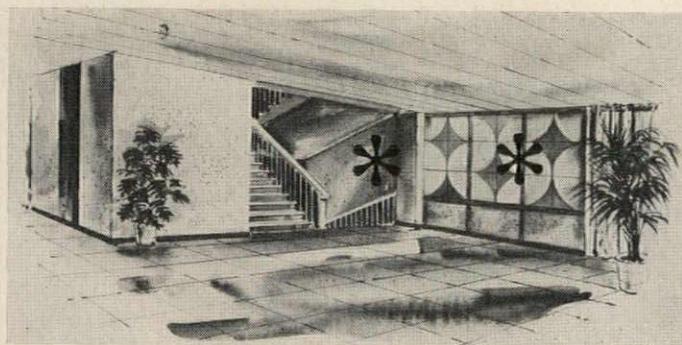
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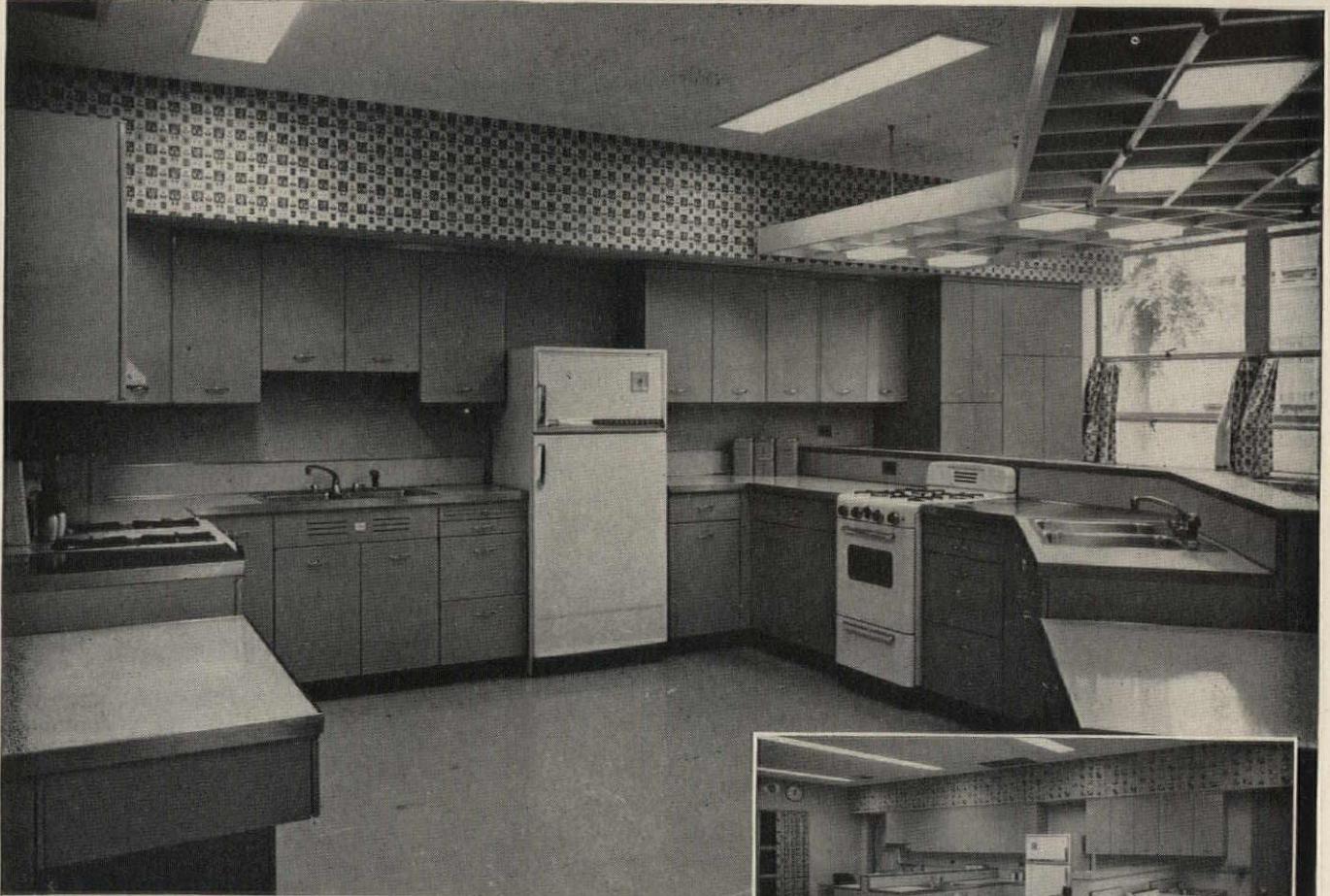
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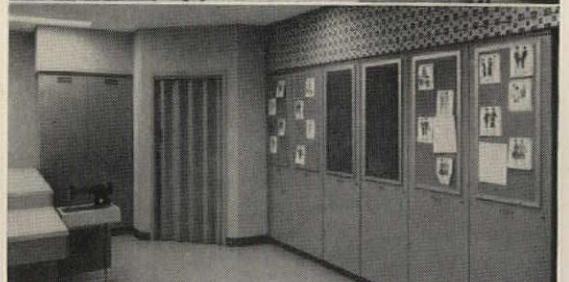
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Everything about the new Kroger Building makes it a welcome addition to downtown Cincinnati. Its 29 stories contain more floor space under one roof than any other office building in the city—over 500,000 square feet. A strikingly colorful exterior is achieved with porcelain enamel panels in light and dark blues and off-white. An unusual feature is the use of reinforced concrete instead of structural steel. This construction provides minimum floor-to-floor heights, permits the use of smaller columns and offers a wide latitude in the choice of interior finishes. *Square D electrical distribution and control equipment is on duty throughout this beautiful structure.*

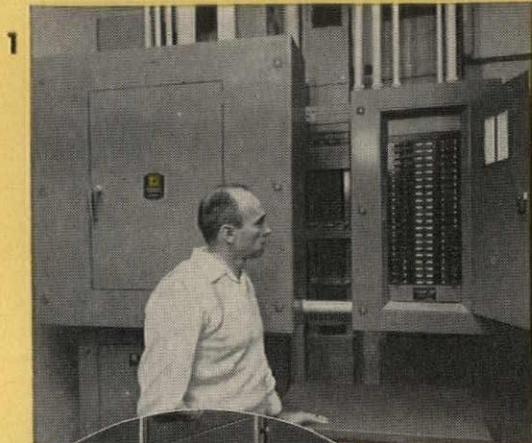
**FIELD ENGINEERING SERVICE** is available to architects and consulting engineers through more than 100 Square D offices, backed by over 1000 authorized electrical distributors and 19 plants in the United States, Canada, Mexico and Great Britain

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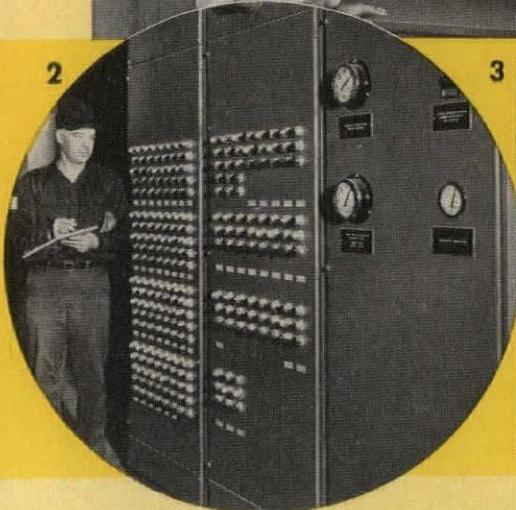
# electricity is distributed and controlled



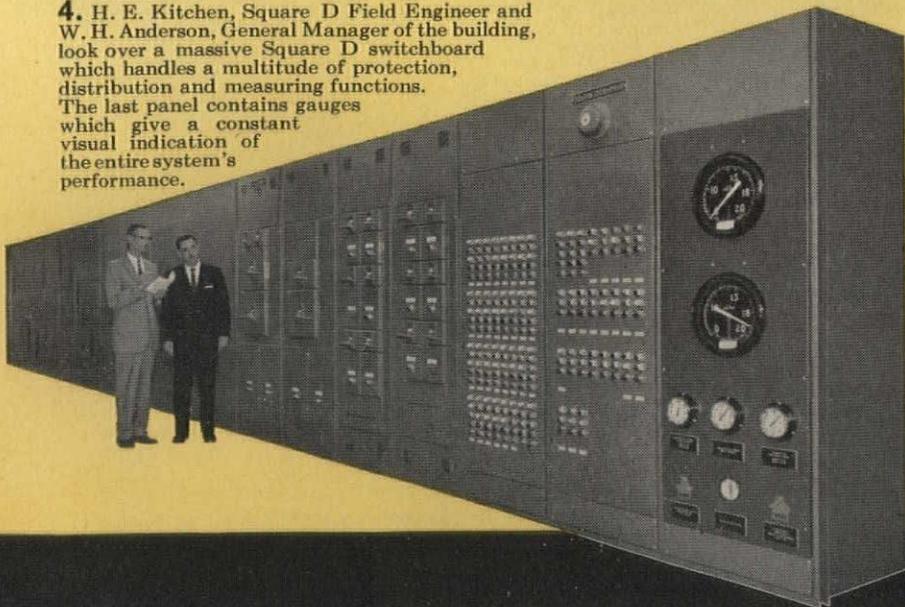
**1.** Nando Arduini, Resident Engineer, inspecting the Square D equipment in one of the electrical rooms. There is an identical room on each floor. Each has three Square D lighting and power panelboards, fed by Square D duct.

**2.** This Square D control panel, installed in the boiler room on the 26th floor, is a duplicate of that in the basement main switchboard. It provides another point from which the entire heating and air conditioning systems can be controlled.

**3.** These two Square D wall-mounted panelboards contain over-current protective devices for each of the automatic elevator controllers.



**4.** H. E. Kitchen, Square D Field Engineer and W. H. Anderson, General Manager of the building, look over a massive Square D switchboard which handles a multitude of protection, distribution and measuring functions. The last panel contains gauges which give a constant visual indication of the entire system's performance.

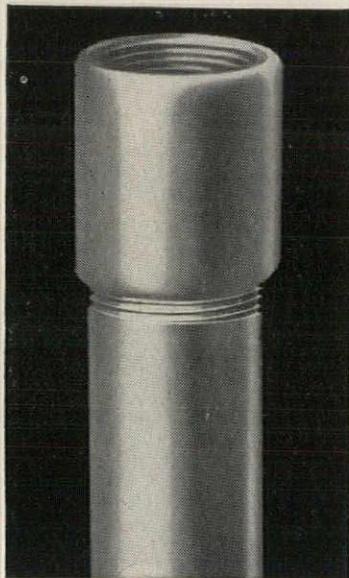


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First Security practices security by specifying steel pipe.



## galvanized **steel pipe** fills a tall order

Dependable, economical, galvanized *steel pipe* is used for the drainage and vent lines in the new First Security Bank Building in downtown Salt Lake City. But for that matter it might be almost any other large building in Utah or in any other place in America. Because architects, engineers and contractors through the years have learned that they can depend on *steel pipe* for a lifetime of service wherever major construction is going up.

Generations of experience have shown

engineers and contractors that low-cost *steel pipe* goes in easily and economically—provides lasting performance in soil, waste and vent lines. It's another example of the many kinds of jobs that *steel pipe* can do best.

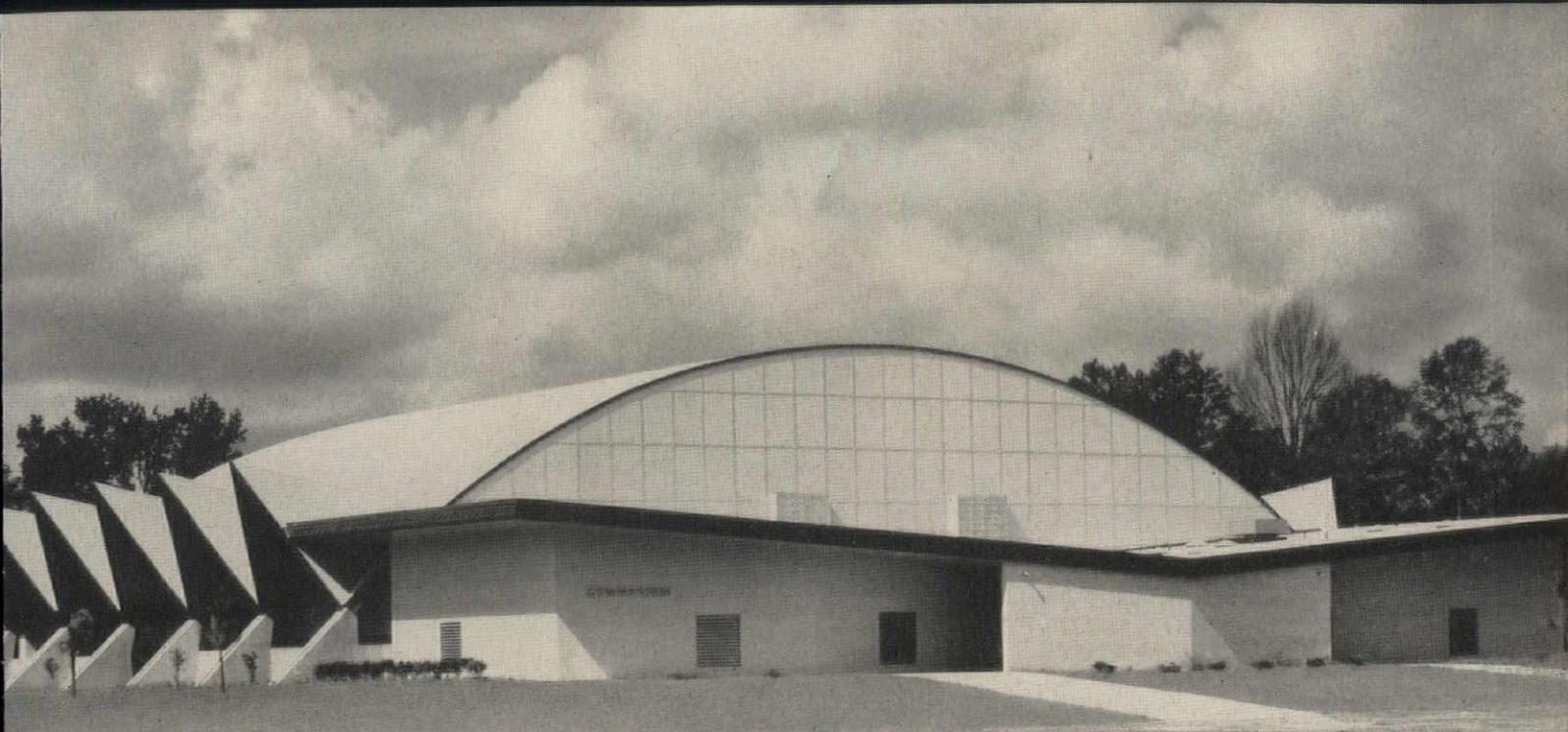
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maintenance costs down with  
child-proof Asbestone Panels**

Kids can be pretty rough on a school building, inside and out. That's why the architects chose Gold Bond Asbestone Panels for this handsome school in Baton Rouge. They're easy to clean and almost maintenance-free. Sturdy facing sheets of Asbestos-Cement shrug off the worst effects of weather, humidity, salt air and high-spirited children. And the insulation core gives adequate heat insulation and sound isolation; makes the panel a complete interior-exterior wall.

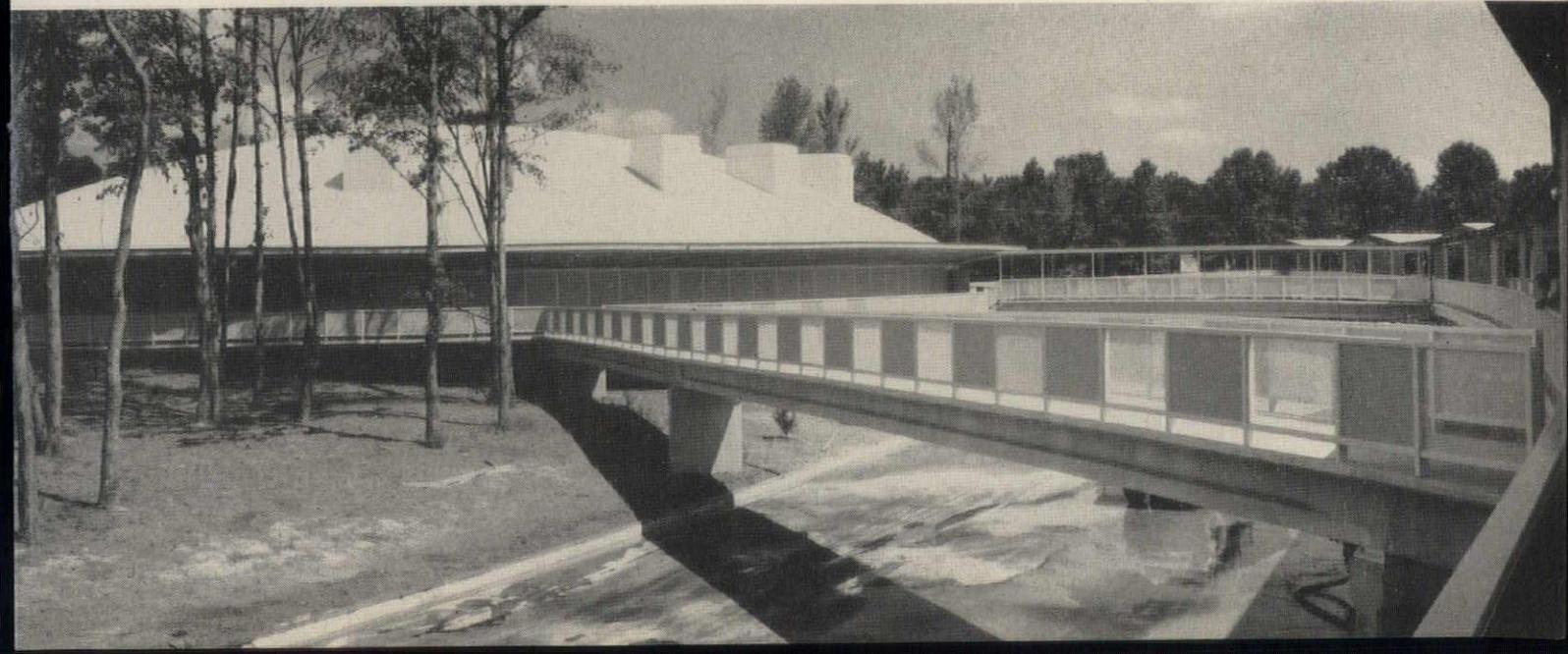
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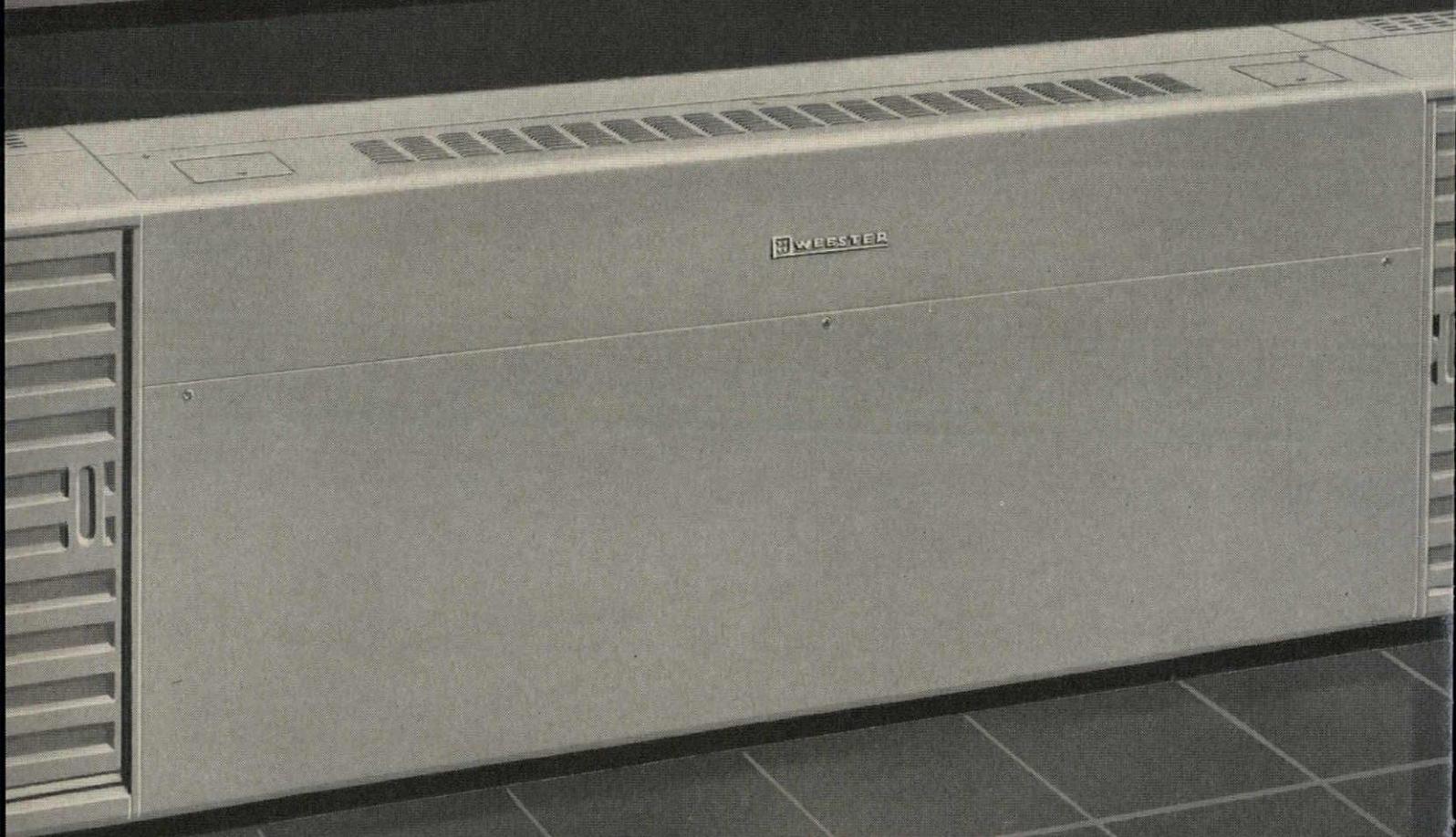


*Architects:* Miller, Smith & Champagne, Baton Rouge, La.





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**WEBSTER**  
**UNIT VENTILATOR**



for Complete Comfort Control with WEBSTER SYSTEM FOR SCHOOLS

## A WEBSTER UNIT VENTILATES AS IT HEATS OR COOLS FOR COMPLETE CLASSROOM COMFORT

Simply heating today's classroom is not enough. Adequate ventilation and cooling are equally vital in providing a comfortable environment in which to teach and learn. The new Webster Unit Ventilator meets all three requirements in a single unit designed especially for school installation. It *ventilates* as it heats or cools—assures gentle circulation of filtered air at the right temperature throughout the room. Room air and outdoor air are blended by a damper of exclusive design which assures proper ventilation and draft-free comfort. Each unit is completely self-contained. No expensive central system duct work is required. The Webster Unit Ventilator is engineered to be used with Webster "Tru-Perimeter" Walvector to provide a blanket of heat the length of every wall. Functionally styled storage units integrate Walvector and Unit Ventilator into a custom installation to complement every school interior. A fully illustrated brochure details performance and installation advantages possible only with the new Webster Unit Ventilator. Write for a copy today, or ask your Warren Webster man about the complete line of Webster System Products for Schools.



Webster "Tru-Perimeter" Walvector • Webster Cabinet Heaters  
and Propeller-Fan Unit Heaters • Webster Convactor Radiators  
• Webster System Traps and Valves • Webster Unit Ventilator



**WARREN WEBSTER & COMPANY, INC.**  
HEATING • COOLING / CAMDEN 5, NEW JERSEY



## Gleaming trouble-free Nickel Stainless Steel windows...now at lower cost than ever before

Now you can give your client long-lasting, trouble-free Nickel Stainless Steel windows — at a surprisingly low cost.

This is because manufacturers have recently developed a new technique for roll-forming Nickel Stainless windows that makes them *competitive* in cost. It is a fast, continuous process for making sturdy, attractive and economical windows. Savings in manufacturing costs are passed on to the consumer.

**Corrosion-Resistant.** These gleaming windows *stay* gleaming. They keep their good looks because they're solid Nickel Stainless, corrosion-resistant all the way through — *trouble-free for the life of the building*. You'll see Nickel Stainless windows gleam in most environments...

even industrial cities where smoke and fumes ruin paint and cause rapid corrosion of other metals.

**More benefits.** Nickel Stainless resists pitting and rusting. It doesn't discolor adjacent areas. It is more compatible with other commonly used building materials — both aesthetically and galvanically.

**Choose your own style.** Nickel Stainless Steel is used for all types of windows — fixed or pivot, casement, projected or hopper type. Also, there are many uses for Nickel Stainless Steel inside the modern building. In fixtures... fittings...

doors...elevators...escalators. In a thousand and one hardware items, Nickel Stainless Steel offers gleaming appearance...utility...long service life.

**Want to know what other architects are doing with Nickel Stainless?** Send for a copy of our new booklet, "Architectural Uses of the Stainless Steels". It describes windows as well as many other applications of Nickel Stainless. A copy belongs in your reference files. Write for it — today — and we'll get it to you promptly.

**THE INTERNATIONAL NICKEL COMPANY, INC.**  
67 Wall Street  New York 5, N. Y.



**Inco Nickel** ... makes stainless steel perform better longer.

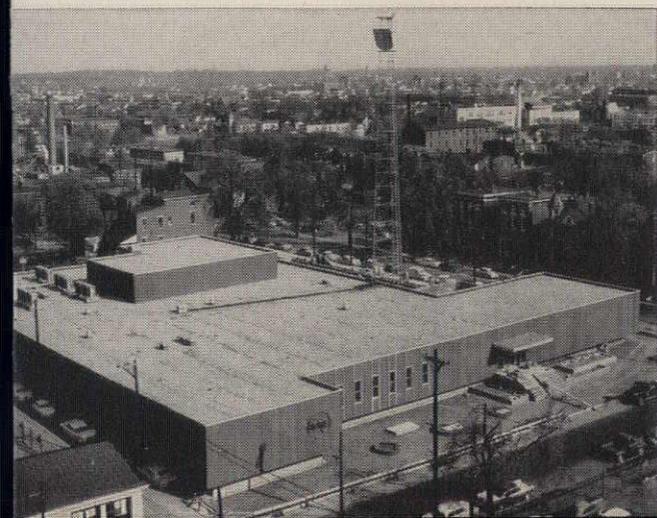


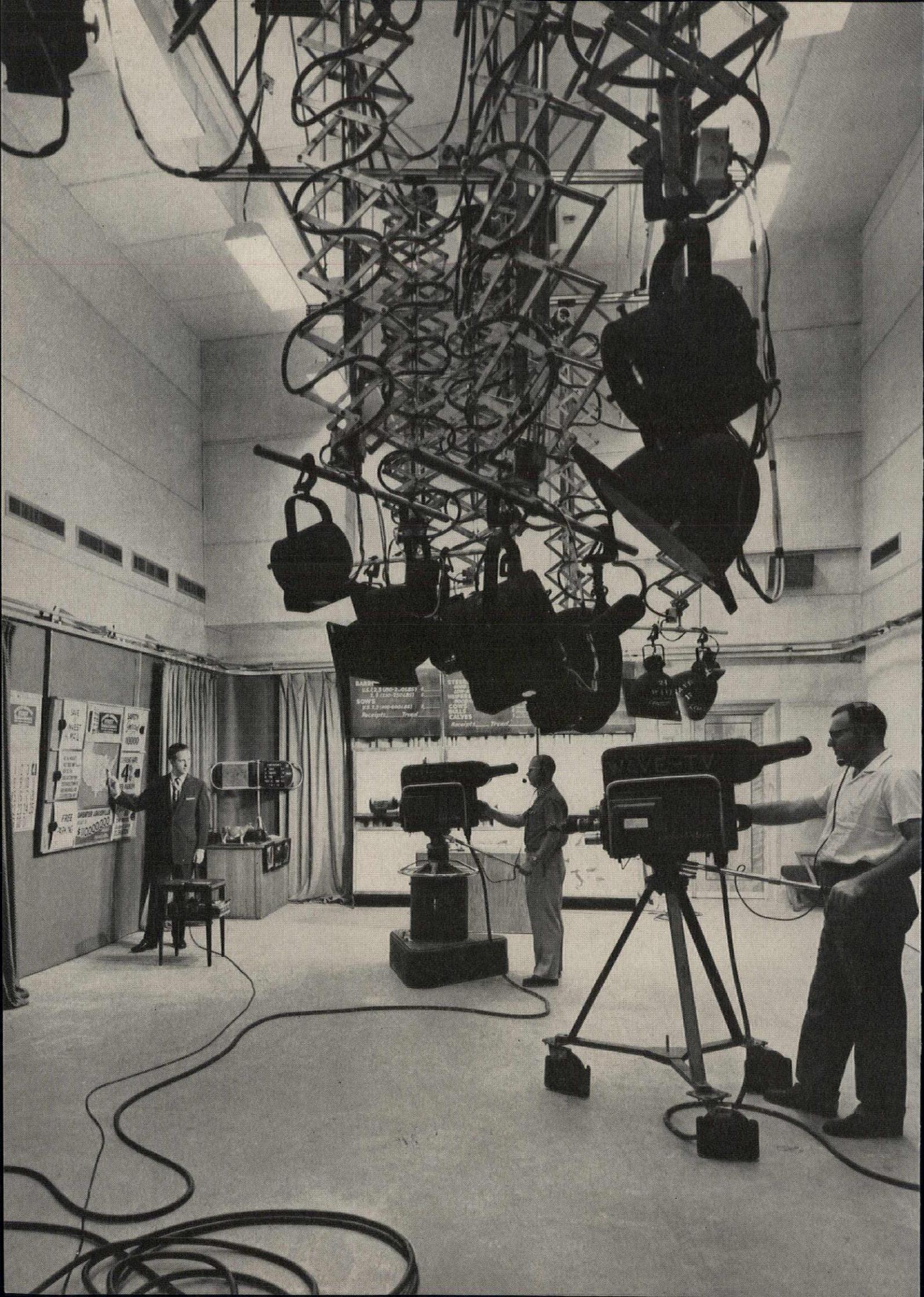
Kentucky's first TV station  
 Powers-Up to put new  
 radio-TV center on the air

New Television Center of Channel 3, Louisville, is a ground floor structure supplying 75,000 square feet of production, storage, studio and office space.

Bright, attractive conference room (below) at WAVE utilizes modern decor and paintings to symbolize its aggressive growth in the bustling TV industry. J-94148-1

YOU CAN BE SURE ...IF IT'S **Westinghouse**





BARRY  
15.25.8 (100-2-0000) 4  
1.1 (100-20000) 1  
SON'S  
12.5 (100-00000) 1  
Receipts... Fred

STEVE  
10.1 (100-2-0000) 4  
1.1 (100-20000) 1  
SON'S  
12.5 (100-00000) 1  
Receipts... Fred

Smaller of two TV studios demonstrates the electrical capacity available for flooding light on television sets. Smaller, permanent sets are located here. Main studio, 65' x 45' and 23' high, contains a complete electrical kitchen and adequate space for automotive and aquatic displays.

## New "WAVE" broadcasting station criteria demands reliable electrical system

Prime among the design criteria for the new WAVE TV studios in Louisville, Kentucky, was an absolutely reliable electrical distribution system to keep the 100,000-watt station on the air without interruption. Station executives also insisted on plenty of reserve electrical capacity to facilitate easy expansion.

In designing the new building, Architect A. Read Henry developed a very successful combination of beauty and function. With the TV and radio studios as the core of the building, all production facilities, storage offices and control stations are arranged in a square for convenient access to these main centers of station activity.

This impressively modern new studio and office building of WAVE, Inc., is accented by an interesting pink and gray sidewalk pattern that undulates in inviting fashion along Floyd and Jacob Streets

in Louisville. It's the third new home for the station since it first went on the air in 1933.

Heart of the electrical distribution system is a Westinghouse building-type switchboard that feeds and protects all circuits in the building. Circuit breakers were specified for all feeder circuits in the switchboard and panelboards to provide maximum protection and absolute reliability for continuous TV programming.

Owners, architect, engineers and contractors alike are all well pleased with the cooperation Westing-

(contd.)

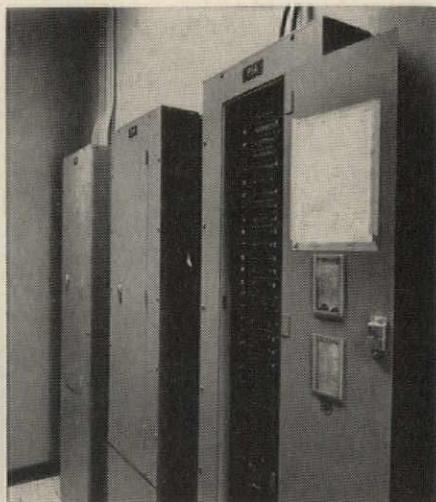
YOU CAN BE SURE ... IF IT'S

# Westinghouse

J-94148-3



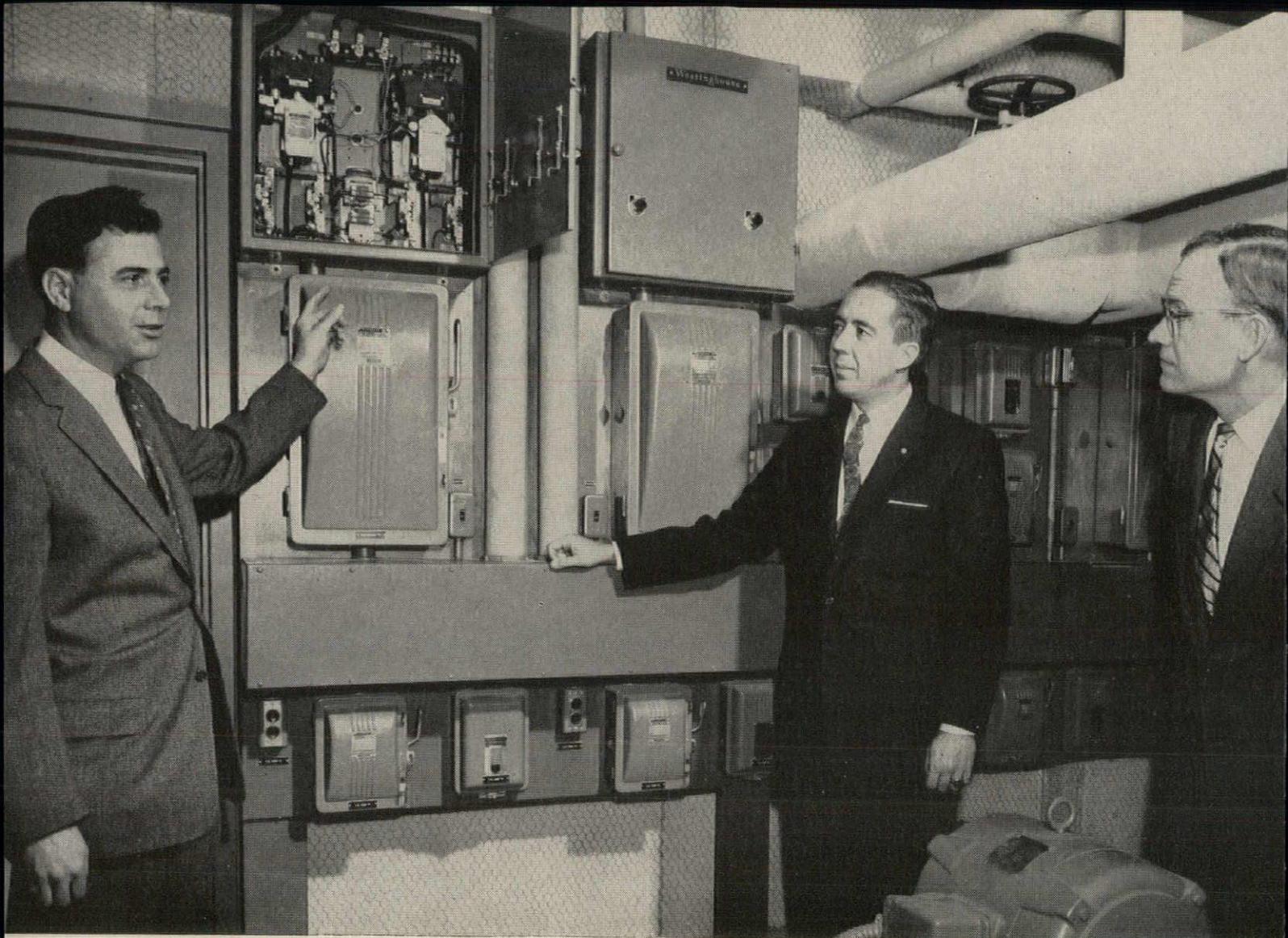
K. A. Lentz, Jr., Westinghouse Sales Engineer, looks on as L. A. Bulleit, E. R. Ronald & Associates, points out some of the many important electrical features of the new Television Center to L. A. Worland, E. R. Ronald & Associates; G. W. Norton, Jr., President of WAVE, Inc.; and Architect A. Read Henry of Hartstern, Louis & Henry.



Westinghouse Type NA1B panelboards are used for distribution of the many lighting circuits in the studio. These circuit breaker panels protect circuits against overloads and short circuits.



A. J. Eversmann, Maintenance Superintendent of WAVE, inspects the modern and compact Westinghouse building-type switchboard with R. A. Schlaug and M. D. Bornstein, both of Bornstein Electric Company. Westinghouse AB De-ion® circuit breakers distribute and protect all power circuits in the studio. Provision is made to install additional breakers when required in the future.



## Station finds reliable electrical system essential *(contd.)*

house demonstrated on the project. A Westinghouse construction specialist can be of service in your planning. Call the Westinghouse sales office near you, or write Westinghouse Electric Corporation, Box 868, Pittsburgh 30, Pennsylvania.

J-94148-4

OWNER: Station WAVE, Inc., Louisville, Ky.

ARCHITECT: Hartstern, Louis & Henry, Louisville, Ky.

CONSULTING ENGINEER: E. R. Ronald & Associates, Louisville, Ky.

GENERAL CONTRACTOR: F. W. Owens Company, Inc., Louisville, Ky.

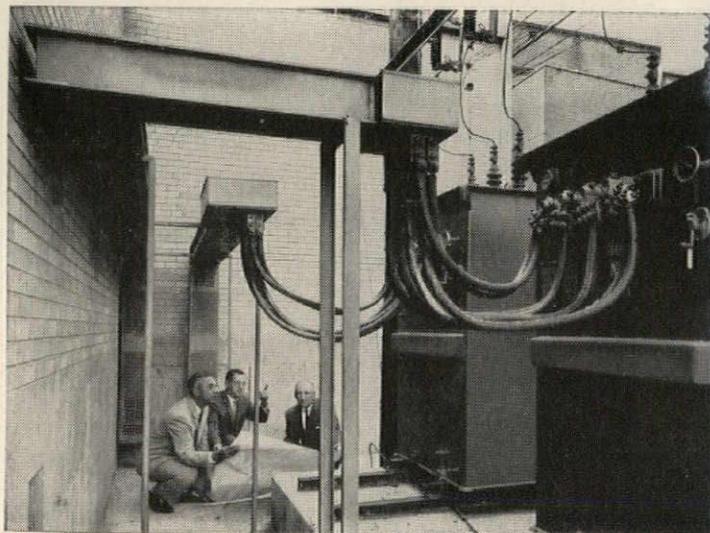
ELECTRICAL CONTRACTOR: Bornstein Electric Company, Louisville, Ky.

MECHANICAL CONTRACTOR: Stevens Engineering Company, Inc., Louisville, Ky.

WESTINGHOUSE DISTRIBUTOR: Tafel Electric & Supply Company, Louisville, Ky.

K. F. Haynes, F. W. Owens Company, General Contractors, discusses Westinghouse Class 11-700 part winding reduced voltage starter with Paul Tafel, Jr., Tafel Electric and Supply Company; and M. T. Shaw, Mechanical Engineer, Stevens Engineering Company, Inc. This starter controls the 30-hp Life-Line® "A" air conditioning motor shown in foreground. Also shown are Westinghouse safety switches, line-starters and pushbuttons.

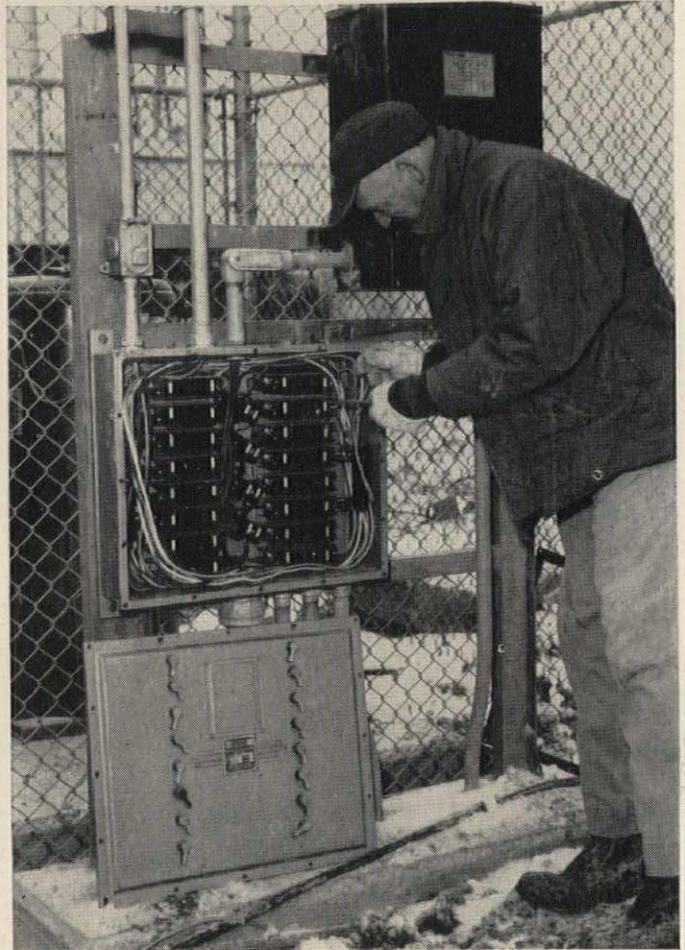
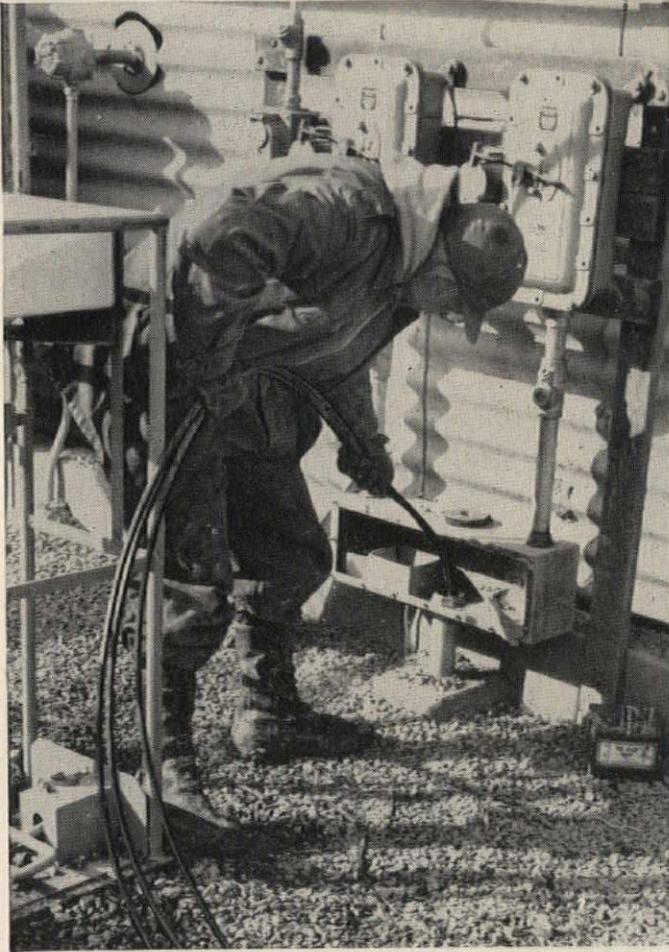
R. J. Barker, Tafel Electric and Supply Company; R. A. Schlaug and M. D. Bornstein inspect substation where two 300-kva transformers furnish 120/208 volts for building power. Two runs of 1600-ampere, weatherproof, low-impedance bus duct carry the low-voltage power to building-type switchboard within building.



YOU CAN BE SURE...IF IT'S  
**Westinghouse**

Another new development using

# B.F. Goodrich Chemical *raw materials*



New THW wire insulated with Geon is used in sizes up to 3/0 AWG at this new Sohio plant. Wire is made by the Paranite Wire and Cable Division of the Essex Wire Corporation, Marion, Indiana. B.F. Goodrich Chemical Company supplies the Geon vinyl.

**"We welcome the higher factor of safety"**  
*... of new THW wire insulated with GEON vinyl*

These pictures show new wiring going into the Sohio Chemical plant at Lima, Ohio. Here's what the contractor, W. W. Clark Corporation of Cleveland has to say about it:

"In a chemical plant or refinery, electrical wiring often has to go near processing equipment that operates at high temperatures. We try to keep it at least a foot away, but sometimes have to go as close as 6". We welcome the higher factor of safety this new THW wire gives us."

Now you can add new heat resistance to the proved properties of insulation of Geon vinyl. Geon is tough, weatherproof and keeps its exceptional properties with age. It also resists oils, greases and chemicals.

For information about Geon wire and cable covering, or other ways that Geon improves products or opens new markets, write Dept. GF-4, B.F. Goodrich Chemical Company, 3135 Euclid Avenue, Cleveland 15,

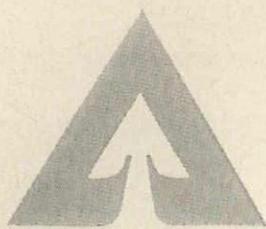
Ohio. Cable address: Goodchemco.  
In Canada: Kitchener, Ontario.



**B.F. Goodrich Chemical Company**  
a division of The B.F. Goodrich Company



GEON vinyls • HYCAR rubber and latex • GOOD-RITE chemicals and plasticizers



## Weyerhaeuser Water Repellent Treated Lumber gives you a better finished job—4 ways to save

- Protects the wood
- Protects the finish
- Improves the job

Weyerhaeuser's specially developed repellent is a combination of water-resisting resins with a pentachlorophenolic toxic additive (to protect against stains, molds, decay-forming fungus, and termites). These active ingredients are mixed in a volatile mineral spirits vehicle which carries them evenly over the faces, edges, and ends of siding or lumber. A retention of 5 to 7 gallons of repellent per thousand feet is our specification.

Water Repellent Treatment is available in 4-Square Kiln-dried Western Red Cedar, Douglas Fir, West Coast Hemlock. It is recommended for all exterior applications except where there is ac-

the most common causes of paint failure. It slows down the loss or pick-up of moisture by the wood with the result that there is less cupping and swelling, reduced grain raising, less checking, and little or no water stain.

### 4 ways to save

Water Repellent Treatment makes immediate savings possible on paint and labor costs. In addition paint jobs last longer, and when the time does come to repaint, fewer repairs are necessary. These savings are possible because Water Repellent Treatment serves as a good paint undercoat . . . reduces brush "drag" so painting goes faster . . . makes paint spread further . . . and keeps more of the paint oils on the surface to prolong the life of the job. It makes two coats very nearly as effective as three coats.

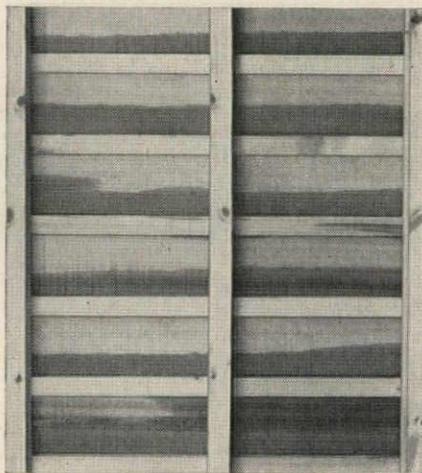


Photo of untreated test panel, after exposure to moisture in simulated weather conditions.

tual ground contact or an unusual moisture condition.

The untreated siding illustrated above shows the results of capillary action ("wicking") of wood fibers. The illustration in the next column shows how effectively Weyerhaeuser's Water Repellent Treatment stops this action.

Water Repellent Treatment actually "raincoats" lumber and siding to give it surface protection from rain and snow that's new to lumber handling. This raincoat permits painting at any favorable time up to several months after construction has been completed.

After painting, Water Repellent Treatment prevents wicking of storm-driven rain and snow, thus eliminates one of

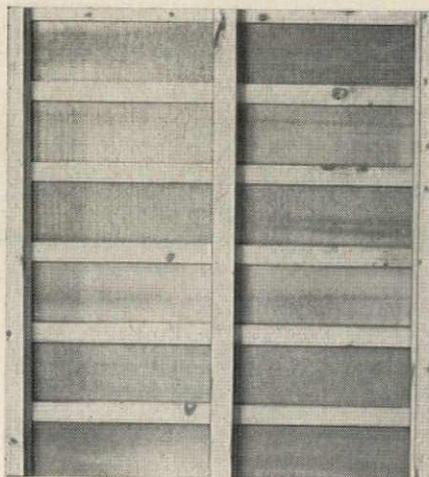
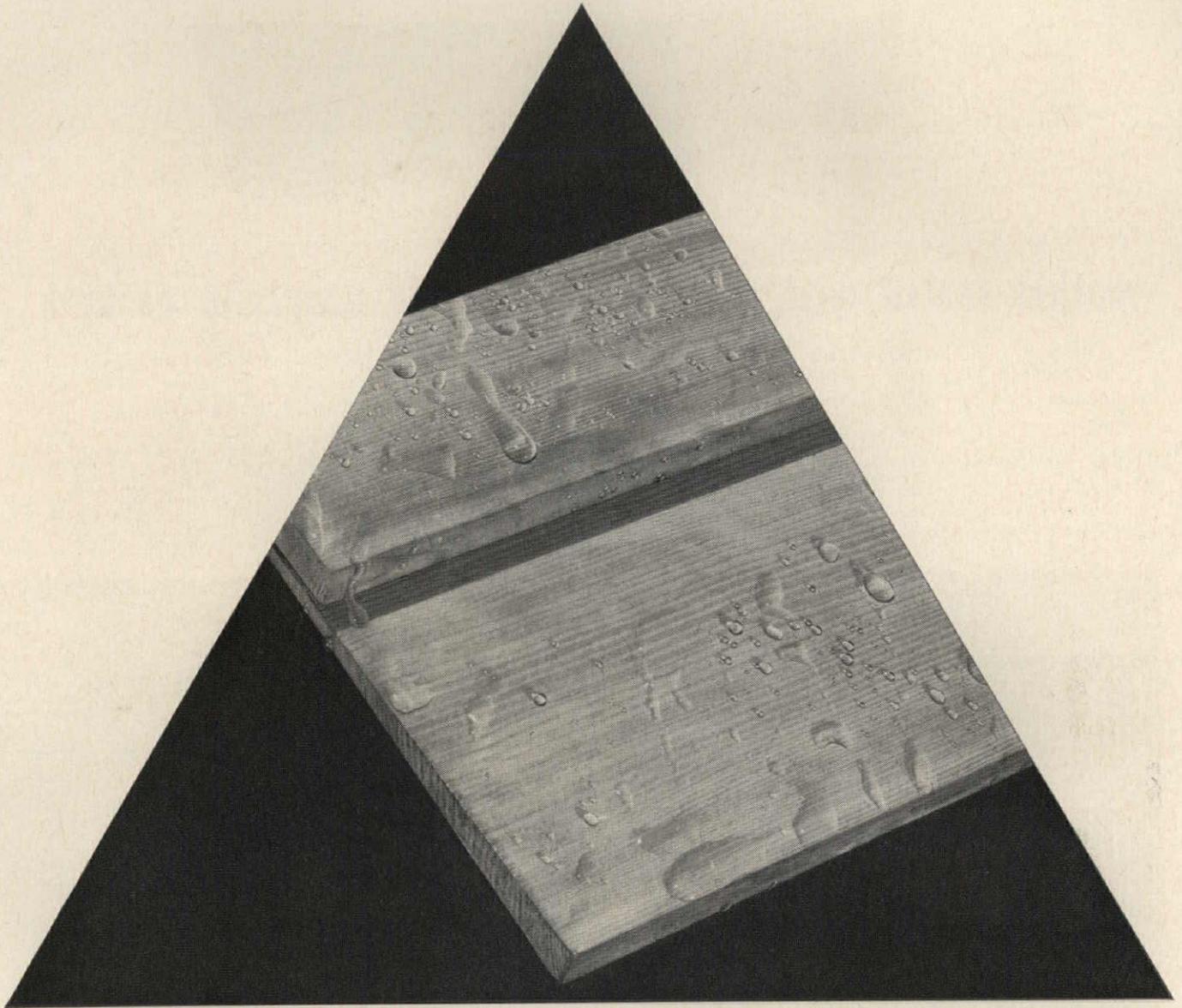


Photo of Water Repellent Treated test panel shows moisture resistance in identical test.

### Uses

*Bevel siding and dropsiding* for homes, garages, barns, churches, schools, and commercial buildings. Also vertical siding in Board & Batten, WC-130, WC-134, WC-136, and WC-140 patterns. *Outside trim*, including fascia boards, casings, porch posts, soffit lumber, bevel sill, barge boards, pulley stile, and exterior mouldings. *2x6 Roof decking. Exposed beams* made of doubled or tripled 2x6s, 2x8s, 2x10s, 2x12s. *Porch and deck floors*—1x4s, 5/4x4s, or 2x6s. *Decorative fencing* (note: use pressure treated posts wherever there is ground contact, water repellent treated lumber above ground.)

For additional information, write: Weyerhaeuser Company, Lumber and Plywood Division, Dept. 50, Tacoma Building, Tacoma 1, Washington.

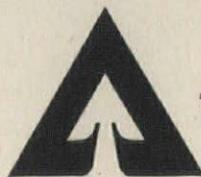


## **WATER REPELLENT TREATED LUMBER**

### **Bevel and Vertical Siding—Roof Decking—Outside Trim**

Weyerhaeuser's Water Repellent Treatment gives wood products a "raincoat" that protects before, during, and after installation and finishing. This raincoat protects lumber products from moisture absorption, and where such conditions are prevalent it also protects against damage from stains, molds, decay-forming fungi and termites. It provides a better paint base, paint spreads farther and lasts longer.

For a quality sales story . . . a quality job . . . and for the savings that a quality material can bring . . . use Weyerhaeuser 4-Square Water Repellent Treated wood products for siding, trim, decking, flooring, and fencing. It is available in 4-Square Kiln-dried Western Red Cedar, Douglas Fir, and West Coast Hemlock. Be sure to have complete and detailed information you need available for your specifying.



## **Weyerhaeuser Company**

Lumber and Plywood Division



Architects : Page and Steele, Toronto, Ontario  
 Glazier : Pilkington Glass, Ltd., Toronto, Ontario  
 Gasket supplier : Pawling Rubber Corp., Pawling, N. Y.



*Elastic neoprene gasket with molded corners and U-shaped cross section is quickly installed at the site.*

## At Toronto's new Education Centre, all lights are weather-sealed with timesaving, durable neoprene gaskets

The architects of the Education Centre for the Board of Education specified neoprene gaskets for two important reasons:

**Lasting Seal** Neoprene synthetic rubber has proven its durability in many years of outdoor exposure. It retains its elasticity, even under constant com-

pression . . . won't soften in hot weather or stiffen in cold weather. Properly designed neoprene gaskets maintain an effective seal under wind loads or structural movements from expansion or contraction.

**Ease of Installation** Neoprene pre-formed gaskets permit on-site econo-

mies. Installation requires no specialized skill and is done in far less time than conventional glazing methods.

Our booklet, "Neoprene Gaskets for Curtain Walls," gives further information. For your copy, write: E. I. du Pont de Nemours & Co. (Inc.), Elastomer Chemicals Department AR-8, Wilmington 98, Delaware.



*Pawling's "Wet Seal" neoprene channels make glass safe, easier to handle. This job was glazed at a temperature of 15° F. Workmen, if they desired, were able to glaze with gloves on.*



**NEOPRENE**  
 SYNTHETIC RUBBER

Better Things for Better Living . . . through Chemistry

# Specify Floor Maintenance to Insure **CONTINUING** Beauty of your Interiors

After you have specified flooring, its final clean-up and initial treatment, go one step further: **Specify proper continuing care.**

After building acceptance, proper maintenance will display your floors effectively, help set off and complement your interior design - through years of wear.

For the beautiful floor below, there was no "or equal".

Let us prepare for you a manual on the care of the floors you specify. Your client will appreciate this added architect specified maintenance service and you'll like the way flooring complaints will be eliminated.

- Over 160 Hillyard trained floor treatment experts are located throughout the United States.
- There's one near you who will, at your request, survey your finished floors, determine traffic and soil loads for the various floors and recommend proper maintenance procedures. A complete manual for floor care will be individually compiled for every floor you specify.
- Write for the name of your nearest Hillyard "Maintainer" who can provide this free service. District offices listed in Sweet's Architectural File.

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classified as to  
slip resistance.

Bloomfield Hills Junior High School, Bloomfield Hills, Michigan



Write too for FREE Hillyard A. I. A. Numbered Files—practical treating guides, one for each type of flooring.

WHETHER TERRAZZO, WOOD, CONCRETE, CERAMIC TILE or RESILIENT FLOORS



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Passaic, N. J. San Jose, Calif.

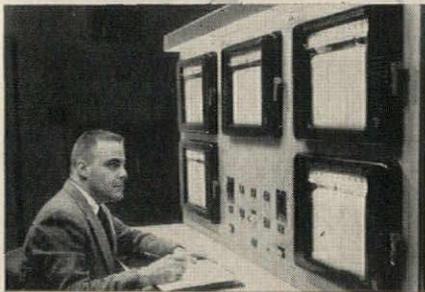
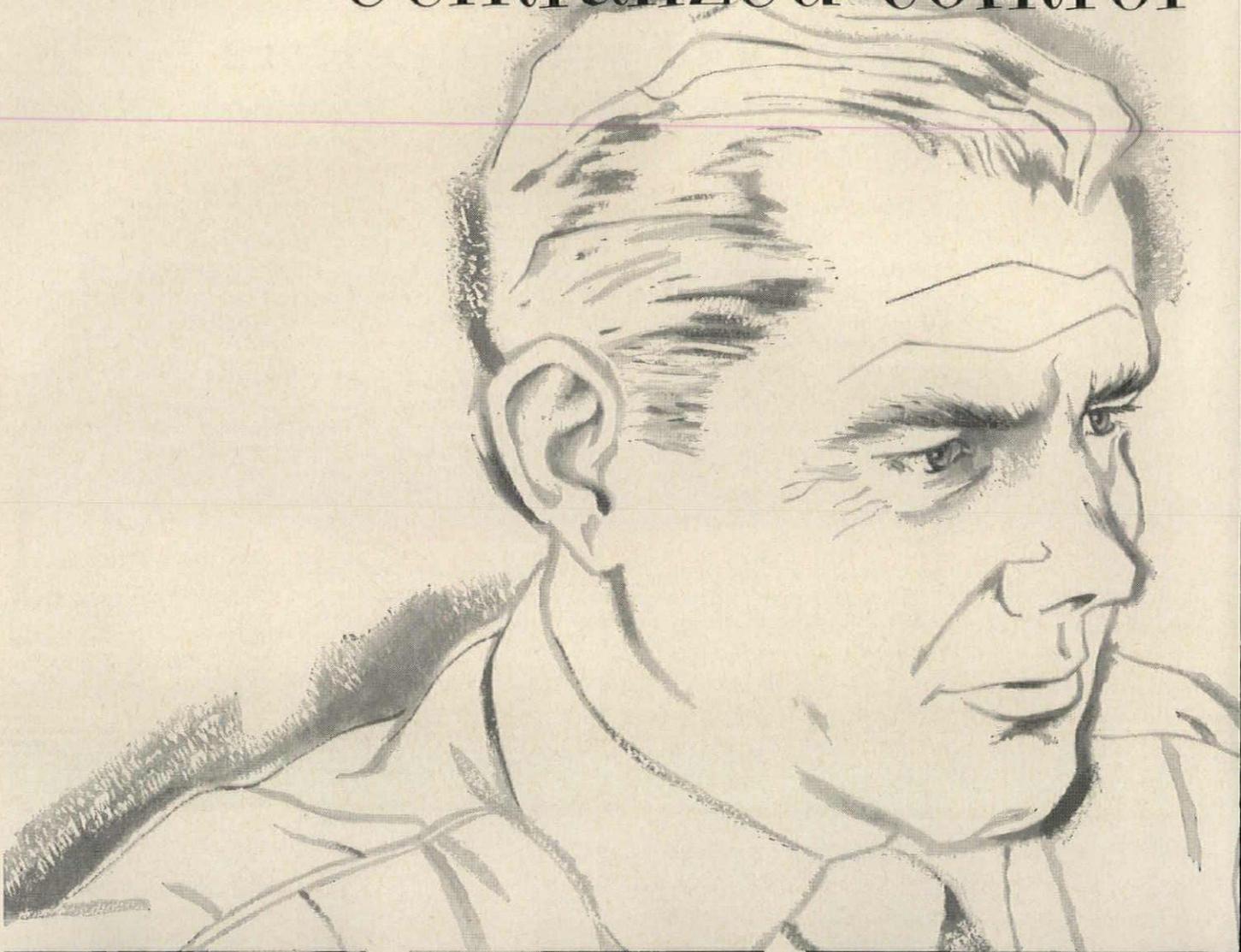


You'll Finish Ahead  
with

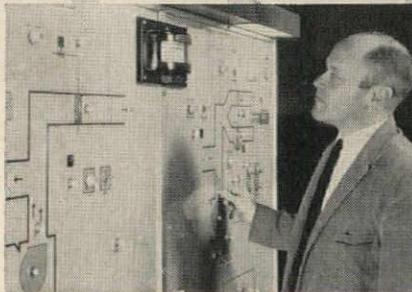
# HILLYARD

Branches and Warehouse Stocks in Principal Cities

# Centralized control



One "Electronic" recorder provides a permanent 24-hour record of temperatures at as many as 24 different points in the building.



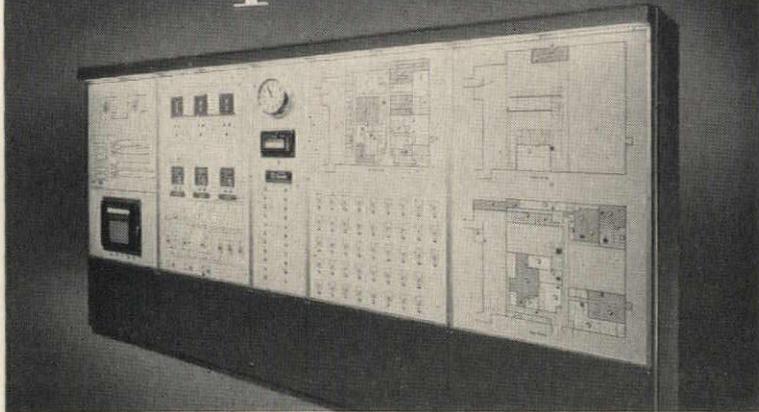
A single "Electronic" eye-level indicator can be used to check temperatures at an unlimited number of points throughout a building.



One man can monitor all mechanical services, check and change temperatures, start and stop equipment, communicate with other areas.



# completes the system



Centralized remote control of air conditioning, and other mechanical services is a highly profitable investment for the building owner. It places management and operation of the services in the hands of a single responsible supervisor. It eliminates endless running from point to point to check and correct temperatures and other variables . . . frees maintenance mechanics to do the work for which they are employed . . . reduces the size of the service staff required. By providing the opportunity for constant monitoring, centralized control saves fuel and power — and because it reports faulty functioning of any unit, it permits preventive maintenance to be performed before costly damage may be done.

Barber-Colman "Electronic" control centers are the ideal answer. They do the job better — electrically. Simple and reliable, they provide instantaneous indication and control, eye-level readings, pushbutton operation and, where desired, a permanent recording of the performance of the system.

Functions which can be performed include temperature indication, recording, and adjustment, as well as start, stop, and indication of operation of valves, motors, blowers, pumps, fans, alarms, heating and refrigerating equipment, lighting, and other equipment.

Barber-Colman "Electronic" control centers *complete* the system, assuring at all times ideal comfort conditions for the occupants of the building.

Ask for new Bulletin No. F-8944, which describes and illustrates control center values and explains the unique advantages of "Electronic" control.

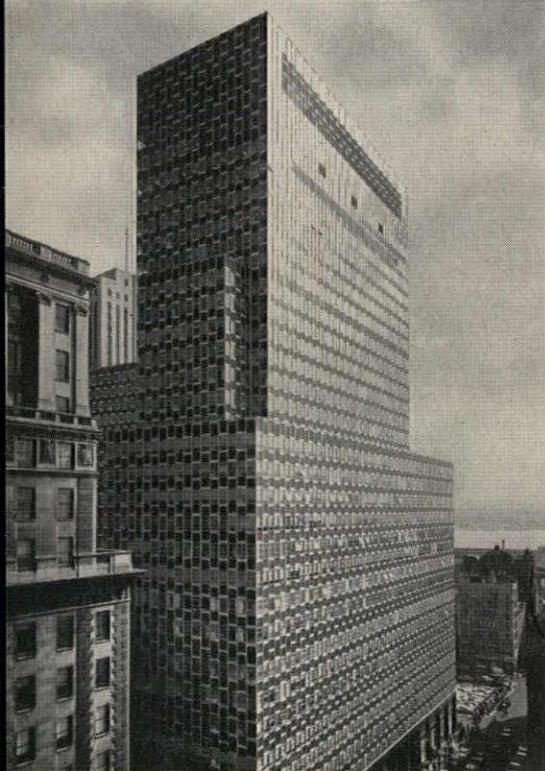


**BARBER-COLMAN COMPANY**

Dept. H, 1304 Rock Street, Rockford, Illinois

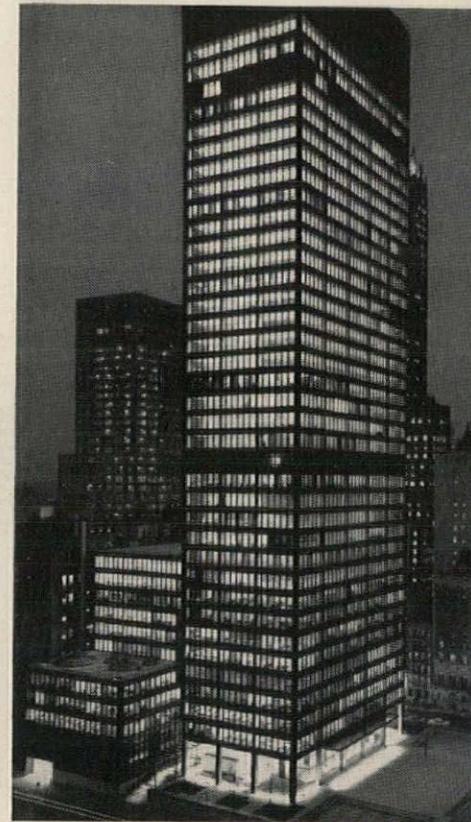
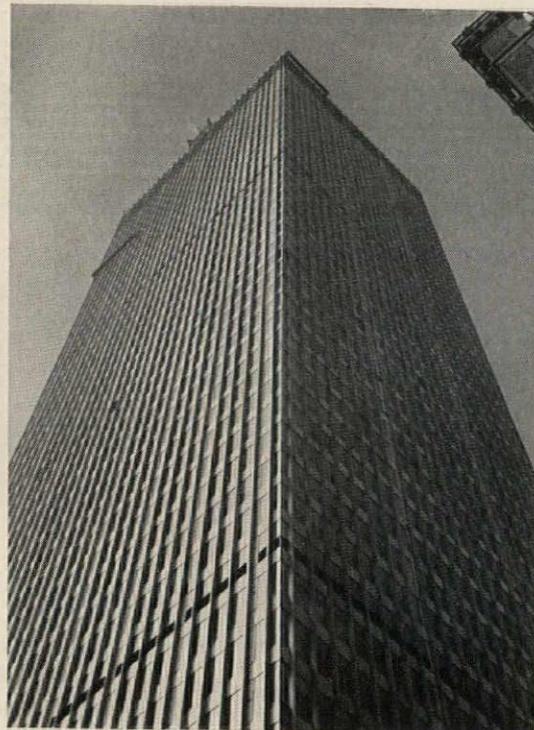


**Bethlehem steel pipe  
in some of Manhattan's  
most significant  
new buildings**



▲  
Bethlehem steel pipe was used in the heating and air conditioning system in the Corning Glass Bldg.

Arch., Harrison & Abramovitz & Abbe; Struct. Engr., Edwards & Hjorth; Gen. Contr., Geo. A. Fuller Co.; Mech. Engr., Jaros, Baum & Bolles; Heat. & Air Cond. Contr., Wolff & Munier, Inc.; Pipe Jobber, Charles F. Guyon, Inc.



▲  
Bethlehem steel pipe was used in the heating and air conditioning system of No. 2 Broadway.

Arch., Emery Roth & Sons; Gen. Contr., Uris Brothers, Inc.; Mech. Engr., Rutherford L. Stinard; Heat. & Air Cond. Contr., Raisler Corp.; Pipe Jobber, Charles F. Guyon, Inc.

▲  
Bethlehem steel pipe was used in the drainage, vent, and fire lines of 375 Park Avenue.

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Bethlehem steel pipe was used in the drainage, vent, and fire lines of the Union Carbide Bldg.

Arch., Skidmore, Owings & Merrill; Gen. Contr., Geo. A. Fuller Co.; Struct. Engr., Weiskopf & Pickworth; Mech. Engr., Syska & Hennessy; Plumb. Contr., Jarcho Brothers, Inc.; Pipe Jobber, Charles F. Guyon, Inc.



for Strength  
... Economy  
... Versatility

**Always insist on steel pipe made in U.S.A.**

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA. Export Distributors: Bethlehem Steel Export Corporation

**BETHLEHEM STEEL**



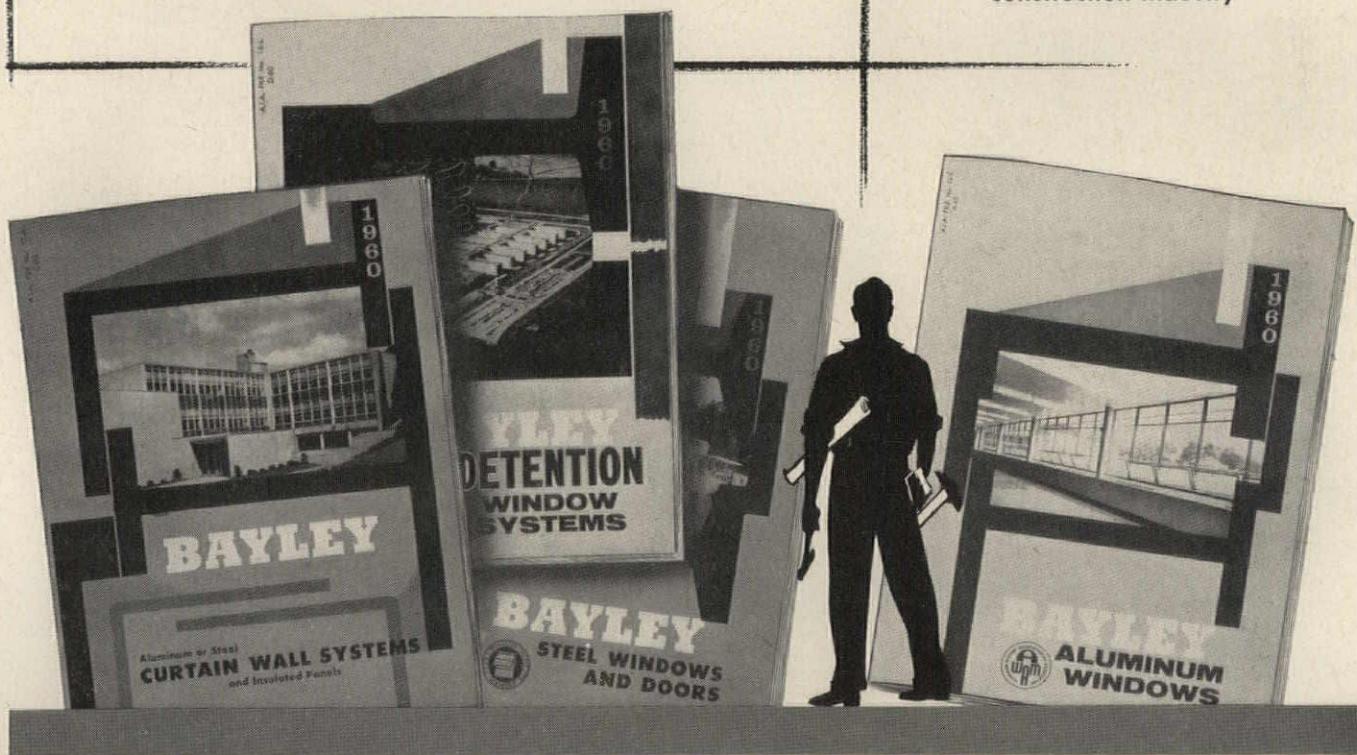
Catalogs you should have for your ready reference if you want Aluminum or Steel Windows or Curtain-Walls — or Detention Window Systems — that

## Back Up Your Work With Quality and Better Service

Windows and Curtain-Walls are an important and major integral part of a building structure. Therefore, it pays in ultimate overall savings to specify the best quality product the market affords — especially in consideration of initial cost and minimum maintenance. What you actually gain in the long run results from much more than the mere physical product itself. A sub-contractor's years of experience, know-how and proven policy of client-responsibilities all account for much of the true value.

When you specify Bayley, you are assured of an intrinsically good product, a supplier capable of handling large or small jobs *plus* the many extra benefits that come from —

- Experienced, cooperative designing counsel
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## WINDOW and CURTAIN-WALL SYSTEMS

WRITE or ask the Bayley Representative or District Sales Office nearest you for copies of these catalogs or for counsel on your current projects.

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Wood has successfully warded off weather for centuries. Here, naturally durable or specially treated woods offer maximum resistance to the elements, and adapt beautifully to difficult terrain demands. Carl Graffunder, architect—Graffunder and Nagle.

*When durability is a design requirement*

# for new answers...look to WOOD



Wind, water, wear and willful neglect stand ready to challenge the mettle of your best design efforts. But in wood you find a natural ally. Wood stands undisputed in its time-proven position as the one construction and finishing material that will withstand the buffeting of the elements—untarnished, uncorroded—actually mellowing with age. No other material offers such diversity of individual shapes and sizes in stock or such a favorable ratio of weight to strength. And what other material is so workable, so amenable to expressive design? For more information on designing with wood, write:

NATIONAL LUMBER MANUFACTURERS ASSOCIATION  
Wood Information Center, 1319 18th St., N. W., Washington 6, D. C.

nlma

for freedom of design, look to **wood**

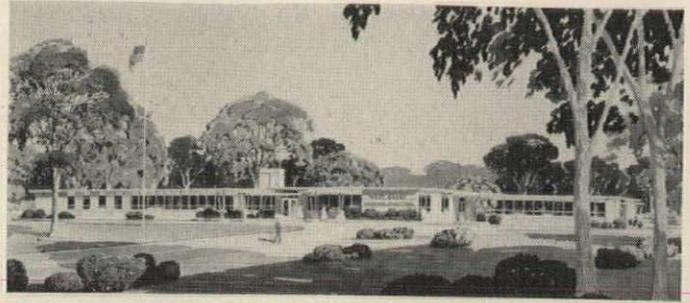
Homes of wood have been traditionally correct for good reason—wood construction wears well physically *and* emotionally, stands up with a minimum of maintenance. Joseph Esherick, architect.



Wood's wide range of stock components and portability make possible *economical* construction by ordinary carpenters of even the most advanced designs. Robert Ratcliff, architect.

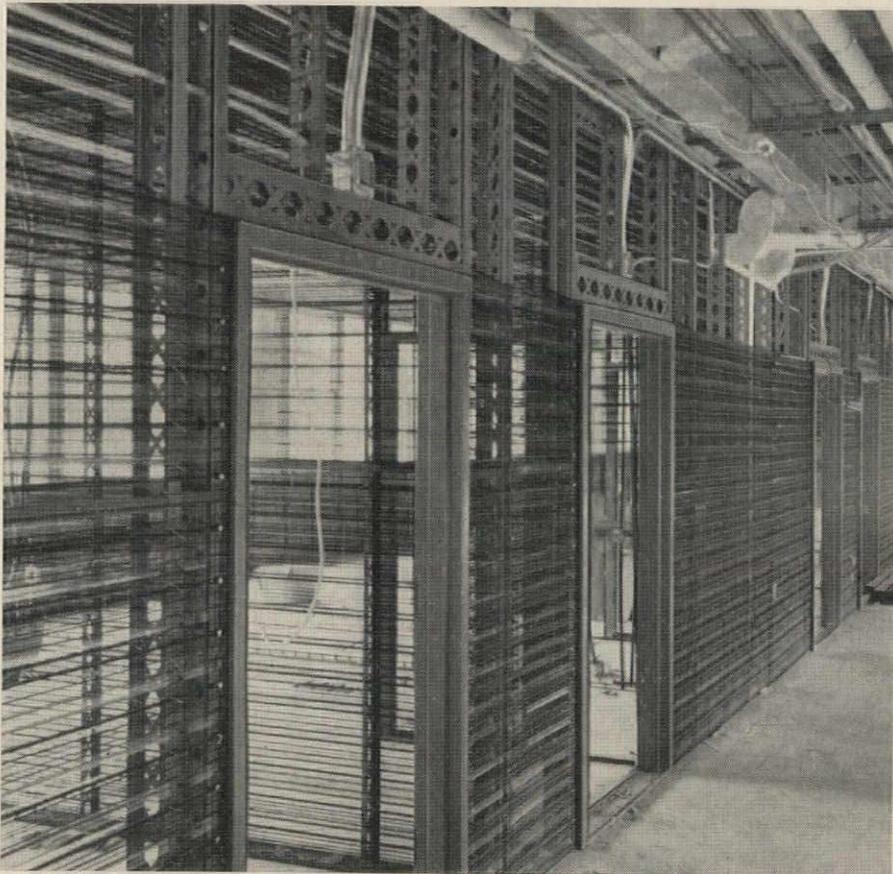
## WEST ESSEX GENERAL HOSPITAL

ARCHITECT: Alfonso Alvarez, Montclair, N. J.  
STRUCTURAL ENGINEER: John Alexanders, Montclair, N. J.  
GENERAL CONTRACTOR: J. M. Straus & Co., Newark, N. J.  
STRUCTURAL STEEL ERECTION: L. C. Vanderbeck Co., Inc.,  
Hawthorne, N. J.  
LATHING AND PLASTERING: Thomas J. McGlone, Rahway, N. J.



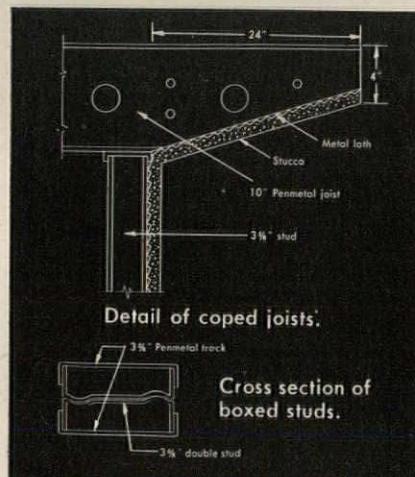
# "Penmetal's structural system saved time, space and money"

*says architect for new hospital*



Penmetal 3 $\frac{1}{2}$ "<sup>16</sup>-gage studs were used for exterior and interior load-bearing walls.

Penmetal 10" structural-steel joists were used in the roof construction. The joists at the outside wall were coped to give the overhang a flare. Cross-sectional detail shows how double studs between windows were boxed with two sections of track to provide additional structural strength.



"Construction time was reduced because the frame was fabricated off the site while preliminary work was installed," explains Alfonso Alvarez, architect for the West Essex General Hospital in Livingston, New Jersey.

"The use of 2 $\frac{1}{2}$ " solid plaster partitions made possible a saving in floor area and cut down on the noise between rooms. X-ray protection was provided simply and economically by using the Permalock nailable stud with lead foil gypsum lath. All these savings are reflected in the low cost of this building, which provides complete hospital services."

The West Essex General Hospital has 42 beds with core facilities planned for expansion to 75. Total area is 21,250 square feet. Cost of construction: \$433,607, bringing the cost per bed to only \$10,324.

Send for new catalog SS-33 which describes this versatile framing system.

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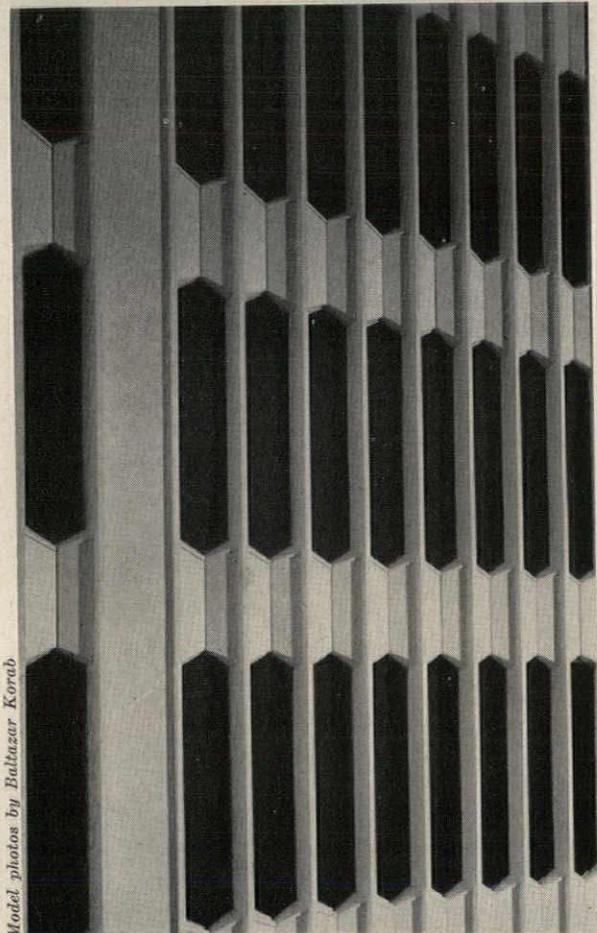
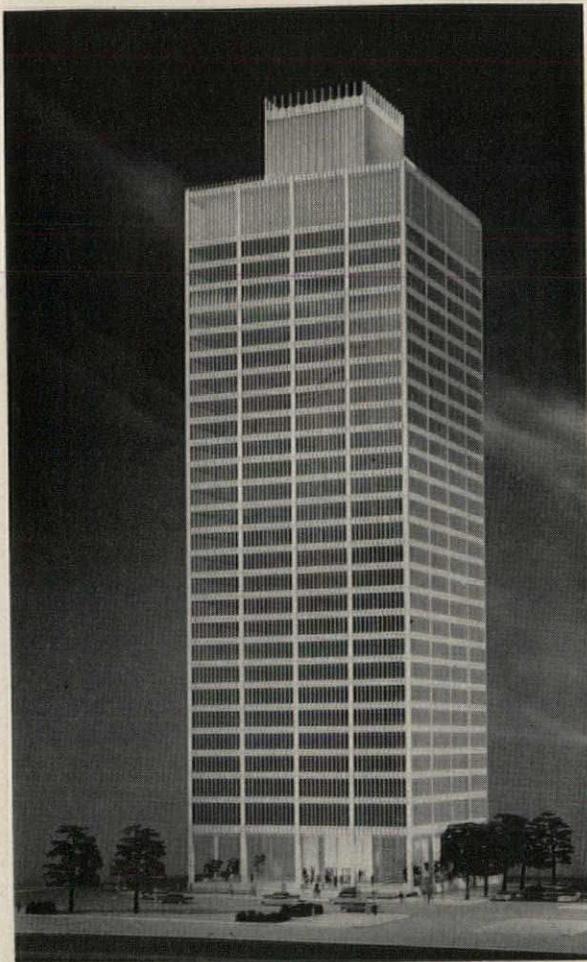
a name to remember

ARCHITECTURAL RECORD AUGUST 1960



## YAMASAKI'S NEW EXPRESSION OF "ASPIRING VERTICALITY"

*Office building for Michigan Consolidated Gas Co., Detroit*



Model photos by Baltazar Korub

## Detroit Skyscraper

*Headquarters Office, Michigan Consolidated Gas Co.*

Recalling Louis Sullivan's idea that a tall building should be a "proud, soaring thing," Yamasaki says of this design, "we wanted to develop an aspiring sense of verticality which seems inherent and necessary for a building of this height. The white, quartz aggregate precast skin enabled us to evolve such a feeling with the most delicate components, and at the same time attain the richness so necessary to modern architecture."

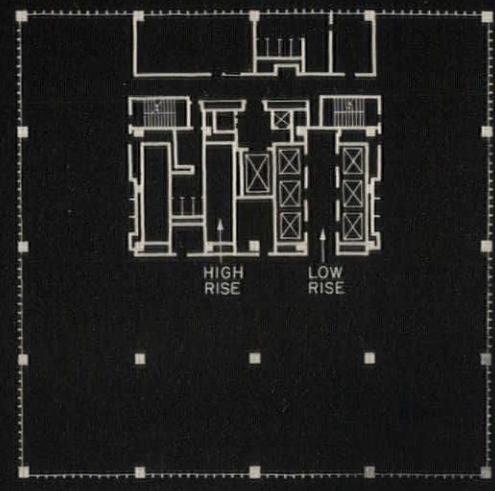
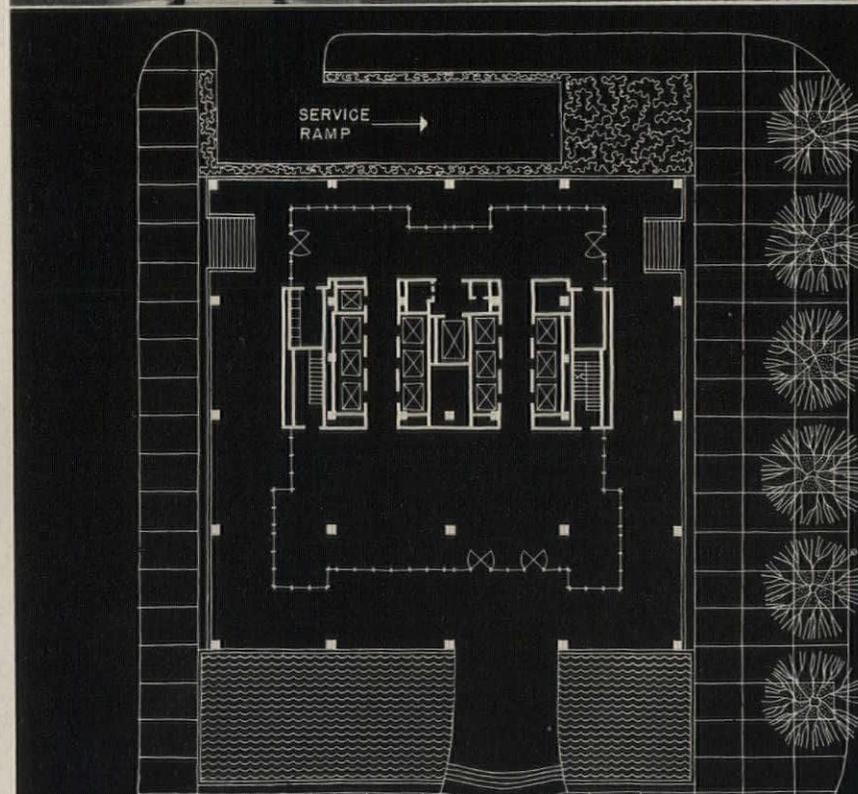
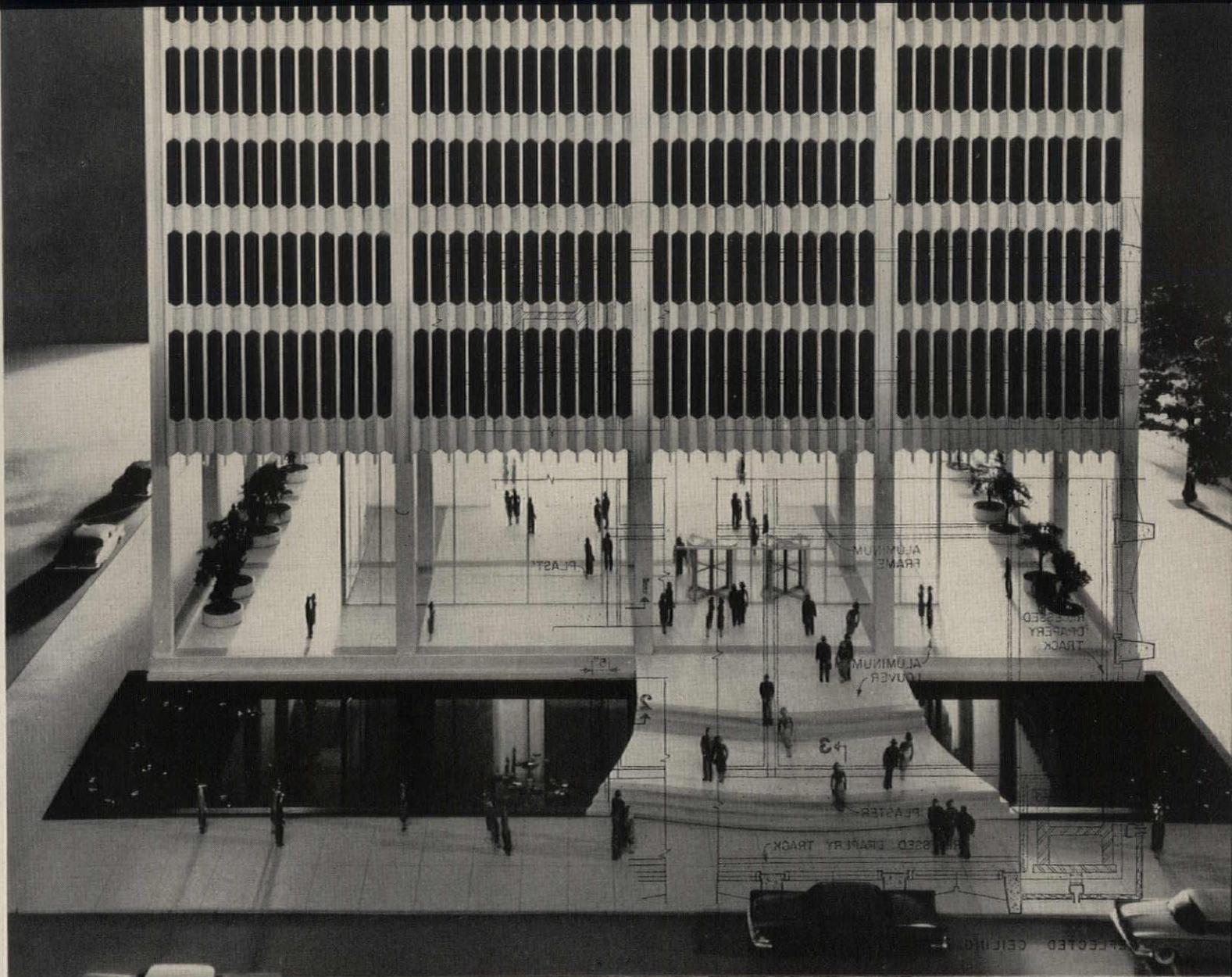
The slender windows contribute to the sense of verticality, and their attenuated hexagonal shape softens the strong horizontal lines spandrels normally create. The deep, 11-in. reveals should provide also the amount of sun and shadow necessary for effective modeling. The quartz aggregate skin will be precast in units 14 ft wide and one story high; the columns will be clad in white marble.

This new headquarters for the 108 year old utility will occupy an unusually favorable site looking across the openness of the nearly completed civic center to the Detroit River. The plot is square and bounded by four streets; the plan of the tower is square, and consists of four bays of 30 ft each way. The \$20 million, 32-story building will rise 430 ft above the street.

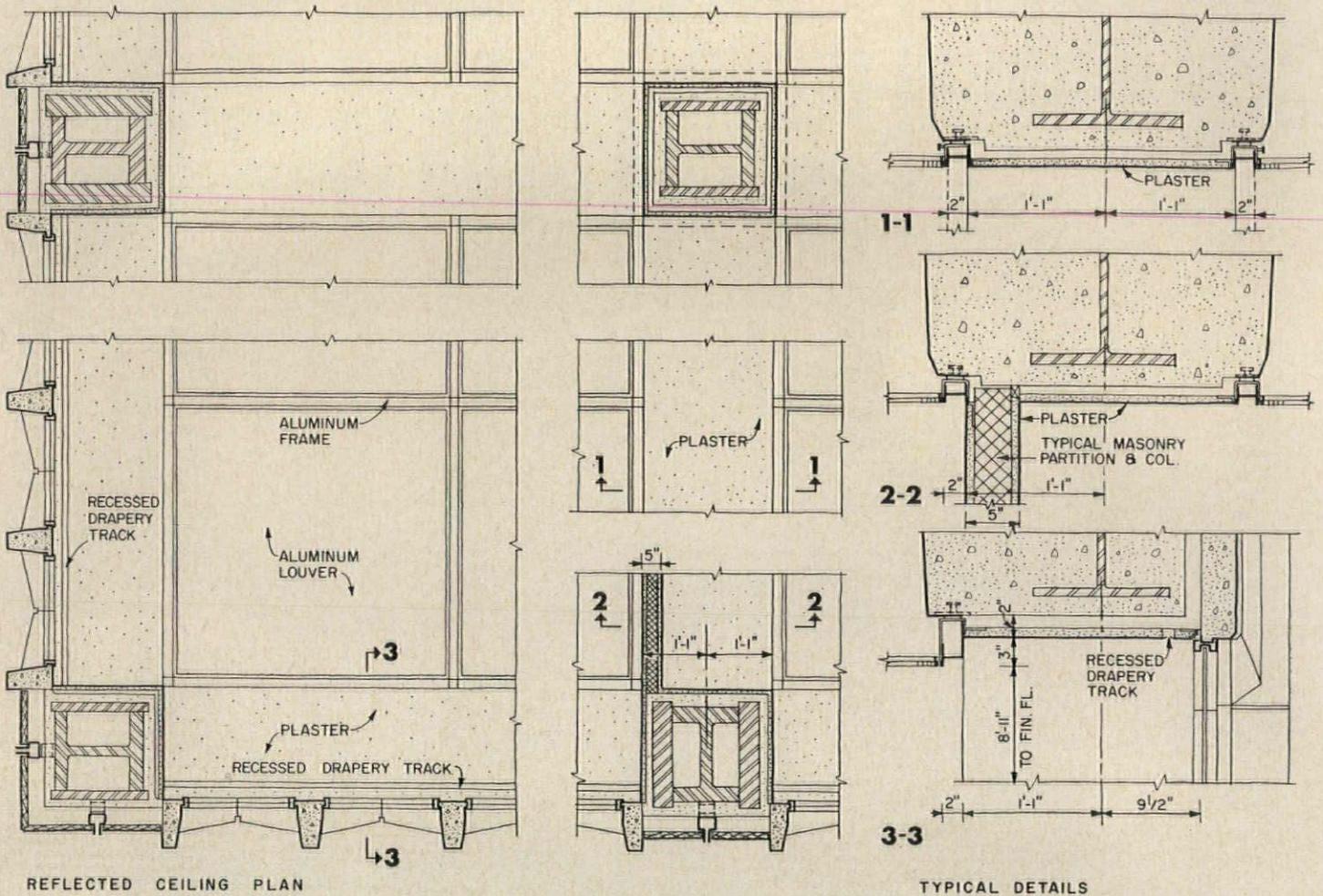
The lobby will have access by way of a 30 ft wide white marble bridge spanning a reflecting pool at the front of the building, or by secondary stairs from the two side streets. The lobby space will be entirely open except for the three shafts of elevators and stairs; and will have walls, floor, and columns of white marble. The elevator lobbies will be carpeted in deep blue; the sparkling suspended lights will be blue—see detail, page 144.

*Minoru Yamasaki—Smith, Hinchman & Grylls, Associated Architects & Engineers; W. B. Ford Design Associates, Interiors; Bolt, Beranek & Newman, Acoustical Engineers; D. Lee DuSell, Sculptor for Lobby Ceiling Lighting.*

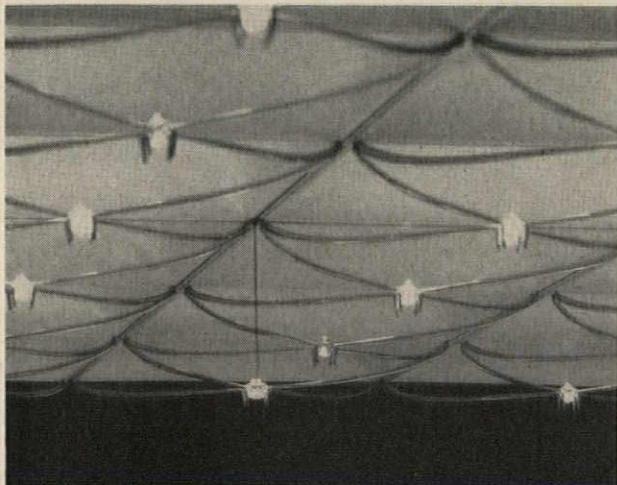
*Architectural Design and Detailing—Minoru Yamasaki & Associates; Engineering Design, Architectural and Engineering Drawings, Specifications, Field Supervision—Smith, Hinchman & Grylls; Firm Sponsors—Robert Hastings & Minoru Yamasaki; Project Administrator—Frederick Sevald; Designers—Harold Tsuchiya & Aaron Schreier; Structural Engineer—Peter Petkoff; Mechanical Engineer—Yoshio Matsumoto; Illuminating Engineer—James McDonald; Electrical Engineer—John Andrews; Elevators—Floyd Williston; for Michigan Consolidated Gas—Ralph McElvenny, Chairman of the Board and President; Hugh Daly, Executive Vice President*



TYPICAL FLOOR (7th)

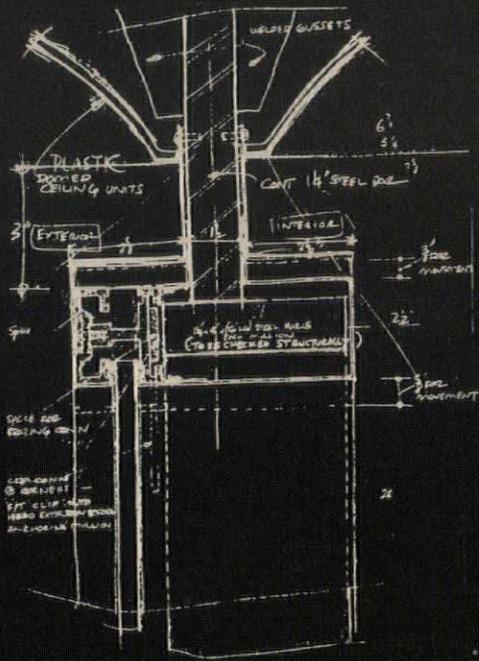


## Detroit Skyscraper

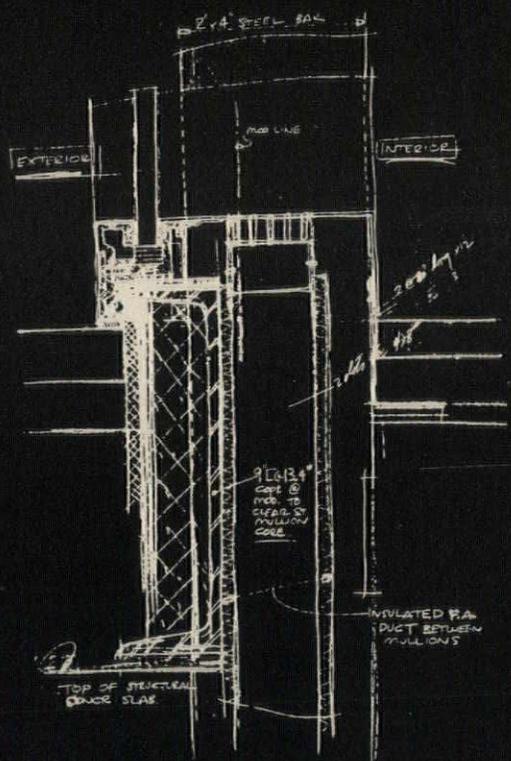


A reflected plan and details of the luminous ceiling typical of all the upper floors is shown above. Both permanent and movable partitions will be used. The narrow window and mullion spacing—2 ft 4 in. on centers—will make possible an unusual degree of flexibility in sizing offices, and will provide, as well, a feeling of protection against the sense of acrophobia many persons feel in rooms with windows extending nearly to the floor. The 11-in. deep concrete mullions, with glazing located at the back, will provide a significant amount of lateral sun shade. Refer to page 204 for a complete technical discussion of the manner in which structural, mechanical, and electrical systems are integrated.

The lobby ceiling lighting system—designed by Lee DuSell—consists of a series of plastic coffers with X-fixtures. James McDonald of Smith Hinchman suggested the lighting scheme, a model of which is shown at left. It consists of a downlight which shines through and around a bead of clear blue glass or plastic, on top of which a reflector is mounted. The reflector will illuminate the coffer; a pinhole opening in the bead will



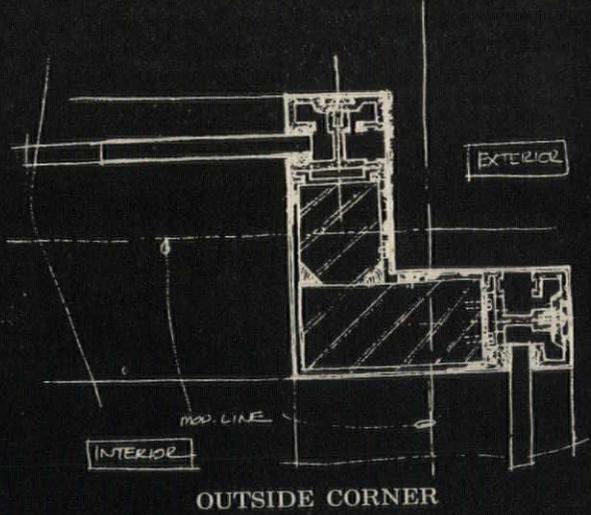
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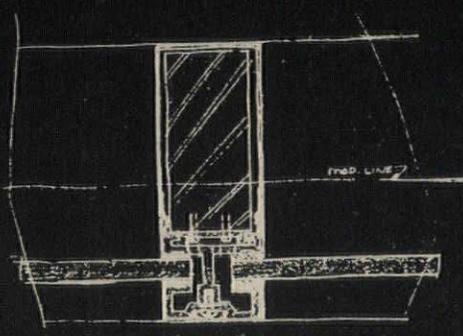
SILL



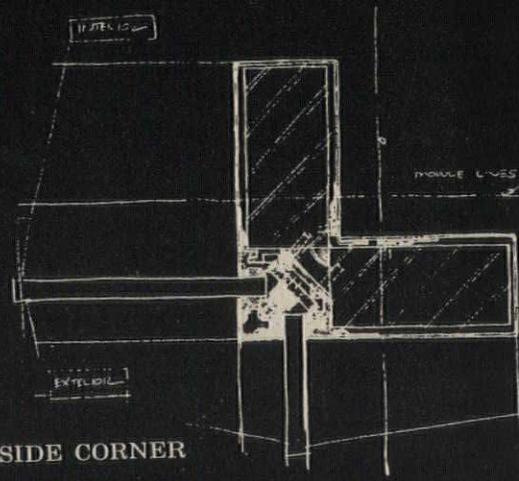
The mullions for the glass wall in the lobby will be pre-tensioned in order to achieve maximum lightness and delicacy—details are shown on this page. Pre-tensioning these 25 ft high members will reduce their required cross section by more than one half. The 4 ft 8 in. wide glass panels will angle in and out for interest and richness



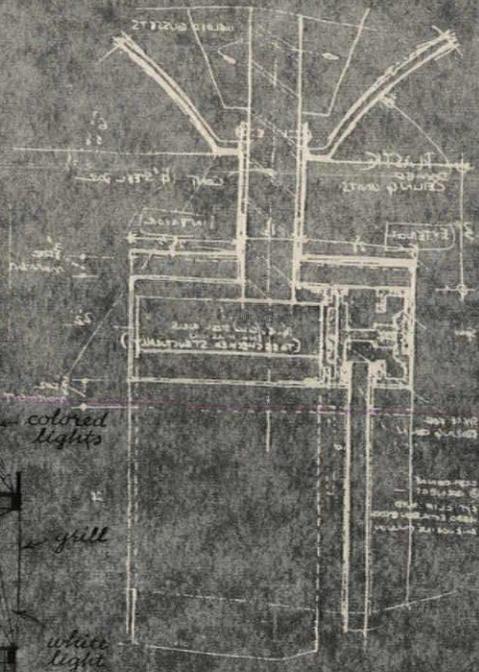
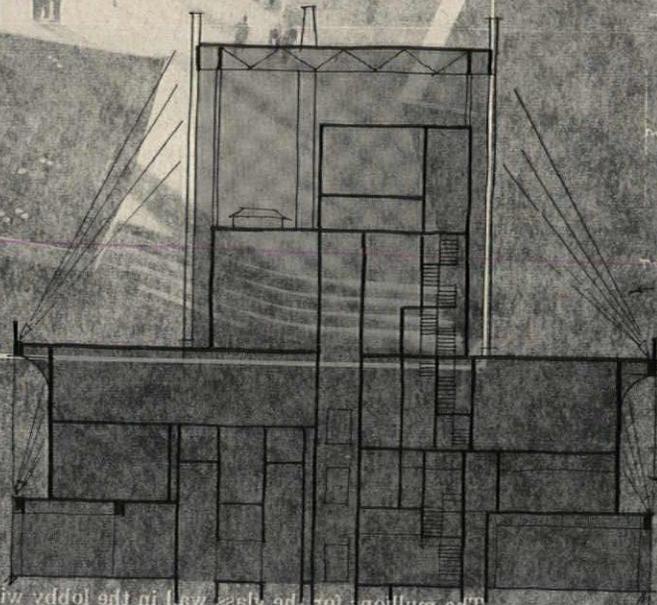
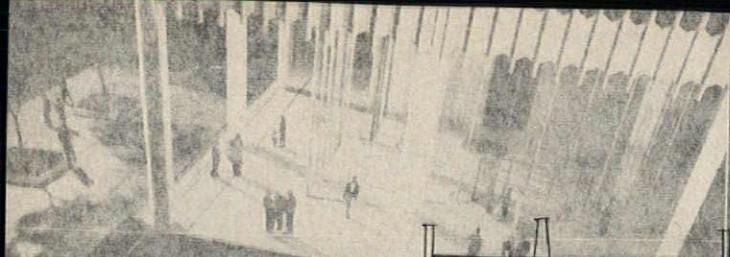
OUTSIDE CORNER



TYPICAL MULLION



INSIDE CORNER

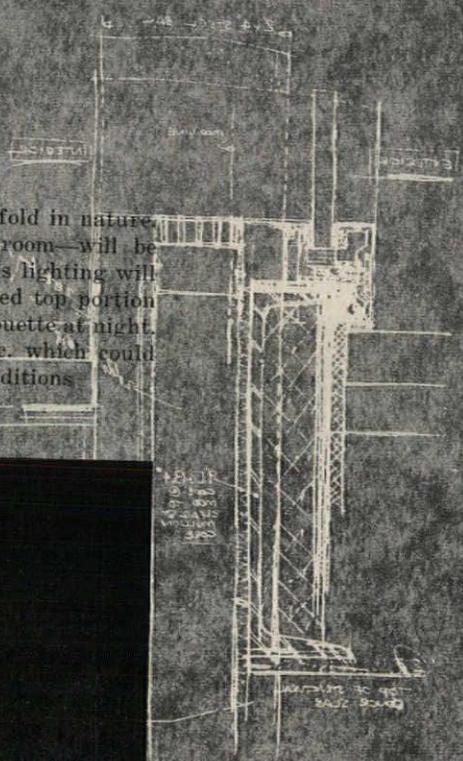


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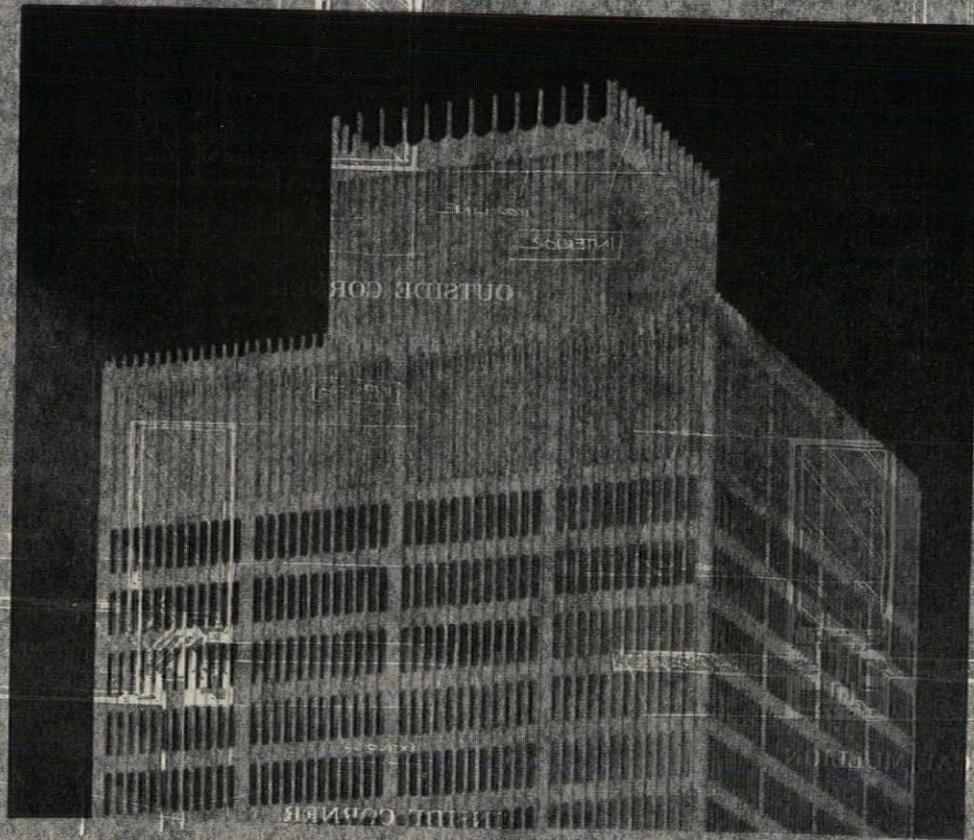
The mullions for the glass wall in the lobby will be pretensioned in order to achieve maximum lightness and delicacy—details are shown on this page. The tensioning cables 2 1/2 in. high members will reduce their required cross section by more than one half. The 4 in. wide glass panels will angle in and out for interest and richness.

### Detroit Skyscraper

Night lighting for the top of the building will be interesting, and is twofold in nature. The upper penthouse—which will house the cooling tower and boiler room—will be illuminated by units concealed behind the tower parapet. The color of this lighting will indicate the weather; blue for clear days, orange for rain, etc. The grilled top portion of the main shaft will be back-lighted to stand out in sharp, lacy silhouette at night. The floors in back of this grill will contain mechanical rooms, shops, etc. which could not be located in the basement of the building due to unfavorable soil conditions.



SHFT.





## SOARING RIBBED VAULTS TO DOMINATE YAMASAKI'S DESIGN FOR SEATTLE FAIR

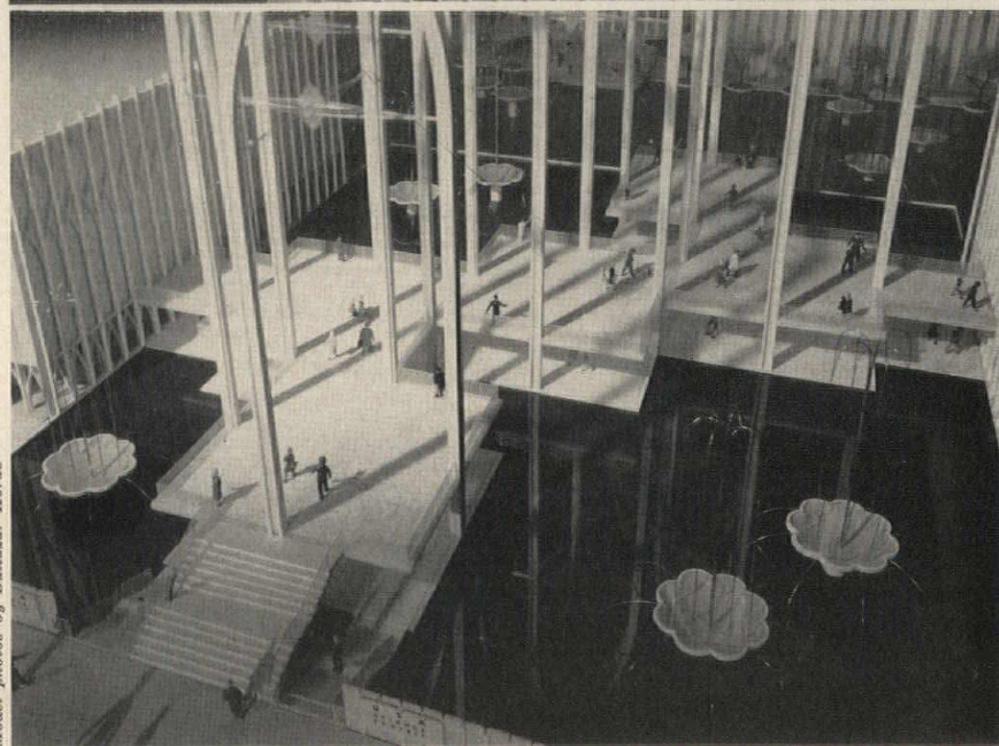
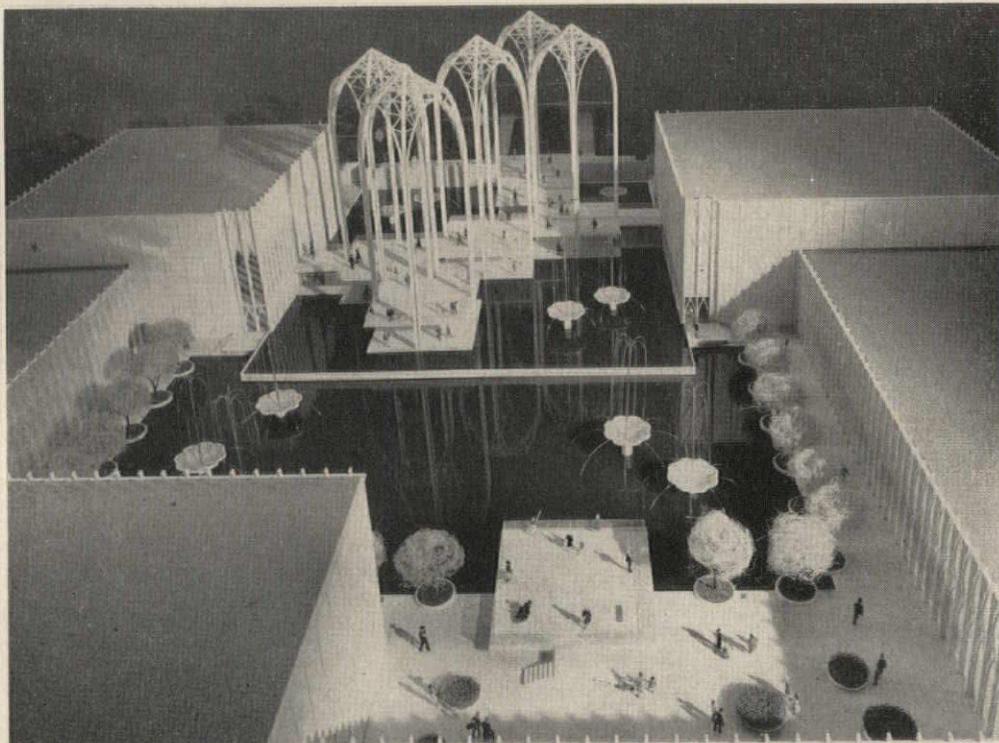
Demonstrating his continuing interest in Gothic forms, architect Yamasaki has made five open-ribbed vaults the visual focus of the design for the U. S. Science Pavilion for the 1962 "Century 21" International Exposition. The skeletal vaults will rise 100 ft above a central courtyard-lagoon; will be constructed of precast concrete with an exposed aggregate of gleaming white quartz; will be glazed at their crowns with vari-colored glass; will be gaily lighted at night by suspended colored lanterns.

The vaults will rise above a series of connected platforms offering passage over an area of pools, fountains, and planting—the platforms serving as entrance and exit for the five exhibit buildings grouped in U-shape to define the courtyard. Precast components of the surrounding buildings will repeat the neo-Gothic motif. The architect describes the courtyard-lagoon area as an "outdoor room of quiet"

*(Continued next page)*



- |                       |                    |
|-----------------------|--------------------|
| 1. Introduction       | R. Rest Area       |
| 2. Paths of Science   | 4. Science At Work |
| 3. A Space Experience | 5. Summation       |



Model photos by Baltazar Korub

*Architects: Minoru Yamasaki & Associates and Naramore, Bain, Brady & Johanson. Designer Of Exhibits: Walter Dorwin Teague Associates. Philip M. Evans, Commissioner, United States Department of Commerce*

## U. S. Science Pavilion for Seattle Fair

and peaceful character, in contrast to the general noise and confusion of a world's fair all about." The element of surprise has been employed in introducing visitors to the courtyard space; the relatively high outer wall serving to block their view of the pools, fountains, and flowers within until they climb the short flight of stairs that lies immediately beyond the entrance gate in the wall.



# ART SERVES SCIENCE

*Alfred Newton Richards  
Medical Research Building  
University of Pennsylvania,  
Philadelphia, Pa.*

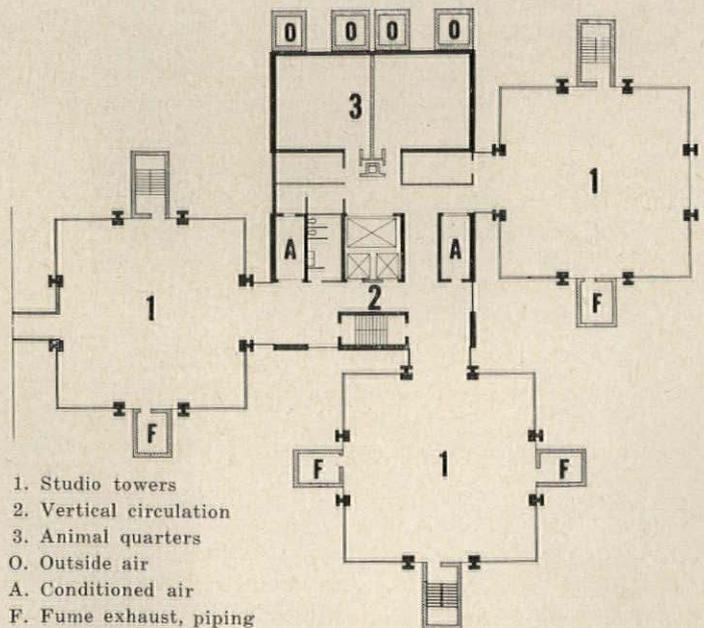
*Louis I. Kahn, F.A.I.A.*

*Joseph W. Molitor*



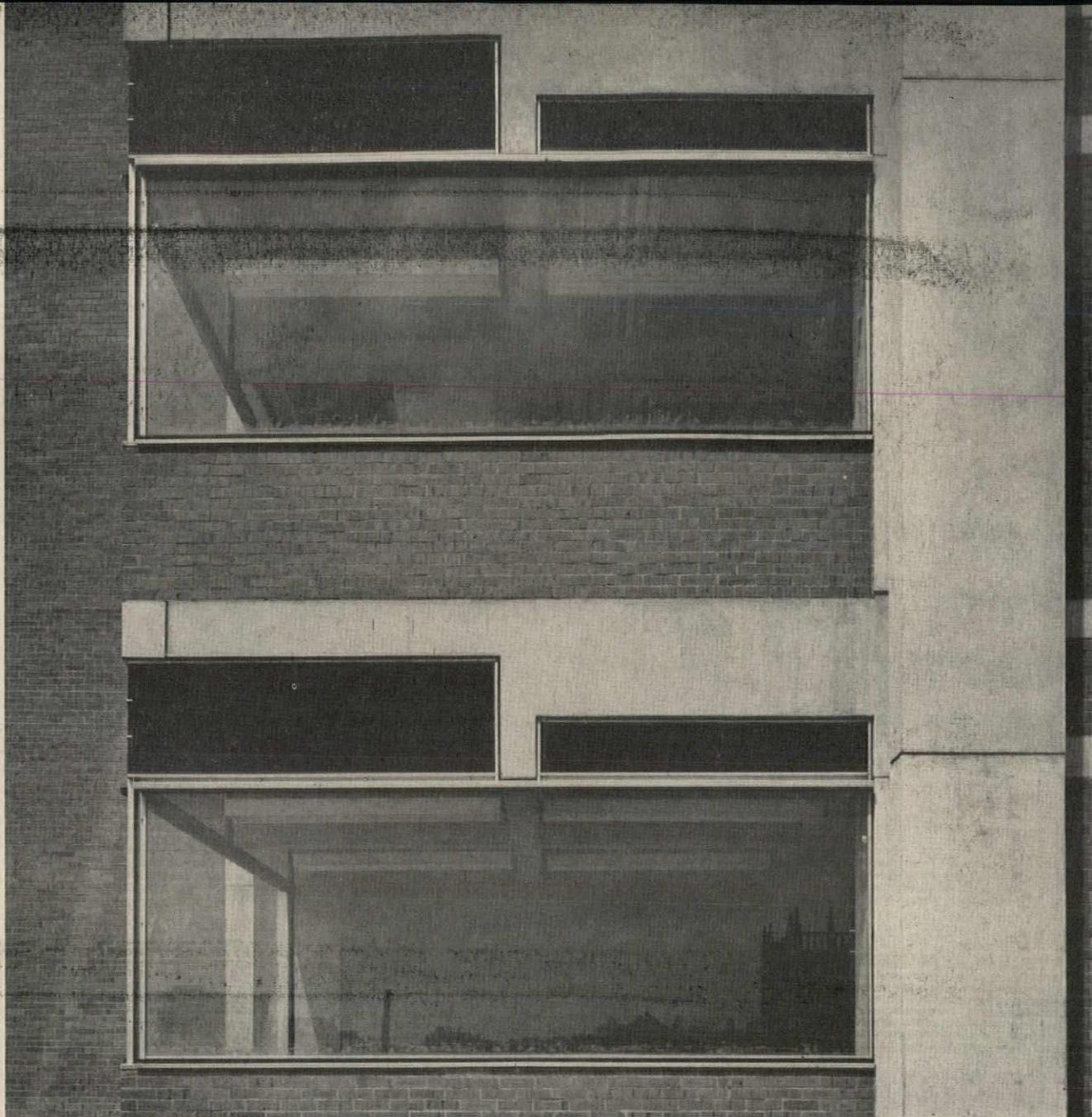
"The entrance portico where the intricate simplicity of the structure stands clearly revealed . . ."

Photos: Mildred Schmetz



- 1. Studio towers
- 2. Vertical circulation
- 3. Animal quarters
- O. Outside air
- A. Conditioned air
- F. Fume exhaust, piping





## Alfred Newton Richards Medical Research Building

eccentric loads, and, by precasting, could be formed as cheaply as a rectangle.)

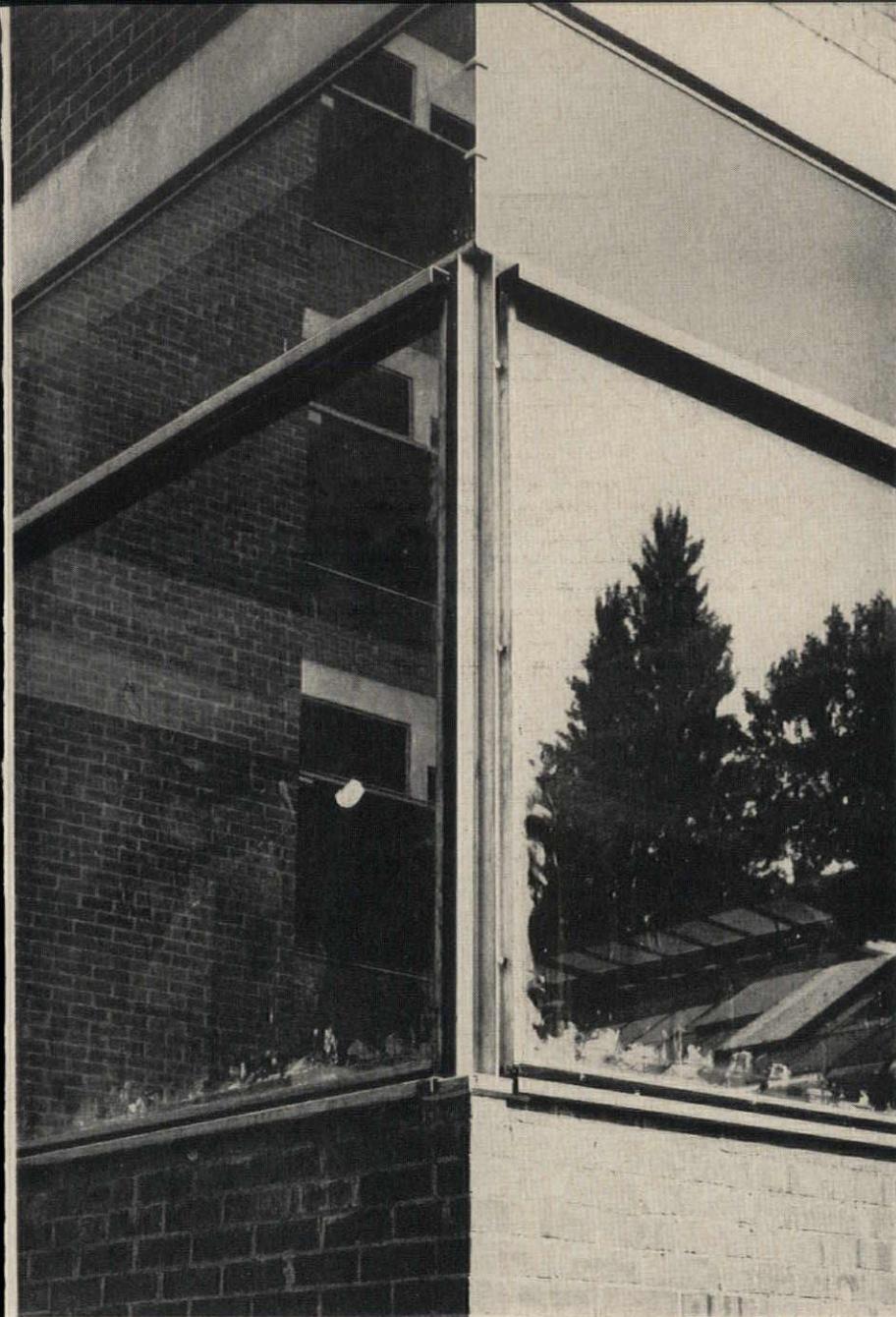
Similarly, faced with an intimidating mass of mechanical equipment, Kahn neither concealed nor glorified it. He simply accommodated it. In the process he synthesized structure and mechanics while giving the mechanical system itself full expression as an inescapable fact of life of a laboratory.

To Kahn, of course, the expression of any aspect of a building must evolve naturally from an initial "realization of what the building wants to be": the statement must derive from a clearly-formulated concept. It is this insistence on beginning at the beginning that gives the Richards Medical Building power without muscle-flexing, individuality without gimcrackery. Structural advances, which Kahn welcomes, and mechanical necessities, which he merely respects, are alike made means to the building's ends.

The ends in this case were to provide for the re-

searchers the kind of studio environment preferred by other creative men (architects, for instance), and to supply the services needed for their work without contaminating their air or encumbering their space. Kahn early rejected the usual double-loaded service corridor with offices and laboratories on either side: It would relegate researchers to "cells" defined by such more or less permanent verticals as columns, pipes and ducts, and it would lead possibly contaminated air from their laboratories through the building before exhausting it. Yet this standard solution was made workable after all—by simply standing it on end.

Thus the offices and laboratories are stacked in three eight-layered towers clustered swastika-style around a ten-story "service corridor." This central tower houses elevators, stairs, lavatories, pens for laboratory animals and similar "servant areas" shared by the flanking studios. It also provides them

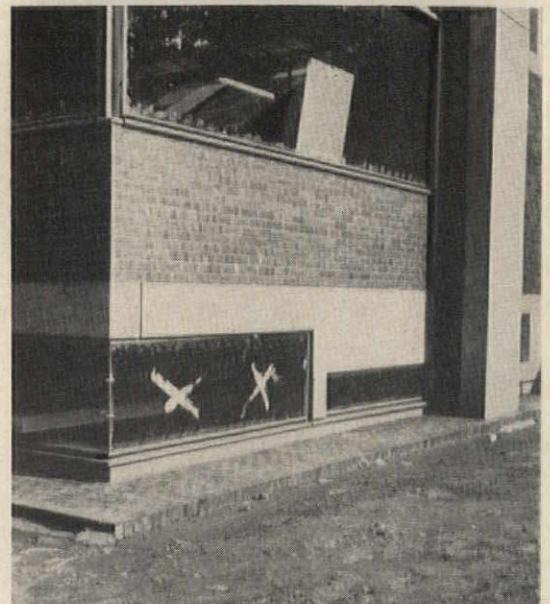
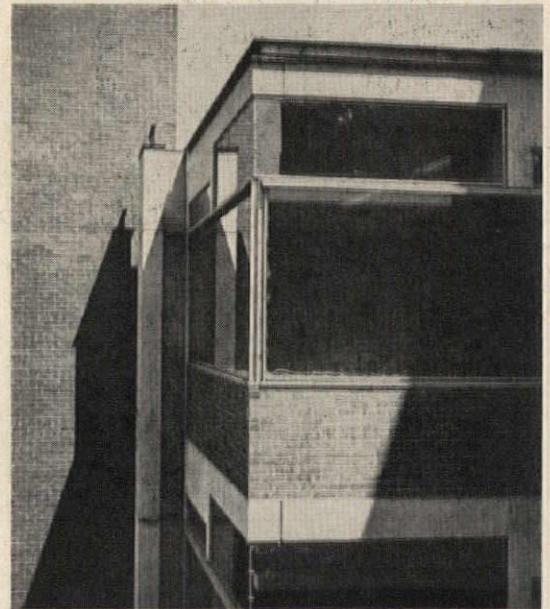


Photos: Mildred Schmertz

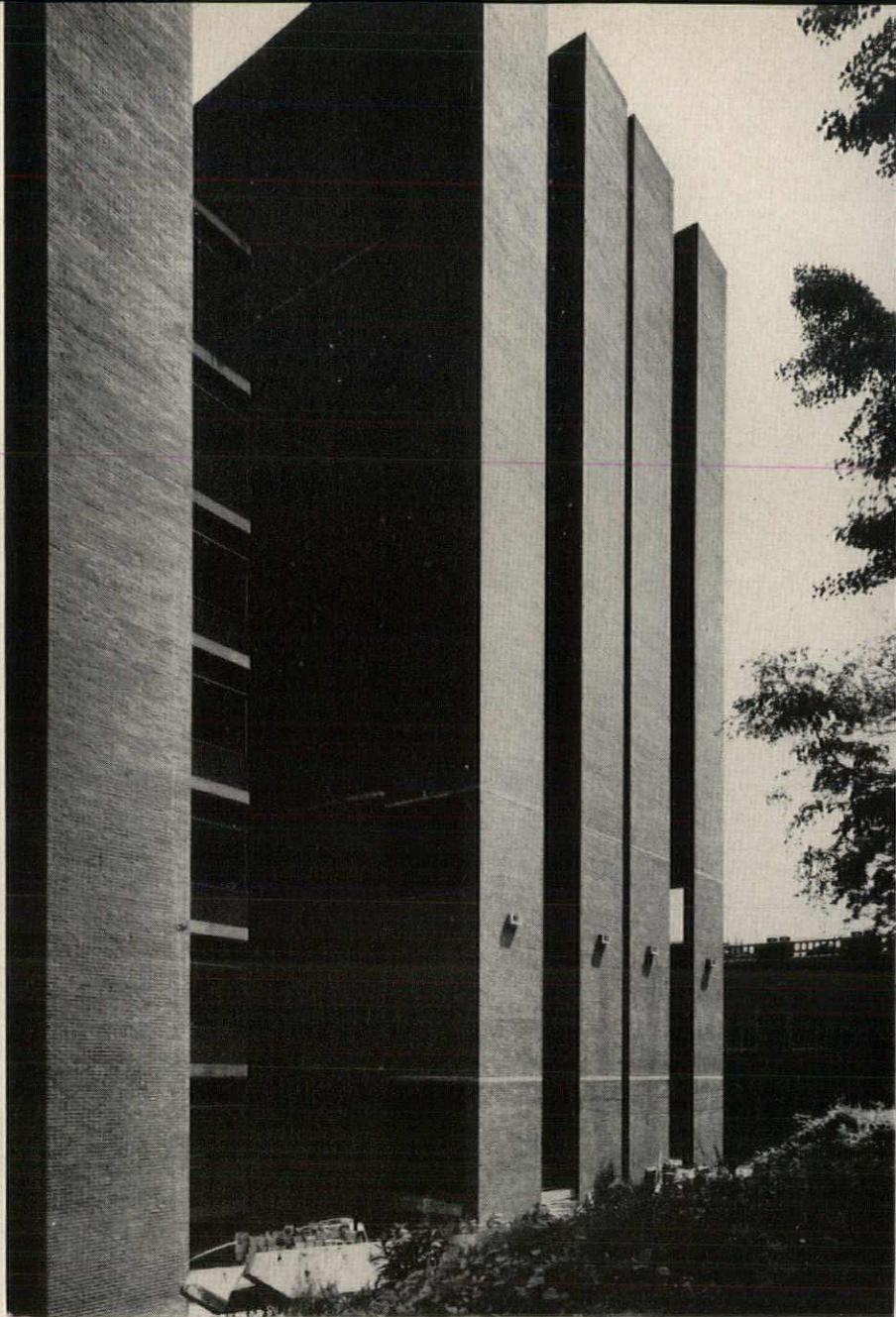
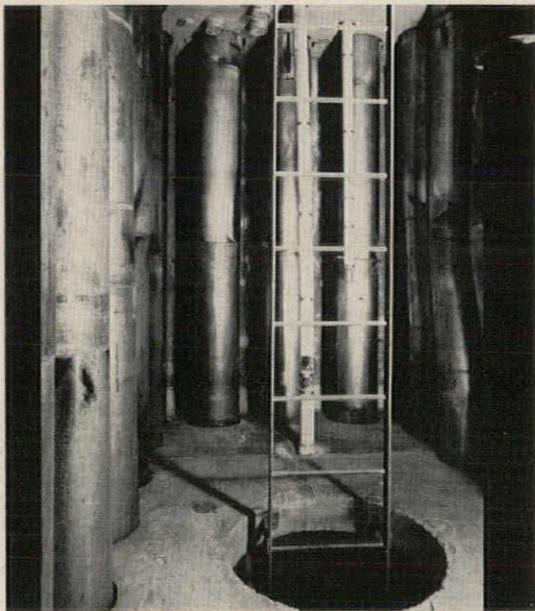
with fresh air. Rooftop handling units inhale clear outside air through four mammoth nostrils at the rear of the utility core, condition it, and send it back down the central tower, distributing it to the studio floors en route. To assure complete separation of this supply air and the waste air and fumes from the laboratories, the studio towers are equipped with their own exhaust stacks, sturdy peripheral brick towers that also contain vertical services peculiar to the studios. Similar shafts enclose emergency stairs, while vestigial subtowers, mere glass-walled passages, link the studios to the central core.

With vertical circulation of piping and people thus removed from the studio interiors, the structure that frames their 45-ft square clear spans itself became an open web through which the utilities housed in the subtowers flow horizontally in, through, and out of the studio floors. Its massive H-columns support a two-way network of bulky Vierendeel trusses which,

In elevation, the studio towers of the Richards Laboratory are a strong geometric pattern of lime-white concrete, pinky-purple brick, and transparent glass. (Where sun control is necessary, on the west side and the upper floors, blue-tinted glass is used below the spandrel beams.) In perspective, particularly from above, they become a stack of giant trays, an effect stemming primarily from the openness of the corners which were lightened by moving the columns into the third points and by cantilevering the spandrel. The spandrel beams, too, help to lighten the corners, their depth reduced in steps to take advantage of decreasing stresses in the cantilever span without making it necessary to glaze into a sloping member. This artful logic extends to other exterior details: joints between the concrete building blocks are tooled for maximum definition; the slender metal strips that frame the windows are not tubular sections that "might be hiding blocks of wood," but are folded to retain the original character of the unburnished stainless sheet; simple, serviceable column caps cast Gothic shadows on nearby towers; the bottom "trays" settle lightly but finally on brick pads



The central utility core is a brick-faced, site-poured concrete tower constructed so that walls enclosing service facilities are also "hollow columns" supporting two-way slabs. Its rear elevation (right) is distinguished by the giant nostrils that supply air to the flanking studio towers. These towers (for details see ARCHITECTURAL RECORD, September, 1959) are precast, prestressed rigid frames made up primarily of paired perimeter columns which support a structural-mechanical web of heavy Vierendeel trusses (far right). Secondary trusses criss-crossing the bays formed by the Vierendeels act as intermediate supports for the utility lines that flow through them. Similar truss sections in the center of the spandrel beams complete the overhead network through which exposed ducts, pipes and conduit, arranged to express their use, flow to and from the vertical service shafts (below)



## Alfred Newton Richards Medical Research Building

supplemented by slimmer secondary trusses and cantilevered spandrel beams, carry the floor loads while permitting the free but unobtrusive overhead passage of exposed ducts, conduit and piping.

There are no verticals within the studios proper except the concrete block partitions around offices and laboratories. These Kahn considers "just furniture," impermanent and expendable. However this "furniture," which extends from floor to overhead service web, *looks* very permanent indeed—so permanent that the actual openness achieved in the studio floors is apparent only in a few very large laboratories. As a result, the building boasts no great interior spaces, although its exterior spaces—the entrance portico in which the intricate simplicity of the structure is clearly revealed, and more particularly the voids between the towers—are more than adequate substitutes.

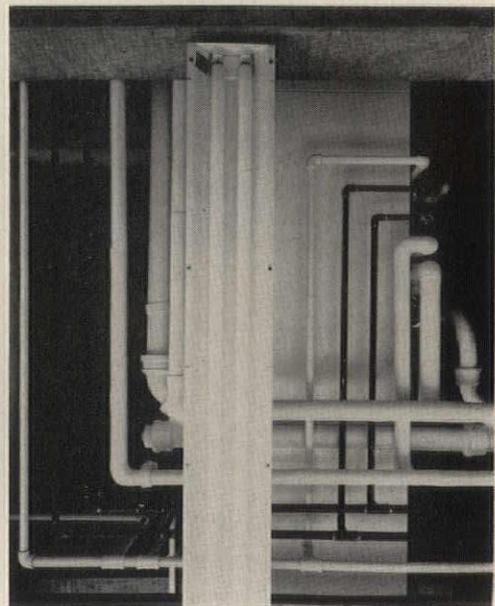
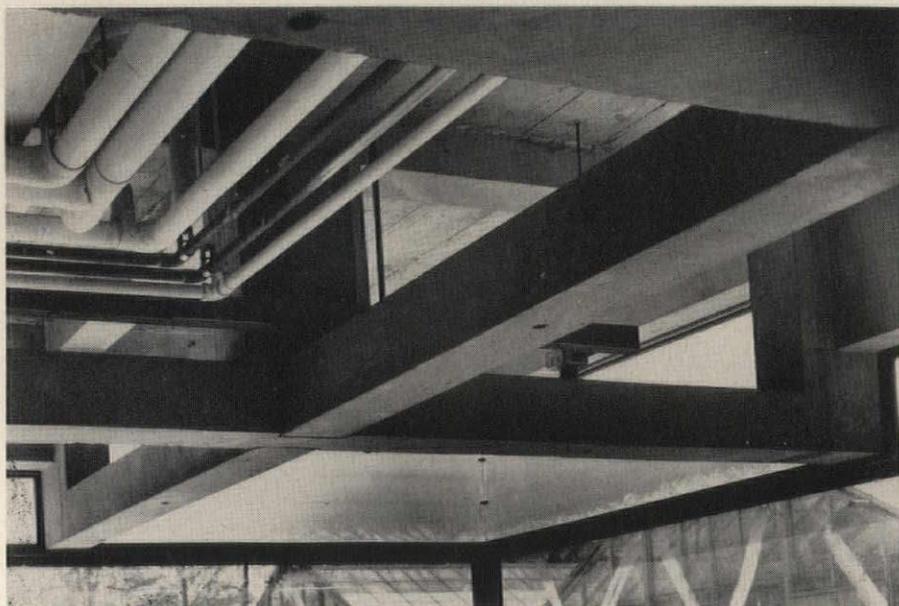
The tower cluster's curious habit of doubling back

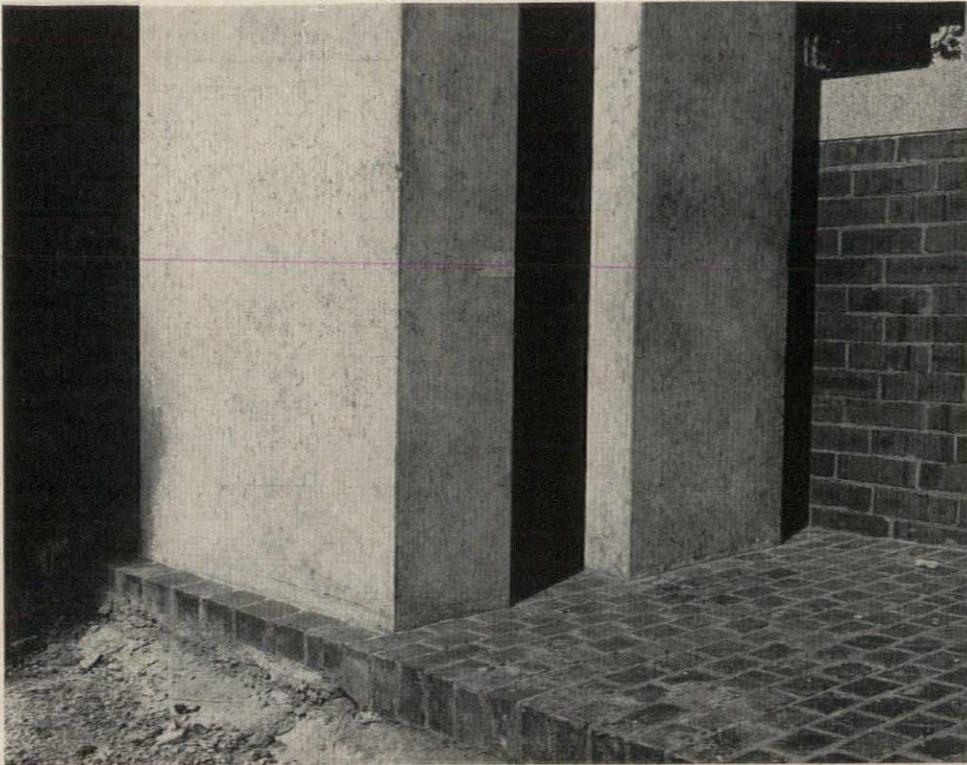
on itself prevents its being apprehended as a whole. But the partial elevation of a tower glimpsed through the glass link between the core and another tower, across an intervening space, gives the uniquely satisfying sensation of having viewed the building in its totality, at once from within and without. Similarly, the whole can be "read" from even the smallest parts. The folded metal of a window frame or the tooled joint between two granite-smooth chunks of precast concrete are as unmistakably the building's own as the massing of its studio towers and the shafts that serve them or the highly sophisticated structure that gives them form.

This singular coherence, derived from the flawless blending of disparate elements into a unified organism, has also rescued the Medical Research Building from domination by gratuitous technological feats that in a lesser building might have been considered sufficient unto themselves.



Photos: Joseph W. Molitor





*Photos: Mildred Schmertz*

### Alfred Newton Richards Medical Research Building

The integrity that characterizes the design of the Medical Laboratory can perhaps be seen most vividly in the clear visual distinction between the two concrete constructions used. In the central tower, which did not lend itself particularly well to precast construction, the exposed concrete unabashedly reveals the relative crudity of site forming. The grain marks left by the wood forms, and even the holes left by the ties are untouched, in pointed contrast to the factory finish of the precast members that frame the adjoining studio towers. Cast in steel forms (the initial cost of which was justified by re-use), these have a precision unusual even in precasting: knife-sharp edges, complex detailing, machine-close tolerances, and the sleek surfaces obtainable only by steam-curing

# The Building Business in the Sixties

*A projection of trends  
by the Economics Division,  
F. W. Dodge Corporation*

NEW CONSTRUCTION during the 1960's will provide a market for more than 650 billion dollars in goods and services. This will be, by far, the largest market ever attained by any fabricating industry.

The pages that follow give some of the reasoning behind this estimate, and point up specific trends that may be expected in the major types of construction. Before going into detail, however, a few words about the projections and their assumptions are in order.

First, we believe that the estimates are conservative, but not overly so. In other words, we have tried to avoid a bias in the direction of either optimism or pessimism, attempting to stick to what seems reasonable and factual as we see it now. The Sixties promise to be a decade of rapid growth, despite some current sluggishness. But a few of the forecasts which have been made in recent months contain what appears to be a little "pie in the sky," and it seems prudent to view the higher ones with caution. For instance, some forecasts of Gross National Product in 1970 run as high as \$800 billion. Our projections imply a 1970 G.N.P. of about \$725 billion. Actually, even our figure represents a somewhat higher rate of growth than the nation has enjoyed in the past few years, although it is a little below the average rate for the whole postwar period.

We have assumed that there will be no major war in the Sixties, because this is the only practical assumption an economic forecast can make. While we are reasonably sure that business—and construction—will undergo some cyclical fluctuations during the decade, we have not attempted to indicate when they will occur. Such an attempt would serve little useful purpose, since the art of forecasting business cycles is still highly imperfect. Our projections are intended to indicate long-term trends, and we have therefore confined ourselves to estimates for 1969 without inserting figures for individual years during the decade.

All the value projections are in constant 1959 dollars. This means that the projections measure real increases in the physical volume of construction, without regard to changes in the value of the dollar. Continued inflationary pressures, which are likely during the 1960's, will make the actual figures somewhat higher when they are reported.

GEORGE CLINE SMITH,  
*vice president and chief economist*  
F. W. Dodge Corporation

Chart 1.

80

Billions of Dollars

70

## New Construction Put in Place

60

50

40

30

20

10

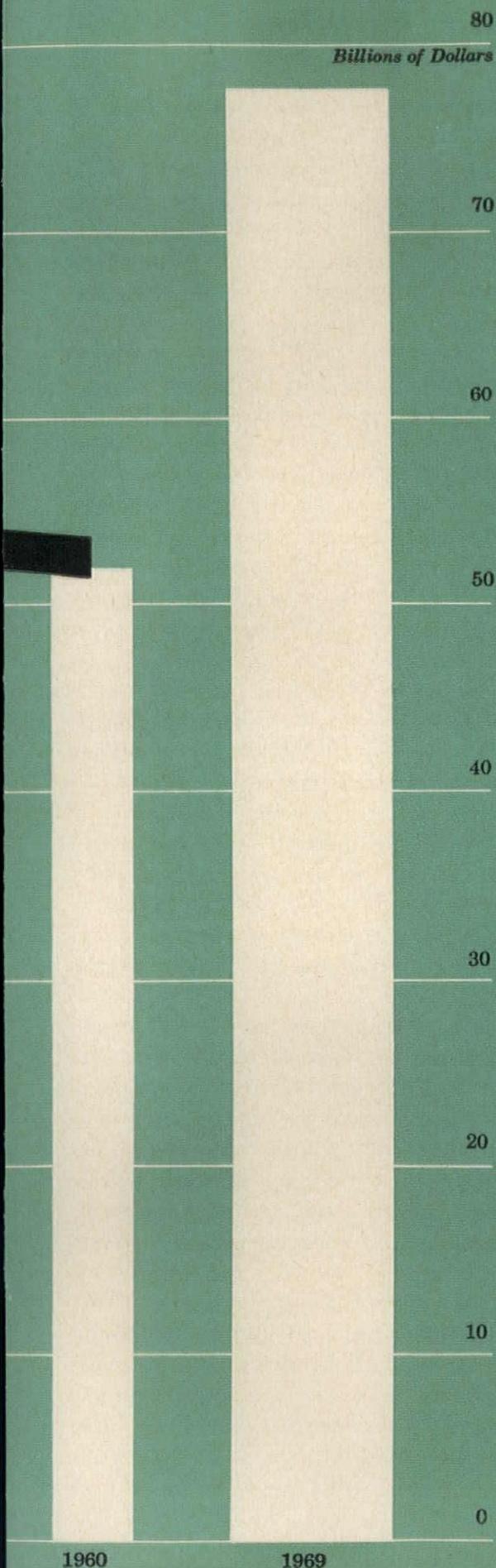
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Constant 1959 Dollars

Actual Dollars

1949 1950 1951 1952 1953 1954 1955 1956 1957 1958 1959

Source: (For all charts) 1949-59, U.S. Dept. of Commerce. 1960, 1969, estimates by Economics Division, F. W. Dodge Corporation.



## Total New Construction

IN ACTUAL DOLLARS, construction in the United States has risen steadily throughout the postwar period until 1960, when a modest downturn seems to be in the making. The heavy line on Chart 1 shows the movement in actual dollars, as reported, from 1949 on.

Rising costs have played an important part in pushing up these dollar totals. When an adjustment is made to eliminate the effects of inflationary pressures, it is apparent that the growth of the construction industry in real terms has not been either as rapid or as steady as the raw figures would indicate. A glance at the bars on Chart 1, which are calculated in terms of constant 1959 construction dollars, shows this difference very clearly. In real terms, the growth in construction since 1955 has been relatively small.

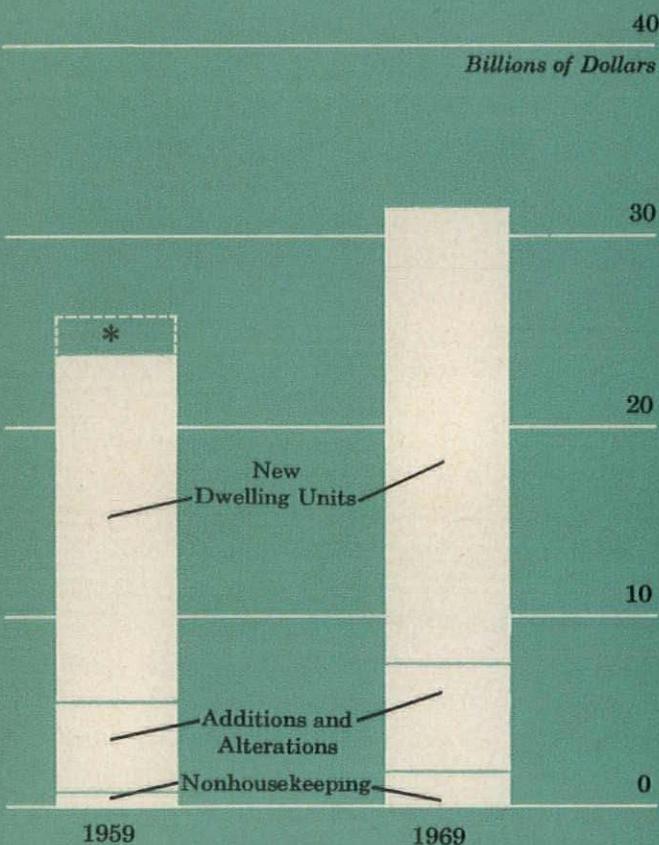
The new series on housing starts, recently developed by the Census Bureau, indicates that substantially more houses were built in each year than had been reported. The so-called "work-in-place" figures, on which Chart 1 is based, have not yet been adjusted upward by the government to reflect the new series on housing. Each figure from 1949 through 1960 would be increased by a small amount, probably in the range of 4 to 6 per cent, if this adjustment could be made. Trends, however, would not be changed significantly. And for reasons explained later, the 1969 projection is not affected by this adjustment.

We expect that total new construction will rise from \$54.3 billion in 1959 to \$77.6 billion in 1969. New construction has accounted for something in the vicinity of 11 per cent of Gross National Product in typical recent peacetime years, and if this relation holds in 1969, the G.N.P. then would be about \$700 billion. Continuing the projection for one more year would put new construction in 1970 at about \$80 billion and G.N.P. at a little over \$725 billion.

Assuming a steady upward trend between 1959 and 1969, total new construction for the ten years of the Sixties would amount to about \$670 billion in 1959 dollars. Obviously, this assumption cannot be made, since 1960 is turning out to be below such a trend. An estimate of \$650 billion for the decade, however, seems quite conservative.

## Nonfarm Residential Building

(1959 Dollars)



\*Expected revision due to new higher housing starts series compiled by the Census Bureau. (Approximate.)

## Residential Building

HOUSING constitutes the largest single segment of total new construction. There are three main categories of residential building included in the work-in-place series. The most important is the construction of new dwelling units, either singly or in multiple-unit structures. A second category is "additions and alterations" which consists of major changes to existing housing. (This should not be confused with maintenance and repair, which is not considered part of new construction.) The third principal category, much smaller than the others, is "nonhousekeeping", and it includes such structures as hotels and dormitories. Farm housing is not included in the residential building group, but is carried as part of farm construction. All reference in this section is to nonfarm housing; but farm housing in recent years has been a very minor part of the housing picture, and its exclusion makes very little difference to the residential figures.

Our estimate is that residential building will increase from the \$23.3 billion reported in 1959 to \$31.1 billion in 1969. The 1959 figure is low, because it has not yet been adjusted upward to take into account the new and higher housing starts series of the Census Bureau. As indicated on Chart 2, our rough estimate is that the adjustment, when made, will bring the 1959 total to \$25.6 billion instead of \$23.3 billion, but this is completely unofficial. This adjustment does not affect the \$31.1 billion projection for 1969.

The projection indicates an increase of 33 per cent in physical volume of residential building over the decade, as measured in 1959 dollars. Spending for new dwelling units will rise 31 per cent from the unrevised 1959 figure, additions and alterations will rise 34 per cent, and nonhousekeeping will go up 88 per cent. The estimated increase in nonhousekeeping appears large, but it represents a slower rate of growth than this category has actually experienced in the postwar period.

Use of 1959 figures adjusted upward to account for the higher housing starts series would decrease the percentage gain in total residential building and in new dwelling units over the decade. On this basis, total residential building would be up 21 per cent by 1969 and new dwelling units would be up only 16 per cent.

## Housing Units

ACCORDING TO the new Census series on housing, 1,530,900 new nonfarm dwelling units were started in 1959. Some 244,000 of these, or slightly less than 16 per cent of the total, were in multiple dwellings; the remainder were in one- and two-family structures. The 1960 total will be below 1959 by 10 per cent or more.

There is no doubt that housing activity will undergo considerable growth in the 1960's. Some popular estimates put the level of starts in 1970 as high as 2,000,000 a year, but this figure seems a little too optimistic. It is entirely possible that there will be a two-million-unit year toward the end of the decade, but we are talking trend levels on a sustainable annual average basis, and these seem likely to be somewhere in the neighborhood of 1,800,000 units by 1970.

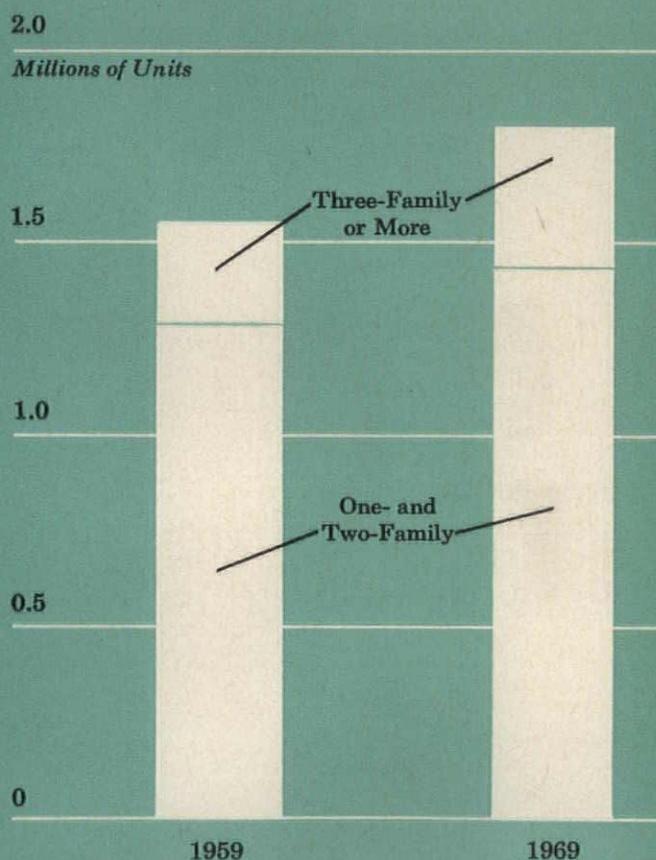
The new higher Census figures on housing starts, it should be pointed out, do not significantly affect the end-of-the-decade projection, since the projection is largely based on demand factors. But the fact that we are currently building housing at a rate higher than had been realized does imply that the increase during the decade will not be as sharp as the old housing series would indicate.

During the decade, about 16 million new nonfarm dwelling units will be required. Population growth (and some slight shrinkage in household size) will require 11 million. A bare minimum replacement rate will require another 3 million. A trend toward two-house families will call for one million more. Finally, about a million additional units will be required to maintain the vacancy rate. This last point may seem strange at first glance, but it is a fact that as our total housing stock grows, the number of vacant houses must increase if the percentage of vacancy is to stay the same. And, of course, some reasonable vacancy rate is required for flexibility of movement and the effective operation of real estate markets.

The 1960's will see more emphasis on multiple dwellings than there has been in recent years. The adult population will grow most rapidly at both ends of the age scale, among newly married couples and the elderly, and these groups are less likely to be interested in single-family homes. The 1970's, however, should see some reversal of this situation.

## Nonfarm Residential Building

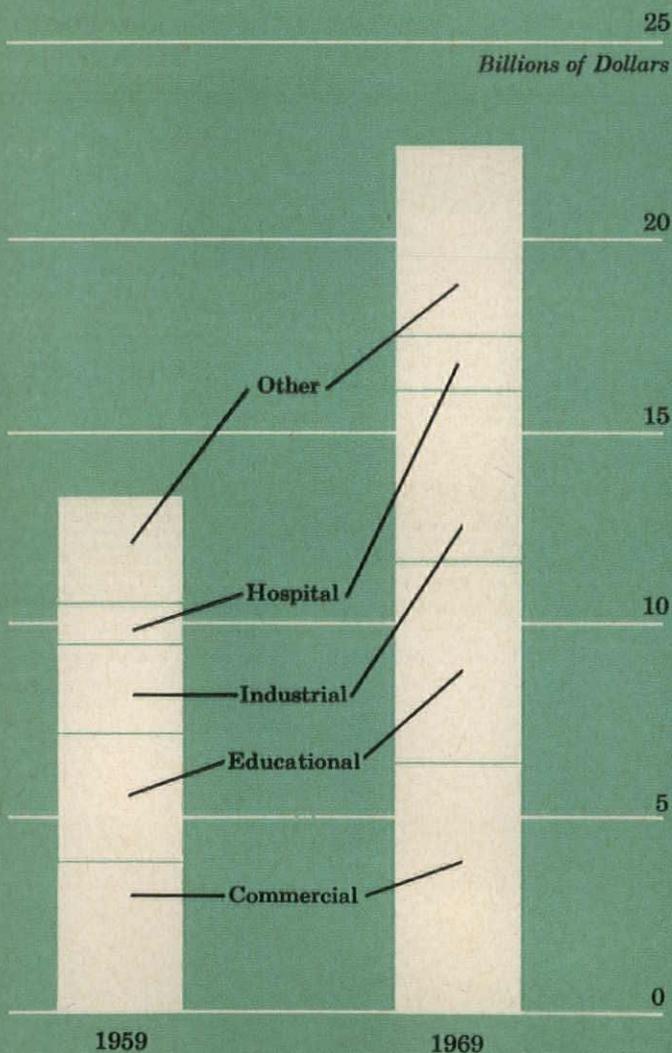
(Number of New Dwelling Units\*)



\*Based on new Census series.

## New Nonresidential Building

(1959 Dollars)



## Nonresidential Building

NONRESIDENTIAL building in 1959 amounted to \$13.2 billion. The projection for 1969 is \$22.3 billion, an increase of 69 per cent during the decade.

Among the major categories, the sharpest percentage gain should be in industrial building. This is partly due to the fact that in 1959, industrial building was abnormally low in relation to other building types. The trend from here on should be upward, in tune with general growth of the economy and the need for new facilities to produce new and different products, or to take advantage of new producing methods. Annual outlays for industrial buildings should rise from \$2.4 billion in 1959 to \$4.4 billion in 1969, a gain of 83 per cent.

Commercial building is the largest nonresidential building category, and an increase of 64 per cent is indicated, from \$3.9 billion in 1959 to \$6.4 billion in 1969. Store building will parallel the growth and movement of population, and the construction of new housing. Office building, which has gained rapidly in importance in recent years, should remain strong, in line with the increasing proportion of trade, financial and service activity in the economy and the growth of "white-collar" work relative to agricultural and manufacturing employment.

Educational building should grow by 62 per cent, from \$3.2 billion in 1959 to \$5.2 billion in 1969. Increased emphasis on education will mean a longer average stay in school, and this will require even more construction of secondary and higher education facilities than mere population growth alone would indicate. It is generally agreed that the increase in school population will be greater in the first half of the Sixties than in the second half, and some observers reason from this that school construction will taper off in the second half. However, in the real world, schools are built partly in response to demand, and partly in response to the availability of funds. Growth in the economy and in government revenues will mean a parallel growth in school building through the decade.

Population growth and increased medical care will bring a gain estimated at 70 per cent in hospital building, from one billion dollars in 1959 to \$1.7 billion in 1969.

## Summary

HEAVY ENGINEERING and other miscellaneous construction outlays in 1959 totalled \$17.8 billion. During the decade, this total should grow by 36 per cent to \$24.2 billion. The principal factor in the gain will be highways, spurred by the new Interstate Program, rising from \$5.8 billion in 1959 to \$8.8 billion in 1969, or 52 per cent. Privately-owned utilities are expected to rise by about 28 per cent, from \$5.3 billion to \$6.8 billion. If this gain in utilities seems relatively small, it should be pointed out that they have shown no gain at all in the past decade, when measured in constant dollars. Some resumption of the long-term upward trend is to be expected.

With respect to total construction, it seems likely that public ownership projects will increase somewhat faster than private ownership during the 1960's. As the table on the next page indicates, private ownership projects should gain about 40 per cent during the decade, and public ownership should increase by 49 per cent. The reason is somewhat more rapid growth in categories like schools and highways, which are principally publicly owned, and somewhat slower growth rates in the predominantly private residential category and in private utilities.

Goods and services that go into maintenance and repair are substantially similar to those that go into new construction. Because present information on the size of the maintenance and repair market is woefully inadequate, forecasting in this area is precarious. A reasonable guess is that maintenance and repair expenditures in the Sixties will run to more than \$250 billion, and possibly \$300 billion. Adding this figure to the \$650 billion estimate for total new construction gives a total market of more than \$900 billion in ten years—within shouting distance of a trillion dollars worth of building materials, labor and services.

By 1969, new construction in constant 1959 dollars will have reached a projected figure of \$77.6 billion annually. Adding a reasonable (but highly tenuous) estimate for maintenance and repair could easily put the combined total market in 1969 at more than \$110 billion—a huge total, but one which, we have reason to hope and expect, is conservative.

## Total New Construction

(1959 Dollars)

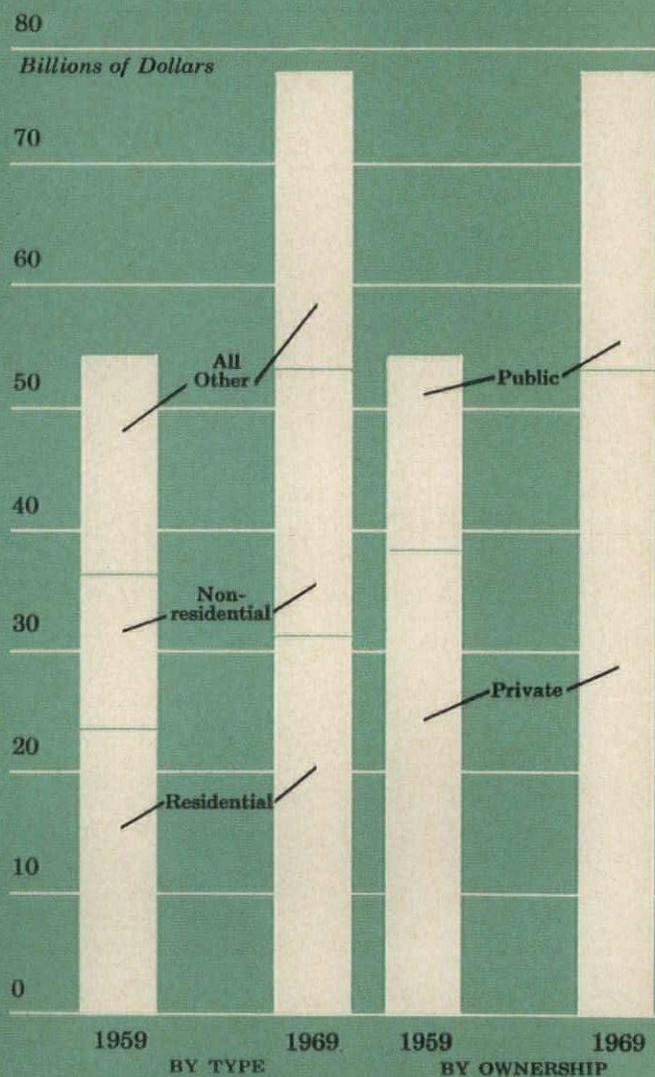
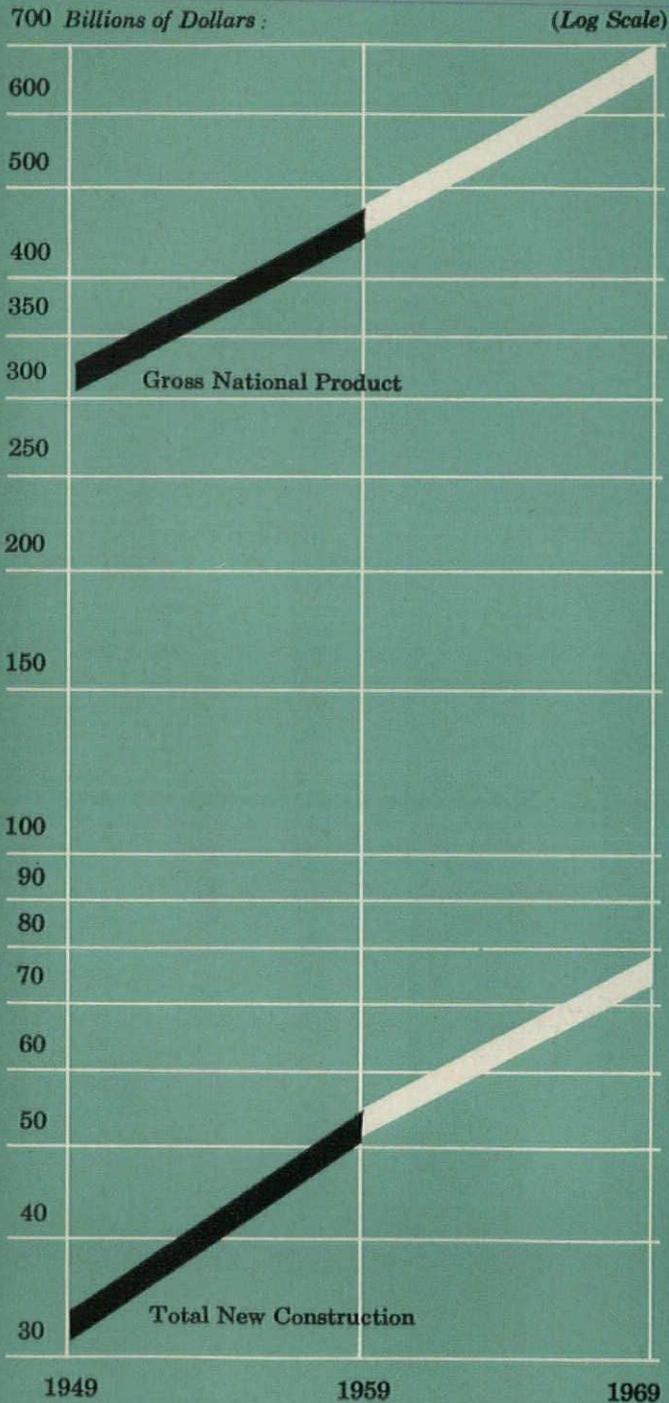


Chart 6.

# Construction and Economic Growth

(1959 Dollars)



## NEW CONSTRUCTION PUT IN PLACE (in billions of 1959 dollars)

CLASSIFICATION	1959	1969	PERCENTAGE INCREASE
<b>NONRESIDENTIAL</b>	13.2	22.3	69
Commercial	3.9	6.4	64
Educational	3.2	5.2	62
Industrial	2.4	4.4	83
Hospital	1.0	1.7	70
Other	2.7	4.6	70
<b>RESIDENTIAL (Nonfarm)</b>	23.3	31.1	33
Dwelling Units	18.1	23.7	31
Additions and Alterations	4.4	5.9	34
Nonhousekeeping	.8	1.5	88
<b>ALL OTHER CONSTRUCTION</b>	17.8	24.2	36
Highways	5.8	8.8	52
Privately-Owned			
Utilities	5.3	6.8	28
Other	6.7	8.6	28
<b>TOTAL CONSTRUCTION</b>	54.3	77.6	43
Private Ownership	38.3	53.6	40
Public Ownership	16.0	23.9	49

## NEW NONFARM DWELLING UNITS\* (in thousands of units)

CLASSIFICATION	1959	1969	PERCENTAGE INCREASE
<b>TOTAL UNITS</b>	1,531	1,800	18
One- and Two-Family	1,287	1,440	12
Apartment Units	244	360	48

\* Based on New Census Bureau Series.

# A PARABLE VIA MILANO AND ROMA

by John Burchard

## THE STRAINED WORK

Perhaps there is no valid distinction between "strained" efforts and ugly results. I assume ugliness was not deliberately sought as a virtue by the designers of the ugly; and certainly the ugly are strained. Certainly, too, the strained usually achieve elements of ugliness or unreality. Perhaps the difference is only one of degree.

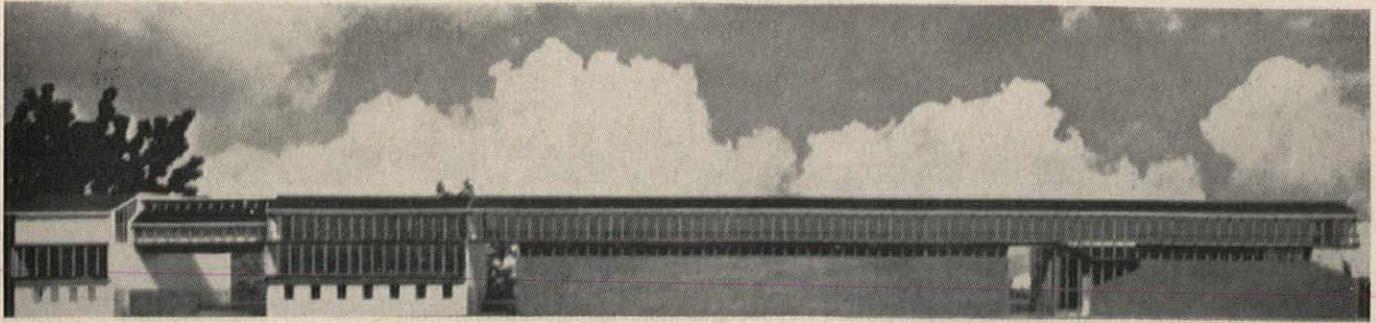
Among the "strained" efforts, one is perhaps least certain about many of the factories, which seem to be approached more self-consciously than in America, a little in the spirit with which the Futurists hailed the snorting engine as more beautiful than the Nike of Samothrace. A reasonable example is Caccia Dominioni's factory for Loro and Parisini in the Via Savona. Viewed as the photographers view it, from head on and far away with big clouds behind it so that the whole thing can appear like the renderings we used to make in the old days, the main elements seem to combine favorably, although with perhaps an excessive horizontality, and the combination of several wall materials does not seem unpleasing. But even from this view and examined more closely, it is evident that there are strange discordances, such as the piddling cantilever of the top floor at one end, the apparently arbitrary diagonal cut-off of some of the walls, the crudity of the two sallyports that lead into the factory. And looked at from other angles there is a welter of unstudied and unpleasing details, fire stairs, grids, interminable interior corridors. The building is defensible only on thoroughly functional grounds. It probably cannot even satisfy function since it is primarily a façade, a face-lifting for a lot of other work that goes on behind it but does not show. But as a façade it has forgotten the important message of Louis Sullivan that the expressive function is at least as important as the utilitarian one.

Yet this is a reasonably successful straining by Caccia Dominioni, whose apartments at the Via Nievo show a rich playfulness with windows and colored tiles. What such straining can end in is all too dramatically illustrated by the ENI Research Center of Nizzoli and Oliveri at S. Donato Milanese, which is as indescribable as it is inexplicable and of which photographs tell the tale all too clearly; or the struts of Siemens previously cited; or perhaps most astounding of all the helical ramps of the Stadio del Centomila by Ronca and Calzolari, suggested earlier by Wright in his project for a self-service garage for E. Kaufman (Pittsburgh, 1947). There is, perhaps, a functional idea of some importance here, and perhaps after more experimenting the wrap-around ramps might be developed into a pleasing form, but at this point the stadium is but another strained experiment.

Straining perhaps reaches its apogee in the proposals of Mangiarotti and Morassutti, who have moved from octagonal and circular tower projects for Rome and Genoa, respectively, to an extraordinary house at San Siro, near Milan, made up of three transparent cylinders, each raised from the ground on a slender

## Part II

*Last month, Burchard took a critical look at the general state of contemporary Italian architecture, and in particular at Italian "Brutalism," the "Ugly Work." In concluding his article, he defines some other architectural directions—some probably fruitful, others certainly not—being taken in Italy.*

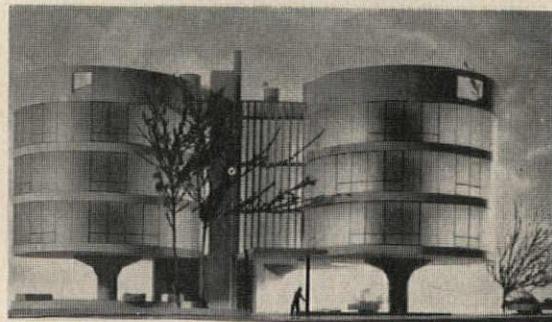


Loro & Parasini Factory, Via Savona, Milan; Caccia Dominioni, architect



*Left:* ENI Research Center, San Donato Milanese; Nizzoli and Oliveri, architects  
*Below:* Stadio del Centomila, Milan; Ronca and Calzolari, architects

*“. . . the Strained Work”*



*Above:* Project for a house, San Siro, Milan; Mangiarotti and Morasutti, architects  
*Left:* Project for an office building, Genoa; Mangiarotti and Morasutti, architects

pedestal containing elevators, conduits and the like. The whole approach is that of a dubious functionalism and a straining to be different. And like so many of these efforts it denies both the structural sense of men like Nervi and the expressive sense of men like Sullivan. Because it can be done is no justification for doing it. The plain fact is that it *looks* unstable, and that is enough to damn it. Of course at this point we must be careful not to credit all the straining to the Italians. Failure to cite American examples does not mean that there are none.

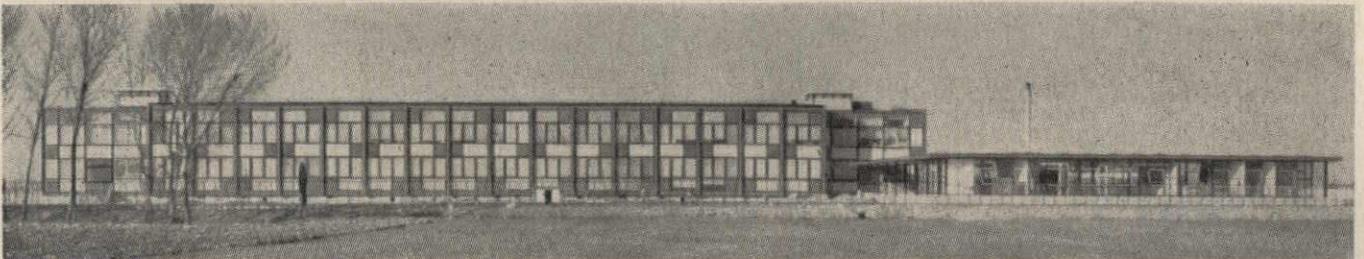
#### THE SIMPLE WORK

The sinners are always more interesting than the blessed, and their awful examples are possibly more influential. So I do not intend to explore the good work of Milan at such great length. There are many examples of vintages not so long gone as to be beyond recall. There are the measured bays of Figini and Pollini's housing in the Harrar Dessié Quarter; Eduardo Vittoria's work as advisory architect to the Società Olivetti, almost always successful, whether the formal Mondrianesque Research Center at Ivrea, done when he was said to be assuming an anti-poetic position, to the transistor factory of SGS at Agrate between Milan and Bergamo. These are clearly enough late rebellions against the rhetoric of Mussolini (and perhaps the rhetoric of some of his architectural contemporaries as well) and they are influenced considerably by Mies. But at Agrate Vittoria has geometricized the country as successfully as Bunshaft did at Hartford though the work is less studied (or seems so). Neither is so sophisticated as Saarinen's recent buildings for IBM. BBPR have contributed to this simplicity over the years, notably and as is well known in the Casa Feltrinelli in the Via Manin (1934-36), the restoration of the Cloister of San Simpliciano (1939), the War Memorial of 1946, the housing in the Via Alcuino of 1946-52, the sophisticated Casa di Via Borgonuovo—Piazza Sant'Erasmus of 1947-48 and re-

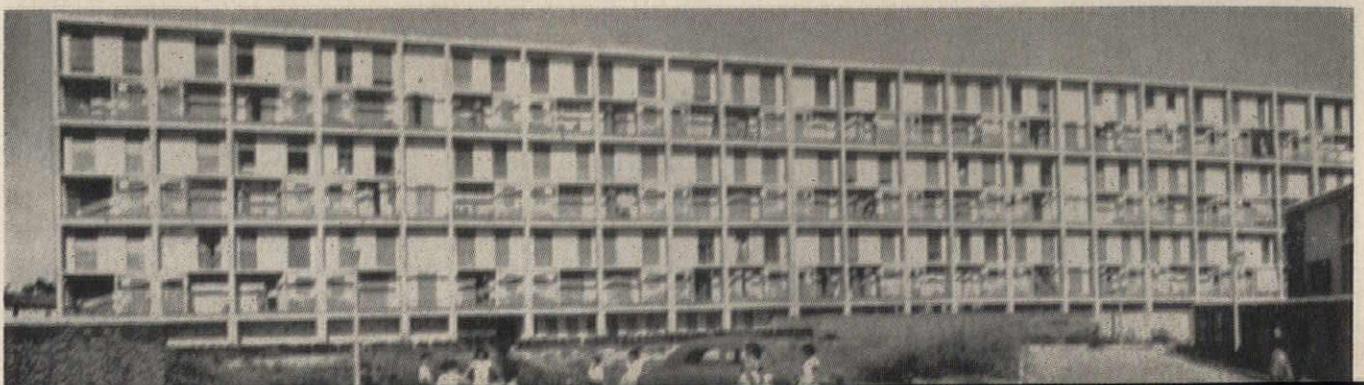


Apartments, Via Nievo, Milan;  
Caccia Dominioni, architect

#### “. . . the Simple Work”

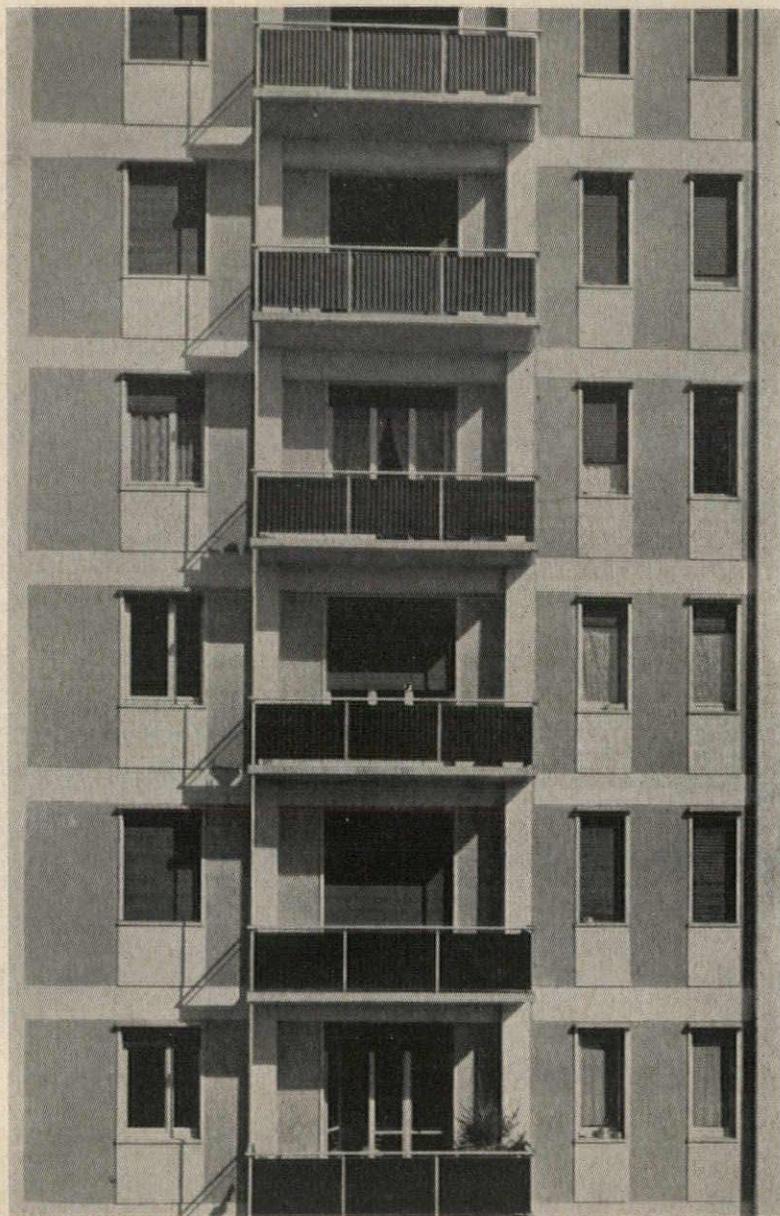
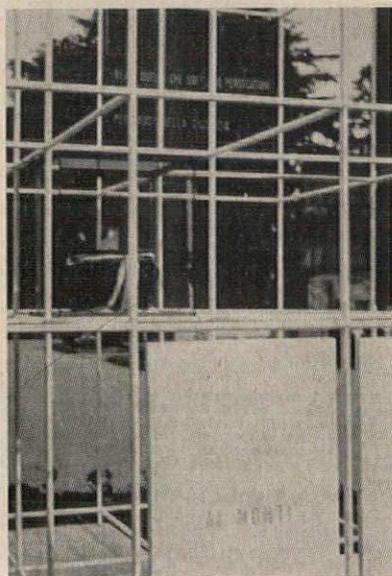


Above: SGS Transistor Factory, Agrate; Eduardo Vittoria, architect  
Below: Housing, Harrar Dessié Quarter, Milan; Figini and Pollini, architects





*“... the Simple Work”*



Housing, Via Alcuino, Milan;  
Belgiojoso, Peresutti and Rogers (BBPR), architects

*Top:* Casa Feltrinelli, Via Manin, Milan; *center:* War Memorial, Milan; *bottom:* Museum, Sforzesco Castle, Milan; Belgiojoso, Peresutti and Rogers (BBPR), architects

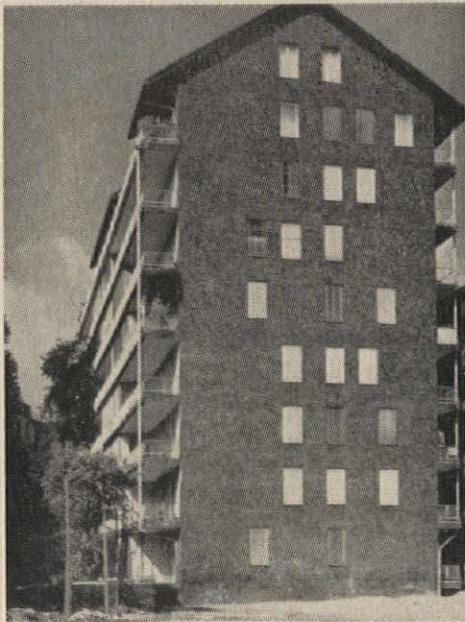
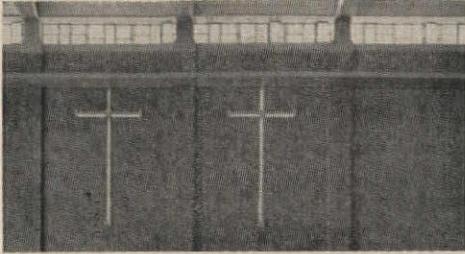
“... the Graceful Work”

cently in the rearrangement of the Museum in the Sforzesco Castle. This is a brilliant job which lets the displayed objects do the work. It deserves a great deal of attention even if it is disapproved of by one or two well-known if not progressive museum directors in the U.S.A. Then there is the almost consistent simplicity of Gardella, a man who deserves much more attention than he gets, as demonstrated, for example, in his church at Cesate, where he returns to the brick that has served Italian architectural history so well but which has of recent years been so overwhelmed by concrete and glass. But with Gardella one moves from simplicity toward grace, and it is of that I would speak in ending this section of the discussion.

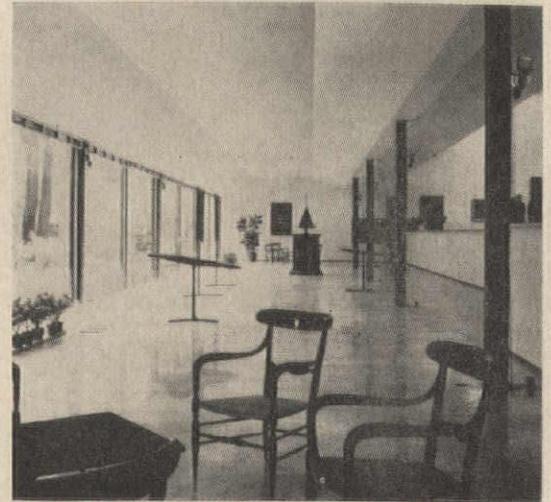
GRACEFUL WORK

One can find a good deal of grace in Milan shining against the obvious crudities. There are the works already cited by BBPR and Caccia Dominioni. Nowhere does this sense of grace appear in a more lively way than when the apartment balconies are sensitively worked out, as Albini did, for example, in the Quartiere Vialba. Nowhere, save when brutality is deliberate, is the grace more betrayed than when they are not. Handsome balconies have been in the Milanese tradition for more than a quarter century. Countless examples could be cited, of which perhaps the most luxurious are the combinations of rail, glass, and foliage achieved in a private park of the Via Marchiondi by Castelli, Gardella and Menghi in 1955, and the very recent and even more graceful one alongside by Minoletti and Chiodi. All these point the way to another of Gardella's graceful creations, the Gallery of Contemporary Art in the Via Palestro.

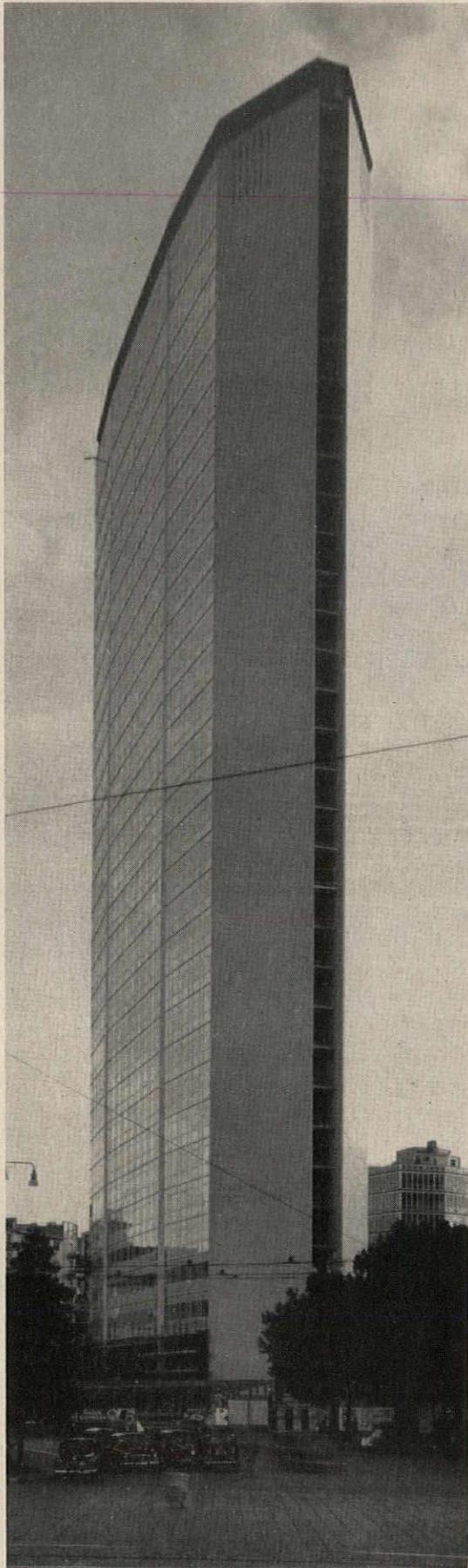
Indeed, the work of Gardella could be left to stand alone as evidence of grace in Milan if it were not for another and more enigmatic man, Gio Ponti, and the important Pirelli Building he has just finished on the railroad station square. Ponti is highly civi-



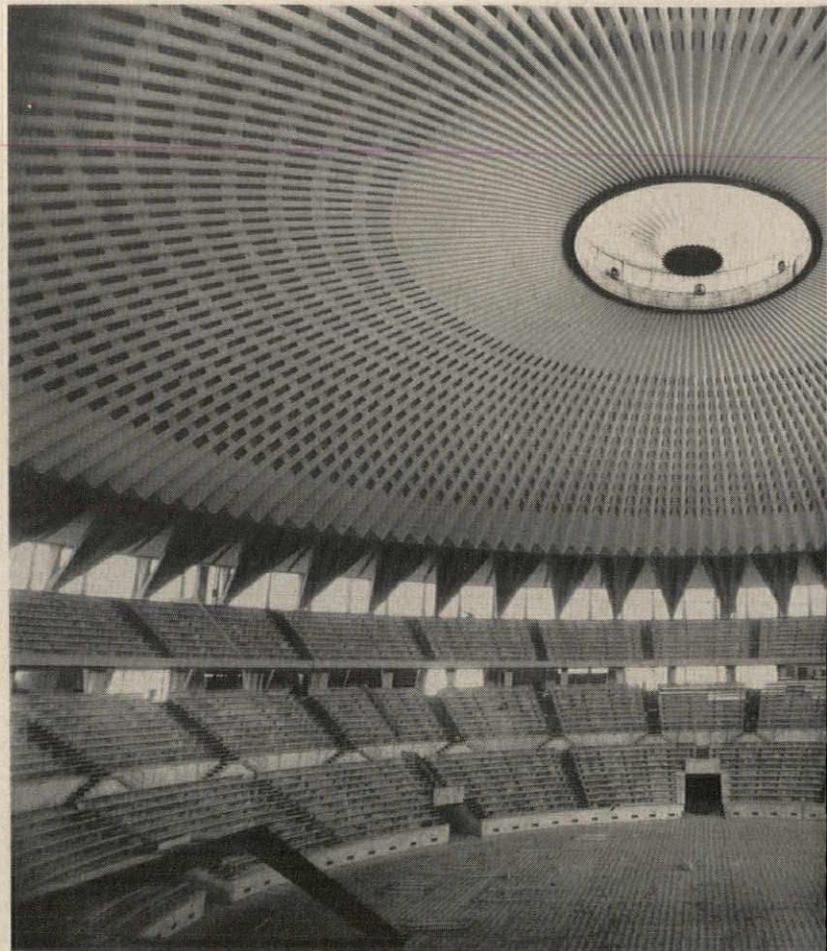
Top: Church, Cesate; Ignazio Gardella, architect  
Above: Apartments, Via Marchiondi, Milan;  
Castelli, Gardella and Menghi, architects  
Below: Apartments, Giardino di Arcadia, Milan;  
Minoletti and Chiodi, architects



Gallery of Contemporary Art, Milan;  
Ignazio Gardella, architect



Pirelli Building, Milan; Gio Ponti, architect;  
Pier Luigi Nervi, consultant



Sports Palace, Rome; Pier Luigi Nervi, designer

*“ . . . these perhaps epitomize  
the present state of  
Italian architecture . . . ”*

lized. He may suffer in some opinion from his versatility. He can draw, he can paint, he can make ceramics, he can write poetry, costume a ballet of Stravinsky's, make the interiors of the deluxe Italian liners. His industrial designs have been excellent, so excellent that it is all too easy to classify him as an industrial designer—easy and comforting. No joiner, he was never adopted by or adopted CIAM, and this has not helped his reputation, for CIAM is loyal to its own. His work does not have the purity of Gropius or Mies, nor the strength and imagination of Le Corbusier, and his is not really an innovative talent. But his work is never without taste, and refinement, and he represents a type of which architecture needs many more. There can be harder men of taste than Ponti and perhaps more gentle ones, but his talents should not be passed by, however much they may be scorned by the "hard-minded" critics. The Pirelli Building is, I suppose, his masterpiece; with Nervi's Roman circus and the unhappy Torre Velasca it can perhaps epitomize the present state of Italian architecture for us.



Each of these three edifices is too important to be treated as cursorily as I must treat them here. The Pirelli is a marvelous example of transparency erected on a concrete structure by a master engineer in concrete, Nervi. Its tapering ends do indeed seem to make sense. The engineering labyrinth of its lower reaches are sensuous and impossible to photograph. The simplicity of its lines, the grace of its shape, the refinement of its bays put to shame the coarse monster, bearing some superficial resemblances, that seems about to appear at Grand Central.

The steady flow of forces in Nervi's new sports palace, from the oculus to the final well-planted pier, is evidence enough that engineering concrete is free from striving when the engineer recognizes that forces do come to the ground, when there is a steady approach to a succession of problems and not a desire to cause a new sensation each fleeting day.

The Torre Velasca is just too bad. No one admires (or likes) Rogers and Peresutti more than I do. I stood with Peresutti while he gave the reasons. The problem they set themselves was difficult, but was it necessary? Intellectually, Peresutti's discussion, though not necessarily convincing, was credible. But all the time the eyes were denying the intellection. It is unnecessary to enter into detailed criticism. Here is a case where no direct experience with the building itself denies the bad impression created by the photographs. This time they do not lie. There is too much historical reference, too much awkwardness.

Great men should be remembered for their successes and not measured by a machine which calculates their averages. Let the work go as an aberration. I would not expect it to have many imitators, unless perhaps in England. It may serve to put an end to the projected top and the ugly concrete diagonal props.

In the end you can box the compass of the Italian scene if you are familiar with the work of Ponti, Nervi, BBPR, Gardella, Albini, Vittoria and Vigano. In the end, I suppose, and despite the dark side, the average is superior. But the dark side seems on the whole to be gaining, even if we put the Torre Velasca down as a sport. There is the familiar inability or unwillingness to collaborate with the other arts. Sticking a Nivola in a New York showroom for Olivetti is not collaboration at the same level as Nivola's murals on the façade of the church in Orani, Sardinia.



Torre Velasca, Milan; Belgiojoso, Peresutti and Rogers (BBPR), architects

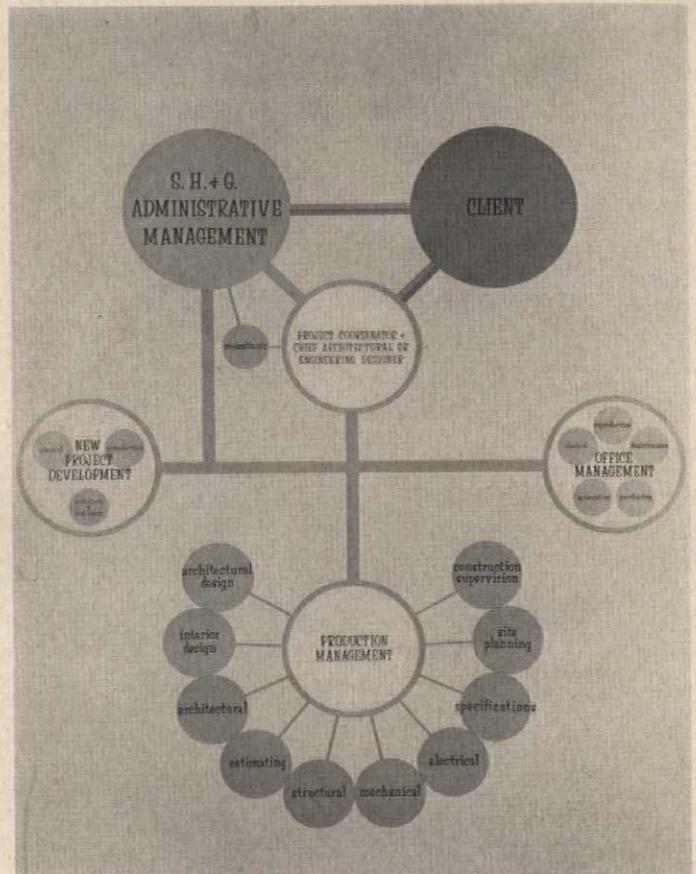
It is about time architects stopped fancying themselves as first-class painters or sculptors. There is the general failure to decide how to terminate a tower, and this in a country whose ancient towers are all around and about the most distinguished in the world outside of Iran. There is an uneasy relation to industry. This is not on the side of understanding patronage, for the Italian industrialists wear the Medicean mantle more comfortably than their American counterparts. It is rather the trouble of a country still torn between the machine and the hand, between the north and the south, the cultivated and the illiterate, the industrial and the agrarian, in a people who are vigorous, effervescent, hard, who love cities but who do not like to plan, bound too much perhaps by their sense of history. But running through this fabric is the evil thread of the incessant pressure for novelty. Ponti says, "Italian architects enjoy experiments more than conclusions." But it is probably not as simple as that. There is a little suggestion that the architects might like to go the way of the painters. Thus they too might hope to reach the point where they might be written about in these terms: "Art excludes the unnecessary. Mr. X has found it necessary to paint stripes. There is nothing else in his painting. Mr. X is not interested in expression or sensitivity. He is interested in the necessities of painting. Symbols are counters passed among people. Mr. X's painting is not symbolic. His stripes are the paths of brush on canvas. These paths lead only into painting." I suppose since buildings must be used, architects may be spared committing the ultimate absurdity, that their doodles lead only into architecture. They probably cannot wholly secede from everything but their personal world. But it may be painful to watch the effort.

This is, I think, the message of Italy of 1960, and it has nothing to do with slogans or categories. It is not a matter of brutalism or neo-liberty or a return to Art Nouveau. There were great men—Le Corbusier, Mies, Gropius, Wright, Maillart and Nervi—who laid down great principles that were not discordant with the principles of historically great architecture. They had enough variety to let great variations ensue. They did not and will not develop everything that could have been made from their principles. Their successors in Italy, often men of great talent and integrity but perhaps of less conviction, have somehow lost the road and are wandering around, trying everything and at the same time shouting, "Look, Ma, I'm dancing."

Finally, there is the complete failure to cope with the larger problem of urbanism. Despite the shiny new streets of Milan, there seems to be no concerted effort at a better city. In this respect the American scene is more encouraging than the Italian save for one point. The General Motors Research Center and the Air Force Academy have aptly illustrated that large complexes can safely be put in the hands of one brilliant architect. The efforts at collaborative work in this country, whether measured by our World Fairs or by our serious constructions such as UN, have demonstrably failed. But this is evidence from New York and not from Milan. Returning to Milan, we have to ask ourselves, is the total result good or even promising? Despite the elegant exceptions, I am afraid we have to say no. But instead of smiling tolerantly in Manhattan and saying, "There, but for the grace of God, go we," we would do better to ask ourselves where we ourselves are going. For it must be evident that an account of an Italian experience reduces in the end to an extended parable for Americans.

*PHOTO CREDITS: Sports Palace, Rome—Oscar Savio; Torre Velasca—Casali. All other photographs reproduced through the courtesy of the publication Milano Oggi and the magazine Zodiac.*

# ORGANIZATION FOR EFFICIENT PRACTICE



1. Smith, Hinchman and Grylls Organization Chart

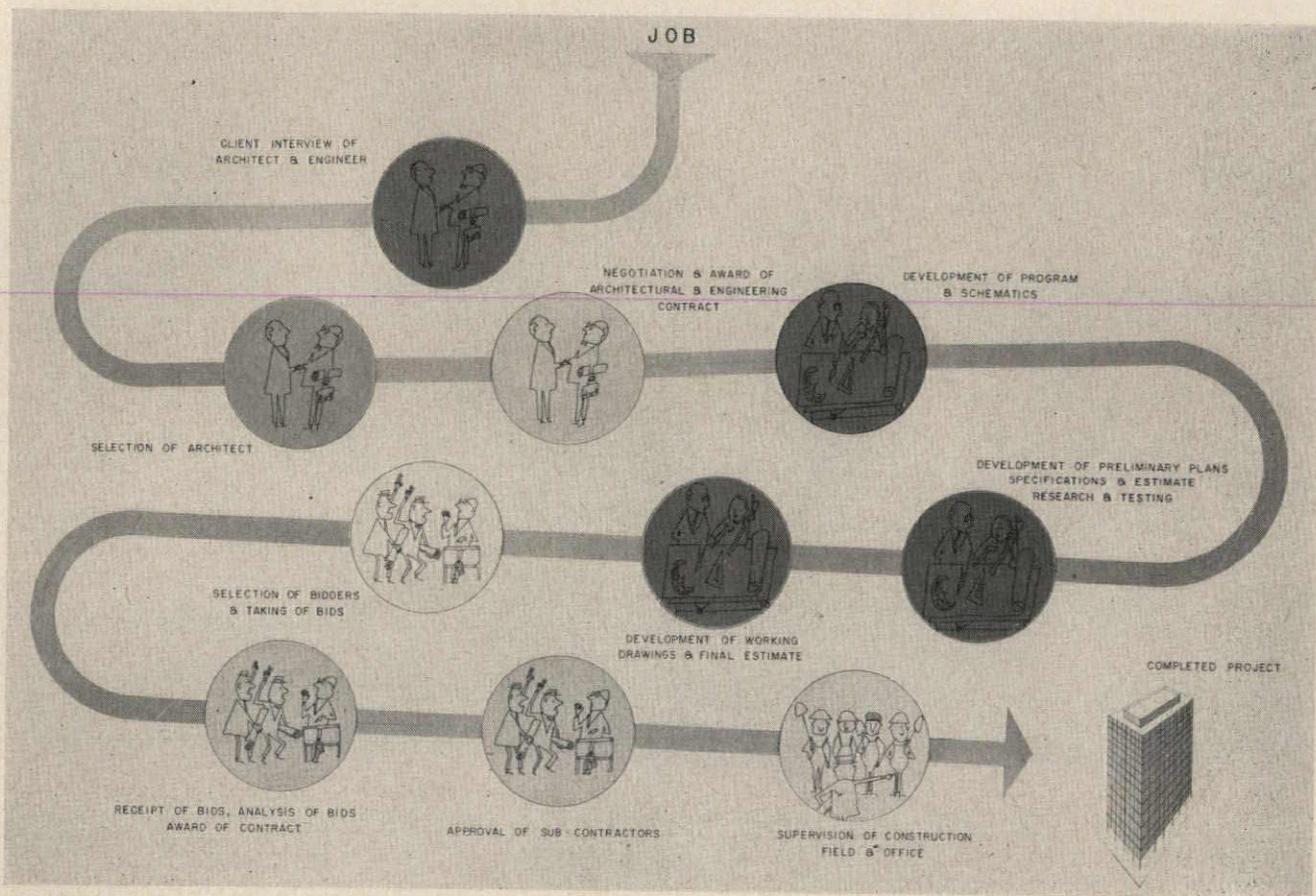
## 3. Smith, Hinchman and Grylls Associates, Inc. Architects & Engineers

The Smith, Hinchman and Grylls firm, reported on in this issue, is seriously concerned with the currently expanding architectural horizons. It is equally concerned with the development of a philosophy of architecture for today and a philosophy of architectural practice to make the architecture work. Some of the SHG ideas of architectural practice, how the ideas are now being put into effect by the firm, and the obstacles that now prevent full realization of the results of the ideas are examined here

In any investigation of the role of the architect in today's society, it soon becomes necessary to take a long, hard look at the philosophy of architectural practice, in order to place the other important aspects of architecture in the proper perspective. In order to design the best possible buildings, how should the architectural, engineering, and other professional services be organized? How can the architect make the most profitable use of his time and talents? How can he integrate his work with that of the other members of a design group?

For some time now, the RECORD has been concerned with the opportunities and problems of present-day practice. What their clients and the public think of architects and what architects think of themselves have been investigated. The directions in which some firms are now turning in order to do new types of work and offer more complete services have been given consideration and their organization has been discussed.

In this issue, a report is made on the Smith, Hinchman and Grylls patterns of organization. More importantly, perhaps, an attempt is made to explain the SHG attitudes toward architecture and its practice. Though it may sound trite, SHG believes, basically, that architecture is concerned with buildings; to improve architecture, it is indubitably necessary to improve buildings. SHG believes that improvements in buildings—in the scientific, as well as the esthetic, aspects—are needed. Architectural esthetics have a part to play—a large part—but they are not the entire production. Mysticism has no role, unless it is a religious one as in the design of a church, rather than an architectural one.



2. Client Chart: Phases of Building Planning

### SHG Organization

The Smith, Hinchman and Grylls organization is large; it now employs about 300 people. The firm has a long record of accomplishment and is more than fifty years old. SHG operates nationally and internationally; in addition to the home office, it maintains a Canadian office in Windsor, Ontario and sets up job offices wherever they are needed. The Canadian office is operated as a separate organization incorporated in Canada.

SHG completely occupies a 40,000-ft leased building in Detroit. The four floors of the building, which SHG remodeled to suit its own requirements, are utilized in somewhat the following manner: ground floor—structural engineering division and miscellaneous departments, first floor—architectural division, second floor—mechanical engineering and electrical engineering divisions, third floor—executive and administrative offices, clerical and accounting, and central files.

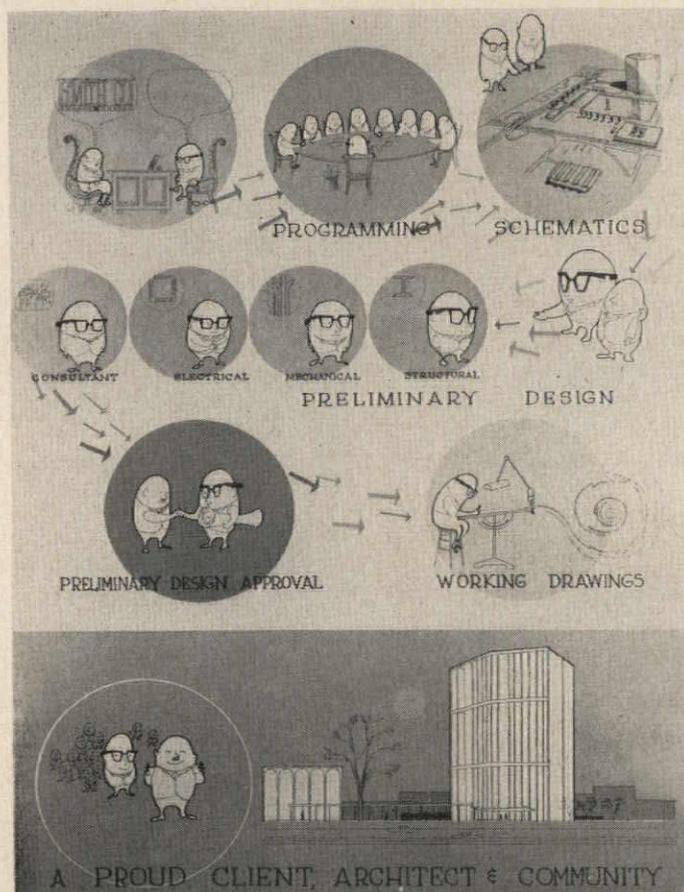
The organization is set up to do all of the usual architectural and engineering professional services for nearly all types of buildings. In addition, the staff has the experience and capabilities required for many specialized design services. Some of these are design of blast-resistant structures, industrial waste systems, atomic facilities, and a number of other special types.

The chart (1.) on the preceding page gives an indication of how SHG organizes its operations to accomplish the work of the firm. The important relationships between the client, the firm, and various departments within the firm are shown. Each project is assigned to a project coordinator who works closely with the chief de-

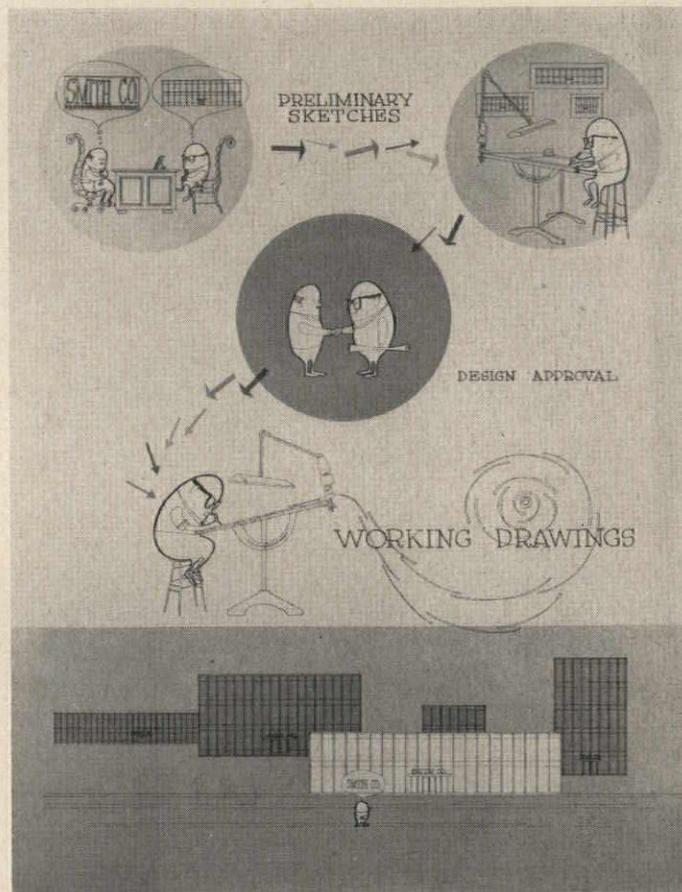
signer for the project. The production management group is composed of an officer of the company and the heads of all major departments and is under the direction of a production manager. This group is the center around which the production of a project revolves.

### Approach to Architectural Practice

Smith, Hinchman and Grylls takes for granted that the practice of architecture is concerned, not only with good architectural design, but with all of the accompanying engineering and planning disciplines necessary for the complete design of complex buildings. SHG believes that the client's needs in his building are important; they also believe that what the client wants in his building is important. Essentially, the firm is attempting to learn all it can about each client's needs and wants, to analyze these things by thorough and creative programming, schematics, and design (engineering as well as architectural), and arrive at the best possible preliminary design. By spending adequate time and effort in the creative phases to allow for close study of almost all of the big problems and their interrelationships, a detailed and quite complete set of figures, drawings, preliminary specifications, and so on can be developed. The presentation can then be made in such a manner that the client can have no doubt of what is intended, what budget is required, how long the remaining professional and construction phases will take. An attempt is made to derive solutions or definitions of all of the major design problems (including budget and technological problems) in the design phases. In this way, the preparation of con-



3. SHG Organization of Architectural Services



4. More Customary Organization of the Services

tract drawings and specifications can become in reality, what so many architects call them, production.

By allotting more time and effort in the creative first stages, the architects and engineers, working closely together, are able to concentrate their activities more effectively on the things they do best, and where they can be of most service to their clients, creative problem solving and design. Through all of this, SHG believes it must lead the client by the hand, keeping him informed and involved in the planning processes. Needless to say, all of these things are ideals, which sometimes cannot be realized in particular projects. But this does not make the principles less valid.

#### The Client

The office tries to begin each project with the basic idea that everything that is feasible will be done by the staff working on the project to dig into the client's basic problems. The client is encouraged to go as far into these basic problems as he cares to or is able. The firm feels that its people have got to understand the client's purpose in the development of the project, his organization, his financial problems. Of equal importance is understanding of the client's philosophies, interests, and cultural thought. All of these things are interrelated in principal; one of the architect's major tasks is to see that they become interrelated, in the correct ways, in actuality.

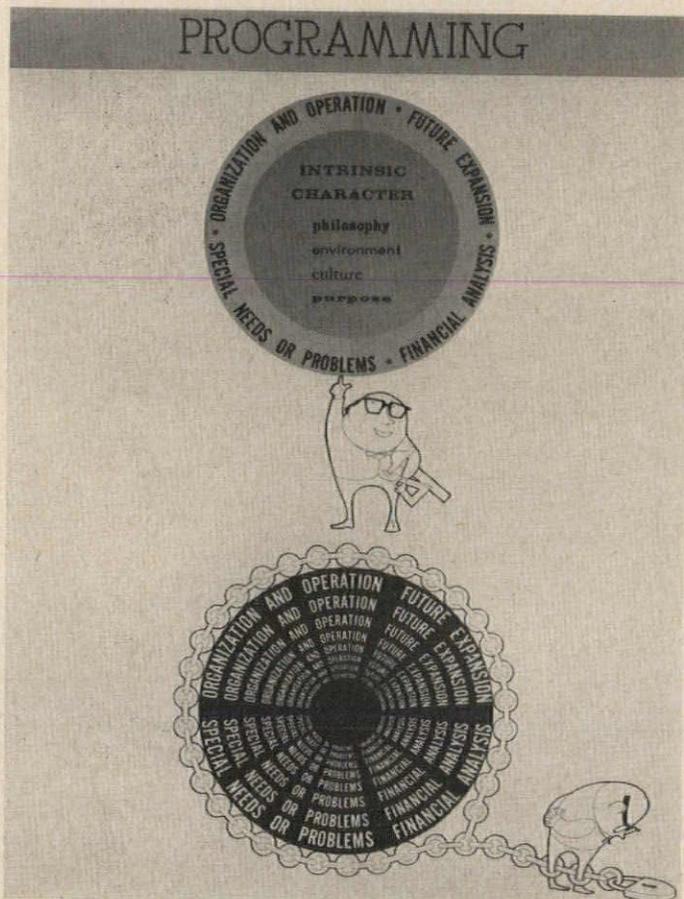
In order to present clearly to clients the processes through which the design and construction of a building must pass, SHG has prepared charts similar to that

shown (2.). Through graphic simplification, in such charts, of the main steps toward the finished building, the firm finds its professional relationships with its clients progress more smoothly and effectively.

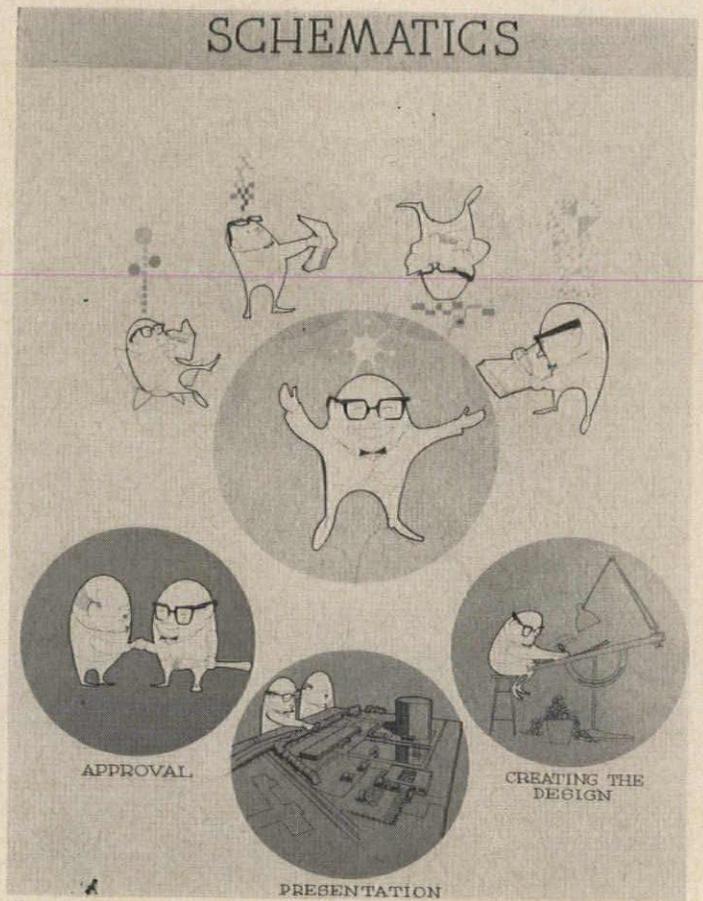
#### Creative Concentration

The SHG organization believes that the professional efforts in the preliminary phases on a project should be somewhat as shown in figure 3. above. After having been engaged by a client, the architect approaches the problem without preconceived notions of what sort of building should result. Thorough programming requires effort and close attention, talented and creative architects and engineers, the client, and, in many instances, highly specialized consultants. Research and programming studies lead to schematic designs in which broad concepts are established. Preliminary design follows. In this stage, as in the ones preceding, the engineers (and consultants) are very much involved in what is going on. After client approval of the preliminary documents, the production of contract documents can go ahead efficiently, leading, if all goes well, to the inevitable happy result. Through all of this, the client has been brought along at a more or less equal pace with this building.

A more common approach to architectural practice in the past might be similar to figure 4. At the beginning, the architect tries to visualize the client's building (it is quite different from that in the client's mind or dreams). The architect then disappears and "designs" the building, reappears to get approval. Then he "draws it up." The final result is blank and anonymous, bearing



5. Program—A Blend of Ideas and Facts



6. Schematics—Free Study and Vision

no resemblance to the client's original picture, but a marked similarity to other similarly conceived buildings.

In order to give the client's problems the sort of concentrated attention needed in the beginning phases of the work, as shown in figure 3., SHG allocates a larger percentage of its total time here and reduces the time spent in production. By developing the more complete preliminaries made possible by closer study over a longer period of time, the firm believes it can furnish its services for the fees it would get under the older scheme.

In the first instance (figure 3.), the architects and engineers are able to spend enough time with the client and with his project to gain some real understanding of both. By the time the broad concepts of the design begin to be defined, each of the individuals involved in the work understand each of the other's viewpoints. Next comes more detailed evaluation, always relating the elements of architectural and engineering design to one another and to the entire project. The basic concepts get exhaustive testing to determine whether they are actually valid. The program and the budget are continuously re-examined. If the concepts stand up and it seems likely that they can be integrated with other aspects still to come, then the work can go on through the preliminary design stage. Further study leads to the final design.

In the second instance (4.), very little of this sort of searching creative activity is possible. The buildings that result from this way of doing things are quite likely to be defective when considered as total architecture with all of the many requirements this implies, though they may be highly acclaimed for some narrower accom-

plishment. One need only picture a building of great artistic merit but which is inhabitable, or another with estimable spacial qualities which does not function.

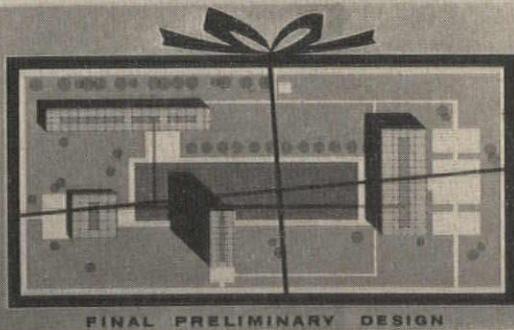
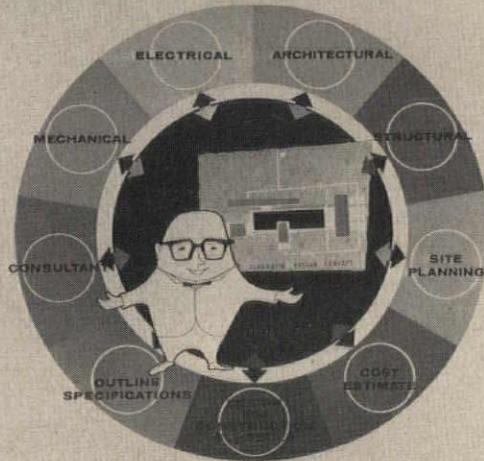
#### Program, Schematics, and Design

In programming a building (5.), the SHG project coordinator and designer attempt to avoid being trapped into the confining chains of preconceived or poorly thought out ideas concerning the client's organization and operation, special requirements, expansion, budget, and the like. Instead, an attempt is made to keep decisions on all of these things completely open, and to consider them freely and thoroughly. In addition, such things as the environment in which the building will be placed and that to be created within, the intrinsic character of the problems, and real purpose are studied in detail.

The schematics (6.), are, for the SHG firm, a time of searching, of deep study and research. An attempt is made by the people working on the project to examine all of the basic concepts in detail, and to test and evaluate them. After the design concepts have been established and approved by the owner, all of the many specialists involved work closely together to correlate all aspects of the building design and arrive at a carefully conceived final design.

Thorough and prolonged study of a building project in the programming, schematic, and design phases leads to a very complete presentation package (7.). By the time the presentation is made, the individuals working on the building have become deeply involved in the project in all of its aspects. The client has been brought

## PRELIMINARY DESIGN



7. Design—Interrelating All of the Problems

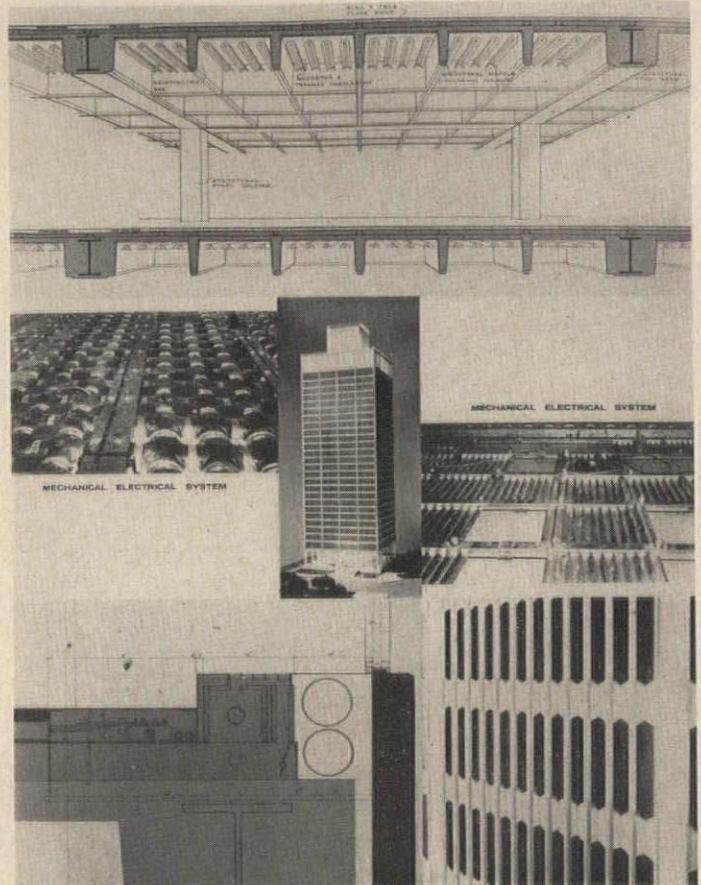
along with the design, step by step. Major problems have been solved or closely defined. The client's approval may then be based on a quite clear picture of the architectural and engineering intent.

### The Presentation

Some idea of the effects of the system may be gained by an examination of the preliminary presentation on a particular building. For the Consolidated Gas Co. Office Building (done in association with Minoru Yamasaki), the presentation to the client at the end of the design phases included the following: 3/16-in. plastic scale model of the building, 71 sheets of drawings, a 41 page preliminary specification, a preliminary estimate (giving costs in detail, including unit costs on all major items) backed up by two estimates made by contractors, a production and construction schedule, and a full size mockup of two floors of the building. Prior to the presentation, some 50 study and detail models had been made and 1/8-in. scale schematic model had been presented. The panel shown (8.) was used for explanation of certain details of the building. An indication of the results of all this can be gained from an examination of the articles in this issue on the architecture and engineering of the Consolidated Gas Building.

### Engineers for Architecture

The Smith, Hinchman and Grylls organization is deeply concerned about the extreme difficulty of obtaining engineers who are able to assume large roles in building design and architects with knowledge and ability in engi-

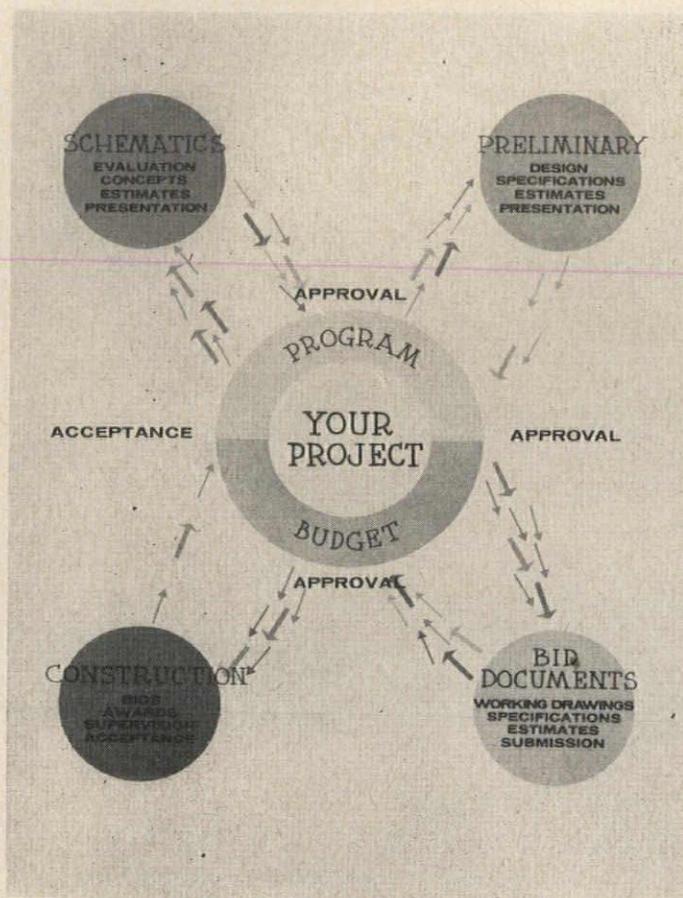


8. Presentation—Complete Picture of Solutions\*

neering. Members of the firm have spent considerable time and effort in examination of the problem and in attempts to do something about it. Visits by firm members to architectural and engineering schools throughout the country have invariably corroborated the SHG feeling that schools are not developing engineers for architecture. Electrical engineering colleges are training students in electronics, not in lighting, power, power distribution, or wiring. Mechanical engineering colleges are training men for research and work in industry, not for building engineering. Visits with architects over the country showed that most were agreed that the problem exists and something should be done about it. Neither the colleges nor the architects showed much readiness to take action on the problem.

Smith, Hinchman and Grylls has tried to attack the problem by giving college scholarships to enable graduate architects to take further courses in electrical or mechanical engineering. After some time, it was decided that the problem was much more basic than such scholarships could hope to overcome. Firm members have participated in a number of conferences and study sessions on this subject, some sponsored by the A.I.A. The thinking of the firm on the problem now tends toward the necessity for action on the part of the architectural profession and the entire industry. Architects must initiate this and lead the way.

\*Office Building, Michigan Consolidated Gas Company, Detroit, Mich., Minoru Yamasaki-Smith, Hinchman & Grylls, Associated Architects & Engineers



Charts used as illustrations in this article were prepared by Smith, Hinchman & Grylls for use in studying their organization and procedures and for explanations to clients and others

9. Program, Budget Interrelate with All Phases

REQUISITES FOR PRESENT-DAY ARCHITECTURAL PRACTICE by Robert F. Hastings\*

In our firm, we want to do not only good architectural design, but all of the related engineering as it pertains to buildings. In order to accomplish these things well, we believe that we must be able to give our best creative efforts to each project. This requires organization. It requires a concentration of creative effort in the design stages. We do not believe that good building design can be done by committee. So, we take some rather basic steps. For each project, the firm appoints a coordinator who is essentially an administrator. Working with him is a designer, a person who has creative skills.

The project coordinator and designer bring other firm architects, engineers, and consultants into the picture as soon as they can reasonably begin to grasp the problems. Eventually, the lead man of the group, the project coordinator will have available to him our production organization and all of the various specialized departments of the firm. All of the people working on a project get deeply involved in the design as a whole.

In order to practice the art and science of buildings in this manner, we need people who are well-trained in the overall aspects of building design, and who in addition have specialties such as mechanical or electrical engineering, or architectural management or design. We need people with cultural backgrounds, deep interest in buildings, creative attitudes toward building design. In the purely architectural aspects of our practice, we succeed—to a degree—in obtaining this kind of person. But we need engineers of the same sort.

*"For several years now, we at SHG have been attempting to find solutions to the shortage of trained, talented, and creative engineers for architecture. It is our belief that the architect has created this problem for himself. If we are to have talented engineers, it will be necessary for the architect to develop more sympathy for and understanding of engineering design. The engineer must be given a reasonable share of the responsibilities for the building design and of the rewards. We must make him a creative member of the design group. In order to accomplish these objectives, it will be necessary to revamp architectural professional organization membership, education, registration, and re-study our objectives in buildings."*

Robert F. Hastings

\* Executive Vice President & Treasurer, Smith, Hinchman and Grylls Associates, Inc.



Elvgren House; Victor A. Lundy, Architect

Alexandre Georges

## Two Hospitable Houses Planned for Breezes and Views

1. Residence for Mr. and Mrs. Gillette Elvgren  
Siesta Key, Sarasota, Florida

Victor A. Lundy, Architect  
Schierloh Builders, Inc., Contractor

2. Residence for Mr. and Mrs. G. Howland Chase  
Brookeville, Maryland

Thomas E. Babbitt, Architect  
Perry Wheeler, Landscape Architect  
Charles H. Shaw, Contractor

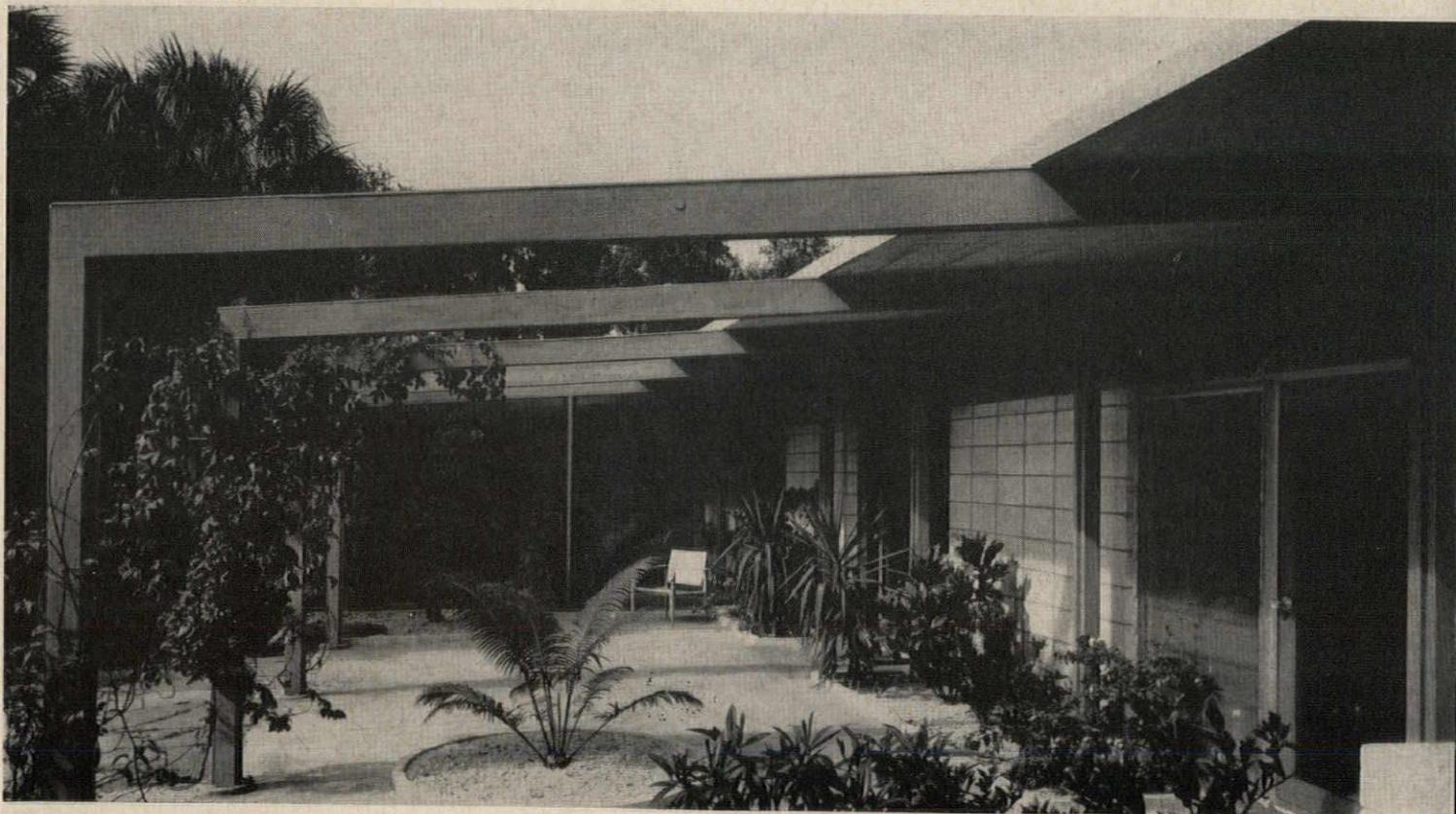
Victor A. Lundy, Architect

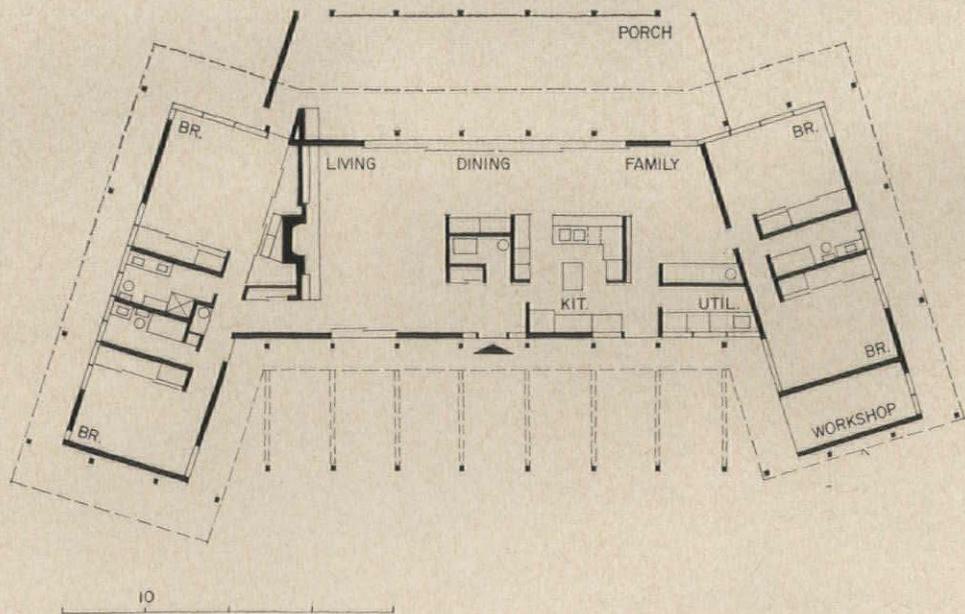
The site of the Elvgren house is a secluded and tropical waterfront one, on Siesta Key in Sarasota, Florida. The house is set well back from the approach, and one comes on it from out of a "jungle" into its clearing at the water's edge. Thus there is a sense of privacy leading to indoor-outdoor planning on the east and west fronts. The plan itself derives out of the owners' desire to make the most of the sea view: the central living area stretches out parallel to the beach, and the two bedroom wings angle off so that each room gets a view of the water and the benefit of breezes from the bay.

The owners have two teen-age sons and a daughter—and all give frequent parties for many people. Living areas are separated by folding doors to permit intimate and separate areas for daily living, or—open—to give a big space for entertaining. This area is extended visually and actually by extension of the supporting roof frames to create outdoor rooms and terraces. One bedroom wing is for parents and daughter, the other for the sons.



Alexandre Georges





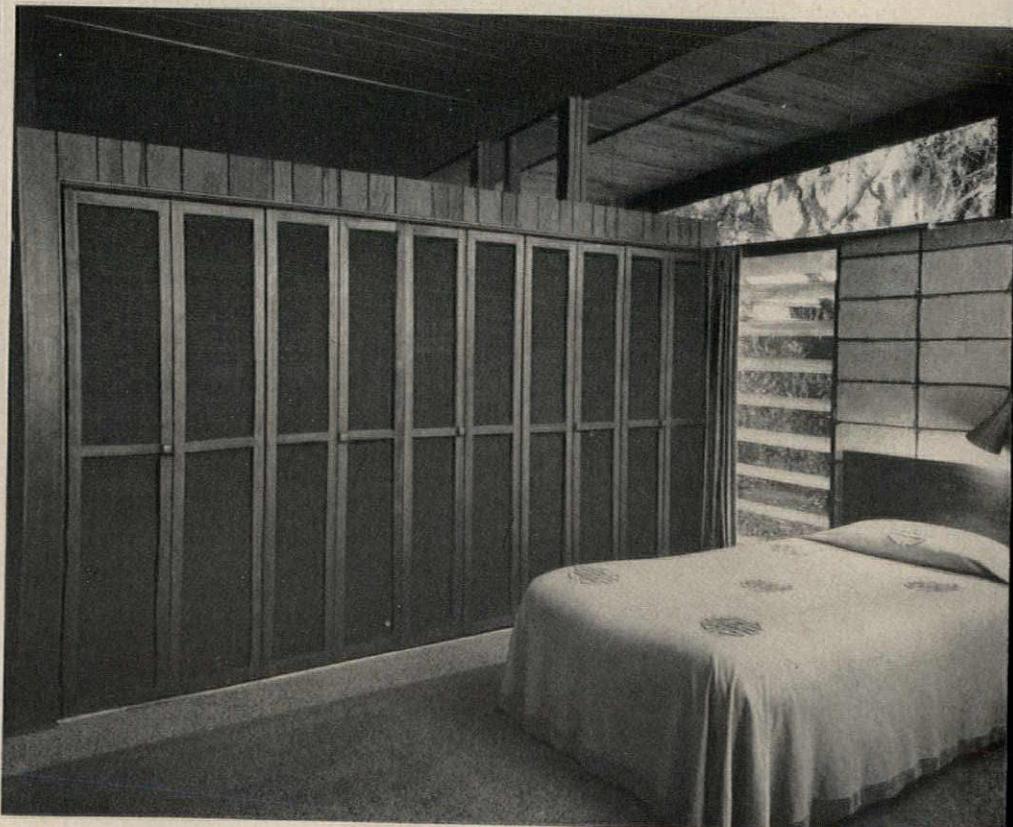
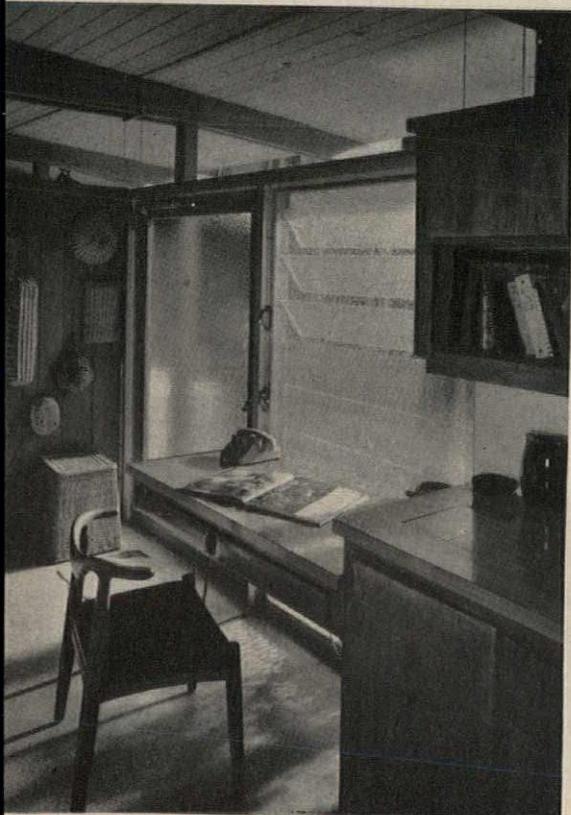


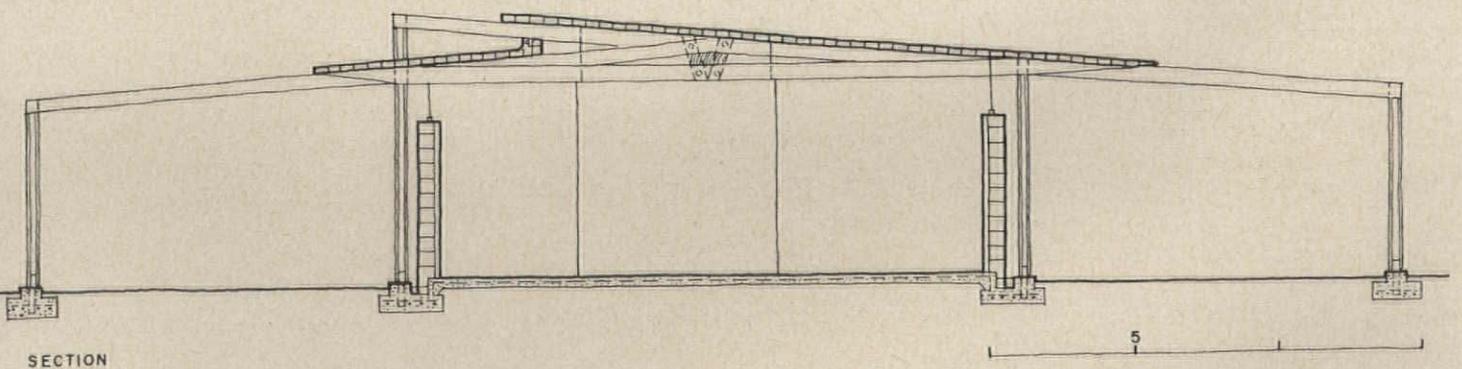
Alexandre George

## The Elvgren House

The structural system of the house is a fairly simple, but interesting one, with all trusswork, supporting beams and columns carefully articulated and exposed. Each member is composed of standard lumber sizes in combination (such as columns composed of two 2-by-4's), and designed so that each piece is seen. To brighten the living area, which might be otherwise too dark because of the wide porch overhangs, the roof beams are continued up on the approach side of the house to form a continuous skylight. At night, a continuous light troffer along this clerestory throws light up against the living room ceiling. The roof structure is completely independent of the exterior and interior walls, which stop at door height, with glass over. All of the wood structure, ceiling, etc., is finished in a natural fruitwood tone. Floors are terrazzo throughout. Exterior masonry walls are a buff-colored concrete block; the fireplace wall is local coquina stone.

About the design, the architect states, "It is an informal house and one feels about it that little children, dogs and parakeets are welcome as well as people." The cost of the house ran between \$45,000 and \$50,000.





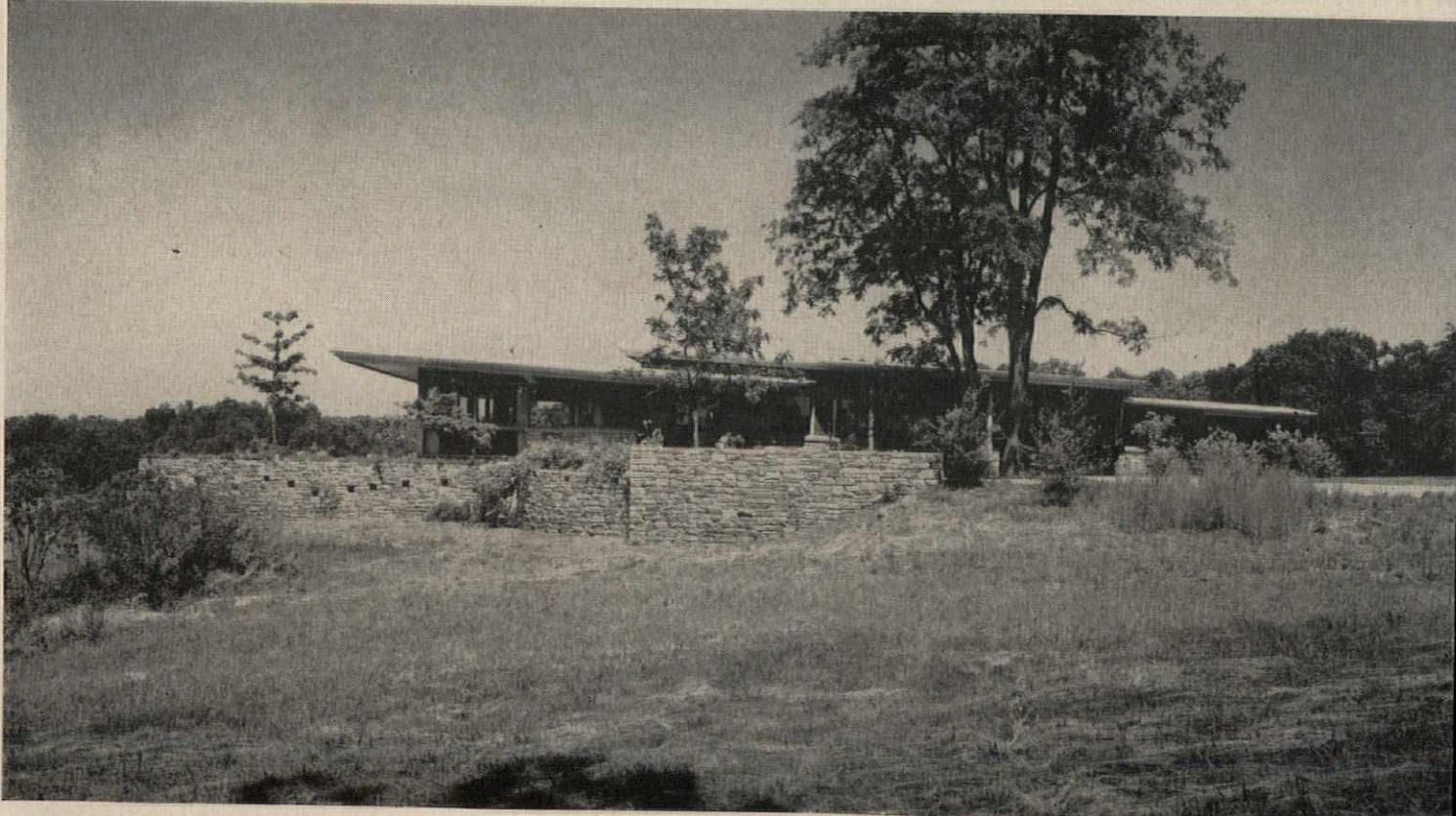
Thomas E. Babbitt, Architect

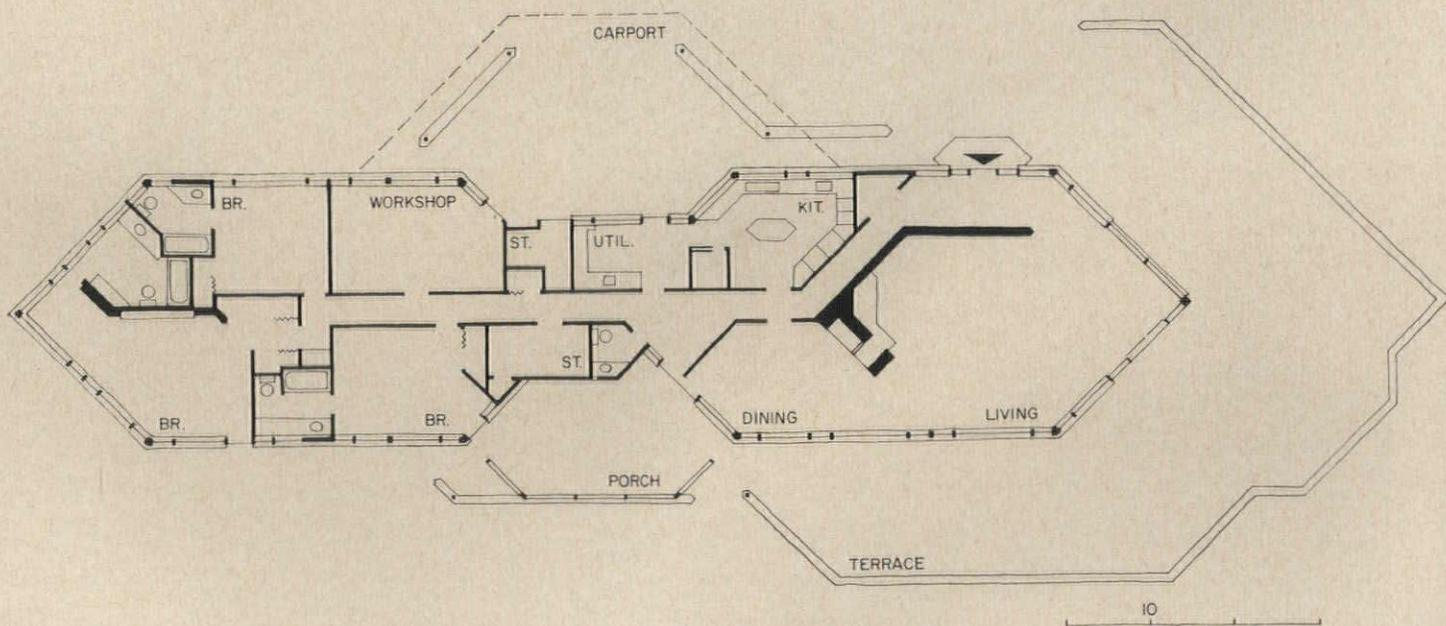


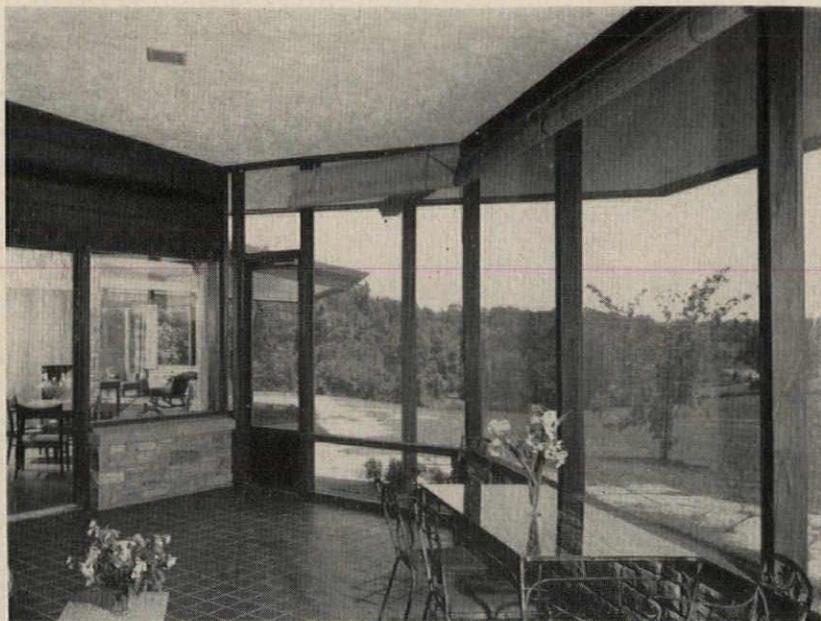
The Chase house was designed essentially as a vacation and weekend house for the present, and then for the owners' future retirement. The site is on a knoll looking out to the south toward a lake, and to the east to a bend of a brook. The plan was designed basically as two glass-enclosed pavilions—one for living, one for sleeping—which would dramatize the views, and create a house that was roomy and that would catch every possible breeze for muggy summers. The two pavilions are linked by a narrow utility core, and the overhangs of the porch and carport.

To create the atmosphere of a cozy sitting area in the big open living room, a free-standing masonry wall was used to create a nook around the fireplace; a change in roof level at this point also made possible a concealed clerestory that floods the fireplace with light. The angles in the plan were used to increase the panorama seen from each room. Materials used include gray stone, wood frame, walls and ceilings of wood-veneer and plaster.

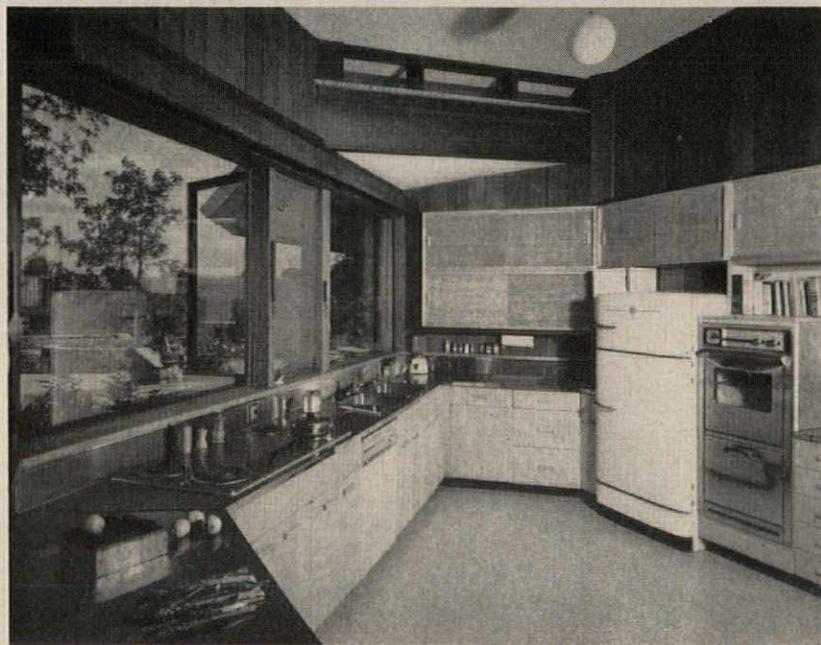
Joseph W. Molitor







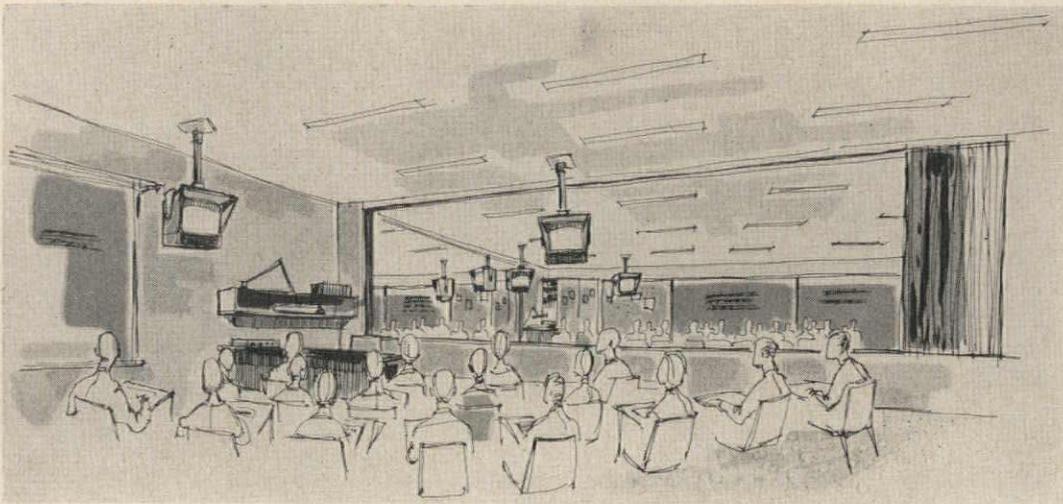
Joseph W. Moulton



### The Chase House

The screen porch, which also serves for outdoor dining (photo at top), has a higher ceiling than the adjoining rooms, and is cooled by air passing through louvers in the resulting space. Most all rooms have good cross ventilation.

Heating is by electric coils in the concrete floor, and in ceiling panels—which permits easy control and quick response for impromptu visits. In addition, a week-long time clock can be set to bring up the heat for the weekend, as well as cutting it down for each night.

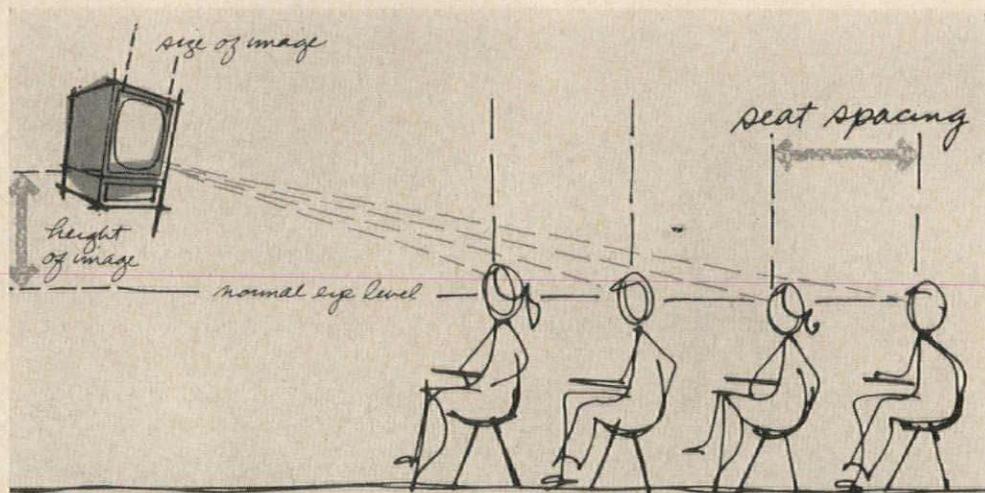


# SCHOOLS

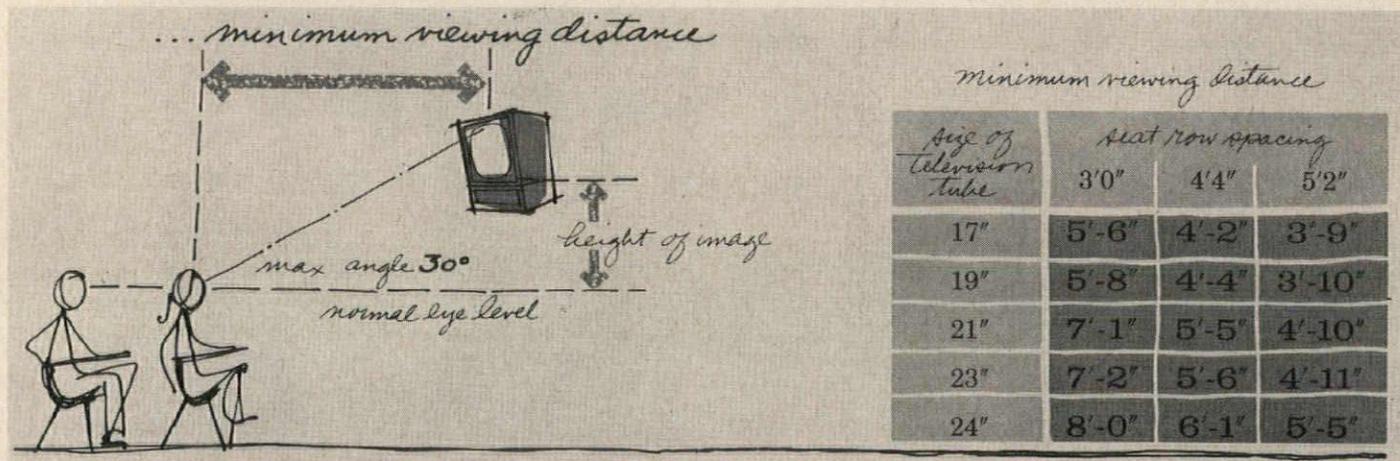
## BUILDING TYPES

Study 285

Probably the most bandied-about phrase from the increasing gamut of mechanical complexities in schools is "Audio-Visual"—at least one new school is even boasting of "venetian audio-visual blinds". Of all the aids, mechanical and otherwise, in this category, the greatest upsurge of interest seems to be in the tremendous potentialities of educational television. The Ford Foundation's Educational Facilities Laboratories, Inc. has just published a handsome report by Dave Chapman, Inc., Industrial Design, on research on ETV and the environment in which television could be employed most effectively. The report gives, of course, one point of view and is slanted primarily for school boards, administrators and teachers, but contains much of interest to architects (including Mr. Chapman's note in the report that "Architecture and structure are properly left to the architect"). The report has recently been awarded the Society of Industrial Designers' gold medal for this year—one of the first times a non-product has made the award. Some pertinent extracts from the report are presented in this study, together with two new schools (in Boonsboro, Maryland, and Weymouth, Massachusetts) planned for ETV systems, and a group of other schools with a high degree of interest in planning, structure and mechanical ingenuity. Full copies of the EFL report are available from their offices at 477 Madison Avenue, New York City.



In planning for TV in classrooms, the sight lines, size of image, height of image, spacing and location of viewer seating are all interrelated and change in any one affects all others. The size of the set establishes maximum viewing distance—recommended ranges being 12 times the actual image width of the picture tube. The normal eye level will vary from about 31 in. for kindergarten to about 49 in. for the 12th grade. This data is based on in-line seating. Staggered seating will allow lower placement of the TV



## PLANNING SCHOOLS WITH TELEVISION

*Extracts from a report on design for ETV by Dave Chapman for Educational Facilities Laboratories*

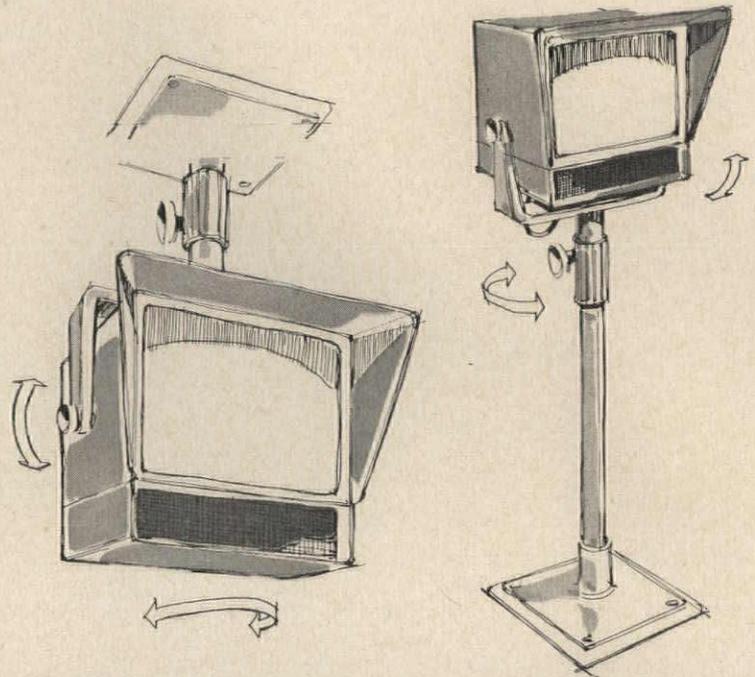
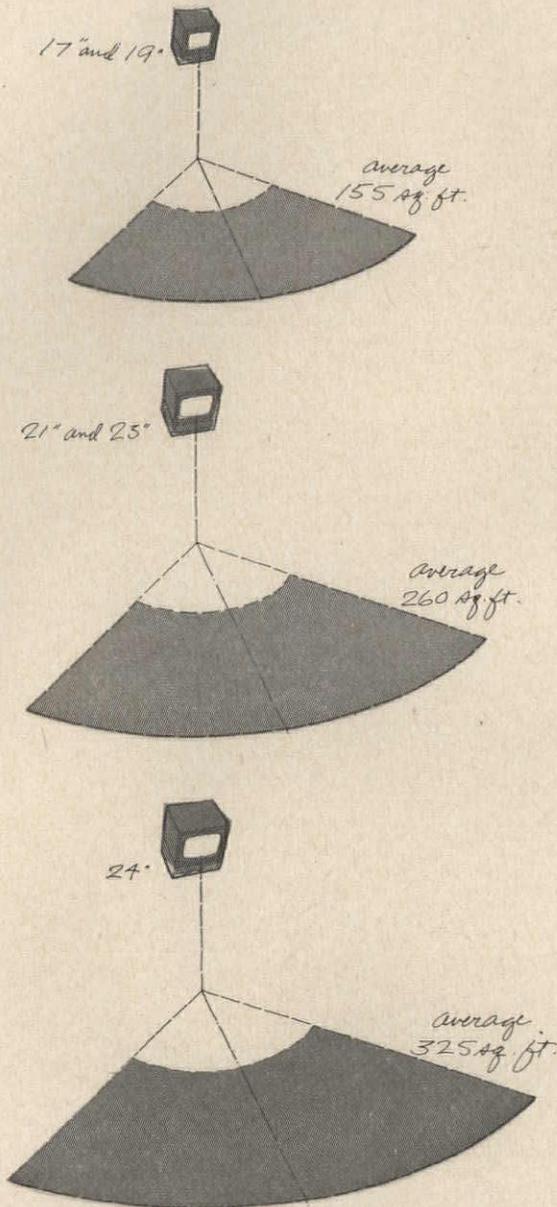
Television in education has a significant if short history. It has already become a part of the teaching program in schools and colleges across the United States.

After a few scattered starts in 1953-54, the television experiments began to spread . . . Perhaps the best known of the closed circuit school television projects was started in September 1956, in Hagerstown, Maryland. By 1959 the 5-year "experiment" had spread through the entire Washington County school system to reach 16,500 of the 18,000 pupils enrolled in 37 of the county's 49 public schools. For the '59-60 session plans called for inclusion of the remaining 12 schools in the system along with the Hagerstown Public Library and the Museum of Fine Arts. An entire range of subjects for grades one through

twelve in the schools emanate from 5 central studios.

. . . And so the background of experimentation and experience has built from these beginnings to the record at the beginning of 1960—569 school districts across the nation making regular use of televised instruction; 117 colleges and universities offering credit for television courses; 144 closed circuit television systems in educational institutions and another 21 for the military; and 45 educational television (non-commercial) in operation.

. . . One of the major purposes of this design study as outlined by EFL was to determine to what extent the use of television affected the facilities, size, shape and structure of the learning area. Our conclusion is that the tail does not wag the dog as might have been expected.



There is a need for adjustable devices to support the television receiver whether ceiling, wall or floor mounted or mobile. Corrections can thus be easily made for glare, seating arrangements, etc. TV receivers for school use are generally 23-in. units, front speakers with higher audio quality than standard home sets

The sketches at left show shape and square footage of viewing areas for different size sets. A line of vision not more than 45 degrees from the axis is the maximum angle recommended for viewing most material without objectionable distortion. When the vertical dimension of the TV receiver is added to the other factors noted here, ceiling heights will in some cases become critical. If a lower ceiling is desired, three courses are open—reduce the number of viewers; raise the successive eye level of the in-line rows of seats; or stagger the seating

Structural allowances must be made for proper installation of conduit or raceway to carry the cables for closed circuit transmission. Studios or classroom facilities used for origination of a program requires special wiring, lighting and ventilation. Beyond these considerations, no special architectural allowances are imposed for television in the school.

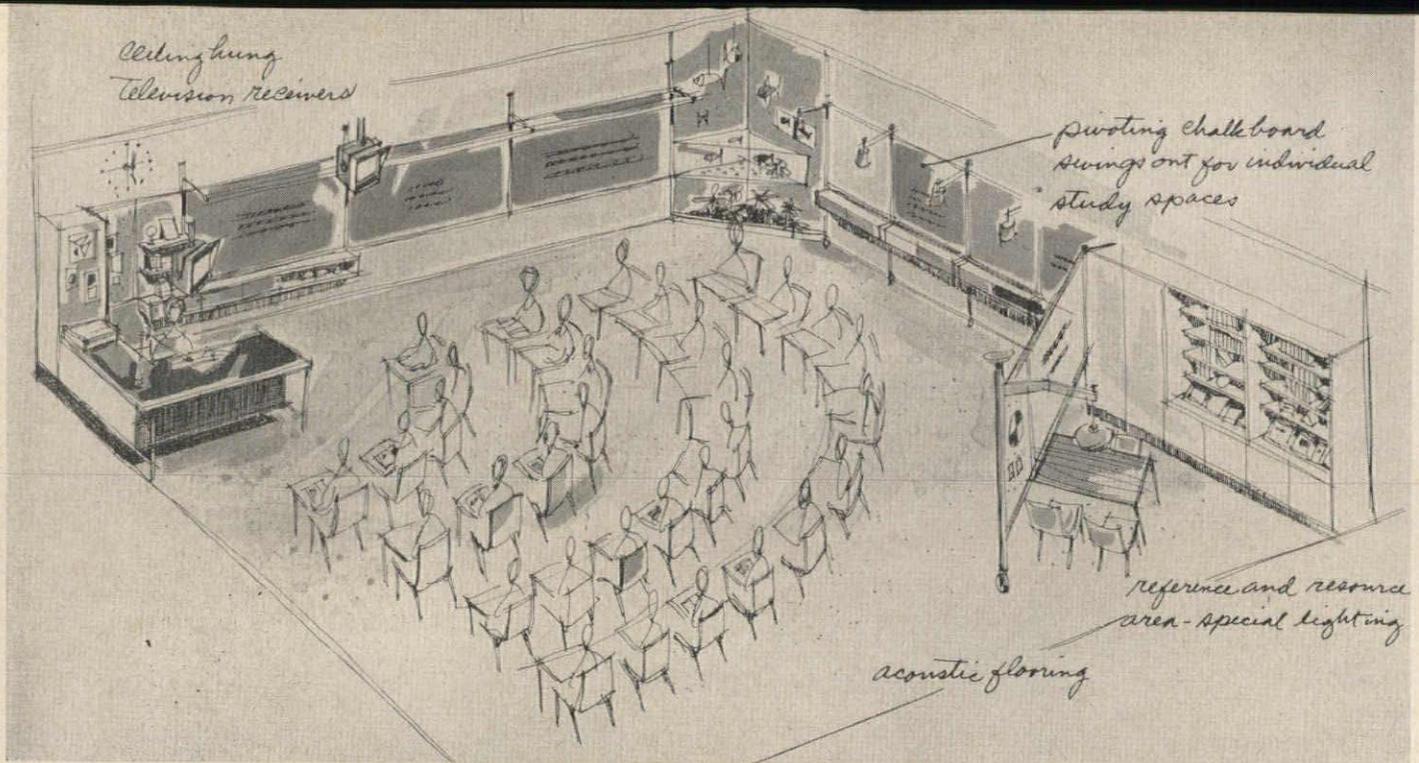
There is no "typical" television system. An installation should be tailored to meet each specific use and condition. It pays to get expert advice from people who have had experience with the kind of operation you plan.

There are two general approaches to inter-building or inter-school television systems. The primary factor that will dictate the selection of closed circuit television or

open circuit television is the economics of distance. Coaxial cable has its distance limitations costwise. In general, open circuit broadcast has potentially greater service range than closed circuit systems.

For school plants or separate units of a school within a close range of each other, closed circuit linkage by coaxial cable may well be a practical answer. The most extensive closed circuit system in current school use (Hagerstown, Md.) telecasts to schools as far as 30 miles from the origination point.

In planning a CCTV coaxial cable system, the first step is consultation with specialists who design, route and install coaxial cable and community antenna systems. Then you must decide whether you wish to own your own



#### SPACE AND FACILITIES

##### A. STUDIO OR IMAGE AND SOUND ORIGINATING SPACE

1. Space required around equipment for operational functions; i.e., traffic, work space, consideration of ceiling height and vertical space for lighting, stage equipment, storage.
2. Proper lighting, ventilation and air conditioning are functional requirements.

##### B. TV CONTROL SPACE

1. May be space common to all television equipment in modest installation.
2. A special area adjacent to studio space in more complex installation.

##### C. OFFICES AND EQUIPMENT MAINTENANCE SPACE

1. Necessary for personnel engaged in television production; i.e., technical supervision, project coordination, artists, etc.
2. Television equipment maintenance space should be adjacent to television facilities.
3. These spaces should be closely knit for team function and operation.

##### D. LIBRARY AND STORAGE SPACE

1. Storage space for "props" and materials used in television adjacent to work area. The space requirements are often underestimated here.

##### E. SPACE FOR EXPANSION

Do not overlook, because once started, you will undoubtedly expand.

#### EQUIPMENT

Equipment can be categorized as follows:

##### A. VIDEO SYSTEM

1. Camera chains, fixed or mobile mounts, single or multiple lens, remote control, switching system, monitoring.
2. Video tape recorder.
3. Opaque, film, slide projection equipment.
4. Control and distribution equipment.

##### B. AUDIO SYSTEM

1. Microphones, control and distribution equipment associated with the image audio.
2. Intercommunications system between television control and reception points.
3. Television control to cameramen and crew.

##### C. DISTRIBUTION

Cable system to reception points.

##### D. RECEPTION EQUIPMENT

Monitors, television, receivers, frequency converters, etc.

##### E. LIGHTING EQUIPMENT

Requirements vary with scope of operation from simple to complex spot and flood lighting.

##### F. STAGING

Instructional devices, furniture, draperies, etc.

cable or lease telephone company cable facilities. Each has its advantages and disadvantages.

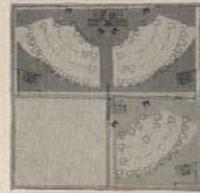
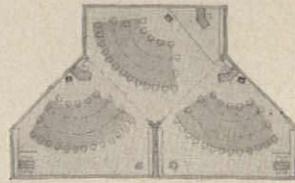
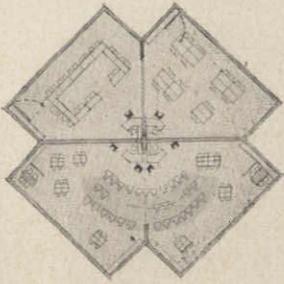
In a CCTV coaxial cable system linking a group of small, medium and large schools, each building is equipped with a master antenna array to allow "off the air" pickup of open circuit VHF and/or UHF educational programs. The cable is "looped" to allow origination of a program at various points within the inter-school system. Without a completed "loop", programs could originate only from one centralized source.

Where the schools are so widely separated by distance as to make a closed circuit coaxial cable linkage uneconomical, communication can be achieved through open circuit VHF and/or UHF broadcast . . . signals can be

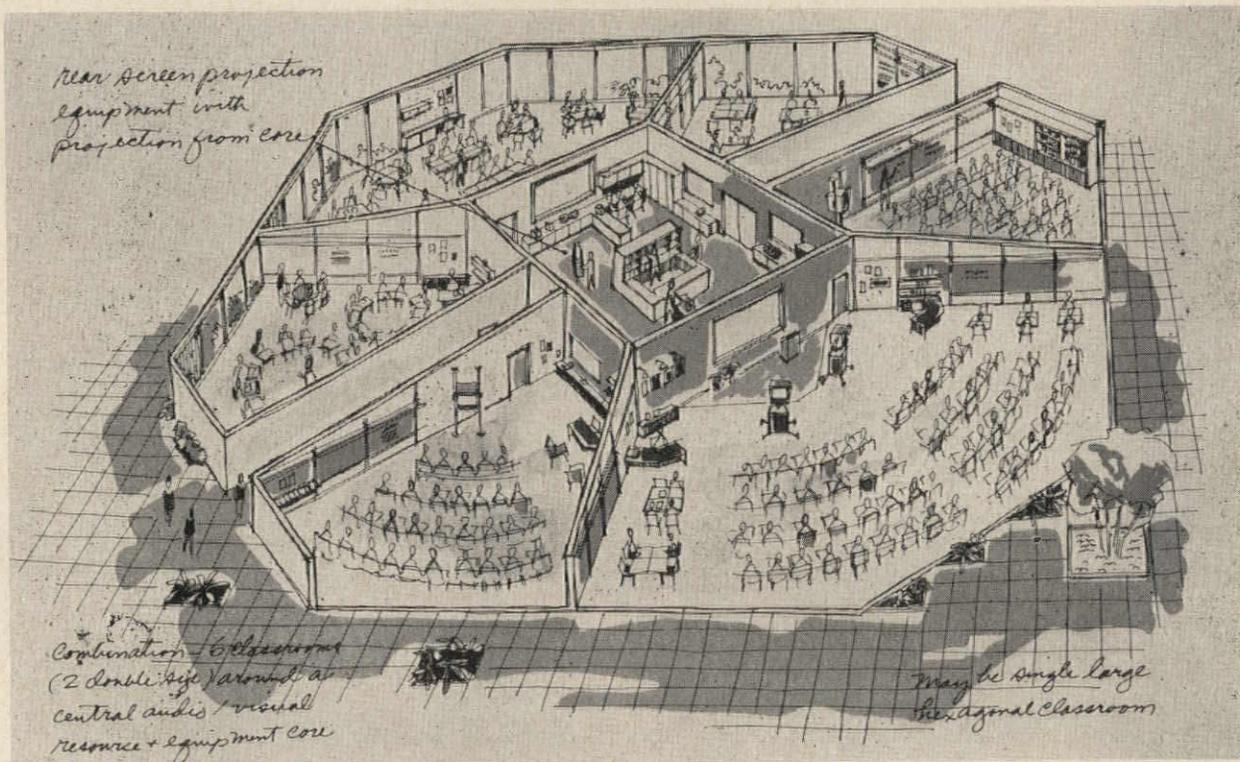
routed into the individual schools through the master antenna array and distributed through the internal cable system. The same signals can also be received "off the air" directly at the receiver with its individual "rabbit ears" antenna.

The range of the maximum power VHF/UHF broadcast stations can be extended to the schools beyond their range by use of VHF satellite or UHF translator stations, by microwave relay or by coaxial cable.

Coaxial cable used for distribution of the TV signal within a building ranges in size up to approximately  $\frac{1}{2}$  in. diameter (usually does not exceed  $\frac{1}{4}$  in.). It is frequently possible to run this cable in raceways or conduits already supplied for an existing sound system, public address



On opposite page is a suggested adaptation of a traditional classroom for TV. Wedge shaped rooms can use similar arrangement. Rooms can be combined with folding partitions for flexibility; a cluster group with central audio-visual core is shown below



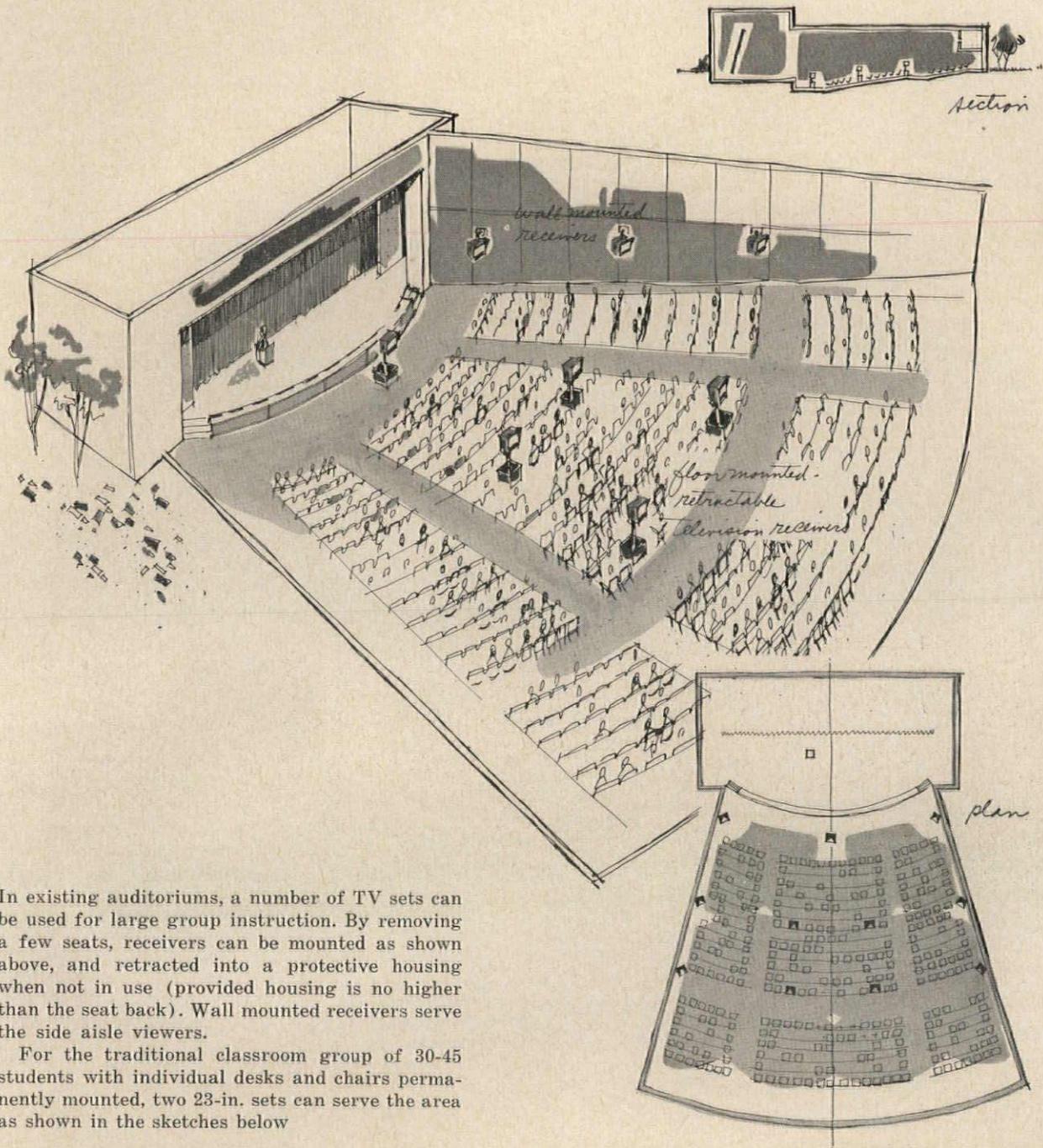
system, alarm system, etc. Where the conduit does not already exist, air shafts or heating ducts may be usable. Another alternate is to run the cable along an outside molding or against the wall shielded with protective covering such as wire mold.

Spaces that already exist in many schools across the country are in themselves suitable for this use of instructional television. . . If the focus of the group were centered on a corner of the room where the teacher, wall maps, viewing screens and teaching aids were also properly grouped, the side walls of the room would establish the proper visual controls to maintain the focus of student attention within a 90 degree arc of view.

The ability to see, to hear and to react are the basic

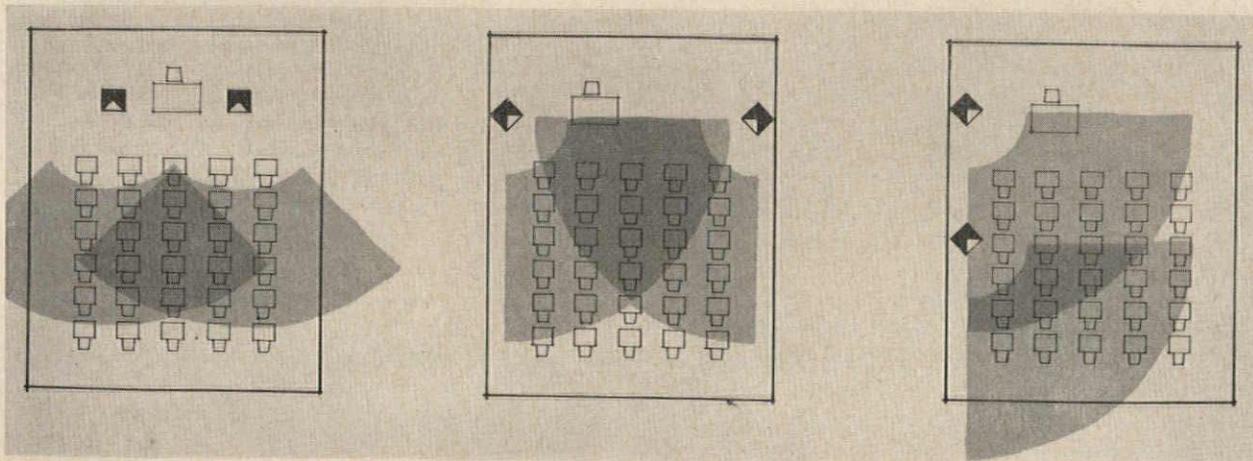
needs for learning. It follows that the physical facilities in the school have a great deal to do with whether a teacher can even begin to reach the students on the most basic levels of communication. Can the student see and hear what is going on? Are lighting, acoustics, ventilation, furnishings proper for the task? Are room colors so depressingly drab that the atmosphere discourages enthusiasm? Facilities can make or break the effectiveness of both the teacher and the learning program.

All of these physical and environmental factors are common problems whether the "teaching image" is in the person of a teacher in the room or is coming to the student via television, tapes, projection or language laboratory equipment.



In existing auditoriums, a number of TV sets can be used for large group instruction. By removing a few seats, receivers can be mounted as shown above, and retracted into a protective housing when not in use (provided housing is no higher than the seat back). Wall mounted receivers serve the side aisle viewers.

For the traditional classroom group of 30-45 students with individual desks and chairs permanently mounted, two 23-in. sets can serve the area as shown in the sketches below



## BOONSBORO HIGH SCHOOL

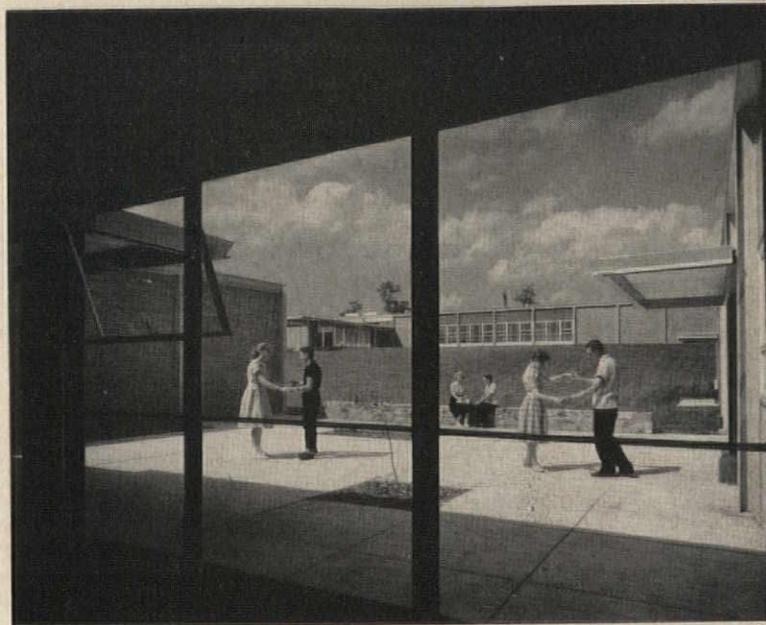
*Hagerstown, Maryland*

The much-talked-about Hagerstown closed-circuit educational television experiment has added this new high school to its system. It offers some interesting comparisons to the previous North and South Hagerstown High schools designed by McLeod and Ferrara. The new school is a rural one, some ten miles from the older urban ones, and built for the same Board of Education, Washington County, Maryland. In contrast to the others, this one is designed for a much smaller enrollment (about 600), a smaller budget (\$1,500,000), and an expectation of enrollment increasing in five or six years to 1200-1400 pupils.

Rolling topography and the expected need for expansion led to the adoption of a campus-plan scheme which would permit unit additions to be made as needed without disturbing the operation of the school. In plan, the "schools-within-a-school" idea of North Hagerstown was applied in reverse: it was considered just as valid for a small school to grow larger by adding "little schools" when needed, as it was to sub-divide a large school. As before, two such "little schools" are linked and share a common assembly-dining area. To date, one such duplex-unit has been built—together with all the specialized areas required for the final school.

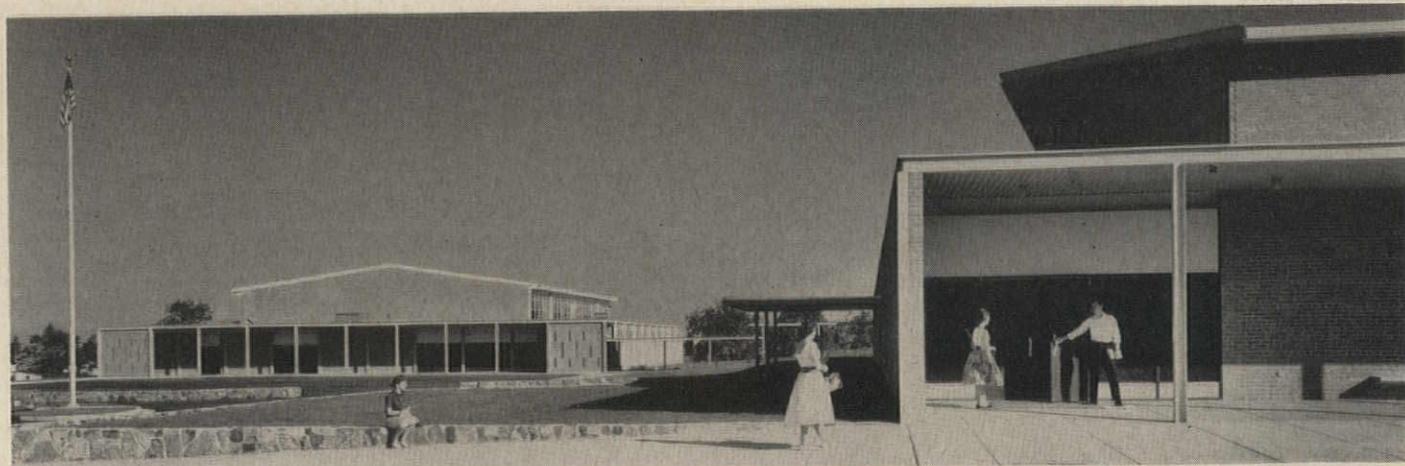
Past experience with both the ETV and educational programs emphasized the need for a variety of instructional room sizes. Thus each "little school" has a large central education laboratory, flanked by classrooms, a 10-15 pupil classroom-conference room, and guidance and teachers' work rooms.

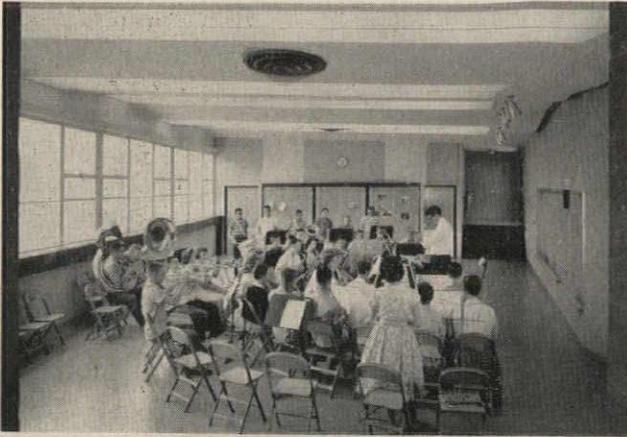
*McLeod and Ferrara, Architects; Engelhardt, Engelhardt, Leggett and Cornell, Educational Consultants; J. Gibson Wilson, Structural Engineer; Kluck, Huhn, Cobb and McDavid, Mechanical and Electrical Engineers; Bolt, Beranek and Newman, Acoustical Consultants; C. William Hetzer Co., Contractor*



A campus-plan scheme of "little schools" provides flexible, easily expandable facilities for this latest addition to the Hagerstown school system and its widely known educational television program

*Joseph M. Molitor*



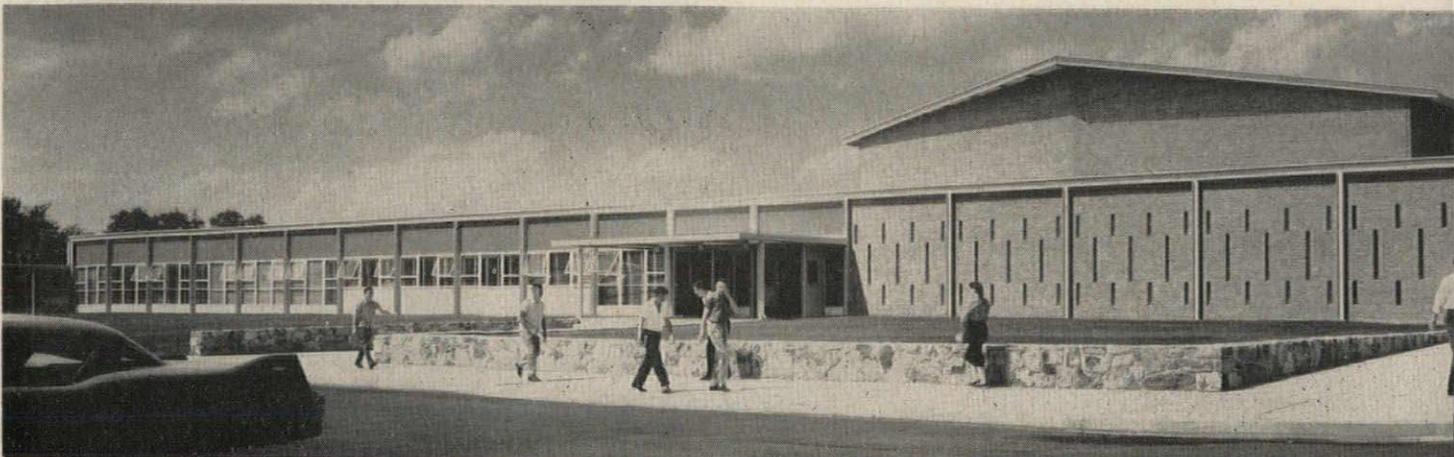


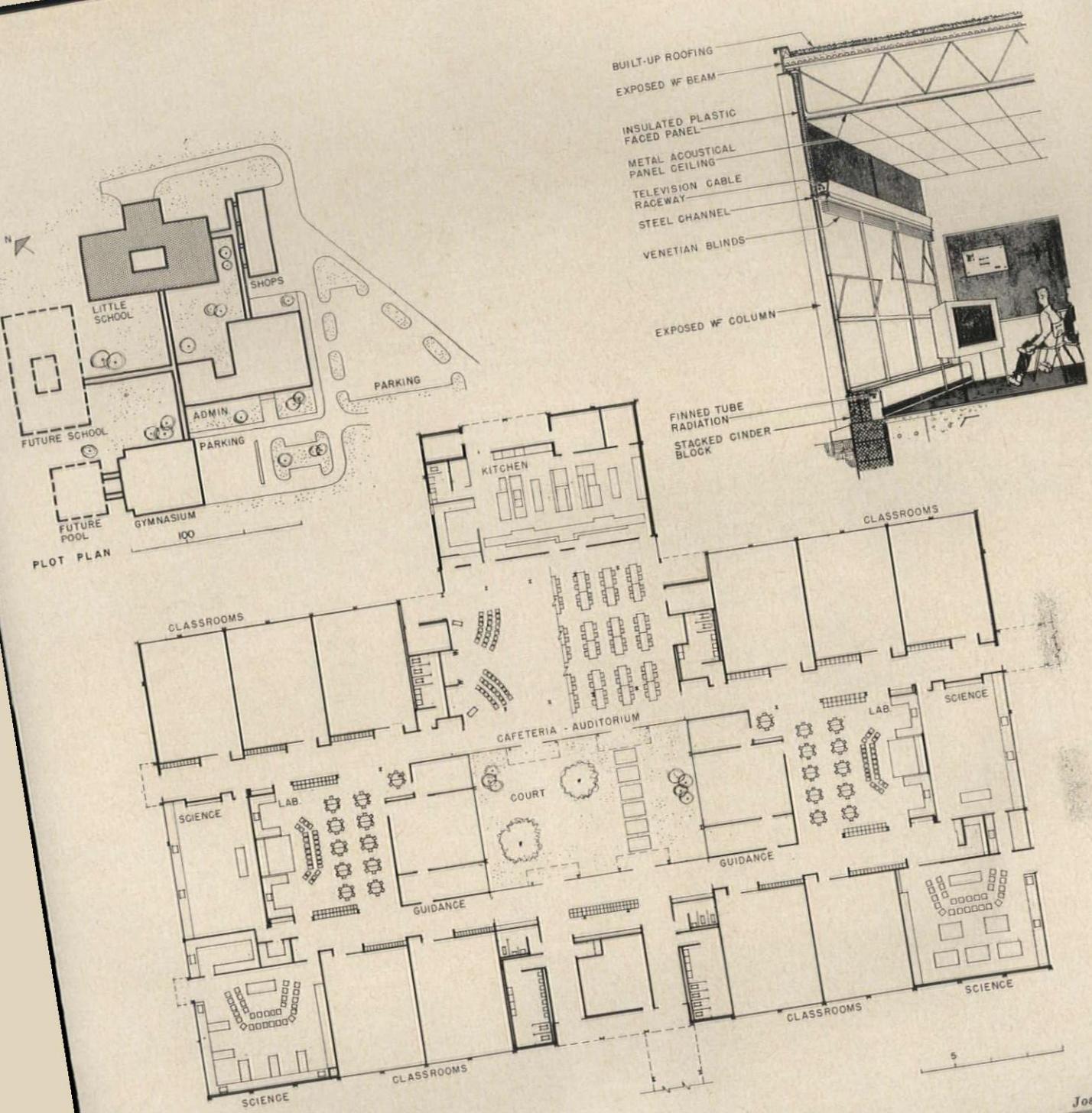
## Boonsboro School

In designing Boonsboro, some design changes were made to increase the effectiveness of TV. Large exterior glass areas were reduced, and window heads lowered to about 7 ft above the floor; above this were installed bright colored 2-in.-thick laminated-plastic insulated panels. The steel framing member at the window head serves both as support and as a raceway for TV cables on top, a venetian blind pocket on the bottom (see detail). The raceway is within easy reach for installing and changing set locations and runs continuous around the perimeter of each building. Ceiling tiles are removable for running additional cables and connections. To preserve the raceway continuity, structural columns were put on the outside face of the buildings, and painted white to contrast with the brick and plastic panels.

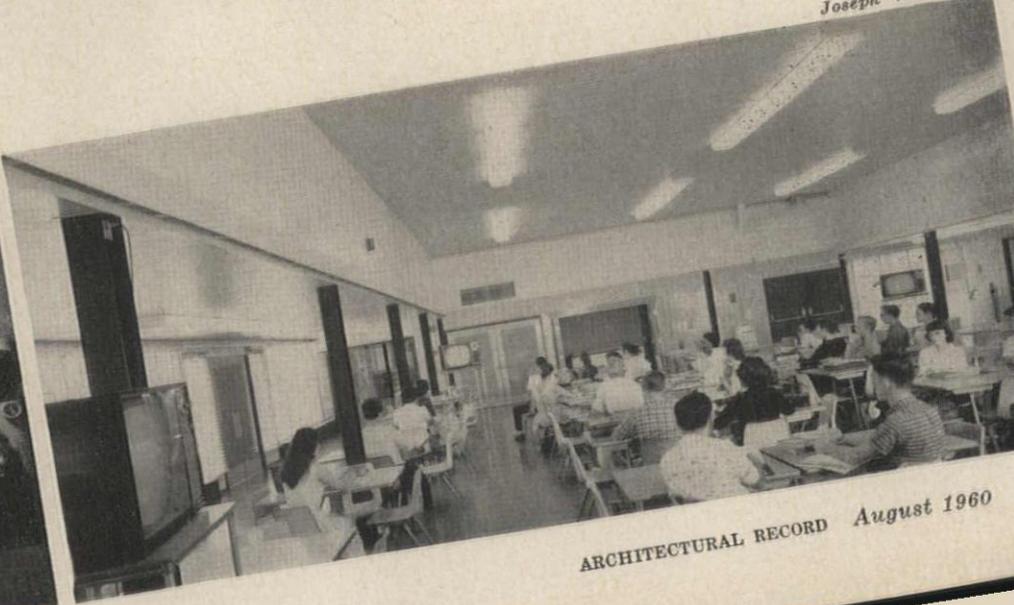
The administrative unit houses office areas, and most of the specialized subjects: business education, art, music, homemaking, and a 650 seat auditorium. The shop unit contains the boiler room, and three shops: agriculture, metals and woodworking. The gym has seating on folding bleachers for some 800 spectators. The kitchen is planned for the entire eventual school—electric food carts will service small serving kitchens in additional "little schools."

Total contract cost was \$1,500,059. Buildings alone (but including most all equipment) was \$1,200,320, or \$14.33 per sq ft.





Joseph W. Molitor



GEORGIA AVE. ELEMENTARY SCHOOL  
*Memphis, Tennessee*

Adjoining Beale Street and the central business district of Memphis, this necessarily big, urban elementary school posed the all-too-usual, and relatively difficult, problem of providing scale which would not overwhelm small children—and without sacrificing outdoor playground areas.

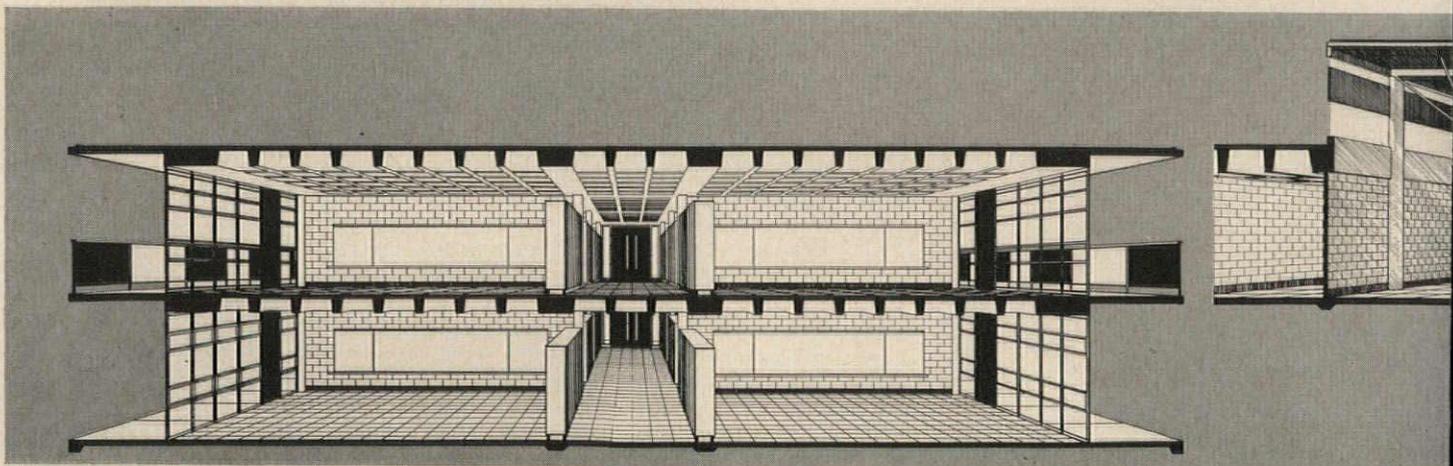
The final scheme uses a three-unit complex of two classroom buildings, and a central administration-cafeterium unit. Site grades were used to place the second floor of the classroom buildings at the same elevation as the floor of the one-story administration unit. Thus all areas can, in effect, be entered at ground level: an arrangement of bridges connects the buildings.

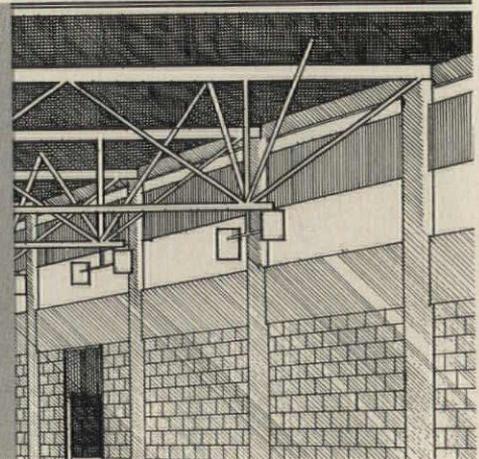
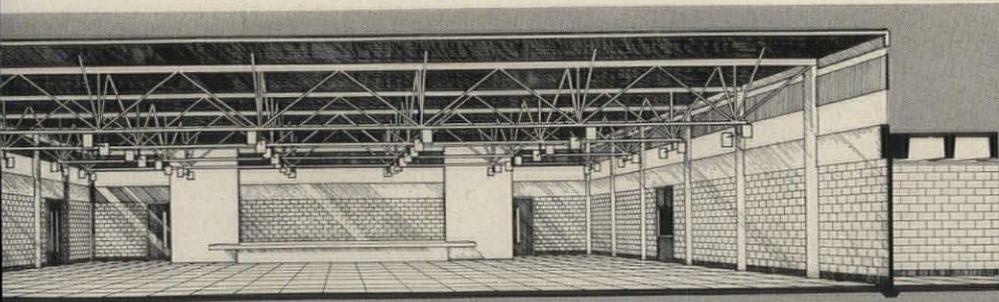
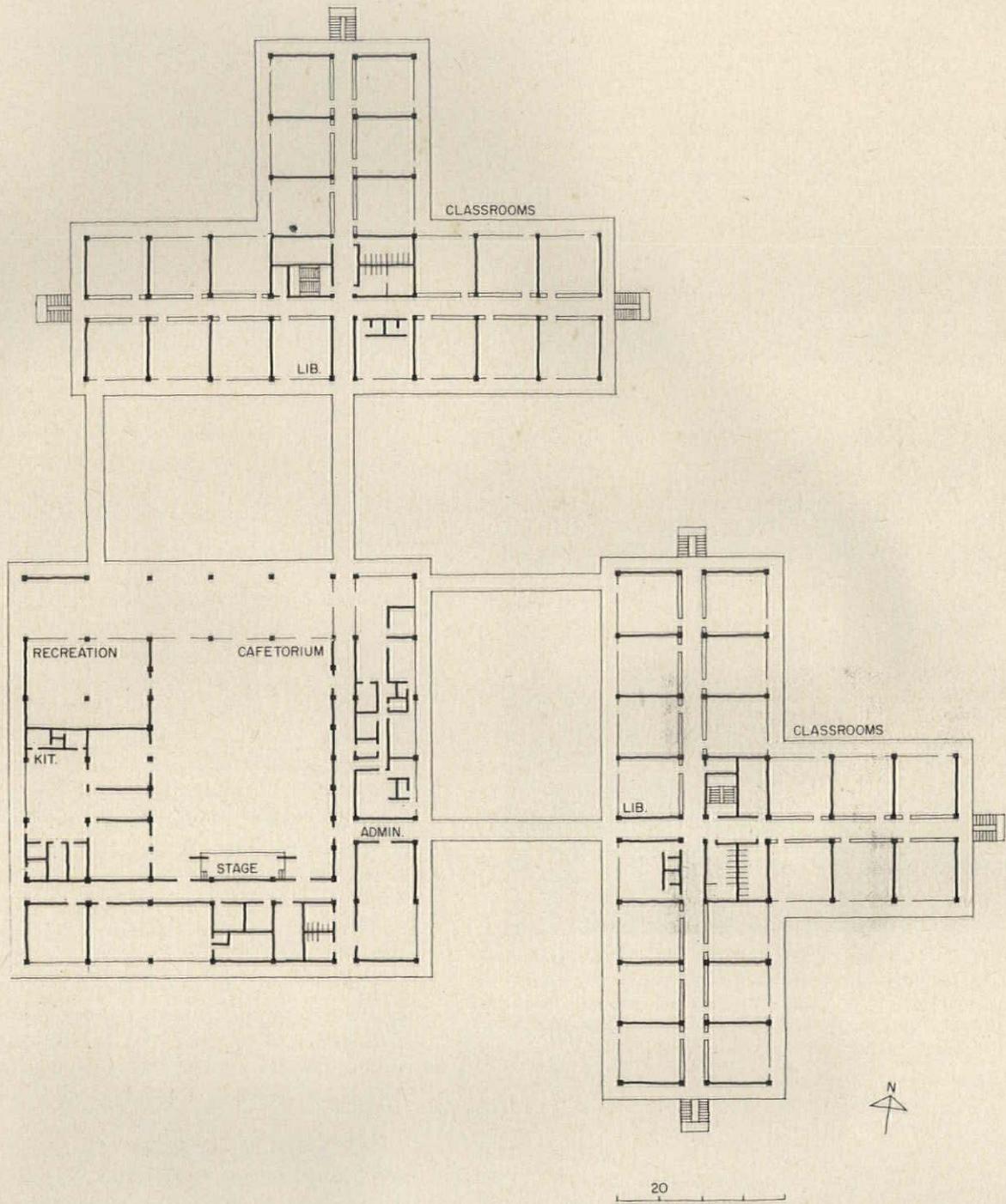
The identical classroom buildings are T-shaped in plan, with each leg of the T containing a cluster of six classrooms on each floor. Thus the school is broken down into a dozen clusters of six classrooms each. They are grouped around common facilities such as stairs, toilets, teachers' room, library. The omission of all interior columns in the clusters, and the use of dwarf storage walls along the interior corridors give good flexibility for the rearrangement of the spaces if needed. The principal circulation around and among the buildings is by outdoor corridors.

The structural system is a concrete slab on grade and a two-way concrete joist system for the second floor and roof of the classroom buildings (the under surface is acoustically treated to give a light-reflective series of sound traps). Prefab decking over lightweight steel trusses are over the cafeterium. Color and simple baffle plates convert the trusses into festive light fixtures (detail far right).

*Office of Walk C. Jones, Jr., Architects; Francis Mah, Drawings; Gardner & Howe, Structural Engineers; Allen & Hoshall, Mechanical and Electrical Engineers; O'Brien and Padgett, Contractor*

Great simplicity in all facets of design produced great economy in this school (\$8.20 per sq ft for 143,578 sq ft), while some architectural ingenuity has created a clean, open, colorful and flexible environment for children of elementary school age in a densely populated urban area





## H. F. HUNT JUNIOR HIGH SCHOOL Tacoma, Washington

An extremely pleasant, almost festive, environment has been created in this school by color-accented structural shapes and courts—and at budget cost.

The entire academic program of the school is housed in a low central building. This unit has two open and planted courts, which double as outdoor corridors. The short interior corridors contain student lockers. The building is constructed on a 16-ft bay, using either two or three bays per teaching station (there are 31 stations in the school). The frame is hemlock, with 2 by 8 ft wood joists covered with a plywood roof diaphragm and built-up roofing. Exteriors are textured plywood, cement-asbestos panels and brick. Sash is wood with jalousies for ventilation.

The round cafetorium building also houses band, orchestra and choral rooms. The stage at the center serves the main auditorium and also allows the band room to be converted into a small auditorium. During the past summer, the local Little Theater group used the building for all of their productions. The framing of the structure is of laminated wood arches terminating at a compression ring at the center. Because of the community use, a separate heating system is used; gas furnaces are placed over the kitchen. The rest of the school is heated by a high-temperature hot water system, with all lines concealed in the joist space.

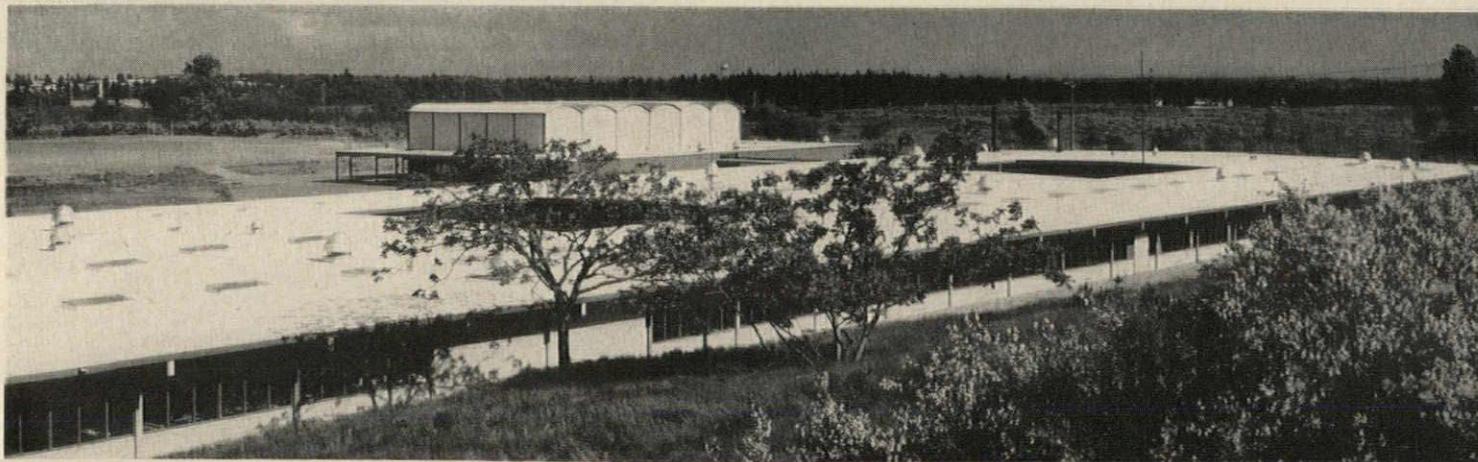
The gym can be divided by a folding curtain into two separate courts. The roof system is formed of prefabricated plywood vaults spanning 16 ft to primary glue-laminated beams. The exterior of this unit has soft red brick at the lower level, white and yellow panels above. The cost was \$11.54 per sq ft, including sales tax, paving, equipment and fees.

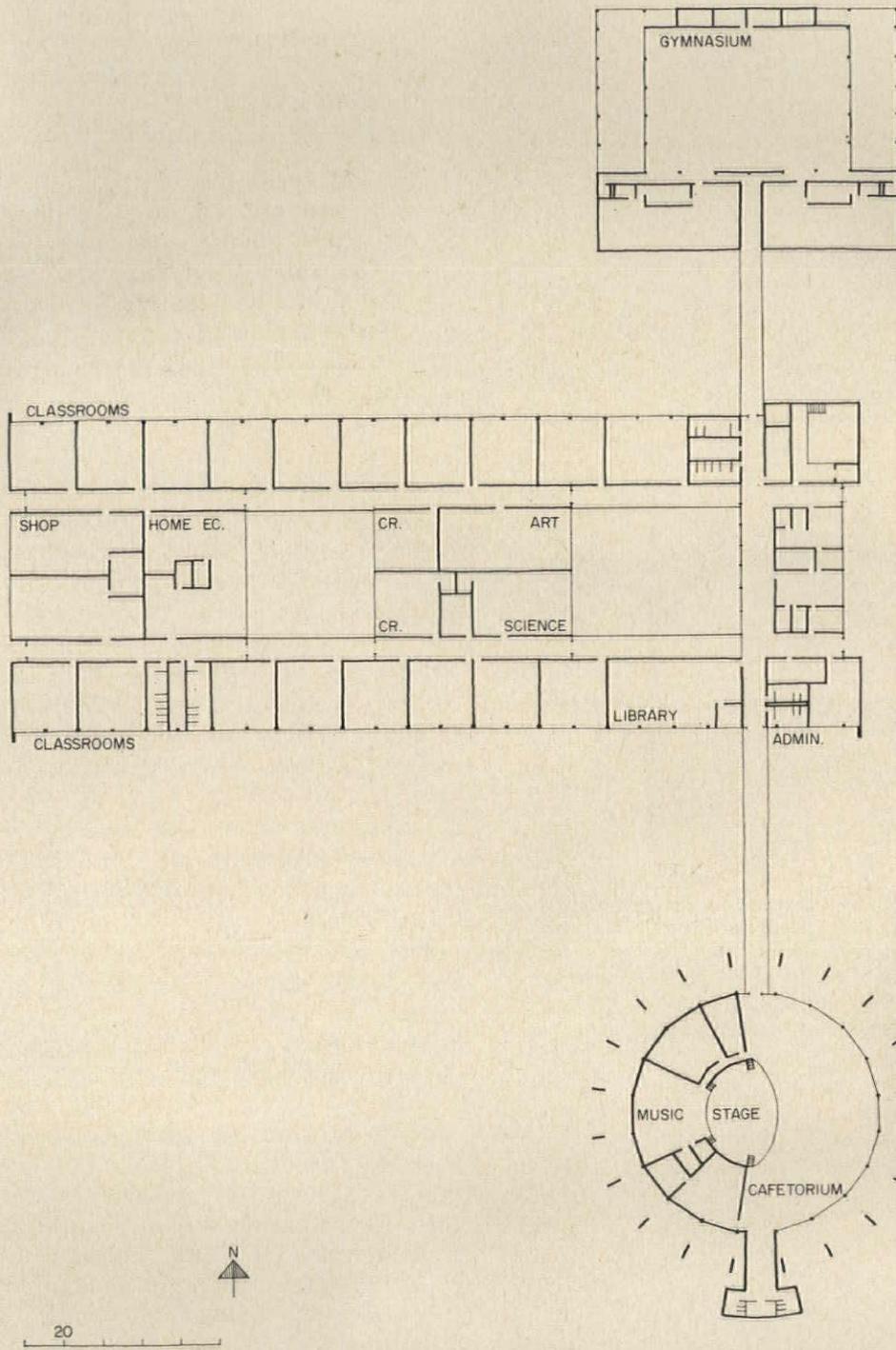
*Robert Billsbrough Price, Architect; Lawrence Halprin, Landscape Architect; Horace J. Whitacre & Associates, Structural Engineers*



The exuberant shapes of the gymnasium and cafetorium add an air of individuality to this economical, court-yarded school. The separation of these noisier areas from the main block reduces the sound level and abets the possibility of their use for community activities

*Dearborn-Massar*





## FOURTH SECONDARY SCHOOL

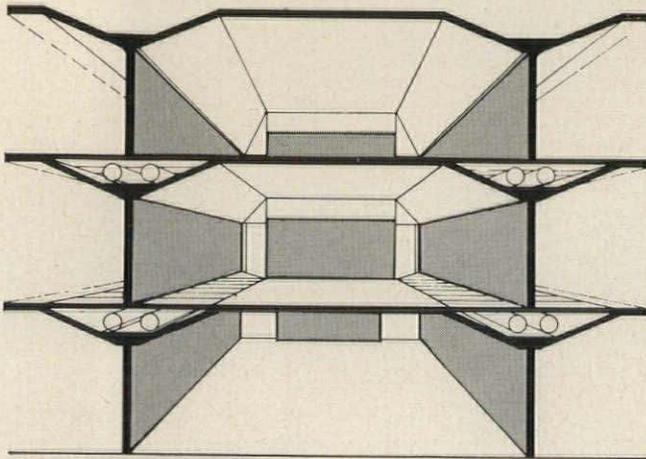
*Sault Ste. Marie, Ontario, Canada*

Some rather unique structural and planning ideas have been used in this new Canadian high school. The school has two classroom wings, each three stories high, flanking the north and south sides of a gymnasium-utility core. A two-level science and administration wing is to the west of the gym, and is placed split-level fashion between the classroom wings to help provide isolation at each level. Circulation is via four stair towers, with a landing at each half level.

An individual classroom expression is created by roofing each one with a 30 by 30 ft concrete "tent" slab—a special form of folded slab consisting of 4-in. trapezium slabs on the sides and square on top, monolithically connected. The structure is supported on columns in the corners. The use of repetitive formwork and the decrease in building height due to minimum floor depth are expected to help reduce costs. Exposed structural elements form the basic finish throughout the building. Exterior walls are brick, interior ones brick or concrete block. Floors are mostly asphalt or vinyl tile, ceilings are acoustic tile on exposed concrete. Heating is by a forced hot water system.

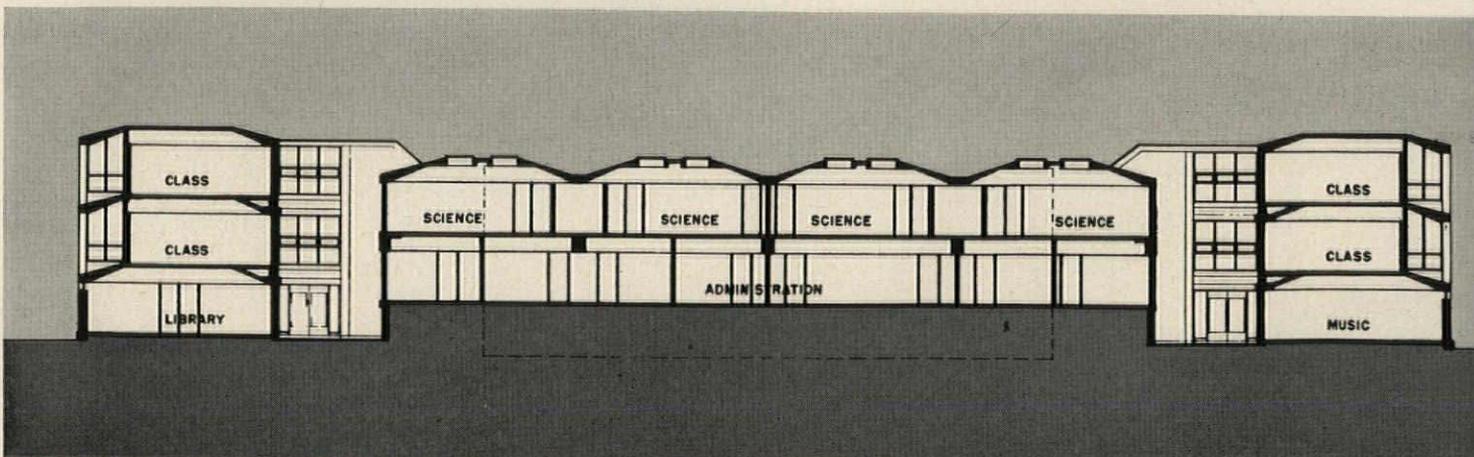
The resulting structural overhangs help reduce the glare problem in the classrooms. The science rooms, which face west, have solid exterior walls, and are lighted both naturally and artificially from skylights in the roof slab.

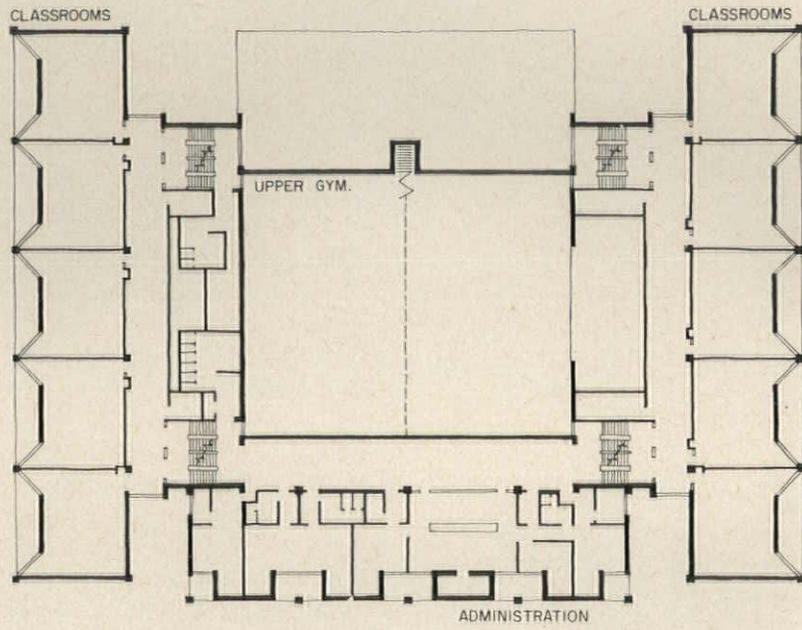
*John B. Parkin Associates, Architects & Engineers; John C. Parkin, Partner-in-Charge of Design; R. V. B. Burgoyne, Associate-in-Charge, Schools; John H. Andrews, Senior Project Designer; R. F. Marshall, Associate, Structural Engineering; J. E. Mews, Associate, Mechanical Engineering; B. Cartwright, Project Architect; Newman Bros. Ltd., Contractor*



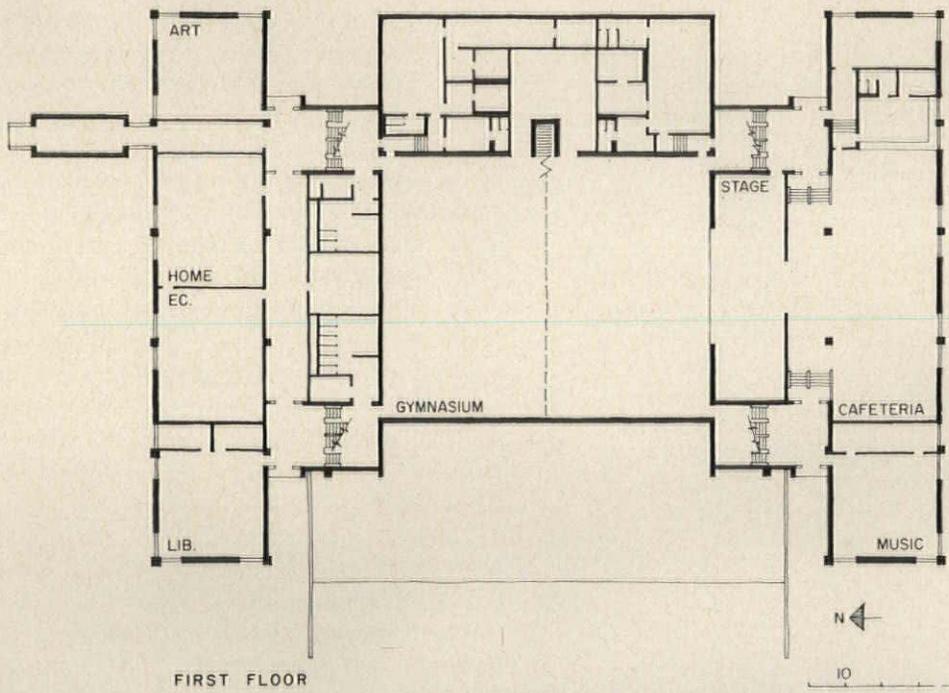
An unusually complete structural and mechanical integration with the architectural form has been achieved in this school, which is now under construction and scheduled for completion in January, 1961.

On each floor, the valley between "tent" slabs is covered with precast concrete slabs, and the space thus enclosed becomes an integral pocket for all mechanical services

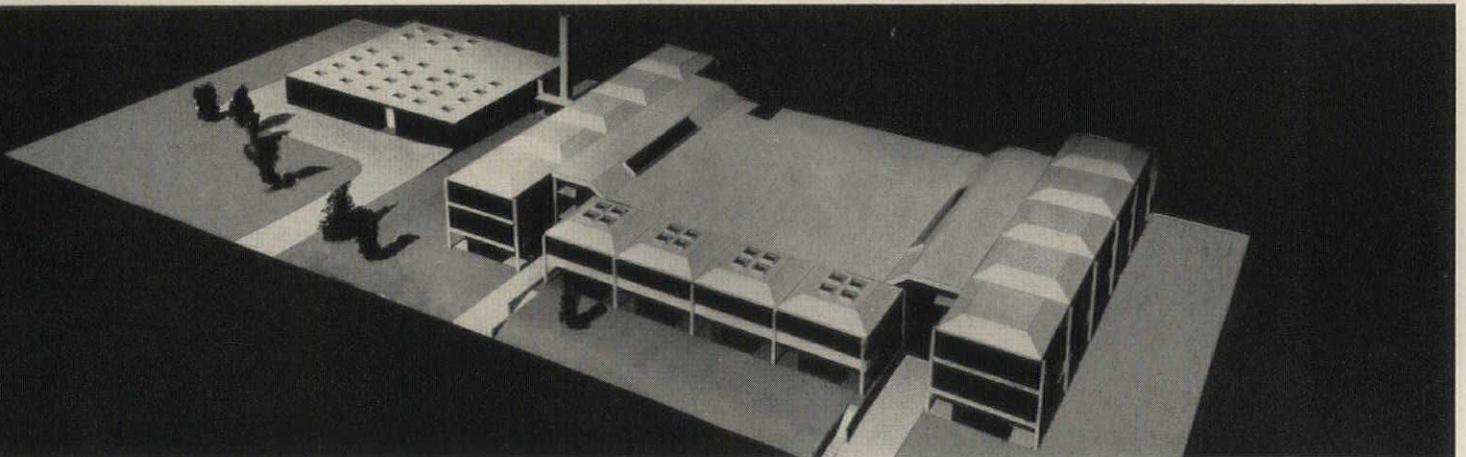




SECOND FLOOR



FIRST FLOOR



## J. S. CLARK JUNIOR HIGH SCHOOL

*Shreveport, Louisiana*

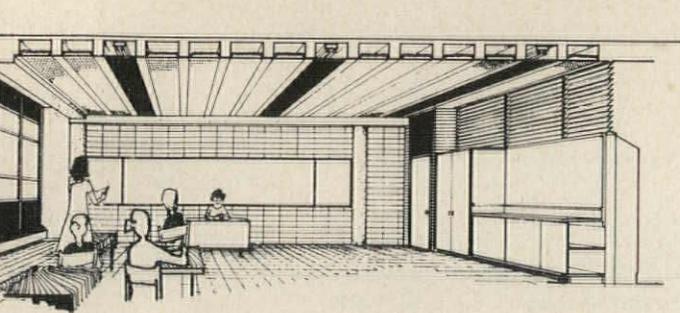
A trim, rather sophisticated urbanity in this school well suits its dual use as junior high and community center. The cafeteria, auditorium, gym, shops and library form a compound around a large paved court and covered play area. During non-school hours, this area serves the neighborhood. The cafeteria and auditorium also open on a large covered mall, which acts as an atrium for large gatherings.

The useable land in the site upon which this school was constructed was very limited, due to a large drainage ditch which traversed the property. The land beyond the ditch is subject to overflow, and unusable for building. Thus, the academic areas for the 1500 student school were placed in a three-story wing. The program covers grades 7, 8 and 9.

The plan was designed with particular emphasis on ventilation, with louvers on the corridor sides of the classrooms to give cross ventilation. The gymnasium is a windowless building, ventilated by exhaust fans with intake louvers placed directly below spectators' seats.

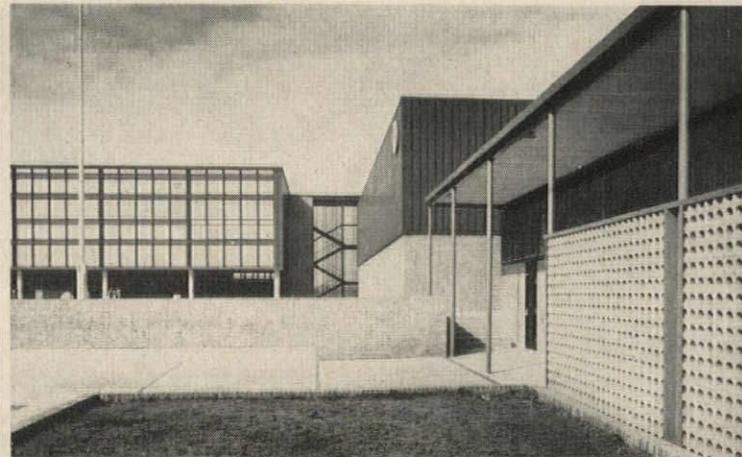
The lower buildings of the complex have frames of structural steel and bar joists, roof decks of poured gypsum on gypsum board. Exteriors are beige brick, blue insulated metal panels. Interior partitions are cinder block. All the buildings are built on drilled, under-reamed piling. Floors are finished with terrazzo, asphalt tile or ceramic tile.

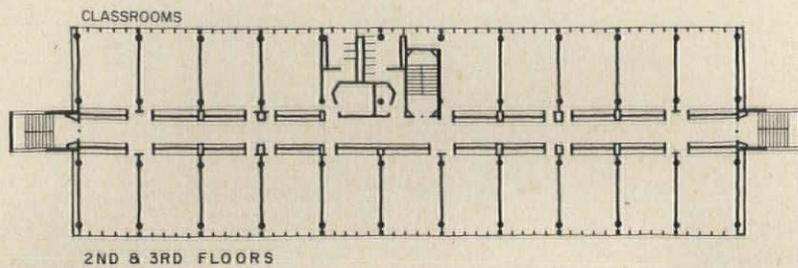
*Wm. B. Wiener, Morgan & O'Neal, Architects; E. M. Freeman & Associates, Structural Engineer; Carl Hadra & Associates, Mechanical Engineer; Southern Builders, Inc., Contractor*



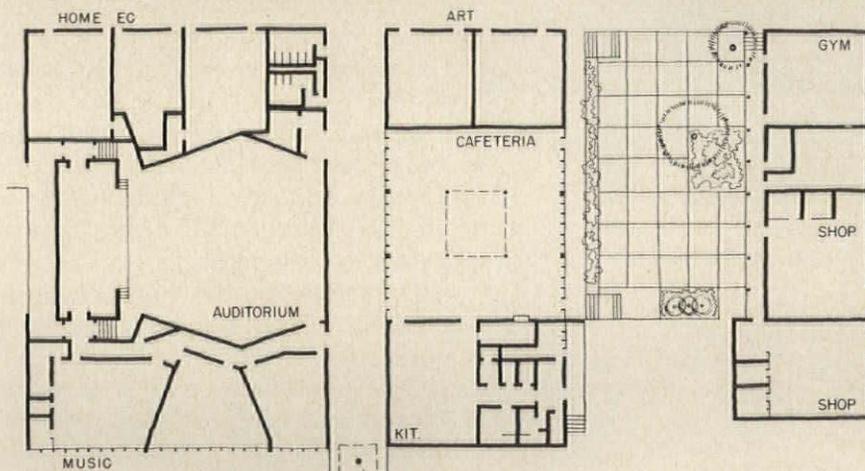
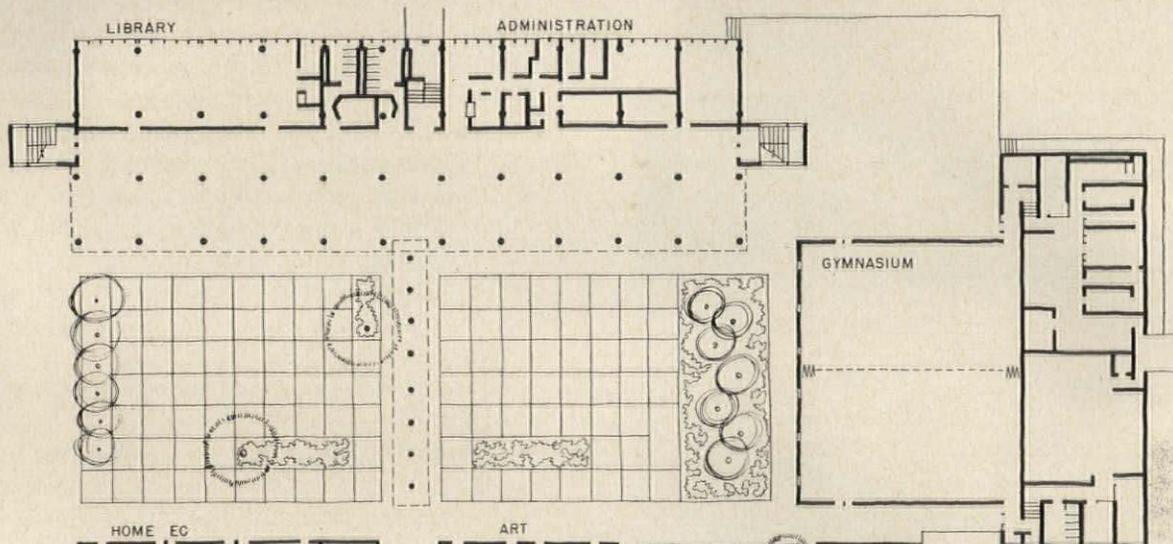
Ground level areas of this school contain areas which double for school and community center use. Classrooms are raised in a three-story concrete framed wing. As can be noted in the sketch above, floors are of left-in-place metal forms, which act as acoustical panels, light troughs and finished ceilings. The exterior walls are steel and porcelain enamel curtain walls

*Film Arbor Studio*

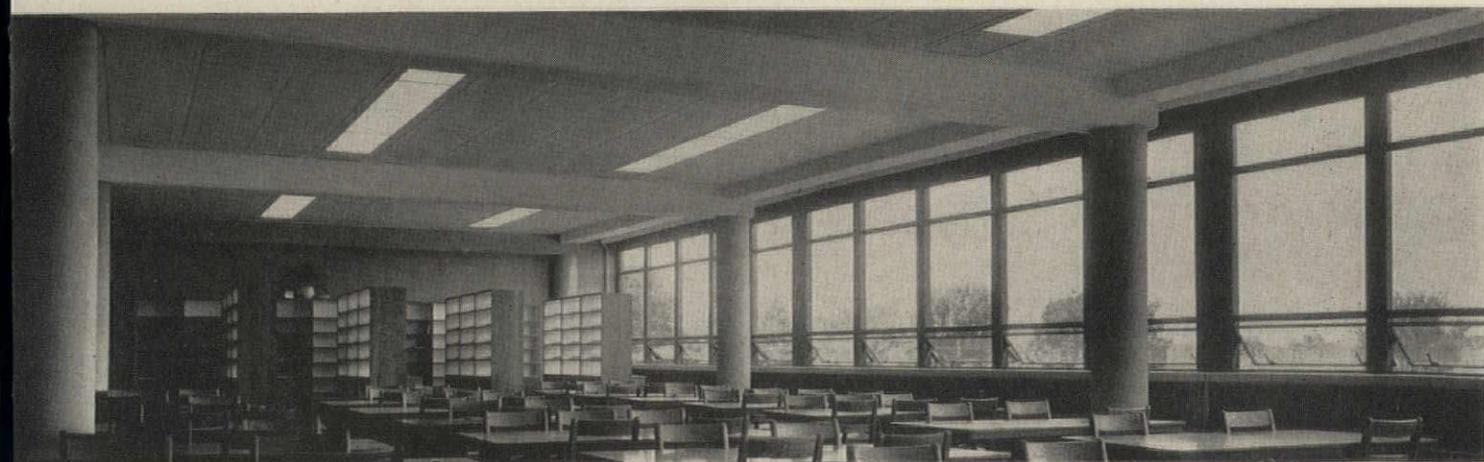




2ND & 3RD FLOORS



FIRST FLOOR



## NORTH SENIOR HIGH SCHOOL

Weymouth, Massachusetts

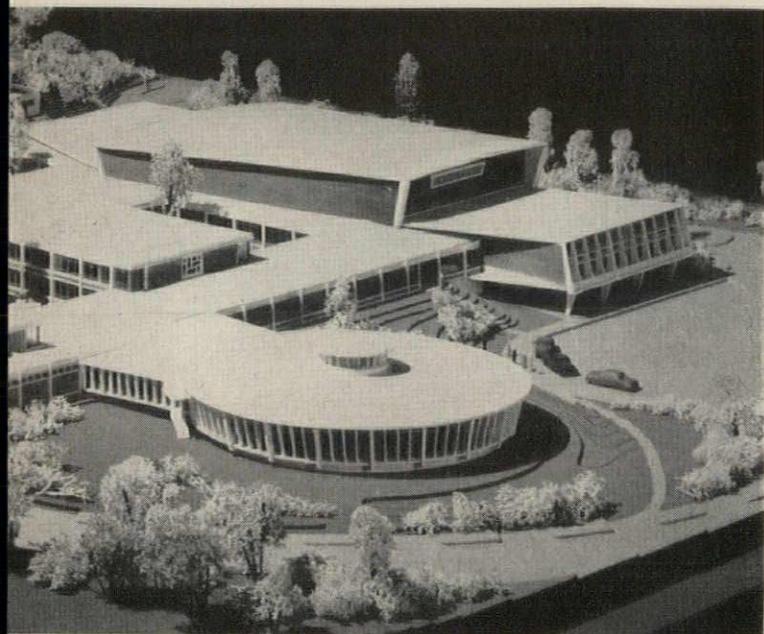
Local educational authorities predict that this big, courtyard-dotted school will become the hub for all audio-visual activities required by the schools in the Weymouth School district and the surrounding communities. Facilities for these activities include: television studio, projection room, preview room, listening booths, work room, reception and administrative offices and storage. It is planned that both live shows and taped programs will be broadcast from the studio, with the students acting as the technicians under the guidance of a faculty member. The entire school has been planned to include TV outlets in all lecture rooms, and in the auditorium for large groups.

A couple of innovations are included in the TV system: a class which is receiving TV instruction can communicate directly with the instructor in the studio to ask questions during the broadcast; and programs can be originated from any room, including the gym for sports events.

The school will have a total of 196 separate rooms, including 70 classrooms. It will accommodate 2,000 pupils, with 350 in the vocational school. Classroom sections are two stories. The structure is reinforced concrete, with brick and glass exterior walls. And—as another sign of the times—parking areas will hold 500 automobiles.

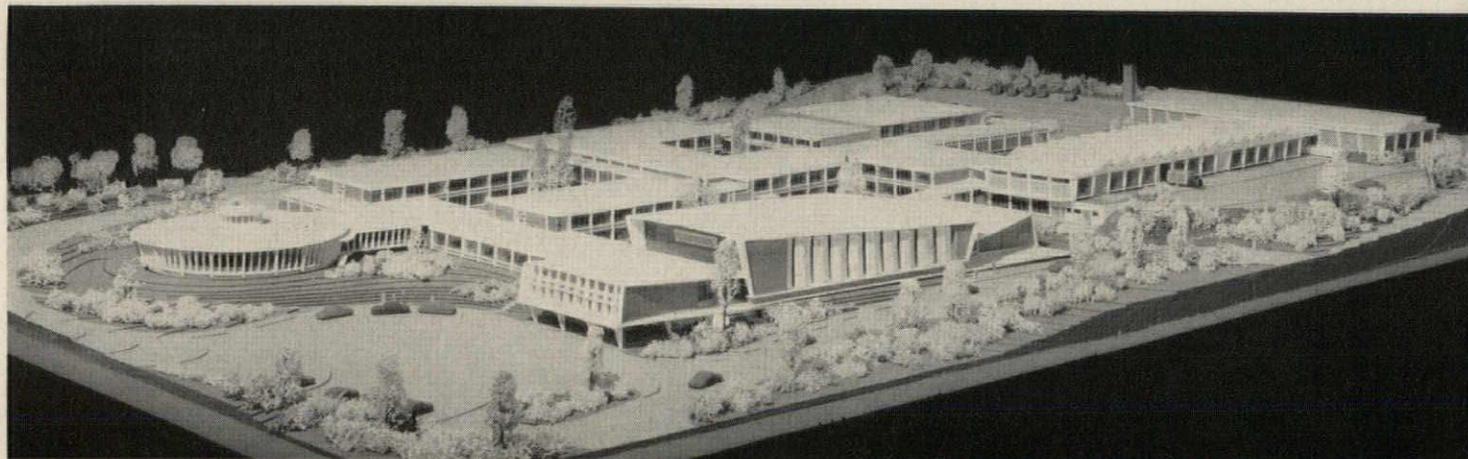
The construction contract price for the school was \$3,685,993, or \$13.65 per sq ft.

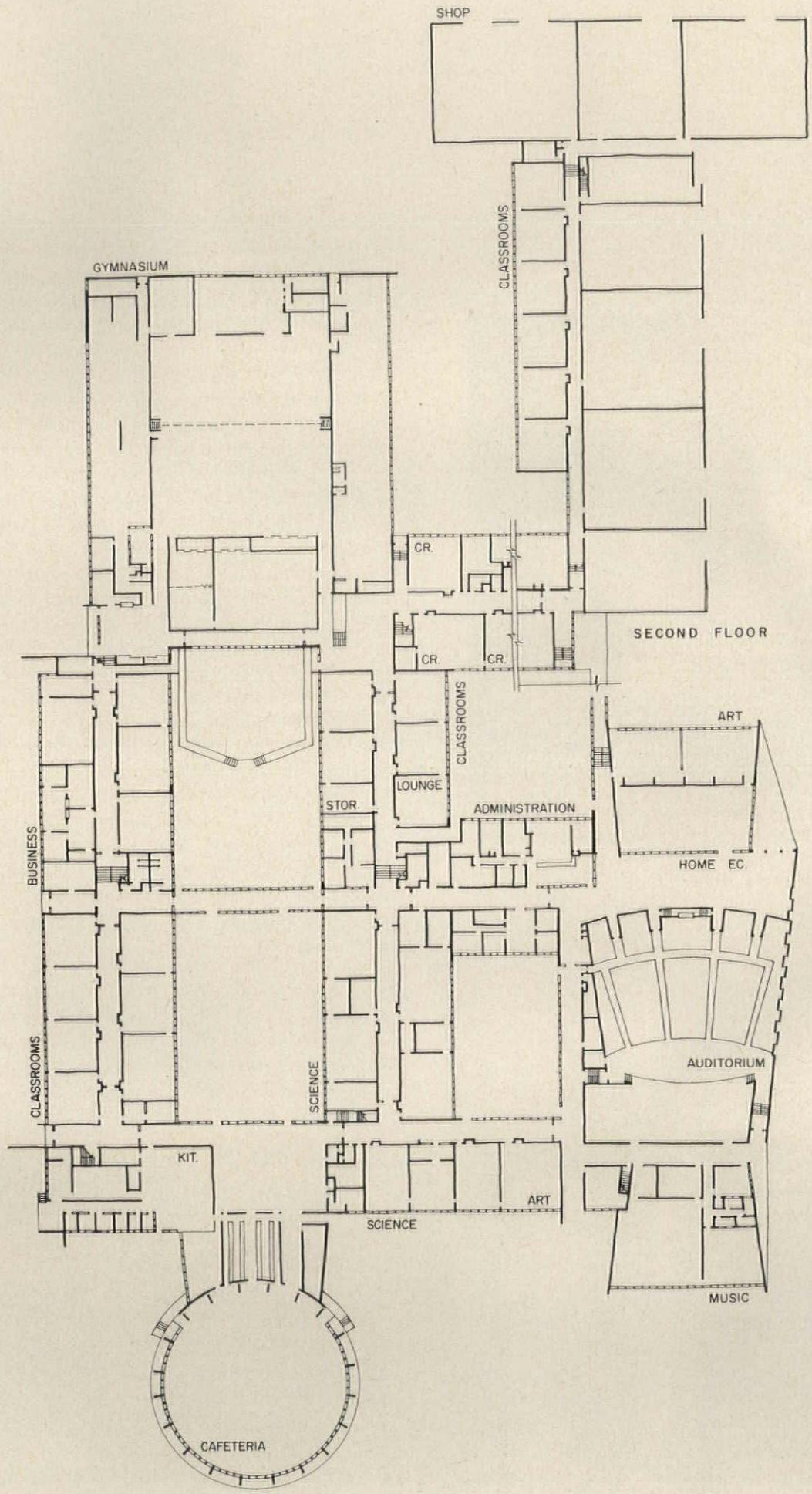
*Paul Coletti of Coletti Brothers, Architect; Anthony Sakakeeney, Structural Engineer; Edwin L. Steinbrunner, Electrical Engineer; Daniel J. Sullivan, Plumbing Engineer; John Capobianco, Contractor; Englehart, Englehart, Leggitt and Cornell, Educational Consultants*



This big, low cost school offers facilities for an unusually broad range of subjects—and for new teaching methods. Special items include a laboratory for teaching foreign languages, and a vocational school with shops for such items as electronics and offset lithography.

Areas are designed to use closed-circuit television, audio-visual films, tape recorders, and large class lectures with master teachers





## L. G. HANSCOM ELEMENTARY SCHOOL

*Bedford, Massachusetts*

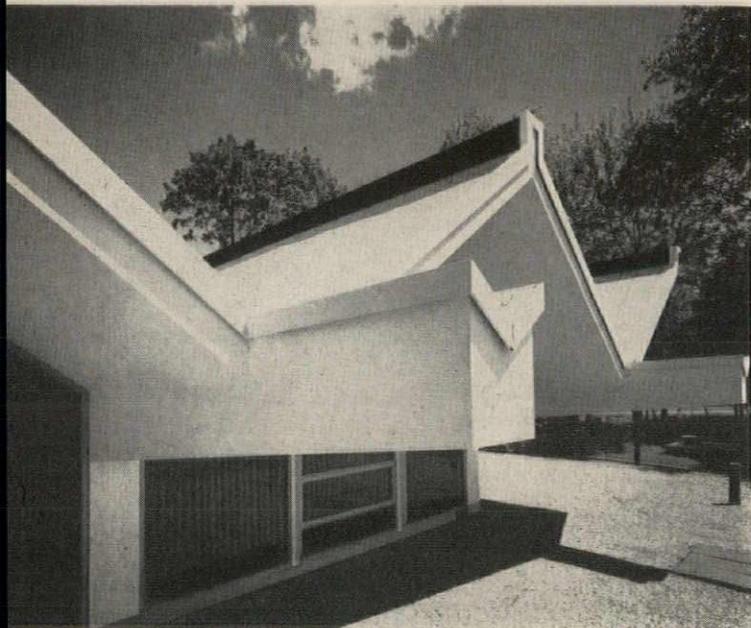
Carefully studied color and detailing are extremely noteworthy in this school designed for the children of military personnel stationed at the Air Force Cambridge Research Center, Hanscom Field. Built under the supervision of the HHFA through a grant from the U. S. Department of Health, Education and Welfare, the school will be operated by the School Department of the Town of Lincoln, Massachusetts.

A cluster plan was used to provide play spaces near every classroom, and to retain the small scale the architects felt desirable in an elementary school. In addition to allowing easy expansion, the small clusters make it possible to operate 4 or 8 classrooms for summer school or evening classes without maintaining the entire building.

At present, the school consists of three clusters of four classrooms each, and a double kindergarten; these are grouped around a main unit housing administration, cafeteria-gym, shop, home economics, and library. The master plan as shown provides for an addition of two clusters—one of which is already under construction.

Opposite the main court by the gym, and in the corridor of every classroom cluster are brick murals in bright colored geometric patterns to contrast with otherwise neutral surroundings. A brightly colored terra cotta screen between the kindergarten entrance and its court adds interest to this space. Gargoyles at the beam ends of the folded plate roof over the multi-purpose gym serve as downspouts for the roof valleys.

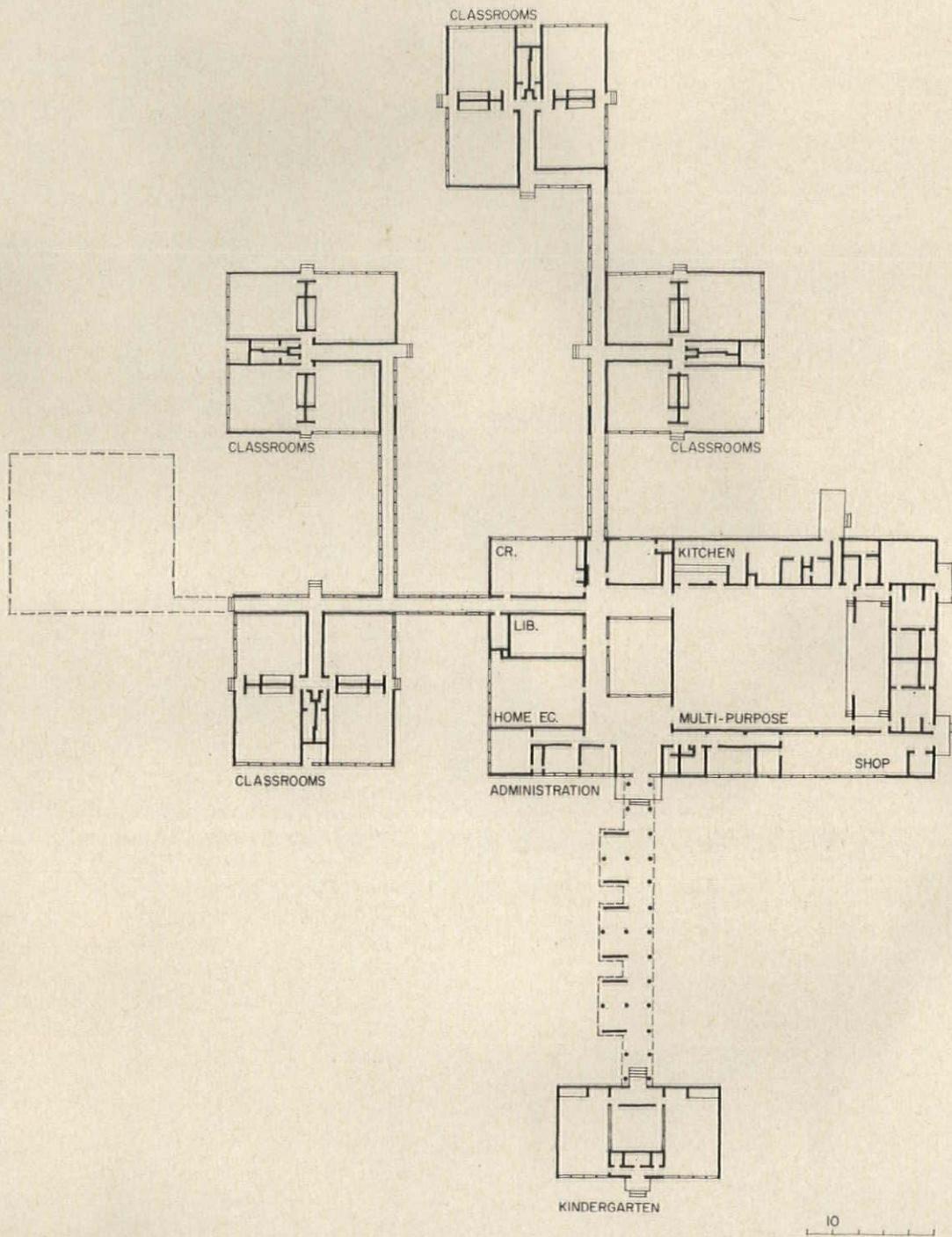
*The Architects Collaborative, Architects; Louis A. McMillen, Partner-in-Charge; Earl Flansburgh, Job Captain; Edward K. True, Structural Engineer; Reardon & Turner, Mechanical Engineers; Logue Building Company, Contractor*



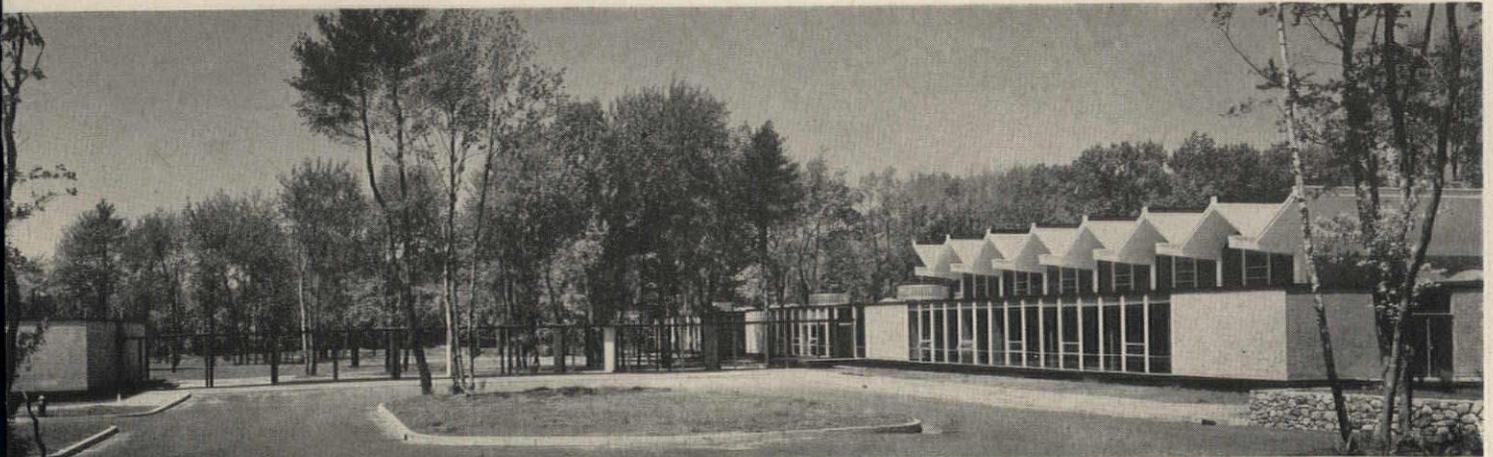
A cluster scheme helps provide a small scale highly appropriate for an elementary school. A festive, attention-getting quality is provided for the children by patches of bright color and a folded plate roof over the gym. Each unit of the cluster is heated independently, allowing easy expansion (or contraction) of the school

*Louis Reens (also above photo)*





Joseph M. Molitor







Louis Recns

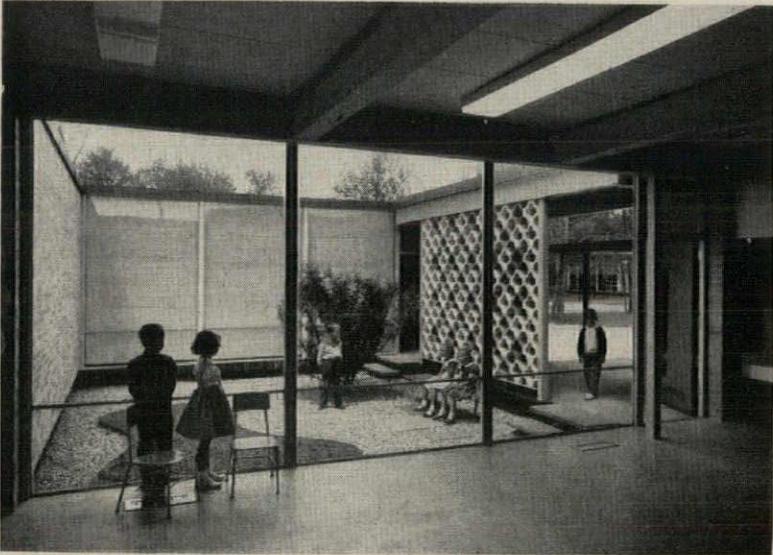
### L. G. Hanscom Elementary School

The site of the school was farmland during the 19th Century, and several of the stone fences of that period remain. After it was abandoned for farming, a second growth of trees developed. The site plan of the school was designed to preserve as much of this as possible.

The structure of the school is steel and concrete, with exteriors of brick. The interiors are brick or block, and plaster or red oak where covered. Floors are asphalt or vinyl asbestos tile. Roof ventilator fans are centralized within louvered "fences" to help neaten the appearance



Joseph W. Moltis

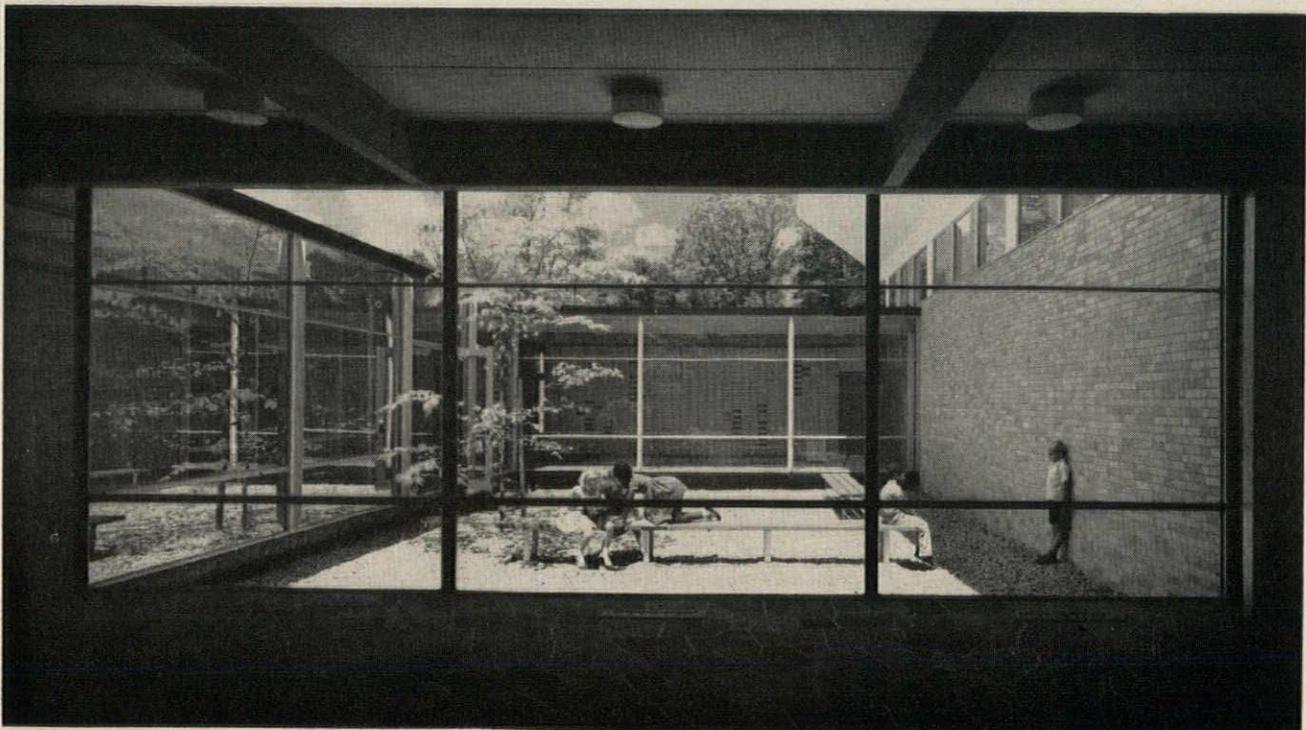


Louis Eeems (also below)

## L. G. Hanscom Elementary School

Courts abound within and without the buildings—spaces for play or for outdoor classrooms in good weather. Those in the main unit (below) and in the kindergarten (left center) provide interior light, quiet spots for reading and protected locations for nature projects.

An extremely interesting use of glass was used in the school to reduce glare, and to help define the building units: the buildings proper have gray glass, while the linking glazed corridors are fitted with clear glass. Thus the one becomes apparently more solid, the other less conspicuous



# Architectural Engineering

## Whither Technology?

The respective roles of architect and engineer and their education are being closely scrutinized because of the impact of technology on building, the problem being to make technology the servant and not the master. Concern is hardly confined to these shores. Latest evidence is two pieces of commentary in the May issue of the *Journal of the Royal Institute of British Architects*. Excerpts follow:

### Re: Education

1. From a paper by W. A. Allen, architect at the Building Research Station in England, on architectural education: "It seems to me that the toughest problem we face [in education] is handling science and technology. . . . We have some tenacious obstacles to overcome. For one, we have been unable to free ourselves yet from the handicap of books and teaching based in engineering. This is not to decry engineering for engineers, but engineering for architects. What we have had and still often get are watered-down courses intended merely to make us acquainted with such subjects as foundations, structures, light, heat, ventilation, sound, sanitation, equipment, etc.; it is said that there is no time for more, but more, if it were given, would at present probably lead only to more competence in computation, and this is not what we mainly require. A good building is a single organic embodiment of all its technical functions, its planning requirements and its esthetic idea; it requires policy-level thinking about each aspect in order to get it organized properly from the outset. We require therefore neither a mere acquaintance with these technologies nor yet a full-blown computational familiarity, but the basis for sound policy decisions about design, and this often involves not engineering alone but economic, industrial, and human parameters. On the computational side all that seems essential is a sufficient ability to carry out the engineering design necessary for small jobs on which consultation is impracticable. On the larger jobs the approach I describe ought to improve our work with consultants."

### Re: Building Correctly

2. From a tribute to Pier Luigi Nervi on his receiving the Royal Gold Medal, by Ove Arup renowned structural engineer: "For him the purely constructional problems come first, and they have a fundamental bearing on the design. By studying the design, one can almost sense the process of reasoning and intuition which has led to it. Nervi, when he means business, does not indulge in fancy types of shell which are the despair of the builder and a headache to the engineer—he wants to help the builder, not to make building difficult. The ribbed solutions derive directly from the [forming] techniques he has so carefully and cleverly developed. Finally, of course, he considers the pattern created by the ribs; he manipulates it until it satisfies his sense of beauty, without putting too great a strain on the economy, but he does not start off with a preconceived esthetic idea, divorced from construction or structure. The result is that his structures have a directness and inevitability about them, which surely is a mark of greatness. The architecture grows out of the process of building. But I think even Professor Nervi will admit that there are cases where his maxim cannot be the only, or even the main criterion, of architectural merit. There must be many buildings of predominantly emotional content, or where the function is very complex, and where other considerations play a greater role."

Footnotes from Arup's tribute: On architects—"It is natural enough that architects are more liable than engineers to forget about the more sordid facts of life because they—quite legitimately—get absorbed in the esthetic aspects of their work." On engineers—"They are not, perhaps, so liable to forget about the facts of life, but they can become too absorbed in analysis as opposed to design; they may get bogged down in tactics and forget the wider claims of strategy."

## This Month's AE Section

*MECHANICAL SERVICES: A SLICE OF STRUCTURE*, p. 204. *THIN SHELLS CUT FROM "DOUGHNUTS,"* p. 207. *DESIGN OF "AIR ENTRANCES,"* p. 212. *PRODUCT REPORTS*, p. 215. *LITERATURE*, p. 219. *TIME-SAVER STANDARDS*, Threaded Nails, pp. 221, 223.

# Mechanical Services : A Slice of Structure

*A plenum sandwiched between structural and finished floors supplies conditioned air to both interior and exterior zones; the structure itself conceals the lighting equipment; and the electrical wireways perform dual function by supporting the finished floor*

Suspended ceilings have a deceptive way of hiding the maze of ducts and wiring that sprawl below the floor slabs of most contemporary office buildings. In this building the designers have not let the structure and mechanical services go their separate ways, but have combined them in such a way that the floor structure (a waffle slab) conceals the lighting and ceiling air diffusers, a plenum sandwiched in the floor construction distributes conditioned air to both interior and exterior areas, and wiring

in the floor gives both horizontal and vertical electrical flexibility.

All of this is accomplished in a total floor depth of only 3 ft, whereas it is 4 ft or more in most office buildings these days. The architect estimates this saved two stories in the 28-story building.

## Air Plenum

Ductwork is considerably minimized by using a slice of the floor structure as a plenum. Inside this air plenum—a 3-in.-high space provided between the top of the structural slab and the bottom of the finish floor construction—are a series of finger ducts which go out to the edge of the interior zone. Some supply cool (50-55 F) air to the interior zones through ceiling diffusers; the remaining ones serve as returns for both interior and exterior zones. The open spaces between these finger ducts send the 50 degree air into an open plenum circling the perimeter from which it is fed to terminal "under-the window-" units.

As is usual these days, the building requires cooling most of the time, even at below freezing temperatures. The interior will always require cooling. For those times when a perimeter area calls for heat (e.g. on a cold day when a portion of the building is in the shade) hot water from a perimeter pipe loop is tapped off to finned tubes in the terminal units over which the cool air flows, bringing it up to the temperature required.

## Perimeter Zone

One individually-controlled terminal unit is provided per 4-ft-8-in. module. The perimeter system is classified as

terminal reheat with variable air volume. This, in essence, is a new twist to the old reheat principle. To reheat all of the perimeter air would be expensive, but here reheat is used only when called for by a room thermostat. Also a factor aiding the economy is the variable volume control. Minimum air is supplied during heating; maximum for full cooling. When heating is required, a damper shuts off about three-fourths of the air flow through the terminal unit, allowing some 65 cfm at 55 F to pass through the unit and be heated by the finned tube. As less heating is required, the flow of hot water is gradually shut off, until no heating of the air takes place and its temperature is back at 50 degrees. As more cooling is needed, the damper opens gradually until, at full capacity, 250 cfm of air are flowing through the unit. Thus each module on the perimeter can respond to a wide range of heating and cooling demand. The interior, cooled all the time, is divided into four zones, and the air can be throttled down if less cooling is needed.

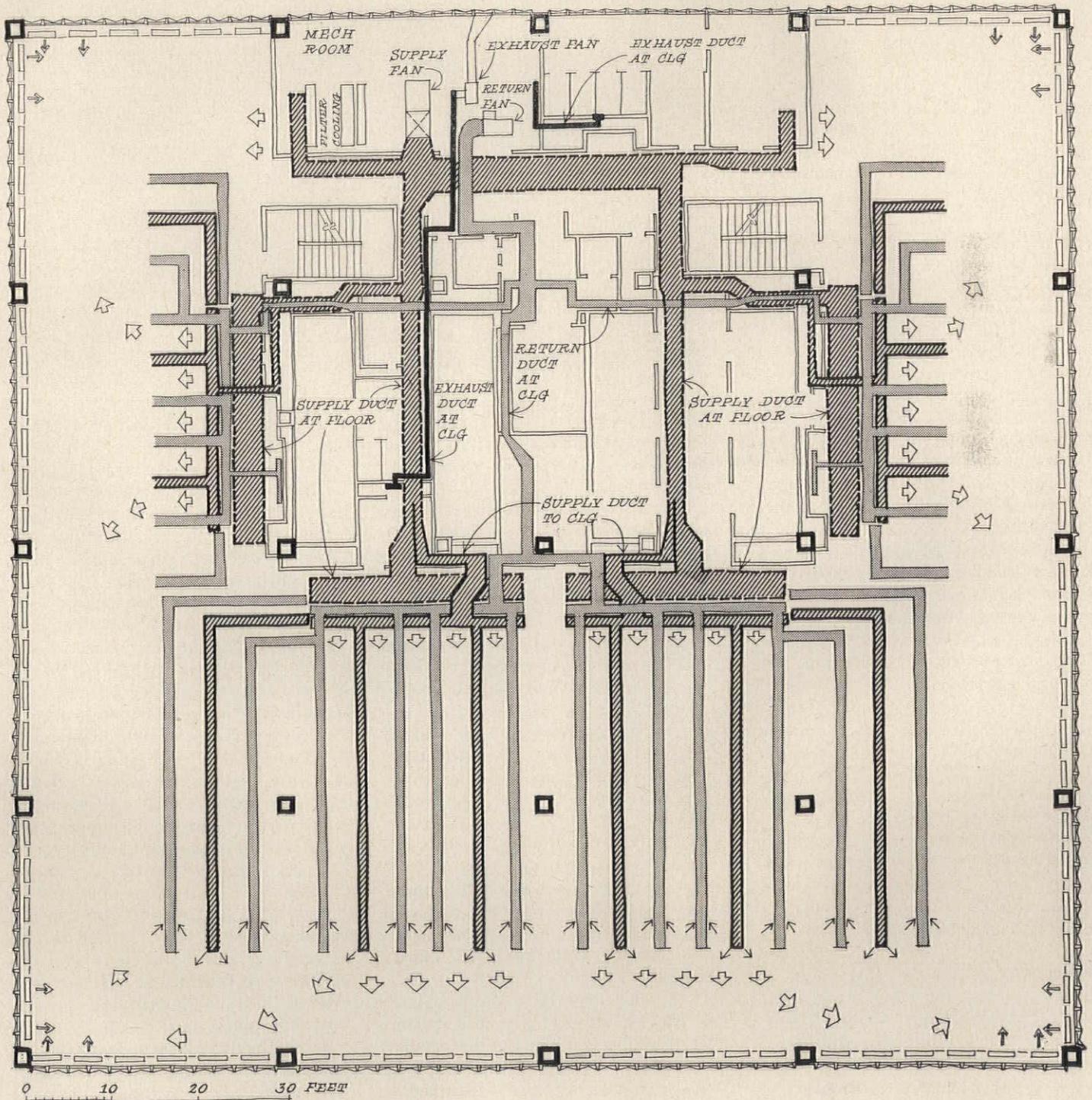
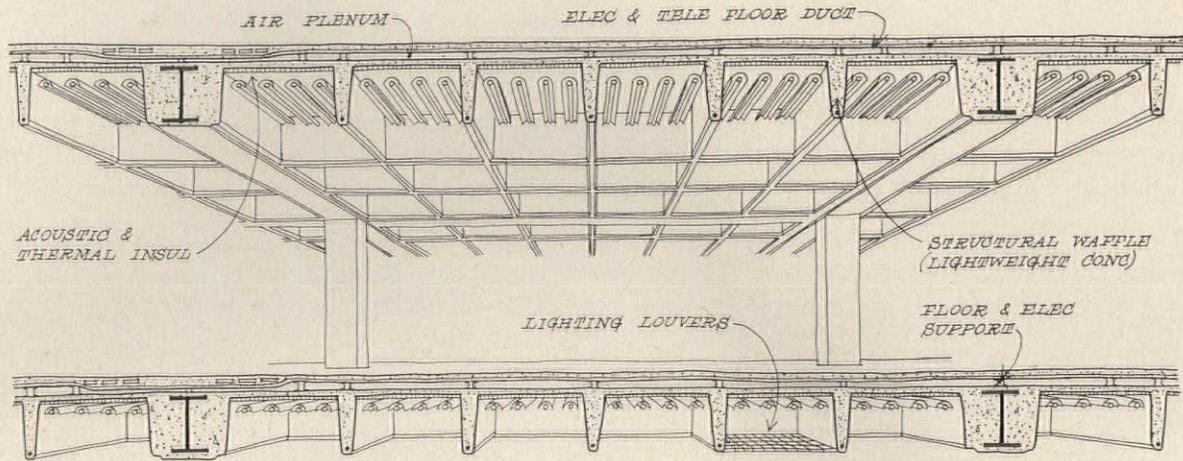
Although the air volume is variable at the perimeter, velocity of the air at the grille is constant: since the static pressure at the grille stays the same, so must the face velocity. The velocity of air from the unit is intended to be sufficient to counteract drafts from cold glass and to permit mixing of supply and room air.

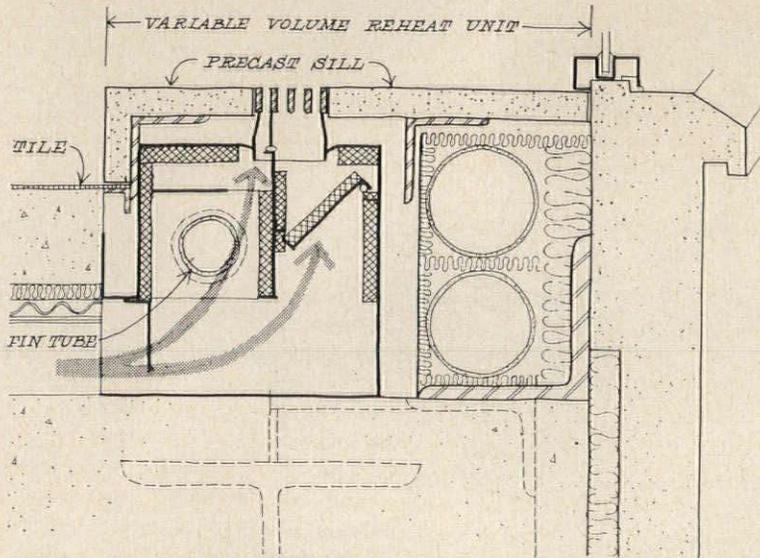
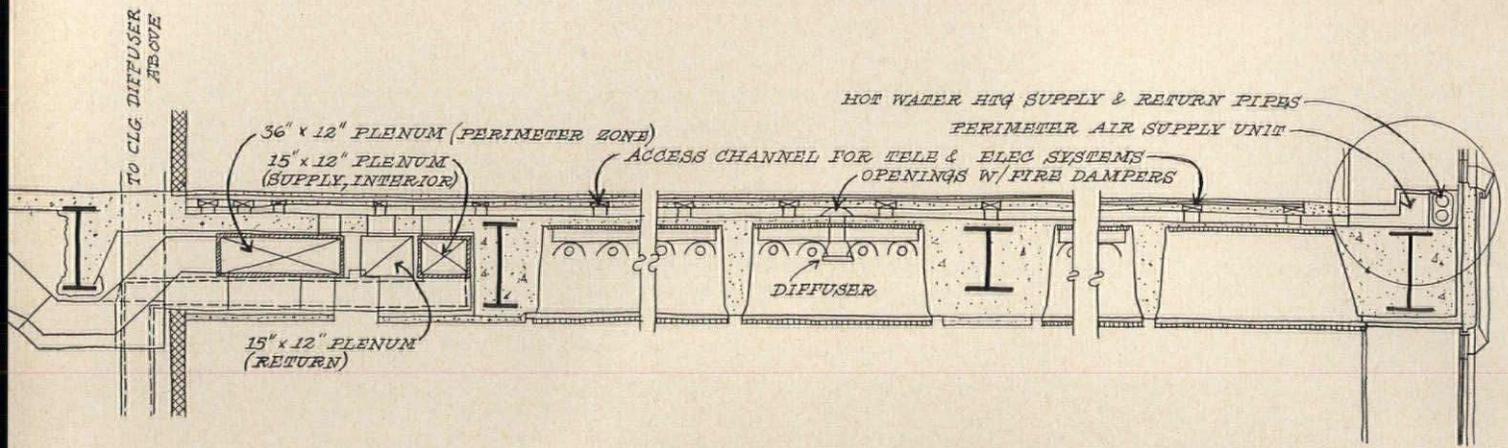
## Mechanical Rooms

Rather than setting aside several whole floors for mechanical equipment, which would have had the visual effect of cutting the building in several parts, the designers placed a

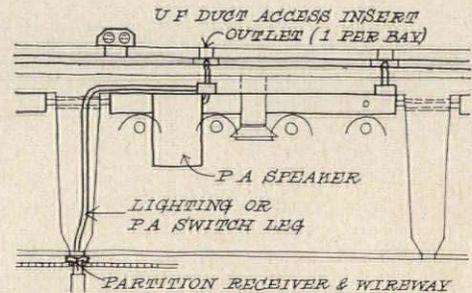


Michigan Consolidated Gas Company  
Office Headquarters  
Minoru Yamasaki-Smith, Hinchman &  
Grylls  
Associated Architects & Engineers





Supply fan feeds 50 degree air to large plenum which distributes air to the interior zone through ceiling diffusers and to the exterior zone through window units. Same fan serves a single floor. Variable volume reheat unit warms the 50 degree air to temperature required when heating is called for. Sketch below shows wiring for switching lights, PA system



small mechanical room in the corner of every typical floor, containing the filters, cooling coils and fans, and a steam-to-hot water heat exchanger to furnish hot water for the perimeter heating.

While this arrangement requires more fans of a small size instead of several large fans, it eliminates the large vertical shafts generally used for supply and return duct risers.

Absorption refrigeration machinery and gas steam boiler are located on the penthouse (29th floor). Capacity of the system for each floor is 20,000 cfm with 56 tons of cooling. The distribution system is low pressure, low velocity at approximately 3 in. total static pressure.

The lighting load will be approximately 6 watts per square foot. Originally four fluorescent lamps were to be installed in each coffer, but this number has been reduced to three.

#### Electrical Wireways

The air plenum is formed by pouring the lightweight concrete finish floor on top of a corrugated metal deck, supported by the continuous metal cells which serve as the raceways for

wiring. The cells in turn, which are spaced approximately on 2 ft 4 in. centers, are supported by cylindrical steel stub posts.

The cells will have preset electrical inserts for future installation of either electrical or telephone outlets. They will be fed by a system of headers originating at the central electrical shaft. The system is designed and laid out to permit use of "access hand holes" in place of the more restrictive standard multiple junction boxes. By depressing the wireways for passage of the header, a 2½-in. finish floor can be used in place of the normal 4-in. slab.

#### Structure

The 28-story Michigan Consolidated Gas building is approximately 124 ft on a side, with columns on 30 ft 4 in. centers. This column spacing and arrangement of the plan results in only three interior columns in the office area.

The basic module of the building was set by the 4-ft 8-in. dimension of the waffle grid; partitioning can be placed and relocated along these lines. Columns are 2-ft 4-in. square

and mullions are repeated every 2 ft 4 in.

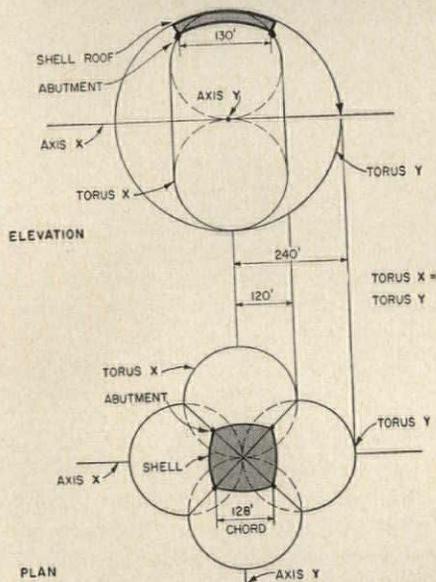
While not necessary structurally, the depth of the waffle ribs was made equal to that of the beams so that the ceiling would be flush, permitting all partitions to be the same height. Besides enclosing the lighting fixtures, the waffle ribs serve as sound barriers.

Design considerations called for a smooth 90 degree angle between beams and columns, and for the dimension of the columns, including fireproofing, to be one-half module or 2-ft-4-in. square. Use of either rivets or high-tensile bolts would have required some husky connections between beams and columns. To avoid increasing the beam cover beyond what was necessary for fireproofing, and increasing the total height of the building, the designers decided to use welding.

Heavy columns for the lower floors are made of four plates welded together to form a square tube (in some cases five plates are needed). Columns on the intermediate floors are made up of a standard rolled section and two plates.

# Thin Shells Cut From "Doughnuts"

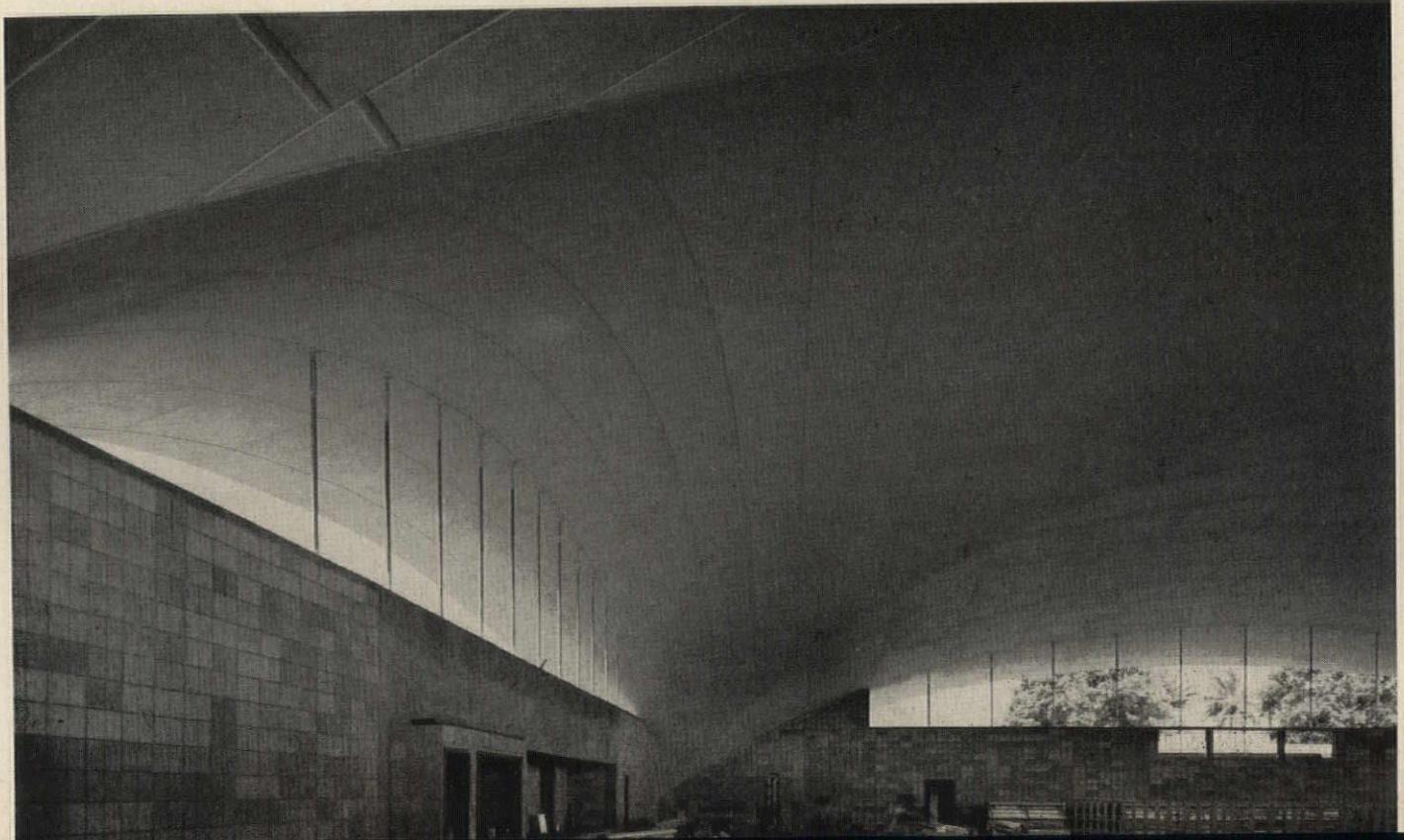
An engineer copes with theory in the first, construction in the second

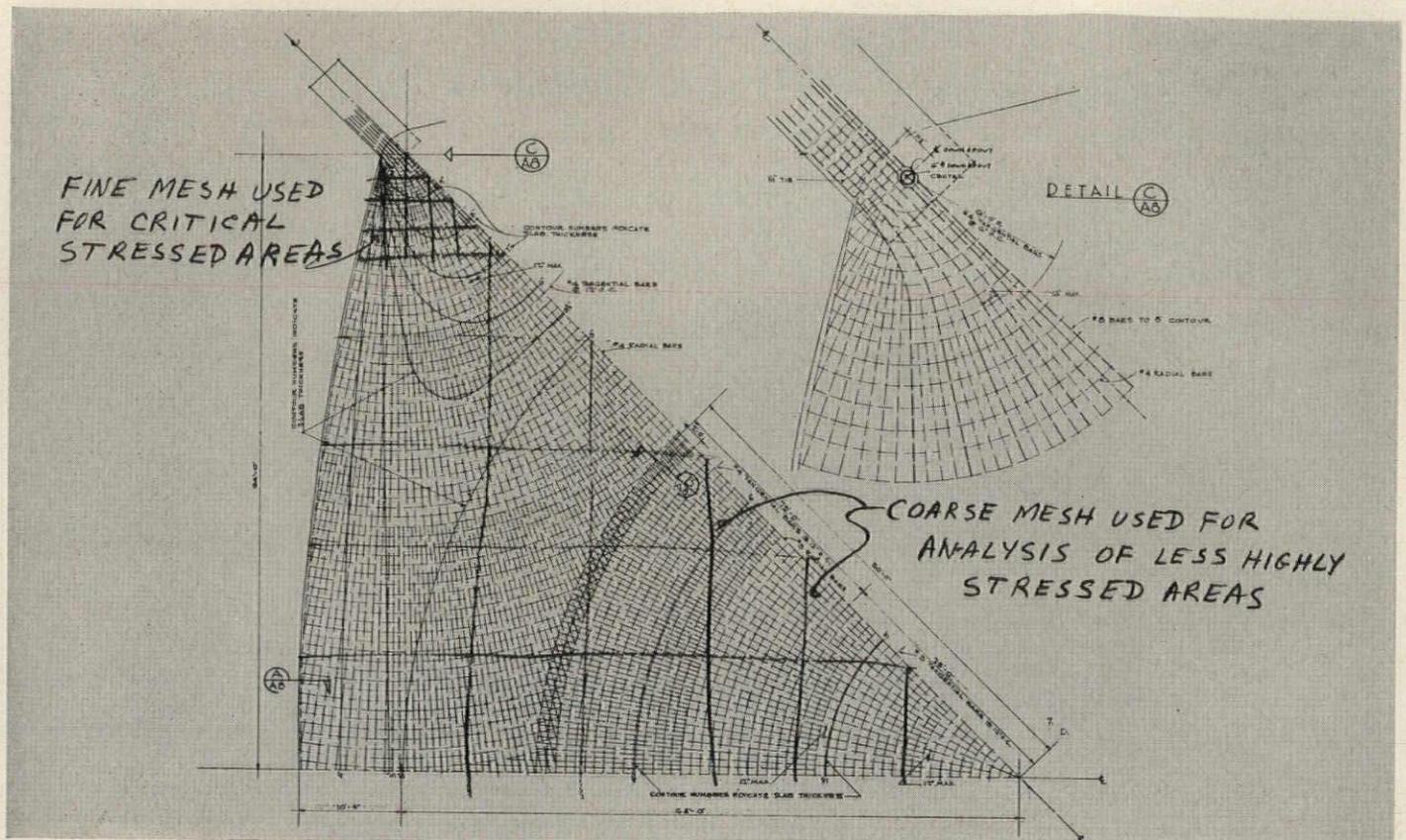


## DIFFICULT TO ANALYZE

This large doubly-curved dome for a supermarket near Honolulu is known as a double torus (a doughnut is a torus). It departs from conventional practice in shell design in that it has no edge beams (to get a thin edge), no stiffening ribs, no hinges at the abutments. Richard Bradshaw, the structural engineer says, "I have little patience with engineers who place hinges and other gadgetry in buildings which actually weaken the structure." The shell is thickened in the proper areas to manage the stresses and to channel forces to the ground. The unusual design made analysis a rather complicated affair (Bradshaw's theory is explained on the following page). The shell rises and falls with a change of temperature and window mullions telescope to accommodate shell movement. *Wimberly and Cook, Architects; Nordic Construction Co., Contractor. (Windward City Shopping Center, published in AR Sept., 1959.)*

R. Wenkham photos





Grids marked by the engineer on this reinforcement diagram show division of shell into large sections where stresses are not so critical and small sections where stresses are large

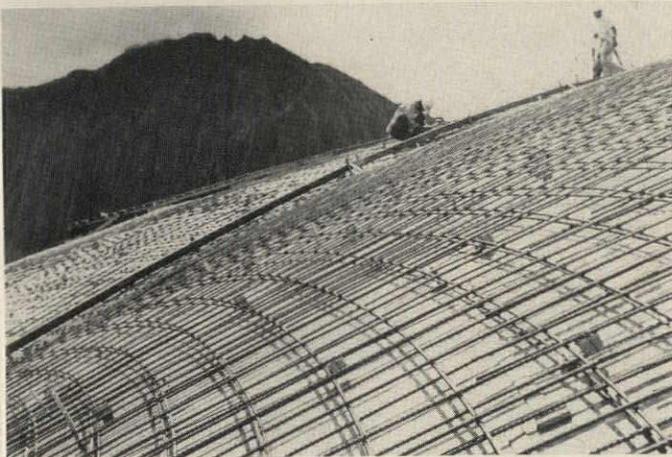
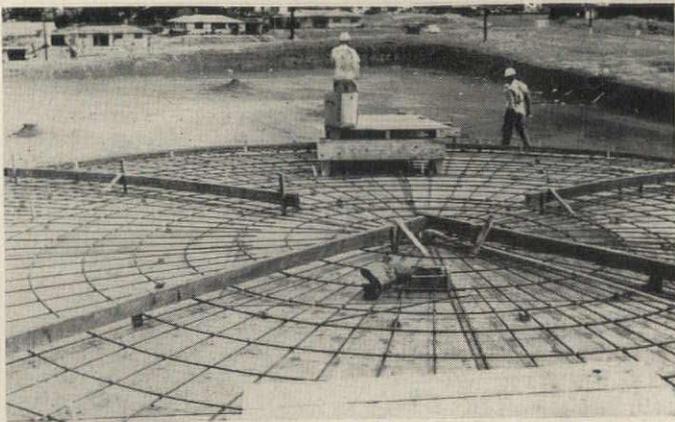
## ENGINEERING ANALYSIS *by Richard R. Bradshaw*

The method of analysis is unusual. To my knowledge, no shell has ever been analyzed in this same way. The three general differential equations of a thin shell were solved, including terms for bending. These equations consist of three linear, partial differential, simultaneous equations, two of the second order and one of the fourth. It should be mentioned at this point that no two authorities ever use quite the same identical equations for shell theory. This is because certain terms are always dropped out. The terms to be dropped are decided upon by the geometry of the shell. In my case, I dropped out certain terms and then substituted them back in after obtaining an answer. From this it was possible to determine that the terms could be omitted. My actual choice of equations were the ones derived by Donnell in 1933. Since these were derived for cylindrical shells only, it became necessary to extend them for the case of double curvature. This was done under the assumption that cross-product terms, employing both radii of curvature, would be small in comparison to those employing single radii curvature. In this way, perfectly general equations for any shell were obtained. If one radius goes to infinity, equations for a cylindrical shell are obtained. If both radii go to infinity, the general equation of a flat plate is obtained. If the width of the plate is decreased to unity, the general differential equation of a beam is obtained. Hence, it might be said that the equations solved for this shell were the general equations of almost all structures.

The equations were cast in a finite difference form.

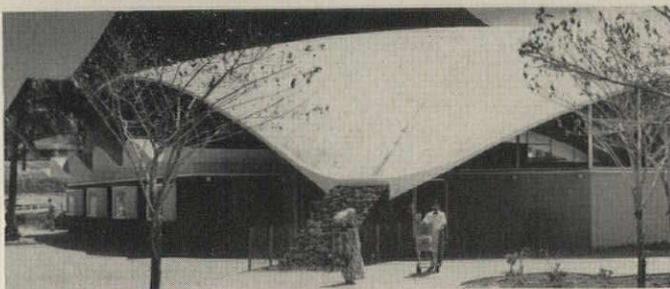
The shell was divided into imaginary pieces on a coarse grid. These pieces were imagined to be held in position by various moments, shears, axial loads and twisting moments. As these were released one by one, a sort of three dimensional moment distribution was employed. By proceeding around and around the shell from piece to piece, it was possible eventually to get convergence and thus get the deflection pattern of the shell about all three coordinate axes. Upon completion of the analysis on a coarse grid, the critical areas near the abutments were divided into a finer grid and convergence obtained again. This system of analysis is known as Southwell's Relaxation. Moment distribution is a very simplified special case of Southwell's General Method of Relaxation. The mathematical method used to obtain convergence is known as "Liquidation of the Residuals." This is obtained by pushing the unbalanced forces across the borders. To my knowledge, this method has never been used for the solution of these particular equations. The method was exceedingly tedious and laborious and I do recommend it for general usage. In fact, I have not used it since. However, as a pioneering step I believe it to be noteworthy. Engineers still have found no convenient way of analyzing a general shell.

The shell was checked for buckling in the upper flat region. The classical elastic buckling formula was used with a reduction to allow for plasticity, initial roughness, and the generally low stresses occurring during buckling of a doubly curved surface under radial compression load.



Conventional formwork was built for the shell and, while not an engineering requirement, the contractor elected to pour it in one piece. In the first few weeks after removal of the forms the center deflected approximately 2 in. The discontinuous edge deflected about 3 in. downward at the center of its span, and rose 1 in. at the quarter point

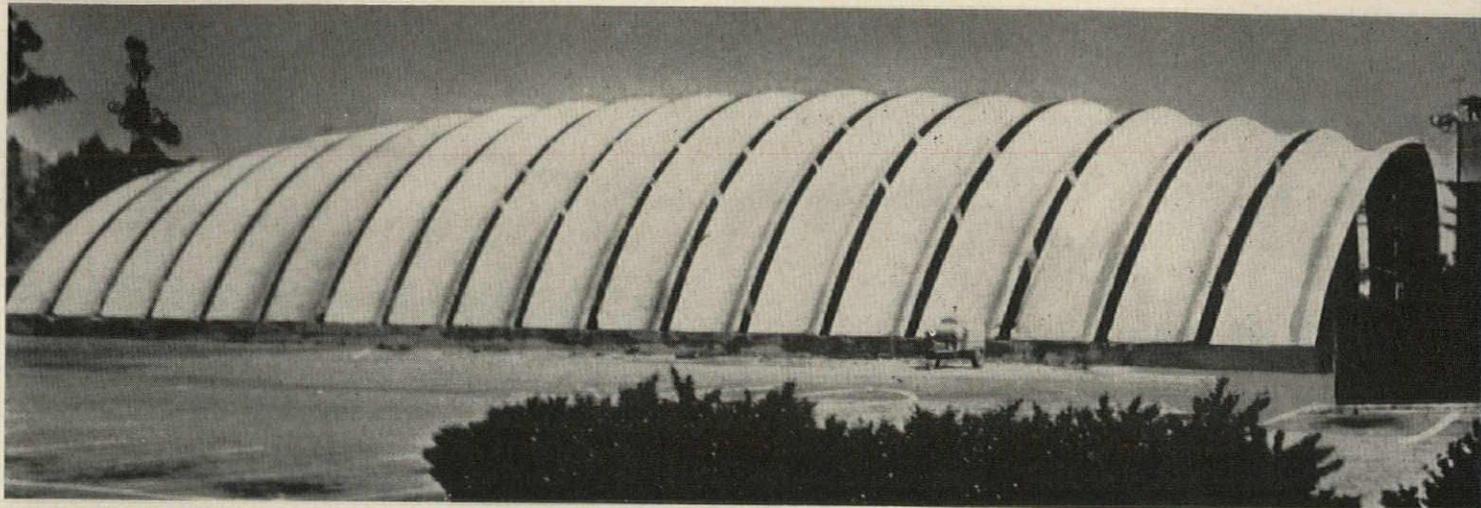
*All photos by R. Wenkam*



To avoid edge beams, which would have made the shell appear heavy, the 130-ft unsupported edges were made slightly thicker than the center portion. The dome ranges from 3- to 4-in. thick 40 ft from the center; the edges go from 4 in. at the perimeter to 5 in. at 10 ft inside; the shell at the abutment is about 9-in. thick, tapering to 5½ in. on an arc 23 ft toward the center of the dome. The corrugated shells seen at left above span 20 by 20 ft, are 2-in. thick and ribless. The slab is thickened slightly over column heads to take concentrated loads at these points

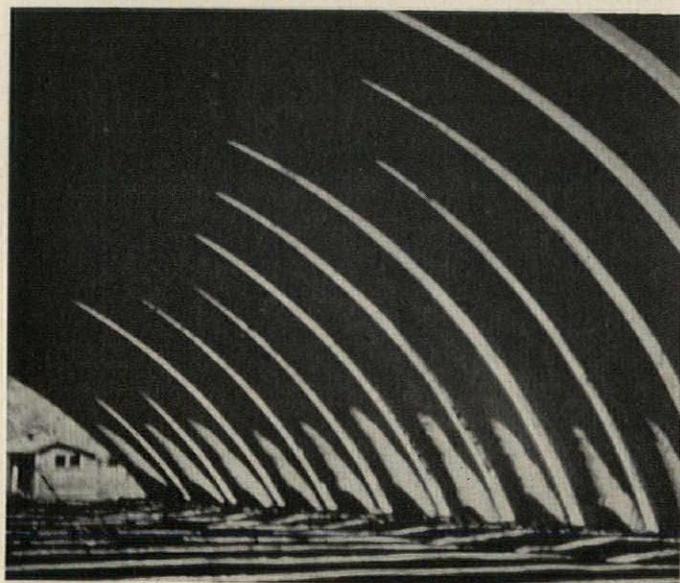
# Thin Shells Cut From "Doughnuts"

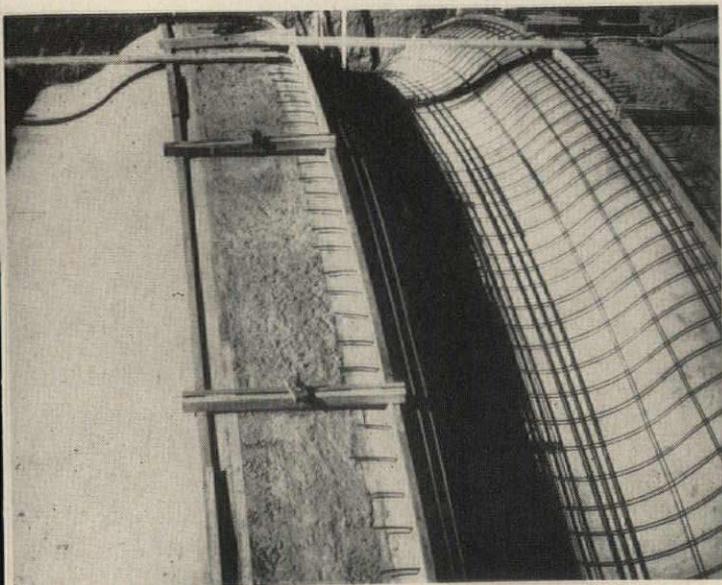
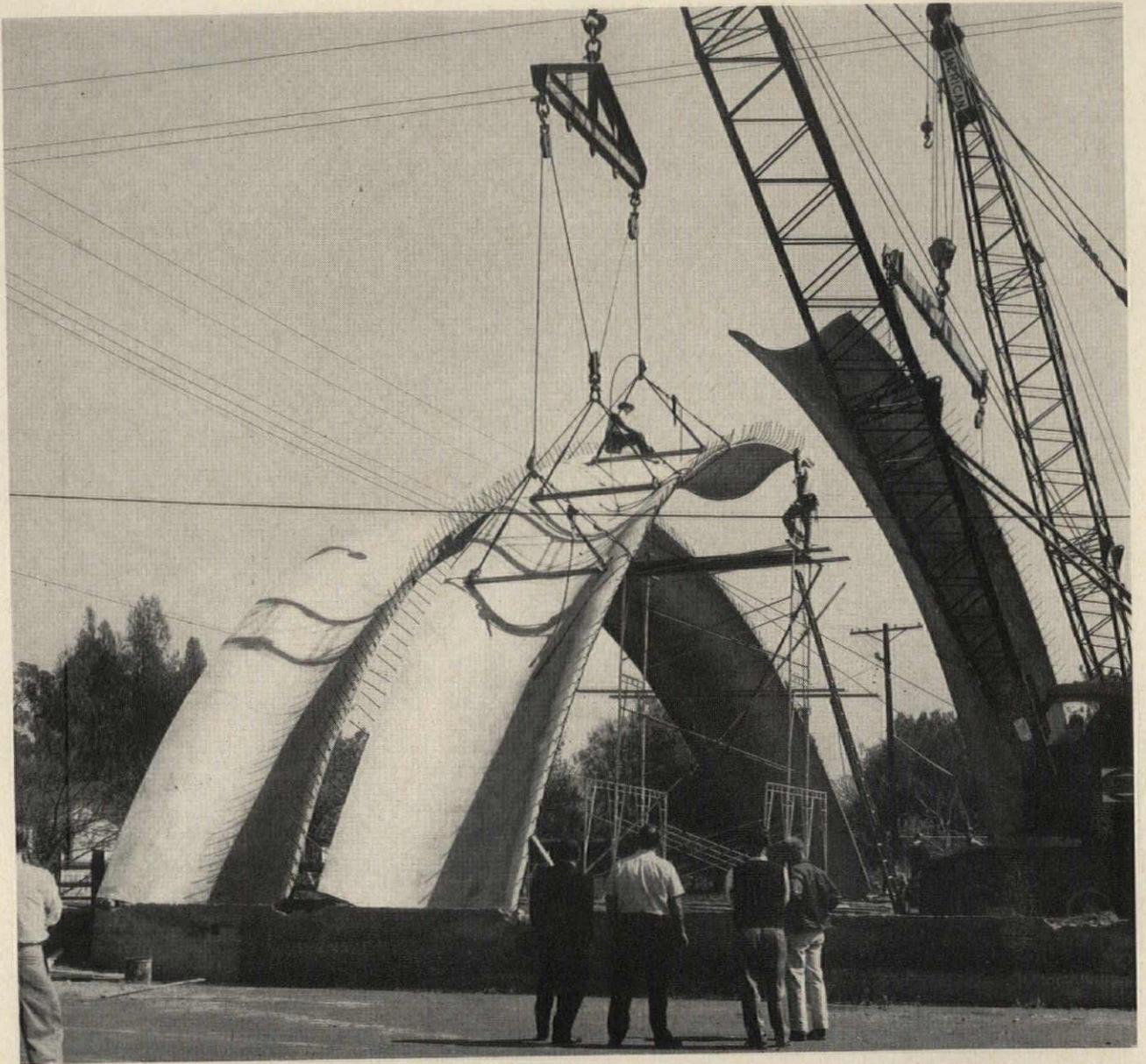
*An engineer copes with theory in the first, construction in the second*

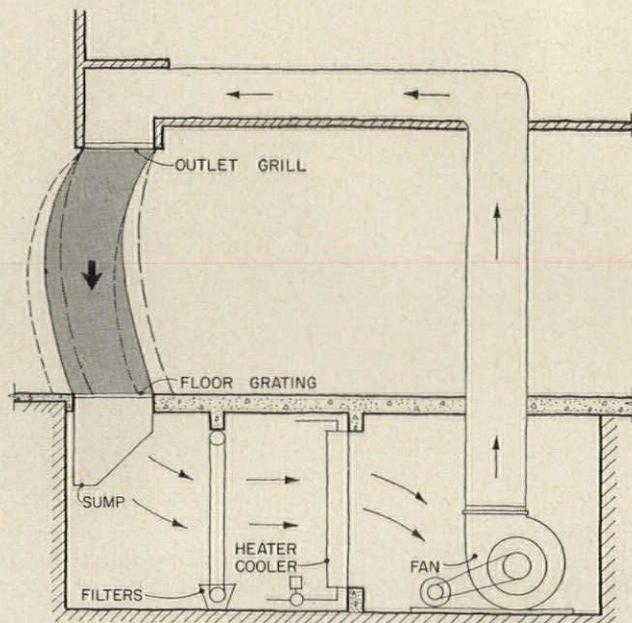
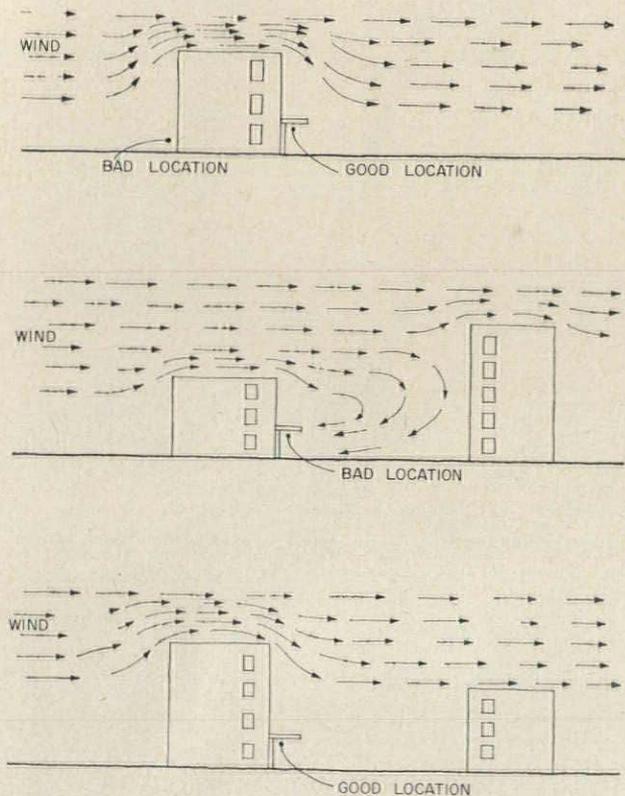


## TRICKY, BUT INEXPENSIVE TO BUILD

Interest in this shell for a Los Angeles ice skating rink is the reverse of the previous one: problem was complications of construction rather than theoretical analysis. Construction method, taken together with the shape of the shell (geometrically, its sections are cut from a corrugated torus), yielded the low cost of \$2 per sq ft of projected floor area. The shell, whose ridge line is slightly curved, spans 100 ft and is 180-ft long. It is 3½-in. thick to meet a 1-hr fire rating; a shell this thick might span twice as far. Sections toward the ends tip slightly forward so that the end sections provide a 10-ft overhang. An earth form was used for precasting the 36 sections in piles of nine each. The forms were dug in a pit to avoid using a crane for pouring. (The mathematics get involved for casting doubly curved pieces on top of one another.) The pieces were picked up two at a time and set in slots cast in the footings; steel in the upper ends was then welded. Due to fire restrictions glass was not permitted in openings, so these were gunited. *Carl Matson, Architect; Richard R. Bradshaw, Structural Engineer; Raines-McClellan, Contractor*







Operating components of an air entrance system are diagrammed above. Gray tone indicates the air pattern of a properly operating system. Small dashes are air pattern when the air stream is too strong, long dashes when it is too weak. Effect of wind and adjacent buildings on location of an air entrance is shown at left

## DESIGN OF "AIR ENTRANCES"

*A description of what they are, how they work and where they can be used by Sulzer Bros, Inc., a specialist in these matters*

Today you can walk through building entrances that are open summer and winter, but which at the same time keep the weather out, the conditioned air in. The trick is in providing an air screen several feet thick and as wide as the entrance. The air stream is blown gently out of a grille in the ceiling and is sucked in through a floor grating in a continuous cycle.

There are two forces against which the air screen has to work: wind in all cases, and stack or "chimney effect" in tall buildings. New commercial buildings are kept under positive pressure to prevent infiltration of outside air, minimizing stack effect. Sulzer engineers say that the air screen can be used in new buildings as high as 30 stories. In older, multi-story buildings with manually operated windows the limit is about 12 stories.

Operation of the air screen is shown above. The discharge plenum may be located directly above the outlet grille. However when the entrance is relatively high, an addition-

al glass plenum is used between the outlet grille and the hung ceiling to preserve the open feeling of the entrance. Bars in the floor grating are spaced close enough together to prevent penetration by the small heels of women's shoes.

When the air has passed the floor grating, the larger particles of foreign matter are eliminated in a plenum chamber or sump which is periodically cleaned by a flushing device. The air is then further cleaned by filters, heated by coils and brought back by a blower to the grille above the entrance.

If the efficiency of the air screen does not have to be varied often, a semi-automatic control system is used: temperature of the supply air is adjusted automatically in accordance with outside temperature. Fan speed and angle of the air discharge are adjusted periodically at a control panel.

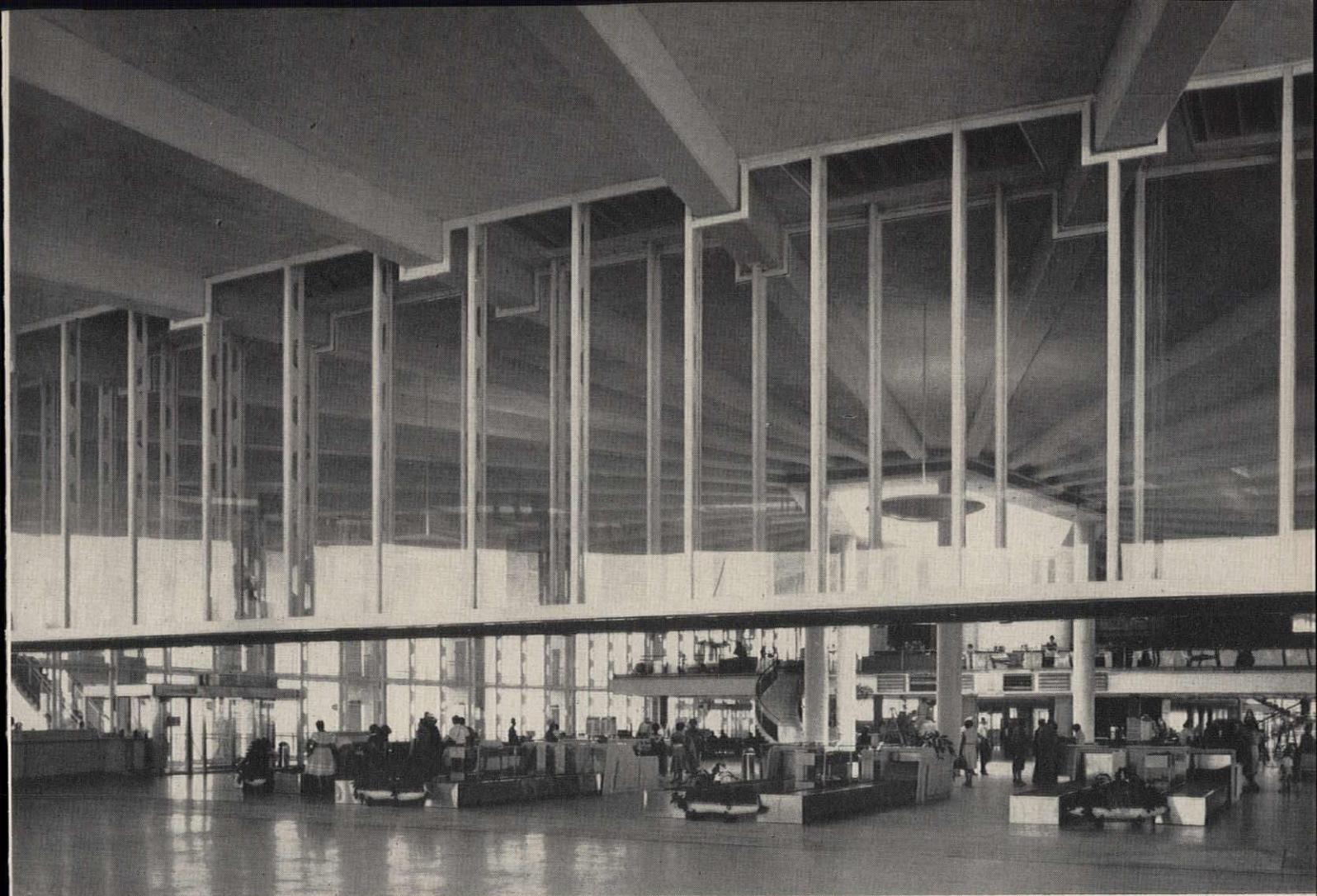
If the efficiency of the air screen has to be changed frequently due to variable conditions, a fully automatic control system should be used:

temperature of supply air, motor speed and air discharge angle are adjusted automatically.

### Design of Air Screen

The primary design question is the quantity of air necessary for a specific installation, and this depends on the difference in pressure between inside and outside. Following are several factors affecting the pressure differential:

1. *Height of structure:* Feasibility of the air screen depends partly on the degree of stack effect. In existing buildings this effect is measurable. In new buildings the theoretical stack effect can be calculated, and the actual stack effect then predicted on the basis of empirical data. The degree of pressurization, tightness and type of construction (sealed glass, etc.) have considerable effect.
2. *Orientation:* An entrance facing into the prevailing wind is difficult to seal by an air stream unless a wind screen is used. For example, the machinery required for an air screen facing into the prevailing wind



89-ft wide, 7-ft deep air entrance for Pan American passenger terminal in New York; Tippet-Abbott-McCarthy-Stratton, Architects & Engineers. Air reaches supply grille through a 23-ft high glass-enclosed plenum to make the full opening transparent.

would have to be half again as large as for one facing away.

Good and bad locations are shown in the sketch on the first page. If a three-story building in an open area has an entrance on the leeward side, the location is good. However, if there is a taller building across from this entrance, the air screen has to counteract a much higher pressure caused by wind deflected from the tall building.

When the wind patterns are complicated, as in the downtown areas of large cities, or the wide open areas of airport sites, a detailed study will probably be necessary. Wind tunnel tests may be required for evaluating very unusual design conditions.

The depth of the air stream is generally determined by the pressure that it has to work against. In a simplified sense, the pressure exerted by the air stream is a function of its depth and its velocity.

The practical upper limit for the velocity of the air stream is that which people will accept as being comfortable. Experience has shown

that a velocity of 1200 ft per minute (13.5 mph) at head level should not be exceeded. The higher velocities are normally required only in cold, windy weather when the air stream is less strong and more comfortable than the wind.

In Sulzer installations, the depth of air streams has ranged from 2 ft 6 in. for a highly pressurized building to 6-ft 6-in. for a building exposed to a strong prevailing wind.

#### Location of Equipment

Four locations for equipment can be used: below, above, adjacent to, or remote from the entrance. At times a combination may be used, such as fans and filters below the entrance and heating coils above the entrance. Advantages and disadvantages of each location are as follows:

*Equipment Below the Entrance.* This location is by far the most common. Basement installations have the advantages of compact arrangement, small distance of air travel, and freedom of design above floor level.

*Equipment Above Entrance.* This

system also has a short air travel, but more space is required than with a basement, and structural support is required for the equipment. Since the equipment room is a suction chamber, drawing air through the ducts from the air intake pit below the entrance, the construction of the equipment room and ducts must be airtight to prevent short circuiting of air from the building.

*Equipment Adjacent to Entrance.* The primary disadvantage of this system is that the equipment room occupies valuable floor space and may be very difficult to blend in with the room.

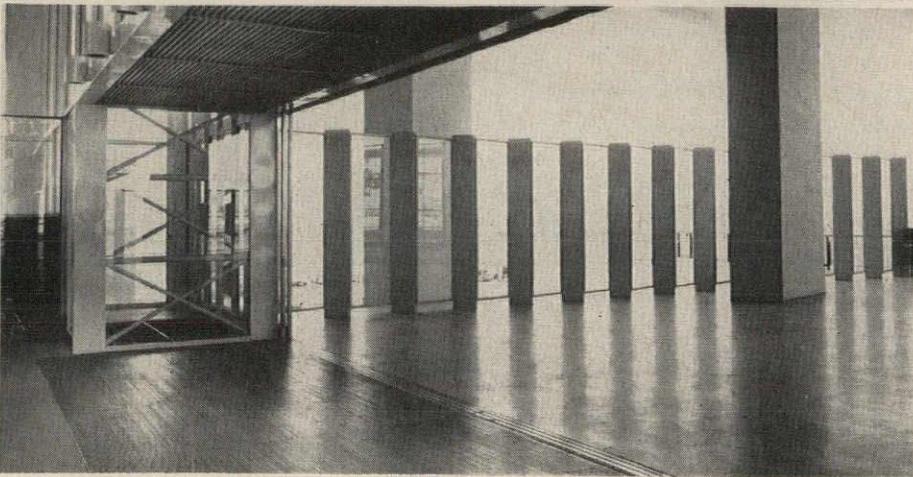
*Equipment Remote from Entrance.* Permits a great deal of flexibility in design, but it is usually more expensive because of long duct runs.

#### Conventional Doors

Air screens require conventional doors to close the opening after business hours, when wind and temperature conditions are beyond the capability of the air screen, for equipment repair or against the possibility of



Left: Details of air entrance for Pan American Terminal. Front wind screen is shown top left. Side wind screen, supply grille and floor grating are in bottom photo. 15-ft sliding glass panels to close air entrance stack three deep at either side (top right)



Below: Example of a fairly typical installation in a branch bank. Again a glass plenum drops down to the supply grille. Doors slide into side pocket



Charles Payne

power failure.

Basically doors can be located as follows when not in use: 1) folded back against the ducts, 2) lifted above the entrance, 3) dropped below the entrance, 4) moved into pockets on the side of the entrance, etc.

In entrances up to 8 ft the simplest and least expensive method is to pin the doors back in the full open position. Above this width the problem is more complex.

### Pan American Passenger Terminal

Because of the unique design of the new Pan American Passenger Terminal Building, (its elliptical canopy covers about four acres in size) and the strong winds at Idlewild, a complicated distribution of wind pressure was anticipated at the entrance. It was decided, therefore, that wind tunnel tests should be conducted.

Sulzer engineers state that very small models can be used (for instance in a scale of 1:100 or 1:200) while still obtaining accurate data on pressure distribution.

Wind statistics showed an average

wind velocity of 19 mph with maximum values of over 65 mph. It was clear that an air curtain could not work effectively unless there were wind screens. Thus the model tests were conducted in the wind tunnel of the Swiss Federal Institute of Technology in Zurich to determine the necessary size and position of the wind screens.

Two wind screens were provided at the sides near the entrance, and a large one in front. These screens are intended not only to reduce the wind pressure but also to ensure that this pressure is approximately equal over the whole width of the entrance and nearly over the full frontage of the building. Without wind screens an oblique wind might produce high pressure at one end of the entrance and low pressure at the other, pushing the air curtain into the building at one point and pulling it out at the other. This would greatly complicate the control problem. Openings were provided in the canopy over the air entrance to permit release of excessive air pressure.

## Foamed Plastic: Triple Use Form For Thin Shells

*Styrofoam* foamed plastic planks have lately found acceptance as permanent form liners which do multiple service as insulation, vapor barrier, and base for interior surface finishing. Supported by wire during construction, the planks have also been used as combination form boards and insulating core for site-built structural sandwich panels.

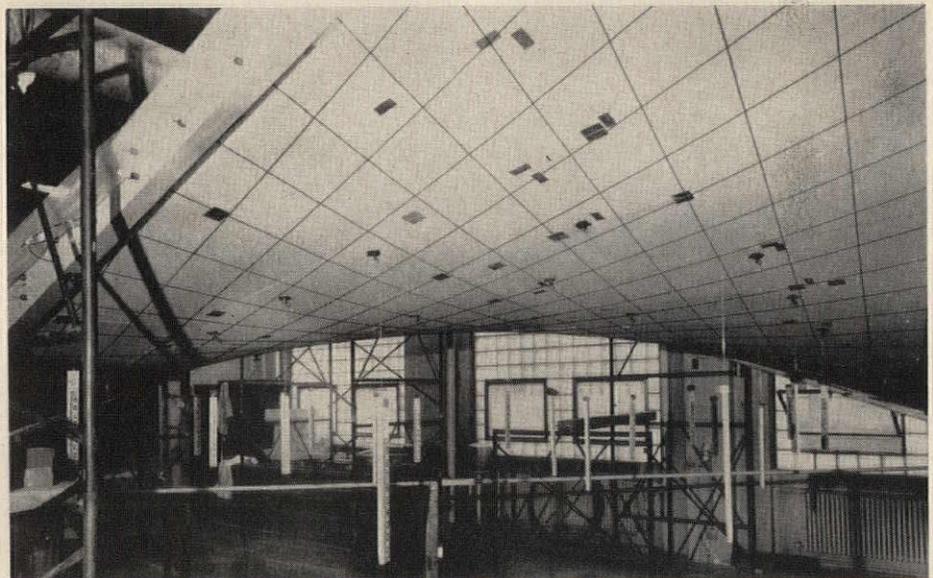
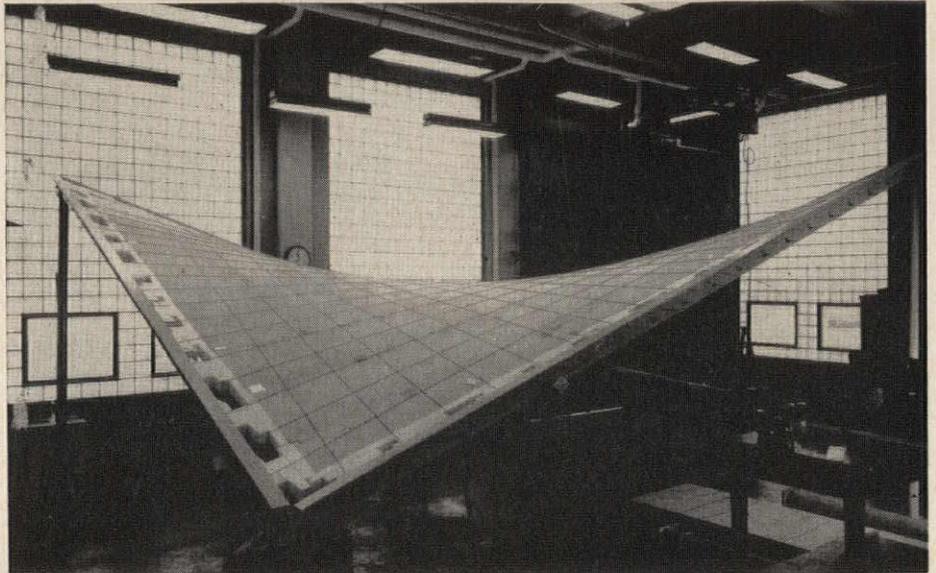
Now, a research project sponsored by Dow and carried out under the direction of Dr. J. L. Waling, professor of structural engineering at Purdue University's School of Civil Engineering, indicates that these two techniques can be combined in such a way that wire-supported *Styrofoam* planks might serve as non-removable formwork for concrete shells.

The principal advantage of such a construction system would be to encourage the use of thin shells in this country by cutting the high cost of the formwork now required and by eliminating such additional construction steps as applying vapor barrier and thermal insulation.

The Purdue group has concentrated on the hyperbolic paraboloid which, itself a versatile form, has the added advantage of being generated by straight lines. Their first approach, supporting the *Styrofoam* shell-cum-form between two sets of tightened straight wires, was ruled out because the excessively high wire tension that would have been necessary to warp the *Styrofoam* into a true hyperbolic paraboloid would also have resulted in sizeable lateral deflections of the edge beams. However, it was found that these stresses could be lowered and framing simplified by offsetting the wires leading from one edge beam to the opposite one. Skewing the top lattice to exert a downward pressure and the bottom lattice to exert an upward pressure was found to force the *Styrofoam* planks into the desired shape.

After this approach had been tested on small-scale models, the Purdue research group constructed a 20-ft square model in order to further develop the construction technique and to permit load tests to be performed.

Holes for supporting the wire lat-



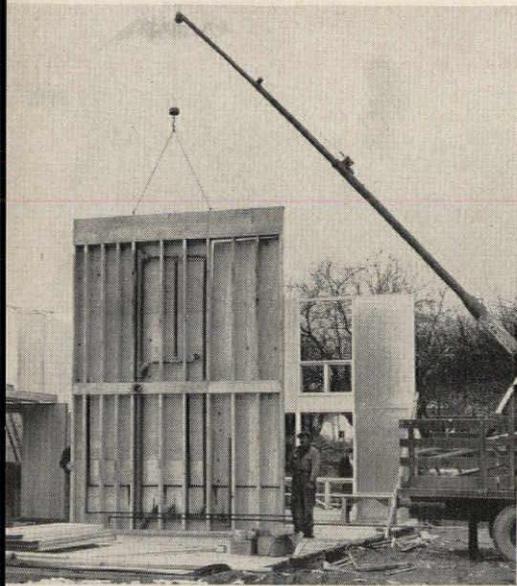
tice were spaced 12 in. apart on the steel edge beams, with one end of each wire offset two spaces in the top network and three spaces in the bottom network. Two by eight foot *Styrofoam* planks placed inside the double lattice were forced together by high-density *Styrofoam* wedges inside the edge beams, and further aligned by sheet metal H- and Z-clips. When the wires were tightened, the planks formed a shell that deviated from a "perfect" hyperbolic paraboloid by no more than half an inch.

A uniform loading of 20 psf re-

sulted in a maximum deflection of about  $2\frac{3}{4}$  in. at the center point, with no buckling. This deflection was reduced to  $\frac{1}{2}$  in. under the same loading after the shell had been stiffened by a  $\frac{1}{4}$ -in. layer of mortar troweled on the top surface.

On the basis of this successful test, the Purdue group is now exploring the possibilities of adapting the construction method to other shapes based on the hyperbolic paraboloid. Further information on the system is available from *The Dow Chemical Company, Midland, Mich.*

## Vinyl Pipe Presages Practical Prefab Plumbing



Because it will withstand operating temperatures from 180 to 200 degrees F (as much as 60 degrees higher than conventional vinyls), a new polyvinyl dichloride, *Hi-Temp Geon*, is expected to open for plastics the metal-sealed doors to hot water plumbing.

The plastic's heat resistance, plus its light weight (one-sixth that of copper), its corrosion-resistance and its self-extinguishing property, make practical the prefabrication of easily-transported plumbing walls. A two-story prototype was recently installed in an NAHB research house in East Lansing, Michigan, where a wall containing hot as well as cold water lines for bathroom and kitchen was assembled in a local plumbing

shop, trucked to the building site and hoisted into position by a light crane (photo left).

For such an installation—and such others as ducts, conduits, corrosion-resistant paneling and even industrial hot-acid piping—the plastic's cost, which will be competitive with other piping materials, is also considered an advantage, as is its ease of fabrication and handling. *Geon* can be joined with socket solvent cement or threaded couplings, cut with an ordinary saw; and formed to desired curvatures by heating.

*Geon* pipe will be produced by other manufacturers using resins and techniques developed by B. F. Goodrich Chemical Co., 800 Second Ave., New York 17, N. Y.

## New Material, New Method Offer New Protection for Roofs

The chronic problem of economical weather protection for roofs, which has become critical with the advent of new roof forms—and has often prevented their use, will be alleviated by the introduction of a new roofing material and a new method of applying it.

Equally useful for conventional flat roofs and for unconventional geometric forms, for standard deck materials and for thin shell concrete, the new *Monoform* system provides for the simultaneous application of an asphaltic compound and glass roving or fibers over a clean prepared surface. The result is a tough, monolithic coating that is said to assure adequate weather protection at less cost and in less time than the usual method of building up roofs, layer by layer, with felt or woven glass fabric and "hot-mopped" asphalt. (The assurance takes the form of 20, 15 or 10-year surety bonds when the *Monoform* roof is applied by a franchised applicator.)

The system itself is based on the development of new asphaltic compounds that provide the proper wetting characteristics for incorporating glass fibers into the finished film, and on the perfection of the *Sealzit* gun. This light-weight applicator employs three ejection nozzles: two for applying the especially formulated Flintkote coating compounds, and a

separate ejector for applying the chopped glass reinforcing. All three ejectors work simultaneously, a pump and compressor forcing the coating materials and glass roving through hoses and ejectors.

According to the company, a three-man crew using the *Sealzit* gun can install between 15 and 18 thousand square feet of roofing a day compared to about eight thousand square feet with a five-man crew using conventional methods.

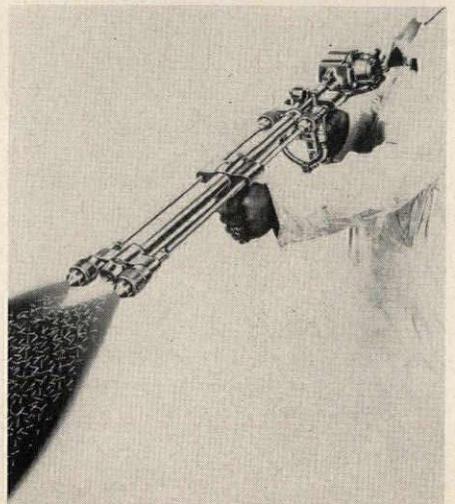
The end product of this simple, fast operation is an integrally reinforced membrane that will not flow or sag at high temperatures or crack at low temperatures, once the film has cured. The *Monoform* film also has the advantage of not supporting combustion; weathers uniformly; and can be applied easily to normally inaccessible and even damp surfaces.

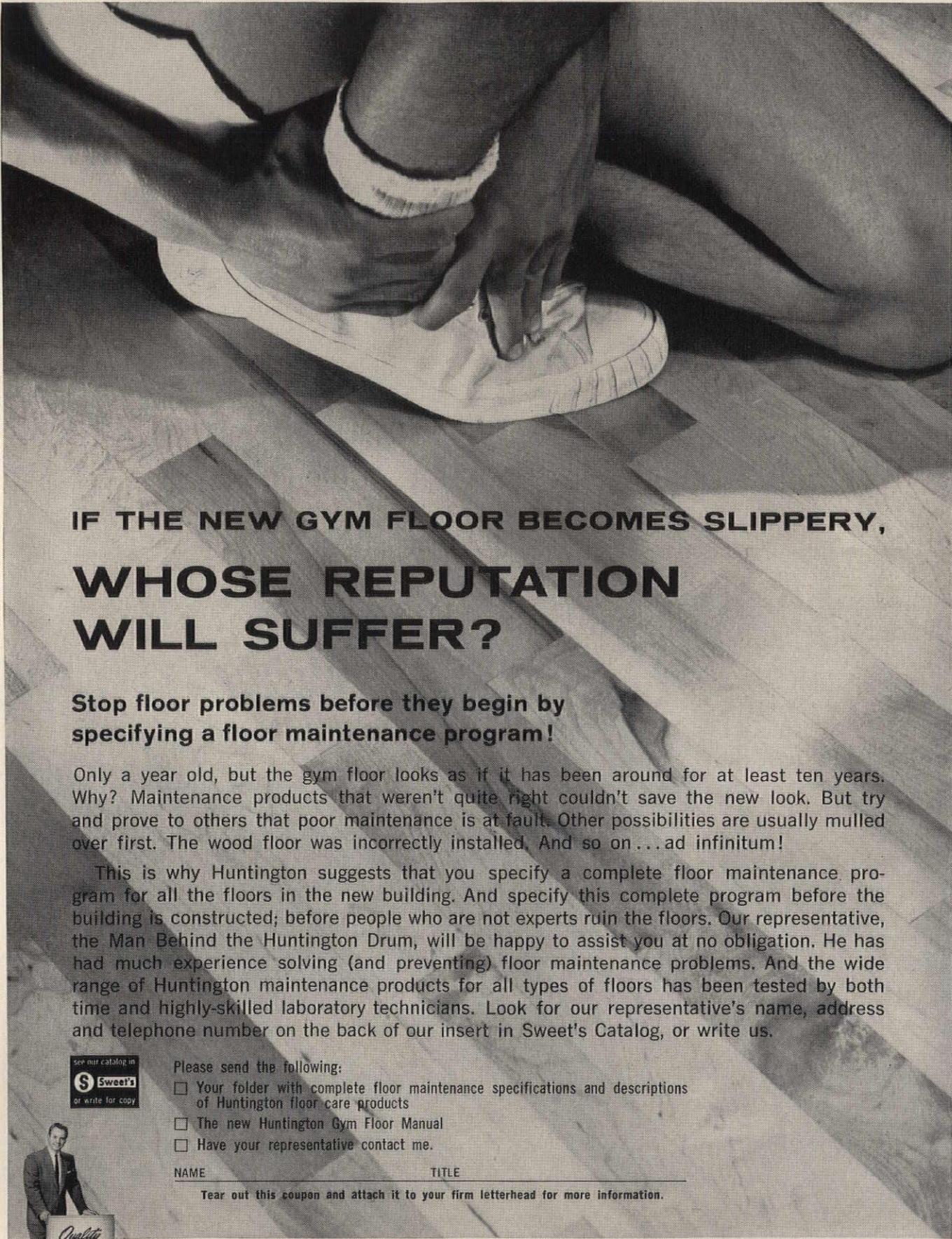
Naturally smooth and black, the seamless coating can, if desired, be combined with such aggregates as crushed rock, vermiculite, sand, roofing granules, metallic powders and decorative flakes. Flintkote has also developed two decorative-reflective, aluminum-pigmented surfacings which can be applied to *Monoform* roofing, but other types of paints are not recommended as yet because their coefficients of expansion differ from that of the *Monoform* coating.

Although the cost savings implicit

in this single-operation method of laying a roof (estimated at up to 20 per cent or more compared to conventional methods), combined with its applicability to such "problem roofs" as thin shells, point to a major market in industrial and commercial roofing, Flintkote anticipates wide uses in other phases of construction as well. The *Monoform* system and the *Sealzit* gun can, for example, be used for below-grade waterproofing and dampproofing membrane, in the application of insulation, for maintenance and repair work, for sound deadening and pipe coating, as a corrosion protective in water tanks, and in waterproofing farm structures and irrigation ditches. *The Flintkote Company, 30 Rockefeller Plaza, New York 20, N. Y.*

more products on page 230





**IF THE NEW GYM FLOOR BECOMES SLIPPERY,  
WHOSE REPUTATION  
WILL SUFFER?**

**Stop floor problems before they begin by  
specifying a floor maintenance program!**

Only a year old, but the gym floor looks as if it has been around for at least ten years. Why? Maintenance products that weren't quite right couldn't save the new look. But try and prove to others that poor maintenance is at fault. Other possibilities are usually mulled over first. The wood floor was incorrectly installed. And so on...ad infinitum!

This is why Huntington suggests that you specify a complete floor maintenance program for all the floors in the new building. And specify this complete program before the building is constructed; before people who are not experts ruin the floors. Our representative, the Man Behind the Huntington Drum, will be happy to assist you at no obligation. He has had much experience solving (and preventing) floor maintenance problems. And the wide range of Huntington maintenance products for all types of floors has been tested by both time and highly-skilled laboratory technicians. Look for our representative's name, address and telephone number on the back of our insert in Sweet's Catalog, or write us.



Please send the following:

- Your folder with complete floor maintenance specifications and descriptions of Huntington floor care products
- The new Huntington Gym Floor Manual
- Have your representative contact me.

NAME \_\_\_\_\_

TITLE \_\_\_\_\_

Tear out this coupon and attach it to your firm letterhead for more information.



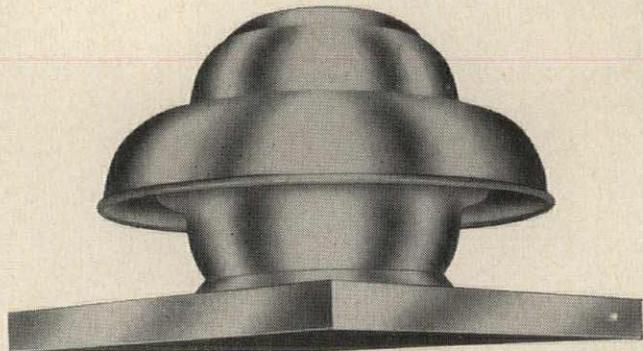
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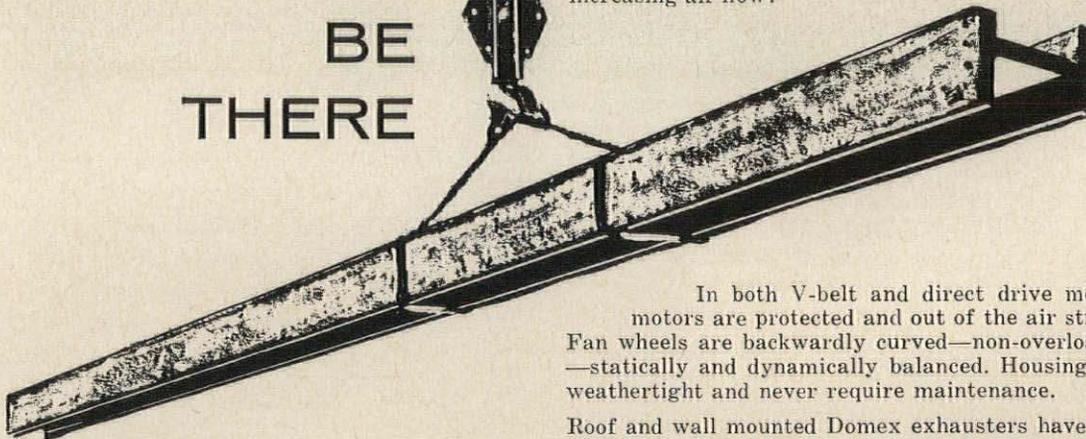
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**Footcandles**

. . . and *Interior Lighting Design*, a pocket-size booklet of footcandle and lighting design tables, contains footcandle recommendations for a wide variety of industrial, commercial and residential applications; information on distribution and light measurements; and precalculated footcandle tables plus photometric data on various types of luminaires and light sources, and information on interior wiring for lighting. 58 pp., 10¢. *Westinghouse Lamp Div., Westinghouse Electric Corp., P. O. Box 388, Bloomfield, N. J.\**

**Commercial Kitchen Ventilation**

Covers the requirements for an effective ventilation system in the commercial kitchen, design fundamentals for component parts of the system, and the effect of cooking appliances and exhaust systems on air conditioned areas. 26 pp., 50¢. *Order Dept., American Gas Assn., 420 Lexington Ave., New York 17, N. Y.*

**Engineered Recessed Lighting**

Catalogs complete line of recessed lighting fixtures for residential and commercial use, with installation instructions, light curves and coefficient tables, and detailed drawings of all units: square, rectangular, opal glass, round, adjustable beam, and shower and aisle lights. 36 pp. *Advertising Dept., Moe Light Div., Thomas Industries Inc., 207 E. Broadway, Louisville 2, Ky.\**

**Plastics for Architects**

. . . *Artists and Interior Designers*, by Armand G. Winfield, details building uses of both thermosetting resins and thermoplastics. Also included are a glossary of terms, and lists of designers, associations and publishers in the plastics field. 50 pp., \$2. *The Society of Plastics Engineers, 65 Prospect St., Stamford, Conn.*

**Elementary Analysis**

. . . of *Hyperbolic Paraboloid Shells* presents basic data necessary for the understanding and application of the static principles underlying the design of this widely-used thin shell type. Discussion of basic geometry is followed by analyses of skewed and sloping hyperbolic paraboloids and hyperbolic paraboloidal groined vaults. Sections on unsymmetrical loads, secondary stresses and testing

are also included, as are supplementary tables and diagrams, and an appendix on the derivation of formulas for skewed hyperbolic paraboloid shells. *Reinforced Concrete 35, 24 pp. Portland Cement Assn., 33 West Grand Ave., Chicago 10, Ill.*

**Keeping American Lawns Beautiful**

Describes underground sprinkler heads in terms of operating data and suggested uses. Tables on coverage, discharge and pressure, as well as specification data, are included. *Rain Jet Corp., 301 S. Flower St., Burbank, Calif.*

**Panelyte Technical Data Brochure**

(A.I.A. 23) Gives information on physical properties of the high-pressure decorative laminate, with data on results of tests against National Electrical Manufacturers Association standards; suggested details of application on counters, walls, and doors; specifications guides. 20 pp. *Information Department, Panelyte Div., St. Regis Paper Company, 150 E. 42nd St., New York 17, N. Y.\**

**Floodlights**

Gives descriptive material on various fixtures for floodlighting, including which types are recommended for use in recreation areas, ornamental lighting, billboard illumination and industrial applications. Bulletin GEA-7201, 10 pp. *General Electric Company, Schenectady 5, N. Y.\**

**Electrical Signaling Equipment**

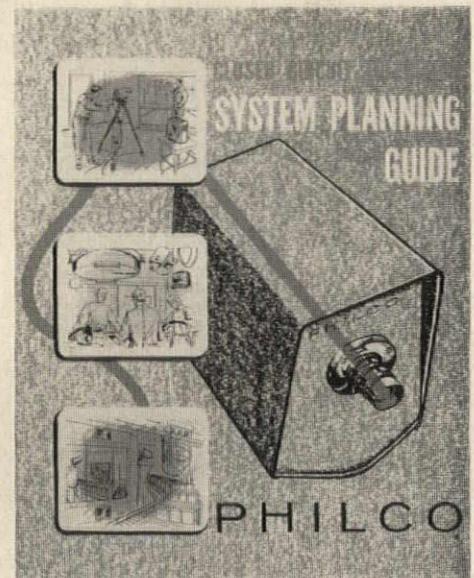
Offers information on horns, bells, buzzers, chimes and sirens, with guides to selection of proper signal for various background noise levels and work areas; gives specification data and dimensional drawings, plus sections on gravity-drop and lamp-type annunciators and on accessory equipment (door-openers, clocks). Catalog 160, 88 pp. *Sperti Faraday, Inc., Adrian, Mich.\**

**Prestressed Roof Decks**

(A.I.A. 4-K). Describes the *Flex-Tee* member, giving technical information on casting details, structural qualities and limits, and placement; contains tables of basic design data for various spans, and guide specifications. 8 pp. *Flexforms, Inc., 1445 West Quincy, Englewood, Colo.*

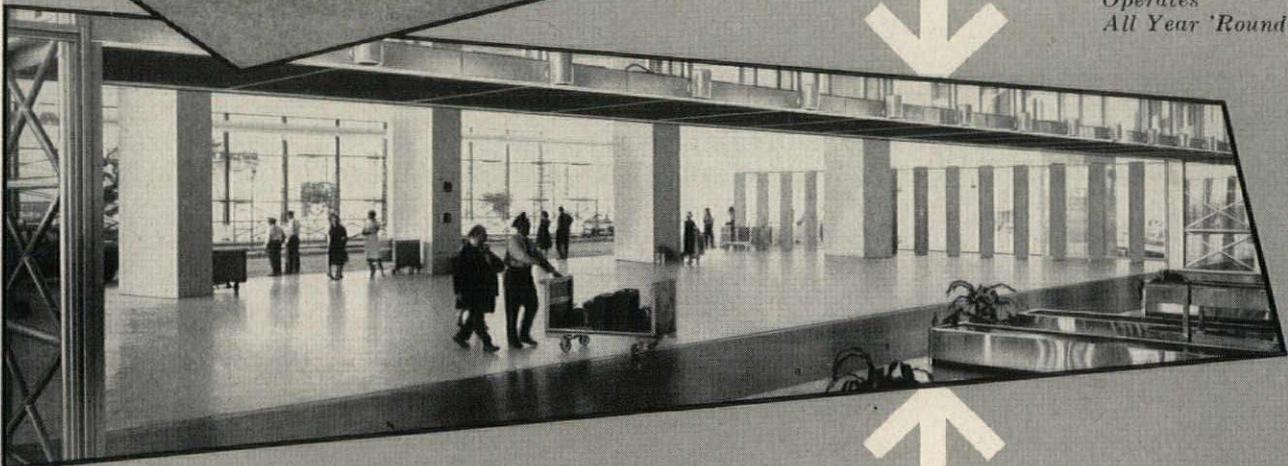
*\*Additional product information in Sweet's Architectural File*

*more literature on page 279*



**CLOSED CIRCUIT TELEVISION SYSTEM PLANNING GUIDE** is designed to outline the many uses of closed circuit TV, and to indicate how the systems may be adapted to a variety of applications. A general discussion of closed circuit TV, supplemented by more detailed information on the factors to be considered in planning specific installations, is followed by sections on the design and use of closed circuit TV systems in industry, in business, in hospitals and medical centers, and in education. A glossary of common terminology is also included. 42 pp. *Philco Corp., Government & Industrial Group, 4700 Wissahickon Ave., Philadelphia, Pa.*

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**THREADED NAILS: 3—Design Factors**

by Howard P. Vermilya, A.I.A.

**Lateral Strength**

The deformation of the nailed joint, loaded laterally, is the primary consideration in establishing an allowable lateral load. The common wire nail has about the same resistance as the low-carbon-steel helically threaded nail when driven into side-grain lumber. The high-carbon-steel, hardened, helically threaded nail, because of its greater stiffness and increased withdrawal resistance, even under lateral load conditions, can use the design value normally credited to the common wire plain-shank nail which is one gauge heavier.

Professor Stern states as a result of his work with threaded nails at Virginia Polytechnic Institute's Wood Research Laboratory that a helically threaded, hardened nail loaded in double shear can transmit twice the design load attributed to that nail in single shear, in a joint consisting of two nominal 1-in. side members and one nominal 2-in. center member. The *Douglas Fir Use Book*, however, in commenting upon plain-shank nails says that limited tests show that at design level of holding power, the nail capacity in double shear is at least twice that for single shear, but at ultimate loads, the shear efficiency is less and varies according to the ratio of the thickness of the side members to the center member. It, as well as the *National Design Specification for Stress-Grade Lumber and its Fastenings*, recommends that when a nail fully penetrates all three members, the allowable

load be increased over that for single shear by one-third when each side member is not less than about one-third the thickness of the center member, increased by two-thirds when each side member is equal in thickness to the center member. This refers to plain-shank nails whereas Professor Stern's recommendation referred specifically to high-carbon-steel, hardened, helically threaded nails.

Tests of full-size trussed rafter assemblies carried out at Wood Research Laboratory of Virginia Polytechnic Institute, with joints having multiple nails in double shear using the design values ascribed to these threaded nails by Professor Stern (namely twice that of nails in single shear), have withstood loads of from five-and-one-half to seven times the design load before failure. In all cases the failure had been in the wood members of the assembly rather than in the joints, with joint deformation held to a negligible amount.

**Withdrawal Strength**

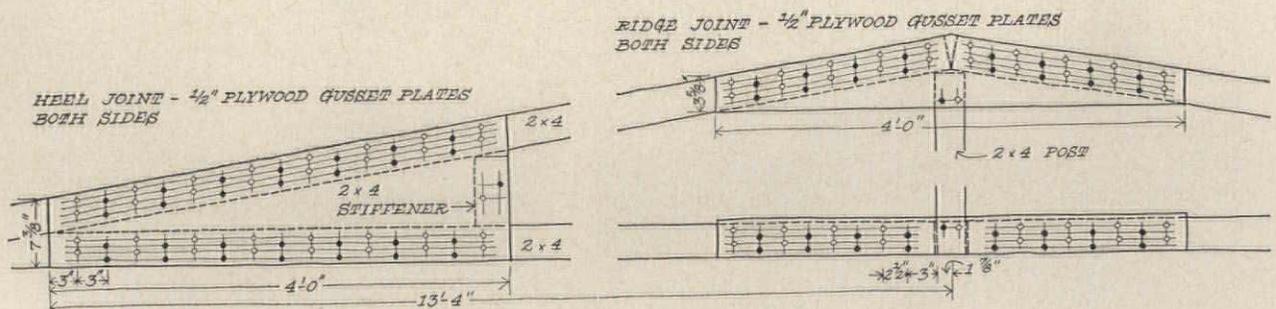
Nails loaded in direct withdrawal from side-grain lumber are not so efficient in strength as when loaded laterally. Withdrawal resistance of nails is materially affected by the specific gravity of the wood, varying with the density even within species. The significant loss in holding power concurrent with wood seasoning and the numerous uncertainties in joints of this type have resulted in the

practice of ascribing a factor of safety of six in determining allowable loads for plain-shank nails. Professor Stern, as a result of the higher and longer lasting holding power observed in his research with threaded nails, recommends that this factor of safety be reduced to two when applied to the ultimate test load for a properly threaded nail loaded in axial withdrawal. Consequently, withdrawal design values for such threaded nails of the same diameter or gauge can be at least three times that for plain-shank nails.

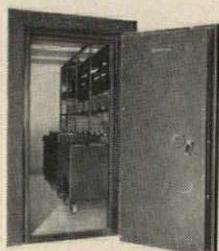
**Other Design Factors**

When more than one nail is used in the same joint the total allowable load in withdrawal or lateral resistance is the sum of the allowable loads for the individual nails. This applies provided the edge and end distances, and spacings parallel and perpendicular to the grain are sufficient to develop the full strength of the nails without splitting the member. Spacing of threaded nails should be as follows (same as for plain-shank nails): not less than five Diameters from the edge of the member, 15 D-20 D from the end, and not less than five D against and 15 D-20 D with the grain.

To further reduce the hazard of splitting, plain-shank and threaded nails may be driven into prebored holes of approximately 70 per cent of the shank or thread-root diameter in width, and 70 per cent of the depth or penetration.



Design of an all-nailed, king-post trussed rafter, 26-ft 8-in. span



## Central Record Vault —growing trend in commercial records retention

*Behind the trend: more companies are looking for ways  
to save space and cut costs of storing vital records*

The problem of "record inventories" is beginning to rival that of product inventories for many businesses. Reason: the high capital investments and an excessive amount of floor space required for filing.

The solution: a central record-storage room or vault, equipped with Mosler's insulated, Flat Sill Vault Door. This room-door combination provides maximum storage in minimum space, together with protection against fire and theft for valuable records. Many businesses are building a "records retention program" with a central record room as a nucleus.

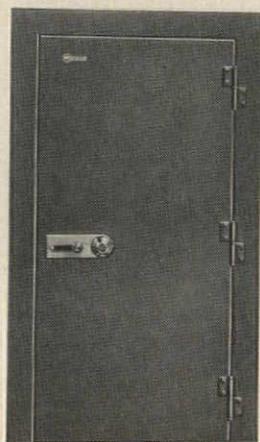
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**STYLE** Mosler has designed this door with clean, compact handle and dial arrangement. Standard and matched colors available. Over-all design blends perfectly with all architectural styles.

**SECURITY** This is Mosler's exclusive "Counter-Spy" combination lock. Numbers on edge of dial are visible only to person operating combination. Mechanism includes special relocking device and inside escape handle.

**SAFETY** Beveled-edge Flat Sill permits same floor level inside and out. Result: no foot bridge, no falling hazard.



**LOW-COST INSTALLATION** This door is simply clamped on the inside of the vault wall with removable flange plates and adjustable jack screws. *No grouting is required.* Result: lower cost because minimum man-hours are required for installation.

**TESTED** This Mosler Door has both the U.L. and Safe Manufacturers National Association labels. (No door can be trusted to protect records unless it has *both*.) It comes under the "B" classification for burglary insurance and meets National Board of Fire Underwriters recommendations for fur and merchandise storage.

**FIRE RESISTIVE** The Mosler Flat Sill Vault Door has been tested and certified for protection against fire. Insulation is Mosler's patented Monolithic fire-resistive material in both door and frame.

**SPECIFICATIONS** Complete details, including schematic drawings and installation directions, are in special Mosler Brochure #FP39. Write for your copy.



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**THREADED NAILS: 4—Design Factors**

by Howard P. Vermilya, A.I.A.

**SAFE LATERAL LOAD-CARRYING CAPACITY (SHEAR RESISTANCE) AND WITHDRAWAL RESISTANCE**  
(Common Wire Nails and Threaded Nails in Douglas Fir and Southern Pine)

Penny-weight	Length, Inches	Common Wire Nail		Hardened Threaded Nail		Safe Lateral Load per Nail in Single Shear, Pounds		Safe Withdrawal Load per Inch of Side-Grain Penetration, Pounds						Safe Withdrawal Load per Inch of End-Grain Penetration, Pounds							
		Diameter, Inches	Count per Pound	Diameter, Inches	Count per Pound	Common Wire Nail	Hardened Threaded Nail*	Common Wire Nail	Hardened Helicly Threaded Nail*	Common Wire Nail	Dense Coast-Type Douglas Fir (c')	S.P. (d')	(e')	(c)	(c')	(d')	(e')	(f)	Common Wire Nail	Hardened Helicly Threaded Nail*	Southern Pine (g-e) (g-e') (g-f)
6d	2	0.113	181	0.105	190	63	69	93	29	33	42	67	81	78	93	97	116	...	81	97	...
8d	2 1/2	0.131	106	0.120	117	78	82	106	34	39	48	77	92	89	106	111	133	187	92	111	156
10d	3	0.148	69	0.135	78	94	94	188	38	44	55	87	104	100	120	124	149	206	104	124	172
12d	3 1/4	0.148	63	0.135	73	94	94	188	38	44	55	87	104	100	120	124	149	206	104	124	172
16d	3 1/2	0.162	49	0.148	57	107	107	212	42	48	60	95	114	109	131	136	164	...	114	136	...
20d	4	0.192	31	0.177	36	139	139	262	49	57	71	114	136	131	157	163	196	256	136	163	213
30d	4 1/2	0.207	24	0.177	31	154	139	262	53	61	76	114	136	131	157	163	196	256	136	163	213
40d	5	0.225	18	0.177	27	176	139	262	58	67	83	114	136	131	157	163	196	256	136	163	213
50d	5 1/2	0.244	14	0.177	23	202	139	262	63	72	90	114	136	131	157	163	196	256	136	163	213
60d	6	0.263	11	0.177	18	223	139	262	68	78	97	114	136	131	157	163	196	256	136	163	213
Shear Resistant Spiral Threaded Nail †	1 1/2	...	...	0.135	158	...	94	188	...	...	...	87	104	100	120	124	149	206	104	124	172
	2 1/2	...	...	0.135	101	...	94	188	...	...	...	87	104	100	120	124	149	206	104	124	172

Based on page 65 of "National Design Specification for Stress-Grade Lumber and its Fastenings" (1960 edition), subject to adjustments (see Section 203A, etc.).

Limitations: Design values for lateral load-carrying capacity of common wire nails based on two-thirds shank penetration and those of hardened helically threaded Screw-Tite® nails based on one-half shank penetration of shortest nail of given diameter.

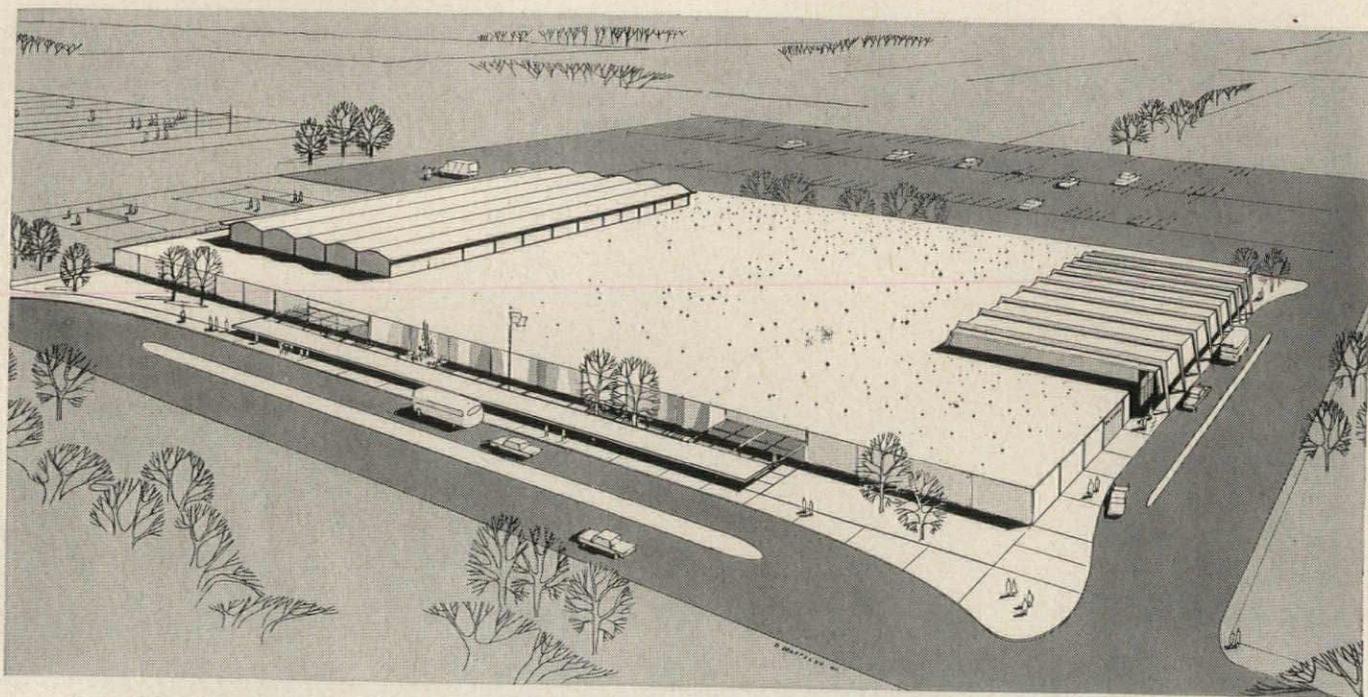
Selection of Design Values of Threaded Nails: Column (b) is based on derivation procedures generally accepted for common wire nails and indicates the extreme conservatism of the design values shown in Column (a). Columns (f) and (g-f) take into consideration the fact that the test values for delayed withdrawal resistance of properly threaded nails are similar to the immediate test values. This fact eliminates the need for a factor of safety of six for immediate ultimate withdrawal resistance which is customarily applied to common wire nails. A factor of safety of two is fully

adequate. Again, these design values indicate the conservatism of the design values presented in Columns (c), (d), (e), and (g-e).

- (a) Design values for one-gauge larger common wire nail.
- (b) One-sixth of test value (page 26 of V.P.I. Wood Research Laboratory Bulletin No. 3).
- (c) 1150x3x0.186 D (acc. to FPL). (d) 1150x3x0.214 D. (e) 1150x3x0.267 D.
- (c') 1380x3x0.186 D (acc. to NDS). (d') 1380x3x0.214 D. (e') 1380x3x0.267 D.
- (f) Three times design value for plain-shank nail of same wire diameter.
- (f) One-half of test value (page 26 of V.P.I. Wood Research Laboratory Bulletin No. 3).
- (g) Five-sixths of design value for side-grain penetration (Timber News, Vol. 59, No. 2138, pp. 490-492, December, 1950).

\* tests based on use of Screw-Tite® nails made by Independent Nail & Packing Company  
† tests based on use of Hi-Load® nails (For plywood diaphragms and gusset plates) made by same company

Table prepared for Architectural Record by Professor E. George Stern, Virginia Polytechnic Institute Wood Research Laboratory. Threaded nail values based on products of the Independent Nail & Packing Company, Bridgewater, Mass.



## This Secondary School will give you ideas

It's a new kind of school—free from the limitations of natural light, natural ventilation and rigid site orientation because temperature, humidity, light and sound are under constant control—a school that provides flexibility of classroom space, easy conversion of any room to audio-visual activity, maximum administrative control, minimum distances between teaching units, more square feet of classroom wall space for instructional purposes and considerably more working space per site acre.

This new school actually costs less to build—and less to own and operate—yet it provides maximum educational efficiency year round and will serve more pupils than conventional schools of equal area. There is less perimeter wall, less exterior glass and shorter runs of pipe and conduit. And since classroom partitions are non-load bearing and movable, such a school is ready for any educational development—including new classroom groupings required by Core and Subject curriculums.

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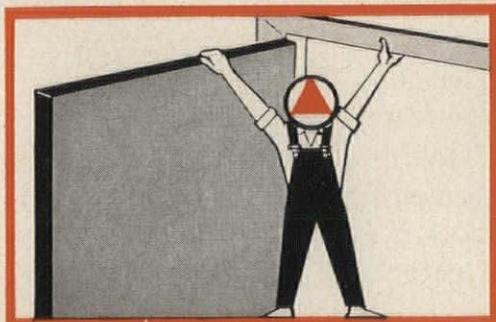




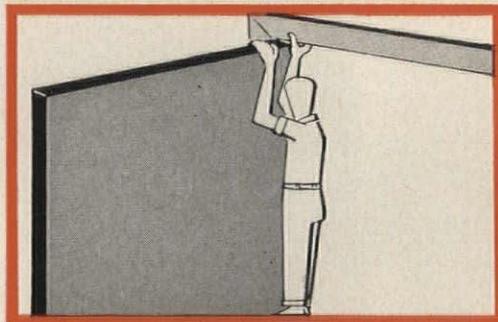
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 ... spring-cushioned for absorbing shock



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separately installed



leverage control when  
"built-in"

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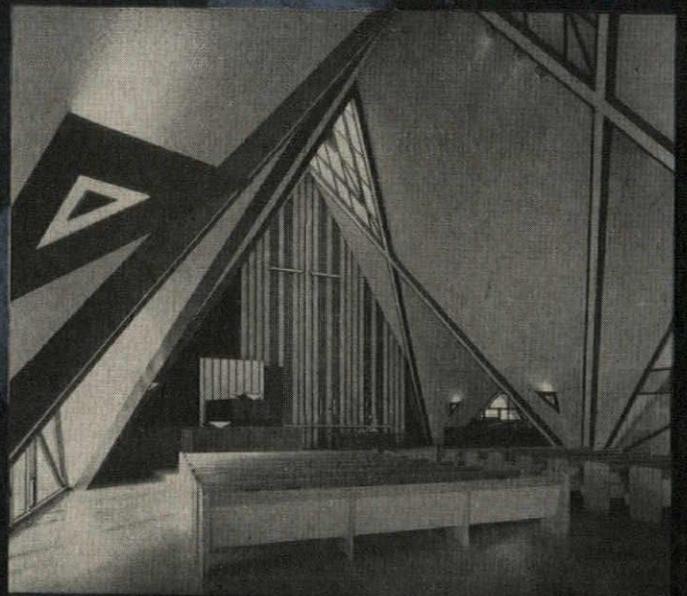
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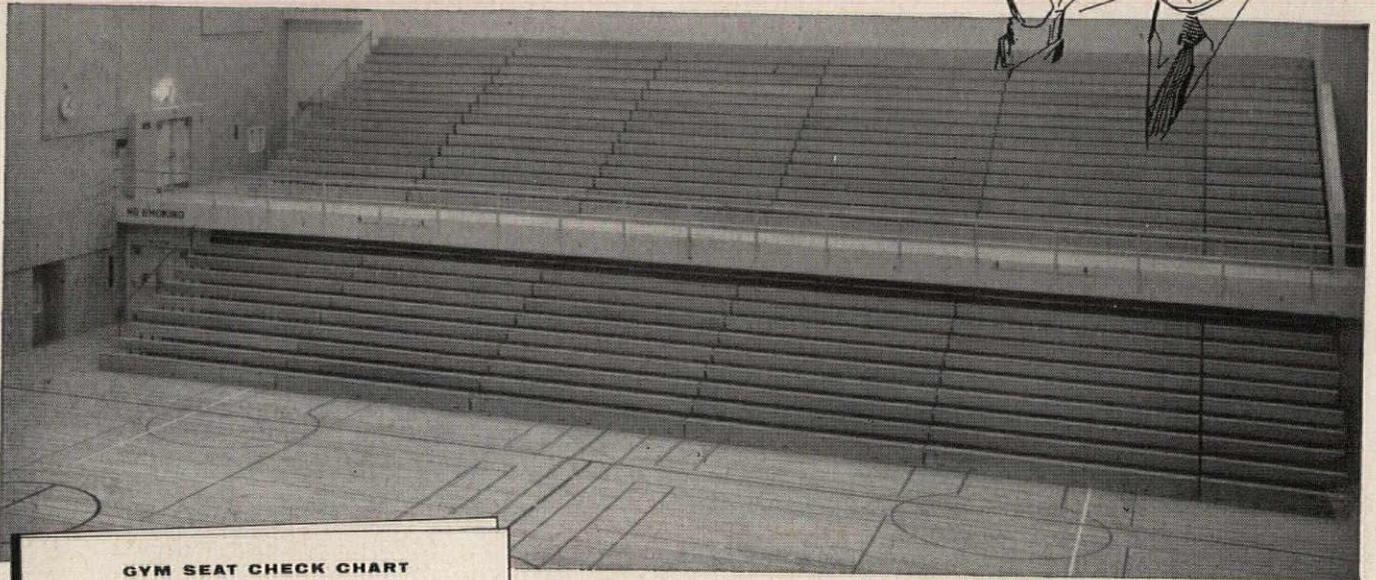
Here plaster plays its part. Troweled smoothly across broad wall expanses and sweeping boldly into the pointed peaks, it flows with the counterpoint of plane and angle as only plaster can. Sprayed-on acoustical plaster assures a reverential hush.

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## GYM SEAT CHECK CHART

An easy "Do-it-Yourself" scorecard for comparing the deciding features of various makes of bleacher-type gym seats.

Check these important design and construction factors before selecting any gym seats, whether they be listed or telescopic, to obtain the maximum in safety, service, easy and convenient operation, and minimum maintenance.	Enter the make of gym seats under consideration and mark "YES" or "NO" in space provided	MEDART
1 Are fronts of seats perfectly vertical when closed to safeguard against accidents and to permit "rush seating"?		
2 Do seats operate on a telescopic principle, completely free of sliding members? (See Fig. 2)		
3 Are seats designed and constructed independent of telescopic multiple linkage, levers and pins? (See Figs. 3, 4, 5, 7 & 8)		
4 Is steel understructure free-standing and self-supporting, independent of wood truss, riers and footboards? (Wood members should add to strength of understructure and bear no structural stress. (See Fig. 1)		
5 Are each full length seat row at least four vertical uprights to support a capacity load to complete safety? (See Fig. 1)		
6 Are uprights properly staggered to avoid overlapping of adjacent seating? (See Fig. 3)		
7 Are uprights interlocked at top and bottom to insure strength from non-loading opening and closing? (See Figs. 2 & 3)		
8 Are all operating uprights equipped with two permanently lubricated, rubber-lined casters? (See Fig. 4)		
9 Are casters enclosed in steel housings to insure protection from damage, possible accidents, and to protect against an excessive accumulation of dirt and debris? (See Figs. 2 & 3)		
10 Do casters retract into steel housings when seats are under live load so seats are locked safely in position? (See Fig. 4)		
11 Are front row uprights equipped with two non-slip rubber pads to lock seats in any position? (See Fig. 4)		
12 Is each seat board slanted slightly backward for maximum comfort?		
13 Do wood members have an oven-dried, mechanically applied, alkyl methacrylate varnish finish, which has many times greater wear resistance than ordinary gym seat finishes?		
14 Can any number of seat rows be opened and safely locked in position for use while all others remain closed? (See Fig. 8)		
15 Do seats occupy minimum floor space when closed?		
16 Can seats be locked per your requirements, without alterations to casters?		
17 Can seats be equipped with automatic hinged top risers to prevent binding of backrests, etc.?		
18 Are movable seats equipped with an integral hydraulic lift which is controlled and operated at the base?		
19 If seats are to be power-operated, is power unit of positive action type, completely free of Bow friction drive?		

Courtesy of FRED MEDART PRODUCTS, INC., 333 DeKalb Street, St. Louis 18, MO. 10-108

## GET YOUR COPY

A gym seat check chart that will help you in making impartial comparisons of features and values. No obligation—just MAIL THE COUPON.

FRED MEDART PRODUCTS, INC. • 3540 DEKALB ST. • ST. LOUIS 18, MO.

Send me a copy of the GYM SEAT CHECK CHART

Name.....

Organization.....

Street Address.....

City..... Zone..... State.....

**GREATER SAFETY?** Medart seats have it—compare them with others! Self-supporting steel understructures, *plus added strength* of wood members, support over 400 pounds per foot of seating space.

Four dual *vertical* uprights for *each* 16'0" seatboard. Two rollers on each upright retract and place load on floor, not walls or casters.

**MORE SEATING?** Medart 16-foot seat sections up to 12 rows high use only 32½" of floor depth when closed. *Better seeing* is assured with a choice of 17" or 18" seat heights. Ample *toe and heel* space add to comfort of spacious seat room.

**EASIER OPERATION?** Floating telescopic seat supports and interlocked twin rollers under each upright assure easier opening and closing; prevent binding and damage.

**LESS UPKEEP?** Harder, tougher clear wood finish lasts up to 15 times longer. Vertical fronts collect less dust. Swing-up front riser makes sweeping of debris quick, easy. Also, rubber rollers won't mar finely finished floors.

Sharply competitive in price, Medart Telescopic Gym Seats offer a host of exclusive features that promise savings in money, better performance, extra years of service.

**MEDART**  
TELESCOPIC GYM SEATS



DUKE...Pioneers in Food Service Progress!

Engineering-minded **DUKE**  
dealers know food service design



Duke sales representatives and Duke restaurant equipment dealers . . . all are specially trained to help you with engineering problems in design and layout. To the Duke man, food service planning aid to the architect is just as important as providing a quality, competitively priced modern line of Duke food service equipment.

Recommend Duke . . . famed for efficiency and economy in schools, restaurants and institutions everywhere. Look to Duke Cafeteria Counters and the original Thurmaduke Waterless Food Warmer. Get the facts now . . . mail coupon and consult your Sweet's Catalog file.

# THURMADUKE

Duke Cafeteria Counter, St. Thomas Aquinas High School, Florissant, Mo.  
Hellmuth, Obata & Kassabaum, Inc., Architects  
Frank T. Hilliker and Associates, Food Service Consultants

SEE OUR CATALOG IN SWEET'S  
OR WRITE FOR COPY

**pioneers  
new ideas in  
food service  
equipment**

THURMADUKE WATERLESS  
FOOD WARMERS AND  
PORTABLE FOOD WARMERS  
SERVICE TABLES  
CAFETERIA COUNTERS  
AEROHOT

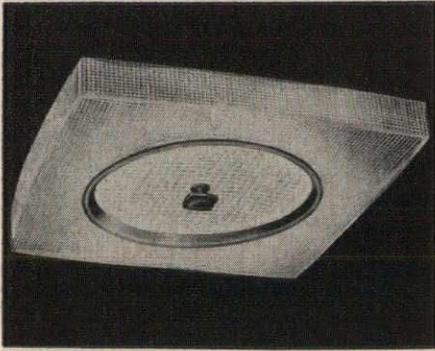
*Clip and Mail to:* DUKE Manufacturing Co., Dept. 123  
2305 N. Broadway, St. Louis 6, Mo.

Please send me information and specifications on one or all of following:  
 Thurmaduke Waterless Food Warmers and Portable Food Warmers     Service Tables  
 Cafeteria Counters     Low-cost Aerohot Food Warmers and Tables  
Are you interested in name of Duke dealer-representative in your area who can help you with food service equipment planning? Check here if you desire this information:

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

## Product Reports

continued from page 216



### Two-lens Residential Luminaire

A new multipurpose indoor lighting unit is now available for use in almost any home location. The rectangular ceiling unit has a circular center lens of *Endural* glass and an outer lens of acrylic plastic. The inner lens concentrates light on the area directly below while the outer one blends the lighting for the surrounding area. The luminaire is a semi-recessed unit which fits into the ceiling and the 11 $\frac{1}{8}$  in. square lens projects only 1 $\frac{1}{2}$  in. from the ceiling area. The circular lens is removed by unscrewing a finial nut that is screwed onto a rod extending through the lens from the fixture. *Holophane Company, Inc., 342 Madison Ave., New York, N. Y.*



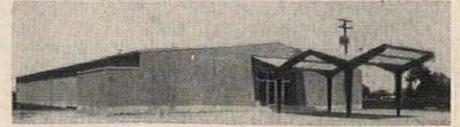
### Mobile Shower Cabinet

An effective device has been developed to enable the physically-handicapped to bathe himself. It is a portable shower chair, mounted on casters, which is made of a light, non-corrosive fiber glass for durability and easy maintenance. An exclusive feature is the hydraulically controlled seat which allows a wheel chair patient to enter and leave the unit, as well as adjust for height without aid. The bath is equipped with a stationary spray which encircles the bather just above the shoul-

ders. To insure safety, a non-scald mixing valve has been incorporated to automatically cut off the water should there be a temperature change. *Safety Bath, Inc., P.O. Box 781, Lubbock, Texas.*

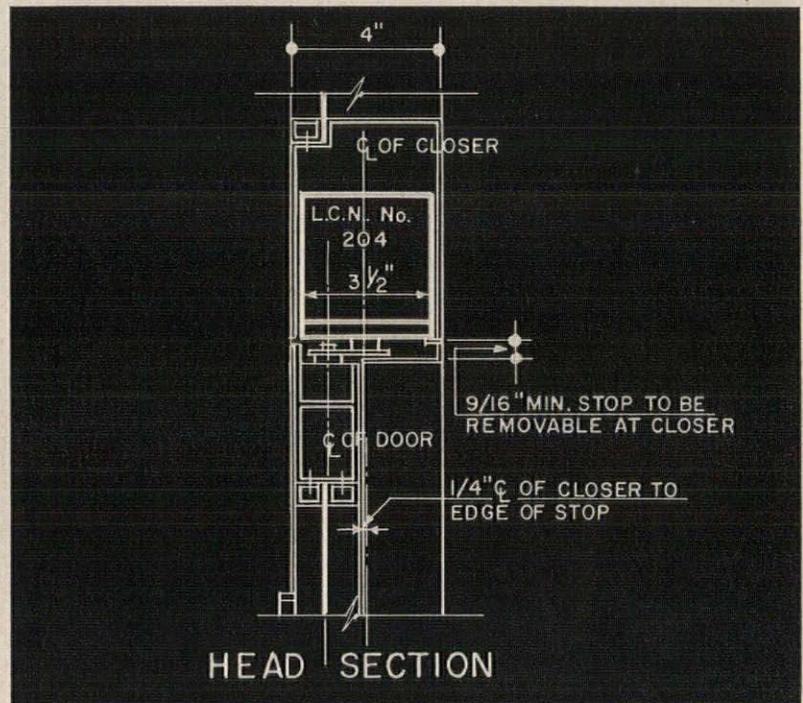
### Boltless Prefab Buildings

*Varco Uniframe Buildings*, rigid frame structures designed for use in industry, business, community and farm, are now being distributed nationally. A complete line has been



engineered of clear span buildings up to 120 ft in width. All buildings are designed for *Uniframe* construction—a unique welding process which eliminates the use of nuts and bolts in the steel framework. *R. G. Varner Steel Products, Inc., Pine Bluff, Arkansas.*

more products on page 236



### CONSTRUCTION DETAILS

for LCN Overhead Concealed Door Closer Shown on Opposite Page

*The LCN Series 200 Closer's Main Points:*

1. Efficient, full rack-and-pinion, two-speed control of the door
2. Mechanism entirely concealed; arm disappears into door stop on closing
3. Hydraulic back-check prevents door's being thrown open violently to damage walls, furniture, door, hinges, etc. Door may open 180°, jamb permitting
4. Hold-open (optional) set at any one of following points: 85°, 90°, 100° or 110°
5. Easy to regulate without removing any part
6. Used with either wood or metal doors and frames

Complete Catalog on Request—No Obligation  
or See *Sweet's 1960, Sec. 18e/La*

**LCN CLOSERS, INC., PRINCETON, ILLINOIS**

Canada: Lift Lock Hardware Industries, Ltd., Peterborough, Ontario



Waldron & Dietz, Architects

Modern Door Control by *LCN* • Closers Concealed in Head Frame

EDMONDS SENIOR HIGH SCHOOL, EDMONDS, WASHINGTON

LCN CLOSERS, INC., PRINCETON, ILLINOIS

Construction Details on Opposite Page

*Progress Is Our Most Important Product*

GENERAL  ELECTRIC



# NO SUBSTITUTE

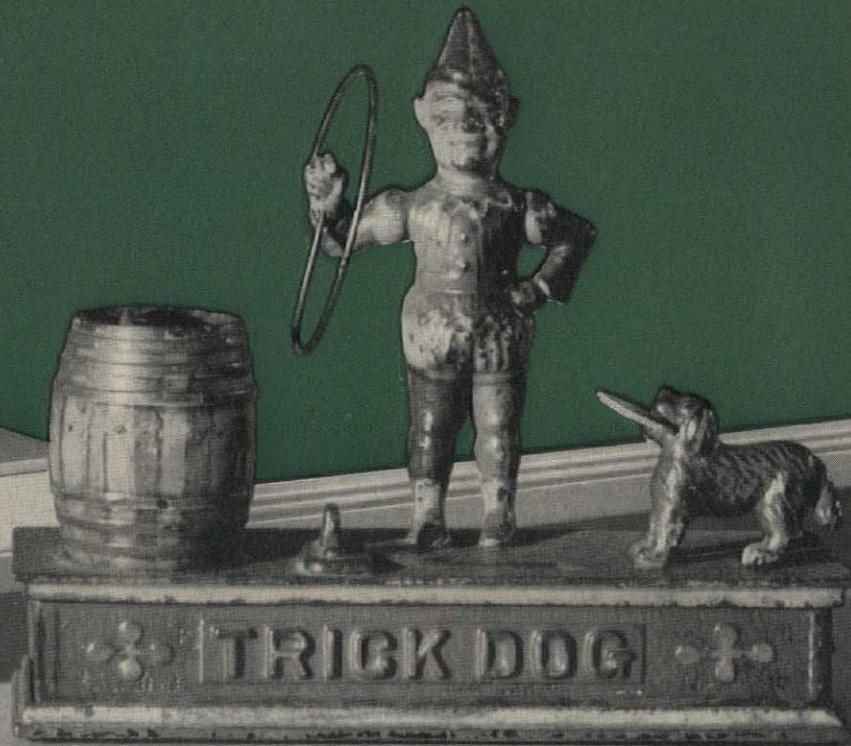
"We almost never write 'no substitute' on our plans. But with G-E Power Grooves it's different. They're the most powerful fluorescents made—so, fewer lamps and fixtures are needed for any level of light. This means I can save my clients about 40¢ a square foot initial investment over slimlines . . . 20¢ a foot over High Output Lamps! Maintenance costs are

lower, too. What's more, the higher lighting level usually means increased production."

**SUBSTITUTE?** "There aren't any substitutes for the new General Electric Power Groove. Its 15,000 lumens can't be matched by any other fluorescent."

General Electric Company, Large Lamp Dept. C-029, Nela Park, Cleveland 12, Ohio.

# permanently\* economical Nucite glass chalkboards



## Why the finest chalkboard costs less than so-called "economy" boards

Compare the cost of Nucite glass chalkboards against the cost of purchasing *two* "economy" composition boards—or against the cost of slate chalkboard *plus* several charges for resurfacing. That's what the *minimum* cost will be over the life of the building. You'll have to replace composition boards . . . you'll have to resurface slate. All you do to Nucite glass chalkboards is wash them.

In the time it takes a kindergarten student to reach high school, the cost picture will favor Nucite chalkboards—and they'll *still* have a maintenance-free lifetime to go. Installations twenty years old have the superior texture, color and legibility they started with. Nucite chalkboards just *can't* wear out.

They're difficult to damage, too. Nucite chalkboards resist chipping and withstand heavy impacts better than most other chalkboards. They're similar to porcelain panels used in curtain wall construction.

On top of long-range economy, Nucite boards deliver long-range legibility. They have the finest writing surface available. Five sight-engineered colors. Send for samples . . . or see Sweet's <sup>23e</sup>/<sub>Ne.</sub> Agents and distributors in all principal cities. Write for the name of the one nearest you.

**Nurite crayon boards** do double duty as projection screen and light ivory background for multi-color

diagrams and drawings. Since pigmented chalk is likely to stain any chalkboard surface, Nurite boards and Ezy-Rase water soluble wax crayons were developed especially for classroom color work. A moist tissue or sponge erases markings completely. Identical framing, installation and appearance make Nurite boards the perfect companion to Nucite glass chalkboards. They're especially suitable for art and science classrooms which make heavy use of charts, diagrams and films. Ask your New York Silicate distributor about it. He'll also advise on Nucite glass, steel, Formica, Silicate composition or slate chalkboards, and on glass door or changeable letter bulletin boards—all made by New York Silicate.

\* In more than 20 years and 25,000 installations, we have never been called upon to fulfill the following guarantee: the surface of Nucite glass chalkboards is guaranteed for the life of the building against fading, warpage, or becoming slick or shiny under normal classroom use. • Should any Nucite glass chalkboard break within 20 years after installation, outside of willful or accidental damage, it will be replaced free of charge.

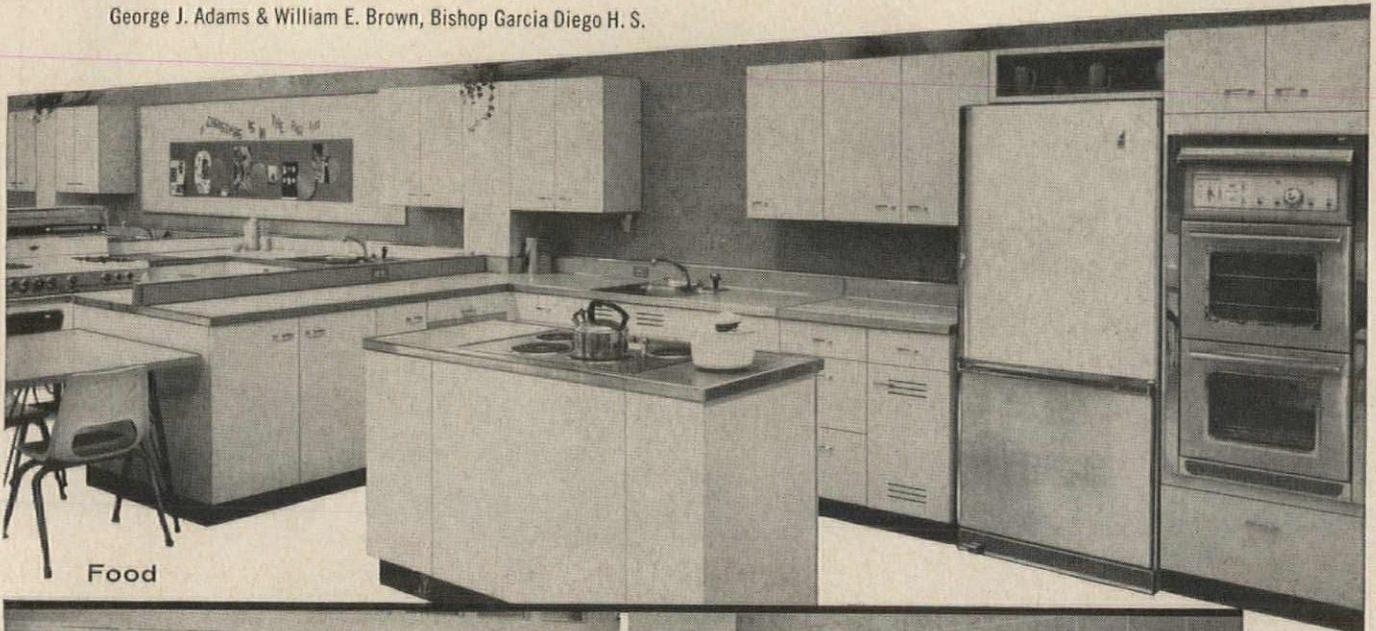
**NEW YORK SILICATE**  
BOOK SLATE COMPANY, INC. 600 Old Country Road  
Garden City, New York

# Custom school installations by *St. Charles*

Specified by:

Chester L. Carjola, San Marcos H. S.  
 Arendt, Mosher & Grant, La Colina J. H. S.  
 George J. Adams & William E. Brown, Bishop Garcia Diego H. S.

...in Santa Barbara, California



Food



Science



Arts and Crafts



Clothing



Clothing

The beauty of these installations reflects the built-in St. Charles quality that means long-range economy, even under extremely hard usage. And St. Charles' custom-flexibility provides vital design-freedom... permitting each installation to meet each individual teaching requirement.

Write for free catalog: "St. Charles Custom School Storage Furniture." Available at request on your letterhead. St. Charles Manufacturing Company, Dept. ARS-8, St. Charles, Illinois



*St. Charles*  
 Custom School Storage Furniture



School Storage Furniture for Food, Clothing, Science Labs · Arts & Crafts · Elementary Classrooms

Corrugated

Roof Deck

V-Beam

Choose from 20 colors  
in any of the 5 types  
shown . . . all in Stucco  
Embossed, Leather-  
grained or Mill Finish.  
Also field assembled  
insulated wall  
systems using com-  
binations of these  
and other forms.

Reynolds Aluminum "Colorweld" 60 in 20 new colors!

4" Ribbed

8" Ribbed

## New color concept for aluminum roofing and siding

As color accelerates the swift trend to rustproof, corrosion-resistant aluminum for commercial building, Reynolds introduces new colors . . . plus a new color-before-forming process with important advantages.

The exclusive "Colorweld 60" process permanently bonds to aluminum color that is so tough it stands up under forming and embossing . . . maintaining absolute uniformity. This means greater beauty, clean-lined and clear-textured. It means faster production—immediate availability. And it brings the cost of color down to only a few pennies per square foot!

Get the full facts on "Colorweld 60" from the nearest Reynolds sales office. Mail the coupon *now* for your copy of new Color Brochure! Reynolds Metals Company, Richmond 18, Virginia.

Watch Reynolds TV Shows: "BOURBON STREET BEAT" and "ADVENTURES IN PARADISE"; and, resuming in October, "ALL STAR GOLF"—ABC-TV.



MAIL THIS COUPON NOW!

Reynolds Metals Company,  
Dept. AR-8  
Richmond 18, Virginia

Please send me immediately your new Color Brochure on "Colorweld 60"—complete with accurate reproduction of the 20 new colors available.

Name \_\_\_\_\_

Firm \_\_\_\_\_

Street \_\_\_\_\_

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

\*Trademark of Reynolds Metals Company

APPROVED

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model codes  
... for more  
types of  
construction  
... in more  
cities

DETROIT  
LOS ANGELES  
PHILADELPHIA  
CHICAGO  
NEW YORK

**BESTWALL  
FIRESTOP**

No other fire-rated gypsum wallboard has been proven in as many different constructions and received as many approvals so extensively throughout the country as Bestwall Firestop. It has been approved by the Uniform Building Code, BOCA Code and the Southern Building Code.

Made under Underwriters' Inspection Service, every piece of 5/8" Bestwall Firestop is marked "5/8 Firestop" for quick identification.

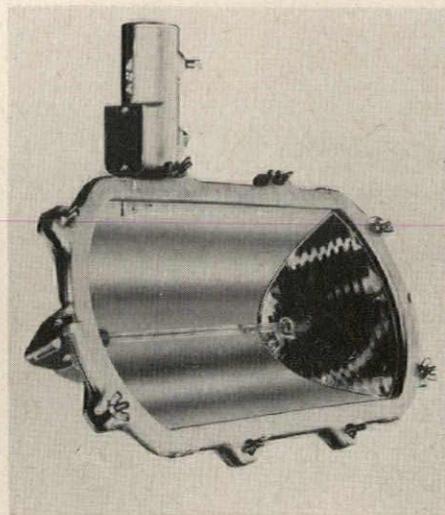
YOUR BEST BUY IS

FIREPROOF GYPSUM  
**BESTWALL**  
BUILDING PRODUCTS

**BESTWALL GYPSUM COMPANY**

Ardmore, Pennsylvania • Plants and offices throughout the United States

## Product Reports



### Wide Beam Floodlight

The Wide-Lite *Lumitor* floodlight, with a vertical beam spread of only 8 degrees and a horizontal spread of 100 degrees, uses quartz-iodine lamps with lamp life conservatively rated at twice that of the ordinary incandescent lamp. An aiming device permits accurate aiming, and because the quartz-iodine lamp must be operated within 4 degrees of horizontal, a level is built into the *Lumitor* housing. The *Lumitor* is available in 500 and 1500-watt models; both of which have sturdy aluminum bodies with deep cooling fins, stainless steel hardware and 1/4 in. glass lens. This rugged construction makes it ideal for exposed locations. An aluminum alzak reflector is specially designed to be used with the quartz-iodine lamp. *Wide-Lite Corp., Box 191, Houston, Texas.*

### Low-Cost, High-Velocity Room Unit

According to the manufacturer, new *Bypass Weathermaster* units will cut as much as 30 per cent from the cost of room units for high velocity multi-story building air conditioning systems. The key to this economy is a factory-installed and factory-balanced control powered by the conditioned air itself. This control proportions the air flow through the coil while the water flow remains constant. Previous room units required purchase of separate flow controls. Virtually any requirement can be met with one of six new models now available, and further flexibility is offered through a choice of five different nozzle arrangements. *Carrier Corp., Syracuse, N. Y.*

*more products on page 248*

# Monterey

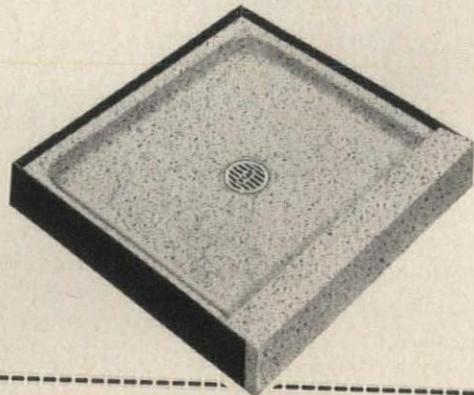
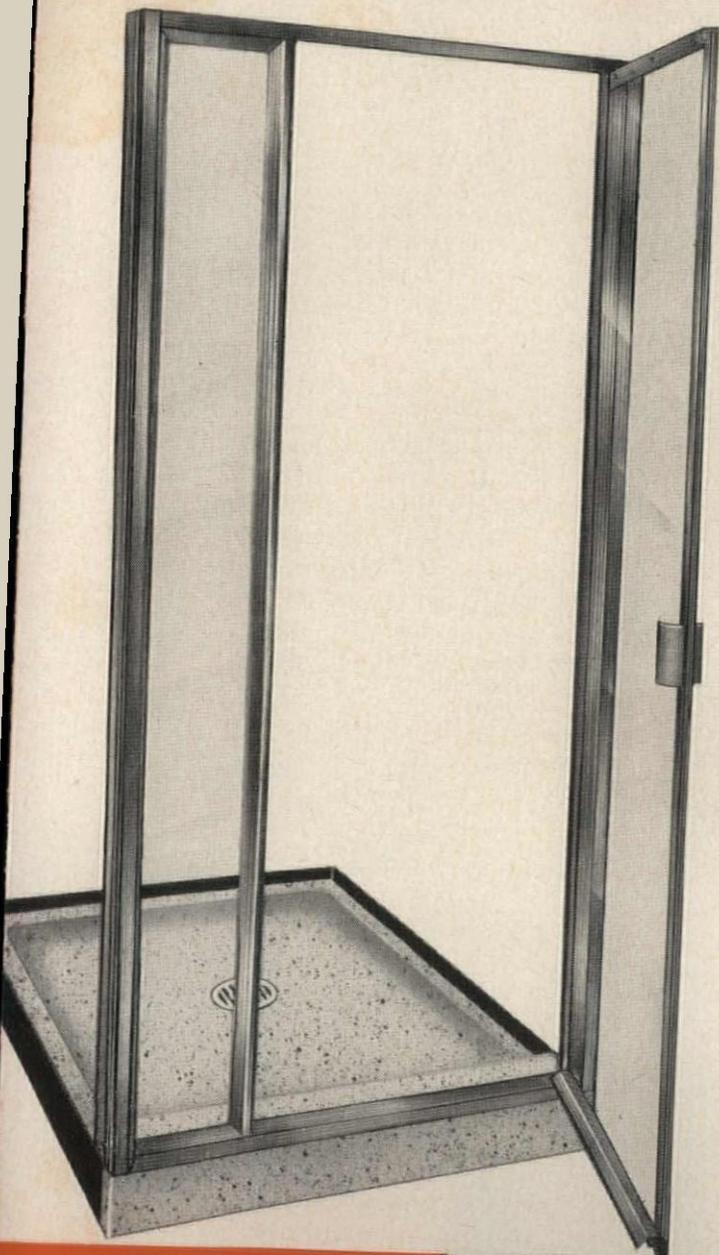


## shower enclosure

## and floor

Now you can custom-build a luxury shower at a cost you never dreamed possible. The Fiat Monterey Shower Enclosure and floor were designed to help you do just that. Made for each other. And like the ideal couple who live happily ever after, these perfect companions insure a permanently trouble-free installation.

Construction time is cut to a fraction. The pre-packed, pre-hung, pre-assembled Monterey enclosure saves hours of costly cut-and-try. 32" and 36" models each allow a full 1 1/2" adjustment—3/4" on each side of the frame—to compensate for out of plumb openings. Adjustment is instant—and accurate! The one-piece PreCast Terrazzo Floor does away with old-fashioned sub-pan, mortar, and tiling construction—slides into place in one simple operation.



# 5

strategically located plants for fast delivery at lower cost!  
Plainview, Long Island, New York;  
Franklin Park, Illinois; Los Angeles, Calif.  
Albany, Georgia;  
Orillia, Ontario, Canada

Get the facts about these new time and cost cutting products—send today for details!

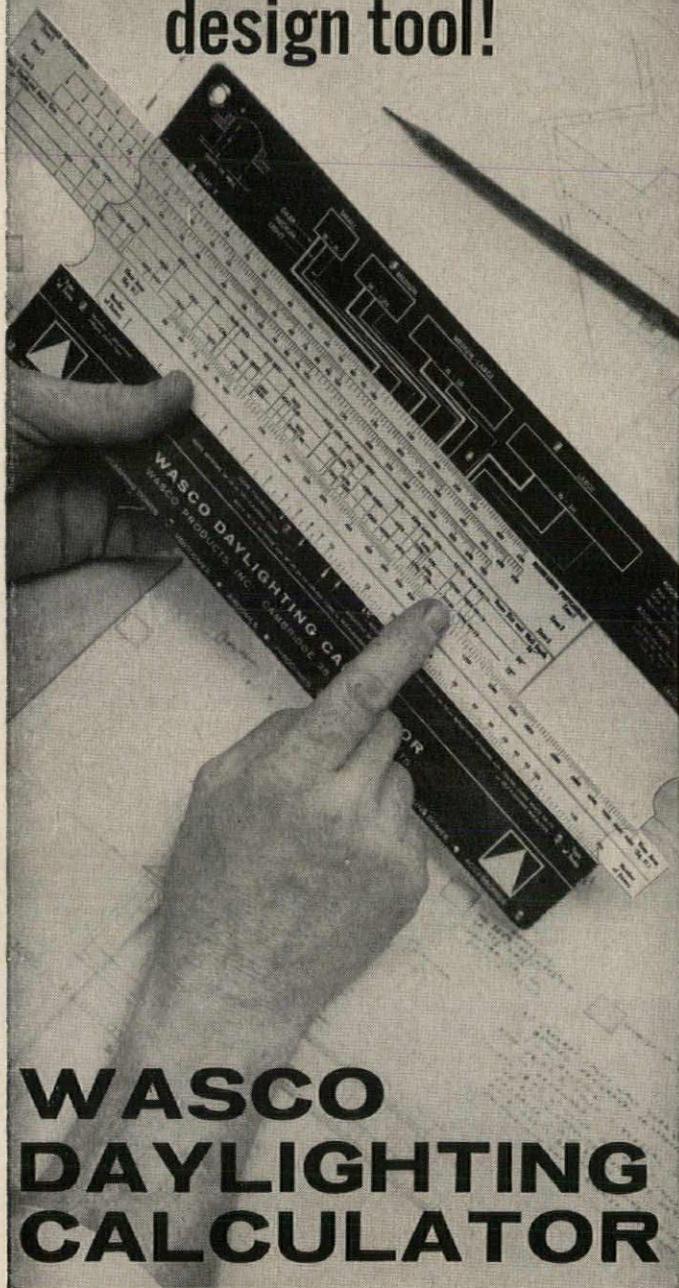
**FIAT**

FIAT METAL MANUFACTURING CO.  
9301 Belmont Avenue, Franklin Park, Illinois

Please send me data about the Monterey Shower Enclosure and PreCast Terrazzo Floor.

Name \_\_\_\_\_ Title \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

a new basic  
design tool!



## WASCO DAYLIGHTING CALCULATOR

Now Wasco puts reliable daylighting design at your fingertips! A few minutes with the new DAYLIGHTING CALCULATOR tells a designer exactly the size, number, type and spacing of Wasco Skydomes required . . . to provide the illumination level and light distribution he needs for the job at hand.

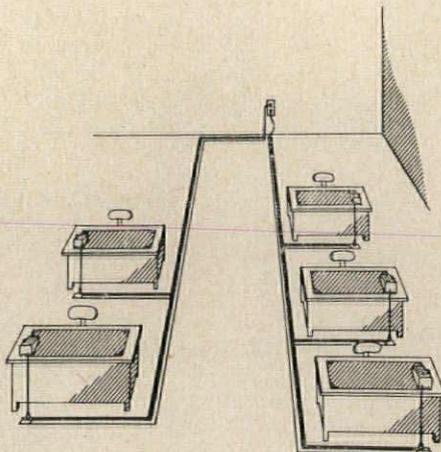
Wasco representatives are now distributing Daylighting Calculators — with full instructions — to leading architects all over the country. Write us to have a Wasco man call with your Daylighting Calculator.



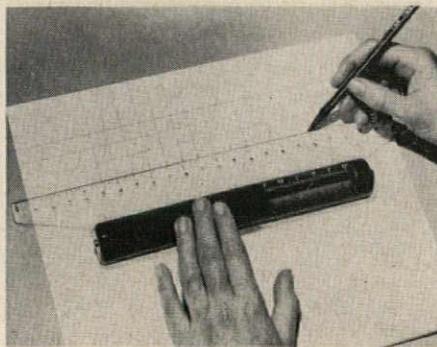
# WASCO

WASCO PRODUCTS, INC., 7 BAY STATE ROAD, CAMBRIDGE 38, MASS.

## Product Reports



**Over-the-Floor Electrical Wiring**  
*Custom Electriduct*, a made to order wiring system that is taped on top of the floor and plugs into a wall outlet, makes it possible to change the location of floor outlets for electrical appliances and machinery without tearing up the floor. The over-the-floor wiring system is prefabricated to specification, with outlets located as required along the lengths of nearly-flat rubber encased wiring. Standard 4-, 5-, 6-, and 10-ft lengths of this floor-hugging "extension cord" are also available. *Electriduct Div., Ideas, Inc., 214 Ivinson Ave., Laramie, Wyo.*



### Calibrated Drawing Ruler

A new West German drawing instrument—a 12-in. long combination triangle, T-square and parallel ruler—provides a quick method of drawing horizontal, vertical and angular parallel lines at automatically-measured even or varied intervals. Built-in rollers allow easy movement up or down; a spiral index window indicates distances between horizontal or angular lines as close as  $\frac{1}{16}$  in. Circles and arcs are scribed up to a diameter of 22 in. \$3.95 from *Rol-Ruler Co., P.O. Box 164, Riegelsville, Pa.*  
*more products on page 252*

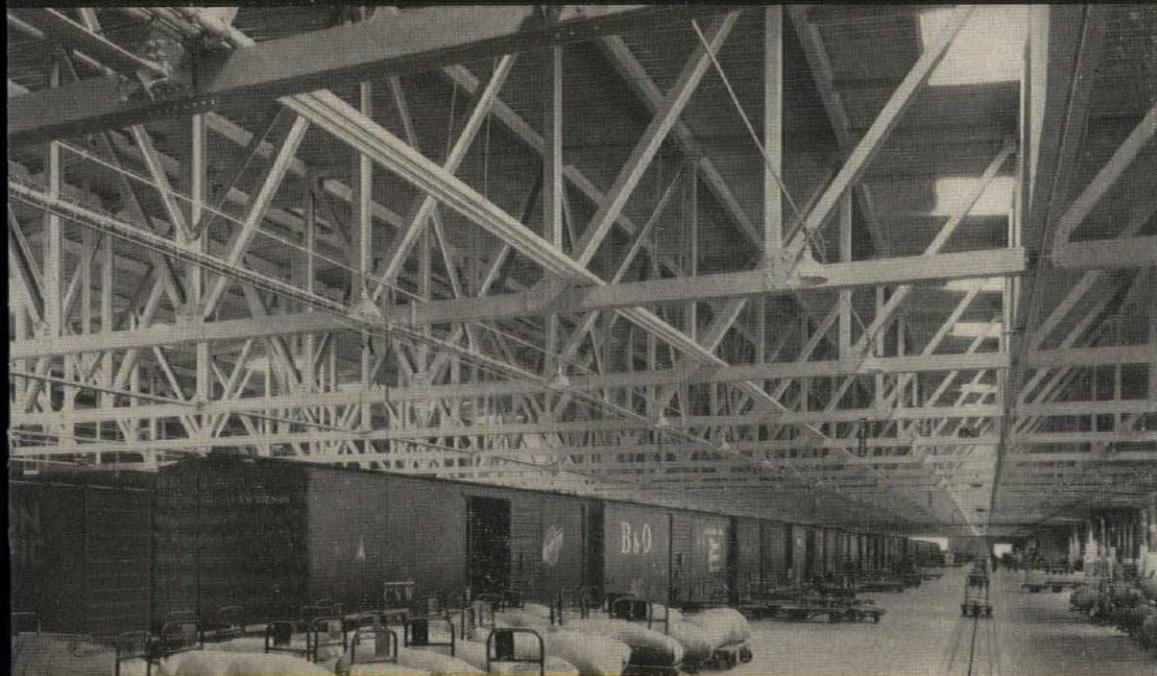


According to architect Leo A. Daly, this large freight depot was designed to provide completely enclosed facilities for loading, unloading, and storing train cargos. The long clear-span allows uninhibited movement for efficient freight handling, and calls for admitting natural daylight - with some provision for venting gases and smoke in the case of fire.



## FREIGHT DEPOT BY LEO A. DALY CO.

## DAYLIGHTING BY WASCO



Architect Daly solved the daylighting problem in the best way possible by specifying 64 trouble-free, weatherproof Wasco Skydomes in two rows . . . running the length of the depot. This design floods the interior with pleasant, glare-free natural light that eliminates the expense of artificial lighting during the day. And he solved the need for automatic fire venting by adding Wasco Pyrodomes and Pyrovents to the roof (55 in all), located adjacent to each structural bay to halt the spread of damaging smoke or heat.

Only Wasco makes Skydomes . . . the original daylighting units . . . proved in more than ten years of service. Skydomes are available in many types - to help you solve any problem in daylighting, fire venting or roof ventilation. Call your Wasco representative, or see Sweet's File 20a/Wa.

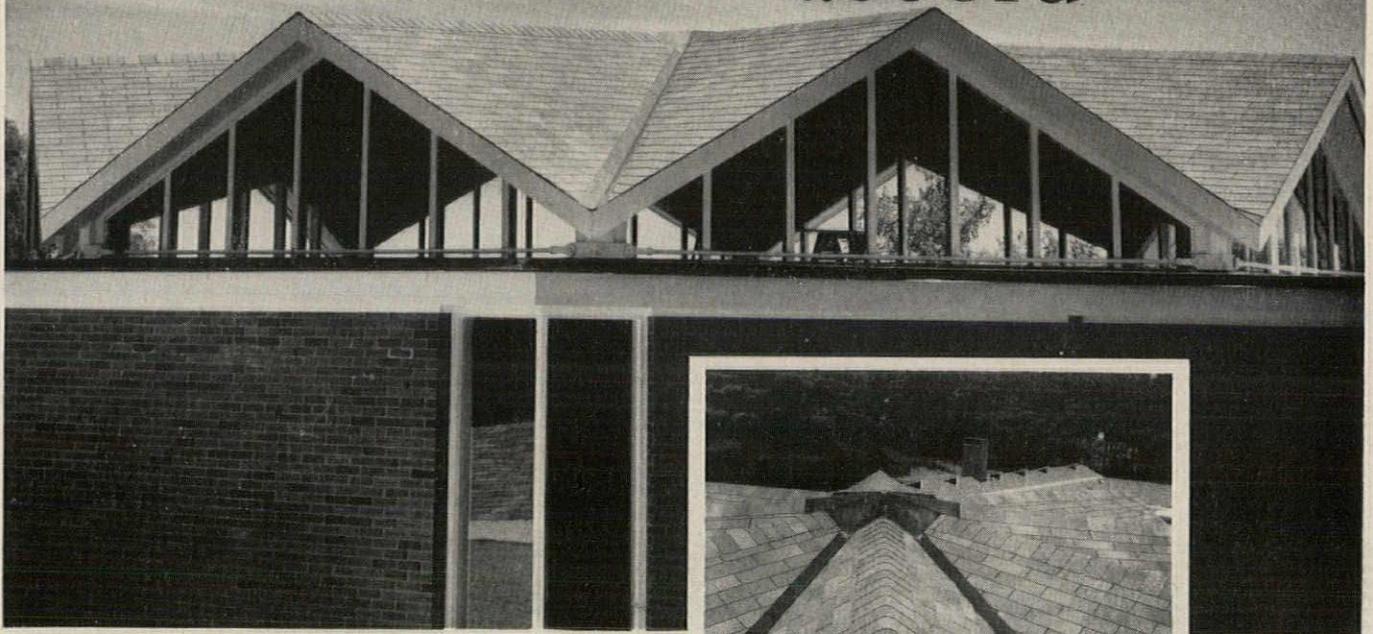
GOOD DAYLIGHTING DESIGN STARTS WITH



**WASCO**  
**SKYDOMES**

WASCO PRODUCTS, 5 BAY STATE RD., CAMBRIDGE 38, MASS.  
IN CANADA: WASCO PRODUCTS (CANADA) LTD., TORONTO, ONT.

# Shingle and design in perfect accord



UNITARIAN CHURCH, Concord, New Hampshire

## The BIRD ARCHITECT'S 18" KING-TAB points up the rhythmic lines of this beautiful roof

When the roof is a dominant architectural feature, the special qualities of the magnificent Bird Architect Shingle are more than ever important:

**SLATELIKE BEAUTY**, with depth and rich shadow lines, gives the impact and dignity worthy of a house of worship. The famous Gothic Slate Blende is particularly suited to churches.

**UNIFORMITY OF SURFACING** in even distribution of jumbo color granules is controlled in manufacture — no unsightly application on the site.

**GREATER SAFETY, TRIPLE PROTECTION:** 300 lbs. per square, thick as standard slate; 3 full layers at every point, with 5" exposure. For use on slopes with pitch as low as 2" in 12".

See specifications in SWEETS FILE **8C**  
**Bi**

or write BIRD AND SON, INC.,  
Box AR-8, East Walpole, Mass.  
Charleston, S. C. • Shreveport, La. • Chicago, Ill.



# BIRD

Architect Shingles

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

**Q.** Who has the right answers to every power control and distribution problem?

**A.** Easy!

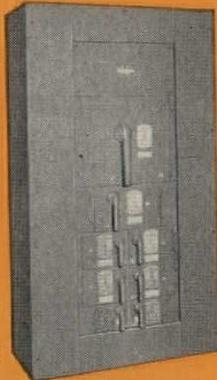
**FRANK ADAM**



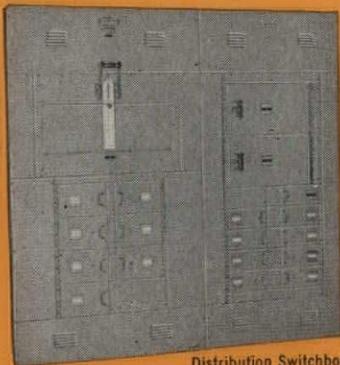
**FRANK ADAM ELECTRICAL EQUIPMENT  
REPRESENTS THE INDUSTRY'S FINEST**



Lighting Panelboards and Load Centers



Distribution Panelboards  
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Distribution Switchboards  
Every type and size

Safety Switches, Busduct & Wire Duct, Stage Lighting Controls

Ask for Catalogs & Bulletins

Frank Adam experience pays off for you in **Electrical Equipment** that pays off best for your clients

Every project creates a different problem of secondary power distribution and control. Developing correct solutions that adequately and economically meet each immediate, as well as future, requirement has been the responsibility of the Frank Adam organization for over 3 generations. There is unlikely to be any size or type of installation in which Frank Adam engineers are not fully experienced and equipped to undertake.

Equally important as its engineering help is the equipment Frank Adam can furnish. Whether your specifications call for a distribution switchboard, a midget safety switch, or everything between, Frank Adam equipment will give unsurpassed performance—safely, efficiently, dependably, durably.

Call your Frank Adam Engineer Representative for willing assistance on every electrical control and distribution problem—or write the factory direct.



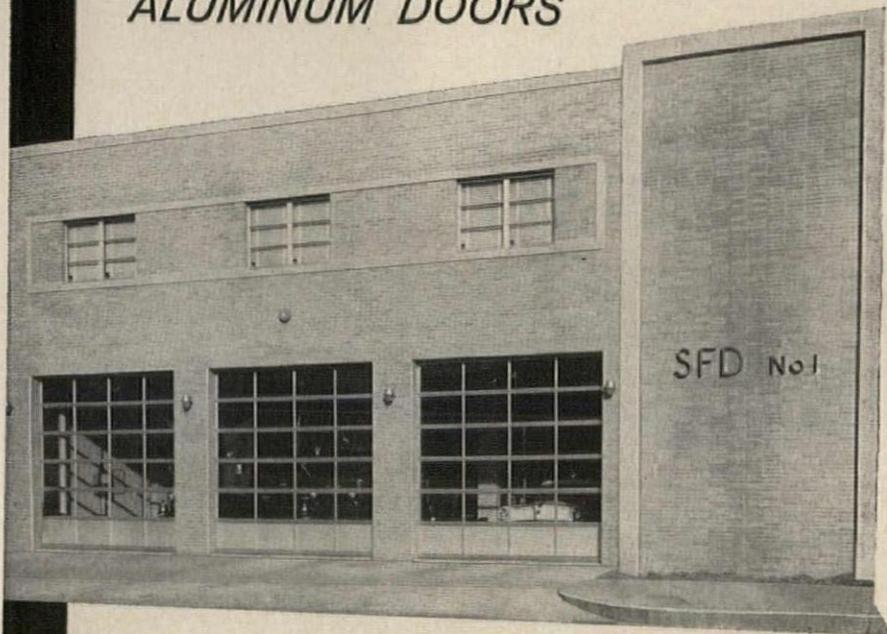
See our Catalog  
In SWEET'S

**FRANK ADAM ELECTRIC COMPANY**  
P. O. BOX 357 MAIN P. O. ST. LOUIS 66 MO

Busduct • panelboards • switchboards • service equipment • safety switches • load centers • Quikmeter

*Springfield Illinois  
Fire Department  
Specifies*

## **RAYNOR** ALUMINUM DOORS



ARCHITECT—Phillip Trutter and Associates  
CONTRACTOR—Franklin Cress  
DOORS INSTALLED BY—Barker Lubin Co., Springfield, Illinois

The  
Mark  
of  
Quality

Maintenance free beauty . . . quality controlled construction . . . adaptation to low headroom, are but a few of the outstanding Raynor features that met and surpassed the overhead type door specifications for the Springfield Fire Department shown above. Every Raynor Door is designed and engineered to meet and surpass the exacting specification requirements of today's modern architectural design, *your assurance* that "when you specify Raynor, you specify the finest."

Contact your nearest Raynor Distributor and request the NEW RAYNOR ENGINEERING MANUAL, it will provide you with every necessary detail for the complete line of Raynor Overhead Type Doors & electronic operators.

## **RAYNOR MFG. CO.**

Dixon, Illinois

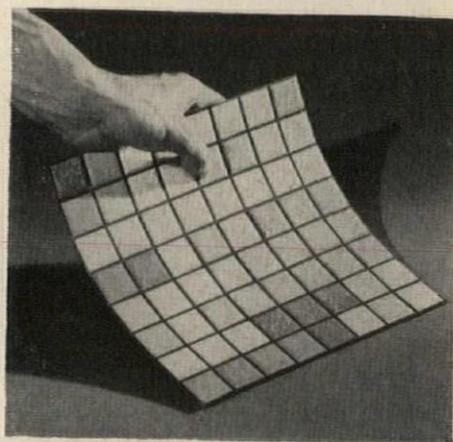
Hammonton, New Jersey



Builders of A Complete Line of Sectional Overhead Doors



## Product Reports



### Rubber-Cushioned Ceramic Tiles

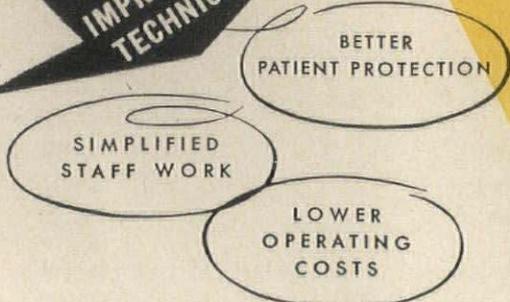
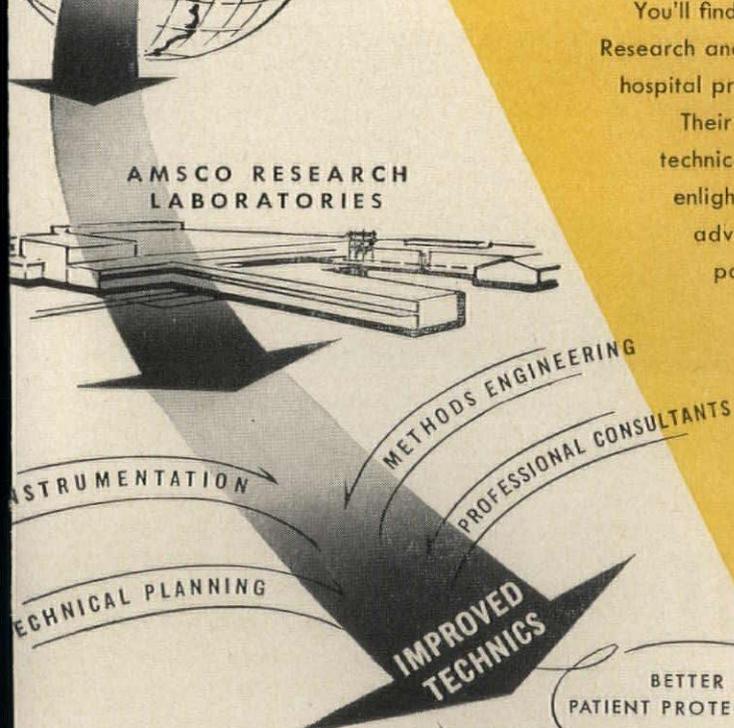
*Ceramaflex* is said to embody all the qualities of ceramic tile plus the additional advantage of floors that are quiet and easy on the feet. Each of the 64 ceramic mosaics that make up one 9 by 9 in. unit is bonded in a pre-formed rubber grip which acts as a cushion between the tiles and the sub-floor and, because of its unusual flexibility, adjusts automatically to any minor imperfection in the sub-floor. The edges of the units are beveled to enable them to lay up so tightly that joints are unnoticeable in the finished job. Since *Ceramaflex* is pre-grooved it is ready for use the instant it is laid. It is installed with special adhesive as quickly and easily as conventional resilient floor tile. It can also be installed satisfactorily on or below grade as well as above grade, over proper sub-flooring. *United States Ceramic Tile Co., 217 Fourth St., N.E., Canton 2, Ohio.*

### Strong, Insulating Roof Board

The new *Aloyglas Copr-fibre* roof board is a dense, plastic-bonded board that combines high thermal efficiency with high structural strength and resistance to puncture, crushing, and damage from foot traffic. Its heavy asphalt-kraft vapor barrier facing is carried over the long edge of the 2 by 4 ft panel and several inches under it to facilitate handling and minimize edge damage during application. A lengthwise edge binding also adds rigidity and eases application. According to the manufacturer, the maximum weight of one pound per board foot will permit lighter and less expensive roof structure and deck, while providing increased insulating efficiency. *Forty-Eight Insulations, Inc., Aurora, Ill.*  
*more products on page 257*

# Solution

## for Hospital Technical Departments



To assure the most efficiently functioning technical departments in every hospital you design . . . draw upon the accumulated experience of the most discontented people in the world.

You'll find them in the professional staffs of the American Sterilizer Research and Technical Projects Divisions . . . working with the hospital problems and methods from more than a hundred countries.

Their unrest stems from a steadfast unwillingness to accept any technical problem as unsolvable, or any improvement as final. This enlightened dissatisfaction sparks a continuing development of advanced techniques and equipment to help hospital technical departments do better work, easier and at less cost.

That's why the finest of architectural firms routinely request Amsco services when designing a Hospital Technical Department. For service-to-Architects is a highly developed group activity at American Sterilizer . . . offered upon the highest professional plane and current to a degree not elsewhere equalled.

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Central Service Departments, Solution Rooms, Infant Formula Rooms, Operating Room Suites, Central Instrument Rooms, Utility Rooms.



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ERIE • PENNSYLVANIA



Ever design  
a hospital?

It's murder.

This hospital  
board bunch.



We discussed  
flooring 'til  
11 P.M.

They think I'm  
a magician.

Obviously, it  
must be sanitary.

Distinctive.



"Springy"  
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And cost "peanuts"  
to maintain.

What they need ...



THAT'S IT!

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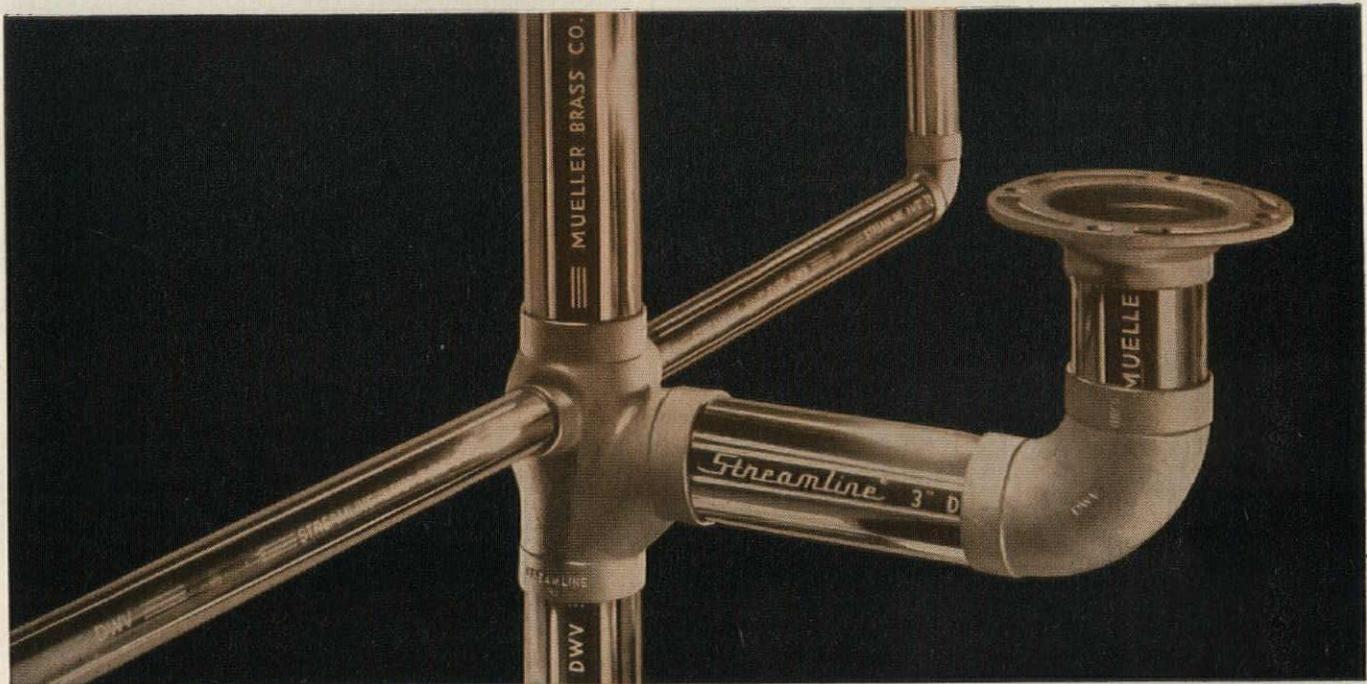
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RUBEROID: Superior Building Products for Better Building

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\*(DRAINAGE, WASTE AND VENT)

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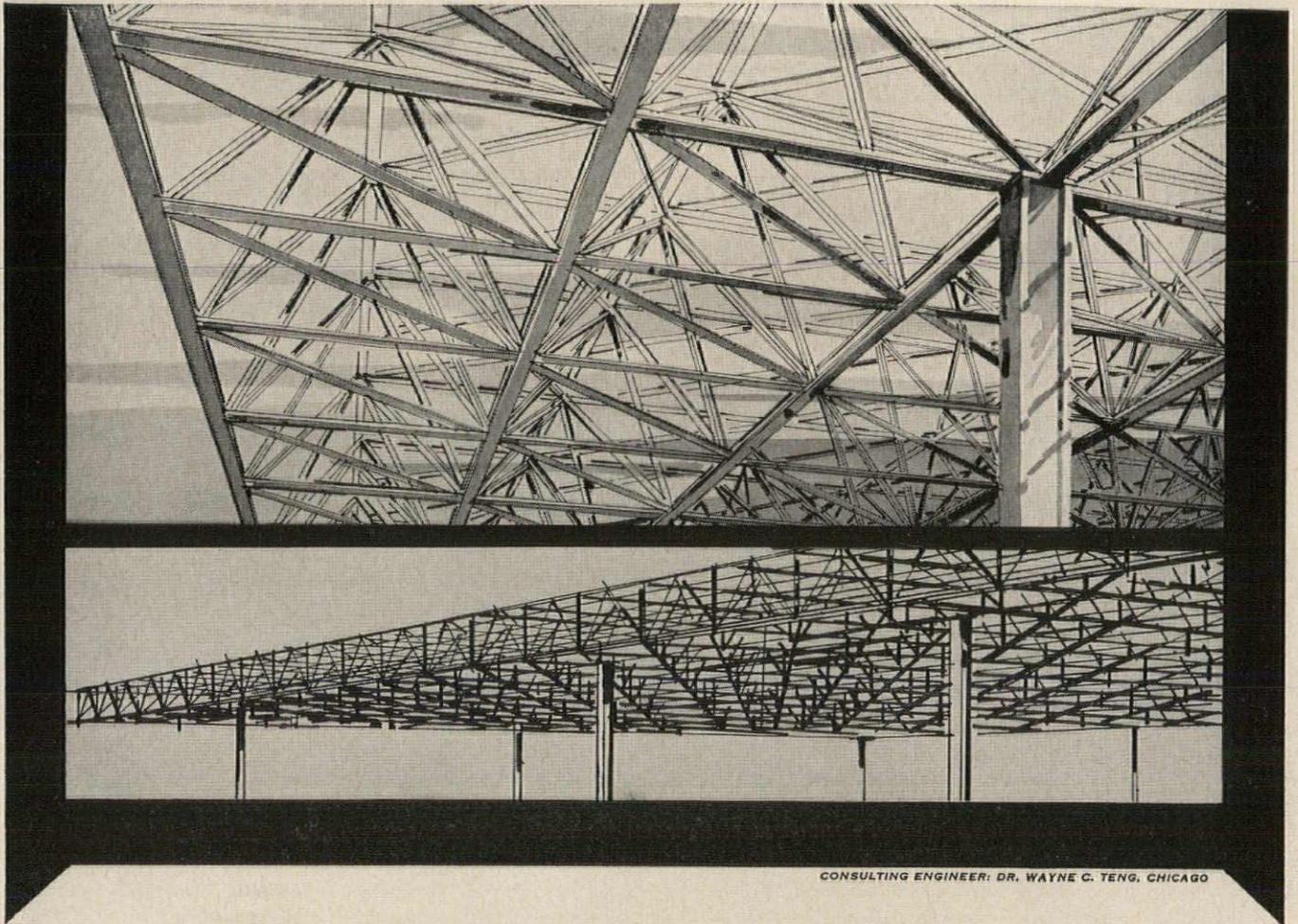
3" ALL COPPER DWV DRAINAGE INSTALLATION	3" GALVANIZED AND DURHAM DRAINAGE INSTALLATION	3" IRON DRAINAGE INSTALLATION
COST TO PLUMBING CONTRACTOR	COST TO PLUMBING CONTRACTOR	COST TO PLUMBING CONTRACTOR
Stack Fittings and Tube	Stack Fittings and Pipe	Stack Fittings and Pipe
Drainage Branch Lines	Drainage Branch Lines	Drainage Branch Lines
Solder and Flux	Lead and Oakum	Lead and Oakum
Labor	Labor	Labor
<b>TOTAL COST OF INSTALLATION</b>	<b>TOTAL COST OF INSTALLATION</b>	<b>TOTAL COST OF INSTALLATION</b>
<b>\$174.66*</b>	<b>\$204.92*</b>	<b>\$182.17*</b>

\*This comparison is based on actual material and labor costs in effect on January 7, 1960, in a mid-west metropolitan area of 75,000 population.

Complete technical information on Streamline DWV Copper Tube and Solder-Type Fittings is included in big, new 32-page Bulletin D-459. Send for your free copy today.



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CONSULTING ENGINEER: DR. WAYNE C. TENG, CHICAGO

*There's an Inland  
Structural Steel  
for every new  
construction idea*

# Space Framing . . . something new in the world

of structural design . . . is beginning to capture the imagination of architects, engineers and builders, everywhere. Utilizing the strength and design flexibility of structural shapes to span long distances and enormous free space areas, it offers both a new approach to the solution of engineering problems, and an exciting contribution to the aesthetics of contemporary architecture.

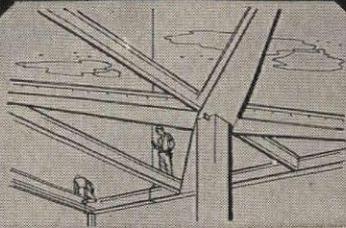
Because Space Framing is a 3-dimensional concept, it makes use of the full potential value of every supporting member, achieves thrust and counterthrust simultaneously, and stabilizes weight. In contrast to 2-dimensional triangular elements in conventional plane construction, the basic unit in Space Framing may be the 3-dimensional tetrahedron, hexahedron or any similar basic form. Multiples of such elements can be used, varying size and pattern, to achieve simple curves, S or reversed curves, domes, variable shapes, thus permitting unlimited structural and design freedom.

Construction cost per square foot is now comparable to conventional techniques, when efficiently engineered. Steel structural sections can be prefabricated, delivered to the site and erected speedily. What's more, modern electronic computers may be employed for the mathematics involved, markedly reducing design time. In domes, 3-dimensional construction minimizes the possibility of buckling and because of the clean geometric pattern, results in a remarkably beautiful visual effect.

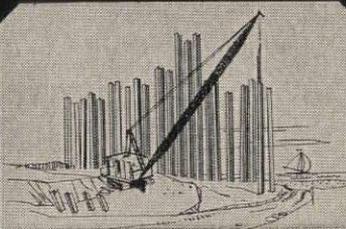
For more information on modern space framing methods, see your local fabricator who now has INLAND structural steels available in all shapes and sizes—or call the American Institute of Steel Construction office in your area.



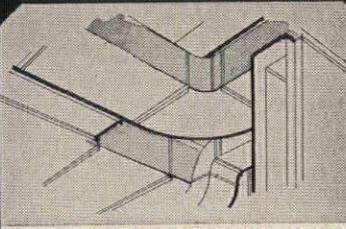
other Inland construction products



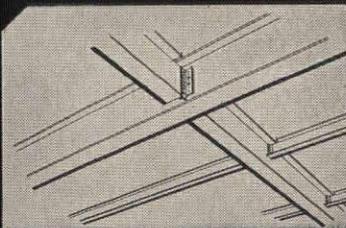
**INLAND STEEL PLATES** are offered in a wide range of gages and sizes with metallurgical and physical properties tailored to every construction requirement.



**INLAND BEARING PILES AND STEEL SHEET PILING** are used in foundations, retaining walls, coffer dams and other excavating and supporting jobs.



**INLAND TI-CO® GALVANIZED SHEETS** are the popular choice of metal contractors who install miles of air handling duct work in the largest commercial buildings. Their nonflaking quality adds years of corrosion-resisting service.



**WIDE FLANGE BEAMS** are the answer wherever more strength with less weight, longer spans with more open floor area, is the goal. Sizes from 4" to 24"



**INLAND STEEL CO.**

30 W. Monroe Street • Chicago 3, Ill.

## Product Reports



### Flexible Office Furniture

A wide range of colors and flexibility are among the features of the new All-Steel line of contemporary metal office furniture. The 4000 line consists of 75 basic units and the keynote is that component parts may be assembled in almost unlimited variation. All necessary furniture and accessories for greater efficiency are included among the line's basic units and standard colors have been broadened to 13. There are also more than 50 different drawers and shelf pedestal variables for use with desks, credenzas and L-units. Tops come in 5 different widths—from 18 to 42 in. and lengths from 24 to 120 in. They are available in laminated coverings or, on special quotation, in hand-rubbed oil finish wood and other materials. Leg sets for the line are in either matching or contrasting finishes or in brushed chrome. Saddle seating is one of the unique features of the chair line being introduced along with the 4000 line. *All-Steel Equipment, Inc., Aurora, Illinois.*

### Durable Interior-Exterior Coating

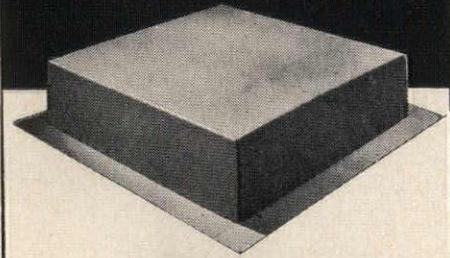
Because it is over 90 per cent inorganic, *Tonecrete*, a durable, decorative coating for interior and exterior building surfaces, does not suffer from the deteriorating effects of oxidation and weather exposure, and is highly fire-resistant. It forms a continuous but vapor-permeable film that can be applied to virtually any surface, including masonry and metal; and comes in a full range of colors, in fine or coarse texture, flat or semi-luster finish. *Desco International Assn., Box 74, Buffalo, N. Y.*

*more products on page 260*

# JAY-PANS

America's Finest  
Forming Medium for  
**CONCRETE  
CONSTRUCTION**

Saves money! Saves labor!  
Saves time!



**ECONOMICAL!** Although priced competitively with conventional forms, Jay-Pans give you more for your money! Always new . . . custom built . . . they eliminate drippage, and the vertical sides mean good savings in concrete, as well as a nice, smooth appearance.

**LABOR-SAVING!** Jay-Pans are tailored for any job, and when cutting is necessary, all that is required is a saw or pocket-knife. Sand is never placed under a Jay-Pan pour, and jobs stay on schedule because there are always enough Jay-Pans on the job site. Lightweight, easy to use, Jay-Pans end chipped floors, save both time and men!

**WEATHER-RESISTANT!** These are not regular "paper" pans. Jay-Pans are made of "freezurboard"—a patented, heavy-duty asphalt-impregnated material similar to asphalt roofing, which is saturated with asphalt. Millions of square feet of federal government, state, and private projects have proved the reliability of Jay-Pans under all weather conditions.

**ALL SIZES!** Tapered, adjustable, long-span, waffle, or cored slab, Jay-Pans give a clean job . . . come in all standard sizes as well as practically any other size you need to fit your most economical module.

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Viking 3-8111 Lawrence, Kansas,

# 14 $\frac{1}{2}$ " LOW!

NEW MODINE FAN-COIL UNITS PERMIT FULL-ROOM DECORATING  
IN BUILDINGS WITH CURTAIN WALLS



MODINE LOW-BOY  
*Airditioners*®

Special, nonstandard adaptations of the Low-Boy AIRditioner include provision for above-the-floor concealment of supply and return piping and for uninterrupted wall-to-wall installations. Because quantity, delivery and price are determined on an individual basis, please contact your Modine sales representative or write to the company.



**550 LOW-BOYS IN LAKE MEADOWS 600**—Modine Low-Boys are providing year-round comfort for residents of Chicago's newest luxury apartment building . . . Lake Meadows 600. This gleaming, glass-enveloped, 12-story and penthouse building overlooks Lake Michigan . . . contains 140 apartments. Owners: New York Life Insurance Co.; Architects and Engineers: Skidmore, Owings & Merrill; Mechanical Contractor: Advance Heating & Air-Conditioning Corp.; General Contractor: Turner Construction Co.

OR FLOOR-TO-CEILING WINDOWS



Modine Low-Boys are never in the way . . . of architect, decorator or tenant. They crouch close to the floor as they heat, cool, filter and dehumidify. The 14½" height is almost a *full foot* lower than other fan-coil units. Although midgets in size, Low-Boys are giants in performance. Using hot or chilled water from a central source, they deliver year-round comfort . . . quietly, economically. They're individually controlled thermostatically or manually. And response is instantaneous!

Handsome Low-Boy enclosures blend with the decor of any room. They're available in 44-, 52-, 68- and 96-inch lengths . . . in six decorator colors: ivory, putty, rose beige, sepia, almond green and dark jade green. Bulletin 760B has complete Low-Boy details. The coupon will send your copy on its way.

A-1411



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Please send new Low-Boy Bulletin 760B.

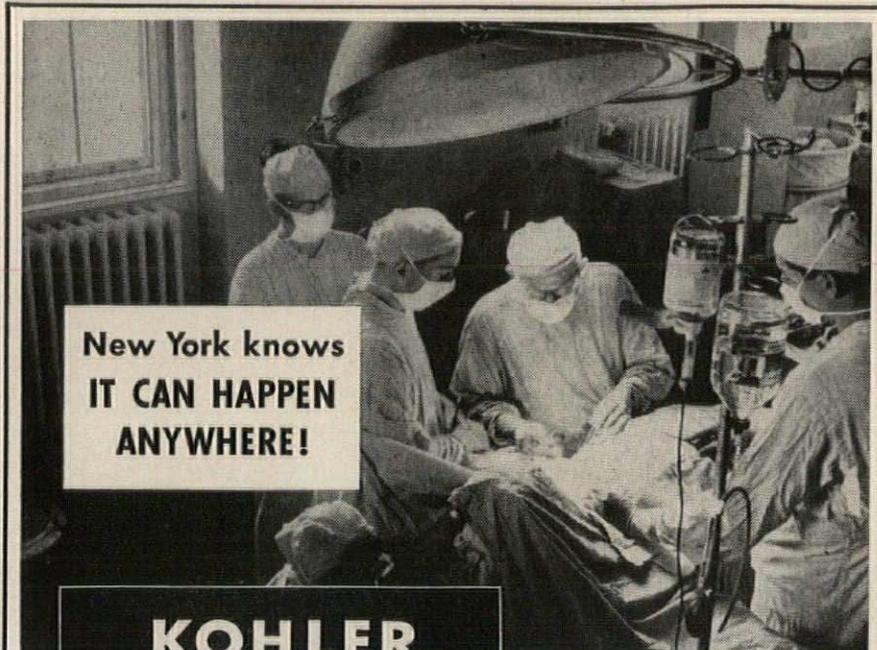
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Firm.....

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In Canada: Sarco Canada, Ltd., Toronto 8, Ontario



**New York knows  
IT CAN HAPPEN  
ANYWHERE!**

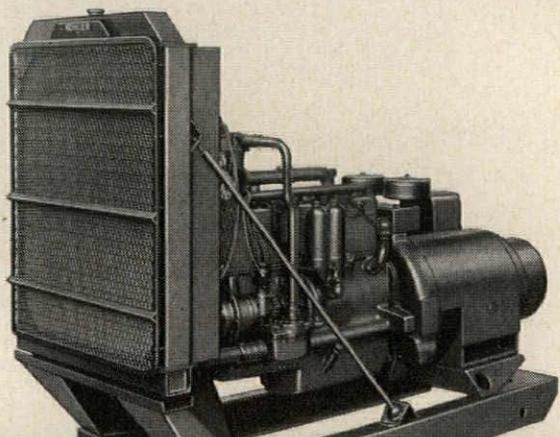
**KOHLER  
ELECTRIC PLANTS**

Major surgery in Mt. Sinai Hospital, New York, being performed with illumination from windows and one emergency light.

## Reliable safeguard for power blackouts

The 13-hour power failure in New York's Manhattan last summer caused widespread hazards, inconvenience, discomfort or loss—in places without stand-by power. In hospitals, surgery was performed without proper lighting, patients were served by candlelight. Buildings of all kinds had no use of lights, air conditioning, elevators, freezers.

Kohler electric plants are reliable, easy to install for emergency power made vitally important by today's increasing dependence on electrical equipment. To help you write specifications for varied applications Kohler Co. will send on request a manual with complete data on sizes from 1000 watts to 100 KW, gasoline or diesel. Write Dept. G-56.



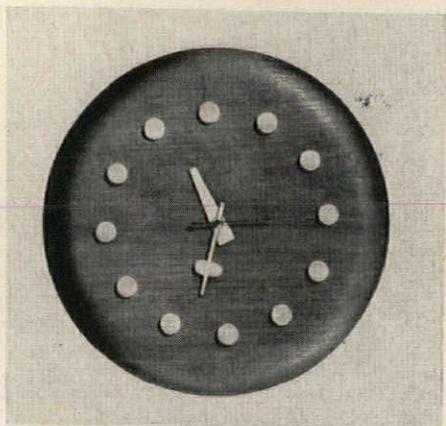
**MODEL 100R81**  
100 KW,  
120/208 volt AC.  
Stand-by.  
Remote start.

KOHLER CO. Established 1873 KOHLER, WIS.

**KOHLER OF KOHLER**

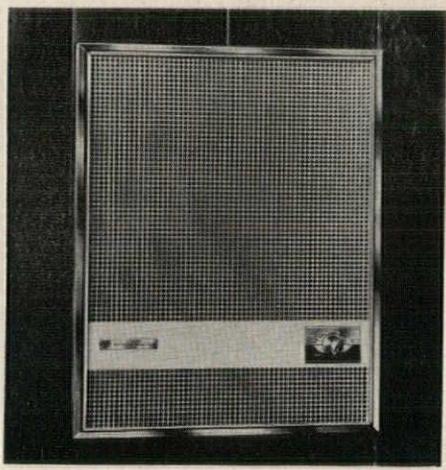
Enameled Iron and Vitreous China Plumbing Fixtures • Brass Fittings  
Electric Plants • Air-cooled Engines • Precision Controls

## Product Reports



### New Faces for Master Clock System

The thirty-three new *Decorator* clock designs for the *Clockmaster* system include faces in a wide range of materials—woods, brass, chrome, leather, mosaic tile—so that each clock in the system installation can match its room decor. "Wooddale" (above) has a natural teakwood face with white hands. *Minneapolis-Honeywell Regulator Co., Minneapolis 8, Minn.*



### Built-in Supplementary Heaters

A new line of built-in, fan-forced heaters, designed for "add-on" rooms and other areas where extra heat may be needed, automatically and quietly circulate warm air without themselves becoming hot to the touch. To prevent heat streaking, the aluminum frame with its beige grill fits inside the main box, eliminating hot air leakage between heater and wall. The four models have ratings from 1500 to 4000 watts and develop from 5,120 to 13,650 Btu. All are rated 240v, and are 20¾ in. high by 16 in. wide by 4¾ in. deep. *Emerson Electric Mfg. Co., 8100 Florissant Ave., St. Louis 36, Mo.*

more products on page 270



## How Alcoa Aluminum answered design questions at Wayne State U.

At Wayne State University, Detroit, the Richard Cohn Memorial houses the College of Nursing, the Graduate School and the School of Social Work—plus 35 general-purpose classrooms—in one beautifully designed building.

Among the design objectives: emphasized vertical lines; no horizontals; a curtain wall that could be colored; permanence and beauty; and, of course, reasonable costs. Alcoa® Aluminum was chosen for all these reasons. Curtain walls of strong, lightweight, corrosion-resistant aluminum display extruded fins in Architectural Gray; the horizontal mullion members are black porcelain on Alcoa alloy. Aluminum needs no maintenance—these walls will *stay* beautiful!

You can enjoy the same kind of design freedom, cut labor costs during erection, achieve lasting beauty in your next building. Get all the facts on aluminum curtain wall and other aluminum products for school construction. Call your nearest Alcoa sales office, or write: Aluminum Company of America, 1823-H Alcoa Building, Pittsburgh 19, Pa.



**BUILDING:**  
Richard Cohn Memorial, Wayne State University, Detroit, Mich.

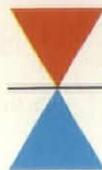
**OWNER:**  
Wayne State University

**ARCHITECT:**  
Harley, Ellington & Day, Inc., Detroit, Mich.

**GENERAL CONTRACTOR:**  
O. W. Burke Company, Detroit, Mich.

**ALUMINUM FABRICATOR:**  
Moynahan Bronze Company, Flat Rock, Mich.

For exciting drama watch "Alcoa Presents" every Tuesday, ABC-TV, and "Alcoa Theatre" alternate Mondays, NBC-TV



**ALCOA ALUMINUM**

THE ARCHITECT'S METAL



**"honest" equipment**

**in montgomery  
VERTICAL  
TRANSPORTATION**

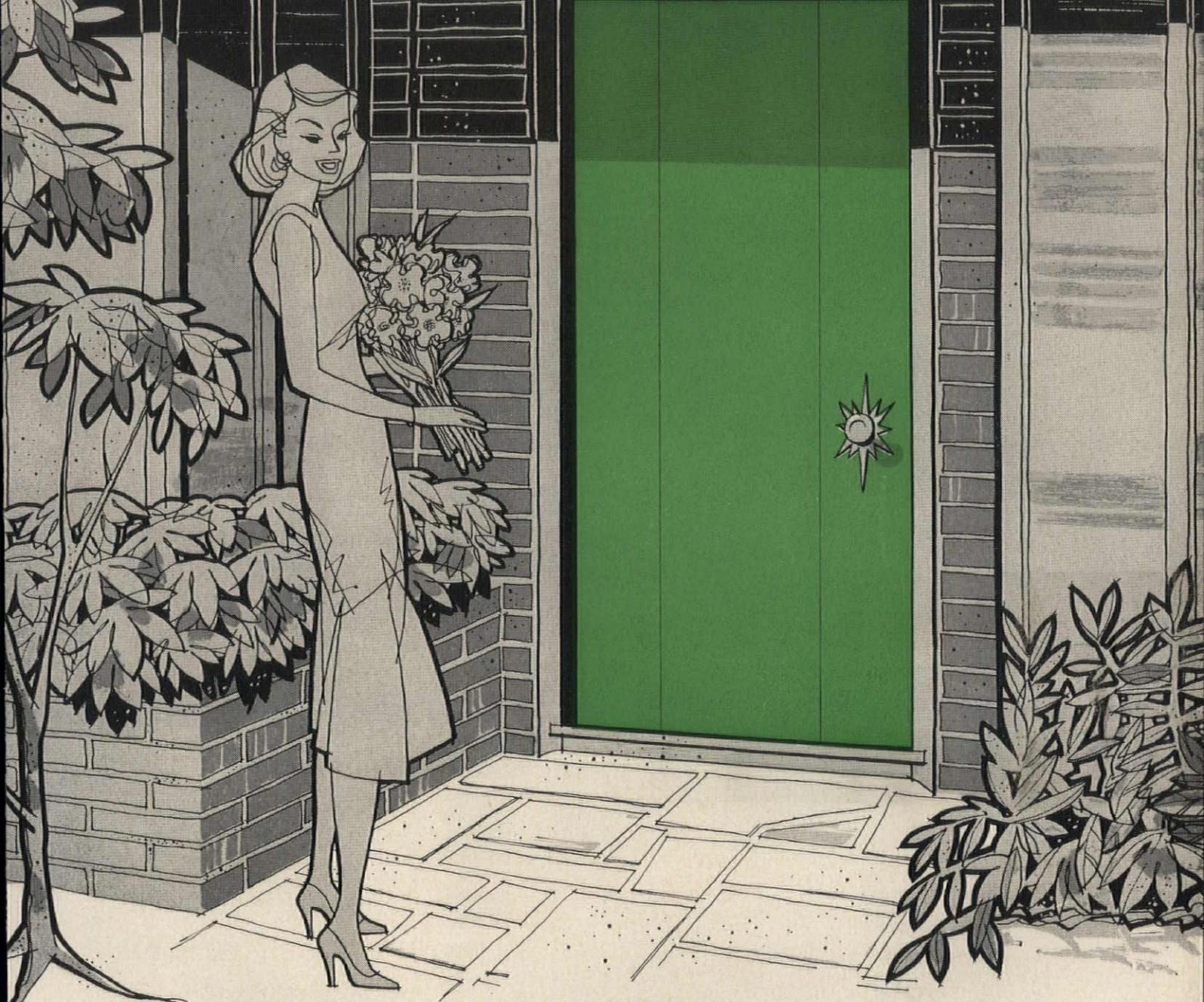
Yes, there is no substitute for "honesty" in the materials and workmanship that go into the design and manufacture of MONTGOMERY DEPENDABLE ELEVATORS.

Whether the requirements be a simple two landing installation or one that would reach the moon, every foot of it would contain "honest" equipment of trouble-free quality where freedom of annoying and costly shutdowns would be enjoyed—a tradition and creed of the "Men of Montgomery" since 1892.



**montgomery® elevator company**  
MOLINE, ILLINOIS

*Exclusive Manufacturers of Passenger and Freight Elevators Since 1892*



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Designed and engineered by U.S.F. — revolutionary construction, ingenious features and experienced know-how produced a metal door to obsolete old-fashioned doors made to bare minimum requirements — provide a new answer to today's modern building.

However, a greater achievement came in creating fabrication and assembly tools to successfully utilize the economies of efficient

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To us it is important that architects and builders know U.S.F. QUALITY DOORS and have the reassurance of constant dependability in their specification of door openings for multiple dwellings, institutional, commercial and residential installations.



**U**NITED **S**TEEL **F**ABRICATORS, INC. • WOOSTER, OHIO

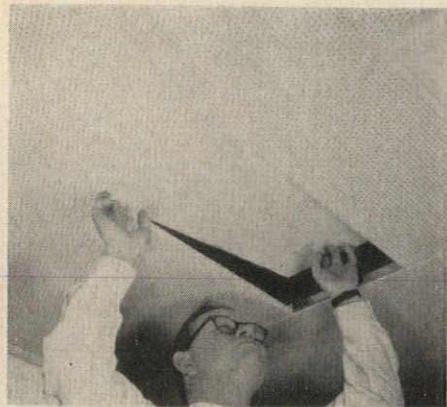
DOOR AND FRAME DIVISION

**Slide Window with Integral Trim**  
A new low cost aluminum horizontal slide window comes with fin trim which forms an integral part of the frame to eliminate the need for outside wood trim. It also features extruded aluminum main frame and vent sections, stainless steel vent slide channels, and vinyl weatherstripping at perimeter openings. Window types in the 700 Series are single slide, picture slide, slide-ventilating picture, and fixed. Sizes range

from 2 by 2 ft slide to 4 by 10 ft. *Truscon Div., Republic Steel Corp., Youngstown 1, Ohio*

**Easy-Access Metal Ceilings**

Accesso Ceiling Products' newly developed metal acoustical ceiling is quickly installed, easily accessible to above-ceiling areas and is priced competitively with popular mineral tiles. With 1½ in. furring channels installed on 4 ft centers, *Accesso* channels are clipped in place on 2 ft



centers and the 12 by 24 in. *Accesso* metal pan units hang from the channel. Incombustible absorbent pads can be laid within the pan. The metal pan's push-up and lift-out removal procedure gives quick access to the above-ceiling space for movement of partitions and lighting fixtures. In addition to the metal pan unit any standard 12 by 12 in. or 12 by 24 in. acoustical tile can be used. *Accesso Ceiling Products, Inc., 3524 Bagley Ave., Seattle 3, Wash.*



Eastman Reading Garden,  
Cleveland Public Library.  
George Creed, Architect;  
Heights Paving Co., Contractor.

SPECIFY

**hydroment**

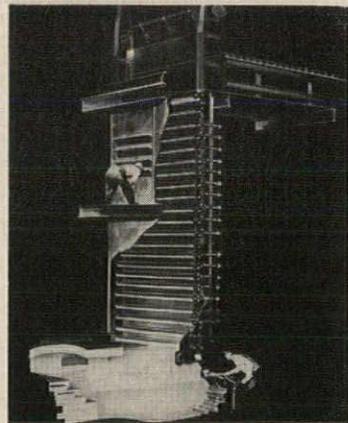
**...for flooring of beauty and durability**

Easily applied by the dust coat method when concrete slabs are poured, HYDROMENT requires no additives or mixing at the job site. Indoors or outdoors, HYDROMENT adds superior strength, hardness and density where it is needed — at the surface. Non-toxic, odorless, waterproof. Available in Tile Red, Tan, Terra Cotta, French Gray, Green, Grass Green, Black, Brown, White and Natural Cement. Write for catalog.



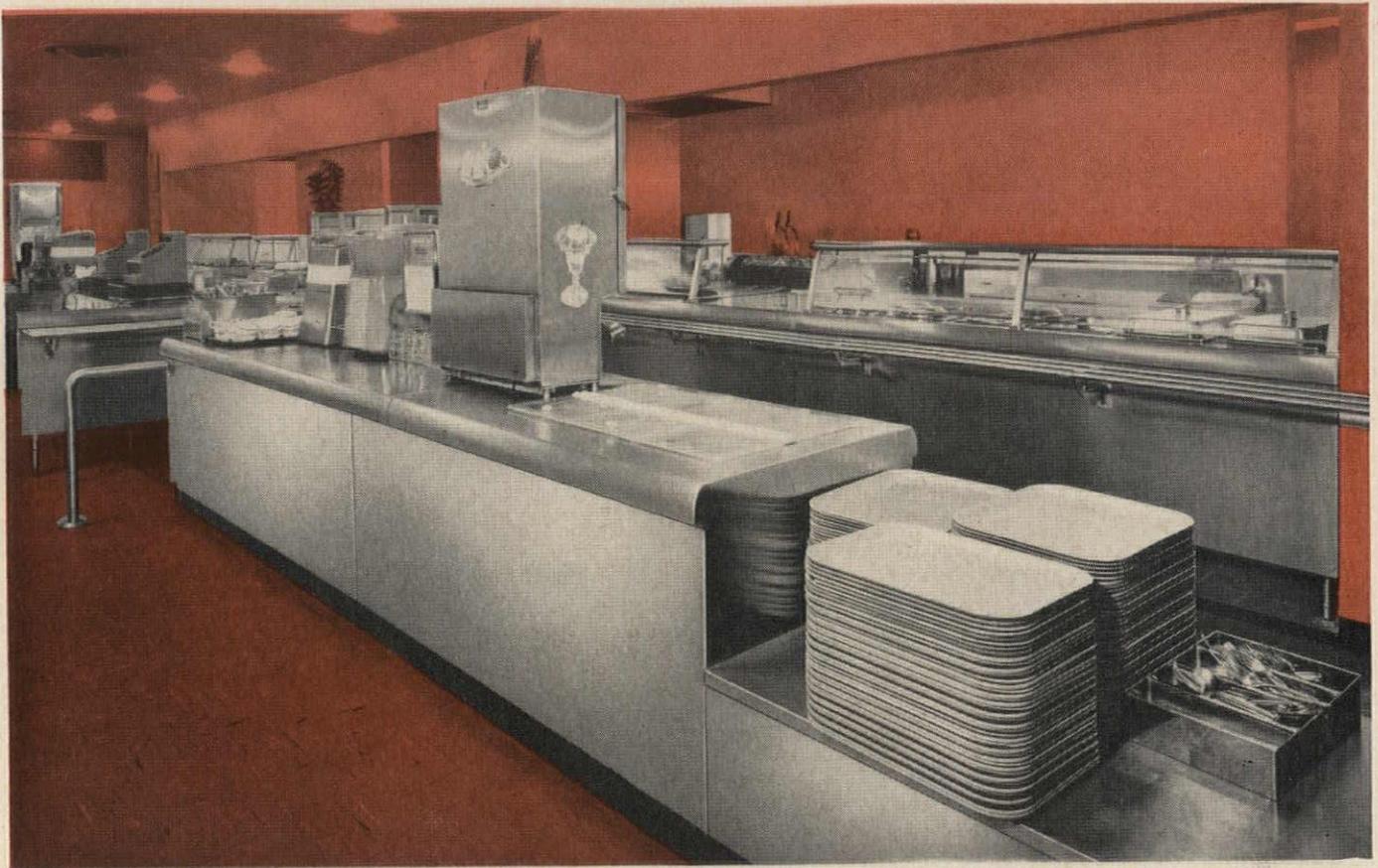
**THE UPCO CO.**

4805 LEXINGTON AVE. • CLEVELAND 3, OHIO



**Distortion-Free Sheet Glass**

A new manufacturing technique has made possible the development of a sheet glass that is superior to any sheet glass currently being manufactured in this country, according to standard distortion measuring devices. Known as *Premium Pennvernon*, it is made on the renowned Pennvernon machine (above) with which molten glass can be formed into sheets in a straight vertical draw, without being touched by any surface-marring mechanical device. It will be offered in all standard thicknesses of window and heavy sheet glass, in most cases at prices no higher than regular "A" quality sheet glass of the same thickness. *Pittsburgh Plate Glass Co., 632 Fort Duquesne Blvd., Pittsburgh 22, Pa.*



The new cafeteria at King's College, Wilkes-Barre, Pennsylvania, features such unexpected cafeteria equipment as a Bastian-Blessing 5' sandwich unit, and a 30-gallon Fast-Serv soda fountain. Each line starts with a 7'6" food warmer. Lacy, Atherton and Davis, Wilkes-Barre, Pa., Architects.

## Ingenious "twin" serving lines and Bastian-Blessing Custom-Modular equipment makes King's College cafeteria a model of efficiency...

**500 hot meals an hour . . . 3 times daily, with a complete menu change each time . . . from only 44 feet of serving lines!**

Fast food service, labor saving efficiency, attractive appearance, and minimum cost were key considerations in designing King's College new Science Building Cafeteria. Facilities for speeding 250 boarding students, 150 faculty members and many of the 700 day students through the serving lines three times daily centered around two "twin" 22 ft. food serv-

ice lines converging on central cashier stands. Unique parallel counters for silver, trays, ice cream and beverages speed service by enabling students to simultaneously "serve themselves" while momentarily waiting to be served from the main food serving counters.

Thanks to Bastian-Blessing's economical and flexible Custom-Modular equipment, the installation was made from stock cafeteria units that eliminated need for high cost, custom built units and their attendant high installation cost.

### BASTIAN-BLESSING

*World's largest manufacturer of fountain and counter food-service equipment.*



Cashier stands at "lines" end hold coffee warmers and lowerators for cups and saucers.



Student dining room seats 400. Faculty members have separate adjoining dining room.



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*Cafeteria Planning Booklet SA-410. Answers many of your questions. Of real interest to anyone planning to expand, modernize, or build new facilities.*

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Chicago 46, Illinois, Dept. 4-H

Please rush your new Cafeteria Planning Booklet SA-410

We are:  Expanding  Modernizing  
 Planning to Build

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ORGANIZATION \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ ZONE \_\_\_\_\_

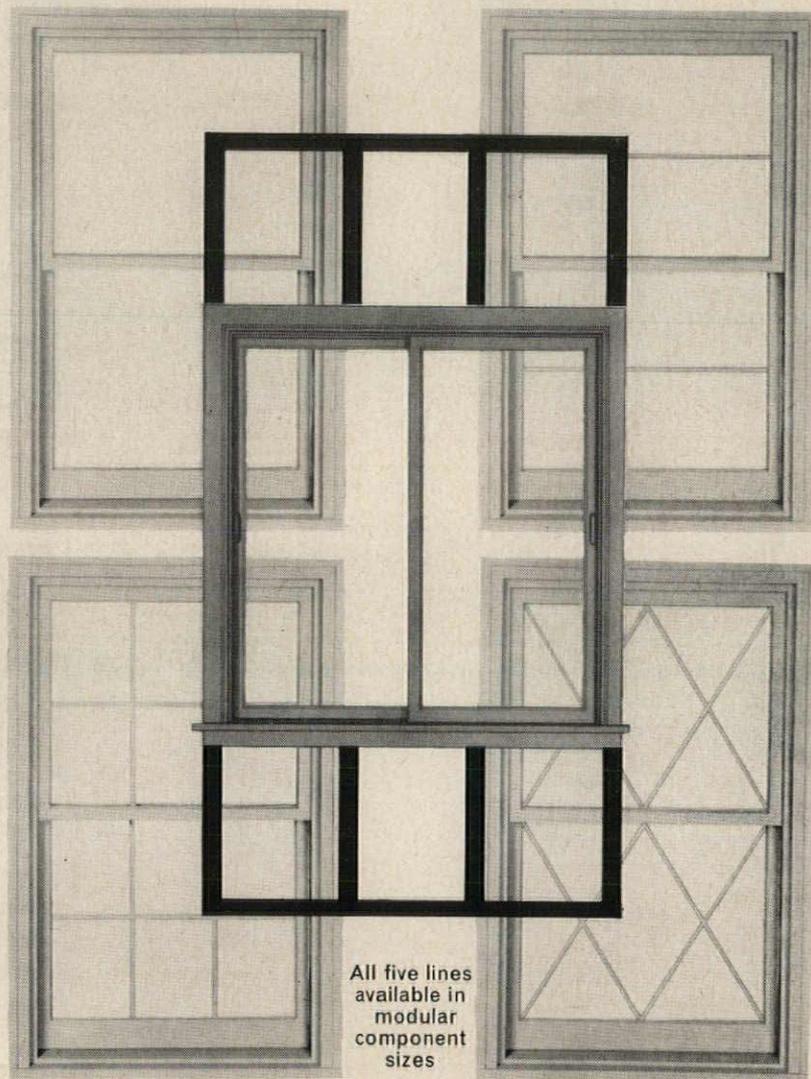
STATE \_\_\_\_\_

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NEW! Four double-hung window lines plus a new sliding window line...  
giving you the widest selection available in every important  
price bracket—backed by a *written* guarantee.



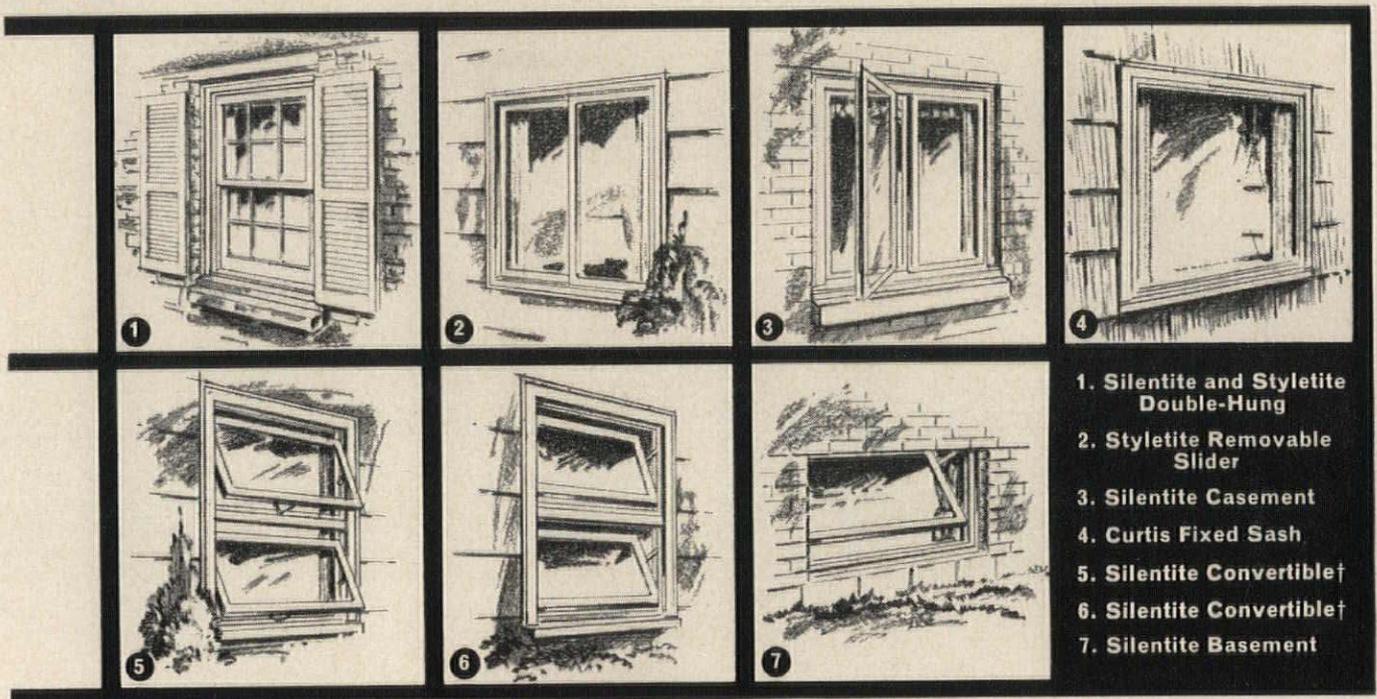
All five lines  
available in  
modular  
component  
sizes

- 1 Select from two Silentite<sup>®</sup> double-hung window lines. Completely weather-stripped, removable and non-removable, finest quality windows available.
- 2 Silentite features wood-on-wood—for smoothest, easiest operation with the natural insulating qualities of wood.
- 3 Choose one of three new Styletite<sup>®</sup> window lines. Wood-on-aluminum operation, completely weather-stripped, removable and non-removable sash, double-hung or sliders for high-quality, low-cost windows.
- 4 All windows are architecturally correct. Classic simplicity for high-quality appearance. Colonial, contemporary and modern styles.
- 5 Shadow-line casing designs on all windows, providing pleasing and uniform exteriors.
- 6 Frames are preservative-treated, then factory-primed for long-lasting protection.
- 7 Complete weather-stripping—compression side jamb, snug-fitting vinyl at head, meeting rail and sill.
- 8 All windows *exceed* the minimum government standards in tests for prevention of wind and water infiltration.
- 9 Sash are balanced on both sides to prevent sticking or cocking.
- 10 Removable bars and grilles available to permit variety of design, easy cleaning of glass and decorating—include horizontal, divided and diamond light styles.

# THESE NEW WINDOW LINES

## selection of stock windows in the industry!

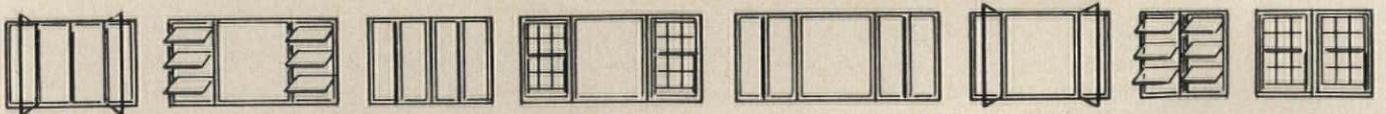
To complement your own architectural concepts, Curtis offers seven basic windows, giving you the greatest variety of stock design combinations available with the individuality and quality that you require.



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2. Styletite Removable Slider
3. Silentite Casement
4. Curtis Fixed Sash
5. Silentite Convertible†
6. Silentite Convertible†
7. Silentite Basement

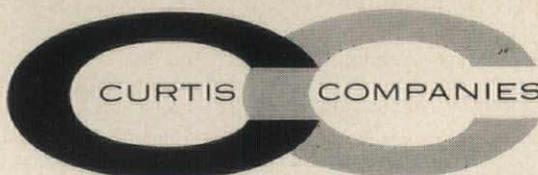
†These Silentite convertible windows can be used in various combinations such as picture walls, ribbon windows, bows, casements, privacy windows and many more.

Here are just a few of the many design combinations made possible by Curtis' complete line of wood windows—the most complete line in the industry. (Curtis also has a wide variety of window styles and sizes to fit the 4' panels used in modular construction.)



For the complete Architectural Detail File, write to Curtis. Address: Director of Advertising.

\*Silentite and Styletite are trade-marks of Curtis Companies Incorporated



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United States Steel**



## Office Literature

continued from page 219

### Handbook of Perforated Materials

(A.I.A. 15-T) Provides complete design and technical information on perforated materials—principally the heavier-gage grilles basic to architectural applications, but also decorative and "industrial" patterns in lighter-gage materials. Each architectural grill is displayed in overall pattern, with technical data (full-size illustrations, details, and tables of opening size) placed in a separate section of the book. 64 pp. *The Harrington & King Perforating Co., 5624 Fillmore St., Chicago 44, Ill.\**

### Adhesive Products

... for the Construction Trades contains information on the properties and applications of a complete line of adhesives, coatings and sealers for residential, commercial, industrial and institutional construction. 12 pp. *Adhesives and Coatings Div., Minnesota Mining and Mfg. Co., 900 Bush Ave., St. Paul 6, Minnesota \**

### Kraloy Rigid PVC Conduit

Includes test results, installation instructions, corrosion resistance charts, and specification information on rigid PVC electrical conduit. 20 pp. *Kraloy Plastic Pipe Co., Inc., Electrical Conduit Div., 402 W. Central Ave., Santa Ana, Calif.\**

### Glarefree Translucent Panels

Describes, details, and gives specifications and suggested uses for new *Seaporlucent* aluminum grid, translucent building panels. 8 pp. *Seaporcel Metals, Inc., 28-20 Borden Ave., Long Island City 1, N. Y.\**

### Wayne School Equipment

Describes, with details and specifications, a complete line of outdoor and gym seating equipment, folding partitions, basketball backstops, and a new folding stage. 42 pp. *Wayne Iron Works, Wayne, Pa.\**

### Integrally Colored Concrete

Discusses characteristics and uses of *Colorundum* integrally colored concrete material, and gives specifications for application. A. C. Horn Companies, 2133 85th St., North Bergen, N. J.\*

\*Additional product information in *Sweet's Architectural File*

more literature on page 282



Photo above, Senior High School, Janesville, Wis. Law, Law, Potter & Nystrom, Architects.

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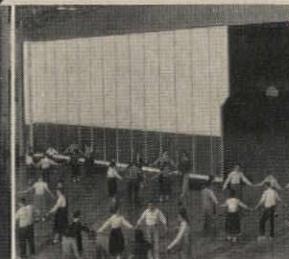
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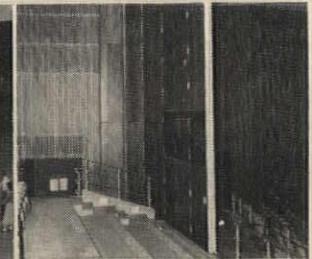
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Batavia, Illinois  
Raymond A. Orput, Rockford,  
Architect



West Senior High School  
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University of Pittsburgh  
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Architects

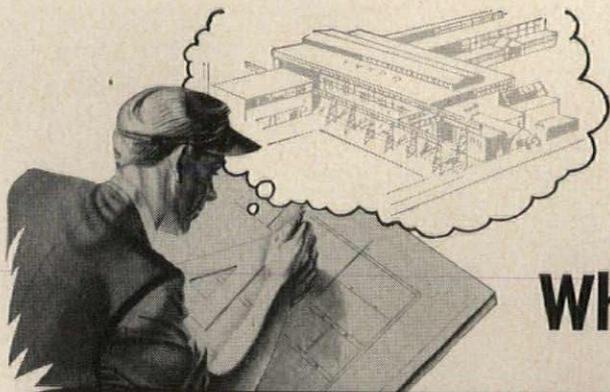
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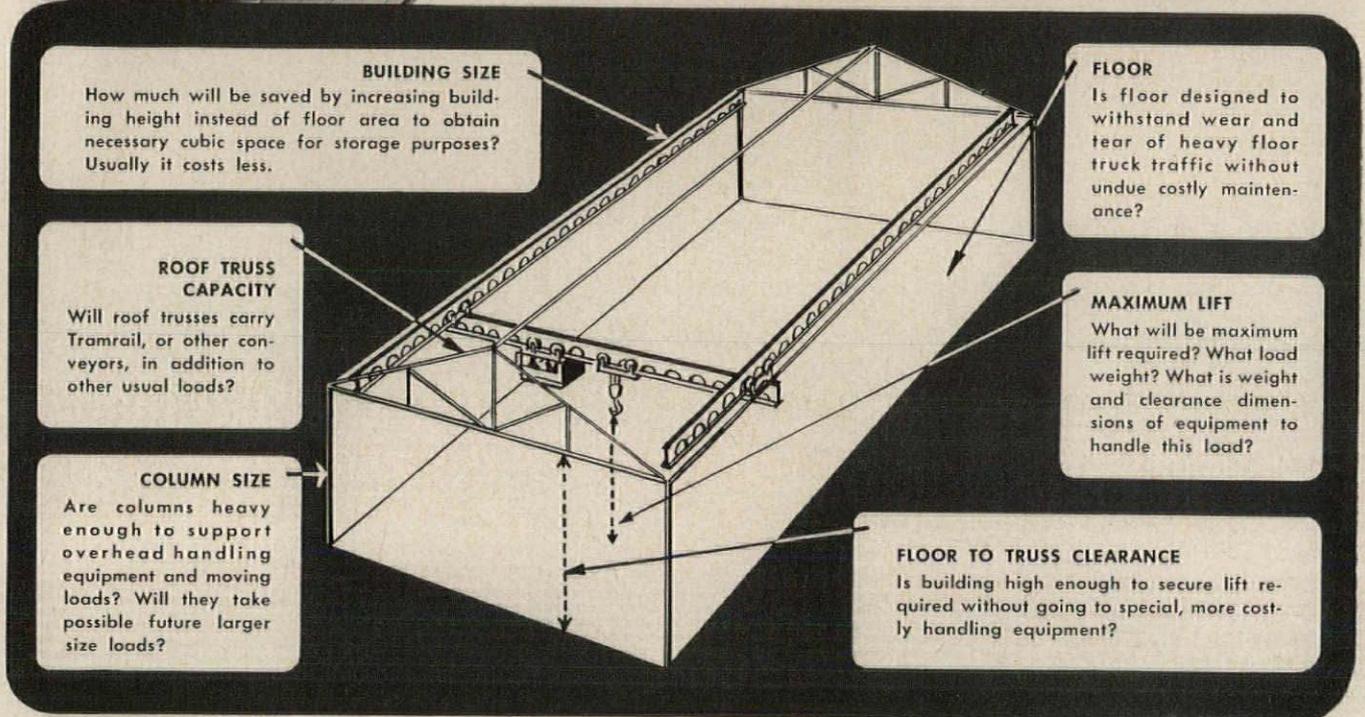
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It is, therefore, imperative that the various steps entering into the making of an item be thoroughly considered when the building is designed. One of the most important of these concerns materials handling because this item often amounts from 25% to 50% of the total production cost, and, also, because it is plant-wise in nature.

Regardless of what handling methods are deemed best, overhead cranes or Tramrail, roller or chain conveyors, floor trucks, etc., the building design, size and construction usually has a tremendous bearing on the ultimate handling efficiency secured. Building clearances, floor construction, column locations, aisleyway allowances and other factors must be considered for the different handling methods for most satisfactory results.

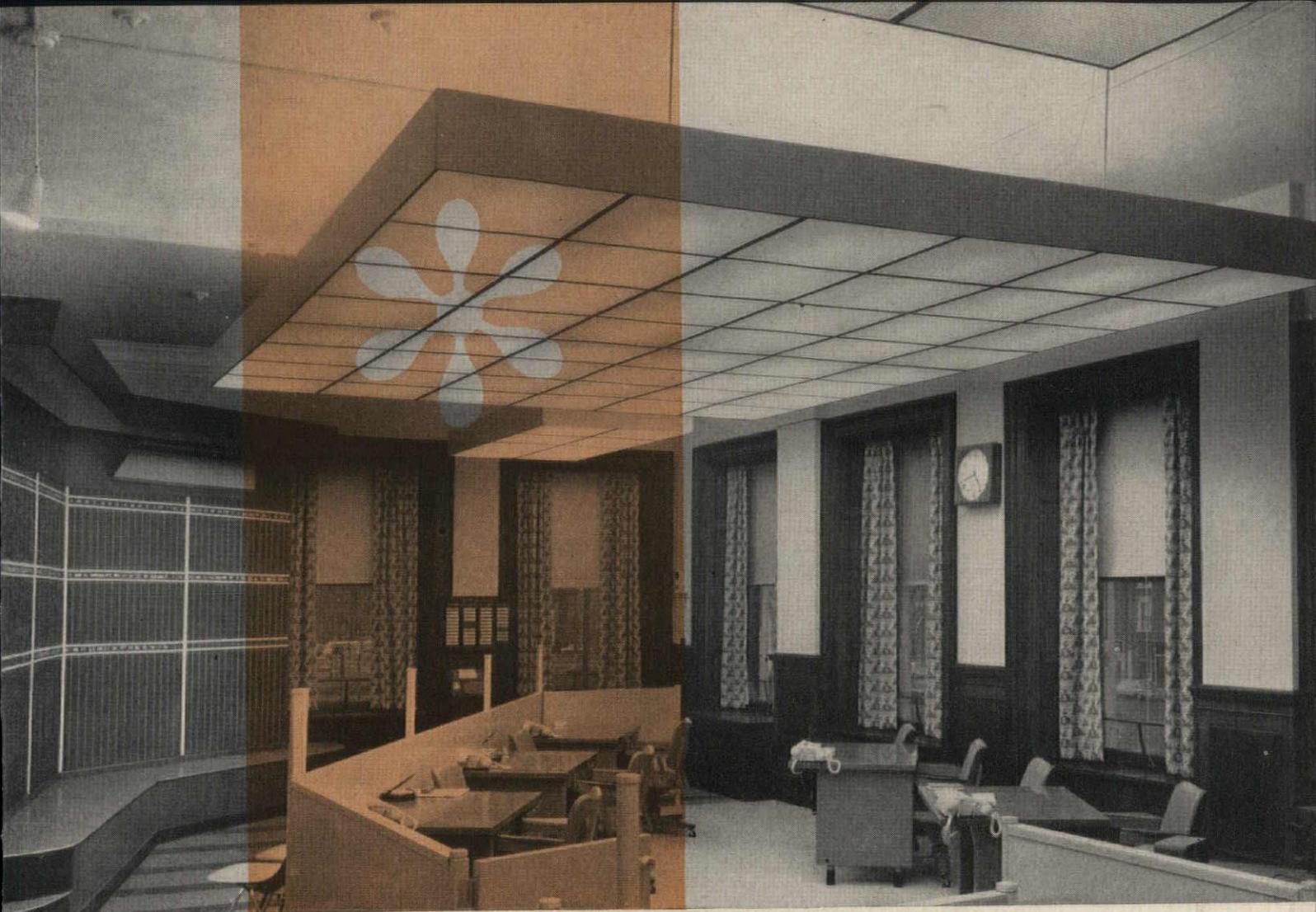
For initial economy in installation, for most satisfactory operation and highest efficiency, plan for materials handling when you design the building. **Do not make materials handling an after-thought.**



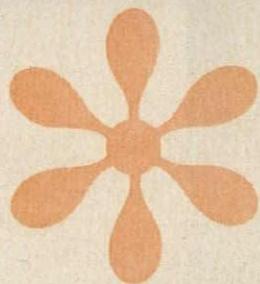
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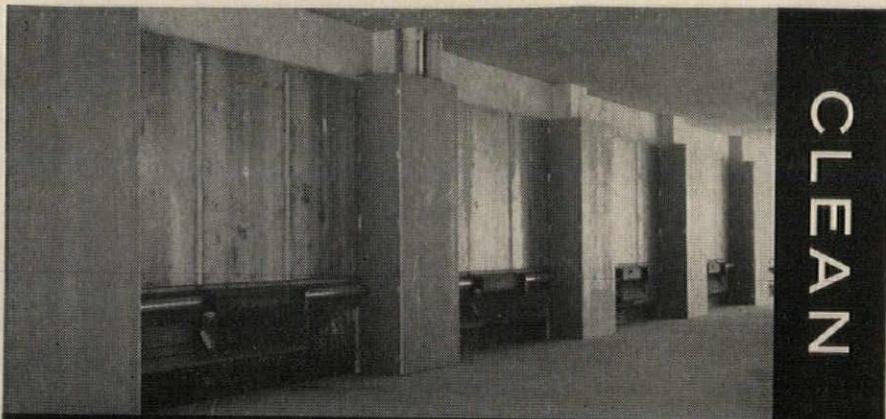
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We invite you to write for Bulletin 32A which gives you complete details on Sinko THIN-CELL Louvers.

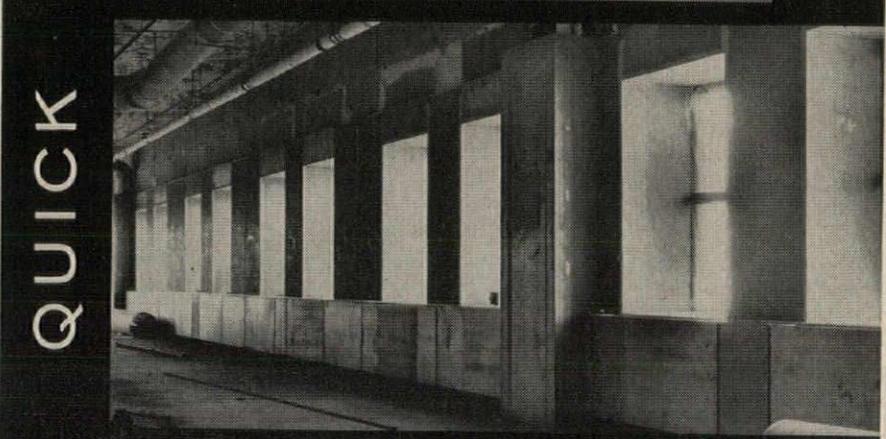


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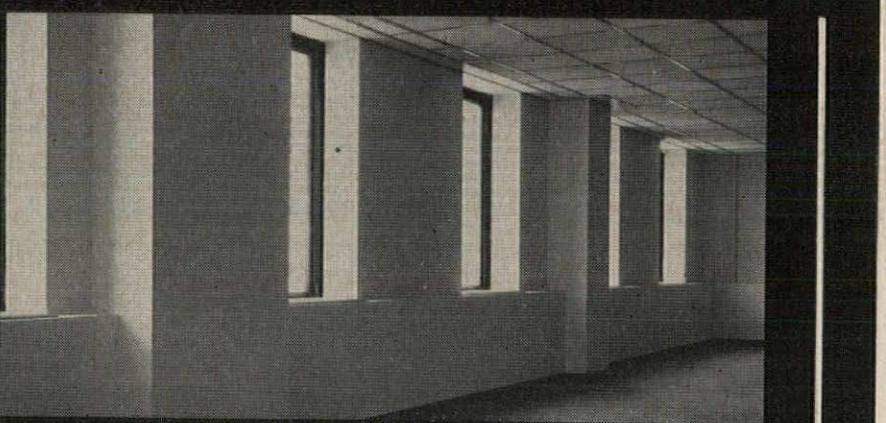




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*Progressive installation photos from Vulcan Building, Cleveland, Ohio. McDowell Company acted as its own general contractor and Hubbell & Benes and Hoff, Inc. were associate engineers and architects.*

See our catalog in Sweet's Architectural File—14a/Me

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## Office Literature

### Heating and Cooling With Water

Catalogs *Hydro-Flo* line of water heaters, coolers, pumps, valves, control units and other products for heating and cooling homes; and discusses functions, performance capacity range, construction and special features of key models in each category. Catalog GC-1259A, 25 pp. Bell & Gossett Co., Morton Grove, Ill.\*

### The Planning and Design

. . . of *Motels and Motor Hotels* is written primarily for prospective owners, but sections on programming and planning will also be of interest to architects. 24 pp. Sponsored by The American Motor Hotel Assn.; published by *The American Institute of Architects*, 1735 New York Ave., N.W., Washington, D. C.

### Kem Tech Science Furniture

(A.I.A. 35-E) Catalogs expanded line of secondary school science furniture and equipment; gives eleven typical science room floor plans plus roughing-in information on all items. Section KTF, 48 pp. *Kewaunee Technical Furniture Co.*, 3006 West Front St., Statesville, N. C.

### The Right Way to Office Planning

Details ways of achieving increased work flow efficiency, and frequently extra space, through use of modular office furniture components and free-standing partitions. Illustrations of typical office installations are included. 10 pp. *Royal Metal Mfg. Co.*, One Park Ave., New York 16, N. Y.\*

### Plumbing Products

Condensed catalog emphasizes fixtures and fittings for residential and small commercial plumbing installations. Catalog PT60. *American-Standard Plumbing & Heating Div.*, 40 W. 40th St., New York 18, N. Y.\*

### Modular Plastic Diffuser

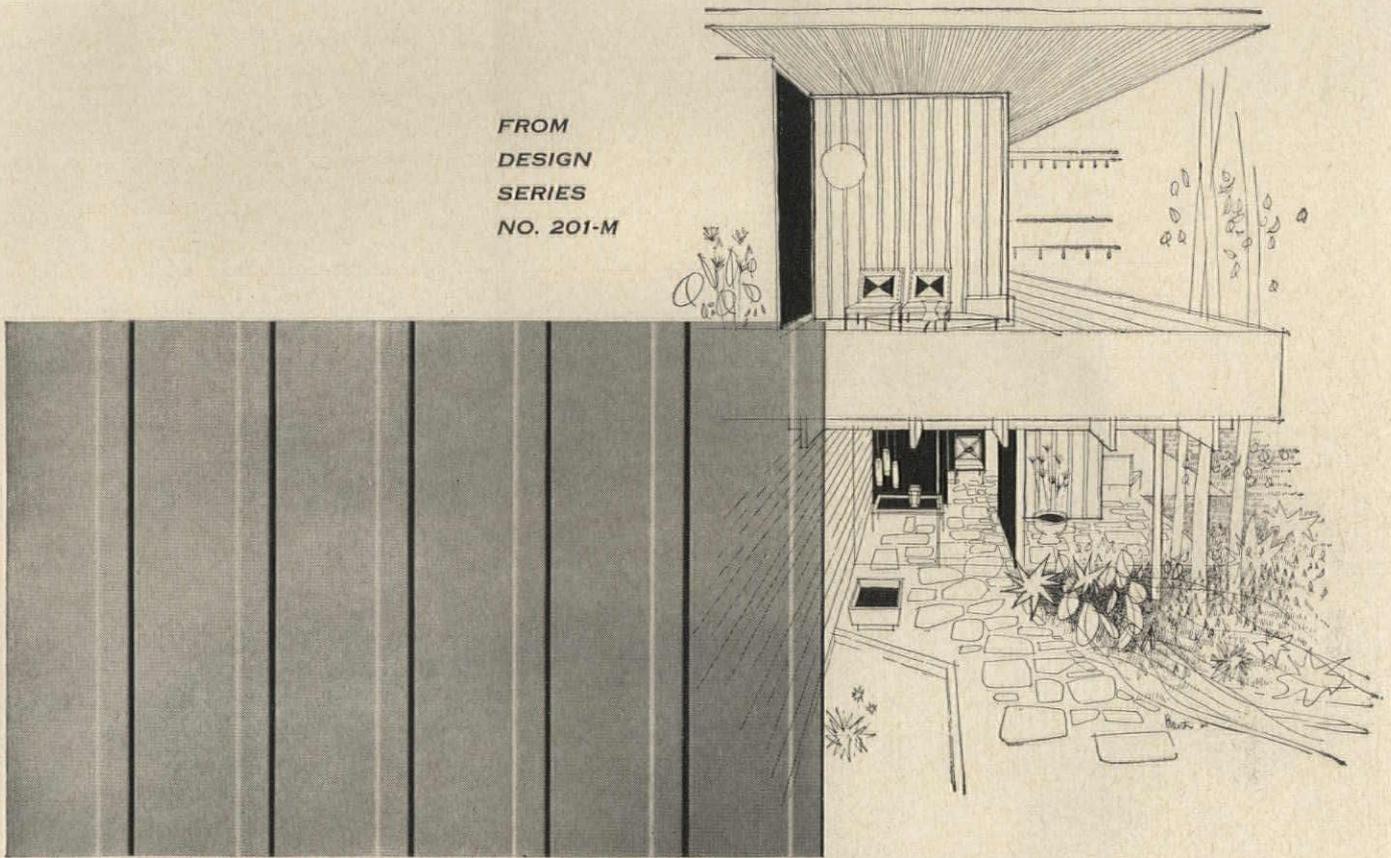
(A.I.A. 30-J) Contains sound ratings, performance data, and engineering information on new plastic modular diffuser. Installation details and specifications are also included. Catalog 460, 38 pp. *Carnes Corp.*, Verona, Wis.

\*Additional product information in *Sweet's Architectural File*

more literature on page 286

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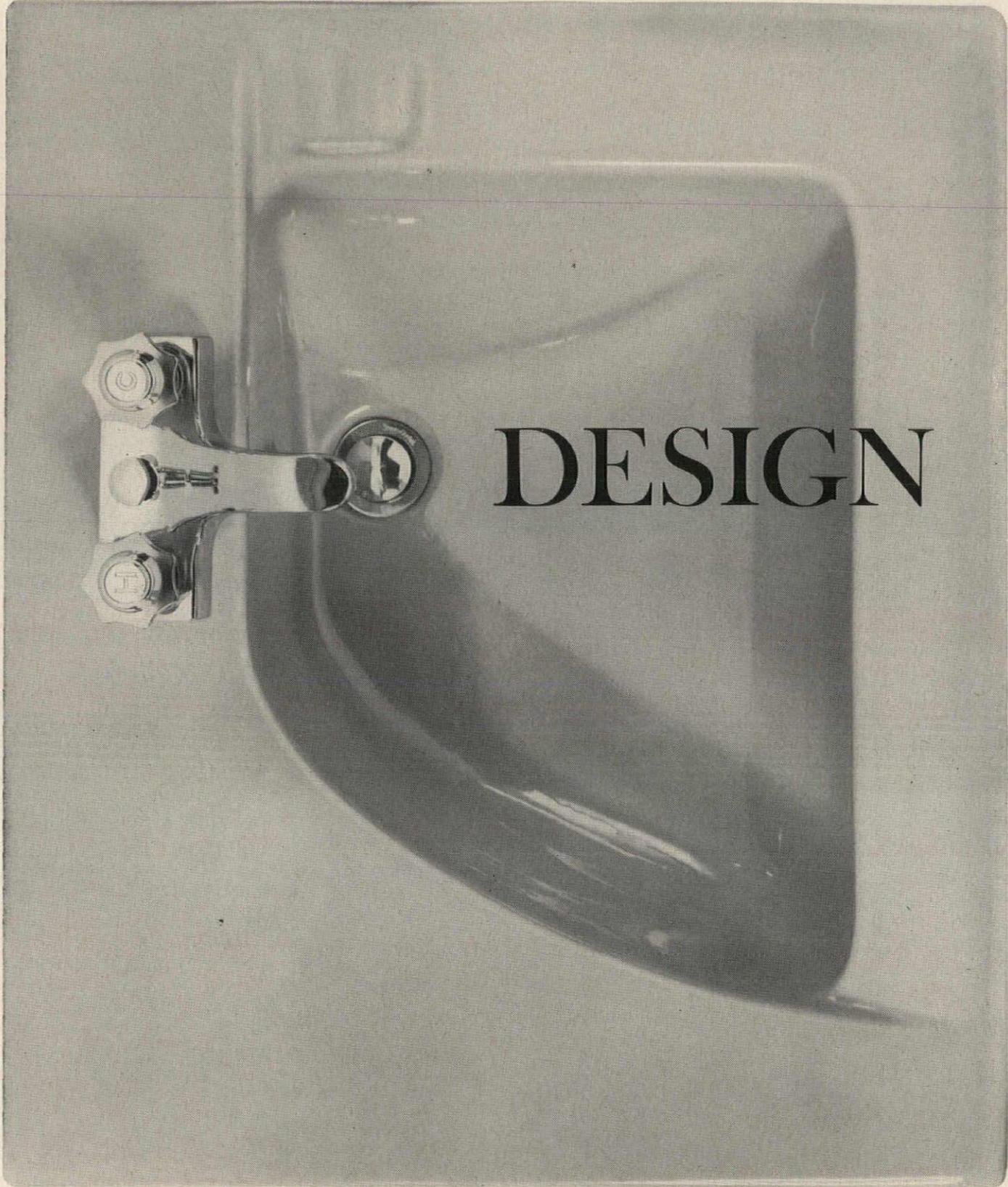
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A.I.A. File Number 29-H  
(July, 1960)

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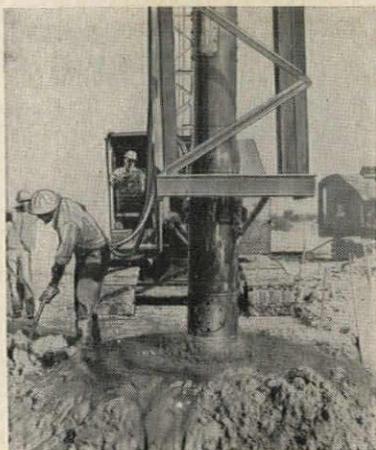
## Office Literature

Architects and Engineers: Reynolds, Smith and Hills,  
Jacksonville, Florida



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### Vibration and Noise Control

Specifications guide discusses factors involved in selecting resilient mountings for various types of air conditioning and related equipment under critical, non-critical and extremely critical conditions. Bulletin F2D, 6 pp. *Korfund Co., Inc., 48-08A 32nd Pl., Long Island City 1, N. Y.*

### Church Lighting

(A.I.A. 31-F-2) Groups church lighting fixtures by related architectural styles for easy selection; indicates dimensions and wattages; and gives data on choices of materials. Catalog 74. *NL Corp., Dept. N-4, 2480 East 22nd St., Cleveland 15, Ohio.*

### Lighting

(A.I.A. 31-F-23) Describes and illustrates complete line of lighting fixtures, with construction details and fixture dimensions. Photometric data, suggested specifications, and mounting information are also included. *Litecontrol Corp., 36 Pleasant St., Watertown 72, Mass.\**

### Plug-In Bus Duct Application Data

(A.I.A. 31-C-62) Contains information—descriptions, drawings, dimensions, and engineering and test data—needed to lay out, specify and install plug-in bus duct. Application Data 30-661, 28 pp. *Westinghouse Electric Corp., P. O. Box 2099, Pittsburgh 30, Pa.\**

### Underfloor Raceway Systems

(A.I.A. 31-C-62) Contains information needed for selecting, specifying and installing *Wheatlanduct* underfloor raceway systems. 12 pp. *Wheatland Electric Products Co., 7308 Church St., Pittsburgh 2, Pa.*

### Vinyl Asbestos Flooring

Presents eight basic floor covering styles and designs, shown in full color, plus such specialties as inserts and bases. *Kentile, Inc., 58 Second Ave., Brooklyn, N. Y.\**

### Seamless Terne for Roofing

(A.I.A. 12-A-31) Describes characteristics of seamless terne roofing, and gives detailed specifications for standard methods of application. 4 pp. *Lead Industries Assn., 292 Madison Ave., New York 17, N. Y.\**

\*Additional product information in *Sweet's Architectural File*  
more literature on page 290

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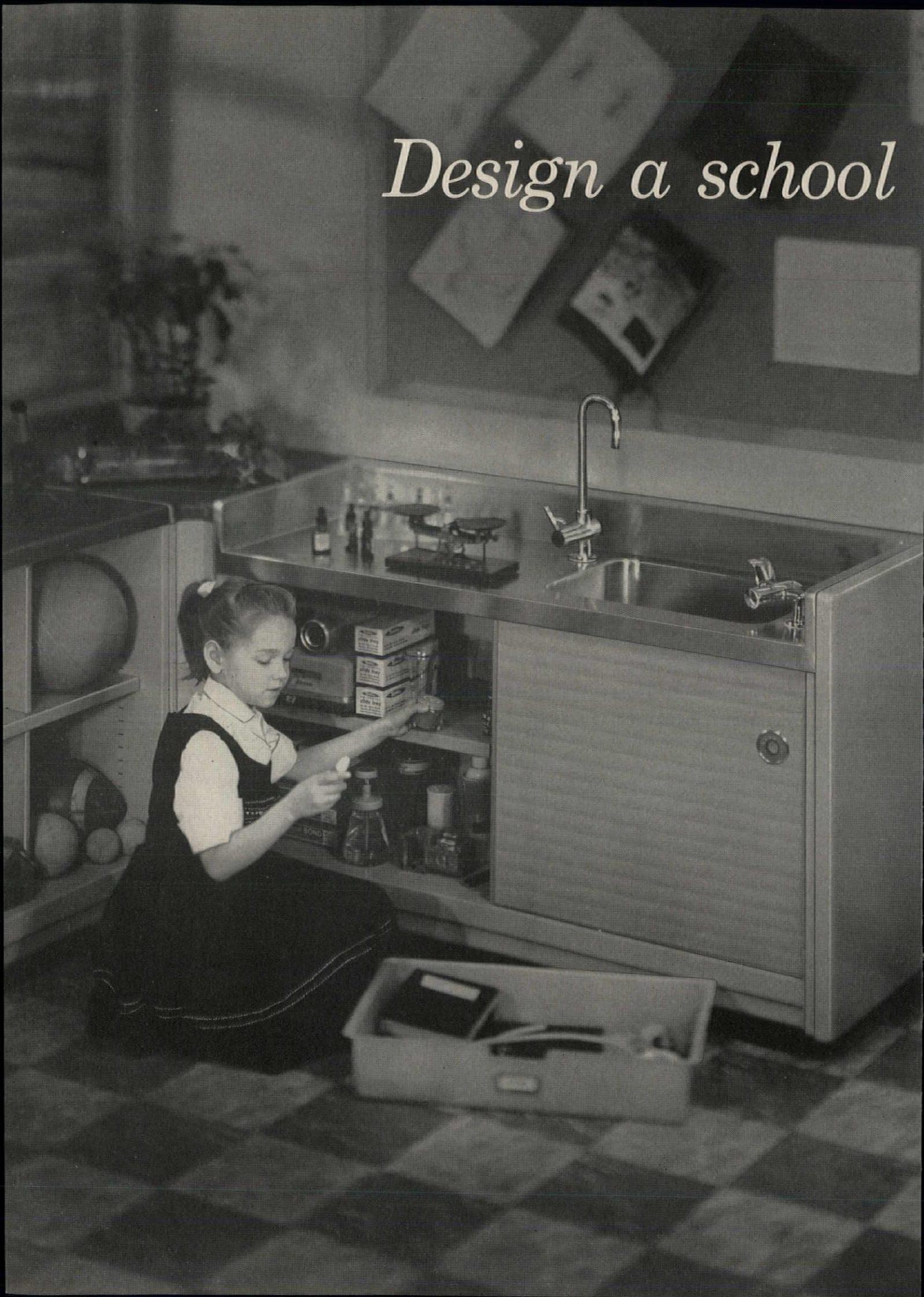
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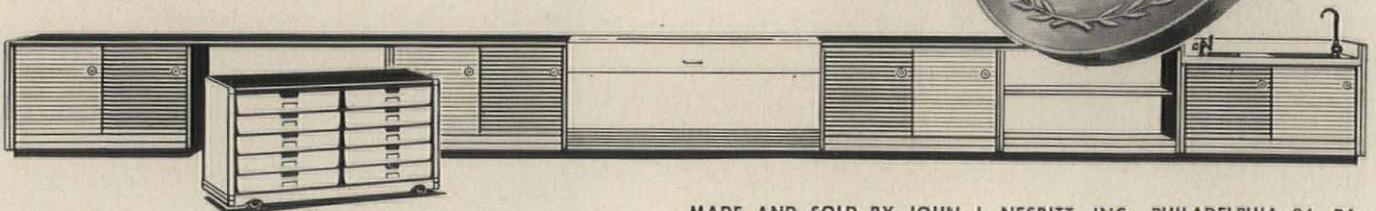


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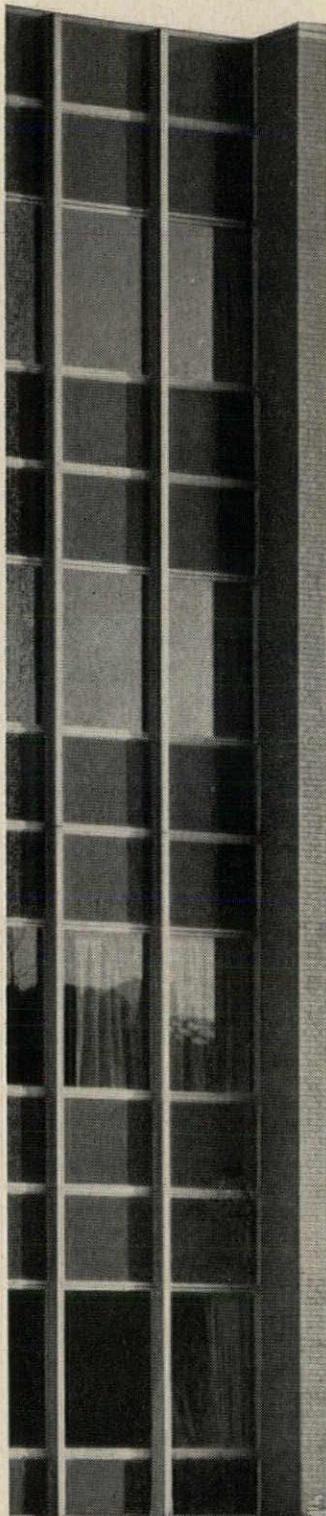
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## Office Literature

### Progress Lighting Fixtures

(A.I.A. 31-F-23) Describes and illustrates complete line of residential lighting fixtures, including some—recessed and downlights, strip fluorescents, and cove and valance fixtures—that would also be suitable for commercial installations. Catalog No. 105, 60 pp. *Progress Mfg. Co., Inc., Philadelphia 34, Pa.*

### Phosphatized Steel Shelving

Contains full information on Penco line of industrial and commercial steel shelving, with specifications, tables of dimensions and capacities, and suggested applications for each type. Catalog 2400, 36 pp. *Penco Div., Alan Wood Steel Co., 200 Brower Ave., Oaks, Pa.\**

### Welded Steel Pipe

Bulletin No. 509 illustrates uses of *Spang CW* welded steel pipe, and gives specification tables for three weights of 1/8- to 12-in. pipe and couplings in black and galvanized finish. 18 pp. *The National Supply Co., Two Gateway Center, Pittsburgh 22, Pa.\**

### Mobile Bench and Table Units

... for *School Multi-Purpose Rooms* (A.I.A. 28-A-7), a buyer's guide, discusses factors to be considered in selecting folding mobile units; and describes units in Howe line. Specifications are included. 12 pp. *Howe Folding Furniture, Inc., One Park Ave., New York 16, N. Y.*

### Beauty for Your Church

(A.I.A. 9-B-3) Illustrates applications of glued laminated timber construction in churches: Tudor, Gothic and parabolic arches, rigid frames, and tapered and straight beams. Dimensional data and connection details are also included, along with data on heavy timber decking. *Timber Structures, Inc., P. O. Box 3782, Portland 8, Ore.\**

### Steel Welding Fittings

Catalogs *Husky* line of steel welding fittings for Schedule 40 pipe, with flow charts, performance data, material specifications, physical properties and suggested working pressures. Catalog H-2, 8 pp. *Nibco Inc., Elkhart, Ind.*

\*Additional product information in *Sweet's Architectural File*

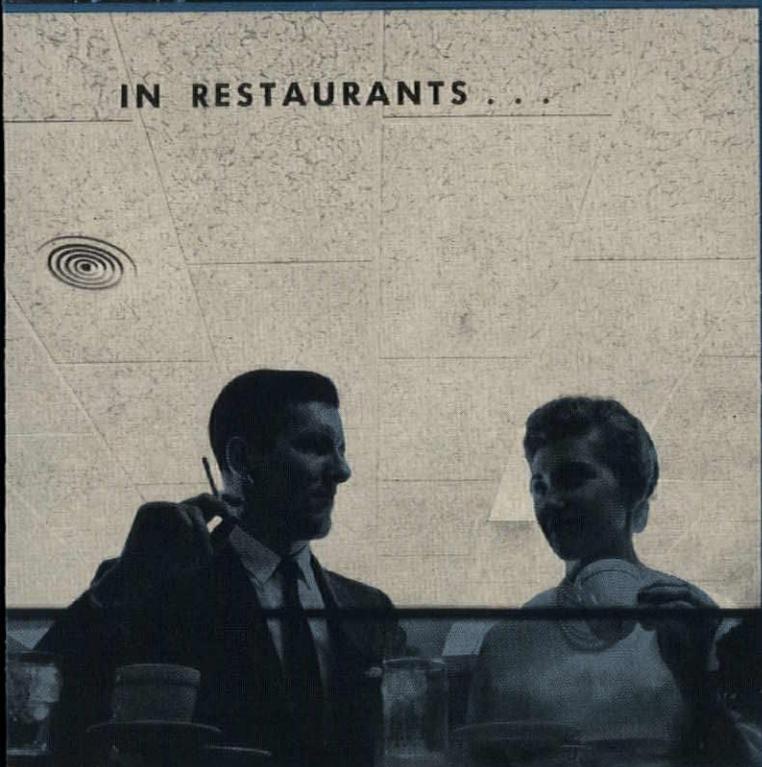
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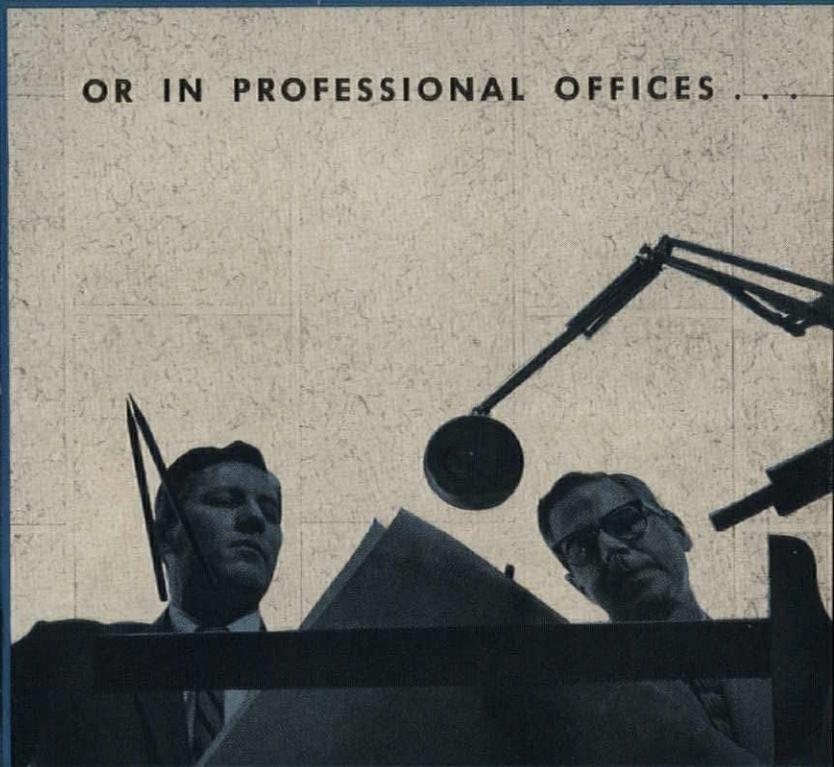
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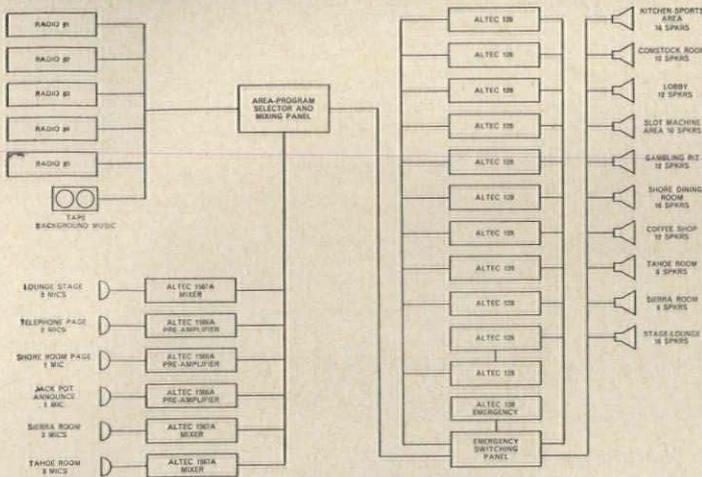
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See our catalog in Sweet's Architectural File 34JAL;  
Industrial Construction File 17eJAL, 1960 Edition

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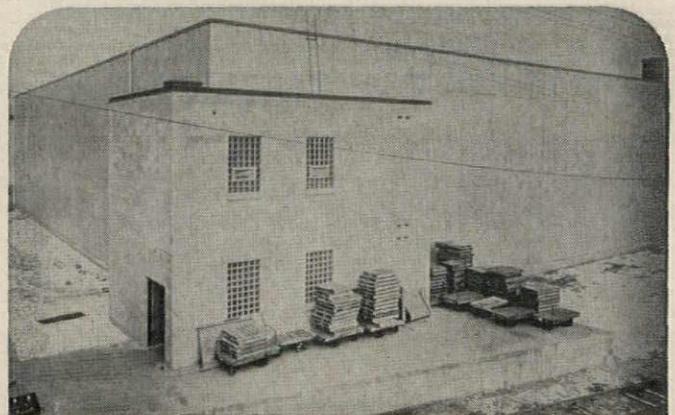
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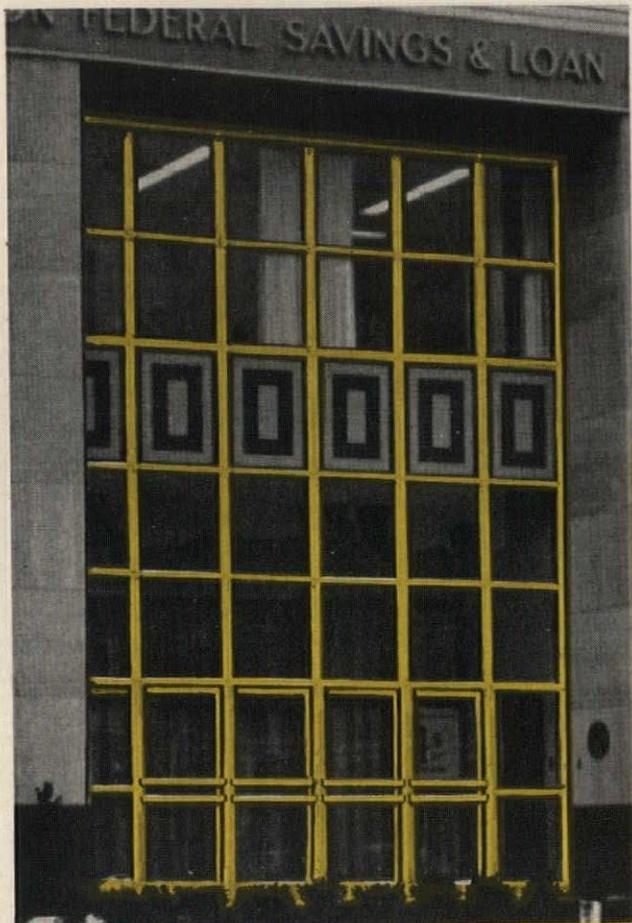
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ARCHITECT: EDWARD J. PARNUM  
BANK CONSULTANTS: THE CUNNEEN COMPANY, Philadelphia, Pa.

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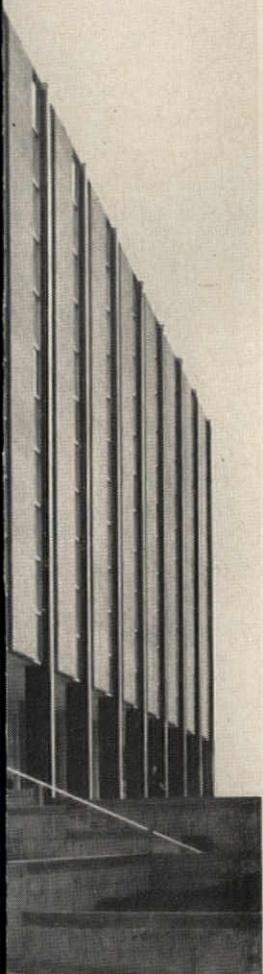
Write for Latest Entrance and Store Front Catalog



Day-Brite lighting helps make the new Pius XII Memorial Library a center of attraction on the St. Louis U. campus.

Day-Brite Troffers with Cleartex® Plastic Lens Panels deliver 73 footcandles of illumination to reading areas.





Architect and Engineer: Leo A. Daly • Electrical Contractor: Sachs Electric Corp.

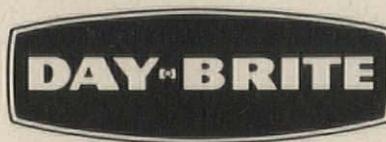
## How Day-Brite lighting "sells" reading in the new Pius XII Memorial Library

From the architect's first draft to the final choice of curtains, St. Louis University's modern new library was planned with one goal in mind; to encourage students to *use* it.

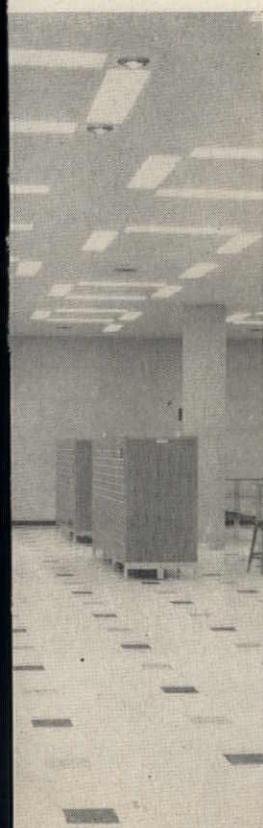
Self-service, open-type book shelves were used to invite "browsing" among the stacks. "Wide-open" interior design helped create a pleasant atmosphere. In addition, comfortable bright-colored furniture was contrasted against light-colored walls and a noiseless cork floor.

Lighting, of course, was a major consideration. It had to facilitate reading and, at the same time, add to the over-all cheerfulness. Day-Brite lighting was specified for high-level, high-quality illumination and clean, modern fixture design.

Good vision calls for good lighting. And you display good vision when you call in your Day-Brite representative early. *Day-Brite Lighting, Inc.*, 6260 N. Broadway, St. Louis, Mo., and Santa Clara, Calif. In Canada: *Amalgamated Electric Corp., Ltd.*, Toronto 6, Ont.



NATION'S LARGEST MANUFACTURER OF  
COMMERCIAL AND INDUSTRIAL LIGHTING EQUIPMENT



CANADIAN ARCHITECTS *continued from page 10*

sal to establish the new joint committee was unanimously endorsed by the Assembly.

Two Minneapolis architects participated in the June 3 seminar on "Professional Responsibility," Robert Cerny, of Thorshov and Cerny, and Rodney E. Engelen, a member of the City of Minneapolis planning staff. Mr. Cerny addressed the seminar luncheon on the subject, "Archi-

ture: Business or Profession." He described the ideal architect as a combination of a creative artist and a hard-headed business man. While most professions have a reputation for carelessness in handling their business obligations, in architecture the situation may be worse where there seems to be an arrogant disregard for the business side. Mr. Cerny said, "Taking an unrealistic attitude

toward a client's budget is unprofessional, quite as unscrupulous as an inferior design."

The report of the Committee of Inquiry into the Residential Environment resulted from action taken at the 1959 R.A.I.C. Assembly in Windsor, Ontario, where the Institute directed "that a formal enquiry be established to investigate the broad range of problems associated with Canada's residential growth and development." Three of Canada's most prominent architects—Peter Dobush of Montreal, John C. Parkin of Toronto, and C. E. Pratt of Vancouver—gave their services and engaged in a visual survey of 13 major centers from coast to coast over a seven-month period. They heard over 400 submissions.

A study of the design of the residential environment in Canada was conducted in order to find out how the profession can contribute more effectively to "the improvement of the quality of the design and layout of our residential areas." The report encompasses a total of 32 recommendations. Fifteen of them are for study, and 17 for immediate action. The Institute has charged the Committee on Housing under Chairman James Murray of Toronto with determining the ways and means of implementation. It is likely that a fulltime administrator will be added to the R.A.I.C. headquarters staff in order to direct the sub-committee activity stemming from the recommendations of the report, and he will conduct close liaison with builders, planners, lenders, realtors, etc. Public reaction to the report has exceeded all expectations, and the R.A.I.C. is resolved that no time should be lost in analyzing the report contents and preparing a plan of action.

The officers and members of the R.A.I.C. Executive Committee of Council for 1960-61 are as follows: Harland Steele, president; J. L. Davies, vice president; F. Bruce Brown, honorary secretary; Randolph Betts, honorary treasurer; Neil Stewart; Francis Nobbs; Maurice Payette; Everett Wilson; Alvin Prack; George Masson; and Howard Bouey.

The 1961 Assembly will be held at the Chateau Frontenac Hotel in Quebec City next May, and the 1962 locale will be Victoria, B. C.



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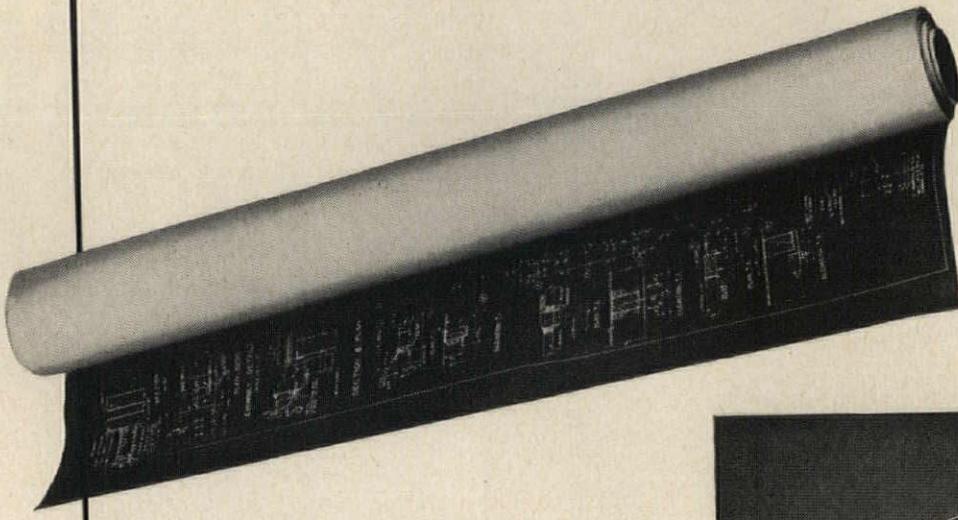
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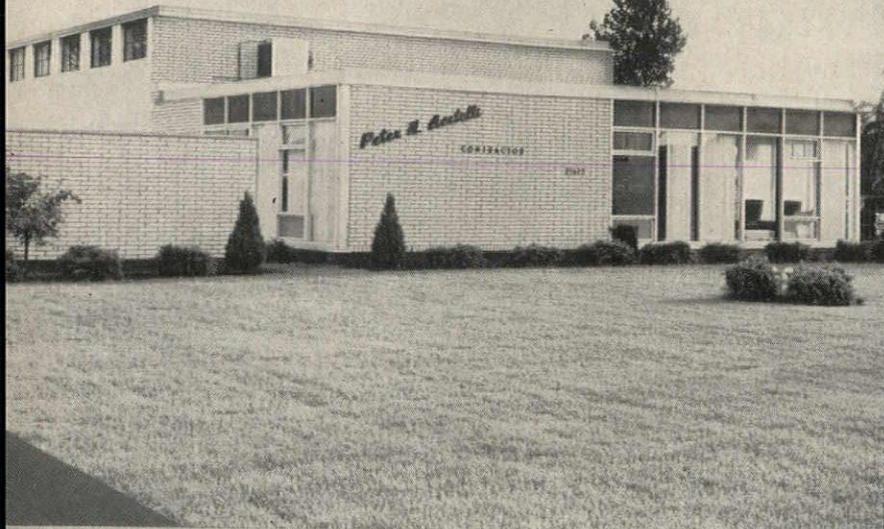
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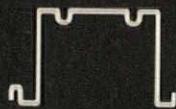


# MAHON MULTI- USE LONG- SPAN M-DECKS...

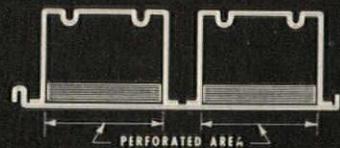


Cross section of Mahon Long-Span M-Deck combined roof-ceiling with troffer lighting and acoustical treatment.

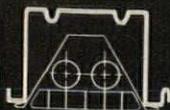
## MAHON LONG-SPAN M-DECK SECTIONS



SECTION M1-OB  
OPEN BEAM DEPTH 3", 4½", 6" or 7½"



SECTION M2SR (Acoustical)  
CEL-BEAM DEPTH 1½", 3", 4½", 6" or 7½"



A NEW SECTION M1-OB (Troffer)  
CEL-BEAM DEPTH 4½", 6" or 7½"

These are the standard M-Deck types now in manufacture by Mahon. Special-form sections can also be supplied.

# ... give you big structural advantages— even in small-building construction

Mahon Long-Span M-Decks furnish architects and engineers with roof sections of functional versatility that are ideal for any project, any budget—big or small. These steel sections provide a combined roof-deck system **and** finished ceiling that means real savings in specifying, erecting and service. Long-Span (truss-to-truss or wall-to-wall) M-Decks, quality made by Mahon, have a high strength-to-weight ratio for use as structural members and are supplied in metal gages and gage combinations for either flat or beamed ceilings. To suit your particular need, M-Decks are also available with or without recessed troffer lighting or acoustical treatment and for use as air-conducting or air-diffusing cells. Get the full story on M-Decks from your local Mahon representative, Sweet's Files or write for Catalog LSD-60.

**1** Mahon Long-Span M-Deck was meaningfully used in this "twin" facility at Livonia, Michigan. For the offices of contracting firm, Peter H. Acitelli, Inc., with its . . .

**2** . . . attractive reception area, Mahon Long-Span M-Deck was used as structural members to span wall-to-wall, as a roof-deck system and also served as a . . .

**3** . . . finished acoustical ceiling in offices—flat ceilings in shops of the R. V. Tool Co. as well. Architects: Wakely-Kushner Associates, St. Clair Shores, Michigan.



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- Steel Roof Deck
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*Speeding American Construction with  
Metal Building Products, Fabricated  
Equipment and Erection Services*

# MAHON

On the Calendar

August

- 7-12 Fifth Congress, International Association of Gerontology—San Francisco
- 29-ff Annual Convention, American Hospital Association; through September 1—Civic Auditorium, San Francisco

September

- 6-16 Second Production Engineering Show: theme, "Automation, Key to Manufacturing in the Sixties"—Navy Pier, Chicago
- 6-16 Machine Tool Show; of equipment and products which keep machine tools running—International Amphitheatre, Chicago

- 7-9 Joint Automatic Control Conference, sponsored by American Society of Mechanical Engineers, American Institute of Chemical Engineers, Instrument Society of America, American Institute of Electrical Engineers—M. I. T., Cambridge, Mass.
- 11-15 62nd Annual Conference, American Institute of Park Executives — Long Beach, Calif.
- 11-16 National Technical Conference, Illuminating Engineering Society—Penn Sheraton Hotel, Pittsburgh
- 15-18 Annual Convention, Society of American Registered Architects—Statler Hilton Hotel, Dallas
- 25-29 42nd National Recreation Congress—Shoreham Hotel, Washington
- 26-28 Ninth Annual Meeting, Standards Engineers Society—Hilton Hotel, Pittsburgh
- 26-30 Third Instrument Automation Conference and Exhibit of 1960, sponsored by Instrument Society of America, and 15th Annual Meeting of I.S.A.—the Coliseum, New York
- 27-30 Sixth Annual Convention, Prestressed Concrete Institute—Statler-Hilton Hotel, New York City

# 2 BUBBLER BEAUTY

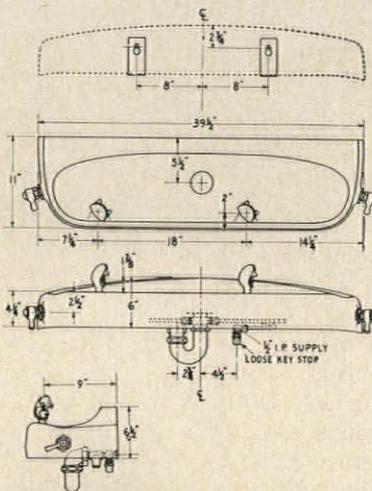


**HAWS MODEL 10F**  
**IN COLORFUL**  
**FIBERGLASS**



An accent of color with the graceful sweep of clean design—that's the new HAWS 2-bubbler Model 10F! Patterned after the popular Model 10Y (3-bubbler fiberglass model), this tough, vacuum molded fiberglass plastic unit is equipped with HAWS exclusive anti-squirt, vandal proof fountain heads. All visible trim is chrome plated. Select white or any of five decorator colors at no extra cost.

For details on HAWS' full line, write for the latest catalog—or check your Sweets File.



October

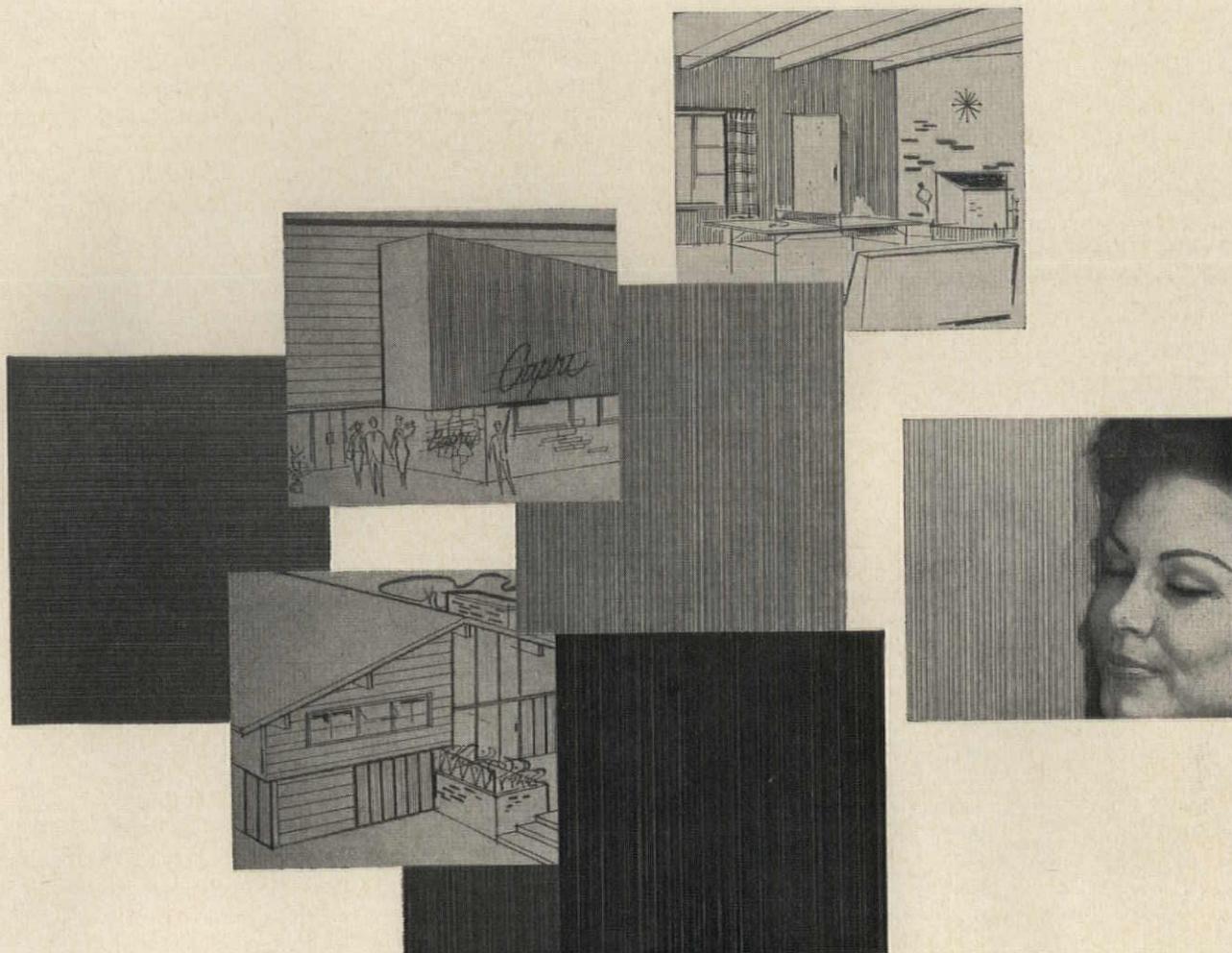
- 5-7 39th Annual Meeting and Chapter Officers' Conference, Producers' Council — Drake Hotel, Chicago
- 8-16 10th Pan-American Congress of Architects—Buenos Aires
- 9-13 National Convention (third of three in 1960), American Society of Civil Engineers—Boston
- 11-14 Eighth annual workshop convention, Architectural Woodwork Institute — Sheraton Park Hotel, Washington, D. C.
- 11-15 Annual Meeting, American Council of Independent Laboratories—Deauville Hotel, Miami Beach
- 17-21 48th Annual National Safety Congress—Conrad Hilton and other hotels, Chicago
- 17-21 National Metal Exposition—Philadelphia



**DRINKING FOUNTAINS**

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*continued on page 306*



create a **HUNDRED** and one  
striking effects with "K&M" Strytex  
decorative panels!

"K&M" STRYTEX Decorative Panels can spark a host of dramatic ideas in planning and design, for residential and commercial application, indoors and outdoors.

Create unusual effects of light and shadow with this deep-textured asbestos-cement structural sheet . . . with the long, clean lines. Use it alone, or with other materials for contrast. Outdoors, "K&M" STRYTEX Decorative Panels form smart, handsome siding for homes, carports, breezeways, and garages, plus store and building facades, permanent marquees, and canopies, backgrounds for signs, and exteriors or garden-type shop structures. Indoors, use them for eye-pleasing partitions and backdrops in stores and offices, or for walls of rooms in residences.

They make eye-catching borders, contrasting strips, cover fillets, friezes, and marginal strips. Provide special decorative effects in combination with wood, steel, glass, and brick.

"K&M" STRYTEX Decorative Panels are a quietly good-looking stone gray. Also available in seven stay-bright, plastic-coated Trend Colors: Colonial White, Spring Green, Pewter Gray, Charcoal Gray, Thrush Brown, Canyon Coral, and Autumn Gold.

Write today! K&M will supply you with complete information on "K&M" Decorative Panels. Write to: Keasbey & Mattison Company, Ambler, Penna. Dept. B-3480.

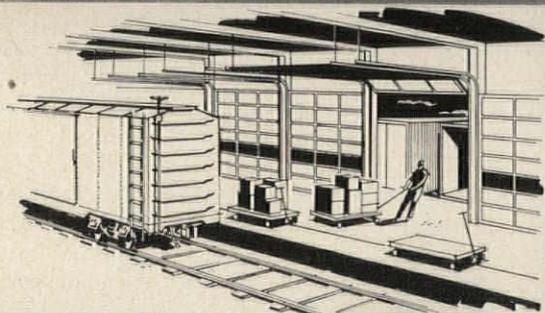


Keasbey & Mattison at Ambler



The Union Pacific Railroad freight station, Kansas City, Kansas, uses a total of 76 "OVERHEAD DOORS" in a vast unloading system that can handle up to 96 freight cars at the same time.

Freight trains are unloaded inside the building with small hand carts. These are carried by conveyor to the proper "OVERHEAD DOOR" for reloading merchandise into trucks.



# "OVERHEAD DOOR" opens a new door to traffic control

*Doors channel traffic—speed movement of people, vehicles, materials*

"OVERHEAD DOORS," as movable walls, give you new flexibility in designing traffic control. By *creating new outlets*, they can speed traffic through dead ends. By *opening more outlets*, they can prevent pile-ups, distribute the main flow of traffic through several openings. By *providing a selection of outlets*, they can divert the flow of traffic in a desired direction. For an unlimited variety of applications, they offer a simple, low-cost solution to more efficient movement of people, vehicles, materials.

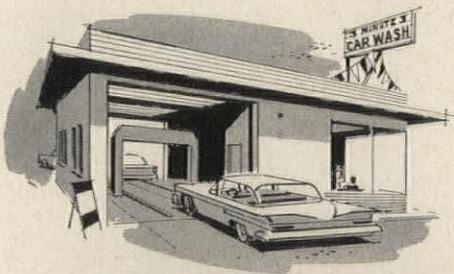
The flexible Union Pacific Railroad freight station, shown at left, is just one example. Two banks of 38 doors serve to *sort* goods being moved from railroad cars to waiting trucks. The railroad cars enter bays inside the building and are quickly unloaded with the use of

small hand trucks, which are carried by a conveyor to the proper door. This ingenious system can handle as many as 96 freight cars at once.

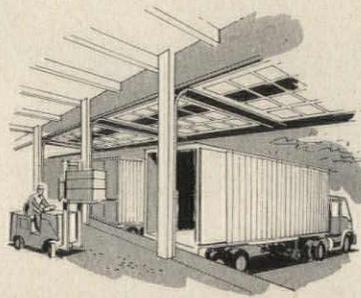
Many other new ideas in traffic control have been developed and tested by Overhead Door Corporation engineers—ideas that result from this company's 39 years of experience in the garage door field.

Get detailed information from your local distributor (see "OVERHEAD DOOR" in the white pages) for an application you may now be planning, or write to Overhead Door Corporation, *General Office*: Hartford City, Indiana—*Manufacturing Distributors*: Cortland, N.Y.; Hillside, N.J.; Lewistown, Pa.; Nashua, N.H.—*Manufacturing Divisions*: Dallas, Tex., Portland, Ore.—*In Canada*: Oakville, Ontario.

*To solve many traffic control problems—*



**Drive-through**—"OVERHEAD DOORS" front and rear (or front and sides) are frequently used by auto service centers, garages, car wash businesses and delivery companies to allow cars and trucks to *drive through* and avoid interruption of incoming and outgoing traffic.



**Reverse opening**—"OVERHEAD DOORS" that open outward, rather than inward, follow the contour of outside wall and canopy. Their reverse opening provides needed head-room for fork-lift trucks and similar equipment used inside to speed materials handling.



**Directional control**—"OVERHEAD DOORS" offer a simple, low-cost way to direct the flow of people. A typical application is a railroad passenger station using automatically operated "OVERHEAD DOORS" to open and close gates of loading passenger trains.



*the original upward-acting, sectional door... made only by*

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19-23 15th Annual Convention, California Council, American Institute of Architects—Yosemite National Park

23-26 Annual National Planning Conference of Community Planning Association of Canada; theme, "Planning for the Smaller Communities"—Sheraton Connaught Hotel, Hamilton, Ontario

27-28 16th Annual Conference, American Society of Industrial Designers—Edgewater Beach Hotel, Chicago

**Office Notes**

*Offices Opened*

Architect Marcel Beaudin has opened an office for the general practice of architecture at 18 North Main

Street in Barre, Vt.

Alan W. Derthick, A.I.A., and Carroll J. Henley, A.I.A., partners in the firm of Derthick & Henley, Architects, announce the opening of an office at 720 Mississippi Avenue, Signal Mountain, Tenn.

*New Firms, Firm Changes*

Dalton-Dalton Associates, Architects and Engineers, the Arcade, Cleveland, Ohio, announce the appointment of Eugene B. Fisher, Jr., Architect, as Director of Hospital Planning, and also the appointment of Don M. Hisaka, Architect, as Director of Architectural Design.

Russell S. Fling, Consulting Engineer, announces that Gunnar Eeman is an Associate Engineer under the firm name of Russell S. Fling & Associates, 101 North High Street, Columbus, Ohio.

Kenneth Kassler, F.A.I.A., announces the partnership of Burton F. Weisbecker in the firm known as Kassler and Weisbecker at 18 Nassau Street, Princeton, N. J.

Lublin, McGaughy & Associates, Architects & Consulting Engineers, 1300 Connecticut Avenue, N.W., Washington 6, D. C., announce the appointment of Alfred Mercado as Director of Planning. For the past two years, Mr. Mercado has directed the firm's planning work in Europe, North Africa and the Middle East.

Perry Coke Smith, Benjamin Lane Smith and Charles Haines announce that Frank J. Waehler is now an associate with the architectural firm of Voorhees Walker Smith Smith & Haines, 101 Park Avenue, New York 17, N. Y.

H. Leslie Walker and Randolph C. Jackson III, announce the separation of their joint practices. Locations of the individual practitioners are as follows: H. Leslie Walker, A.I.A., Architect, 620 Twiggs Street, Tampa, Florida; Randolph C. Jackson III, P. E., Civil Engineer, 312½ Twiggs Street, Tampa, Florida.

**Addendum**

The RECORD regrets the inadvertent omission of the credit for the *Maison du Brésil* photograph on page 156 of the June issue in the Architectural Graphics story. The photographer was Richard Meier.

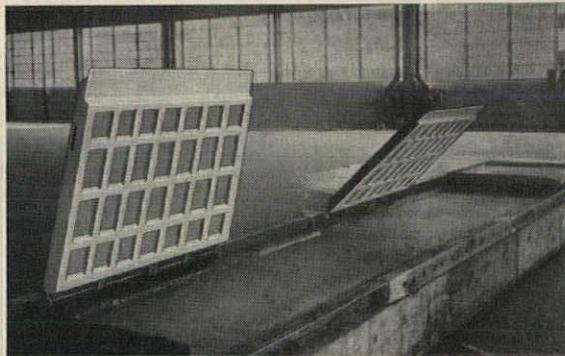
Because no one type is best for all loading dock situations...



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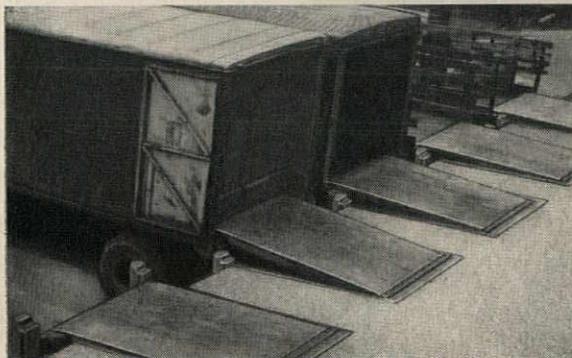
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mechanical ramps



**TRUCK OPERATED**

mechanical ramps



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- ... pioneered by Rite-Hite
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- ... just maintenance-free ruggedness throughout

You get a choice of five manual ramps, 20,000 pounds capacity. Platform swings to nearly vertical position—trailer doors can be opened after trailer is parked at dock—overhead doors can be closed in front of platform. Only three moving parts. No levers project. Side-to-side platform adjustment.

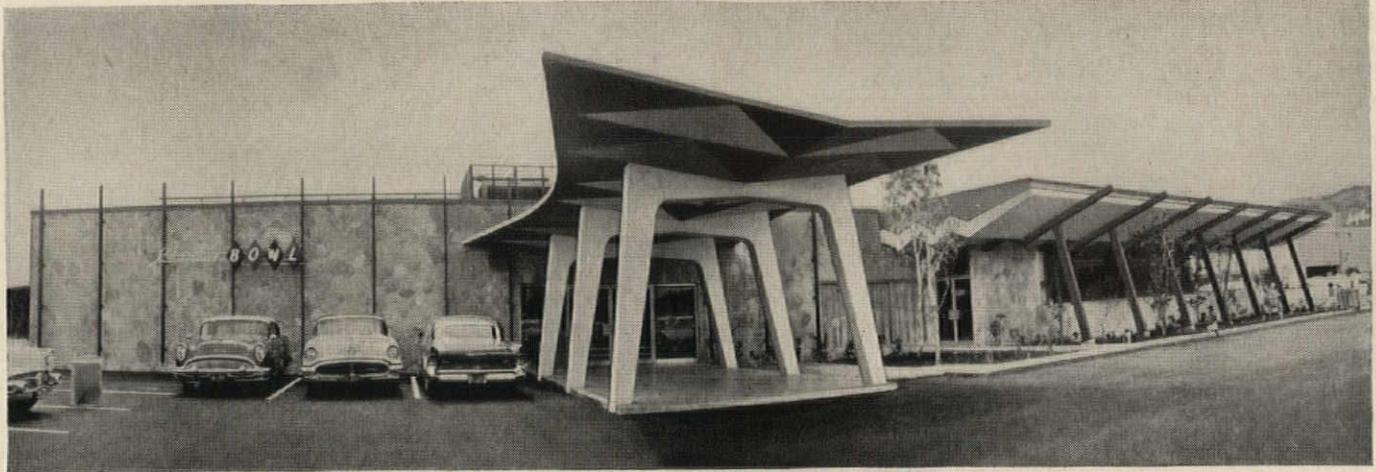
You get a choice of three truck ramps, 20,000 pounds capacity. No operating cost, no electrical, hydraulic or pneumatic system to maintain. Year-around dependability. Platform floats with truck bed—from 9" below to 17" above dock surface—automatically levels and locks.

For descriptive literature and installation details, write Dept. A860



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Waialae Bowl, Honolulu, Hawaii / Architect: Takashi Anbe, A.I.A.



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but we recommend that clients retain an architect”

The franchised contractors who construct Butler “packaged” buildings also actively *sell* them. As a group, these independent Butler Builders are seasoned craftsmen in the construction business. They have learned to properly evaluate the contribution of the architect to Butler construction, and understand the ethics of the profession.

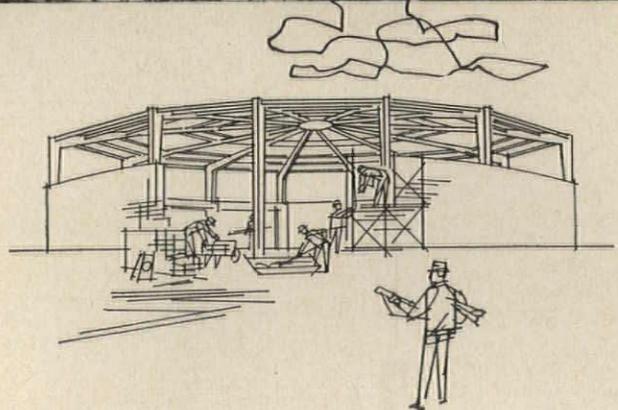
Where Butler structures are not merely utilitarian, Butler Builders recommend that their clients retain an architect . . . that is, unless all nearby architects are simply not interested.

But architects *are* interested—in far larger numbers than you might imagine. The good and satisfying ways in which they have designed on the basic Butler structural, roof and wall systems are astonishingly diverse and individual. We at Butler encourage this association, and predict that it will grow at an accelerating speed in the near future.

The share of market enjoyed by Butler “packaged” buildings is significant today. Yet this young industry is only on the threshold of its technical possibilities. But we are not the advocates of canned design. A nation of individuals can only express its spirit adequately through individual design genius.

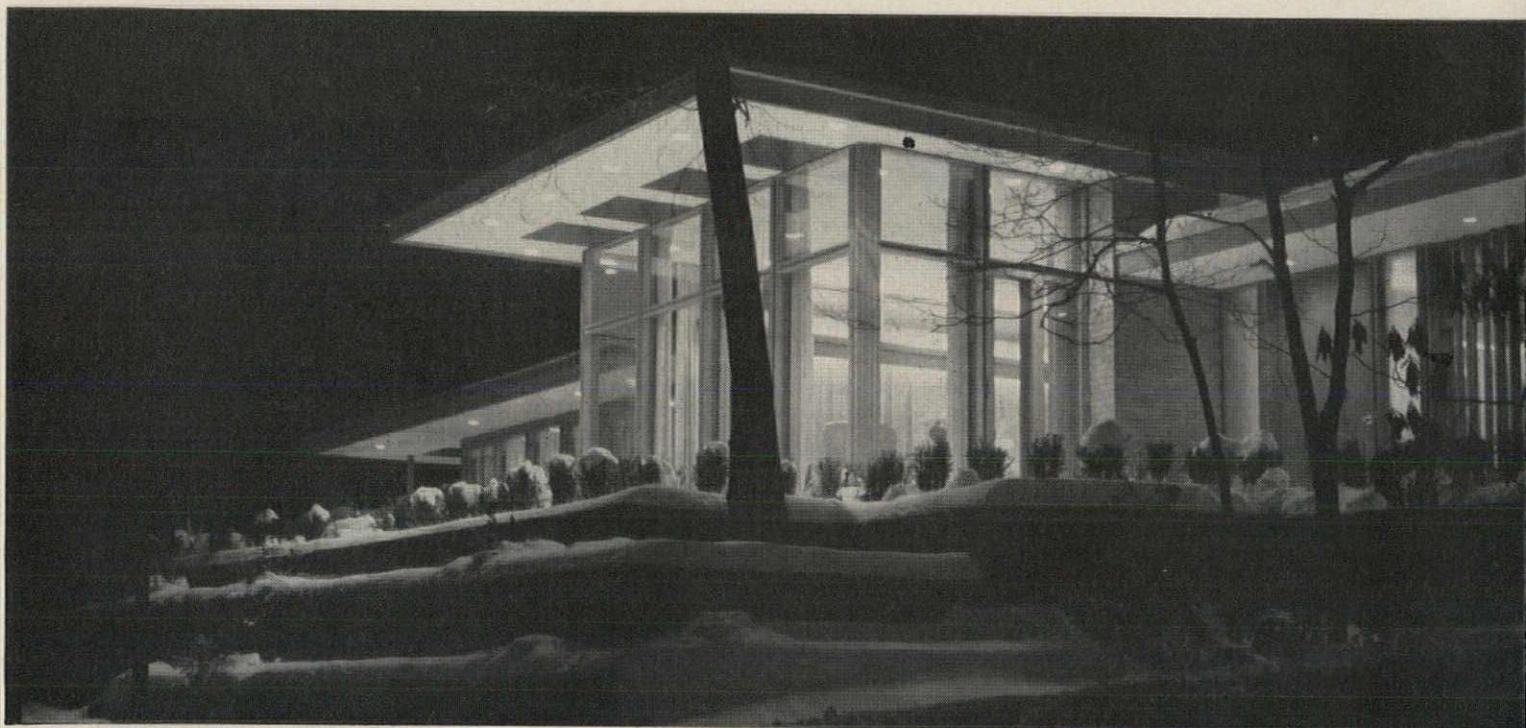
Accordingly, we invite you to contact your nearby Butler Builder, and have him call on you at your convenience. We promise you that you will find his building system a useful tool in the construction of business and community buildings. He can help in financing too. Or write direct to Butler Manufacturing Company, 7427 East 13th Street, Kansas City 26, Missouri.

*Charles B. Ferris and Associates, New York City, used Butler rigid frames in this structural spider web to effect substantial cost savings for the gymnasium-auditorium, St. Pius X School, Plainview, Long Island.*



“YOU CAN DESIGN  
CREATIVELY WITH  
EASY·TO·GET  
STANDARD SIZES”

*Stanley James Goldstein, A. I. A.*



GREENE RESIDENCE, Short Hills, N. J. All exterior window walls were constructed of prefabricated modular load-bearing

window and door frames dimensioned around standard *Thermopane* sizes. The window frames served as the sole exterior wall supports for the conventional roof structure of wood joists.

\*STANLEY JAMES GOLDSTEIN, A. I. A., a practicing architect for 10 years, holds three degrees in architecture and engineering from the Massachusetts Institute of Technology. Served two periods of engineering duty with U. S. Navy. In spite of a brisk practice, takes time to teach related subjects at the Graduate School of Architecture of Princeton University

... says *Architect Goldstein*\*

“I always design with one eye on a glass catalog,” says Architect Stanley James Goldstein. “In fact, most of my houses are designed around standard-size insulating glass units and standard sash. It helps keep costs down, assures prompt delivery, speeds construction . . . resulting in savings I can pass on to my clients.

“You can design creatively with standard-size units. There are over 100 sizes with metal-to-glass edges, and about 90 all-glass units. It’s only a matter



VOLK RESIDENCE, Smoke Rise, N. J. All exterior window walls were constructed of shop-built, prefabricated modular frames, all dimensioned around standard *Thermopane* sizes. These same panel types, which were fitted into the modular wood framing system, together forming the structural wall and exterior and interior finish, accommodate standard steel sash, blank opaque walls, French doors and regularly hinged doors.

of balancing sizes and shapes to room requirements. The only justification, that I can see, for using non-standard sizes is in rare situations where nonrectangular or odd sizes are required.

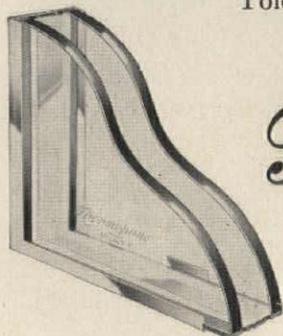
"You can see by the photographs that I like scenic sites. So do my clients. The large glass areas let them enjoy the changing face of nature, hour by hour, day by day, season by season. So I specify  $\frac{1}{4}$ " polished plate glass in large insulating units to provide greatest freedom from distortion. For less critical areas, as in clerestory windows, I specify DSA insulating units.

"New Jersey climates justify using insulating glass *throughout* the homes. Some of my window walls are up to 80 ft. long, yet these houses have small heating plants. Summer comfort is assured by proper orientation, careful siting, tree shading and roof overhangs.



"One of my homes qualified the owner for a V. A. loan because insulating glass made the house acceptable as far as heat loss was concerned."

Whether you're an architect or a builder, it pays to think *first* in terms of standard-size *Thermopane* units. For literature listing sizes write to L. O. F., 4180 Libbey · Owens · Ford Building, Toledo 1, Ohio.



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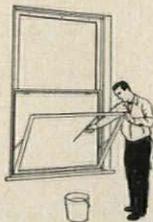
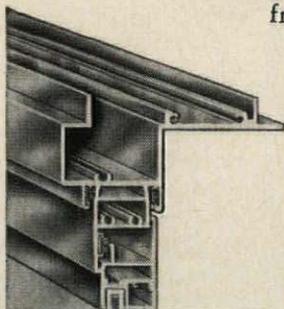


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**MATERIAL** All frame and sash are extruded aluminum alloy 6063-T5 with a minimum tensile strength of 22,000 psi.

**DESIGN FEATURES** Upper and lower sash have extruded glass-frames hinged at the lower rail of each sash. For inside cleaning, glass-frames pivot "hopper style" when in the lower position. Jambs of adjoining windows fastened with male and female screws and splined for weather tightness. Continuous head and sill for mullioned units up to 20' wide.

**HARDWARE** Sash balanced with removable spiral type balances. Glass-frames lock into sash by concealed stainless steel cam locks. Installation anchors of heavy gauge steel cadmium plated.

**WEATHERSTRIPPING** Perimeter of sash double weatherstripped with wool pile. Glass-frames continuously weatherstripped to sash.

**AIR INFILTRATION** Shall not exceed .50 cubic feet per minute per foot of crack length under static air pressure equal to winds of 25 mph velocity.

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**MAXIMUM SIZE** 4'6" x 8'0" frame overall dimensions.

**SCREENS** Fiberglass half or full length screens available.

**FINISH** Lustrous satin-like finish. Anodizing provided if specified.

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## Washington Topics

continued from page 76

April of this year with a two-fold purpose: 1) to encourage the development of new techniques, research, and improvement of methods of aircraft operations affecting noise abatement, and 2) to provide industry, management and other interested agencies and groups with information on noise abatement activities.

Aircraft manufacturers already have spent millions of dollars on research on noise control, and their studies continue. Altitude restrictions, operating procedures and pilot techniques—all have been practiced to minimize noise impact.

Three current methods of controlling noise have been described: 1) muffling at the source through use of noise suppressing devices; 2) muffling at the receiving point by adding extra insulation to roofs and walls, and by air conditioning so windows can stay closed, and 3) putting maximum possible distance between the source and the receiving point. The emphasis now is in applying techniques in the construction and operation of the aircraft itself to lower the noise level.

The administrator of the Federal Aviation Agency, Pete Quesada, outlined the need for such a coordinating organization when he said, "the air carriers, the pilots, the airport operators, and the government have a clear and direct responsibility to act without delay to take all possible steps to minimize the aircraft noise levels in our airport communities. Noise abatement activities on a national basis with effective standards and procedures must be directed towards the solution of this serious and vexing problem."

General Jack R. Cram is president of the N.A.N.A.C.

### HEW Asks Hill-Burton Changes to Affect Health Facility Planning

Toward the end of its second session, the 86th Congress received a draft bill from the Health, Education, and Welfare Department designed to "further sound public and institutional planning" for construction of facilities for patient care.

continued on page 314

ANOTHER

L. E. CARPENTER  
ORIGINAL

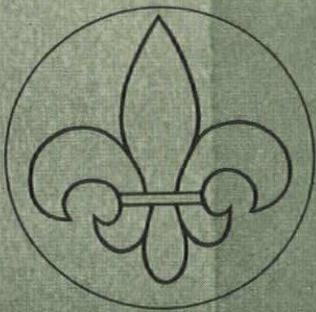
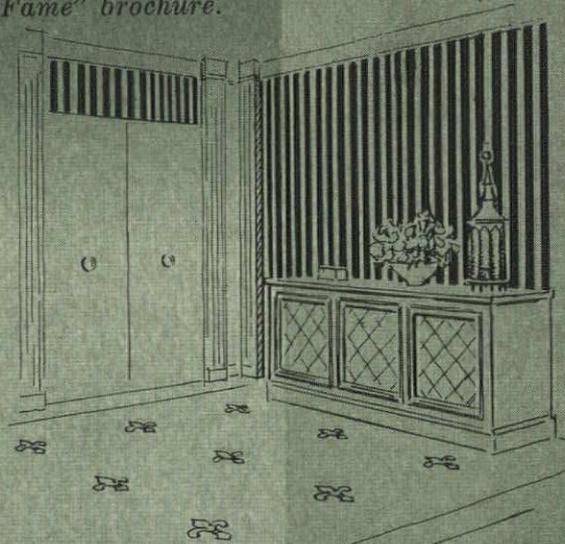
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Al Rubin, leading masonry contractor, gets maximum crack resistance with

# KEYWALL

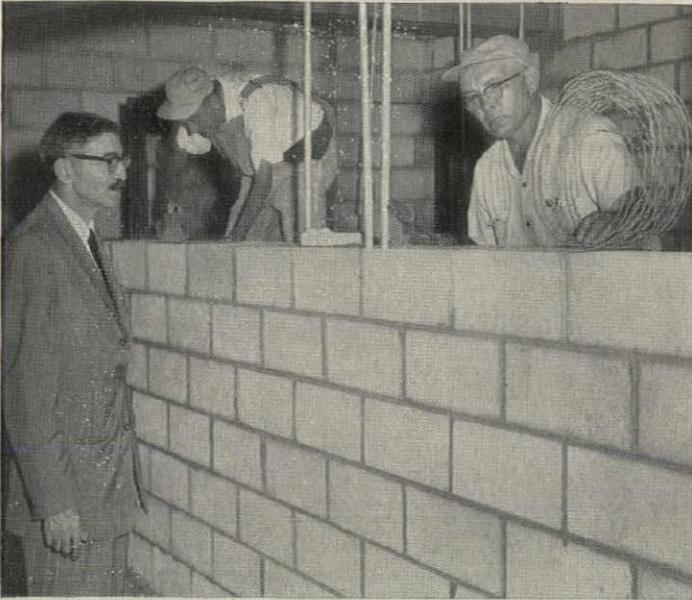
galvanized masonry reinforcement

"You just can't beat Keywall," says Al Rubin, president of Arco Construction Company, Chicago, Illinois. "It's the easiest-to-handle joint reinforcement I know . . . my men really like to work with it. And I get the results I want. That's why I always urge the use of Keywall wherever joint reinforcement is specified."

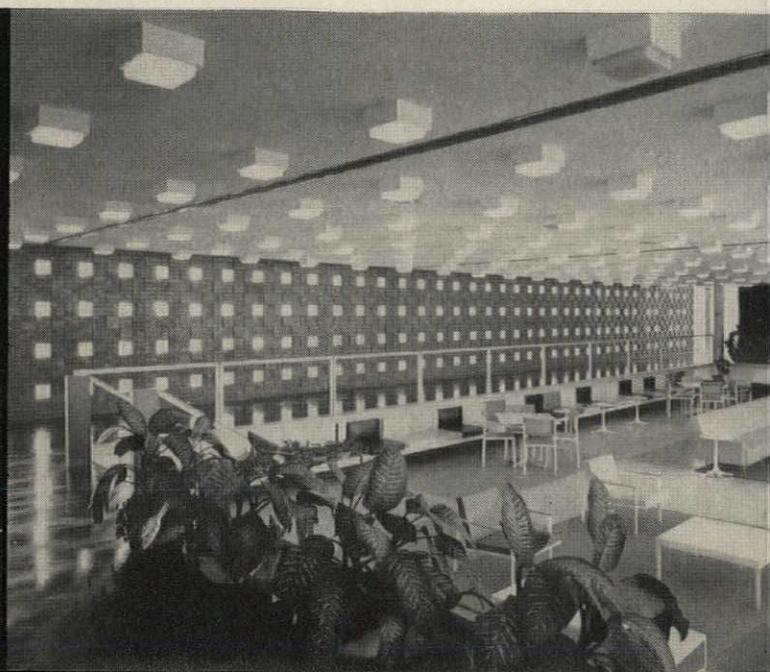
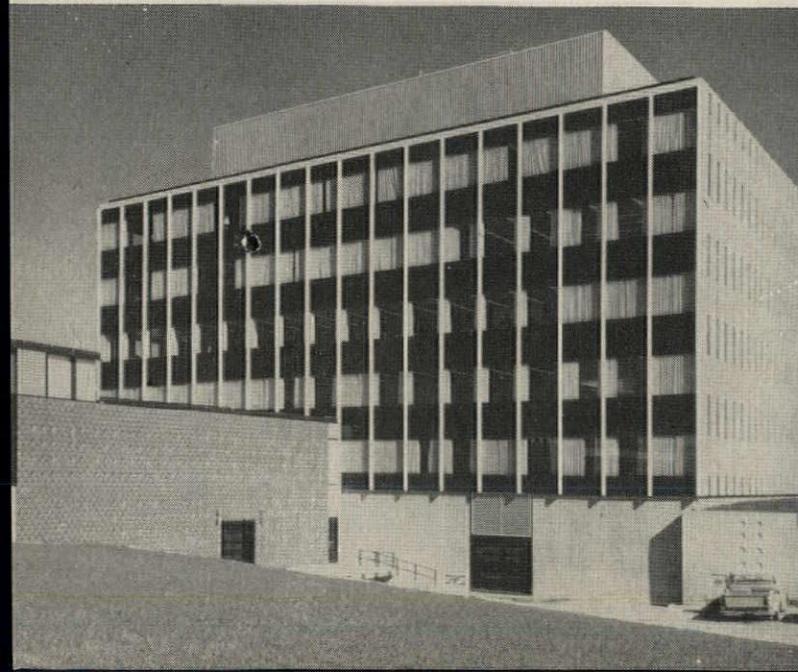
By using Keywall masonry reinforcement on his jobs, Rubin gets stronger walls with greater crack resistance. This is one of the reasons he's recognized for quality masonry by leading Chicago architects and builders.

Rubin's men prefer Keywall. They use it right. Installation details, such as reinforcing corners so they are stronger than the wall itself . . . lapping joints in straight walls to assure continuous reinforcement . . . getting full embedment of reinforcement, even when lapping, without increasing thickness of masonry joints . . . are easily done with Keywall. These superior features, vital in the effectiveness of any reinforcement, make walls reinforced with Keywall stronger and more crack resistant at lower cost.

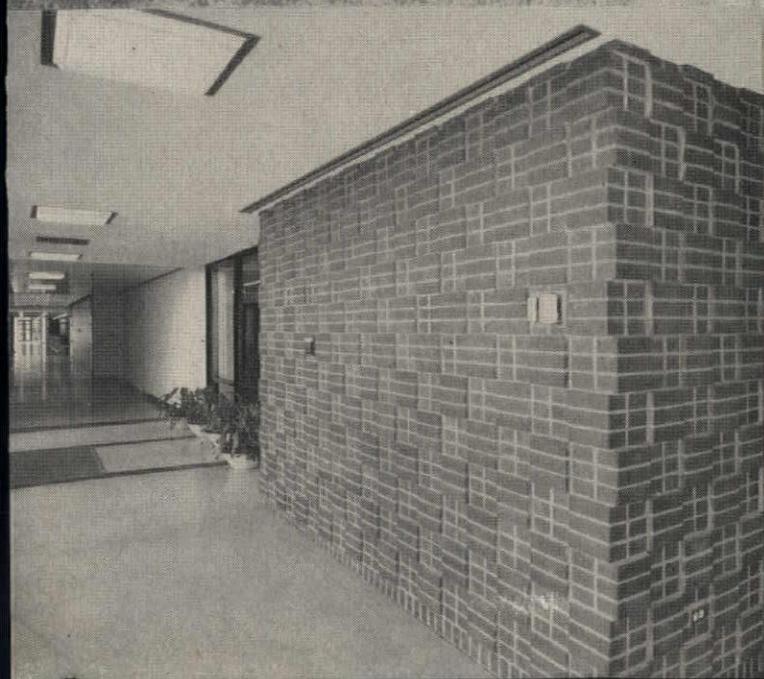
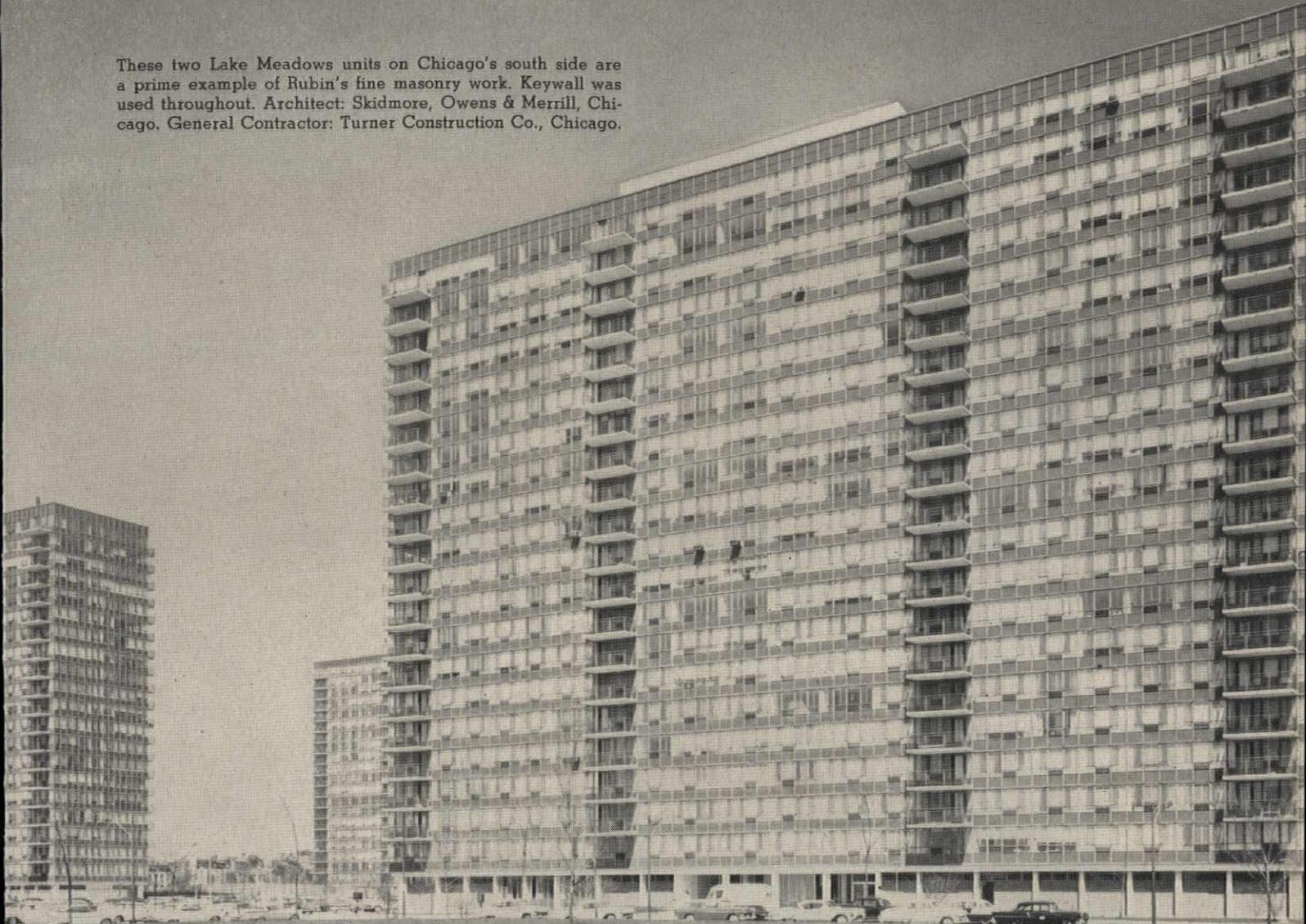
Keywall comes in easy-to-handle 200-foot rolls, galvanized for rust-free storage. Made for the following wall thicknesses: 4", 6", 8", 10" and 12".



Mr. Rubin (standing) notes how easily Keywall is handled on one of his current jobs, the Hyde Park Shopping Center on Chicago's south side. Hyde Park Project Contractor: Webb & Knapp Inc., Chicago. Architects: I. M. Pei & Associates, New York; Harry Weese & Associates, Chicago. General Contractor for Shopping Center: Inland Construction Co., Chicago.



These two Lake Meadows units on Chicago's south side are a prime example of Rubin's fine masonry work. Keywall was used throughout. Architect: Skidmore, Owens & Merrill, Chicago. General Contractor: Turner Construction Co., Chicago.



Rubin used Keywall on the International Minerals & Chemicals Company office building in suburban Skokie. Photographs (left) show interior and exterior masonry construction of this attractive building. Architect: Perkins & Will, Chicago. General Contractor: Turner Construction Co., Chicago.

## **KEYSTONE STEEL & WIRE COMPANY**

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The bill was in the form of proposed amendments to the Hill-Burton hospital construction act, and was suggested as a means of expanding training facilities, revising Title VI of the Public Health Service Act (the hospital and medical facilities construction grant program), and setting up new Federal credit assistance in the construction of group practice facilities.

The broad purpose of the move at this time, said HEW Secretary Ar-

thur Flemming, was to promote sound public and institutional planning for the facilities, the personnel and the organization of services that will be needed to meet present and future requirements for health and medical services and programs.

The proposal was dictated by such factors as the growing population, continued economic growth, higher levels of education attained, greater industrialization and urbanization, and the increasing pro-

portions of younger and older persons in the population.

There is a necessity now for giving greater emphasis to planned expansion and better organization of medical and health resources, according to Secretary Flemming.

The proposed amendments to Title VI of the Public Health Service Act (Hill-Burton) would:

1. permit and encourage states to give more attention and, in exceptional cases, higher priority to projects for the modernization of hospitals and public health centers;

2. authorize increased Federal participation in research and experimentation for more effective use of the services and resources of hospitals and other medical care facilities;

3. place greater emphasis on the construction of special facilities for the care of long-term patients by consolidating the two present categories of chronic disease hospitals and nursing homes;

4. liberalize conditions under which the construction of mental health clinics or, in certain areas, general medical care clinics may be eligible for aid under the program;

5. make available grants to regional, area, and local planning groups to coordinate the planning of hospitals and other medical facilities and services.

An ingenious method for financing the changes has been evolved by HEW personnel so that no increase in existing authorization is needed. This was explained in this way:

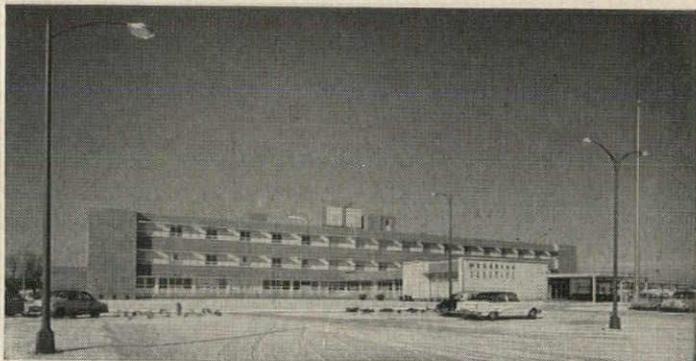
"The current \$150 million authorization for hospitals and public health centers would continue during each of the fiscal years 1961 through 1964. The \$40 million annual authorization for long-term care facilities would replace the existing \$20 million authorization for chronic disease hospitals and \$10 million for grants for nursing homes, and the existing \$20 million annual authorization for grants for the construction of diagnostic or treatment centers would be reduced to \$10 million."

Part of the HEW plan would be to provide grants for medical, dental, osteopathic and public health training facilities construction to assist these institutions in expanding their enrollment capacities. The Department

*continued on page 318*

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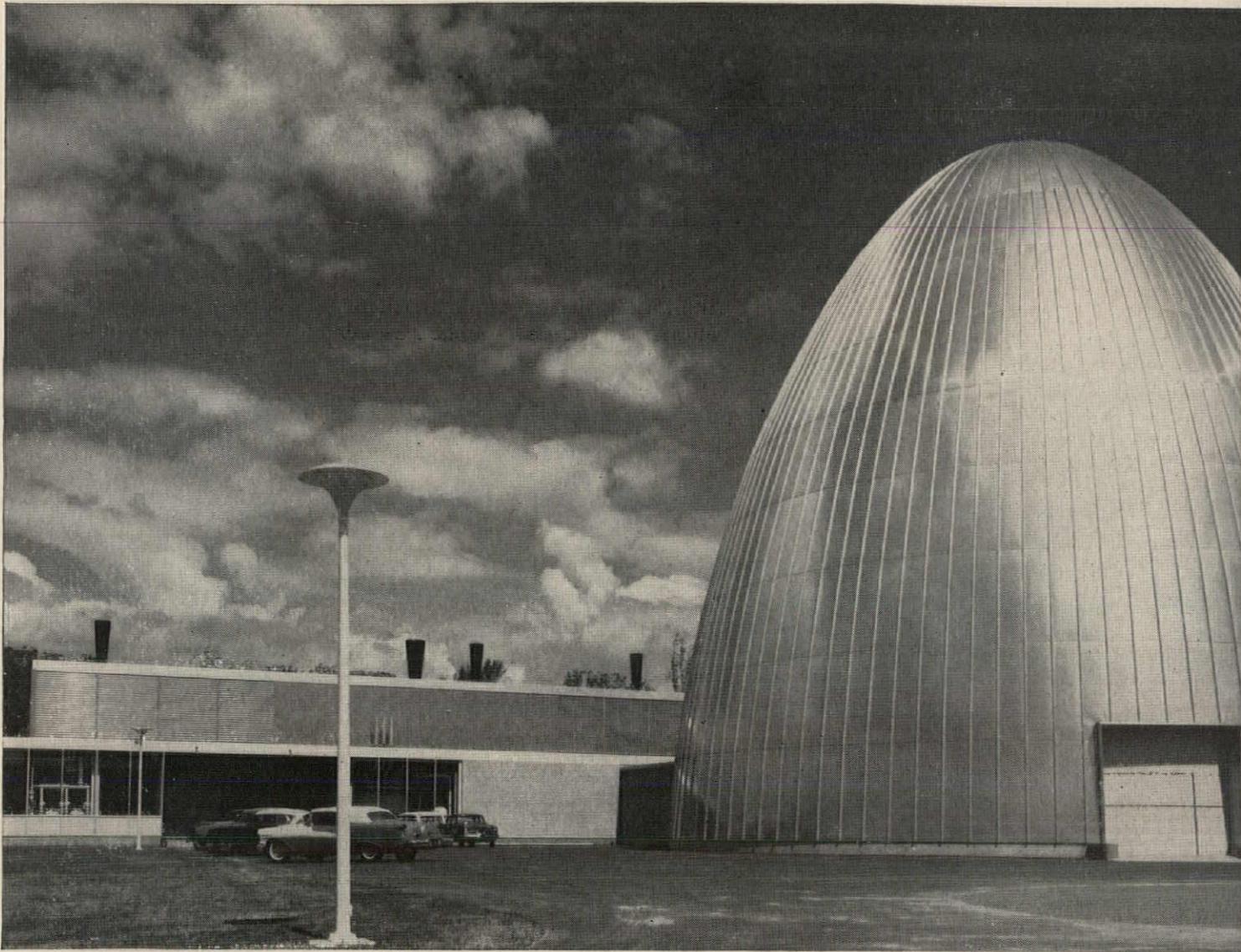
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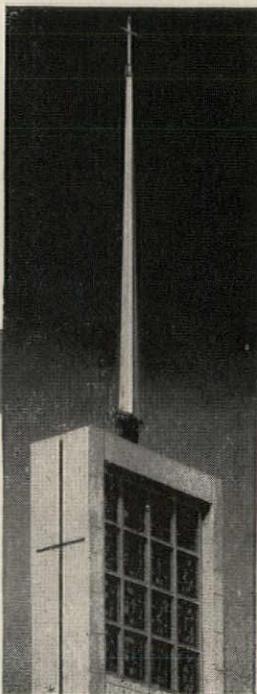
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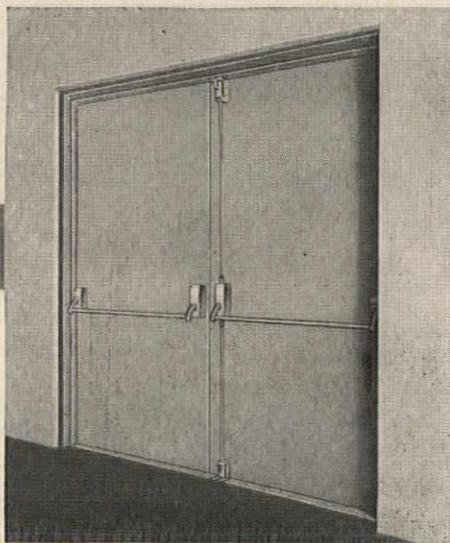
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Reactor Building, Industrial Reactor Laboratories, Inc., Plainsboro, New Jersey  
 Architects: Skidmore, Owings & Merrill, New York City  
 General Contractors: Turner Construction Company, New York City



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Overline Stainless Steel Entrances

# Atomic architecture crafted by Overly wins AIA award

Awarded a 1960 AIA "Honorable Mention," this Overly parabolic roof houses an atomic reactor at Industrial Reactor Laboratories, Inc., in Plainsboro, New Jersey. The graceful dome stands 87 feet high, and contains 14,500 sq.ft. of 16-gage, mill finish aluminum. Designed for lifetime service, this parabolic cover is constructed with Overly's patented mechanical watertight joints, which provide for contraction and expansion in all climatic conditions.

Overly's batten roof system has been specified by architects for almost every type of contemporary metal roof design.\* The Overly system has been adapted for parabolic structures, domes, barrel vaults, groin vaults and to a host of other designs. And Overly is the only national roof fabricator to offer complete erection service and a 15-year warranty on mechanical batten performance.

Regardless of the shape or form of your next metal roof installation, Overly's *craftsmanship* will interpret your design with lasting beauty and accurate definition. Other architectural products crafted by Overly to serve the architect include: A complete line of over 90 styles of hollow metal doors and frames, labeled and non-labeled; Overline Stainless Steel Entrances, built to enhance the design of every building; Overly Fire Barriers, the only product that is U/L labeled for fire and panic protection; Overly Tilt-A-Front construction, an economical wall and entrance fabrication for one- or two-story buildings; and Overly Church Spires, carefully crafted in the finest modern or traditional styles. Overly serves architects across the nation with the finest in architectural products.

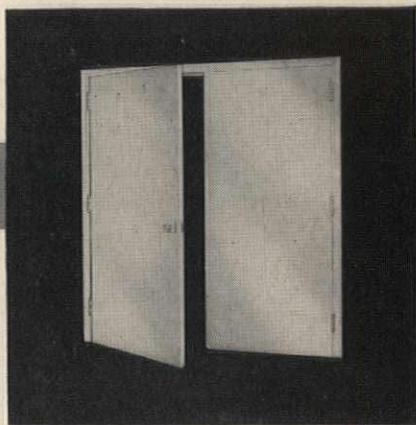
*\*Other current Overly batten type installations may be seen at the Moissant International Air Terminal, New Orleans, La.; the new addition to the U.S. Senate Office Building, Washington, D.C.; the Idlewild International Airport, New York City; the U.S. Naval Academy Gymnasium, Annapolis, Md.; and the University Field House, University of Illinois.*

*The Architect's Craftsman*

## Overly

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Overly "A" Label, Type 50 Doors

ment proposed authorization of a \$100 million expenditure over a five-year period starting July 1, 1960, to support the suggestion.

Of the \$100 million sought, \$75 million would be made available to schools of medicine, osteopathy and public health, and \$25 million would go to the schools of dentistry.

The Surgeon General of the Public Health Service would be authorized to make grants up to 50 per cent of the construction costs.

The draft bill would also provide for a National Advisory Council on Medical Teaching Facilities, and forbid any Federal control over personnel, curriculum, methods of instruction, or administration of any institution.

Still another aspect of the proposals involves setting up a program of Federal guaranties of bonds of private group practice agencies or organizations to assist them in financing group practice medical or

dental care facilities. The Surgeon General would be authorized to guarantee payment of the debt service on bonds sold by group practice agencies or organizations, and payable in 30 years or less.

The guaranty would cover debt service on such bonds to the extent that the pledged revenues prove inadequate, and the aggregate amount of such guaranteed bonds outstanding at any one time would be set in appropriation acts. In any event, however, the amount could not exceed \$30 million. No new contract could be entered into after June 30, 1965.

Bills formally proposing the changes were introduced in both House and Senate and referred to appropriate committees. HEW had hopes of quick enactment, asserting that the provisions in the draft were largely of a non-controversial nature.

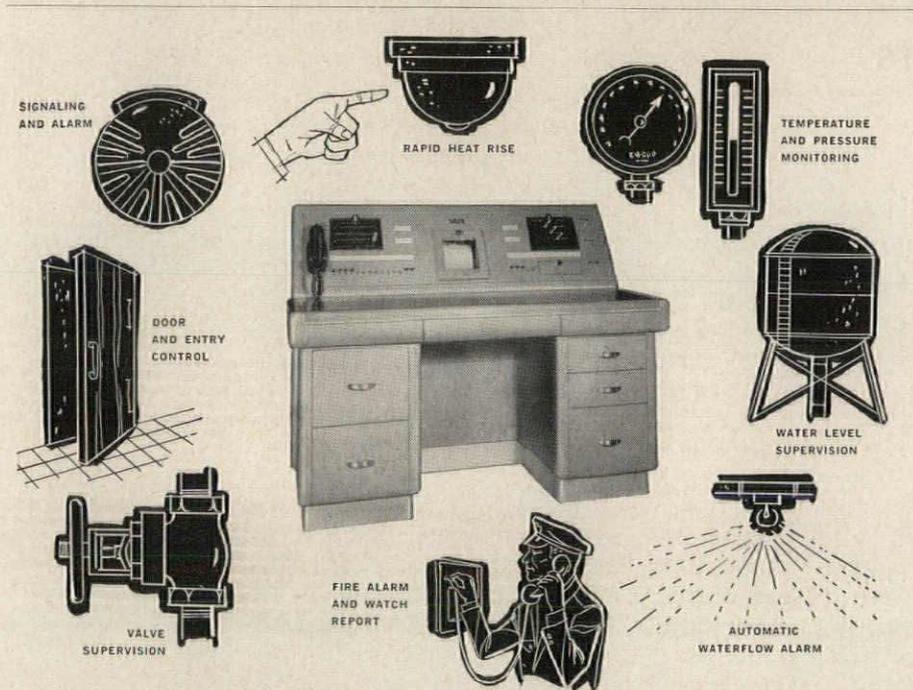
#### HHFA, Still Fund-less for Research, Urges Private Undertakings

The Housing and Home Finance Agency is doing what it can to encourage research without having any funds of its own to put into investigative efforts.

There is a long-standing authority from Congress for the expenditure of \$2.5 million on research studies, but this has not been implemented with appropriations. The Senate has thrown added authority into this year's housing bill for a broad research program in the field of housing, but it appeared that if money to support it was to be forthcoming, the housing agency would have to wait at least until next January.

Meanwhile, housing administrator Norman P. Mason was urging private groups to undertake research on their own to enrich the knowledge on housing subjects. A few weeks ago he announced that the Brookings Institution had agreed to undertake a conference study for the Housing and Home Finance Agency to determine the main areas in which more adequate and reliable information is needed on housing requirements and desires of the elderly. This would serve as a guide to the rapidly growing interest and activity in this field, he said.

*continued on page 322*



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# 62

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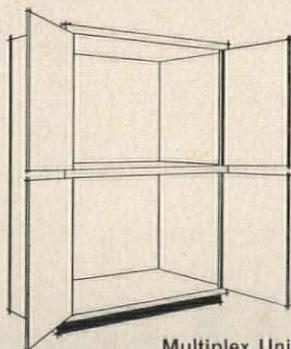
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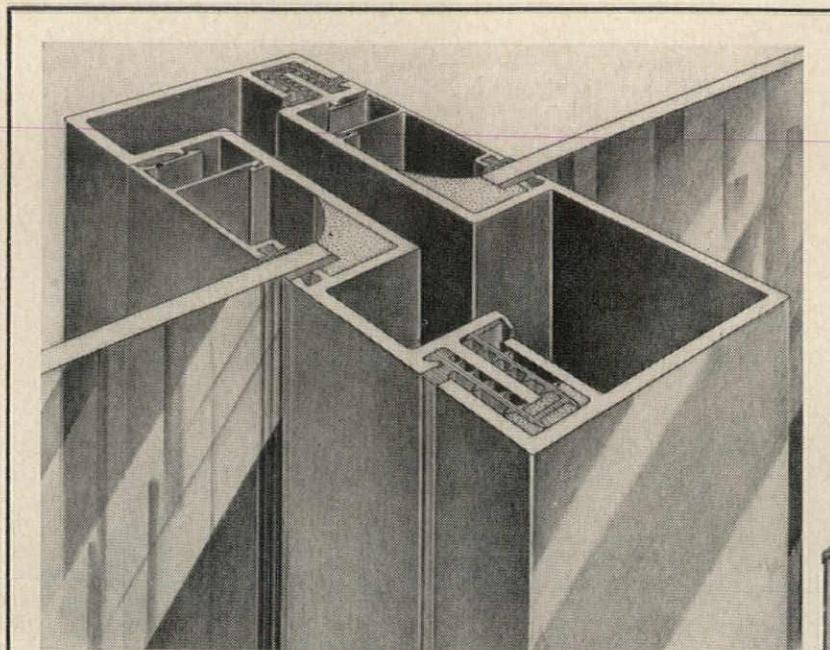
We are planning:  new school;  remodeling job.

name \_\_\_\_\_

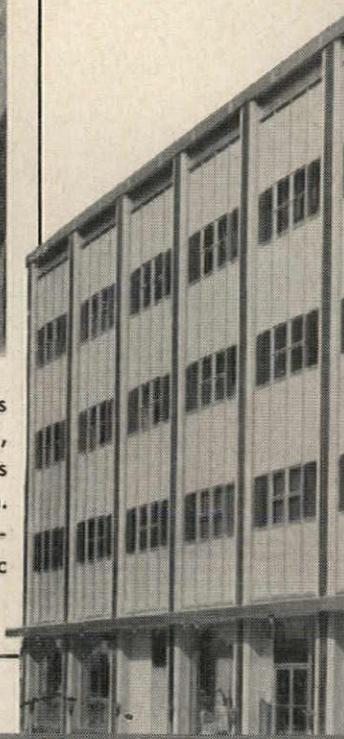
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The curtain wall used on this job was Amarlite Trimline Wall, Series 808, made by American Art Metals Company, Atlanta, Georgia. They report that even under the driving



*Architect:* GILBERT M. FEIN & ASSOCIATES, Bay Harbor Islands, Miami Beach.

*General Contractor:* RICHARD S. FLINK, INC., Miami Beach.

*Curtain Wall Manufacturer:* AMERICAN ART METALS COMPANY, Atlanta.

*Glazing and Curtain Wall Contractor:* ADAMS GLASS SERVICE, Miami Beach.

# Aluminum Extrusions

## Meridian Building, Miami Beach, Fla.

rain conditions during the past winter the performance of the wall has been excellent, crediting the high quality of the Revere Aluminum Extrusions used with helping to make possible this kind of performance.

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The study will take approximately six months to complete and is costing \$16,452.

Mr. Mason said he hoped that recommendations coming out of the study would provide guidelines for private institutions and foundations interested in studies and research in the field of housing for the elderly.

"Much is being done today in the field of housing for the aging, and that is very gratifying," he com-

mented. "However, in view of the tremendous importance of the subject and the fact that the field is relatively new, it is more than ever necessary that this effort be channeled in the right direction.

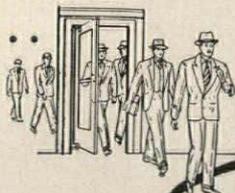
"The purpose of the study to be undertaken by Brookings is to set up guideposts for information and research needed in this field."

The Brookings Institution will select outstanding authorities in the field of housing for the aging to

whom will be assigned the tasks of preparing a series of background papers. These papers will be used as the basis of a two- or three-day conference of architects, financing welfare and other experts in the field of housing for the elderly.

The conference is expected to make recommendations for specific information and study needed and these will be submitted to Mr. Mason and will be published.

more . . .



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Architect:  
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**Sen. Bible Berates Uncoordinated Highway and Renewal Programs**

Conflicts between Federal urban renewal efforts and the interstate highway construction program are hastening the dilapidation of city center areas and contributing to the unplanned development of suburbs, Senator Alan Bible (D-Nev.), chairman of the Senate's District Committee, said recently.

In accusing uncoordinated Federal programs of contributing to urban blight rather than relieving it as they are meant to do, the Nevada Senator used some harsh language. He charged that the interstate highway program was often erecting "Chinese walls" to separate neighborhoods and to pull down otherwise sound residential areas.

"Over the last quarter century, from one crisis in improvisation to another," the chairman said, "our national government has been backing into the future, its eyes glued in the past, reciting the shibboleths of local government self-sufficiency. Today, these can no longer serve."

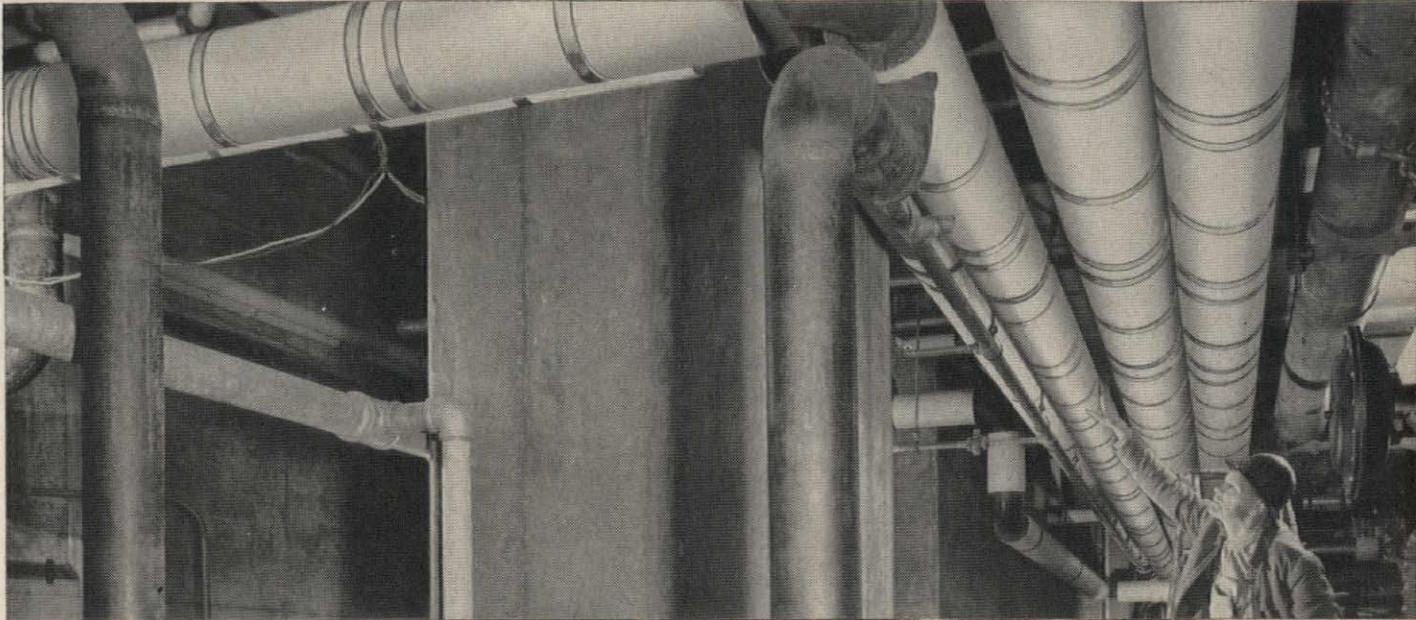
His complaint centered on the allegation that the Federal government programs of housing, redevelopment, highway construction, airport building, hospital and other community facility construction lack strong coordination.

"This is not merely a question of the Federal programs' being administered in a way that handicaps local efforts to solve metropolitan problems," the chairman continued. "It is a matter of the right hand of the Federal government not knowing or caring what the left hand does."

Speaking in San Francisco before a meeting of the American Council to Improve our Neighborhoods (ACTION), Senator Bible indicated he

*continued on page 330*

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Insulation for building service lines—iced water, chilled water, low pressure steam or dual temperature—has frequently proved a maintenance headache. Now you can design away that headache with FOAMGLAS Stay-Dry Pipe Insulation and its combination of five vital benefits. First, since FOAMGLAS is incombustible and the jacket self-extinguishing, FOAMGLAS Stay-Dry Pipe Insulation substantially reduces fire hazards. Second, constant insulating value results from the absolute imperviousness of FOAMGLAS to all moisture. Separate vapor seals are unnecessary.

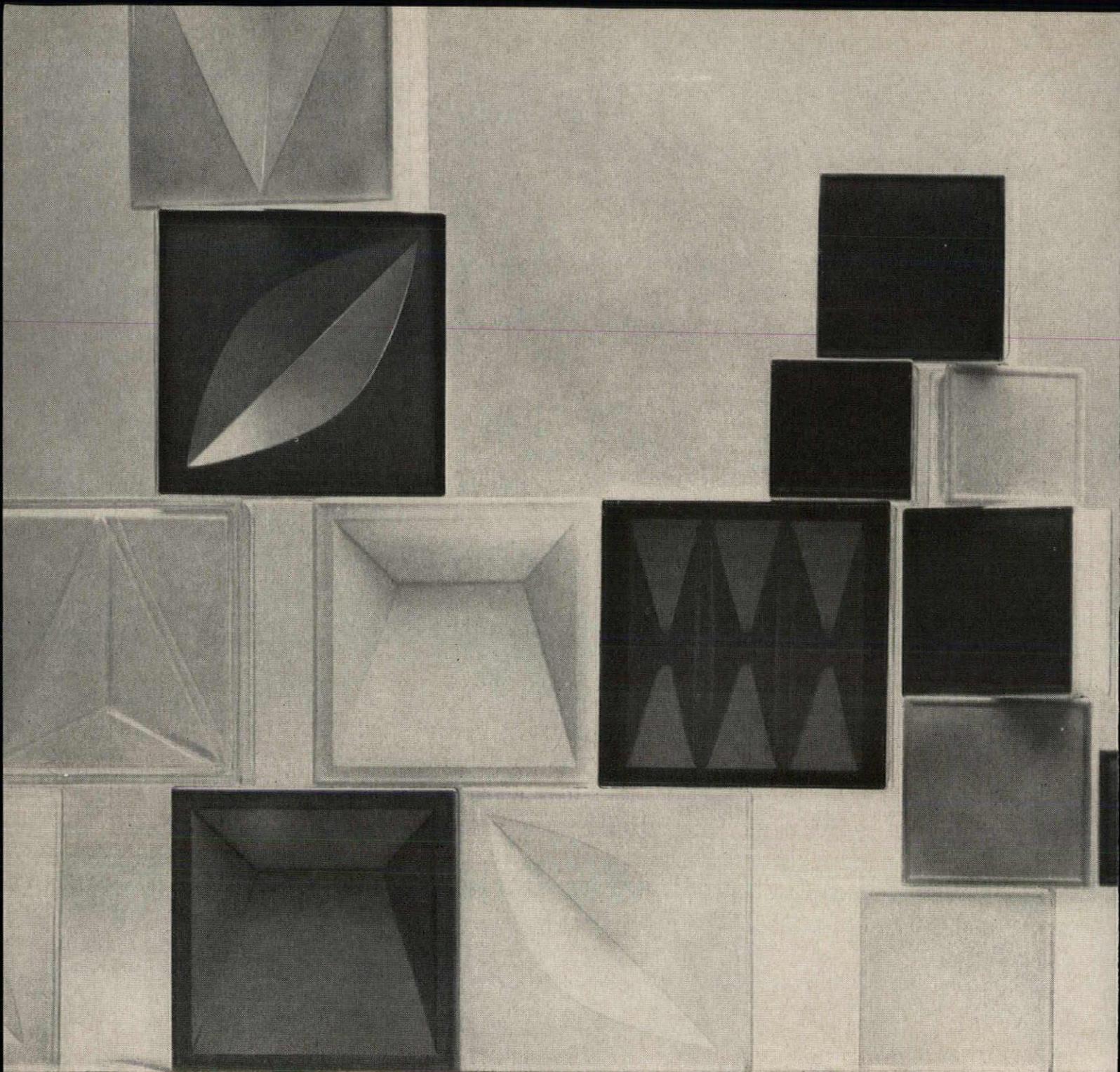
Next is the elimination of all weak spots in piping runs. The extraordinary compressive strength of FOAMGLAS prevents slump or sag on the highest vertical runs and saddle supports can never puncture the insulation. Fourth, the insulation is furnished with a factory applied Kraft-foil jacket. And fifth, all these benefits can be applied to total piping systems since FOAMGLAS Stay-Dry Pipe Insulation is available in sizes from 1/2" copper tubing to 12" IPS with fitting covers and elbows to match. (Continued)

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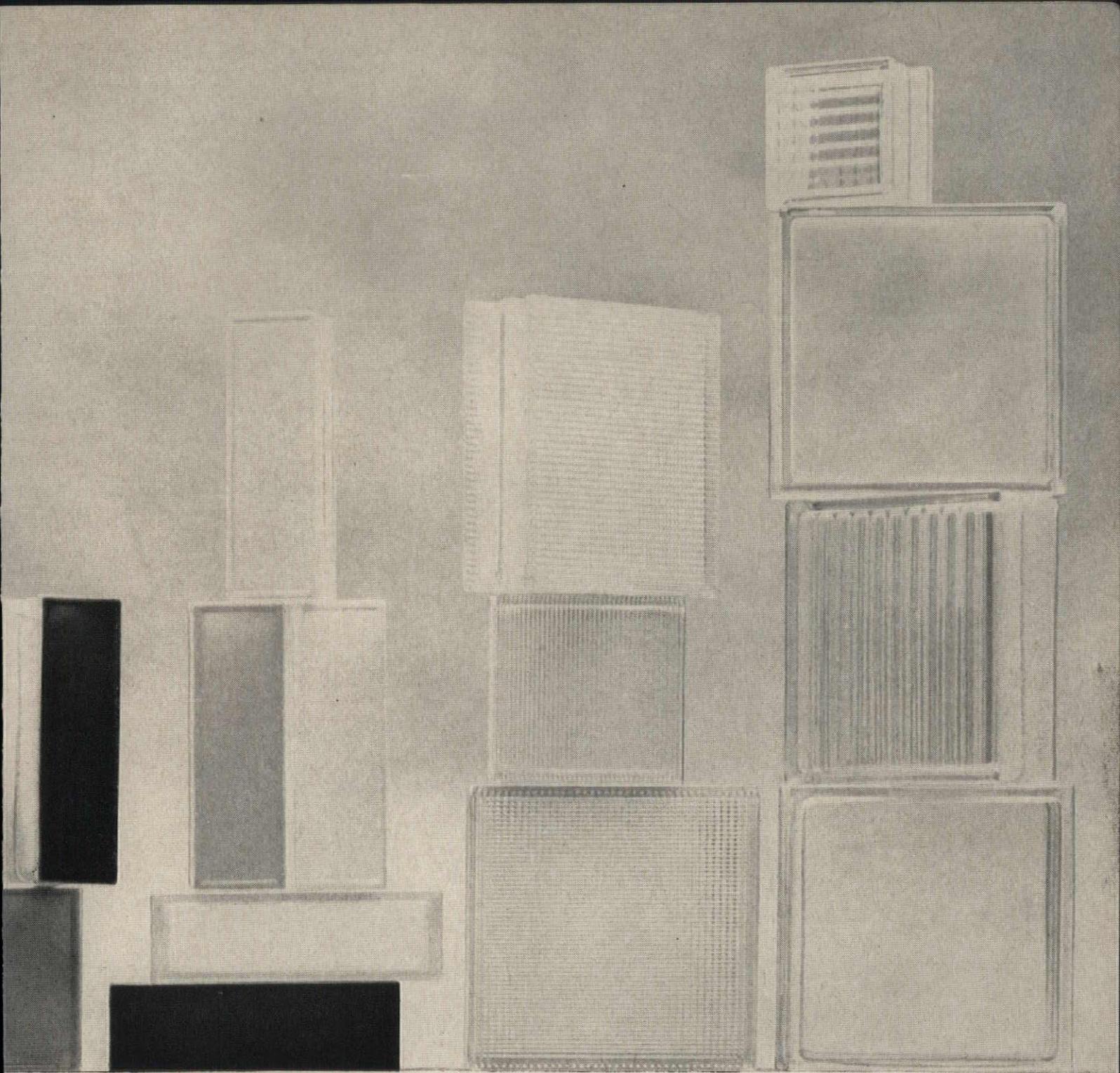
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example: curtain wall design inventory  
— light and shade, color,  
shape and texture in one  
functional material



Consider how broadly PC Glass Blocks and Sculptured Modules contribute to creative interpretation of the basic concept of curtain wall design. No curtain wall material offers the thoughtful architect so many intriguing combinations of surface enrichment and function.

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 insulation... firm  
 support for the  
 beauty of a  
 curtain wall  
 panel design

Beauty is far more than skin deep on this Mutual Trust Life Insurance Building curtain wall. It goes to the panels' functional dependability—kept well in hand by the FOAMGLAS insulation used to form their cores. Rigid FOAMGLAS forms a flat, strong support for the porcelain enameled faces of these panels. The rigidity, unique strength and dimensional stability of FOAMGLAS help make an unusually strong panel with exceptional flatness and freedom from maintenance.

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Time after time, you'll find the best curtain wall panel designs built around an insulating core of FOAMGLAS. No other insulation combines in one material so many benefits for both architect and client. Find out how to add those benefits to *your* next design. Write for our curtain wall brochure.

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| <input type="checkbox"/> FOAMGLAS Low Temperature Insulation         | <input type="checkbox"/> The PC 4 x 12 Block  |
| <input type="checkbox"/> FOAMGLAS Insulation for Industrial Piping   | <input type="checkbox"/> PC Color Glass Blocks                                      |
| <input type="checkbox"/> FOAMGLAS Stay-Dry Pipe Insulation           | <input type="checkbox"/> FOAMSIL, <sup>®</sup> the Acid-proof Insulating Refractory |
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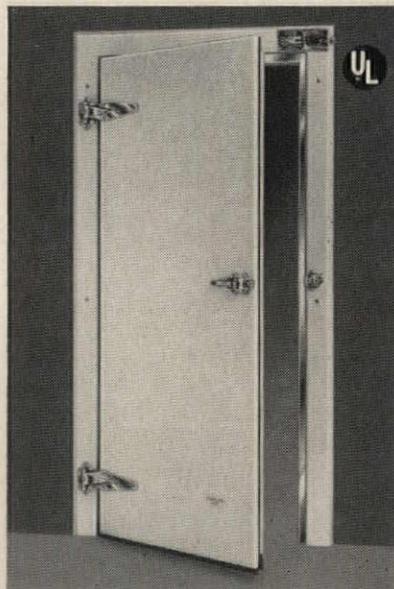
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**4" Thickness:** JAMOLITE Cooler and Freezer Doors are both only 4" thick, both flush-fitting.

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**Frostop** on Freezer Door prevents ice formation. Carries Underwriters' Laboratories label on most sizes.

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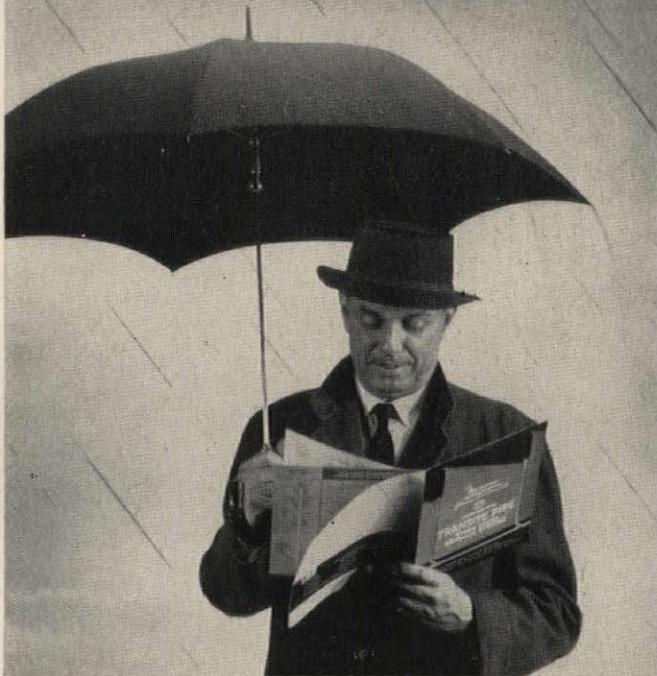
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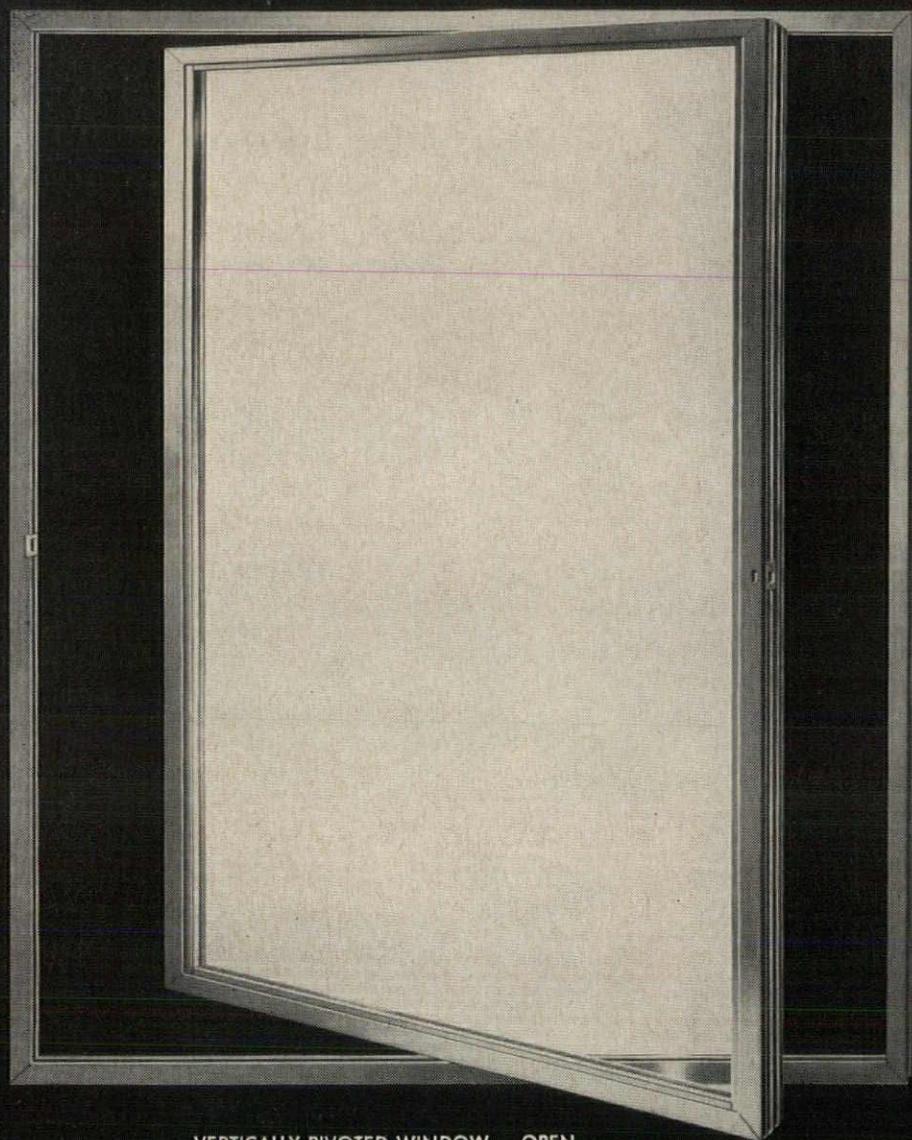
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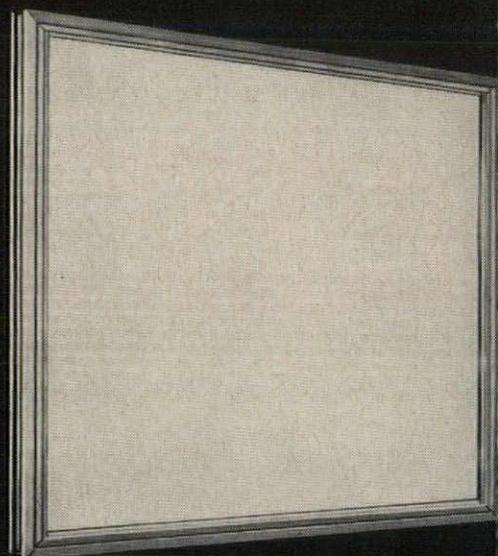
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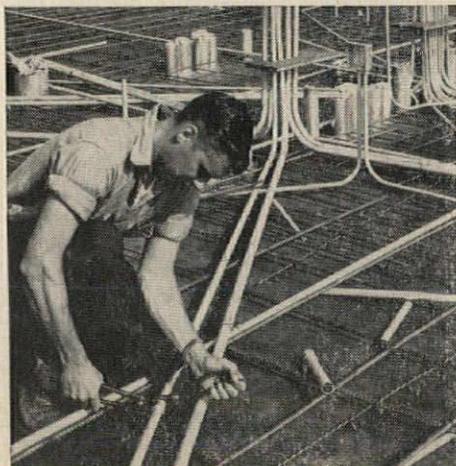
VERTICALLY PIVOTED WINDOW... CLOSED

*New Product*

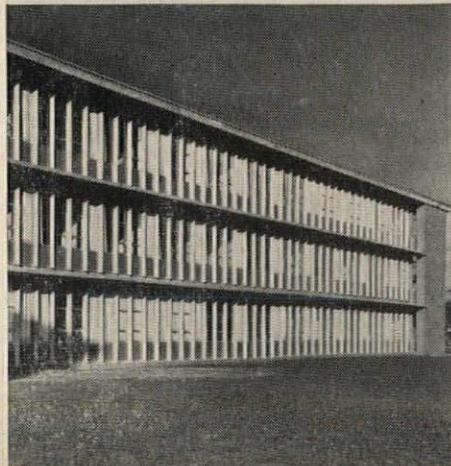
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*of the Month*

**BUILD IN FUTURE CAPACITY!** Republic ELECTRUNITE Electrical Metallic Tubing provides an economical grounded wiring system with room for future electrical expansion. By specifying ELECTRUNITE E.M.T. in the next larger size, you can build in tomorrow's future capacity at a cost no greater than with ordinary threaded conduit. Write for information.



**TRUSCON VISION-VENT** Curtain Wall Construction is a fast, economical method of building. Select practically any type of window. VISION-VENT is available with a choice of high-gloss panel colors, porcelain enamel, stainless steel, or aluminum. Send for data.



**REPUBLIC STEEL LOCKERS** meet virtually every architectural requirement for good planning. Big and roomy interiors are designed for convenience and comfort. Strong, sturdy, steel construction protects valuables and clothing. Bonderized for long service.



# VERTICALLY PIVOTED ALUMINUM WINDOW

*double weatherstripped around vent . . .*

Rotates a full 360-degrees, and locks automatically in reverse position.

Cleaning is done simply and safely from the inside.

Ideal for air conditioned buildings. Window is double weatherstripped around the entire vent perimeter.

Positive vent corner construction and vinyl sponge frame corner fillers insure a tight seal.

Fresh air, too. This window is designed to accommodate a down-and-out transom unit or an up-and-in hopper vent, or both, using the same outside pivoted frame section around the entire unit.

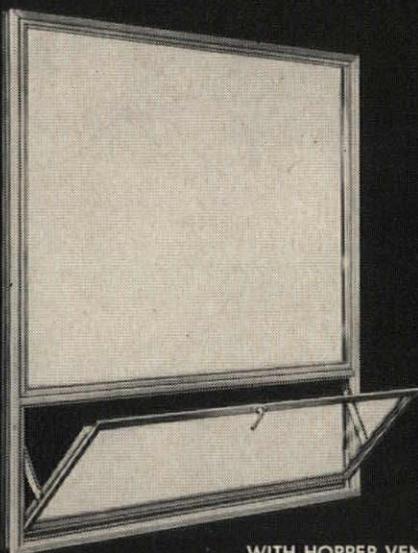
There are a minimum of parts to require maintenance. Hardware is white bronze and stainless steel. It's quality constructed throughout, yet economically priced.

Offers unlimited versatility and design and application.

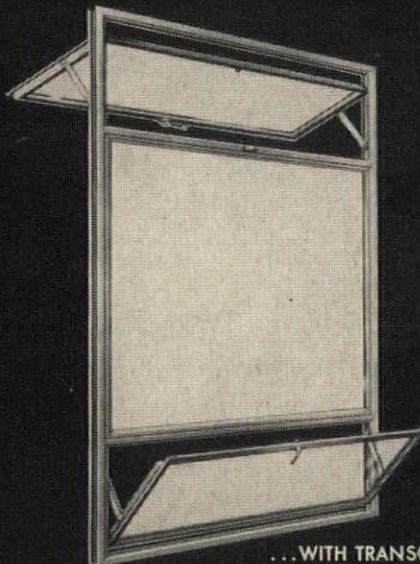
Give owners and tenants this opportunity to more easily cleaned and sparkling windows.

Investigate Truscon's newest—the Vertically Pivoted Aluminum Window, Series 55A.

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felt some form of national investigation of the developing metropolitan problems in this country lay ahead. His committee has been concentrating heavily on the problems of the Washington, D. C. "metropolitan area" and early in June proposed legislation looking toward a subway and rapid transit system for the nation's capital.

The Nevada lawmaker feels that rapid transit cannot serve the whole needs of a city. Nor does he feel

that competition can promise satisfactory mass transit. He was emphatic in asserting that transportation and metropolitan development are part of the same package and should not be separated in urban planning.

"If it is regarded as a separate activity," he said of transportation, "its great constructive force will be lost, and instead it will constitute the greatest obstruction to city development."

**Construction Aid Requested For Dental Research and Teaching**

Both Administration officials and private spokesmen have urged Congress to enact legislation assisting in the construction of medical and dental schools.

They told a House Interstate and Foreign Commerce Committee that Federal aid for this purpose was of utmost importance to the nation's future health and welfare.

Dr. Lester Burket, dean of the school of dentistry, University of Pennsylvania, representing the American Dental Association, noted a recent survey showing that existing dental schools planned to expand and improve teaching and research facilities by some \$104 million during the next five years, if sufficient funds could be found.

A Federal matching grant program was suggested as assurance that the construction would go forward. Dean Burket said a program of more than \$100 million in dental school and research facility construction surely would go forward if an assistance bill became law.

Arthur S. Flemming, Secretary of Health, Education, and Welfare, said there was a need for more dental and medical school facilities, and that some type of Federal aid should be enacted. He supported the Administration proposal for authorization of five-year programs of \$100 million grants to assist in meeting construction and renovation costs. Of the total, \$25 million would be for dental schools, \$75 million for schools of medicine, osteopathy, and public health. The Federal grants would constitute half of the construction cost going to areas of greatest need.

**Public Works to be Honored With a "Week" of its Own**

One of the final acts of the Congress before it recessed July 2 was to proclaim October 2-7 as National Public Works Week. It decreed that the period would be celebrated "with appropriate activities and ceremonies." The proclaiming resolution held that such a week would be an effective way of "explaining the role public works engineering and administration play in the lives of every American family, and par-

*continued on page 338*

*Just published . . .*

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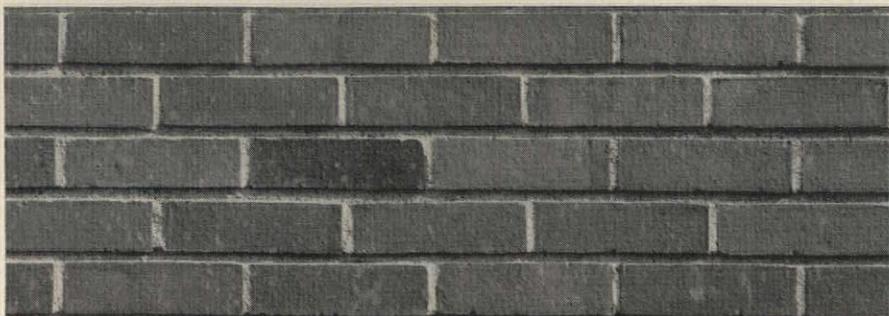
**119 West 40th Street • New York 18, N. Y.**

# ALPHA

BETTER CONSTRUCTION THROUGH  
BETTER USE OF CEMENTS

## news and notes from the field

### The Facts Behind Weather-Proofed Masonry Construction



**STRONG, DURABLE CONSTRUCTION.** Attractive, weather-resistant joints like this resist the effect of freezing and thawing, eliminate the need for costly repointing.

Test after test has shown conclusively that good design, good workmanship and good materials will produce sound, attractive masonry, capable of resisting the most severe conditions.

#### The Vital Component—Mortar

The weather resistance of a mortar used for masonry work is a measure of the mortar's efficiency in helping to produce durable construction. When joints spall and flake, they may be disintegrating because of freezing and thawing, and spalling will continue until repointing is necessary. Air entrainment brings the solution to the problem.

#### Entrained Air in Field Mortars

Air-entraining cements were developed to produce concrete for paving that would resist severe frost action and the effects of freezing and thawing. *Entrained air produces the same advantages in Alpha mortar cement.* Billions of minute, unconnected air bubbles provide a density that resists the entry of water and prevents freezing.

#### Journal of the American Concrete Institute Research Report Confirms Need for Air Entrainment in Mortar Joints.

An extended research project at Lafayette College resulted in these important conclusions regarding the durability of mortars subjected to moisture during freezing weather:

1. No cement-lime sand mortar was durable under freezing and thawing without entrained air.
2. An air-entraining agent could be used to make cement-lime mortars durable but more air was needed than furnished when an air-entraining cement was used.

3. A minimum air content of 11% in the field mortar was needed for ASTM C-270 types M, S and N mortars (Type N is a 1:1:6 cement-lime or a 1:3 masonry-cement mortar; types M and S have more Portland cement).

4. A minimum air content of 13% was needed for types O and K mortars (1:2:9 or 1:3:12).

5. Masonry-cement mortars were all durable without the need of an additional air-entraining agent.

#### Suggested Mortar Mix Specification for Unit Masonry

The following specification has been drawn up at the request of a number of architects to provide a simplified, brief specification.

A.I.A. File No. 3-A

##### 1. SCOPE:

This division of the specifications covers mortars for all types of masonry work indicated on the drawings and in the specifications. The mortar shall be prepared, tested and used as described in ASTM C-270, except as listed below.

##### 2. MATERIALS:

All materials shall conform to ASTM C-270, except as listed below:

- a. MASONRY CEMENT shall be Alpha mortar cement or equal and

shall conform to ASTM Designation C-91, except that it shall have a water retention of not less than 75%.

- b. AIR-ENTRAINING AGENTS, if needed, for use in hand mixes shall meet ASTM Designation C-260.

##### 3. PROPERTY SPECIFICATIONS:

All field mortars shall be mixed, tested and used according to ASTM Designation C-270, except as follows:

No type O or K mortars shall be used in this project. Type N masonry-cement mortars shall be used for all masonry work, except where otherwise indicated. If high strength is required, a type M or S mortar may be designated. No lime shall be used in any mix.

##### 4. PROPORTION SPECIFICATIONS:

The ASTM C-270 proportion specification shall apply except that no type O or K mortars shall be permitted in the work covered by these specifications. No lime shall be used in any mix.

##### 5. MIXING:

All mortars in the field shall be mixed with a machine mixer for at least 5 minutes after all materials are in the drum. Hand mixing will only be permitted with written permission from the architect. If hand mixing is used, the air content of the mortar in the field shall be checked with an air meter to make certain that the air entrained is in excess of 11%. If the air entrained is less than 11%, an air-entraining agent shall be added in sufficient quantity to bring the air content of the field mortar up to 11%.

##### 6. COST OF TESTS:

The cost of any required tests shall be borne by the contractor. Manufacturers mill test reports are acceptable for cement, masonry cement and air-entraining agents.

Reprints of this advertisement  
are available on request.

# ALPHA

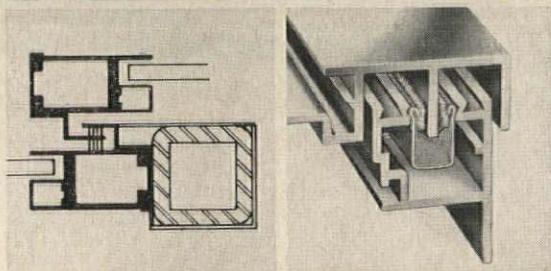
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# PUT THE LOAD ON MILLER

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(Left). Detail shows steel tube, aluminum encased, load bearing mullion as integral part of frame.

(Right). Weatherseal is more than a part—it's also how the door maker relates it to the total door design. Miller's engineered method results in a smooth, easy sliding door that seals securely around the entire perimeter of opening vent.

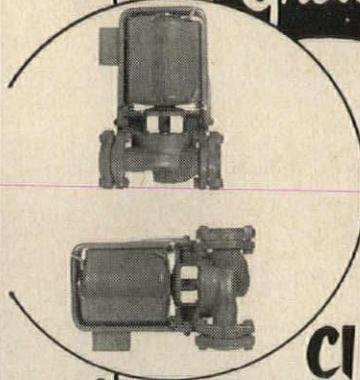
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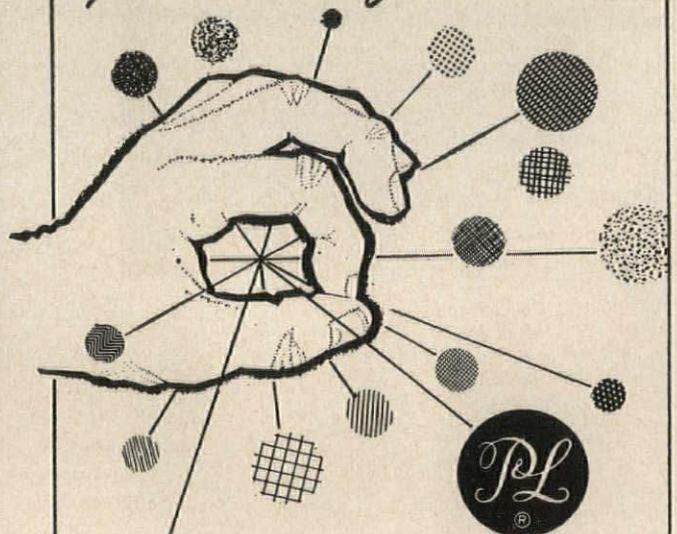
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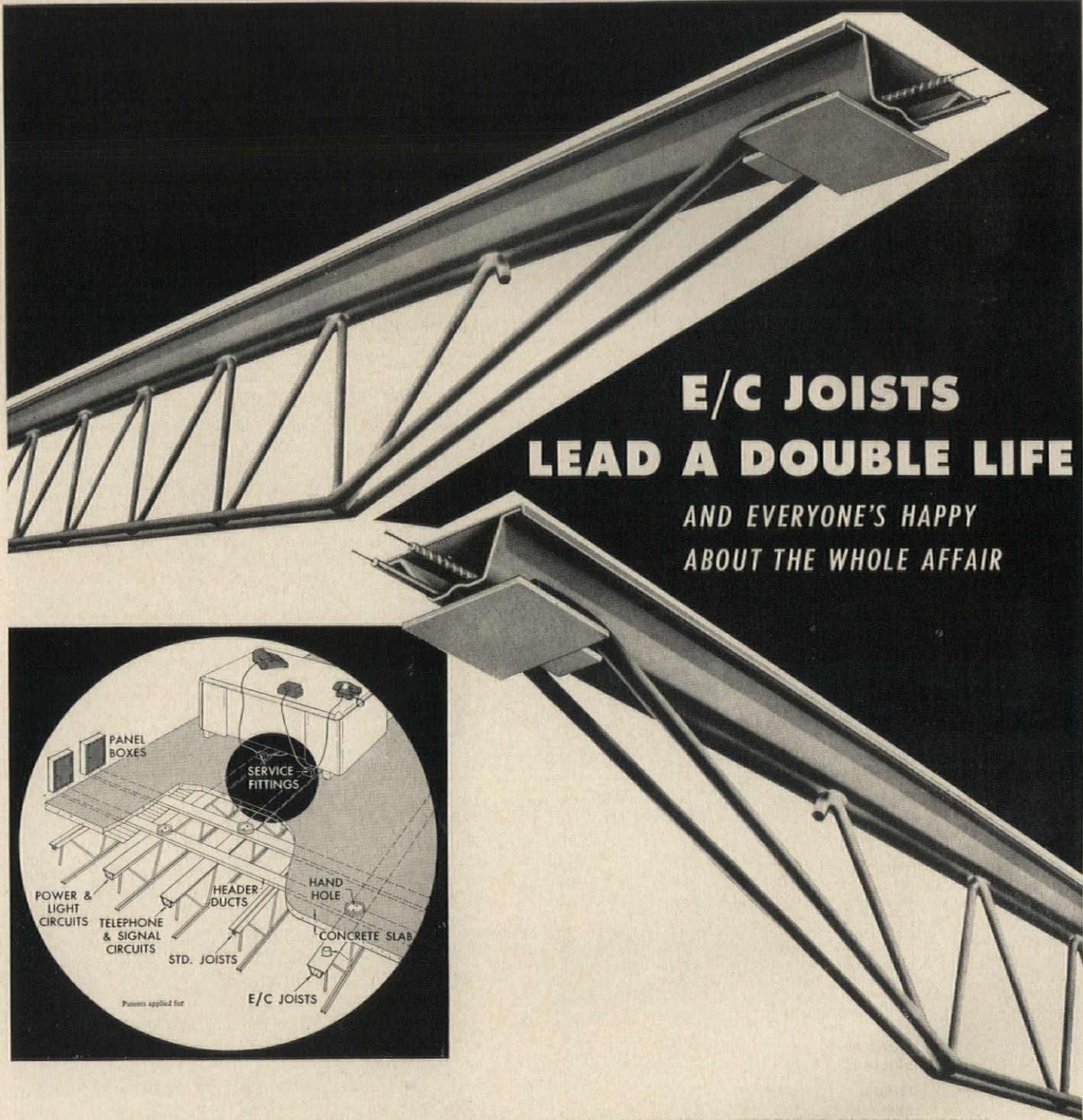
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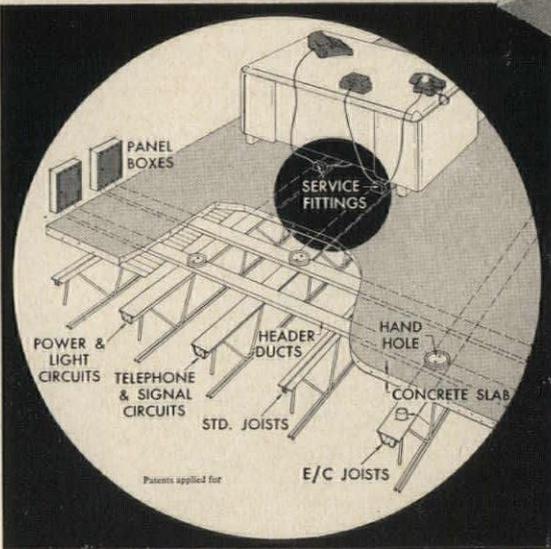
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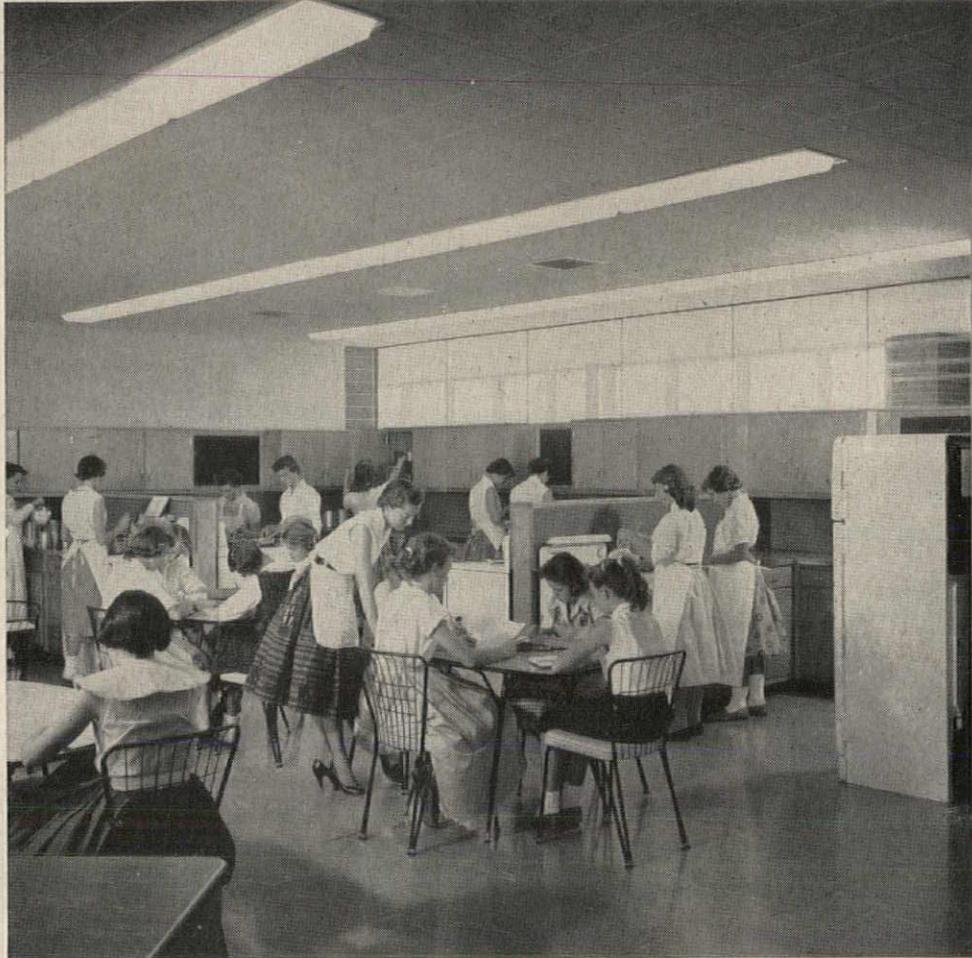


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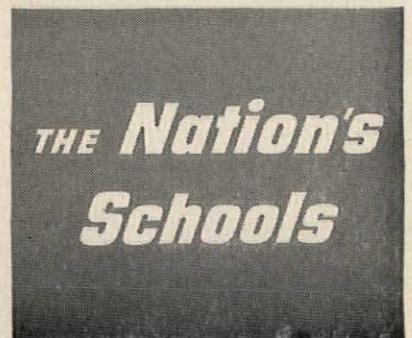
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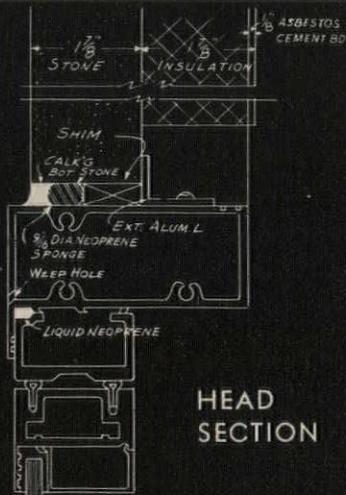
LIMESTONE

## APPLICATIONS IN CONTEMPORARY ARCHITECTURE

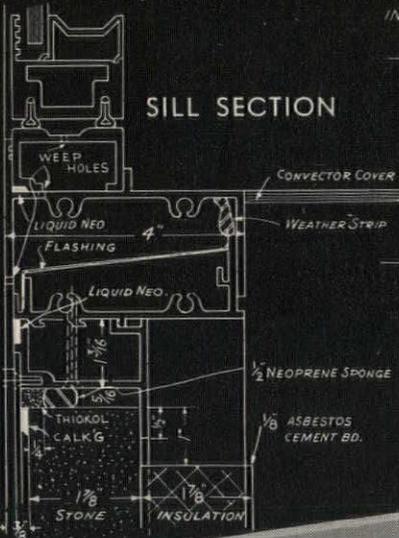
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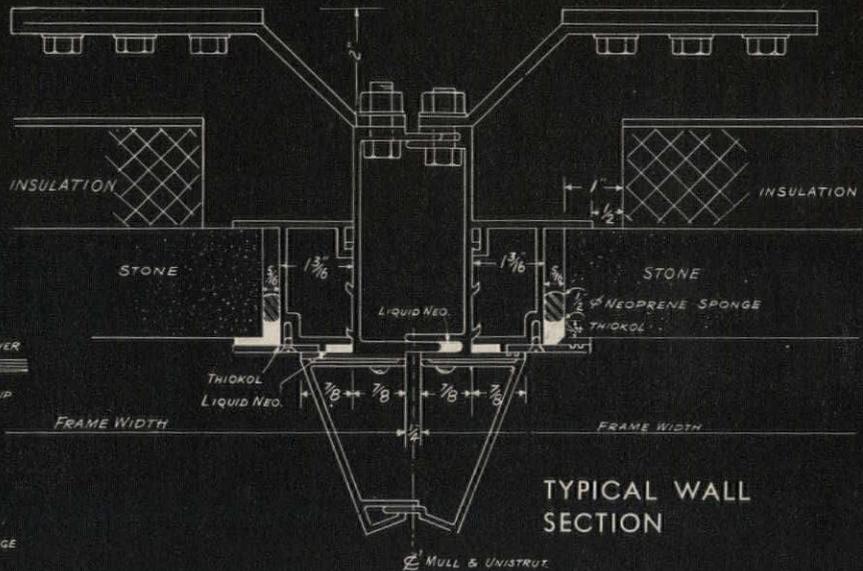
Architects: Associated Indiana Architects  
Contractor: Thomas A. Berling & Sons  
Curtain Wall: Adams-Westlake



HEAD SECTION



SILL SECTION



TYPICAL WALL SECTION

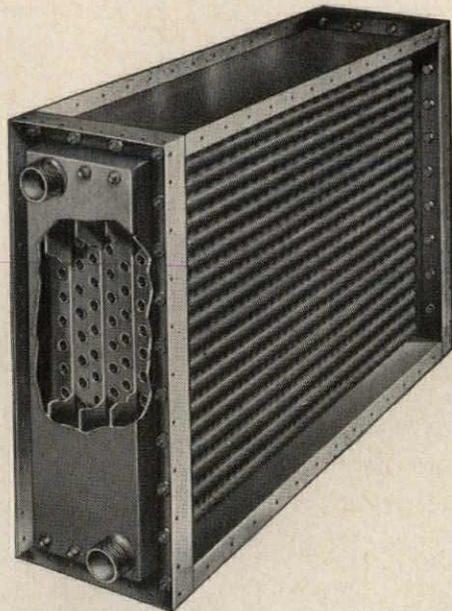


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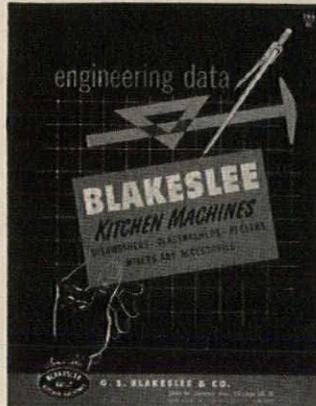
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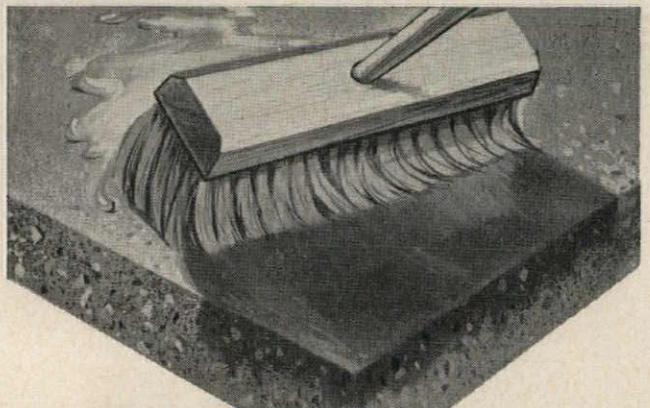


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**Washington Topics**

ticularly, those living in urban communities." And, "It is felt that this program will help to arouse an interest in the young people of this nation to pursue careers in the public service, inasmuch as that service needs top-flight men of imagination, vision and foresight in the field of public works."

**Meeting on Marketing Techniques Planned by Producers' Council**

A marketing conference for and by building material producers will be a part of the annual fall meeting of the Producers' Council, Inc., to be held in Chicago October 5-7. The afternoon of October 5 and the luncheon that day will be devoted to discussions of marketing practices, and a progress report on the Council's comprehensive study in this field will be heard. Chairman of the Council's marketing committee is David Miller, marketing vice president of the Kawneer Corporation at Niles, Michigan.

**Bragdon Transferred to CAB From Public Works Unit**

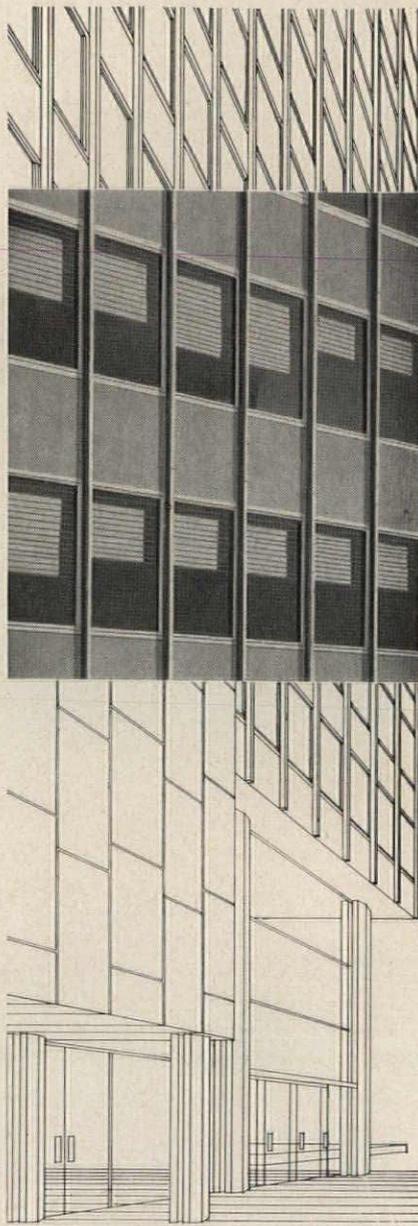
The President's coordinator of public works planning, Maj. Gen. John S. Bragdon, was slated last month to take over his new position as a member of the Civil Aeronautics Board. He was confirmed for the post by the Senate on a 73 to 18 vote.

The executive unit on the planning of public works will continue to function after he has transferred to CAB, he explained. No successor had been appointed at this writing.

Under his administration, the coordinating office assembled considerable data on the plans of governments—Federal, state and local—for all types of public works, their detailed plans and timing for construction.

One of the final tasks of the office under Gen. Bragdon was that of compiling an exhaustive report on the Federal highway construction program and its administration by the U. S. Bureau of Public Roads.

Private construction interests said they would not be surprised to see the office discontinued at the end of the Eisenhower Administration.



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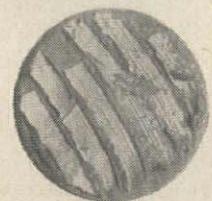
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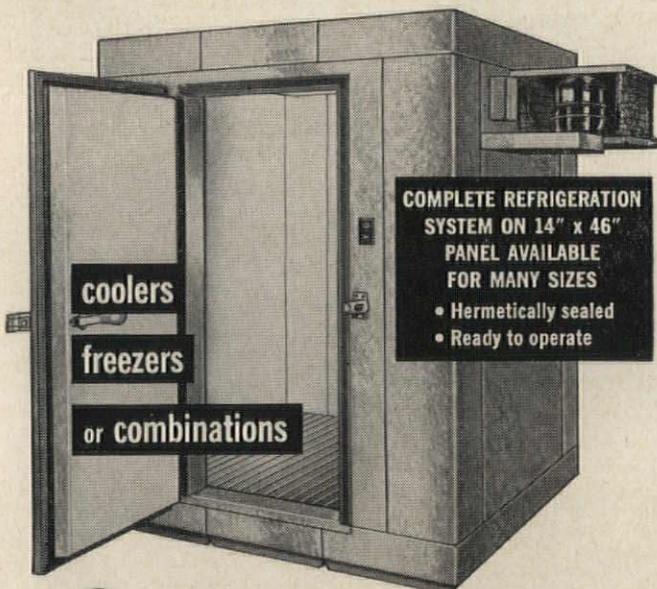


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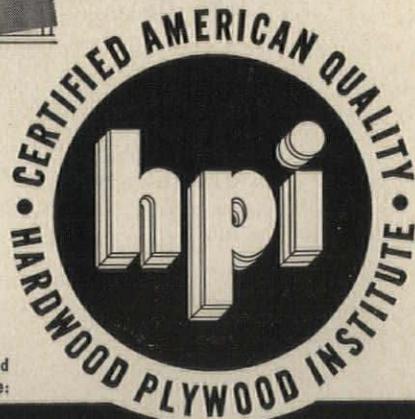
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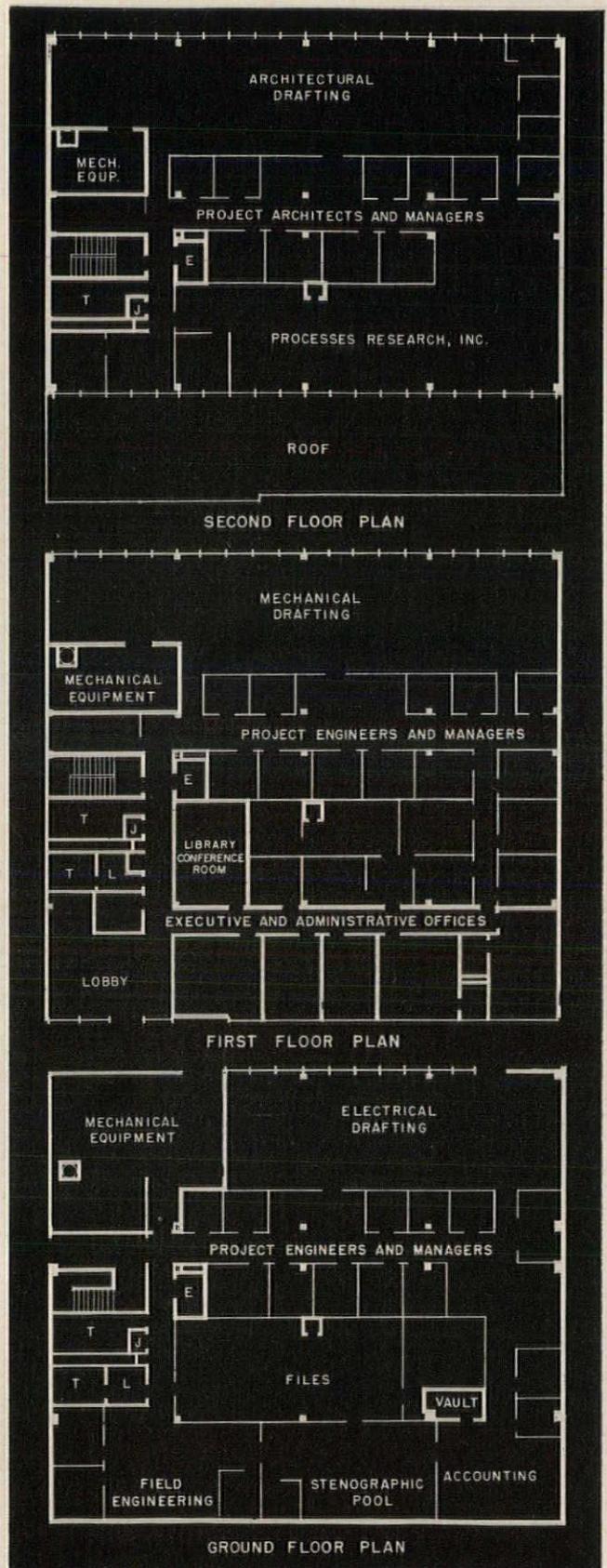
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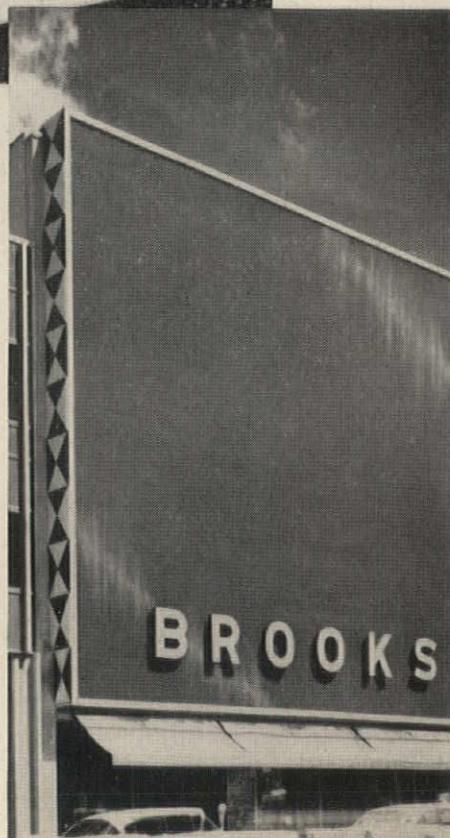
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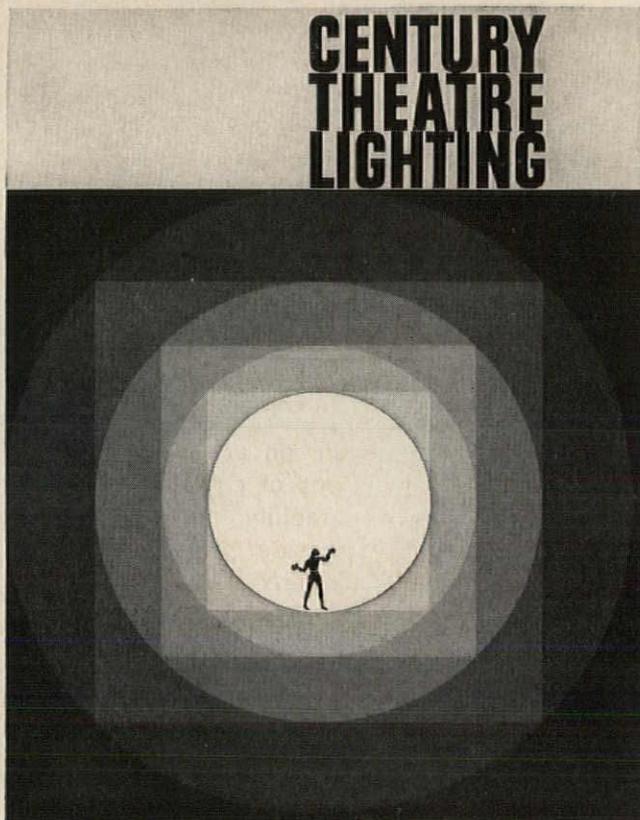


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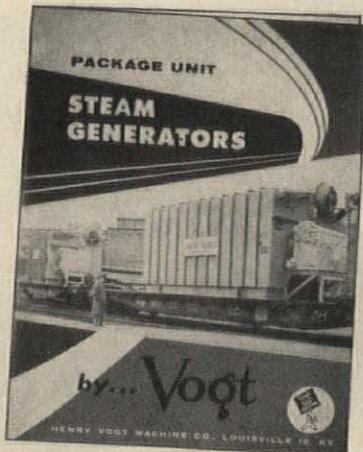
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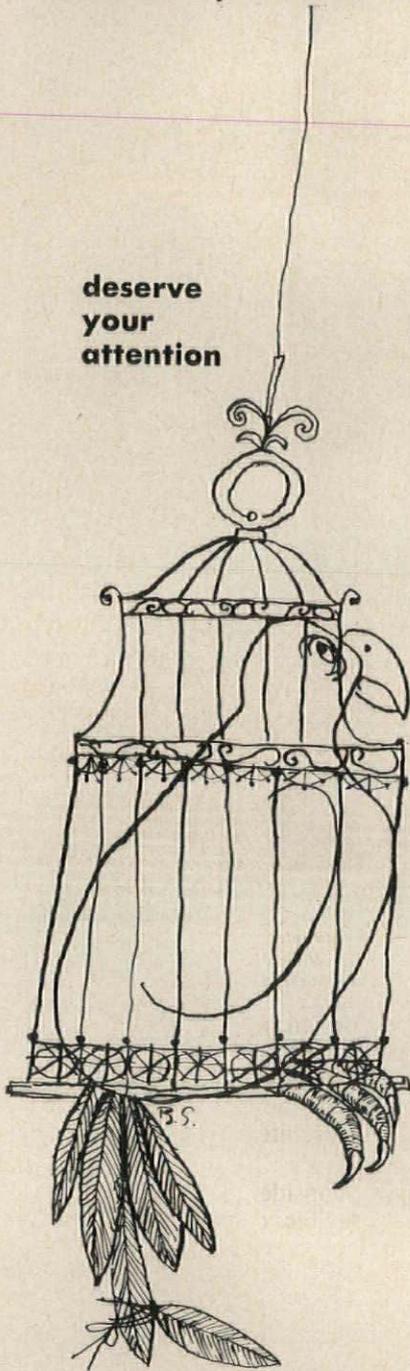
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## Required Reading

continued from page 88

### Technical...

DESIGN OF INDUSTRIAL EXHAUST SYSTEMS. *By John L. Alden, The Industrial Press, 93 Worth St., New York 13. 243 pp., illus. \$6.*

A third edition, updated from the previous edition of 1948.

AN INTRODUCTION TO THE DYNAMICS OF FRAMED STRUCTURES. *By Grover L. Rogers. John L. Wiley & Sons, Inc., 440 Fourth Ave., New York 16. 355 pp., charts and tables. \$10.25.*

An introduction to the theory of structural dynamics pertaining to the special problems of beams and rigid frames, using mathematics (matrices and orthogonal functions) in presenting the analytical aspects of dynamic disturbances in structures.

BUILDING CONSTRUCTION: ROOF FRAMING. *By Alonzo Wass and George A. Sanders. Prentice-Hall, Inc., 70 Fifth Ave., New York 11. 170 pp., illus. \$5.75.*

A simplified presentation designed to be used as a manual.

DATA BOOK FOR CIVIL ENGINEERS, VOL. I: DESIGN. *By Elwyn E. Seelye. John Wiley & Sons, Inc., 440 Fourth Ave., New York 16. 956 pp., illus. \$24.*

Third edition, replacing the 1951 edition.

ALUMINUM CONSTRUCTION MANUAL. *The Aluminum Association, 420 Lexington Ave., New York 17. 389 pp., illus. \$3.*

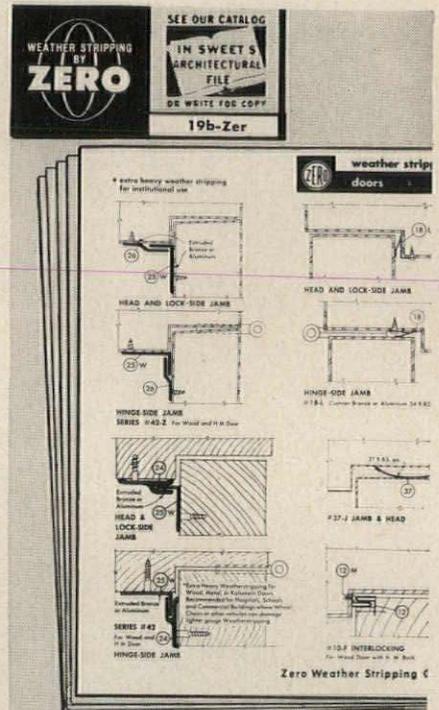
Contains data on dimensioning, weight and allowable loads, as well as specifications information, for structural aluminum elements.

ENVIRONMENTAL SANITATION. *By Joseph A. Salvato Jr. John Wiley & Sons, Inc., 440 Fourth Ave., New York 16. 637 pp., illus. \$12.*

Emphasizes sanitation problems of small communities; includes material on design, construction, maintenance and operation of small plants.

PRACTICAL PRESTRESSED CONCRETE. *By H. Kent Preston. McGraw-Hill Book Co., Inc., 330 W. 42nd St., New York 36. 335 pp., illus. \$11.50.*

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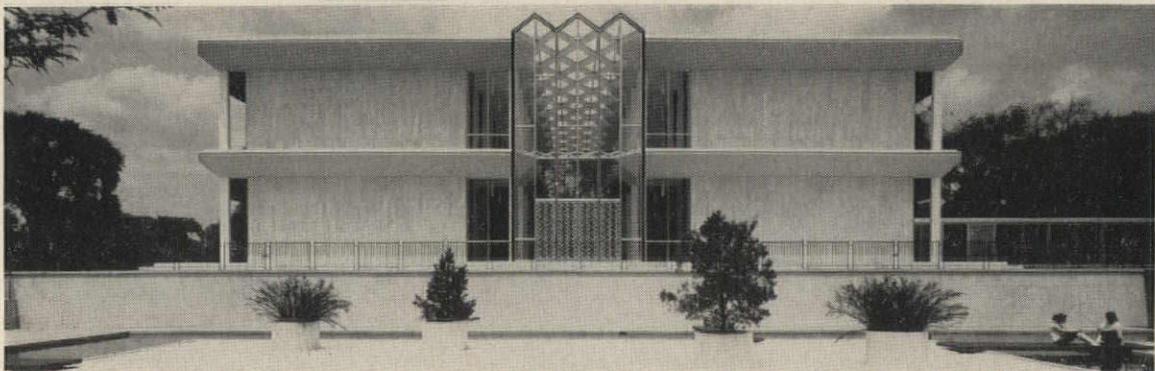
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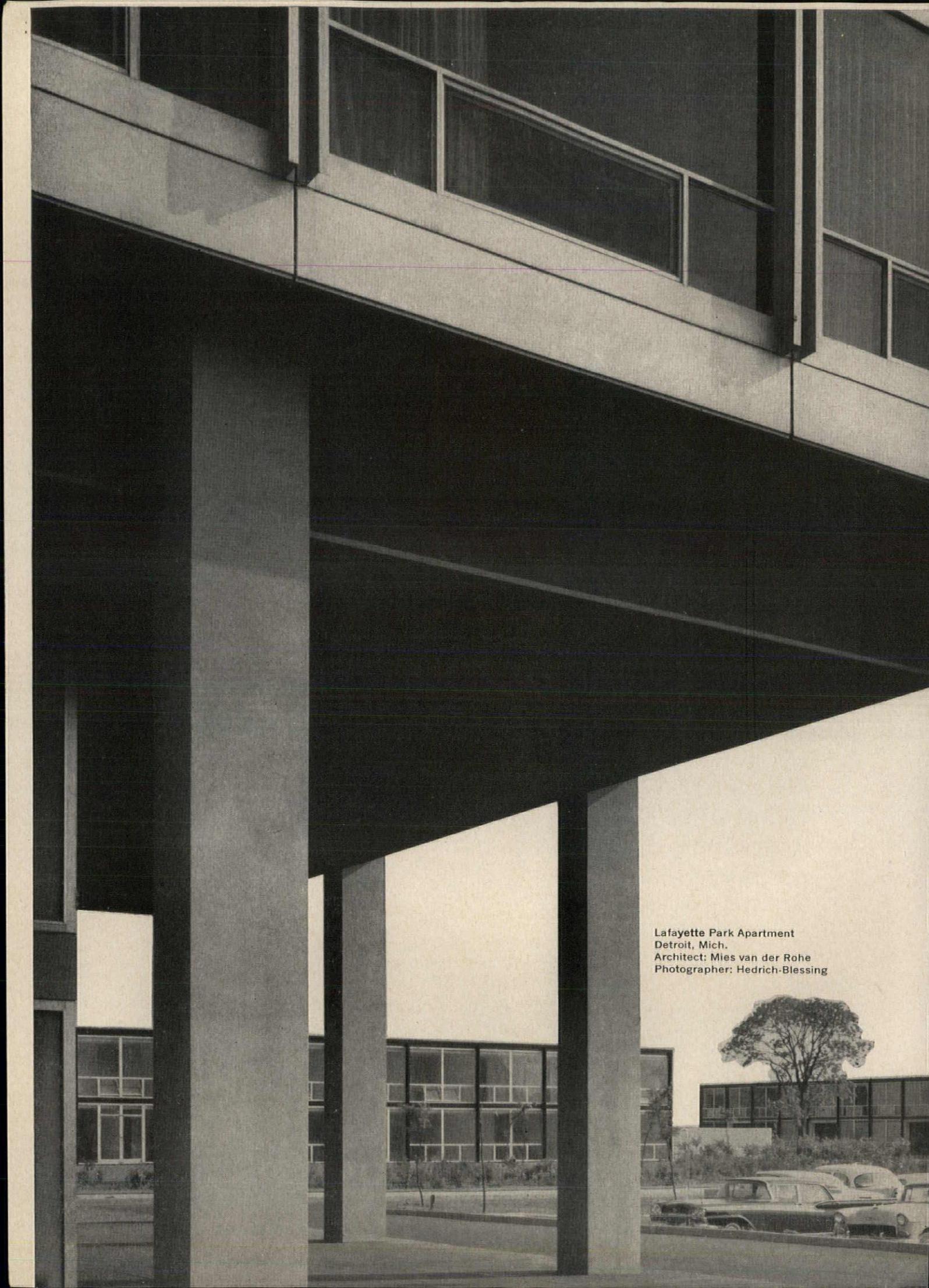
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# Current Trends in Construction

## HOW LONG WILL SCHOOL BOOM LAST?

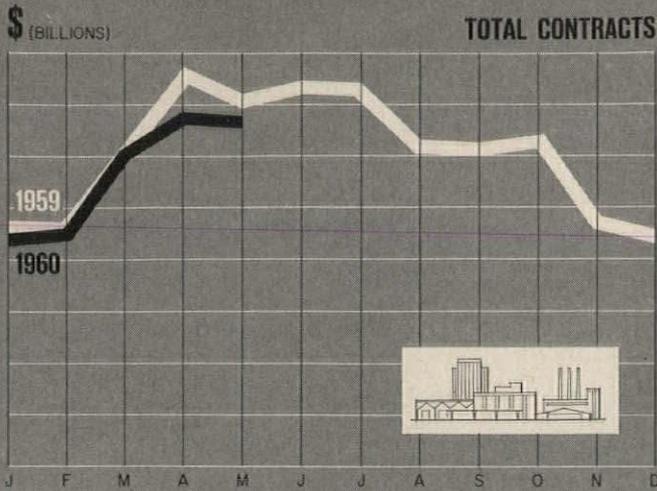
IN THIS SPACE a few months ago (May, 1960) we considered some of the long-range prospects for school construction. Without re-hashing what was said there, one additional point might be made. Projections of the school population indicate that the greatest growth in number of pupils will occur during the first half of the 1960's and that in the second half, there will be a temporary leveling off until the new bumper baby crops expected after 1965 begin to reach school age. Some observers deduce, therefore, that the need for construction of new school facilities will be greater in the first half of the Sixties than in the second half. So far, so good.

BUT it does not necessarily follow that actual construction of schools will be greater in the first half of the decade. Need for a particular item is only part of the process of acquiring it. The ability to pay is also important. Parkinson's second law, about expenditures rising to meet income, may have some bearing here. It is likely that the economy will grow substantially during the 1960's. State and local revenues, being intimately related to economic growth, will also rise. In this real-world situation, it seems that school needs will probably tend to outstrip school building for a few more years, and that later there will be a period of catching up. If one cares to look further ahead great increases in marriages during the mid-Sixties and later will inevitably bring bigger baby crops, and start a new cycle of pressure on school facilities in the early 1970's.

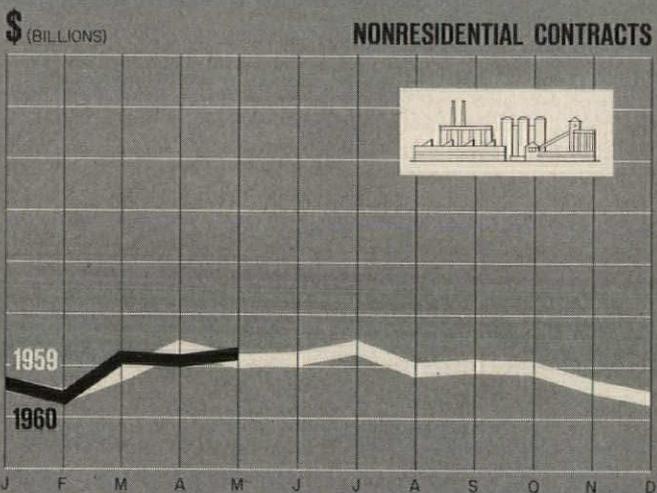
SCHOOL BUILDING contracts, according to the Dodge figures, have shown a very healthy upturn in 1960 after a couple of years of doldrums. The total of \$1,183,000,000 in the first five months of this year was 12 per cent ahead of the same period in 1959, and preliminary indications are that June contracts were up by about the same percentage. While this would still leave the level of contracts below the peak reached in the first half of 1957, the upward movement is encouraging.

THE GAIN in school building contracts is spread fairly evenly across the country, with the exception of the Southeast. For the first five months of 1960, school contracts in New England were up 21 per cent above the same period of 1959, and in the far West they were up 14 per cent. Most other parts of the country were ahead by similar amounts. The Southeastern states, however, were running 11 per cent behind last year.

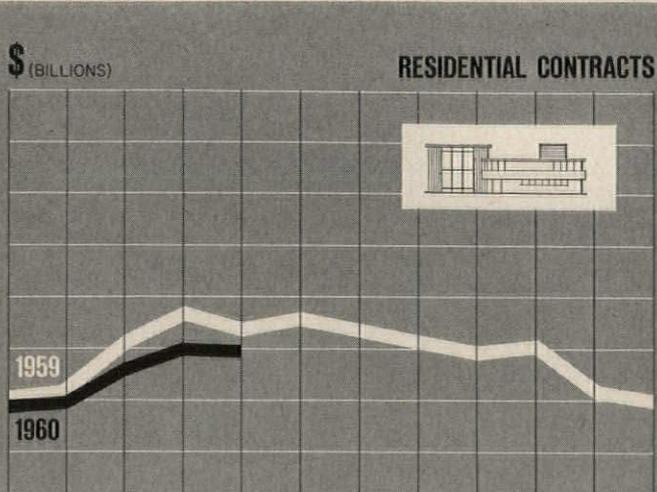
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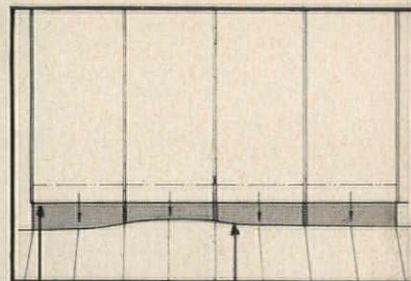


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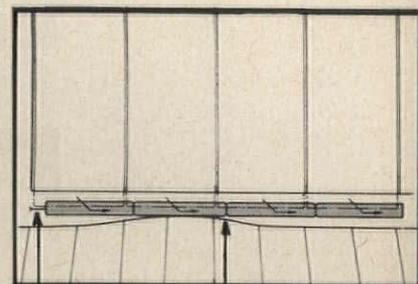


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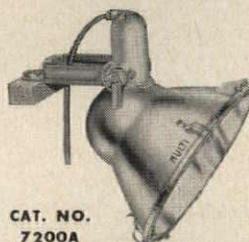
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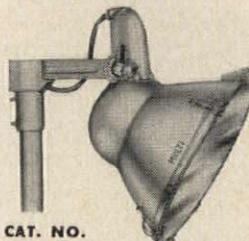
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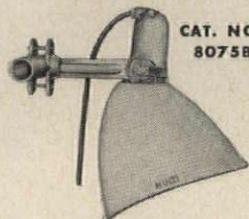
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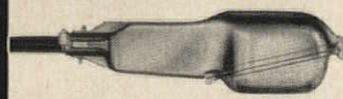


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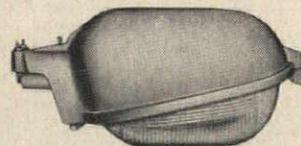
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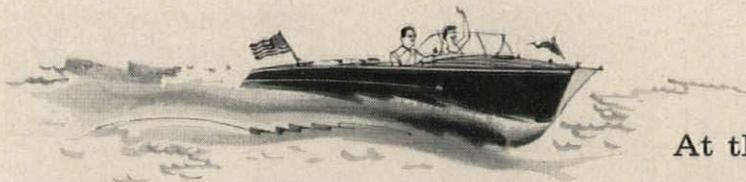


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