

ARCHITECTURAL RECORD

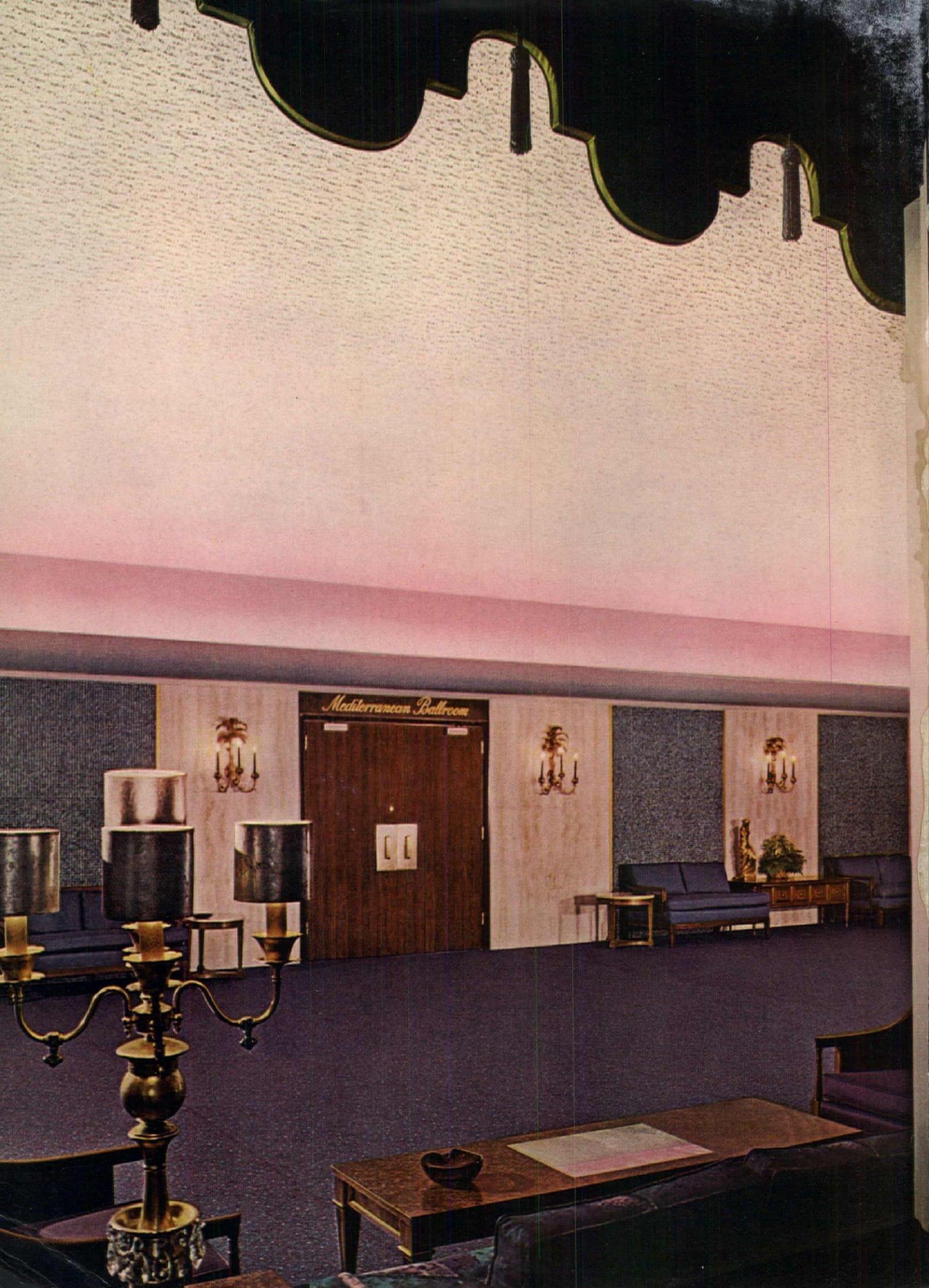
3 MARCH 1963 • TWO DOLLARS PER COPY

BUILDING TYPES STUDY: HOSPITALS

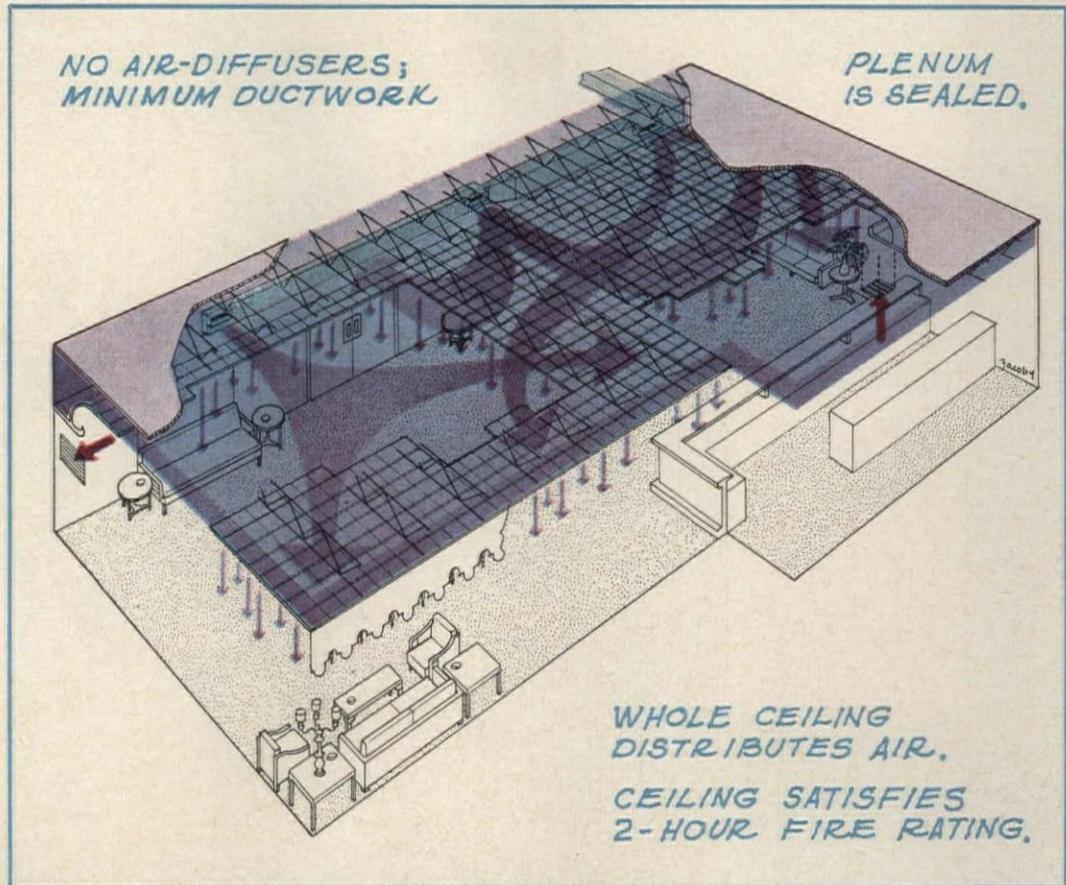
RECENT CAMPUS PROJECTS BY HUGH STUBBINS

YAMASAKI'S AIRPORT IN SAUDI ARABIA

FULL CONTENTS ON PAGES 4 & 5



**Thousands of Armstrong Ventilating Ceilings—
a bold concept in air distribution—
are now paying off. Here is one.**



Complete air conditioning — but no air diffusers, no wall registers and little ductwork. In Armstrong Ventilating Ceiling system, sealed plenum becomes supply duct, through-perforated ceiling distributes air. ■ Entire ceiling diffuses air; whole room gets even, thorough heating/cooling. Ventilating Ceiling presents monolithic, uncluttered surface. System is efficient, silent, virtually invisible (see photo, opposite). ■ Ceiling is time-design-rated Armstrong Travertone Fire Guard, satisfying local fire code's two-hour requirement. ■ Job is good example of thousands of successful Armstrong Ventilating Ceilings throughout country. Economical, too: savings over traditional system normally reach 30¢ per sq. ft. ■ Design these advantages into your current projects; consult your Armstrong Acoustical Contractor or Armstrong representative now. For illustrated portfolio, write Armstrong, 4203 Rock St., Lancaster, Pa.

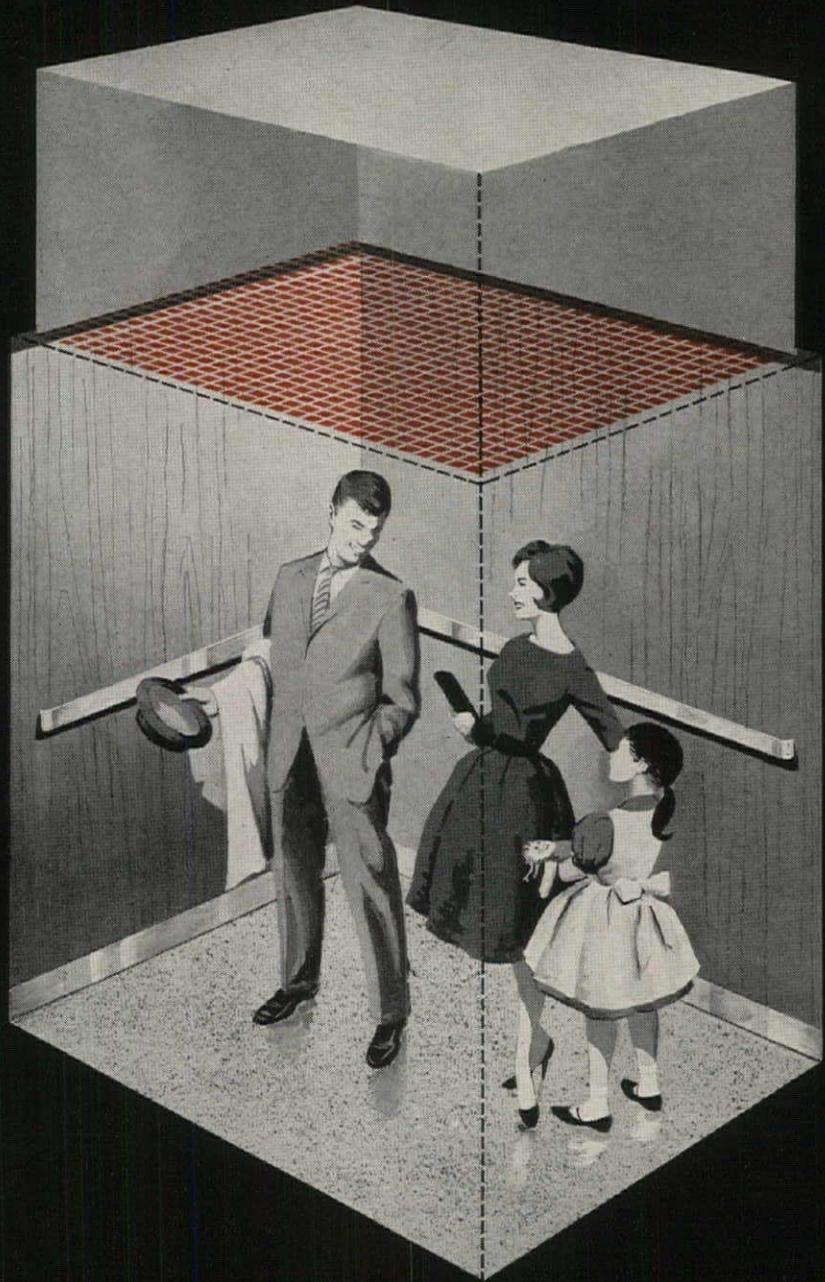
Armstrong
CEILINGS / acoustical
fire-retardant
ventilating

Riviera of Atlanta Motor Hotel: Architect: Carlos B. Schoeppl & Assoc., Miami Beach, Fla. Mechanical Engineer: Oboler & Clarke, Inc., Miami Beach. General Contractor: Capital Construction Co., Atlanta, Ga. Acoustical Contractor: Anning-Johnson Co., Atlanta, Ga.

PHOTOGRAPHY BY LAWRENCE S. WILLIAMS. RENDERING BY HELMUT JACOBY

For more data, circle No. 1 on Inquiry Card.

Normal
ceiling
height for
passenger
use



Save clients the cost of a freight elevator

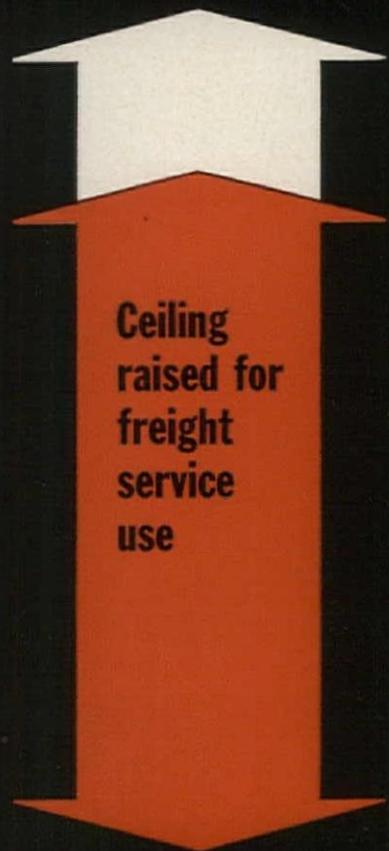
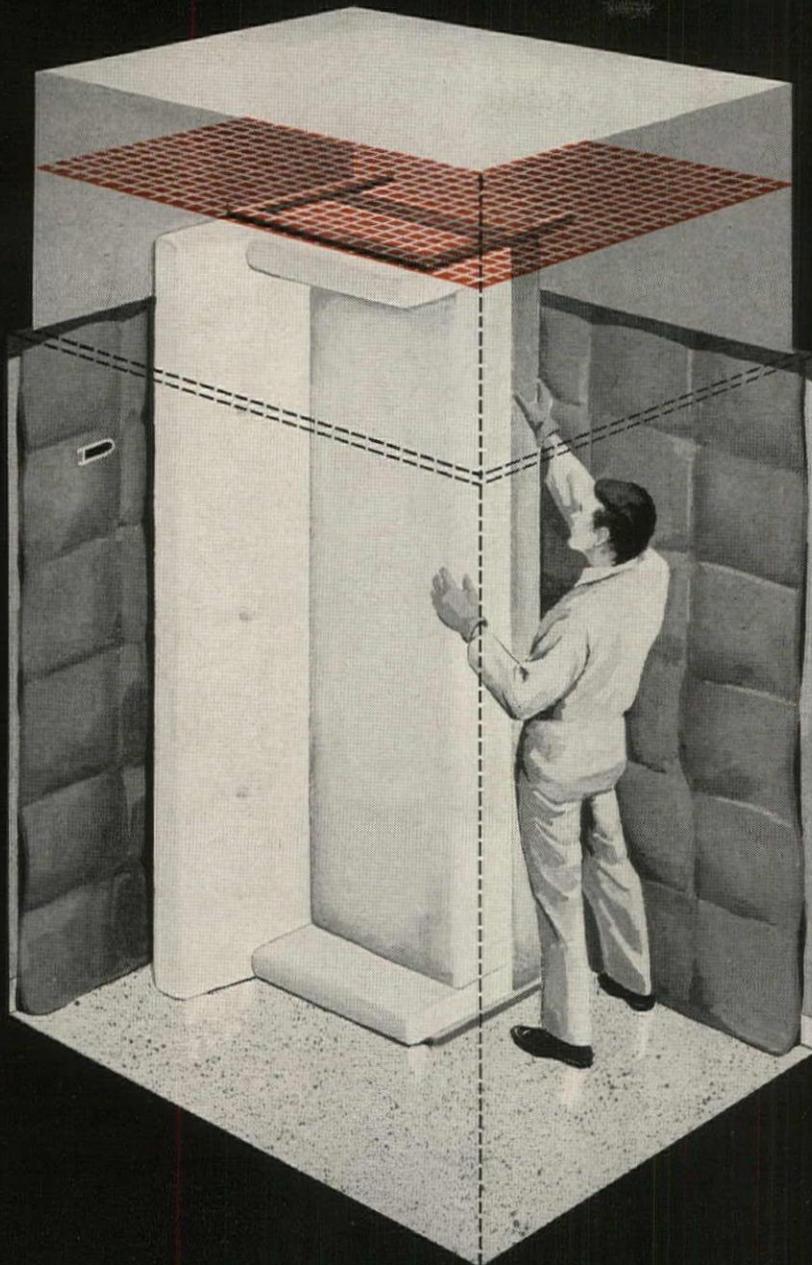
DOVER
ELEVATORS[®]
EXTENDA-CAB
PATENT PENDING

Just touch a button and the ceiling in this unique elevator cab rises to provide the interior height needed for hauling tall objects.

In many buildings it can save the cost . . . several thousand dollars . . . and the space required for a separate freight elevator.

In apartments the Extenda-Cab will accommodate modern long sofas and similar oversize furniture. In commercial buildings it will carry studs, movable partitions, wallboard, ladders and other items frequently used in office renovation.

The false ceiling with modern grid is mounted in a metal frame



with the new Dover **EXTENDA-CAB**

which slides vertically on fixed corner posts. It can be raised either electrically or manually. The car is built with sides of the additional height required and is completely enclosed. The adjustable ceiling does not interfere with lighting, fan or escape door.

Extenda-Cabs are available in any size and interior wall finish desired for Rotary Oildraulic Elevators or Dover Electric Elevators. The additional cost compared to a conventional cab is minor. Mail the coupon now to find out more about using this new elevator idea in buildings which you design.

MAIL THIS COUPON FOR DATA

**DOVER CORPORATION,
ELEVATOR DIVISION**
1002 Kentucky, Memphis 2, Tennessee

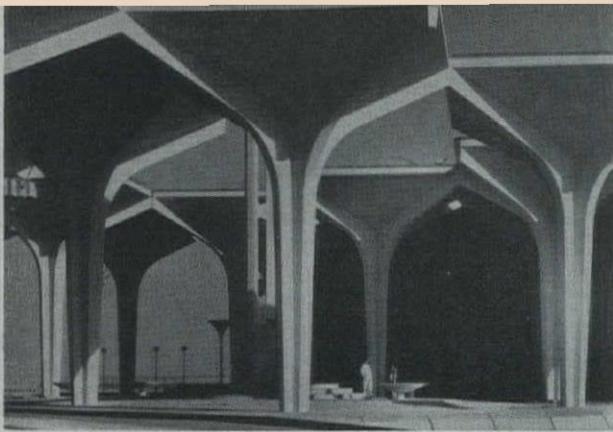
I would like more information on the Dover
EXTENDA-Cab.

Name _____

Company _____

Address _____

For more data, circle 2 on Inquiry Card



Cover:

Civil Air Terminal, Dhahran, Saudi Arabia. Engineers-constructors, The Ralph M. Parsons Company; consulting design architect, Minoru Yamasaki

Advertising Index 334

ARCHITECTURAL RECORD March 1963 Vol. 133, No. 3 Published monthly, except 1963, when semi-monthly, by F. W. Dodge Corporation, a McGraw-Hill Company. This issue is published in national and separate editions. Additional pages of separate edition numbered or allowed for as follows: Western section, (including *Western Architect and Engineer*), 32-1 through 32-28.

Executive, editorial, circulation and advertising offices: 119 West 40th Street, New York 18, N. Y. Western Editorial Office: 2877 Shasta Road, Berkeley 8, Calif. Office of Publication, 10 Ferry Street, Concord, N. H.; second-class mail postage paid at Concord, N. H.

Subscription rate for individuals in the field served \$5.50 per year in U. S., U. S. Possessions and Canada; single copies \$2.00. Further details on page 6. Postmaster: Please send Form 3579 to Circulation Manager, ARCHITECTURAL RECORD, 119 West 40th Street, New York 18, N. Y.

Architectural Engineering

OPERATING ROOM VENTILATION EVALUATED 204

Standard ventilation procedures in use today are evaluated on the basis of their relative hygienic quality

TENSION BAND "PRESTRESSES"

PLEATED ROOF 209

A steel tension band contains the forces exerted by the roof and thus permits very light columns

GLASS SCREEN SHIELDS GLASS WALL FROM SUN 210

Structural and thermal characteristics are given for a glass sun screen for Norfolk's new municipal building

LIGHTWEIGHT PARTITIONS CUT SCHOOL COSTS 212

Long-span concrete plank construction is made possible by lightweight partitions

BUILDING COMPONENTS 217

A Guide to Stainless Steel Finishes

PRODUCT REPORTS 219

OFFICE LITERATURE 220

READER SERVICE INQUIRY CARD 263

ARCHITECTURAL

Architects and Buildings:

- AECK ASSOCIATES. Holy Family Hospital 193
- ANSHEN & ALLEN. Good Samaritan Hospital, Santa Clara County, Calif. 196
- DART, EDWARD D. Headquarters Building, The Illinois Credit Union League, Bensenville, Ill. 154
- FAULKNER, KINGSBURY & STENHOUSE. Holy Cross Hospital, Silver Spring, Md. 183
- FAXON, GRUYS & SAYLOR—HUNTER AND BENEDICT. South Building, Hollywood Presbyterian Hospital, Los Angeles, Calif. 190
- FISHER AND DAVID. Parkview Episcopal Hospital, Pueblo, Colo. 199
- HAMPTON, MARK. A.A.A. Office Buildings, Lakeland and Bradenton, Fla. 160
- LEEDY, GENE. Real Estate Office in Florida 162
- MURRAY-JONES-MURRAY. Doctors Building 158
- NEMENY, GEORGE. Ray Favata House, Dobbs Ferry, N.Y. 175
- OEMING & WATERS. Home Office, Frankenmuth Mutual Insurance Co., Frankenmuth, Mich. 156
- PEI, I. M. Own House, Westchester County, N.Y. 171
- REIDY, AFFONSO EDUARDO. Museum of Modern Art, Rio de Janeiro, Brazil 149
- STUBBINS, HUGH, AND ASSOCIATES. Countway Library of Medicine, Harvard University; Dormitories, University of Massachusetts; Undergraduate Dormitories, Princeton University; Married Students Housing, Massachusetts Institute of Technology; Senior Center, Bowdoin College 133
- YAMASAKI, MINORU, AND ASSOCIATES. Civil Air Terminal, Dhahran, Saudi Arabia 145

Authors and Articles:

- KETHLEY, T. W.; COWN, W. B., AND FINCHER, E. L. "Operating Room Ventilation Evaluated" 204
- PETTIGREW, D. W. "A Guide to Stainless Steel Finishes" 217
- RYAN, JOHN L. "Planning Holy Cross for Effective Hospital Care" 184
- ARCHITECT IN PRACTICE, THE. "Organization for Efficient Practice," Eliot Noyes & Associates 163

Record Reports

BEHIND THE RECORD 9

"Balcony Buncombe"
By Emerson Goble

LE CORBUSIER OPENS FIRST U.S. BUILDING 10

BUILDINGS IN THE NEWS 12

"A.I.A. Award Program for 1963 Honors 13 Buildings"

CURRENT TRENDS IN CONSTRUCTION 18

A monthly analysis prepared for the RECORD by George A. Christie, Economist, F. W. Dodge Corporation

CONSTRUCTION COST INDEXES 20

TWO NAMED TO TOP A.I.A. POSTS 23

ALVAR AALTO WINS 1963 A.I.A. GOLD MEDAL 26

FERNANDEZ WINS 1963 REYNOLDS STUDENT PRIZE 29

NEW YORK STATE REACHES FOR ARCHITECTURE 48

CALENDAR AND OFFICE NOTES 302

Features

DESIGNING WITH DEFERENCE 133 *A group of campus projects by Hugh Stubbins and Associates are solved with respect to their environments*

YAMASAKI'S DHAHRAN AIRPORT 145 *The new concrete technology and old Arabian tradition join in shaping an exotic desert oasis for jet age travelers*

MUSEUM IN RIO CONCEIVED AS FINE ARTS CENTER 149 *Afonso Eduardo Reidy's design for a three-element group includes theater, school and exhibition hall*

SMALL OFFICE BUILDINGS 153 *A group of six solutions to problems in scale, siting, occupancy and traffic*

ORGANIZATION FOR EFFICIENT PRACTICE: 8 163 *How the office of Eliot Noyes combines the practice of architecture with industrial design, and with complete design programs for companies*

IDEAS FOR SPACE IN A BUDGET HOUSE 171 *A sensitively designed weekend house full of ways to add spaciousness to a small country home*

CASUAL SIMPLICITY FOR A SMALL COUNTRY HOUSE 175 *George Nemeny uses a big two-story living area for drama in this quietly stated design*

RECORD

CONTENTS

March 1963

Building Types Study 317: Hospitals

PLANNING NURSERIES FOR NEWBORN IN THE GENERAL HOSPITAL 179 *Latest study, by Architectural and Engineering Branch of the U.S. Public Health Service, describes principles and elements of design for nurseries*

BETTER CARE FOR PATIENTS THROUGH IMPROVED SUPPLY SYSTEM 183 *Efficient design for supply, along with improved circulation and layout, lead to better patient care through better nursing*

NEW TECHNOLOGY INCLUDES COBALT-60 AND SUPER-CLEAN SURGERIES 190 *Architects of addition to this hospital have provided for latest treatment advances*

PROGRESSIVE PATIENT CARE—ALL FIVE ELEMENTS IN ONE HOSPITAL 193 *Aeck Associates hospital is one of first—if not the first—complete progressive care hospital*

ARCHITECTS EMPLOY HOSPITAL STAFF AS CONSULTANTS FOR UNUSUAL DESIGN 196 *For this new hospital, Anshen & Allen produced high-rise scheme based on broad studies*

REJUVENATION AND NEW GROWTH RESTORE USEFULNESS TO AN OLDER HOSPITAL 199 *In this hospital, addition and renovation add up to useful, new life*

Staff of Architectural Record

EDITOR
Emerson Goble, A.I.A.

SENIOR EDITORS
Jeanne M. Davern, *Assistant to the Editor*
Robert E. Fischer, *Engineering*
James S. Hornbeck, A.I.A., *Features*
William Dudley Hunt, Jr., A.I.A.
Elisabeth Kendall Thompson, A.I.A., *West*

ASSOCIATE EDITORS
Herbert L. Smith, Jr., A.I.A., *Houses*
Mildred F. Schmertz, *Design*
William B. Foxhall
Anne Keffer, *Production*

ASSISTANT EDITORS
Kathryn Gallant
Jan Rahm

DESIGN
Eugene H. Hawley, *Director*
Alex H. Stillano, *Associate*
Sigman-Ward, *Drafting*

EDITORIAL CONSULTANTS
Robert Anshen, F.A.I.A.
Edward Larrabee Barnes, A.I.A.
Walter Gropius, F.A.I.A.
Robert F. Hastings, F.A.I.A.
Paul Rudolph, A.I.A.

INDUSTRY CONSULTANTS
Gordon W. McKinley, *Economics*
Clyde Shute, *Statistical*
Clifford G. Dunnells, Jr., *Field Research*
Daniel J. Howe, Jr., *Public Relations*
Ernest Mickel, *Washington*

PUBLISHER
Robert F. Marshall

CIRCULATION MANAGER
Marshall T. Ginn

SALES MANAGER
James E. Boddorf

Officers of F. W. Dodge Corporation

HONORARY CHAIRMAN OF THE BOARD
James McV. Breed

CHAIRMAN OF THE BOARD
Paul Abbott

PRESIDENT
Wallace F. Traendly

EXECUTIVE VICE PRESIDENTS
Julius T. Little, O. O. Paulsell

EXECUTIVE VICE PRESIDENT AND TREASURER
Howard M. Thompson

VICE PRESIDENTS
William H. Hatch, Jr., Gordon W. McKinley,
Richard H. Ray

REGIONAL VICE PRESIDENTS
George H. Atherton, Miles W. Beatty,
Carl S. Bennett, Robert G. Bingham,
Alton W. Kitchens, Sam L. Marshall, Jr.,
Arthur D. Prior

CONTROLLER
Stuart W. McLaughlin

ASSISTANT VICE PRESIDENTS
Walter F. DeSaix, Clifford G. Dunnells, Jr.,
Gault Eastman, Clyde Shute

SECRETARY
John J. Cooke

ASSISTANT SECRETARIES
William C. Breed, Jr., George W. Morzan

ASSISTANT TREASURER
Irving B. Satin

Coming in the Record

NEW WORK OF ALVAR AALTO

This year's A.I.A. Gold Medal, the profession's highest honor, will be presented at the annual convention of the A.I.A. in Miami Beach in May to the great Finnish architect Alvar Aalto; and next month the RECORD will publish a special feature on Aalto's most important new works. The feature is being prepared by Frederick Gutheim, who has made a special trip to Europe to see the new work and to get Aalto's comments on it.

NEW DIRECTIONS FOR OFFICE BUILDINGS

Functional planning of office buildings, like other building types, is being affected by new administrative techniques and new organizational plans made possible by new methods of communication and new uses of older methods. Next month's Building Types Study on Office Buildings will include some examples of new kinds of office buildings which are resulting, and will also summarize the results of a survey of leading business firms on their current thinking in the programming of their office building requirements.

ARCHITECTURAL RECORD (combined with AMERICAN ARCHITECT and ARCHITECTURE), title ® reg. in U. S. Patent office, © copyright 1963 by F. W. Dodge Corporation, a McGraw-Hill Company. All rights reserved including the right to reproduce the contents of this publication either in whole or in part. Quotations on bulk reprints of articles available on request. Indexed in Reader's Guide to Periodical Literature, Art Index, Industrial Arts Index and Engineering Index.

Architectural Record is managed by the Publications Division of McGraw-Hill Publishing Company, Inc. Officers of the Publications Division: Shelton Fisher, president; vice presidents: Robert F. Marshall, operations; John R. Callahan, editorial; Ervin E. DeGraff, circulation; Donald C. McGraw, Jr., advertising sales; Angelo R. Venezian, marketing.

Every effort will be made to return material submitted for possible publication (if accompanied by stamped, addressed envelope), but the editors and the corporation will not be responsible for loss or damage.

SUBSCRIPTIONS: Available only by paid subscription. Publisher reserves the right to refuse non-qualified subscriptions. Subscriptions to Architectural Record solicited only from architects and engineers. Position, firm connection, and type of firm must be indicated on subscription orders forwarded to Circulation Manager, Architectural Record, 119 West 40th Street, New York 18, N. Y. Subscription prices: U. S., U. S. Possessions and Canada: \$5.50 per year; other Western Hemisphere countries, to those who by title are architects and engineers, \$9.00 per year. Single copy price, \$2.00. Beyond Western Hemisphere, to those who by title are architects and engineers, \$9.00 per year for 12 monthly issues not including Mid-May 1963 issue. Subscriptions from all others outside U. S., U. S. Possessions and Canada for 12 monthly issues, not including Mid-May issue, \$24 per year.

CHANGE OF ADDRESS: Subscribers are requested to furnish promptly both old and new address, sending, if possible, stencil impression from magazine wrapper; new postal zone number, if any, should be included. Allow one month for change.

UNCONDITIONAL GUARANTEE: The publisher, upon written request, agrees to refund the part of the subscription price applying to the remaining unfilled portion of the subscription if service is unsatisfactory.

OTHER F. W. DODGE SERVICES: Dodge Reports—Dodge Construction Statistics—Sweet's Catalog Services—Dodge Mailing Service—Home Planners' Digest—The Modern Hospital—The Nation's Schools—College and University Business—Hospital Purchasing File—Chicago Construction News—Daily Pacific Builder (San Francisco)—The Daily Journal (Denver)—Real Estate Record & Builders Guide—Dow Building Cost Calculator. OTHER MCGRAW-HILL SERVICES to the construction industry: Engineering News-Record—Construction Methods and Equipment—Ingenieria Internacional Construction.

Audit Bureau of Circulation



Associated Business Publications



Balcony Buncombe

Some years ago a young lady was walking across the Golden Gate Bridge, when, as goes the story I read, she paused at the highest point, peered over the rail and then jumped. Somebody figured out that she was traveling at 80 miles an hour when she hit the water. Nevertheless she survived; she is said to be the only one who ever fell that far and lived. She lived to deny earnestly that she ever intended to jump when she started across the bridge. She simply paused to look over the rail and felt the fatal fascination of height—a sudden urge to jump.

Acrophobia is essentially a fear of that fascination. It is not merely a fear of height as such, or of vertigo; it is a fear of that compelling impulse to jump. Well, I didn't mean to start a medical dissertation; but I have a conviction that acrophobia is a fairly common fact of life. I shall cheerlessly confess to knowing it, though when I was as young as that lady nothing would have been further from my thoughts.

One supposes that an uncomfortable feeling about heights is the reason why apartment house balconies are seldom used. Up one street and down the other, a city like New York is filled with high-rise apartment buildings, most of them with vertical rows of balconies, most of which are clearly never used. Occasionally you will see a couple of gas pipe chairs and perhaps a potted plant, but almost never do you see any of those chairs in use. I suppose there are other reasons, like noise, dirt, weather, lack of privacy.

In any case, the plain fact is that on high apartment buildings balconies are almost totally useless. They cost money, they frequently sacrifice some space within the apartment; they certainly block off light.

Why balconies then? Why indeed! Clearly architects persuade themselves that balconies are functional,

that they fulfill some humanitarian purpose. They wouldn't be so ubiquitous if architects considered them merely decorated accents in a facade. Decoration is not a permissible word in the drafting room. Accent is little happier. But a stack of balconies is a mighty useful device for architectural purposes. It adds life to a design; it justifies breaks in the wall, and so on. Balconies are an architectural heritage, and so on.

Perhaps good manners would insist that the fiction of the usefulness of balconies be preserved in the public prints. But the fact is that they are not useful, as usually built, and so, bluntly, they become buncombe—something said or done just for effect.

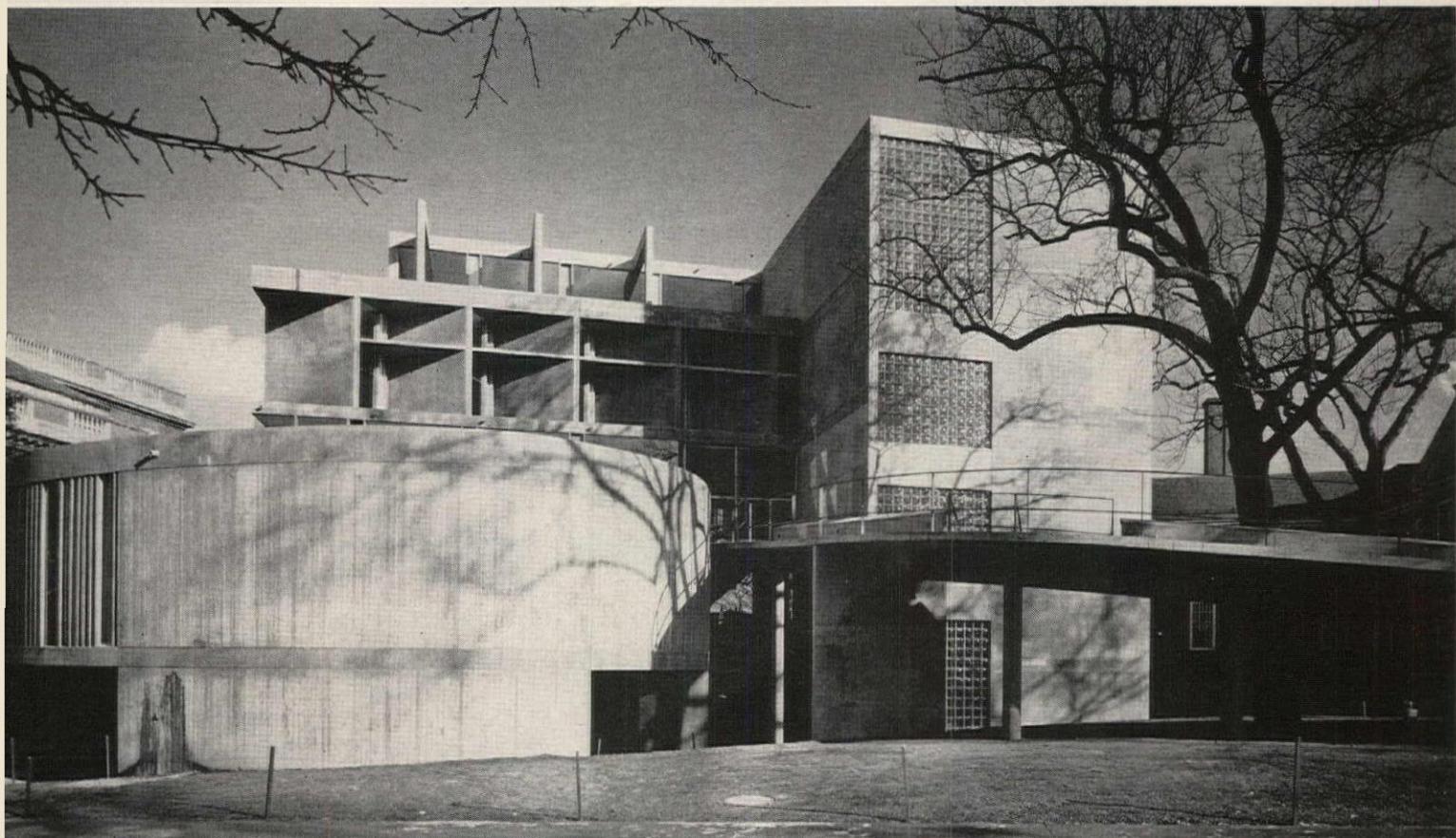
Or perhaps something constructive should be done. It is possible that some facing up would help. Maybe the usefulness of the balcony could be made a fact if it were given real protection, if the possibility of falling or jumping were positively eliminated. A few years ago George Fred Keck did a public housing project in Chicago with balconies protected by full height, heavy mesh screening. I must ask him if his balconies are really used. *Later: No, he said. The usefulness of the balconies had been disappointing to him, and he cited several reasons that seem peculiar to that particular project.*

Even with protection, then, there are complications which make balconies little used.

So I suggest a study of balcony design. What would make them useful? Useful in what way, or ways? What protective devices—screens, grilles, what not? What fixtures? Perhaps some genuine usefulness would suggest new expression.

Perhaps architects are basically right that balconies have a humanitarian purpose, a purpose yet to be realized.

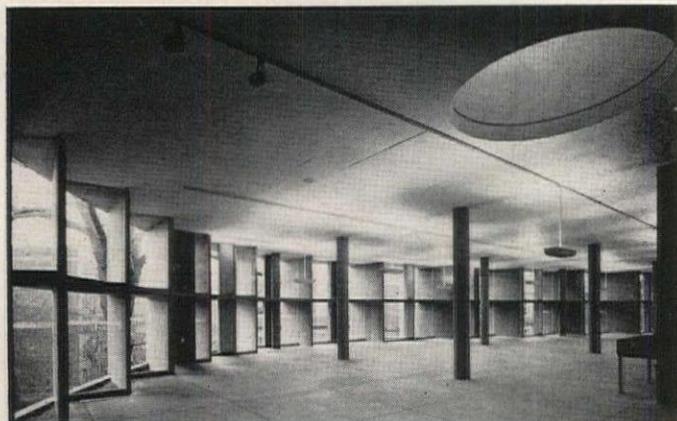
—Emerson Goble



Carpenter Center from Quincy Street: each floor has indoor, outdoor terraces. Concrete baffles shield window wall from sun



Carpenter Center from Prescott Street: ramp passes between glass-walled workshops and terraces at third floor level. Columns 22 feet high support overhanging third floor lobe



Open studio for two-dimensional drawing shows curving glass wall broken by concrete sun breakers. Columns bear weight of floor above. At upper right is glass-domed skylight

FIRST U. S. BUILDING BY CORBU COMPLETED

The first North American building by Le Corbusier—the Carpenter Center for the Visual Arts at Harvard University—has opened for student use. The center, given through the Harvard College Program by Alfred St. Vrain Carpenter and the late Mrs. Carpenter of Medford, Ore., will be dedicated in May.

Set between the Fogg Art Museum and the Harvard Faculty Club, the concrete and glass center has a richly complex exterior. The five floors are all different in configuration: rectangles and squares broken by great asymmetrical curves. Each floor has indoor and outdoor terraces, while a pedestrian ramp sweeps through the building at the third floor. Studio and workshop areas are shielded from direct rays of the sun by concrete sun breakers. Supporting the building are concrete columns which vary in diameter with the load each supports.

The building is organized by floors: basement—auditorium, light and communication studios, dark rooms; first floor—administrative areas and common room; second and third floors—two and three dimensional design workshops; fourth floor—seminar rooms; fifth floor—artists' studio.

The architectural firm of Sert, Jackson & Gourley carried out Le Corbusier's design. General contractor was George A. Fuller Construction Company.



Front to back and in between, the color and design go through and through! Easy care, long wear, greaseproof... perfect for heavy traffic areas. Specifications: 9" x 9" tiles in 3/32" and 1/8" thicknesses. 13 colors. See your Kentile® Representative.

KENTILE VINYL FLOORS

A.I.A. AWARD PROGRAM FOR 1963 HONORS 13 BUILDINGS

The American Institute of Architects, in its 15th annual Honor Awards Program, has selected 13 recently completed buildings for citation. This gives them the nation's highest professional recognition for architectural merit. Five buildings received top Honor Awards and eight received Awards of Merit this year. They are shown on these pages.

Members of the jury making the selection from a record 411 entries were: Robert L. Durham, F.A.I.A., Seattle, Wash., chairman; William W. Caudill, F.A.I.A., Houston, Texas; Mark Hampton, A.I.A., Tampa, Fla.; Ernest J. Kump, F.A.I.A., Palo Alto, Calif.; and Hugh Stubbins, F.A.I.A., Cambridge, Mass.

The jury report read: "The jury found an abundance of good architecture in a variety of building types—ranging from modest homes and churches to impressive skyscrapers. The over-all standard of excellence was unusually high, making the deliberations of the jury more exacting.

"The jury was encouraged to note a trend away from stereotyped clichés based on imported eclecticism. There are many indications that the best American design is now characterized by a sense of appropriateness and creative individuality.

"The buildings selected for awards manifest dependence on a simple palette of materials and colors and purposeful use of structure producing genetic solutions to difficult problems. The awards recognized creative expression, simplicity and refinement in detail without making any effort to find every building type. The absence of schools and industrial buildings among the awards, although regretted by the jury, occurred only because of the large number of superior entries in other types of architecture. The profession should be pleased with this progress toward the creation of a more elevated environment in America."

Presentation of the awards will be made during the 1963 A.I.A. convention, to be held May 6-9 in Miami.

The A.I.A. Honor Awards Program was initiated in 1949 "to encourage the appreciation of excellence in architecture and to afford recognition of exceptional merit in recently completed buildings." Any registered architect is eligible to enter buildings of his design completed since January 1, 1958 in this country or abroad.

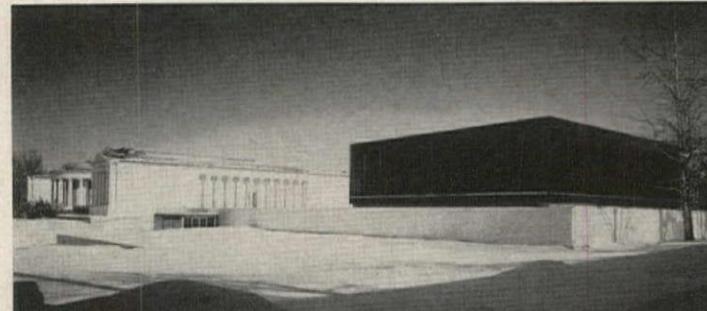
Five First Honor Awards

P. E. Guerrero

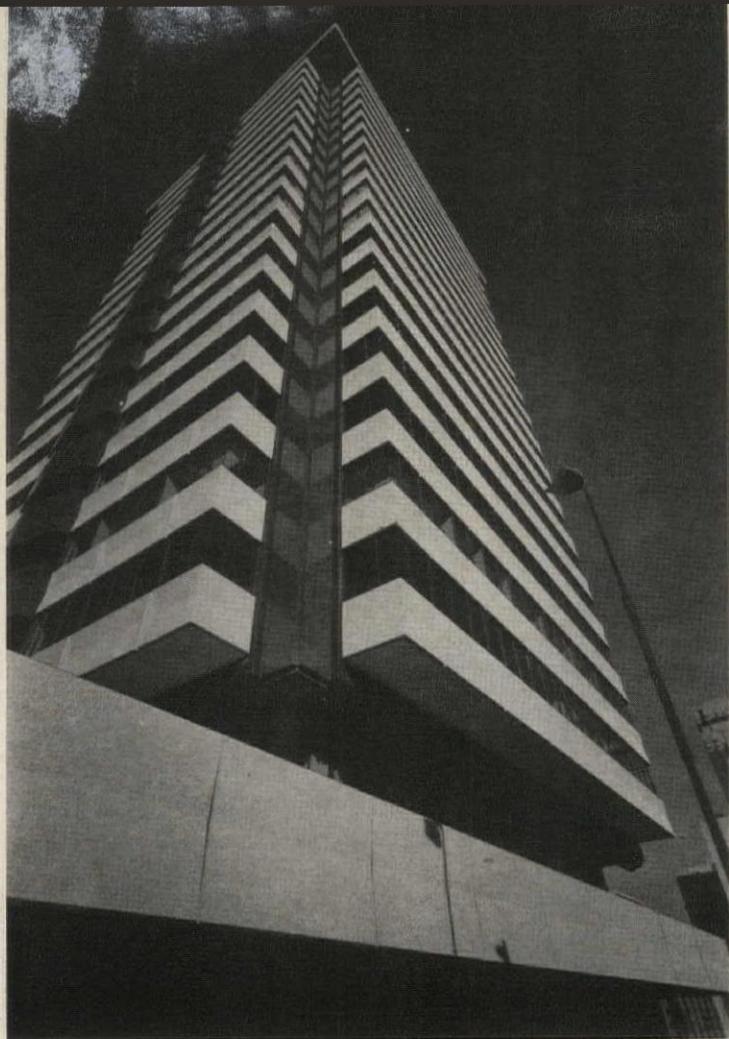


House of Worship, United Church of Rowayton, Connecticut
Architect: Joseph Salerno
Structural Engineer: Wayman C. Wing
General Contractor: T. J. Riordan

© Ezra Stoller Associates



Addition to Albright-Knox Art Gallery, Buffalo, New York
Architects: Skidmore, Owings & Merrill
Structural Engineer: Paul Weidlinger
Mechanical Engineers: Jaros, Baum & Bolles
Lighting and Fixture Engineer: Edison Price
Owner: Albright-Knox Art Gallery
General Contractor: John W. Cowper Company, Inc.



International Building, San Francisco, California
 Architects: Anshen & Allen
 Structural Engineers: Gould & Degenkolb,
 Robert D. Dewell, J. H. Pomeroy & Company
 Mechanical Engineers: Eagleson Engineers
 Electrical Engineer: Charles Krieger
 Landscape Architect: Royston, Hanamoto & Mayes
 Owner: Natomas Company
 General Contractor: Dinwiddie Construction Company



Ezra Stiles, Samuel F. B. Morse Colleges, Yale University
 New Haven, Connecticut
 Architects: Eero Saarinen and Associates
 Structural Engineer: Henry Pfisterer
 Landscape Architect: Dan Kiley
 Owner: Yale University
 Contractor: E. & F. Construction Company

Ralph M. Parsons Company



Dhahran International Air Terminal, Dhahran, Saudi Arabia
 Architects and Engineers: Ralph M. Parsons Company
 Consulting Design Architect: Minoru Yamasaki, F.A.I.A.
 Owner: United States Government, Corps of Engineers
 General Contractor: Oman, Farnsworth and Wright

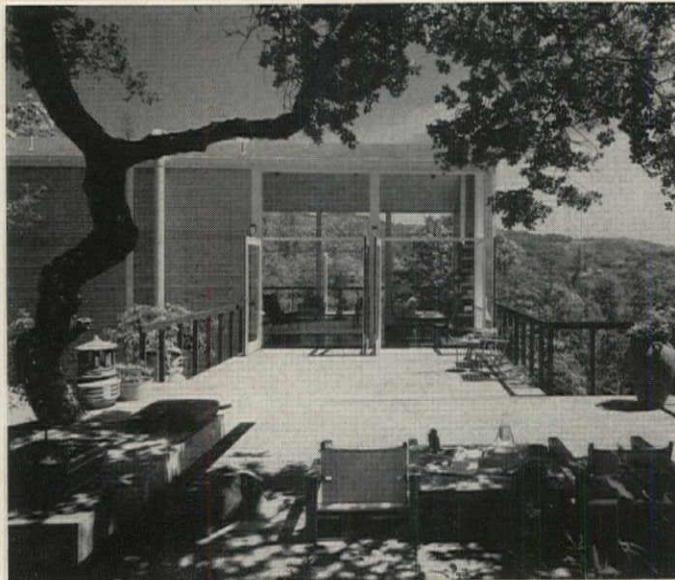
Eight Awards of Merit

© Ezra Stoller Associates

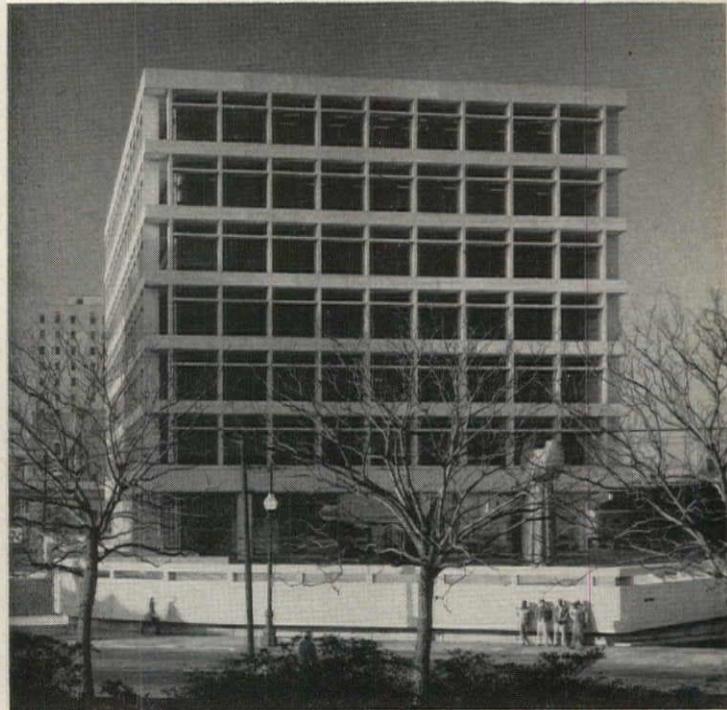


Marshall Safir House, Kings Point, New York
 Architect: George Nemeny, A.I.A.
 Engineer: Edward S. Klausner
 Landscape Architect: J. J. Levison
 Owners: Mr. and Mrs. Marshall Safir

© Ezra Stoller Associates



Green-Johnston House, Mill Valley, California
 Architects: Marquis and Stoller, A.I.A.
 Landscape Architects: Royston, Hanamoto, Mayes & Beck
 Structural Engineer: Eric Elsesser
 Owners: Virginia Green and Leila Johnston
 General Contractor: Guy Baldwin



John Hancock Building, New Orleans, Louisiana
 Architects: Skidmore, Owings & Merrill
 Associate Architects: Nolan, Norman & Nolan
 Structural Engineer: Paul Weidlinger
 Mechanical Engineers: Syska & Hennessy, Inc.
 Landscape Architects: Skidmore, Owings & Merrill
 Owner: John Hancock Mutual Life Insurance Company
 General Contractor: R. P. Farnsworth & Company, Inc.



Hedrick-Blessing

Market Square Mall, Knoxville, Tennessee
 Architects: East Tennessee Chapter, A.I.A.
 Engineers: Southern Cast Stone Company, Structural
 Landscape Architects: Tennessee Valley Authority
 Owner: City of Knoxville
 General Contractors: Roehb Construction Company
 and Southeast Construction Company



Trans World Airlines Terminal Building
Idlewild International Airport, New York
Architects: Eero Saarinen and Associates
Structural Engineers: Ammann & Whitney
Owner: Trans World Airlines
Contractor: Grove, Shepherd, Wilson & Kruge



Academic Quadrangle, Brandeis University, Waltham, Mass.
Architects: The Architects Collaborative
Structural Engineers: Goldberg, LeMessurier and Associates
Mechanical Engineers: Reardon and Turner
Owner: Brandeis University
General Contractor: G. B. H. Macomber Company

Roger Sturtevant



General Community Hospital of the Monterey Peninsula
Carmel, California
Architect: Edward Durell Stone, F.A.I.A.
Structural Engineers: Pregnoff and Mathew
Mechanical and Electrical Engineers: G. M. Simonson
Owner: Monterey Peninsula Community
General Contractor: Daniels and House Construction Co.,
California Stolte Inc.



Apartment Tower, Tulsa, Oklahoma
Architects: Harrell & Hamilton
Owner: 2300 Riverside Corporation, Inc.
General Contractor: Centex Construction Company

SPECIFY ENDURING BEAUTY

All who specify, install or live with Lo-Tone and Nu-Wood acoustical ceiling products are assured of Enduring Beauty . . . for the entire line is engineered for full value performance and is consistently manufactured of the finest quality materials and workmanship available.

Below you see the range of Lo-Tone and Nu-Wood products to be found in Wood Conversion Company's new 44-page section (cover, opposite page) in Sweet's Catalogs.

Contents

Sound Control
Wet-felted Process
Lo-Tone Product Selector Chart
Lo-Tone Acoustical Ventilating Products
Lo-Tone F/R (Fire-Rated) Acoustical
Ventilating Products
Lo-Tone F/R (Fire-Rated) Acoustical
Products
Lo-Tone Vinyl-Coated Acoustical Products
Lo-Tone AF (Attenuation Factor) and
Standard Tiles
Lo-Tone Acoustical Ceiling Board
Lo-Tone Design Tiles
Lo-Tone Acoustical Metal Pan
Lo-Tone Asbestos Board
Lo-Tone Technical Data and Architectural
Specifications
Nu-Wood Product Selector Chart
Nu-Wood Acoustical Ceiling Board
Nu-Wood Acoustical Tiles
Nu-Wood Technical Data and Architectural
Specifications
Application Methods
Visual Index to Products

1963 $\frac{11a}{Wo}$

AIA FILE NO. 39-B



AIA FILE NO. 39-B ACOUSTICAL PRODUCTS

LO-TONE® **NU-WOOD**®
mineral fiber cellulose fiber

CEILING PRODUCTS

sound control air distribution

**WOOD
CONVERSION
CO.**

ST. PAUL, MINNESOTA, U.S.A.

Products of "Enduring Beauty"
including NEW Lo-Tone "Insignia" tile

For more data, circle 5 on Inquiry Card

1962 CONSTRUCTION ROUNDUP

In a year marked by increasing concern about the over-all performance of our economic system, the strength of the construction industry proved to be one important source of support. With final data now tabulated, the full dimensions of the year's achievements are at last a matter of record. Construction contracts in 1962 not only surpassed all previous years' volume (which they always seem to do with a kind of awe-inspiring regularity), but last year's contracts showed one of the biggest gains in over a decade. At \$41,303,454,000, contracts for new construction of all types topped the previous record total set in 1961 by more than \$4 billion—a gain for the year of 11 per cent.

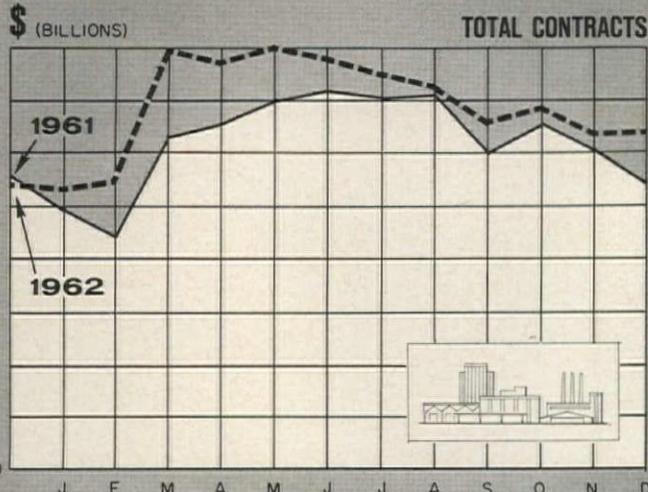
All three of the broad categories of building and construction made strong advances in 1962. Residential building contracts, swelled by a boom in apartment construction topped 1961 totals by 12 per cent. Nonresidential building, without the help of any sizeable gain in one of its biggest components—schools—nevertheless rose 7 per cent over the year. Total building contracts, residential and nonresidential together, amounted to \$31,048,801,000, bettering 1961 volume by 10 per cent. The remainder of the year's expansion took place in engineering construction, which advanced a solid 15 per cent. In all, it was a year of big gains, with reasonably well-balanced growth among the major types of construction.

Residential Building—With an unusually large volume of apartment building dominating the residential market in 1962, it is easy to lose sight of the fact that it was also a good year for builders of single-family homes. This latter type, which still accounts for the vast bulk of residential construction, turned in a 4 per cent gain for the year with total contract value of \$12,123,619,000. Apartments, the big building story of 1962, shot up 44 per cent above their 1961 volume and accounted for one out of every three new housing units in 1962. This compares with only about one out of 10 back in the mid-fifties heyday of one-family building.

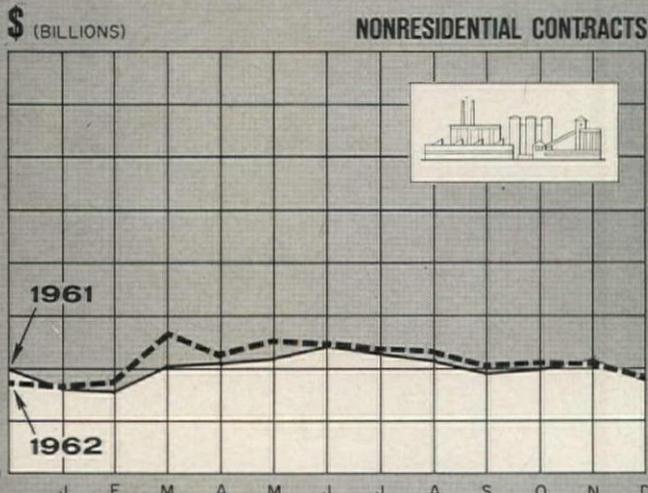
Nonresidential Building—Commercial building, biggest of the nonresidential types, rose a solid 11 per cent in 1962 with a contract value of \$4,215,940,000. Almost the entire gain was confined to office buildings (up 23 per cent), as stores and other retail establishments made only modest advances. Manufacturing construction snapped back from the generally disappointing performance of 1961, recovering most (though not quite all) of that year's decline. The 15 per cent increase in 1962 brought manufacturing contracts to \$2,086,466,000 for the year—still 12 per cent below 1956 and 40 per cent short of the 1951 peak. At \$3,060,196,000, contracts for school building barely eked out a one per cent gain in 1962. Square footage of new educational construction actually declined slightly last year, and the small dollar rise resulted largely from a higher proportion of more costly secondary schools. As for the other nonresidential building types, hospitals and recreational buildings both showed sharp gains, while religious and public buildings held about even with 1961.

Engineering Construction—After showing moderate declines in 1961, both categories of engineering construction registered large gains in 1962. Public works contracts increased 14 per cent for the year, while in the private sector utilities scored an 18 per cent advance.

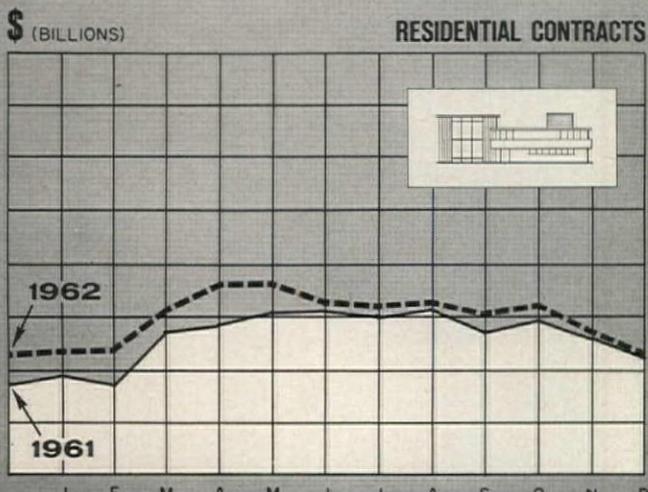
George A. Christie, Economist
F. W. Dodge Company
A McGraw-Hill Company



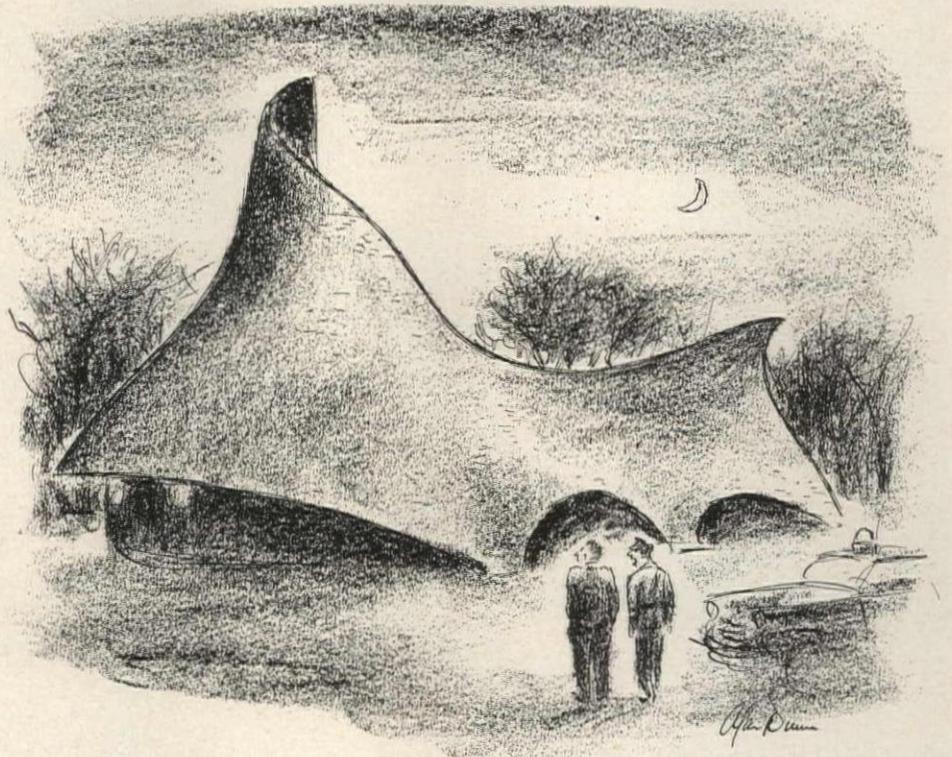
Total contracts include residential, nonresidential, heavy engineering contracts



F.W. DODGE CORPORATION



F.W. DODGE CORPORATION



—Drawn for the RECORD by Alan Dunn

“Are you *sure* you saw it move?”

TWO ARE NAMED TO TOP STAFF POSTS BY AMERICAN INSTITUTE OF ARCHITECTS

M. Elliott Carroll, A.I.A., has been named director of the Division of Professional Services of the American Institute of Architects. He succeeds Theodore W. Dominick, A.I.A., who had asked to be relieved of his administrative duties to return to full-time editorship of the third edition of the A.I.A. Building Products Register, a reference guide of technical data and characteristics of building products. In his new position, Dominick becomes head of A.I.A.'s Department of Architectural-Building Information Services.

A member of the A.I.A. staff since 1960 as head of the Department of State, Chapter and Student Affairs, Mr. Carroll was an associate in the firm of G. Milton Small & Associates, Raleigh, N.C., in 1958-60.

Mr. Dominick joined the A.I.A. staff in 1956 as consultant and editor for the Building Products Register

and in 1960 became director of the Division of Professional Services. Long active in the A.I.A.'s Washington-Metropolitan Chapter, he has served as director, treasurer, secretary, vice president and president.

Another top appointment made last month by the A.I.A. was that of Rockwell K. DuMoulin, A.I.A., as program director for the Pan American Congress of Architects to be held in Washington in 1965.

Mr. DuMoulin was scheduled to join the staff early this month to begin his assignment which will be carrying out the Institute's plans and preparations for the Congress—the first ever held in this country. The A.I.A. will host the Congress simultaneously with its 1965 convention. Washington architect Chloethiel Woodward Smith, F.A.I.A., is chairman of the committee planning the Congress.

Sponsored by the Pan American

Federation of Associations of Architects, the Congress will be attended by delegates from member organizations in 21 countries of the Americas, plus an estimated 5,000 U.S. architects and observers from European and Asiatic countries.

Mr. DuMoulin, a former chairman of the Division of Architecture, Rhode Island School of Design, has carried out a number of assignments for government agencies. He was chief architect in Bolivia for a building program sponsored jointly by the Bolivian and U.S. governments, a city planner and urban reconstruction specialist for the United Nations Relief and Rehabilitation Administration, regional architectural consultant for the Foreign Operations Administration. He was an official U.S. delegate to the Pan American Congresses of 1950 in Havana and 1952 in Mexico.



Architect: Martin Stern, Jr., Los Angeles; General Contractor: Del E. Webb Construction Co., Phoenix; Mechanical Contractor: Hi Rise Mechanical, Las Vegas

**how much does it cost
to air condition
the Sahara with gas?**

We're talking about the popular Sahara Hotel in Las Vegas (inset) where the mercury frequently reaches a sizzling 110 degrees. With Gas-powered Carrier Absorption Refrigeration the owning and operating costs are far less than you think. The same gas-fired boilers that supply heat in winter provide steam as the energy source for summer cooling with the 180-ton capacity Carrier Absorption unit. This means your initial equipment and installation costs are at rock-bottom. What's more, you get peak efficiency at partial loads with Carrier that can't be matched by any other cooling system. For quiet, dependable, economical air conditioning, why not plan your next building with Gas-powered Carrier Absorption Refrigeration. Call your local Gas Company. Or write Carrier Air Conditioning Company, Syracuse 1, New York. **For heating & cooling . . . Gas is good business**



AMERICAN GAS ASSOCIATION INC.

For more data, circle 9 on Inquiry Card

ALVAR AALTO WINS 1963 A.I.A. GOLD MEDAL; AWARDS INCLUDE FIRST PRESIDENTIAL CITATION

Alvar Aalto, world-famous Finnish architect and city and regional planner, has been selected to receive the 1963 Gold Medal of the American Institute of Architects. He becomes the thirtieth architect to win this highest honor bestowed by the national professional organization since it was first awarded in 1907. Past recipients include Frank Lloyd Wright, Walter Gropius, Mies van der Rohe, Le Corbusier and the two Finnish-born architects, Eliel Saarinen and his son Eero Saarinen (post-humously, last year).

Born in Finland in 1899, Hugo Alvar Henrik Aalto received his architectural education from Teknillinen Korkeakoulu (Polytechnic School) in Helsinki. He first began to receive international notice in 1930 with his design for the Turun-Sanomat, a newspaper in Turku. His reputation continued to rise with the design of several distinguished buildings during the next decade. Among them were the Viipuri Library, the Tuberculosis Sanatorium in Paimio, a house for himself, the Finnish pavilions at the Paris Exposition of 1937 and New York of 1939, and the Villa Mairea.

New York's Modern Museum in 1938 held an exhibition of his works. That same year the architect made his first visit to the United States and delivered a series of lectures at Yale University. In the next years he was invited to teach at the Massachusetts Institute of Technology.

His work as an industrial architect began in 1930, when he designed the Toppila Pulp Mill, followed by the Sunila Cellulose Factory. From industrial architecture he went to city planning, including houses, business quarters and factories. In 1947 he designed a dormitory for the Massachusetts Institute of Technology. Other major works include the civic center on the island of Saynatsalo, his own studio house at Muuratsalo, the Finnish Pavilion at the Venice Biennial and churches at Imatra and Seinajoki.

Citation to President Kennedy

The A.I.A. Board of Directors this year voted to award a citation to President John F. Kennedy in recognition of his actions and policies related to architecture and the fine arts. The first to a U.S. President by the 108-year-old organization, the award cites the President for "his appointment of a Special Presidential Consultant on the Arts; his adoption of a policy recommended by a special Cabinet Committee on his appointing, calling for the finest contemporary American architectural thought in the creation of federal buildings; his selection of a qualified advisory committee for the development of an appropriate expression of architecture and landscape architecture in the transformation of Pennsylvania Avenue in the Capital." The citation reads: "All of these actions emphasize his awareness of the basic need of beauty in man's physical environment, the vital role of architecture in its development, and his readiness to employ the presidential power in achieving this goal."

Other A.I.A. Awards for 1963

Other awards were voted by the A.I.A. Board of Directors on nomination of the Committee on Fine Arts Awards, whose members are A.I.A. Fellows Harris Armstrong, L. Bancel La Farge and Gordon Bunshaft. The awards are to be presented at the A.I.A. national convention, May 6-9 in Miami.

The Fine Arts Medal goes to sculptor Isamu Noguchi "for the strength and clarity of his work and his appreciation of architectural form, resulting in a sense of harmony and appropriateness in which his work and the architect's work are clearly defined but each complements the other to the total enrichment of the project."

Engineer R. Buckminster Fuller will receive the Allied Professions Medal "for his untiring life search and achievements in structural systems and because this search has

brought forth the 'Fuller Domes' in all their manifold forms and proliferations."

Recipient of the Craftsmanship Medal will be architect Paolo Soleri "for his excitingly conceived and executed concrete house and workshop constructed with his own hands in the Arizona desert, as well as his other works which demonstrate remarkable scope and creativity . . ."

The American Craftsmen's Council, a national organization founded in 1943 to provide education in the crafts and to stimulate public interest in the appreciation of the work of handcraftsmen, wins the Citation of an Organization "for its varied, continuing and successful activities which foster collaboration between architects and the artists-craftsmen of America . . ."

To G. E. Kidder Smith, F.A.I.A., architect, educator, writer, photographer, goes the Architectural Photography Medal. ". . . his technique of small sequential photographs . . . has created a new form of exposition of world architecture . . ."

Architect Samuel E. Lunden, F.A.I.A., was named recipient of the Edward C. Kemper Award for significant contributions to the Institute and the architectural profession. Mr. Lunden has been active in Institute affairs for more than 20 years.

Honorary Memberships

Elected honorary members of the A.I.A. for "distinguished service to the profession" were the following: Dr. Kenneth John Conant, professor emeritus of architecture, Harvard University; Rev. Dr. Edward S. Frey, director, Commission on Church Architecture, Lutheran Church in America; Charles D. Gibson, chief, Bureau of School Planning, Department of Education, State of California; Dr. Walter Littlefield Creese, newly appointed dean of the School of Architecture and Allied Arts, University of Oregon; and Ernest P. Mickel, Washington editor, F. W. Dodge Publications.



Rowsey Memorial Chapel, Muskogee, Oklahoma—Archts.: Bennett & Crittenden, Dallas, Texas—Tile by Ludowici: Early American Gray Range

RELIGIOUS, RESIDENTIAL, INSTITUTIONAL and COMMERCIAL...Ludowici Roofing Tiles Adapt to All

Our representatives are always available to assist you on your special roofing problems

BRANCH OFFICES & REPRESENTATIVES:

565 Fifth Avenue
New York 17, New York
OXford 7-8090 or 8091

740-15th Street, N.W.
Washington 5, D. C.
NAtional 8-8932

12734 Woodland Avenue
Cleveland, Ohio
771-7777

8428 Kate Street
Dallas 25, Texas
EMerson 1-5013

1412 Sharon-Amity Road N
Charlotte, North Carolina
EMerson 6-3149

1717 Section Road
Cincinnati 37, Ohio
MElrose 1-7945

7909 Big Bend
St. Louis 19, Missouri
WOODland 2-0200

2240 Coral Way
Miami 46, Florida
445-2214

Pittsburgh, Pa.
Dial Operator
ZENith-0779

WEST COAST REPRESENTATIVES: Gladding, McBean

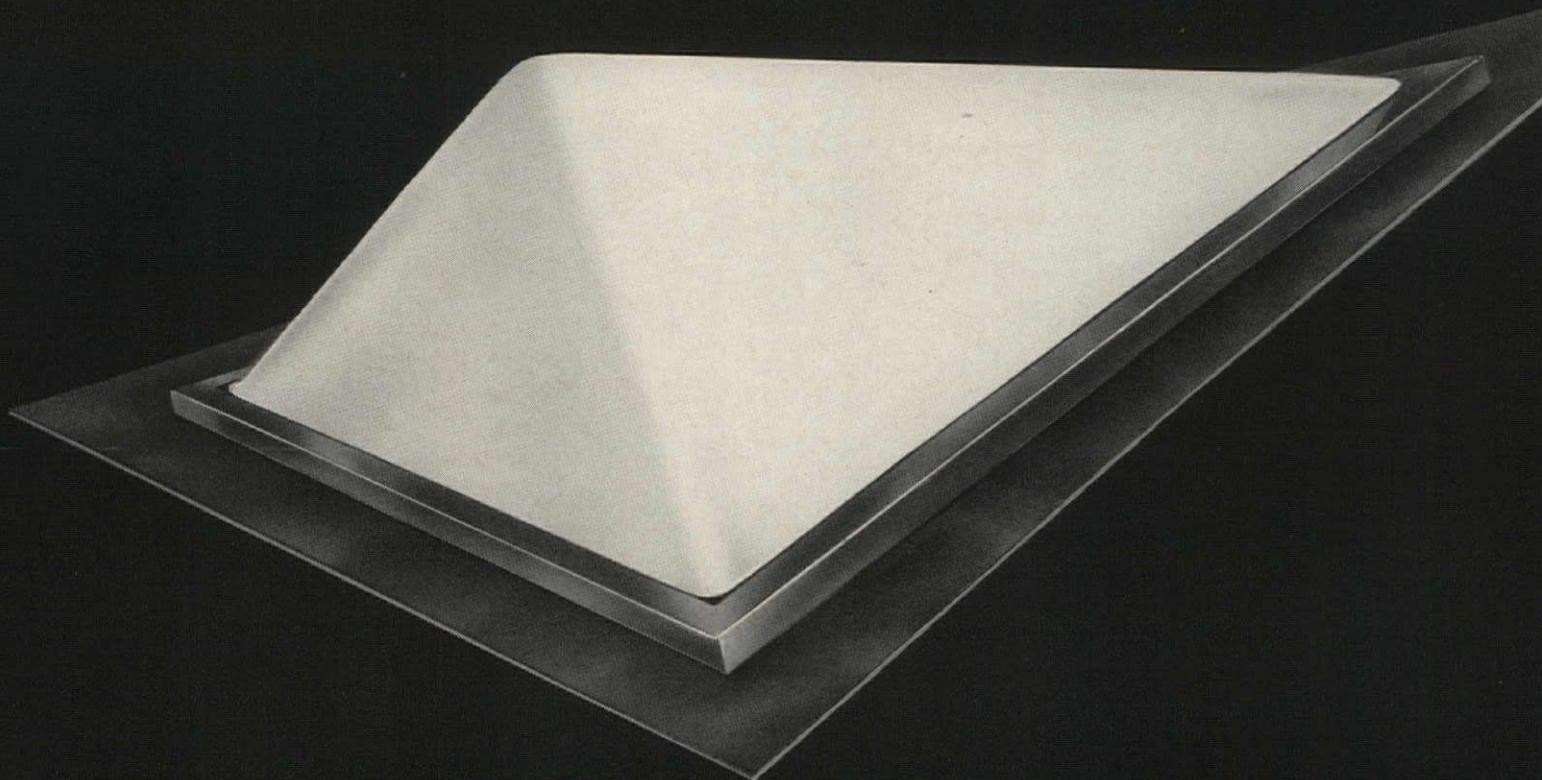
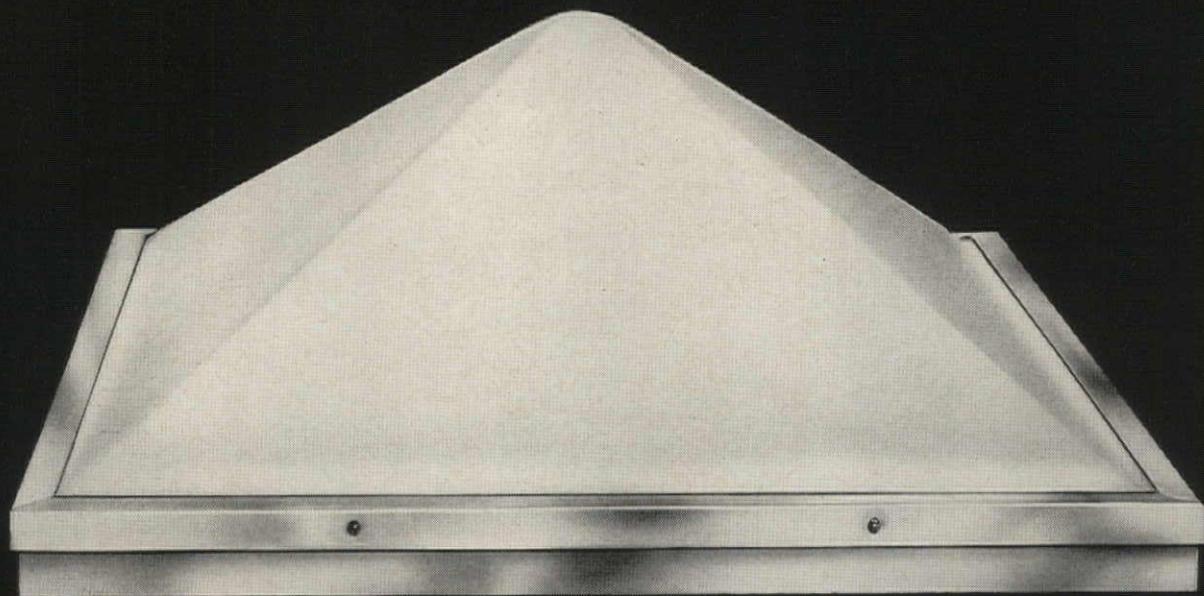
LUDOWICI-CELADON CO. 75 EAST WACKER DRIVE • CHICAGO 1, ILL. • RANdolph 6-6740

Manufacturers of quarry tile, the nation's largest producer of roofing tile and NAILON Facing Brick

For more data, circle 10 on Inquiry Card

SEE SWEET'S FILE NO. $\frac{8f}{Lu}$

NEW SHAPES IN



FERNANDEZ WINS 1963 REYNOLDS STUDENT PRIZE

Manuel A. Fernandez of the University of New Mexico has won the \$5,000 third annual Reynolds Alumni Prize for Architectural Students. Sponsored by Reynolds Metals Company, the competition for "the best design of a building component in aluminum" brought entries from 30 architectural schools.

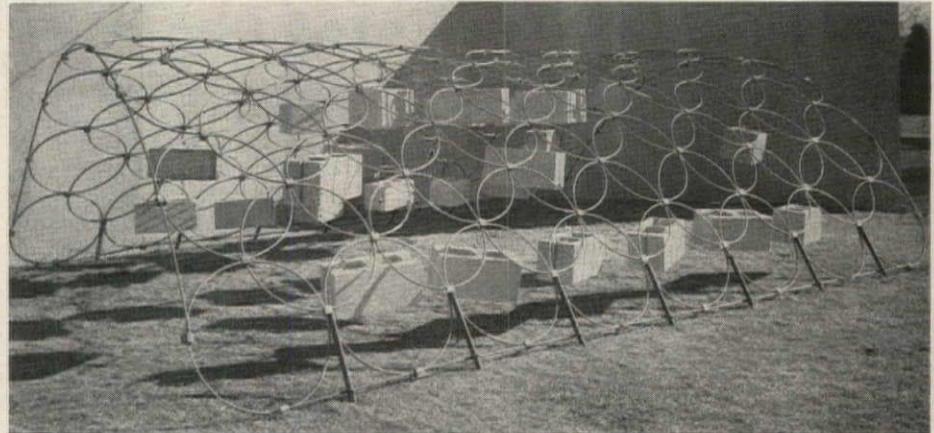
The winning design, an "Aluminum Curvilinear Truss System," is a vaulted space structure formed by simply-connected interlocking aluminum rings.

Entries were judged by a jury headed by Linus Burr Smith, A.I.A., chairman, Department of Architecture, University of Nebraska. Other members were Robert Anshen, F.A.I.A., San Francisco; and Philip D. Creer, F.A.I.A., director, School of Architecture, University of Texas.

Mr. Fernandez, who will get his Bachelor of Architecture degree in June, will receive the prize during

the American Institute of Architects convention, May 6-9, in Miami, Fla. The cash award is divided equally between student and school, with the requirement that the student use his fund for further education. The winner plans research and travel.

In the Reynolds program, participating schools hold their own competitions. Each school's winner is awarded a \$200 prize by Reynolds, and the winning design is then submitted in the national competition.



Concrete blocks suspended from this model of the "Aluminum Curvilinear Truss System" designed by Manuel Fernandez demonstrate its load carrying capacity



Western Pennsylvania State School & Hospital; Cannonsburg, Pa.
Celli-Flynn, McKeesport, Pa.; Archt. & Engs.
John McShain, Inc., Baltimore, Md.; Contr.



BAYLEY

Windows and Curtain-Wall Systems

STEEL and ALUMINUM

CALL or WRITE when you start planning your project



83 Years of Reliability

PROVEN by thousands of well-known BAYLEY INSTALLATIONS from Coast to Coast.

The **WILLIAM BAYLEY** Company

Springfield, Ohio

District Sales Offices

ATLANTA 5, GEORGIA 404-237-0339 CHICAGO 2, ILL. 312-726-5996 NEW YORK 16, N.Y. 212-685-6180
255 E. PACES FERRY RD. 105 W. MADISON ST. 280 MADISON AVE. 1200 WARDER ST. 1426 "G" ST., N.W.
404-237-0339 312-726-5996 212-685-6180 513-325-7301 202-783-2320

Licensed Representatives In All Principal Cities Operating Through The Above District Offices.

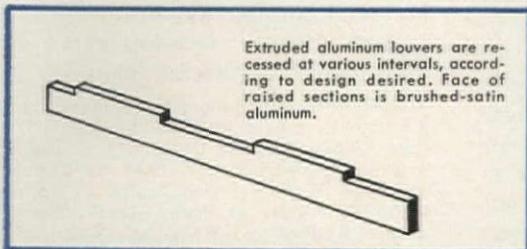
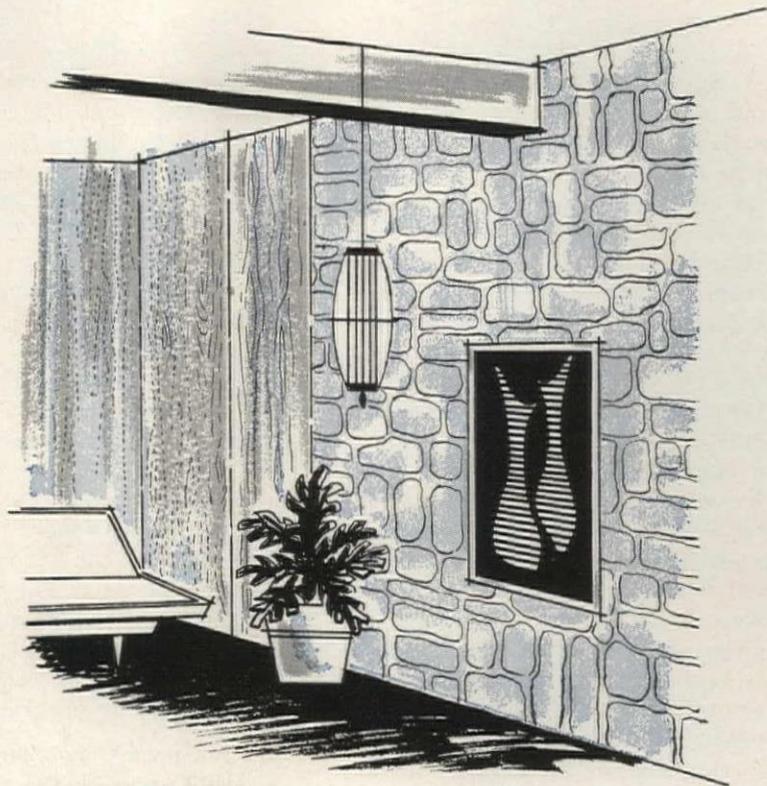
For more data, circle 13 on Inquiry Card

Custom Staccato air grilles

Highlight "notes" of vibrant aluminum, *in the design of your choice*, accented in relief against a recessed background of dark anodized color; air handling efficiency to match the distinctive beauty. That's superb new Custom Staccato by Titus!

Yes, here's truly the refreshingly new and different—EXTRUDED ALUMINUM AIR GRILLES WITH FACE *CUSTOM MADE TO THE DECORATIVE DESIGN THAT YOU SPECIFY*.

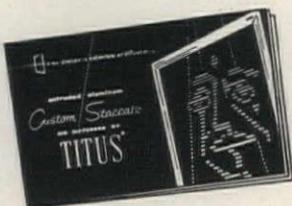
Think what this means! Now the grille face, *with your exclusive design* can be the focal point to harmonize with, or accent the overall architectural motif. Return air grilles need no longer be a problem—with Custom Staccato they can be a decorative asset to enhance your decor.



Extruded aluminum louvers are recessed at various intervals, according to design desired. Face of raised sections is brushed-satin aluminum.

The applications and design possibilities of Custom Staccato air grilles are endless. Use them with religious symbols in churches; abstract designs, emblems—and yes, even trade marks and trade names—in lobbies and other interior applications.

Send us your requirements (a rough sketch will do) . . . let us design a Custom Staccato for you.



New 12-page, full-color Custom Staccato Idea Catalog gives complete details, many suggested designs and applications. Mail coupon for your copy.

by

TITUS[®]

TITUS MANUFACTURING CORPORATION, Waterloo, Iowa

Branch Mfg. Plants: Hialeah, Fla.; Terrell, Texas; Phoenix, Ariz.

- Please send 12-page Idea Catalog on new Titus Custom Staccato air grilles.
 I would like to see sample Custom Staccato air grille. Have your representative call on me.

NAME _____

COMPANY _____

ADDRESS _____

CITY _____ STATE _____

NEW YORK STATE REACHES FOR ARCHITECTURE

The State University Construction Fund, a new state agency created by the New York State Legislature last spring to speed the construction program of the state university, has awarded design contracts to over 30 architectural firms for buildings on 22 campuses. In the next seven years the fund will spend an expected outlay of about \$1,000,000,000 needed to double the capacity of the state university by 1970 and provide added facilities needed in the first years of the next decade.

Provisions developed for working with architects in the new program suggest it may launch a new era for architecture in New York State, and Governor Rockefeller has expressed high personal interest in the cause of distinguished state architecture.

Contracts with architects include a provision that supervision of construction shall be by them as well as preparation of plans.

In contrast to the former way of operating, in which the Department of Public Works was required to construct buildings with four separate contracts, the fund has been given authority to let a single contract.

Design, construction and financing are now in the control of one agency, the State University Construction Fund. In effect, the architect who works with the fund serves a single client.

Governor Rockefeller proposed the new agency last March as an answer to long-standing complaints from the state university trustees and the Board of Regents over the time required to construct college buildings. The lag from start to finish of projects which has ranged from four to six years was attributed to the multiplicity of state officials and agencies that exercised some measure of control over design and construction.

The prediction is that the present enrollment of 37,000 full-time students in state operated units of the state university of New York and the colleges under its jurisdiction will be doubled in ten years. Since the greatest impact of enrollment demand during this period will be felt within the

next four school years, the legislation creating the fund stated that the "provision of required facilities must proceed with the greatest possible expedition." A public benefit corporation, the fund can "receive and administer moneys available for state university construction, acquisition, reconstruction, rehabilitation and improvement."

Three trustees administer the State Construction Fund. They are Clifton W. Phalen, president of the New York Telephone Company, chairman; James W. Gaynor, State Housing Commissioner; and George Dudley, dean of the School of Architecture, Rensselaer Polytechnic Institute. Director of planning is Dr. Anthony Adinolfi, former director of Detroit's 10-year educational planning and building program.

Ways to Speed Construction

The bill creating the new agency has provided for the elimination of much of the red tape responsible for construction delays. Once the orders are received from the state university trustees, the fund will have virtually a free hand in executing the orders. It will also have a free hand over its staff, since none of the employees will have Civil Service status.

At the start of a project, fund officials hope to be able to get a clear picture of exactly what the university trustees want so there will be a minimum of revision as the project goes through design and construction stages.

Design Appointments

As of early last month the following architects had been appointed to design and supervise construction for projects at the universities and colleges listed:

Skidmore, Owings & Merrill and a Buffalo architectural firm to be recommended by SOM, State University at Buffalo; Voorhees Walker Smith Smith & Haines, State University at Stony Brook; Waasdorp, Northrup & Kaelber, College at Brockport; Pomerance & Breines and Waasdorp, Northrup & Kaelber, College at Brockport; Perkins & Will, College at Buffalo; Sargent, Webster, Crenshaw & Folley, College at Cortland; I. M. Pei & Associates, College at Fredonia; Beardsley & Beardsley, College at Geneseo; Snibbe, Tafel, Myller, College

at Geneseo; Ballard Todd Associates, College at New Paltz.

Also, deYoung & Moscovitz, College at Oneonta; Francis X. Gina and Associates and deYoung & Moscovitz, College at Oneonta; Skidmore, Owings & Merrill, College at Oswego; Moulton & Van Keuren, College at Oswego; Fordyce & Hamby, College at Plattsburgh; Edward L. Barnes, College at Potsdam; Moore & Hutchins, Harpur College; Max O. Urbahn, College of Forestry at Syracuse University; Quinlivan, Pierik & Kraus, College of Forestry at Syracuse University; William A. Hall & Associates, Maritime College at Fort Schuyler, New York City.

Also, Ulrich Franzen & Associates, College of Agriculture at Cornell University; Ulrich Franzen & Associates, College of Home Economics at Cornell University; Faragher & Macomber, Agricultural & Technical Institute at Alfred; Thomas Canfield and Faragher & Macomber, Agricultural & Technical Institute at Alfred; Carson, Lundin & Shaw, Agricultural & Technical Institute at Canton; Cadman & Droste, Cataldo & Vikre and Donald J. Stephens & Associates, Agricultural & Technical Institute at Cobleskill; Cataldo & Vikre, Agricultural & Technical Institute at Cobleskill.

Also, Reisner & Diamond, Agricultural & Technical Institute at Delhi; Morris Ketchum Jr. & Associates and Toole & Angerame, Agricultural & Technical Institute at Morrisville; Barker & Henry, Whiteface Mountain Weather Station.

Master Planning Appointments

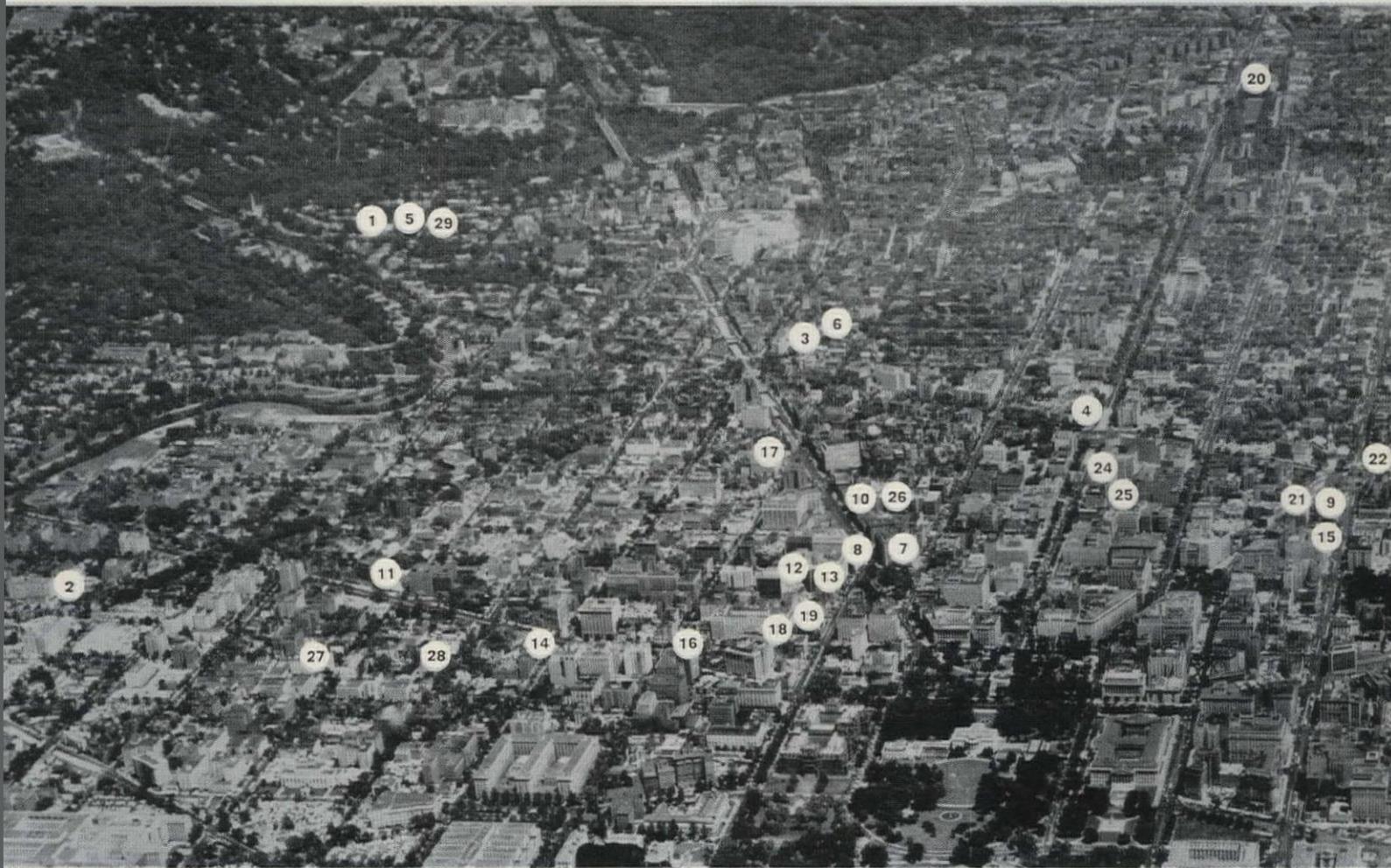
Architectural appointments for master planning are as follows:

Edward Durell Stone, State University at Albany; Perkins & Will and Skidmore, Owings & Merrill, State University at Buffalo and State University College at Buffalo; Voorhees Walker Smith Smith & Haines, State University at Stony Brook; Pomerance & Breines and Waasdorp, Northrup & Kaelber, College at Brockport; Sargent, Webster, Crenshaw & Folley, College at Cortland.

Also, I. M. Pei & Associates, College at Fredonia; Snibbe, Tafel, Myller, College at Geneseo; Ballard Todd Associates, College at New Paltz; deYoung & Moskovitz and Francis X. Gina and Associates, College at Oneonta; Skidmore, Owings & Merrill, College at Oswego; Fordyce & Hamby, College at Plattsburgh; Edward L. Barnes, College at Potsdam; Moore & Hutchins, Harpur College; William A. Hall & Associates, Maritime College at Fort Schuyler; Ulrich Franzen & Associates, State Colleges at Cornell University; Thomas Canfield and Faragher & Macomber, Agricultural & Technical Institute at Alfred.

Also, Carson, Lundin & Shaw, Agricultural & Technical Institute at Canton; Donald J. Stephens and Associates, Cadman and Droste, and Cataldo and Vikre, Agricultural & Technical Institute at Cobleskill; Reisner & Diamond, Agricultural & Technical Institute at Delhi; Brown, Daltas and Associates and Sharp and Handren, Agricultural & Technical Institute at Farmingdale; Morris Ketchum & Associates and Toole & Angerame, Agricultural & Technical Institute at Morrisville.

WITHIN TWO MILES OF THE WHITE HOUSE...



53 CLEAVER-BROOKS BOILERS IN 29 LOCATIONS

Count 'em! All votes for a proven campaigner over the past 20 years — the Cleaver-Brooks packaged boiler. Not at all surprising when you consider that the CB boiler is the *original* packaged boiler. And that Cleaver-Brooks has continued to set the pace with features that mean the best in dependability, appearance and service.

And CB boilers are more than "capital improvements." They're the popular choice coast-to-coast wherever economical, top-quality steam is specified. Select from 190 factory-tested candidates — 15 through 600 horsepower. For more information write for free booklet, "How to Select a Boiler."

Apartment Buildings

- (1) California Apartments
- (2) Continental Apartments
- (3) Apartment-1545 18th
- (4) Apartment-1616 Rhode Island
- (5) Apartment-2144 California
- (6) Apartment-Du Pont East

Office Buildings

- (7) Riddell Building
- (8) No. 1, Farragut Square
- (9) Pitney-Bowes

- (10) 1725 De Sales St.
- (11) 2121 Pennsylvania Ave.
- (12) 1707 H St.
- (13) 1710 H St.
- (14) 1901 Pennsylvania Ave.
- (15) 1411 K St.
- (16) 1776 Pennsylvania Ave.
- (17) Marsh Building
- (18) New Medical Building
- (19) Doctor's Building

Hotels and Motels

- (20) Meridian Hill Motel
- (21) Burlington Hotel

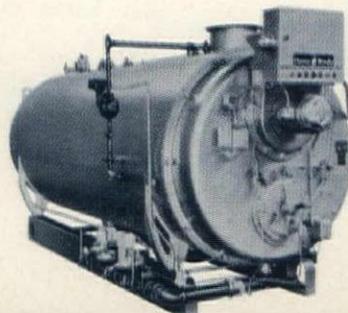
- (22) International House
- (23) Virginia Motel

Buildings—Public and Private

- (24) American Chemical Society
- (25) Washington Post
- (26) Golden Ox Restaurant

Schools and Colleges

- (27) GWV Crawford Hall
- (28) George Washington U.
- (29) Cathedral Latin High School



Cleaver  **Brooks**[®]

ORIGINATOR AND LARGEST PRODUCER
OF PACKAGED BOILERS

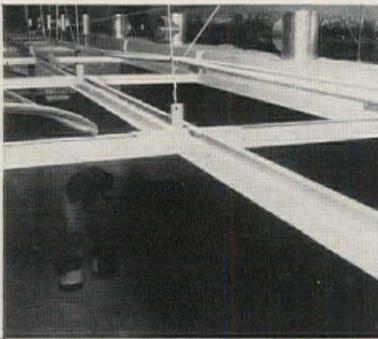
Dept. AR363, 3707 N. Richards St., Milwaukee 12, Wis.

For more data, circle 23 on Inquiry Card

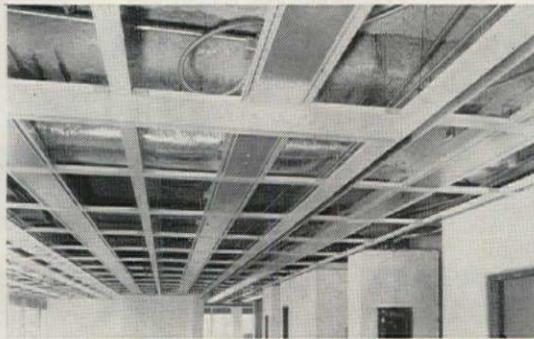


SECURITEE PAN SYSTEM SCORES AGAIN— CHOSEN FOR TOP SPOT IN INDIANAPOLIS

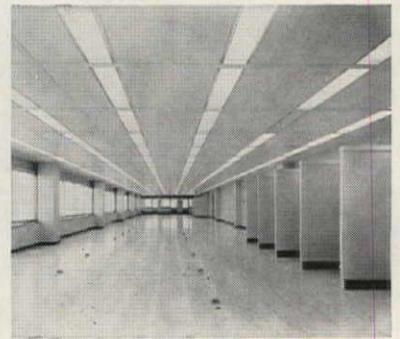
CITY-COUNTY BUILDING, Indianapolis, Ind.



A specially designed direct hanging clip spaced 4' 6" on center supports the suspension system, including light fixtures.



Ceiling construction is made up of 4' 6" x 4' 6" module. Main runner pans 3½" x 13' 6" length, cross pans 3½" x 4' 2½" lengths.* (Partition ceiling channels are also attached to this assembly).



Modular design is easily and perfectly maintained in all areas. Installation made efficiently and economically.

More than 400,000 square feet of new ceiling in the \$28,000,000 Indianapolis City-County Building is installed on W. J. Haertel's **SECURITEE PAN SYSTEM**.

Chosen by both architect and contractor, **SECURITEE PAN SYSTEM** combines strength of main runners and cross pans to afford a true and level intersection at all points, even though more than normal weight loads are applied.



*Can be furnished in any pan width 2" to 6¾", depending on the special modular requirements.

* T. M. REG. U. S. PAT. OFF.

For more information about this and other **SECURITEE SYSTEMS**, write . . .

W. J. HAERTEL & CO.

1932 15th Avenue, Melrose Park, Illinois
Phone FI 5-7995

For more data, circle 24 on Inquiry Card



ARCHITECT: MATSON & WEGLEITNER • GEN'L. CONT'R: HENRY O. MIKKELSON



WOOD CASEMENT WINDOWS

PELLA ALSO MAKES QUALITY WOOD
FOLDING DOORS AND PARTITIONS,
WOOD SLIDING GLASS DOORS,
WOOD MULTI-PURPOSE WINDOWS
AND ROLSCREENS

Specify without wood bucks for economy and appearance

PELLA offers the *only* wood window with specific design features for installation in masonry and other openings *without wood bucks, brick mould or exterior trim*. This method saves both labor and material. And, the clean lines and pleasing appearance blend well with any type construction, too. Wood frames coupled with stainless steel, spring-type weatherstripping increase the efficiency of heating and air conditioning systems. PELLA CASEMENTS save on maintenance labor and storage space with their self-storing storms and ROLSCREEN . . . the original "instant screen" that rolls down in the spring, up in the fall. Available in 18 ventilating units up to 24" x 68" glass size and 48 fixed sizes. See the Yellow Pages and phone the nearest PELLA distributor for details on "no buck" installation. See SWEET's for other installation details on PELLA CASEMENT WINDOWS.

ROLSCREEN COMPANY • PELLA, IOWA

For more data, circle 59 on Inquiry Card



*** Total excellence starts with the prime coat!**

The responsibilities of the first coat on metal are *big!* It must take hold, prevent rust, adhere tightly, and form a sound, compatible base for the intermediate primer and the top coat! Whether you specify it as a shop coat by the fabricator, or as a job-site application on structural steel by the painting contractor—you can rely on Rust-Oleum total excellence to *last and last.* Your assurance is over forty years of industrial proof! Your Rust-Oleum Factory Specialist and a Rust-Oleum Distributor will be happy to work hand-in-hand with you. Write for your free copy of Rust-Oleum Architectural Catalog No. 261-A, which includes complete specifications for coating Structural Steel, Steel Sash, Water Tanks, and Galvanized Metal—or contact your Rust-Oleum Distributor.

Trouble with peeling on galvanized metal? Rust-Oleum Galvineum® coatings really stick to new or unpainted galvanized metal, for long-lasting protection.



RUST-OLEUM®

STOPS RUST!®

RUST-OLEUM CORPORATION • 2502 OAKTON STREET • EVANSTON, ILLINOIS

For more data, circle 60 on Inquiry Card

Scholarships and Awards

continued from page 92

prestressed concrete completed or under construction before April 1, 1963, within the U.S. or its possessions or Canada may be entered.

Harry Weese, F.A.I.A., is chairman of the jury composed of three architects and two engineers.

Entries must be received not later than April 1, 1963. For information write the Prestressed Concrete Institute, 205 W. Wacker Drive, Chicago 6.

Rotch Scholarship

Exercises preliminary to the selection of the 74th winner of the Rotch Travelling Scholarship for \$5,000 will be held in April. Applicants must be American citizens, under 31 years old on March 15, 1963, whose architectural record includes study or experience in Massachusetts.

For information on requirements, write William G. Perry, Secretary, Rotch Travelling Scholarship Committee, 955 Park Square Building, Boston 16, Mass., before March 7. Applications are due March 25.

Copper and Brass Awards

Architects, engineers, designers, manufacturers, and anyone else working with copper metals is invited to enter the fifth annual Copper and Brass Achievement Awards competition sponsored by the Copper and Brass Research Association. Prizes of \$500 and a bronze trophy are to be presented to winners in each of two categories—architectural and industrial—at the annual meeting of the association in Hot Springs, Va. on May 15.

The architectural award is granted for outstanding design or application of the copper metals in architecture, building construction, statuary or other artistic or decorative creations. In the industrial category, the award is given for a notable contribution to advancing the use of copper or its alloys through product development or redesign, new marketing or metallurgical research.

The contest closes March 31. Entry forms with details may be had from the Copper & Brass Research Association, 420 Lexington Ave., New York 17, N.Y.



DESIGNER: EDWARD DON CO.



WOOD FOLDING PARTITIONS

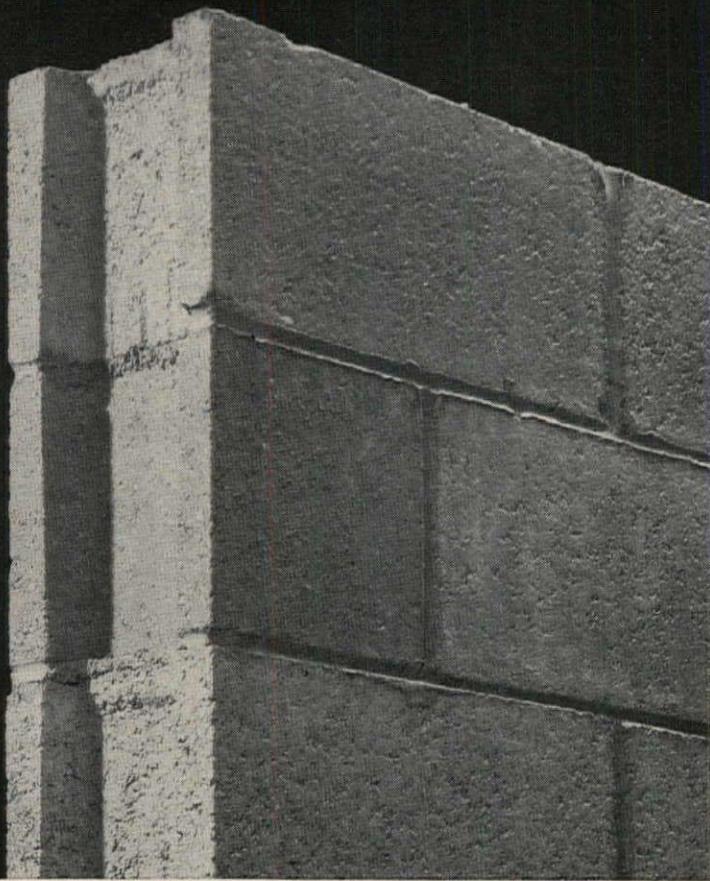
PELLA ALSO MAKES QUALITY
WOOD FOLDING DOORS,
WOOD SLIDING GLASS DOORS,
WOOD CASEMENT AND MULTI-PURPOSE
WINDOWS AND ROLSCREENS

Rich wood stars in this dramatic "panel-show"

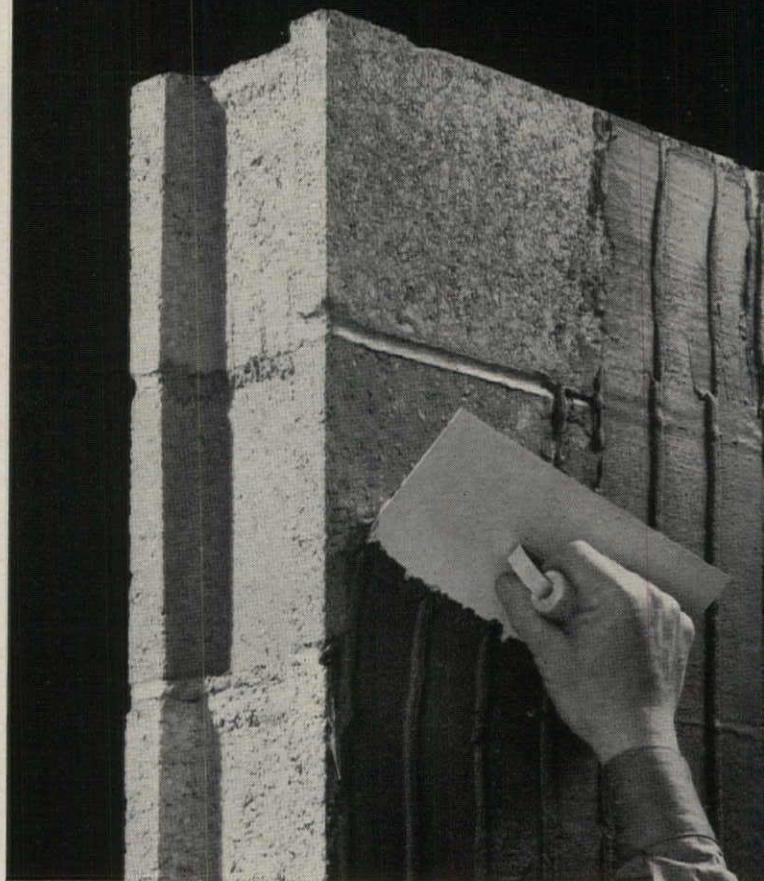
From rich veneer beauty to dramatic panel proportions, PELLA WOOD FOLDING PARTITIONS offer pleasing answers to problems of space division. You can specify from these 6 genuine wood veneers: PHILIPPINE MAHOGANY, AMERICAN WALNUT, OAK, PINE, BIRCH or ASH. Ask us to do the finishing at the factory or have it done on the job. Stable wood core construction prevents warpage. Patented "live-action" steel spring hinging assures smooth, easy operation. Available for all widths and heights up to 20'1". Full specification in SWEET'S or call your PELLA distributor listed in the Yellow Pages.

ROLSCREEN COMPANY • PELLA, IOWA

For more data, circle 61 on Inquiry Card



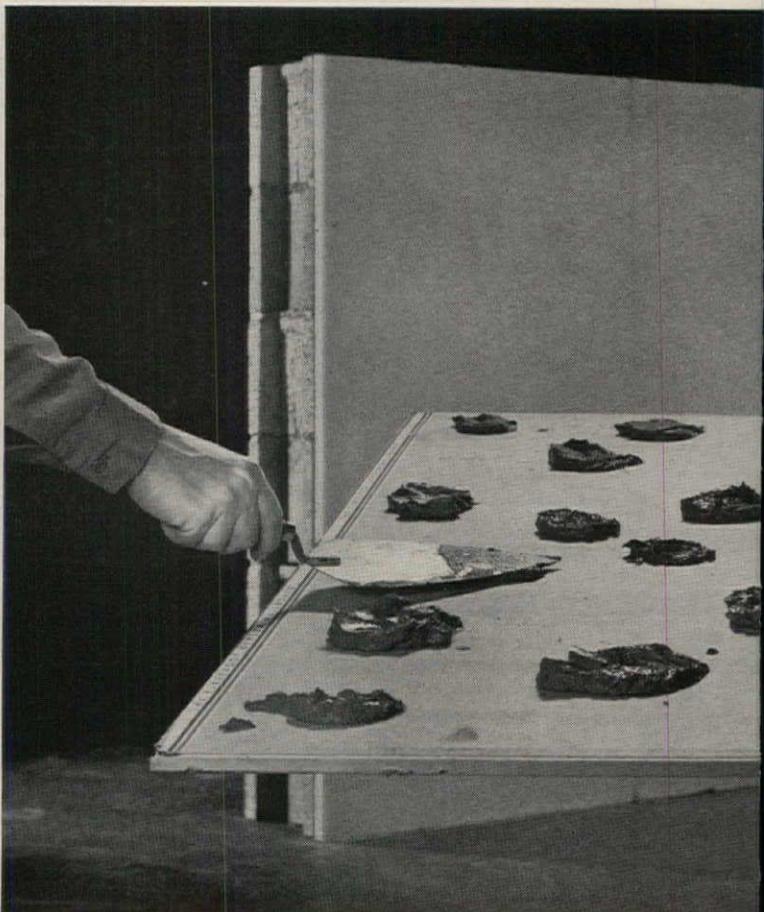
1. To insulate masonry walls well:



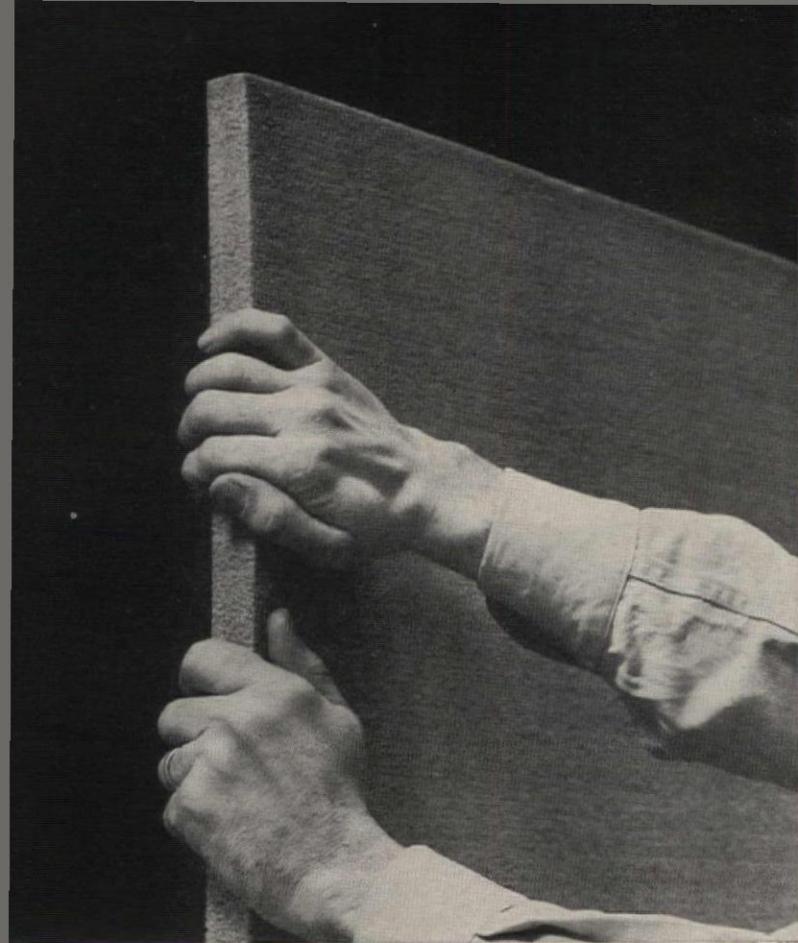
2. Start with Styrotac® bonding adhesive.



5. Take wallboard. (Forget the vapor barrier.)



6. Styrotac goes on.



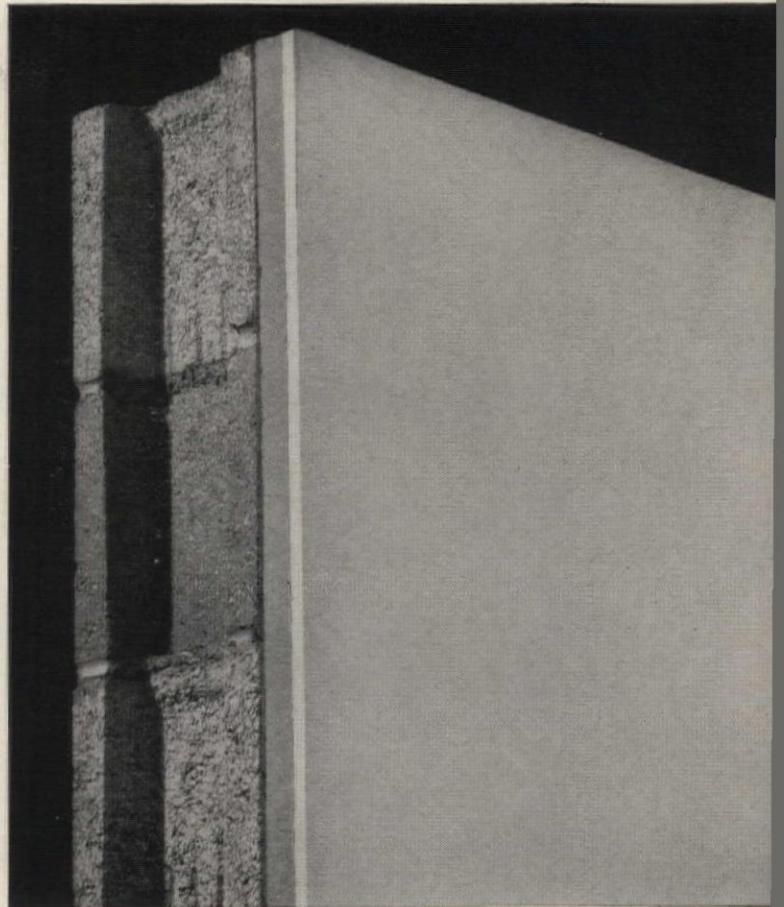
3. Specify Styrofoam® FR insulation board. It prevents moisture absorption and migration; keeps its low "k" factor (0.26!) *permanently*.



4. Styrofoam FR is pressed into place.



7. Wallboard goes up. Finished wall (8-in. cinder block, 1-in. Styrofoam FR) has U factor of 0.14.



8. Want more data? Consult our catalog in Sweet's Architectural File, or write: The Dow Chemical Company, Midland, Michigan.



more and more great American architects are using

M A R M E T

here are a few of the reasons:

SERIES 5212 CURTAIN WALL

The unusual three dimensional treatment on this post office was created by the architect with bronze duranodic aluminum panels and vertical glazing, set off by diamond shaped bronze aluminum panels glazed on a slightly tilted horizontal plane. Aluminum frames of natural anodized and bronze aluminum were used to compliment the effect. . . . The brilliant, eyecatching result is a tribute to the imaginative skill of the architect. . . . In order to execute this unusual custom design, the engineers at Marmet assembled a two story mock-up in the Marmet test laboratory to help the erector in the complex erection sequence and insure that all parts would fit tightly. This was followed by exhaustive water testing to insure lasting owner satisfaction.

ARCHITECT
J. G.

DAVERMAN

Grand Rapids, Mich.



GRAND RAPIDS POST OFFICE

The imposing facade of this new structure in Grand Rapids, Michigan is fenestrated with MARMET's monumental AP series. Specially designed sun screens which add the striking face effects, were also fabricated by MARMET.

MARMET

corporation

SWEETS CATALOG 3a
OR WRITE MARMET MAR

300-R Bellis Street
WAUSAU, WISCONSIN

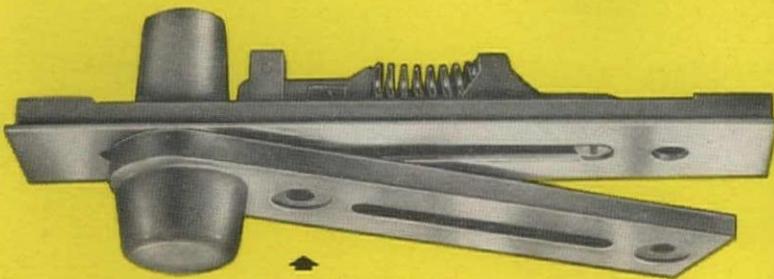
For more data, circle 63 on Inquiry Card

EMERGENCY TEAM

STANLEY DAP-1

Double Acting DOOR PIVOT* and

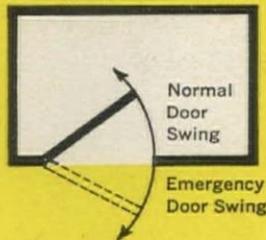
ES-1
Emergency
DOOR STOP*
RELEASE



TOP PIVOT ASSEMBLY



BOTTOM PIVOT ASSEMBLY

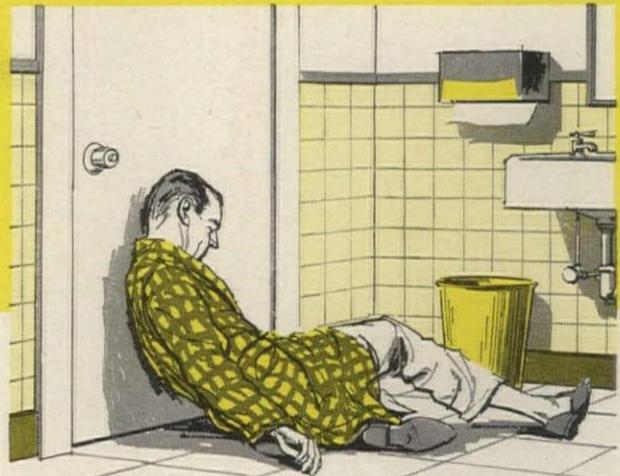


Instant Access

When seconds count . . . count on this reliable Stanley combination to assure instant access to a patient—or anyone—who has fallen against the inside of an inward swinging bathroom door. Simply depress the Emergency Door Stop Release and pull door outward.

The Stanley ES-1 Emergency Door Stop Release converts a double acting door hung on center pivots to a single acting door with a safety release acting as a stop. The ES-1 can be applied in any location on door frame. Stop release resets automatically.

The rugged, smooth-riding DAP-1 Double Acting Door Pivot is designed for a long life of trouble-free operation on commercial average or low frequency interior doors. The cast aluminum Top Pivot Assembly of the DAP-1 Set is equipped with a "walking beam" operated by a



When stricken person blocks normal inward door swing, Emergency Door Stop Release provides instant access by allowing the door to swing outward. For hospitals, institutions, convalescent homes, etc.

lever for easy door installation. Bottom Pivot Assembly components are a heavy wrought brass jamb bracket and heavy wrought steel door plate with free-acting ball bearing unit. Standard bottom door clearance is $\frac{3}{4}$ " , with provision for $\frac{1}{4}$ " vertical adjustment.

For complete information ask for Form H-237. Write to: Stanley Hardware, Division of The Stanley Works, Lake Street, New Britain, Connecticut.

* PATENTS PENDING



THE
STANLEY
WORKS®

AMERICA BUILDS BETTER AND LIVES BETTER WITH STANLEY

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

CANADIAN PLANTS: HAMILTON, ONTARIO, AND ROXTON POND, P.Q.

For more data, circle 64 on Inquiry Card



One of twelve smart grille designs

RIVERSIDE MEMORIAL CHAPEL, BRONX, NEW YORK. Ralph Leff—*Architect.* Westerman-Perlman Corp.—*Contractor.* Daylight is softly screened, and artificial lighting is dramatized by the five perforated facade panels for which the architect specified white Ceramic Veneer grilles (Design No. FS-EE). Trim, facing, coping and sills are Ceramic Veneer in a light mottled gray.



offered in the full color range of Ceramic Veneer

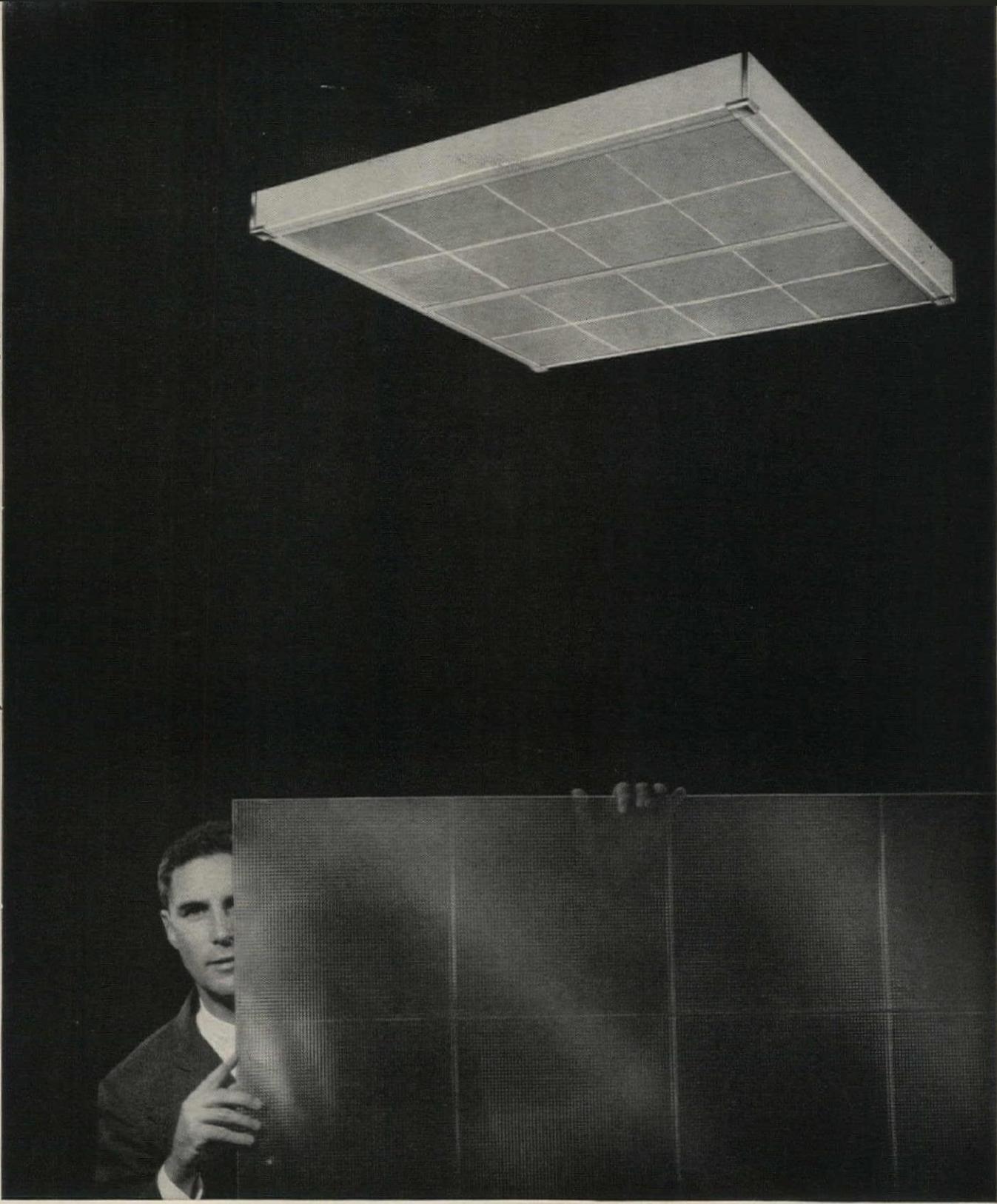
Lasting ceramic colors—a whole spectrum of them—await your choice when you specify grilles of Ceramic Veneer—the modern architectural terra cotta. You have a selection of twelve standard grille designs in a number of finishes—glossy, satin, vitreous slip, or unglazed. So, keep Ceramic Veneer in mind when the buildings on your boards need colorful solar screens, perforated facades or room dividers. Ceramic Veneer's quality is time-proved; its cost is less than you would expect. Write for literature on the many architectural uses of Ceramic Veneer—in grilles, plain surfaces, sculpture, or polychrome panels. Construction detail, data, estimates and advice on preliminary sketches involving the use of Ceramic Veneer will be sent on request.

FEDERAL
SEABOARD
TERRA COTTA
CORPORATION



10 E. 40th St., New York 16, N. Y.
Plant at Perth Amboy, N. J.

ACRYLIC



NO YELLOWING PROBLEM

When you specify acrylic shields made from LUCITE acrylic resin for the lighting fixtures in your building, you can expect service life three to five times greater than that of non-acrylic plastic materials. You virtually eliminate the problem of "yellowing". And maintenance costs are reduced to an absolute minimum. In short, shields made from LUCITE make possible the most efficient—and attractive—lighting you can buy.

Lighting fixture with "Controlens", injection-molded of LUCITE, by Holophane Company, Inc., New York, N.Y.



PLASTICS DEPARTMENT
 BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

For more data, circle 65 on Inquiry Card

SEND FOR MORE INFORMATION

E. I. du Pont de Nemours & Co. (Inc.)
 Dept. AR-3, Room 2507L, Nemours Bldg.
 Wilmington 98, Delaware

Please send your lighting booklet.
 Please ask a manufacturer of acrylic shields to contact me.

Name.....
 Position.....
 Company.....
 Address.....
 City..... State.....



A RōWAY door belongs in any plan you create

RōWAY Overhead Doors belong to any plan you may have in mind . . . and for several reasons. Obviously, strength, ease of operation and economy are important RōWAY features.

What about the **appearance** of an overhead door when considering the plan you have created?

Does it enhance the style of architecture being used? RōWAY will.

Does it fit in with your design? RōWAY will. There are no restrictions, no contrasts, no eyesores when you specify RōWAY Overhead Doors.

there's a RōWay for every Doorway!

COMMERCIAL • INDUSTRIAL • RESIDENTIAL



ROWE MANUFACTURING COMPANY
Department AR363, Galesburg, Illinois



For more data, circle 66 on Inquiry Card

For more data, circle 67 on Inquiry Card →

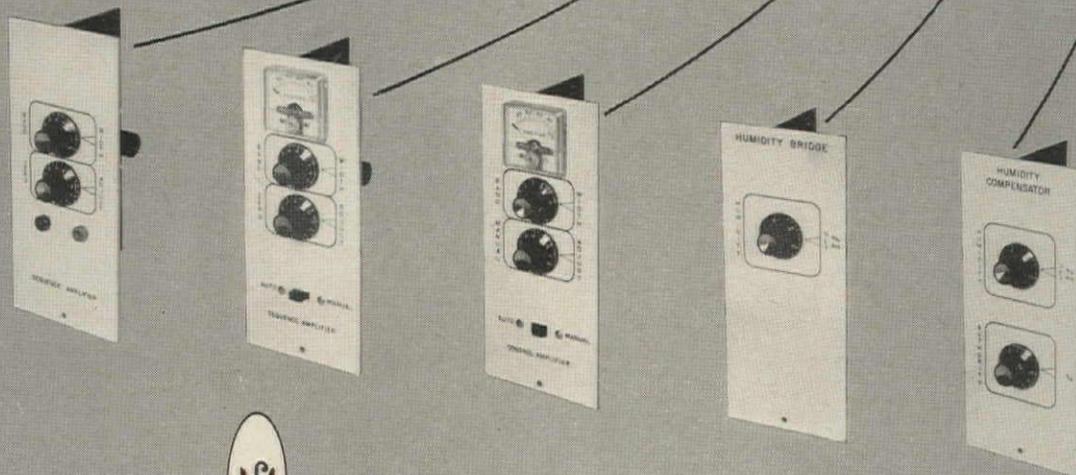
When you design air conditioning control systems...



*think CYBERTRONIC**

... to get the simplest most flexible system to control temperature, humidity or pressure. The F & M Cybertronic Control System can be used on any system to provide more efficient operation ... with utmost reliability at reasonable cost.

- Plug-in modular construction
- No shielded wiring
- Remote sensing ... temperature, humidity, pressure
- No relays or potentiometers required
- Output signal indication
- Higher reliability
- Minimum maintenance
- Lower initial and installation cost



CONTROLS  DIVISION

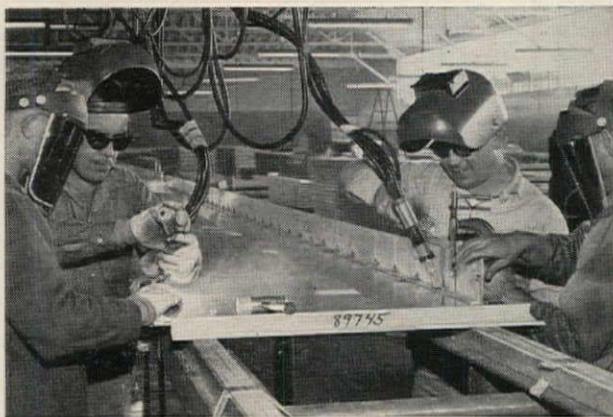
FISCHBACH AND MOORE, INCORPORATED
9005 Sovereign Row • Dallas, Texas • Phone: ME 1-8520



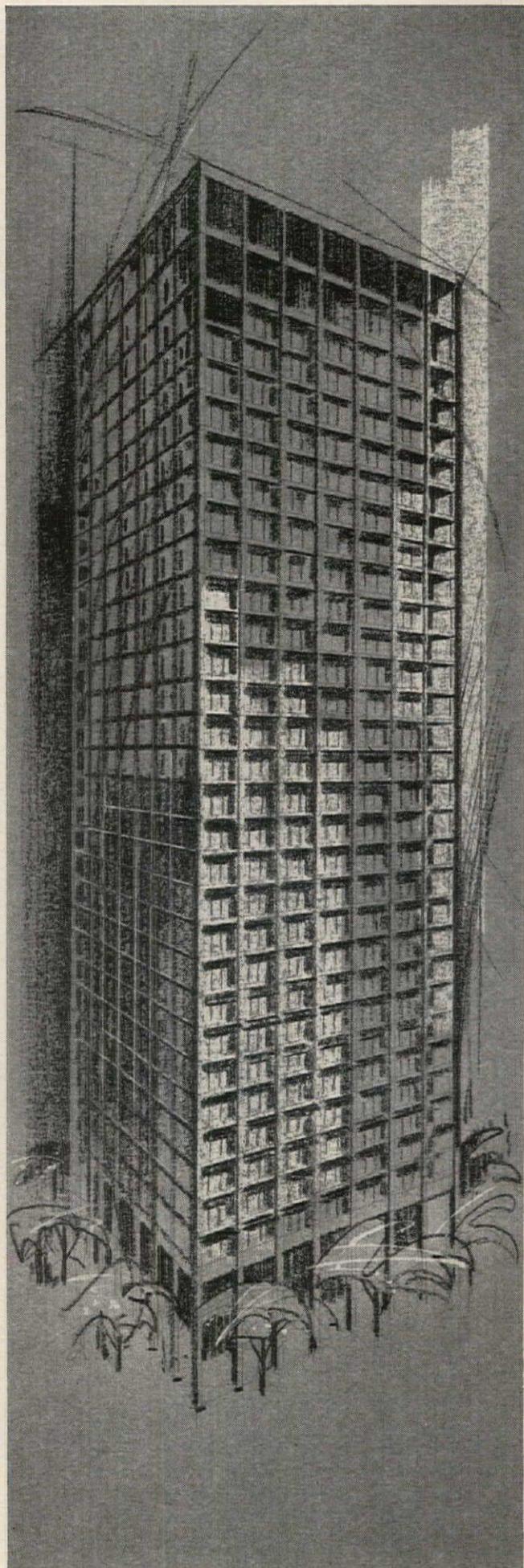
***CYBERTRONIC** (derived from cybernetics) ... an electronic control system simulating the functional capabilities of the human nervous system.

© Copyright 1963 by Fischbach and Moore, Incorporated

Tennessee Building—Houston
Architect-Engineer: Skidmore,
Owings and Merrill, San Francisco
General Contractor: W. S. Bellows
Construction Corp., Houston



Kawneer extrudes and fabricates to specification! Our facilities and know-how are big pluses on any monumental wall system. What are your metal fabrication problems? We can help you solve them and produce your requirements to schedule.



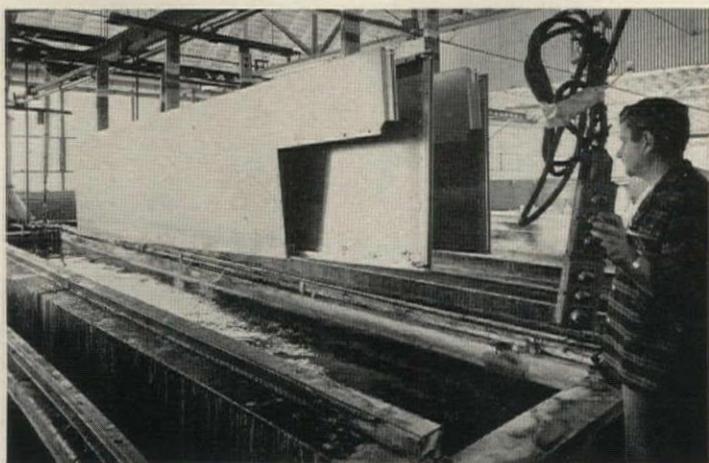
Challenge

Kalcolor[®] Aluminum by Kawneer is used to create a living building on Houston's Horizon

A dramatic profile will soon dominate Houston's skyline. It is the Tennessee Building, created by Skidmore, Owings and Merrill of San Francisco.

Clad with anodic color coated aluminum, the building will be vibrantly alive because of the effect of ever-changing play of light and shadow on the finish. Weather and industrial gases cannot dim its beauty. A custom designed sunshade also adds life to the facade.

The building is a Challenge for Kawneer, too. It takes over 2,000,000 pounds of Kalcolor aluminum. Kawneer has the facilities and know-how for the complete job . . . anodizing, extruding, fabricating and erecting. Kawneer is the single-source-supplier-erecter, so there is minimum color variation. Write for brochure.



Over 2,000,000 lbs. of matching anodic color coated aluminum! Extrusion, fabrication and finish, all done in the same plant. Kawneer can test the custom design sections at any stage of production. No sub-letting assures complete quality control!

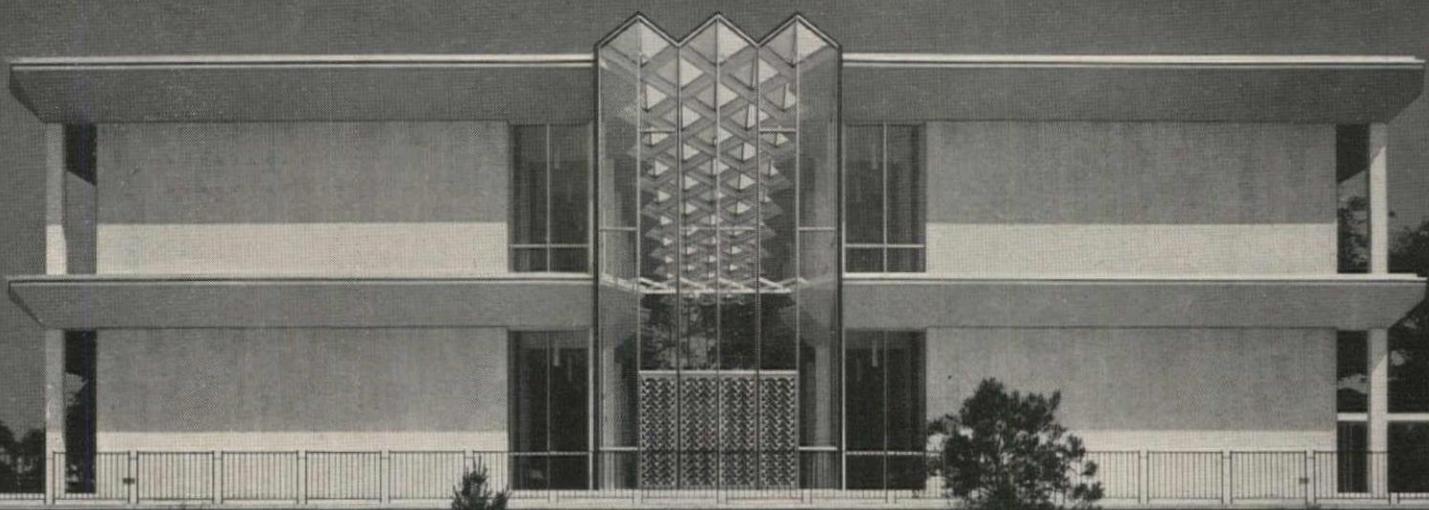


Schedule: 2½ floors of windows and cladding per week!
To produce the ultimate in beauty, each piece is charted, color-checked and keyed for erection at a Kawneer factory. On arrival, it's hoisted into position—speedier erection!

Kawneer Company, A Division of American Metal Climax, Inc.

Niles, Michigan • Richmond, California • Atlanta, Georgia • Kawneer Company Canada Ltd., Toronto, Ontario, Canada

For more data, circle 68 on Inquiry Card



McGREGOR MEMORIAL CONFERENCE CENTER
WAYNE UNIVERSITY, DETROIT, MICHIGAN
ARCHITECT:
MINORU YAMASAKI AND ASSOCIATES

Engineered Features

- A precision-formed 1/4" steel gutter serves as both a method of drainage and a structural support.
- The gutter assembly is well insulated and sealed with 16 oz. lead coated copper.
- The fifty-three extruded aluminum pyramid skylights (5/8" x 10'0") ingeniously blend with the diverse historical influences.

Photographs by Baltazar Korab



bring the Beauty of Nature indoors
with Super Skylighting

Look to Super Skylighting to provide the unusual . . . the interesting . . . the architectural focal point of your next project. Super Sky has a flair to help you create a new dimensional concept and to breathe life into interiors.

Super Sky's engineers work with you from drawing board to completion. From *your* plans they *design, fabricate, erect* the skylight . . . and even *guarantee* it. This engineering assistance on data, estimates and suggestions is yours . . . at no obligation. Write Super Sky today!

For FREE illustrated booklet — "A New Concept in Dimensions Unlimited," attach this coupon to your letterhead and mail to Super Sky Products, Box 113-AR, Thiensville, Wisconsin.

For more data, circle 69 on Inquiry Card



SUPER SKY PRODUCTS
BOX 113-AR, THIENSVILLE, WISCONSIN
Phone CHestnut 2-2000, Thiensville, Wisc.
FLagstone 4-6700, Milwaukee, Wisc.

Announcing New Church Deluxe Moltex Seats

**NEW MELAMINE-ENRICHED MOLTEX WITH SELF-SUSTAINING
CHECK HINGE WITHSTANDS HEAVY-DUTY COMMERCIAL USE**

Even more rugged than regular Moltex, the new Church Deluxe Moltex seats are unqualified first choice for any application where hard use will be routine, where maintenance must be minimized despite the possibility of abuse, where cost-per-year is more important than the original bid. Molded solid and heavy of alpha-cellulose-filled melamine, Deluxe Moltex has proved to be the most durable seat on the market today. The rugged new stainless steel self-sustaining check hinge prevents dropping and slamming, checks the seat when it is raised slightly past the vertical.

*Available in white or black for
elongated or regular bowl.*



FIRE-PROOF

Impervious to burning cigarettes or matches. Proved fireproof in ASTM Code tests.



STAIN-PROOF

Cannot be permanently discolored by iodine, acids, alkalis, ink, disinfectants, detergents, old age.



SURE-HOLD HINGE

Newly designed self-sustaining, stainless steel hinge with positive check holds firmly in any position.

CHURCH

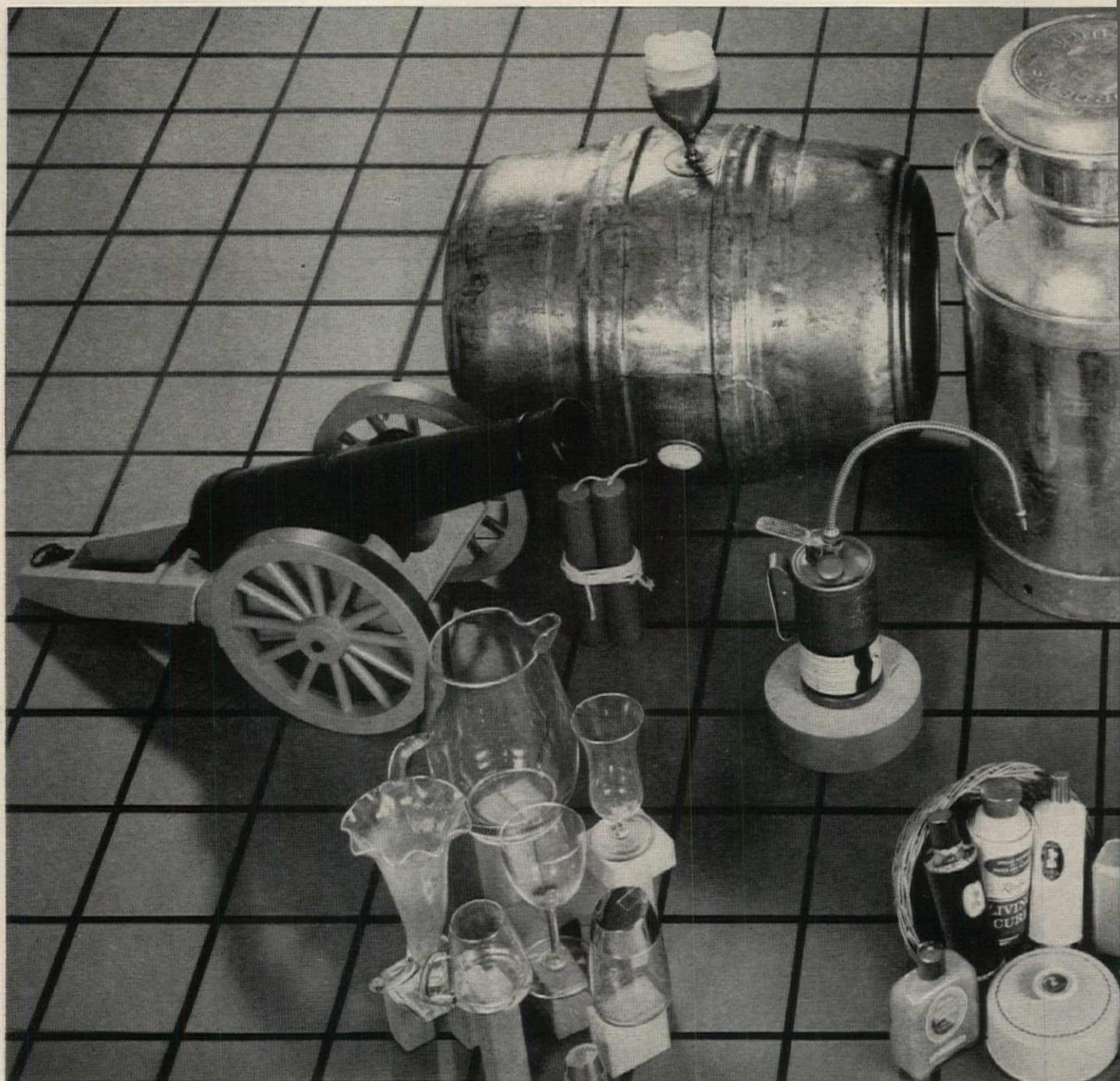
"THE BEST SEAT IN THE HOUSE"



AMERICAN-Standard
C. F. CHURCH DIVISION

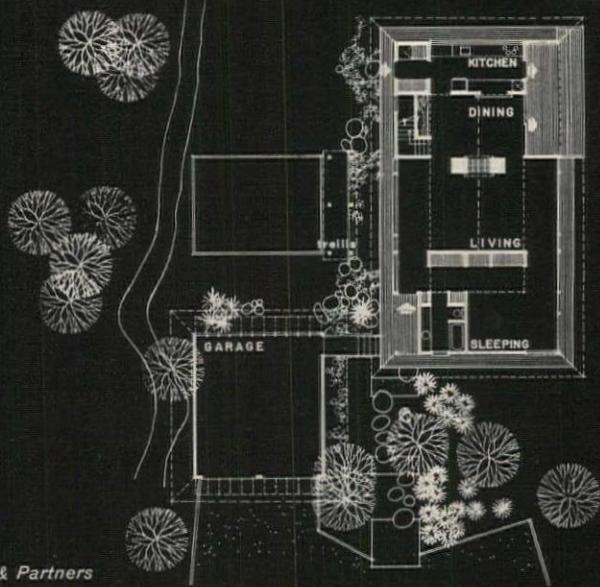
40 West 40th St., New York 18, N. Y.

For more data, circle 70 on Inquiry Card



**New development in industrial flooring:
an epoxy-based mortar-grout that makes
ceramic tile floors acid & alkali resistant,
stronger, easier to install than ever before.**

Participating Companies: American Olean Tile Co./Atlantic Tile Manufacturing Co./Cambridge Tile Manufacturing Co./Carlyle Tile Co./Continental Ceramic Corporation / General Tile Company/ International Pipe and Ceramics Corporation / Jackson Tile Manufacturing Co. / Jordan Tile Manufacturing Co./



Architects: A. O. Bumgardner, A. I. A. & Partners



When the roof is important, specify Red Cedar Shingles

The natural character of genuine Red Cedar Shingles, their unique color, texture, dimension and line cannot be imitated. Rugged, durable, storm and wind-resistant; a Red Cedar Shingle roof ages gracefully, in fact gains character with the years. If you would like complete

information about applications and specifications for this classic material, write: Red Cedar Shingle Bureau, 5510 White-Henry-Stuart Building, Seattle 1, Washington or 550 Burrard Street, Vancouver 1, British Columbia **RED CEDAR SHINGLES**

For more data, circle 72 on Inquiry Card



Burnham Hydronic* Heating ...finest for every home you design

Client satisfaction is guaranteed in every new home that's heated with BASE-RAY, the original and still the finest radiant baseboard. It's so quiet, so inconspicuous you have to look twice to find it. It's slim, smart looking, blends beautifully with room decor. And it's all but indestructible because it's all cast iron. Clean, draft-free BASE-RAY radiant heating is the finest for any home — ranch style, two story or split level.

Burnham's new F.H.A. approved BASE-RAY series loop system helps cut installation costs up to 50% and maintain top performance. Specify it on your next job.

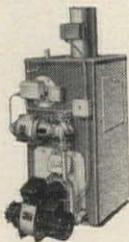
Team BASE-RAY with a Burnham cast-iron boiler. Boilers are shipped "ready to go" — assembled, wired and factory tested. It's the hydronic heating team that cuts costs and satisfies home buyers best.

*Hydronics — the science of heating with warm water



Attractive, space-saving boiler for oil or gas ▶

Write now for new, 16-page, free Burnham manual telling how to cut costs on BASE-RAY series loop installations.



Burnham Corporation

Heating & Cooling Division
Irvington, New York



Member

- Send me Burnham Design Manual, BASE-RAY Series Loop Installations.
- Also send me information on BASE-RAY and Boilers.

Name _____

Address _____

City _____ State _____

AR-33

For more data, circle 73 on Inquiry Card

A NEW LOOK FOR BUILDING EXTERIORS

with JOANNA color-match window shades

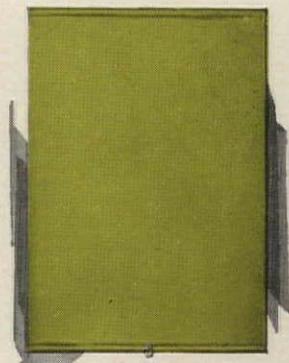
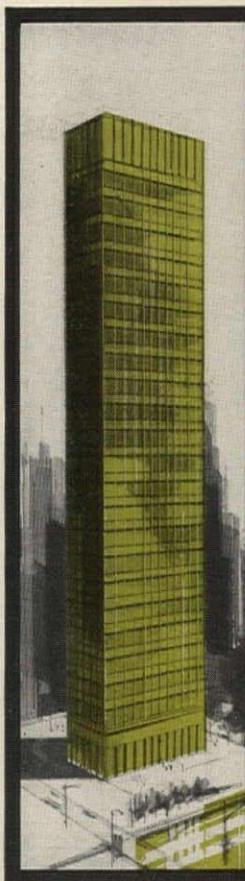
Now you can have window shades that match or blend with colors of building exteriors. Joanna Western will color-match contract orders to your exact specifications.

No other window covering offers such unlimited colors.

No other window covering offers such flexibility—outside color uniformity—interior variety. Inside, shades may be white or custom-dyed to go with room decorating plans.

No other window covering can effect so many economies — original cost, installation and maintenance. Plus the fact that Joanna shades have insulating qualities that help keep down fuel and air conditioning costs.

Write or send coupon for more information.



Available in room-darkening and translucent styles.

Mr. W. B. Berry, Contract Sales Dept. AR
Joanna Western Mills Co.
22nd and Jefferson Streets
Chicago 16, Illinois

- Please send complete information on Joanna color-match shades.
- Please have representative call.

Name _____

Firm _____

Address _____

City _____ Zone _____

State _____

Sweets Catalog listing: 18c Jo

JOANNA

JOANNA WESTERN MILLS COMPANY

For more data, circle 74 on Inquiry Card

DESIGN DISTINGUISHED ENTRANCES IN ANY CONTEMPORARY STYLE



Marshall Savings & Loan Association, Riverside, Ill. B. T. Moravec, Architect

Heavy-duty all-glass HERCULITE Doors are made of shock-resisting PPG Tempered Polished Plate Glass to give strength and durability. They are available in a wide range of standard sizes, in thicknesses of $\frac{1}{2}$ in. and $\frac{3}{4}$ in.



S&W Professional Building, Coral Gables, Florida. Leroy K. Albert, Architect

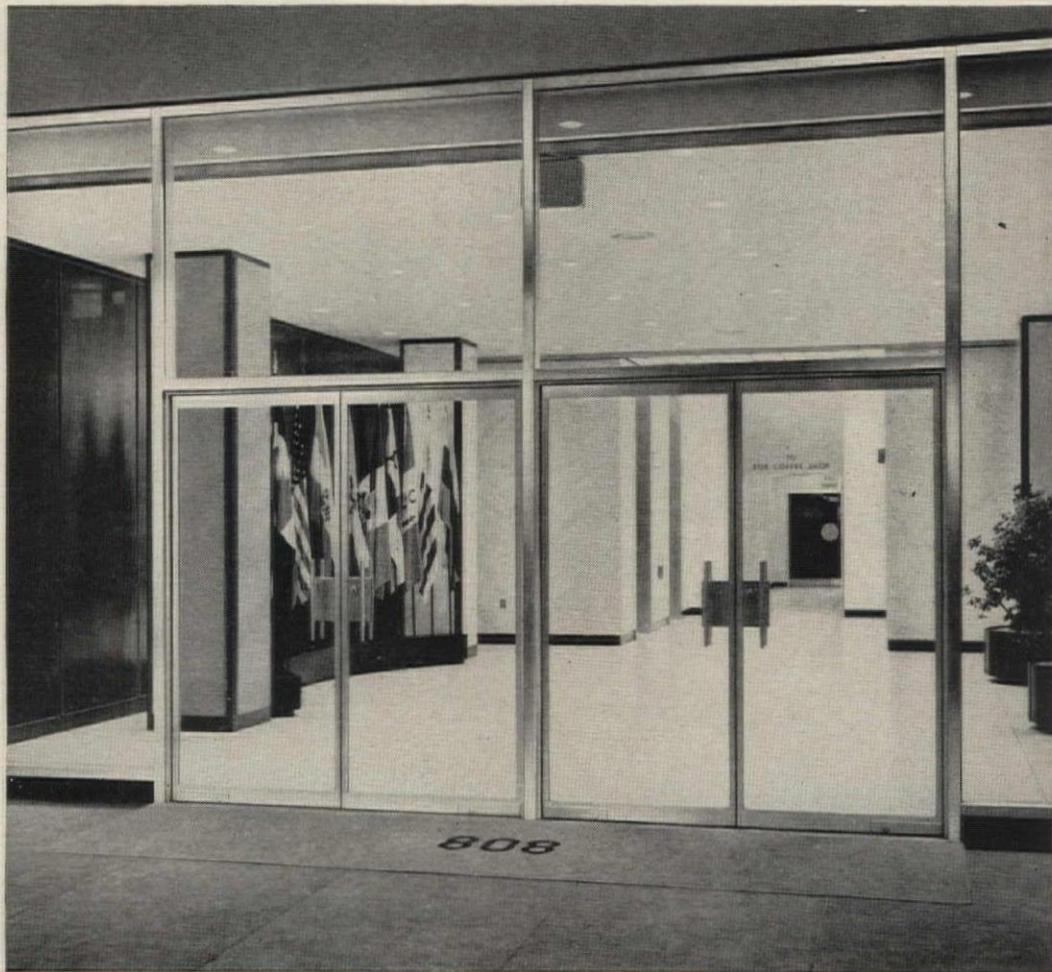
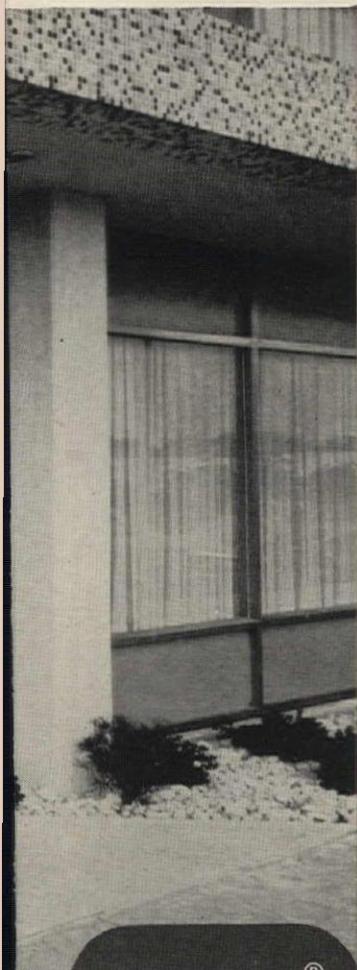
Stylish, aluminum-framed TUBELITE Doors have an exclusive interlocking feature to assure rigidity. Exposed seams and fastenings are eliminated by dovetailed, hollow construction. A reinforcing structural channel is available when required.

simplicity of line and appealing design give Modern Doorways by PPG the look of distinction and elegance that naturally fits in with today's varied architectural requirements. An extensive range of sizes and styles gives you almost limitless design flexibility.

PPG offers three basic doorway units—HERCULITE[®], WEST and HERBELITE[®]—each with distinctive characteristics. A complete PPG Doorway Package includes frame, all hardware required for installation, and—when desired—the PITTCOMATIC[®] automatic door operator.

For complete information, contact your PPG Architectural Representative. Also, see Sweet's Architectural File, Section 16e.

WITH MODERN DOORWAYS BY PPG



808 Office Building, Washington, D.C. Vlastimil Koubek, Architect

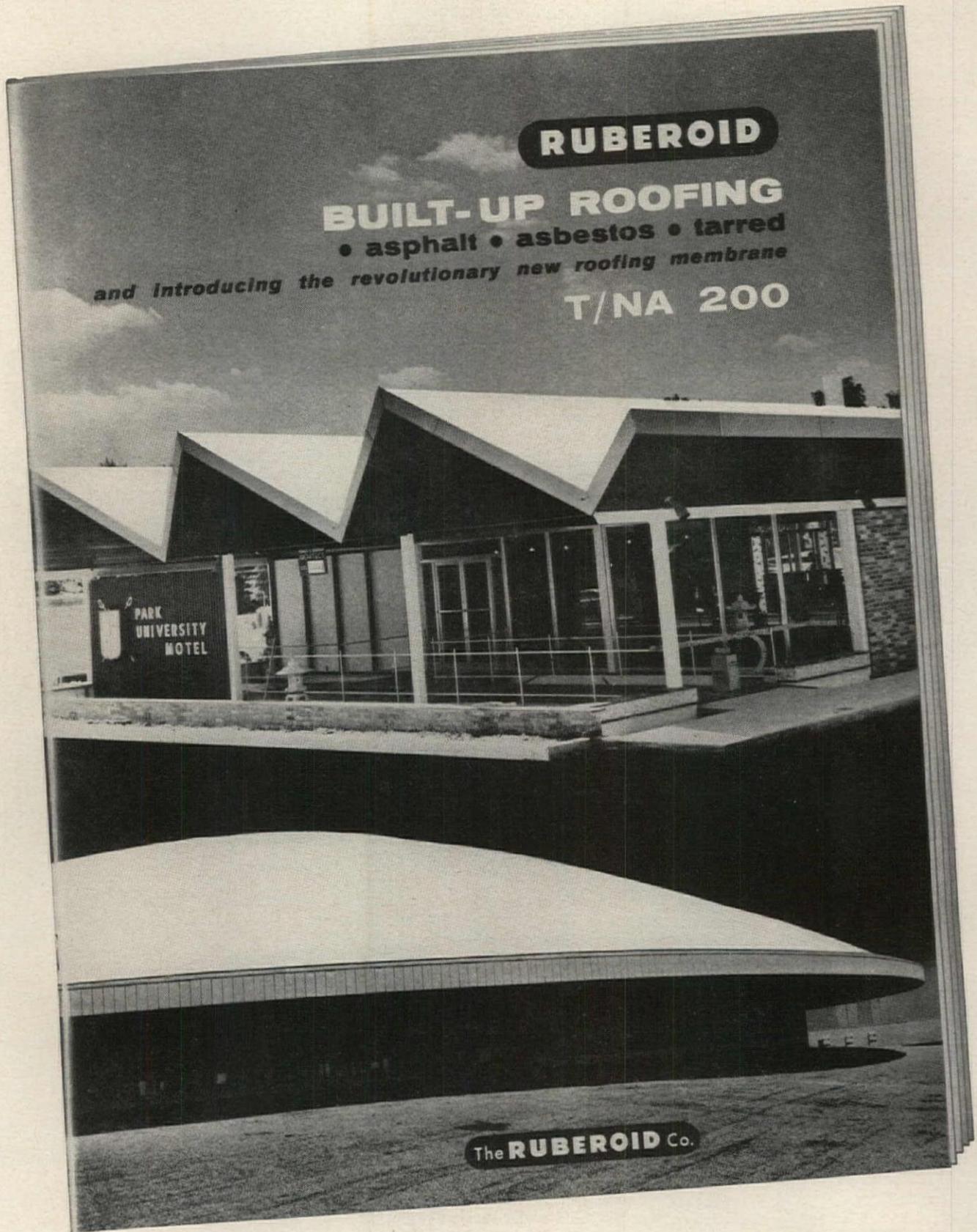
Elegant, slender-framed WEST Tension Doors have 1/2 in. glass held under tension within the metal frame. Result: a strong, serviceable unit that does not sag, rack, or get out of alignment. Available in aluminum, bronze, and stainless steel.

Pittsburgh Plate Glass Company

Paints • Glass • Chemicals • Fiber Glass In Canada: Canadian Pittsburgh Industries Limited

For more data, circle 75 on Inquiry Card





**Write today for your free copy
of this new 48-page catalog**

The RUBEROID Co., 733 Third Avenue, New York 17, New York

Also available in
Sweet's Architectural
and Industrial
Construction file: $\frac{8a}{Ru}$



Robert D. Harvey Studio

*1. The Countway Library of Medicine of the
Harvard Medical School and the Boston Medical Library*

DESIGNING WITH DEFERENCE

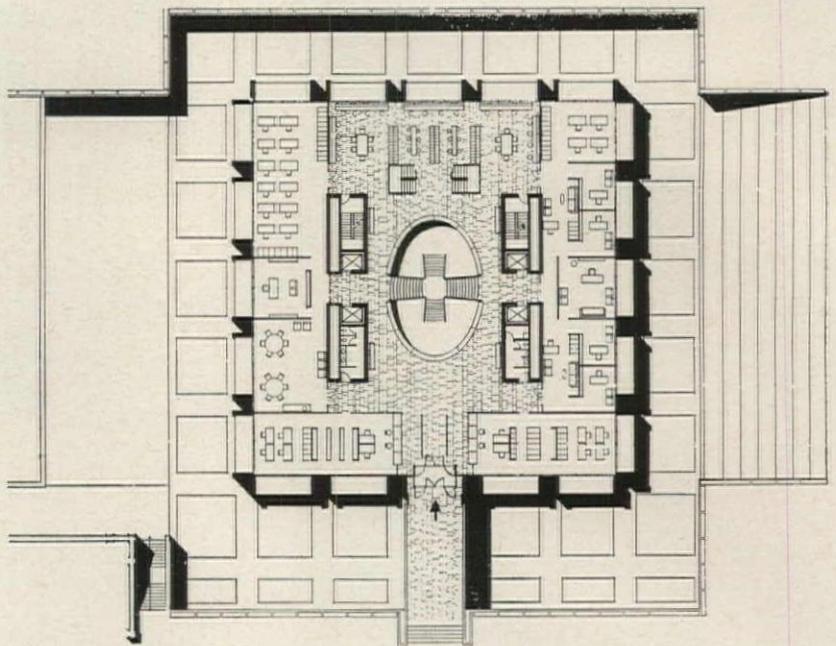
A Medical Library at Harvard, and dormitories at the University of Massachusetts, Princeton, M.I.T. and Bowdoin, all by Hugh Stubbins Associates show by their differences that they are precise architectural solutions for widely varying requirements which respect separate campus environments

Many leading architects these days assert that they no longer design their buildings as separate entities, complete in themselves. Their design rationale for a new building is frequently based as much on an analysis of the proportion and character of the buildings adjoining it as it is on the program. This approach makes sense on campuses where existing buildings often establish a sense of quality and character to be maintained and extended.

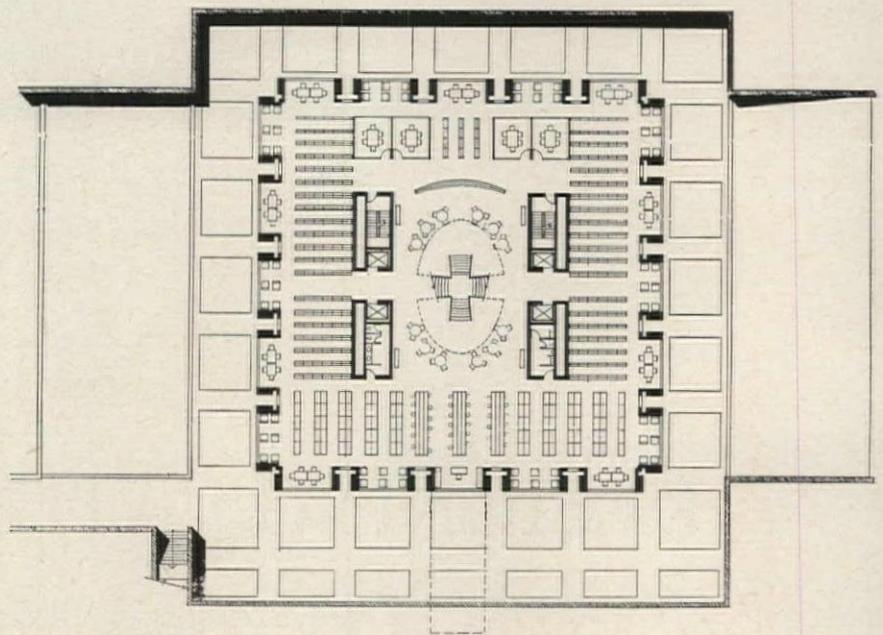
The Countway Library has been conceived as a monumental building, in part because of its importance as one of the largest medical libraries in the United States, second only to the National Library of Medicine in Bethesda, Maryland. It will house not only the Harvard Medical School Library and the Boston Medical Library, but it will be the central resource for the entire medical community. The use of a monumental conception to symbolize importance may be justification in itself, but there were supporting reasons.

The tight irregular site which has been selected for the Countway Library is adjoined by the large scale white marble, neoclassic buildings of the Harvard Medical School. These structures are monumental and any new buildings to be added to the complex must stand up to them, or be overpowered. Their classic symmetry suggested that the library be solved symmetrically, and the site dictated that the plan be square. The surrounding buildings determined the height of the library, and the thickness of their cornices influenced the depth of the bold library cornice which is actually an office floor containing space for the editorial staff of two medical journals, as well as clubrooms, reading rooms, a rare book room and a multi-purpose auditorium.

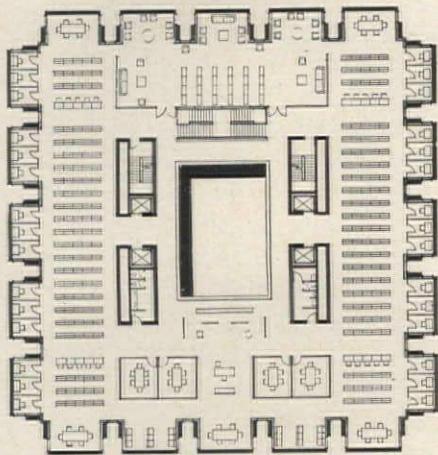
The strong horizontal shadows under the library cornice, created by a set back floor, and the vertical shadows cast by the projecting walls upon the plane of the recessed columns, deliberately evoke in reverse image, the plastic strength of projecting columns and cornice in the neoclassic buildings.



MAIN ENTRANCE AND STAFF

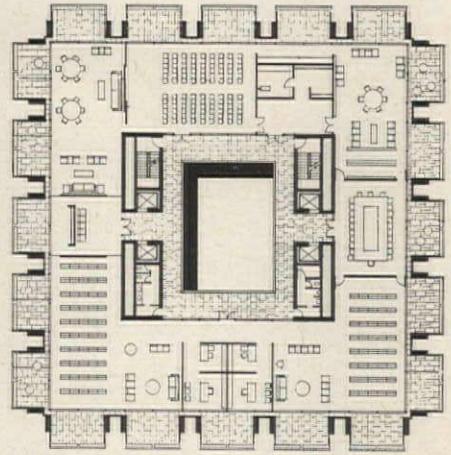


MOST-USED SERIALS

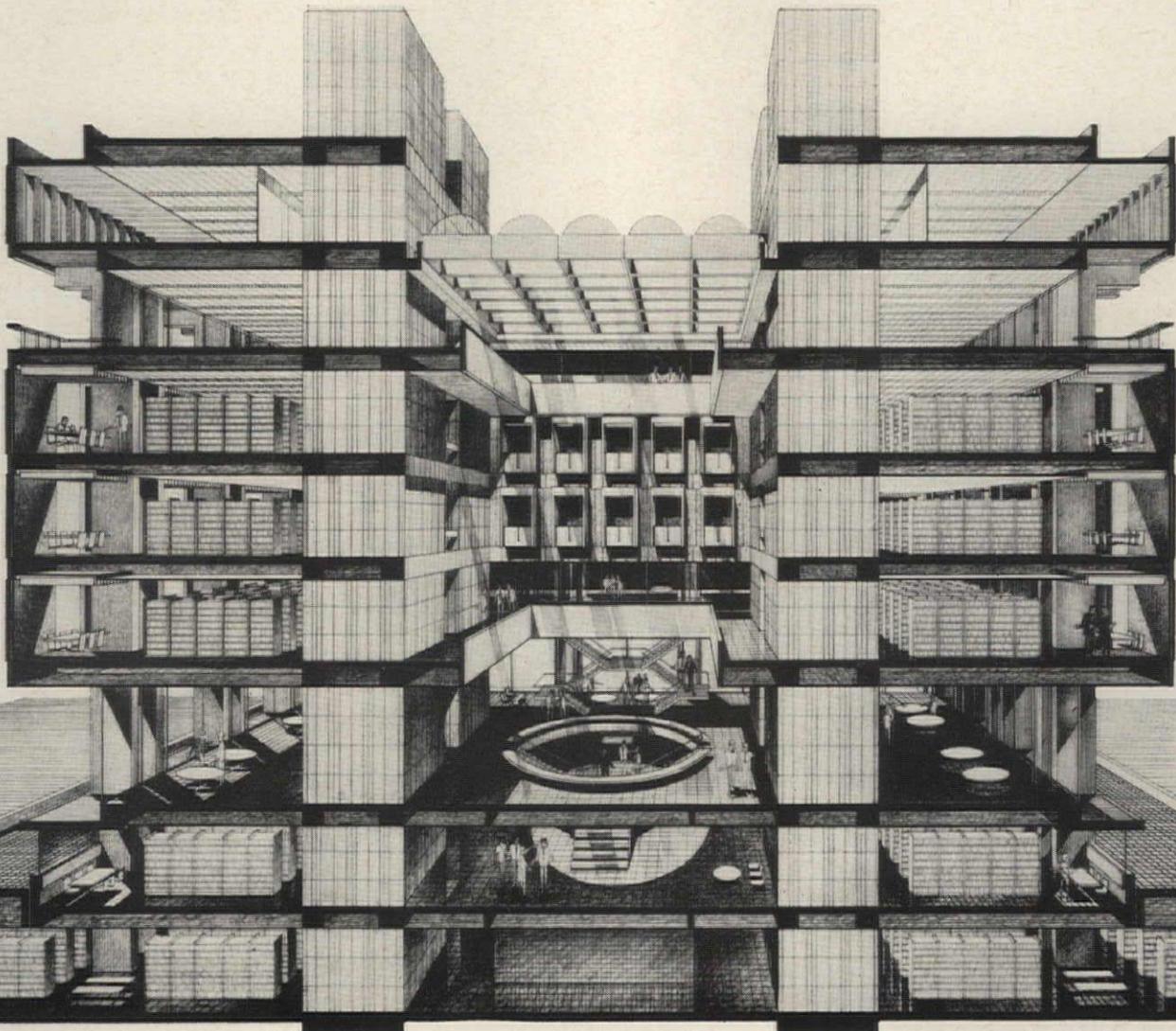


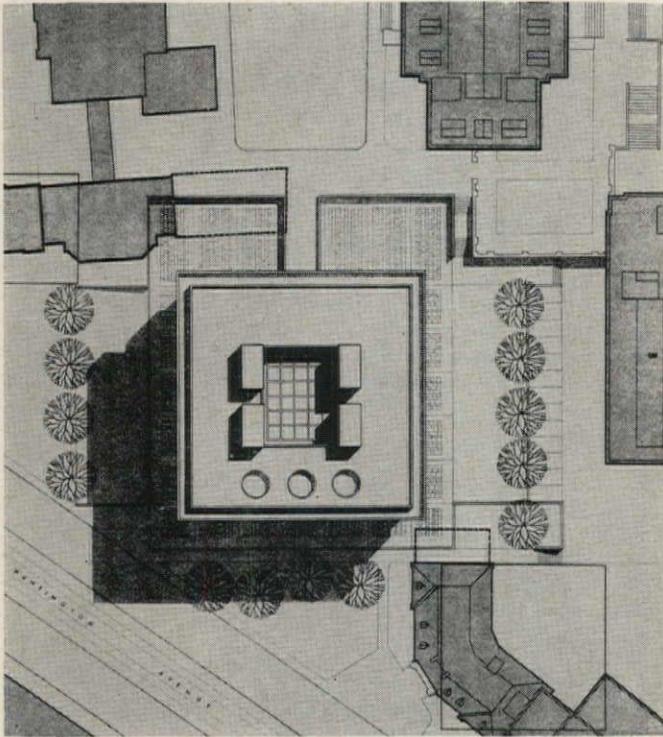
MOST-USED MONOGRAPHS

The library houses a working capacity of 750,000 volumes and a full capacity of 1,000,000 volumes. The main entrance floor is reached by a bridge over a shallow court which gives light to the floor immediately below which will receive the most use. The main entrance level is designed for the library staff and its tools, which are the card catalogue and reference sources. The two floors below the main level are for journals, indices, abstracts, and the three floors above this level are for books and monographs. The two top floors house special facilities



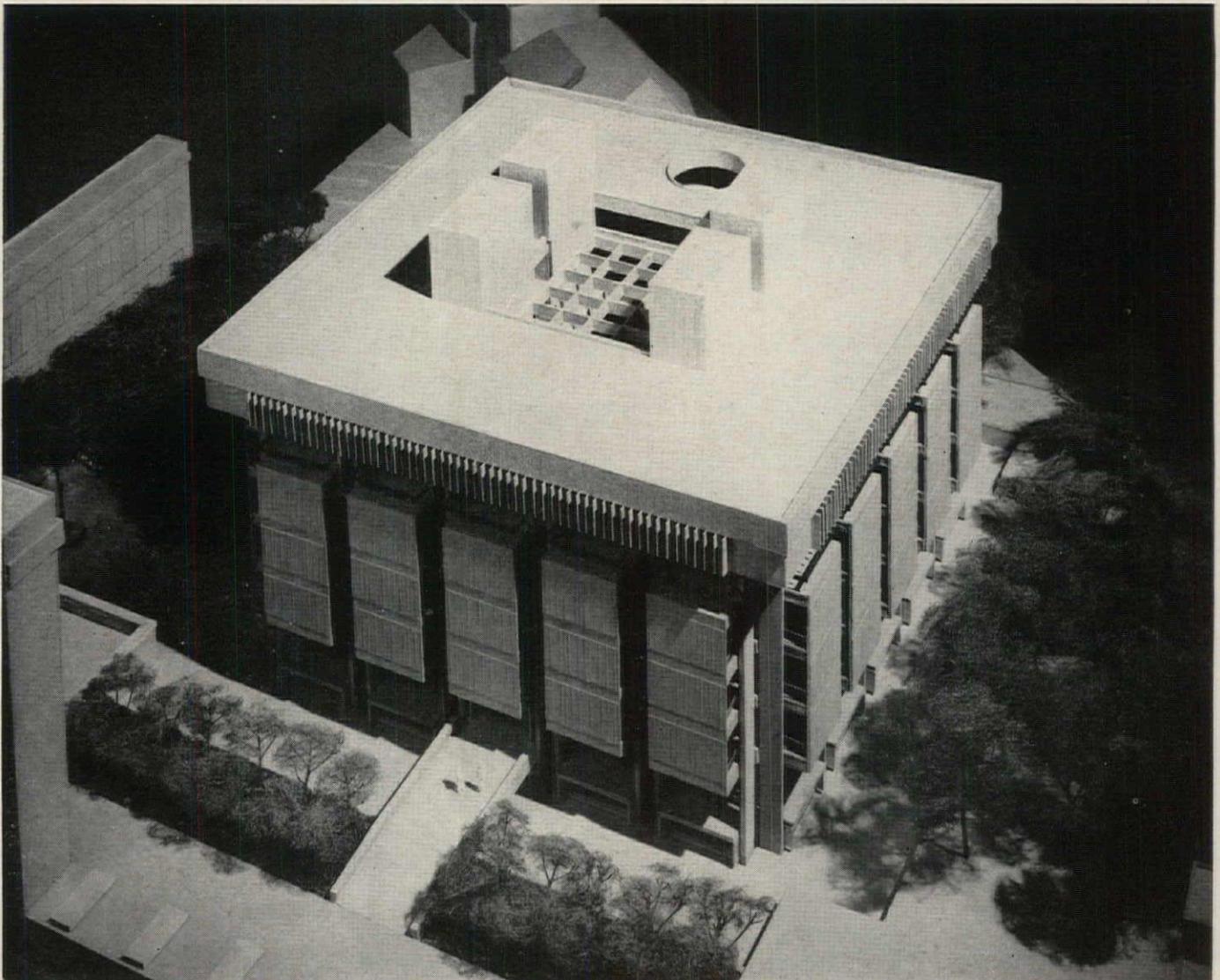
HISTORY OF MEDICINE AND CLUB ROOMS



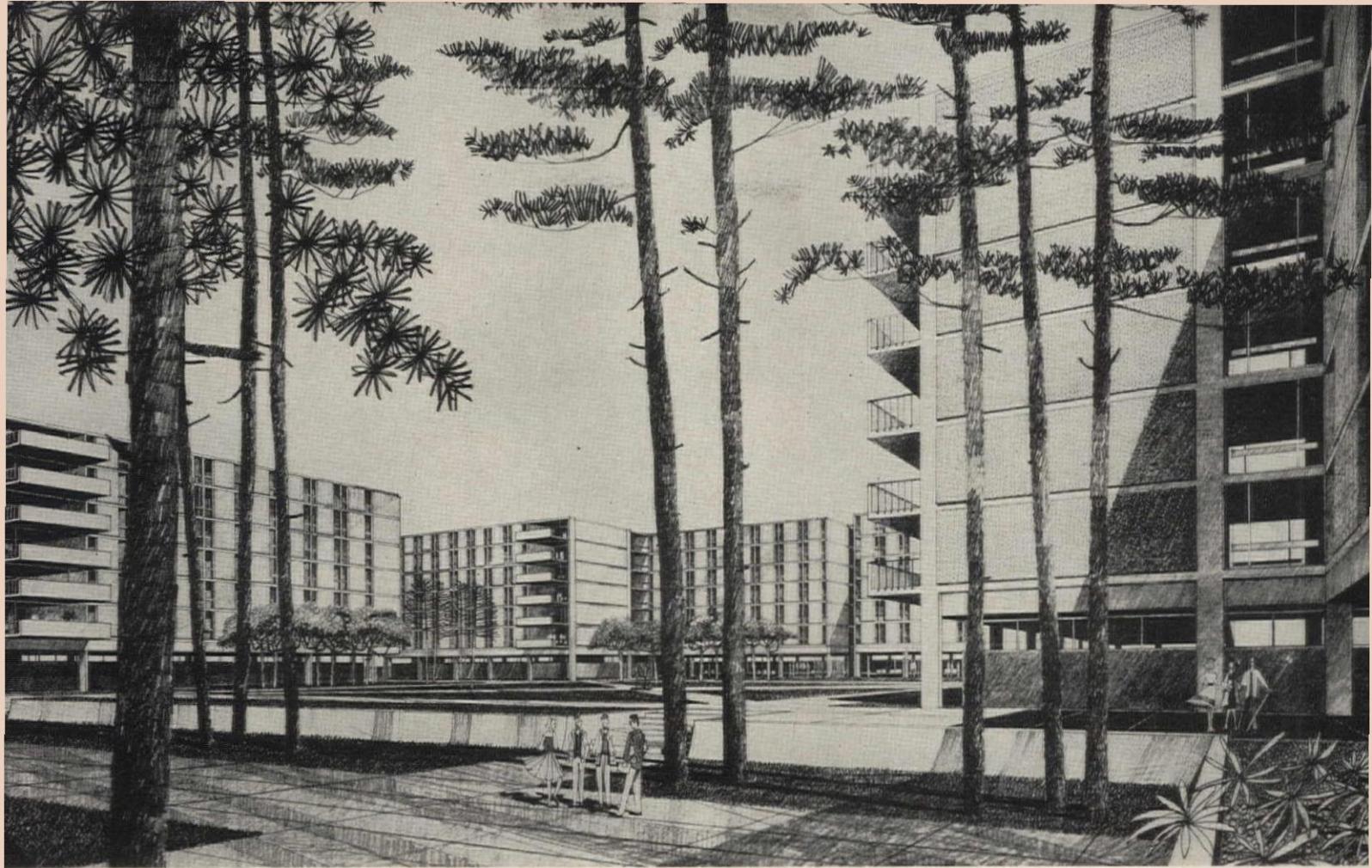


The scheme turns inward to a multi-storied sky-lit court with stairs and elevators at each of the four corners of the court perimeter. The book stacks are beyond, and on the last periphery, at the greatest distance from the corridors, with the book stacks as a sound buffer, are the quiet alcoves for reading and conversation. The alternative solution would have been to put the vertical circulation in a central shaft in which case the building would have turned outward. Stubbins is opposed to extensive use of glass in libraries, contending that problems of heat and especially glare have not been well solved in those which he has studied. In this building glass will be well shaded in the deep recesses made by the projecting alcoves, as well as under the cornice.

The Countway Library will be faced with limestone.



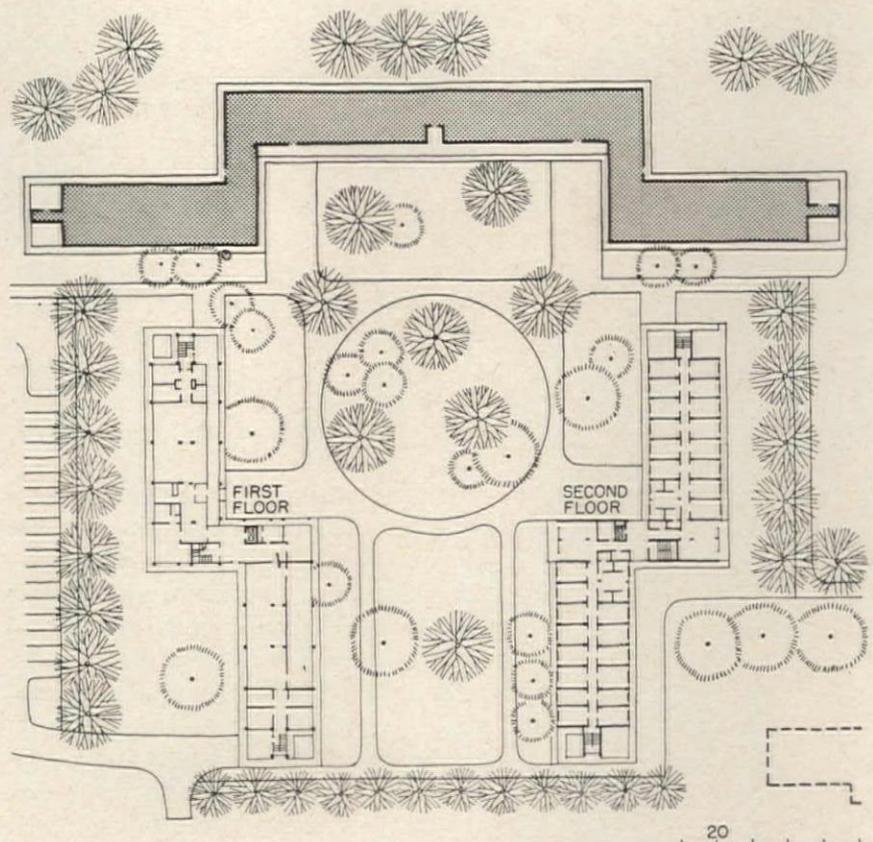
Robert D. Harvey Studio

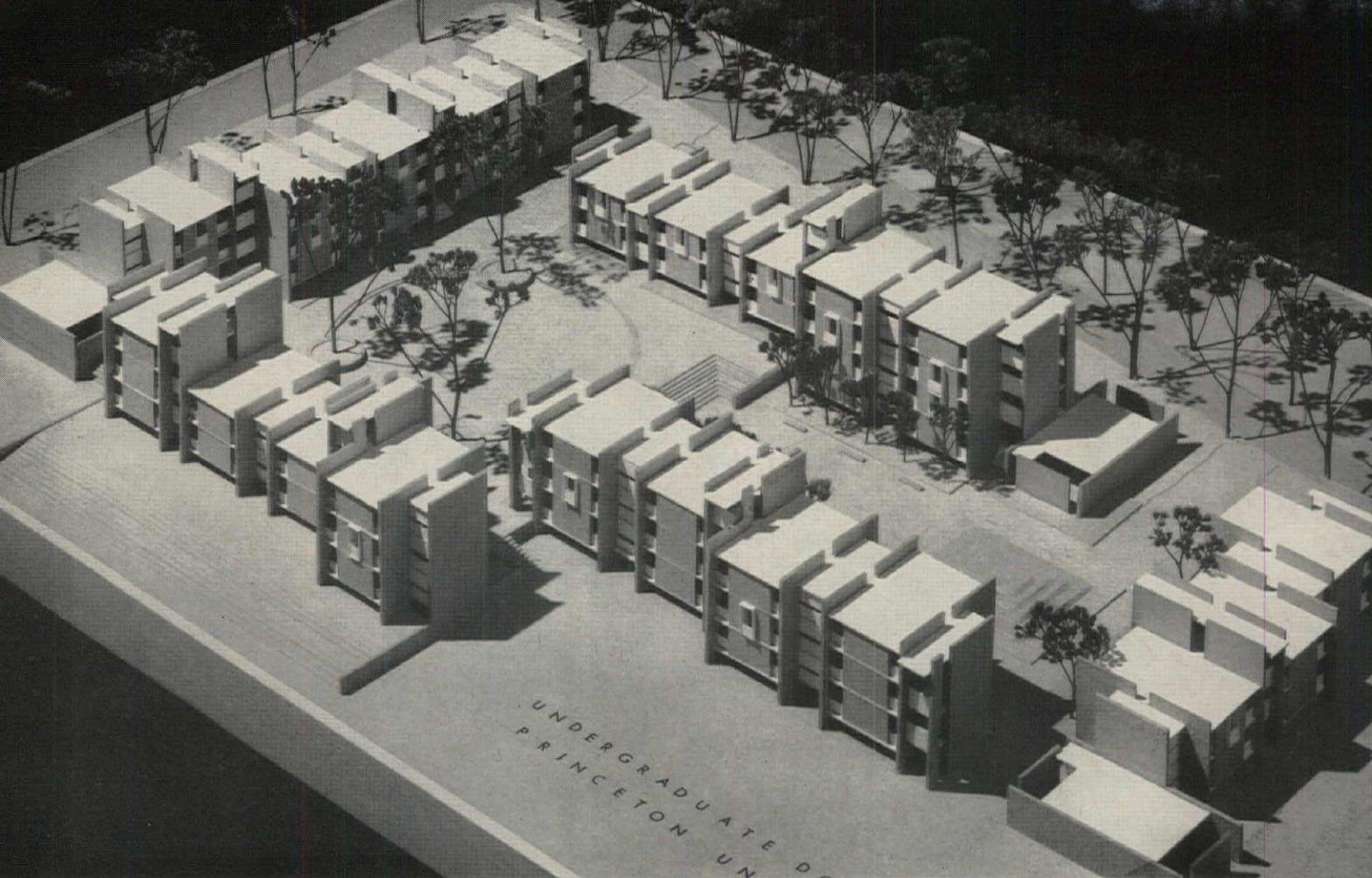


2. Dormitories Under Construction at the University of Massachusetts

Deference here was to economy and speed. The site of this state college is generous and full of trees, and other campus buildings are not sufficiently close to become major determinants of the design solution. The dormitories, to be occupied by 1,300 students, are financed by bonds issued by the University of Massachusetts Dormitory Authority. The buildings must become self liquidating.

For cheapness and speed, Stubbins used precast concrete bents in combination with precast reinforced floor planks to construct what will be, according to the architects, the largest group of precast buildings yet to be erected in this country. For these structures, concrete was found to be cheaper than steel fireproofed, and the precast bents can be erected as quickly as steel. Concrete is exposed inside and outside and walls will be of masonry block. Basements are kept to a minimum, and luggage, for example, is stored on the ground floor.





Robert D. Harvey Studios

3. Undergraduate Dormitories for Princeton

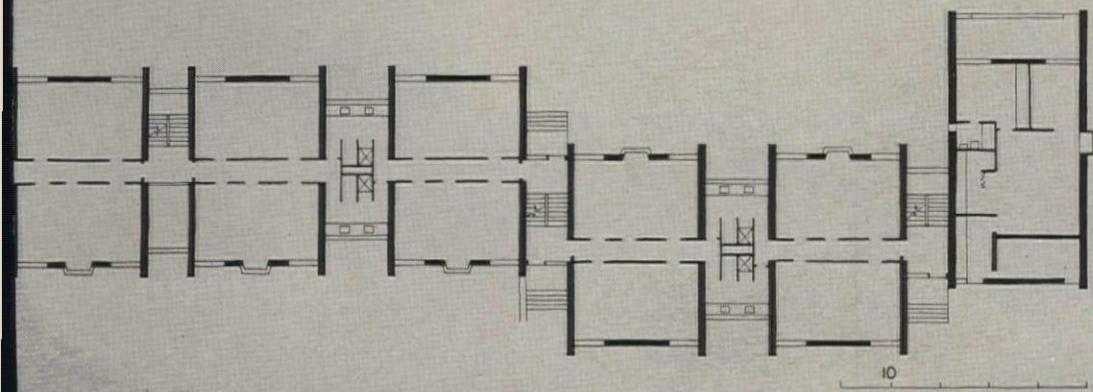
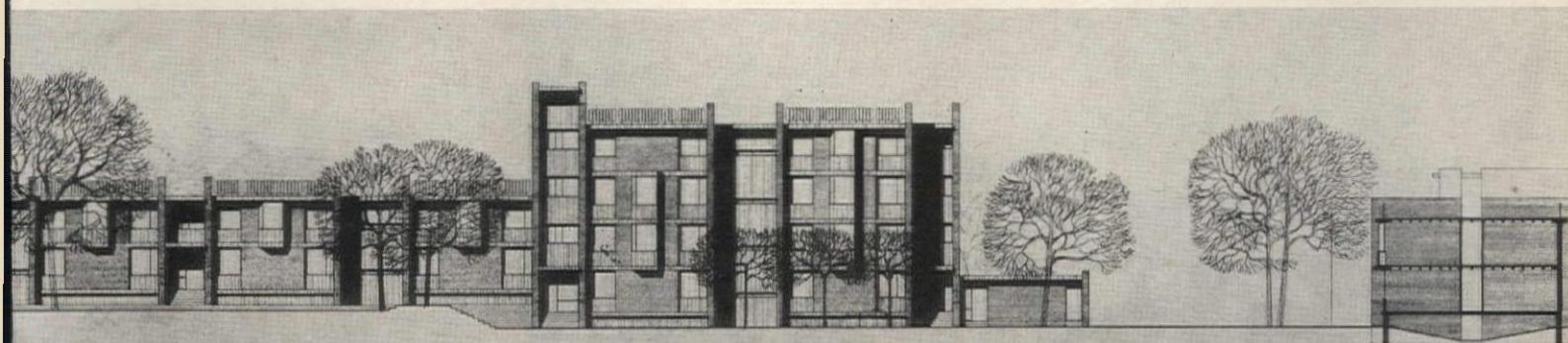
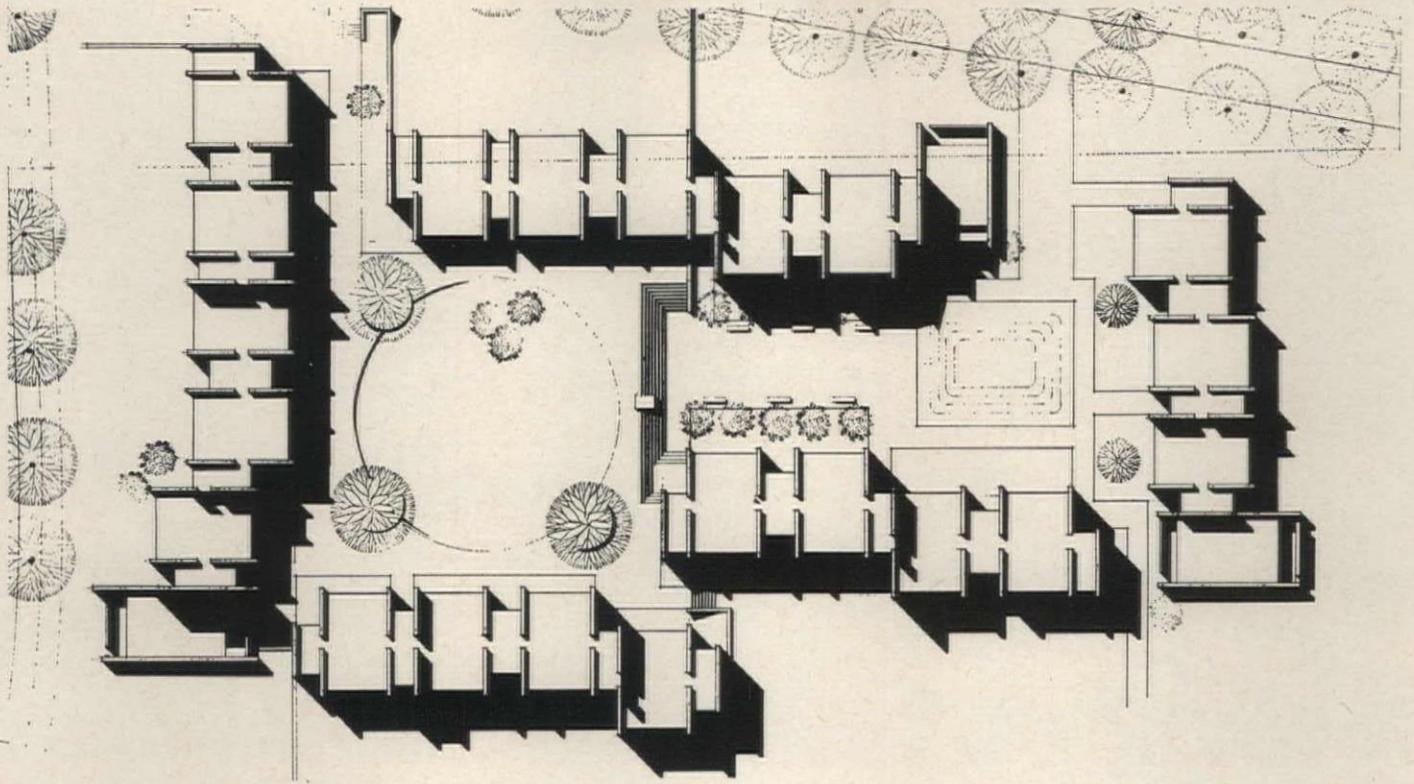
The problem here, according to Stubbins, was how to find something in the present day vernacular which would be on speaking terms with those nearby Princeton buildings which are in the Gothic style. The intricate skyline of this dormitory project achieved by varying the number of stories in each unit, and the staggered wall planes, punctuated by the thin verticals formed by the projecting edges of the masonry bearing walls, achieve a complex effect in sympathy with the buttresses and crenelations of the older Princeton buildings in the Gothic manner.

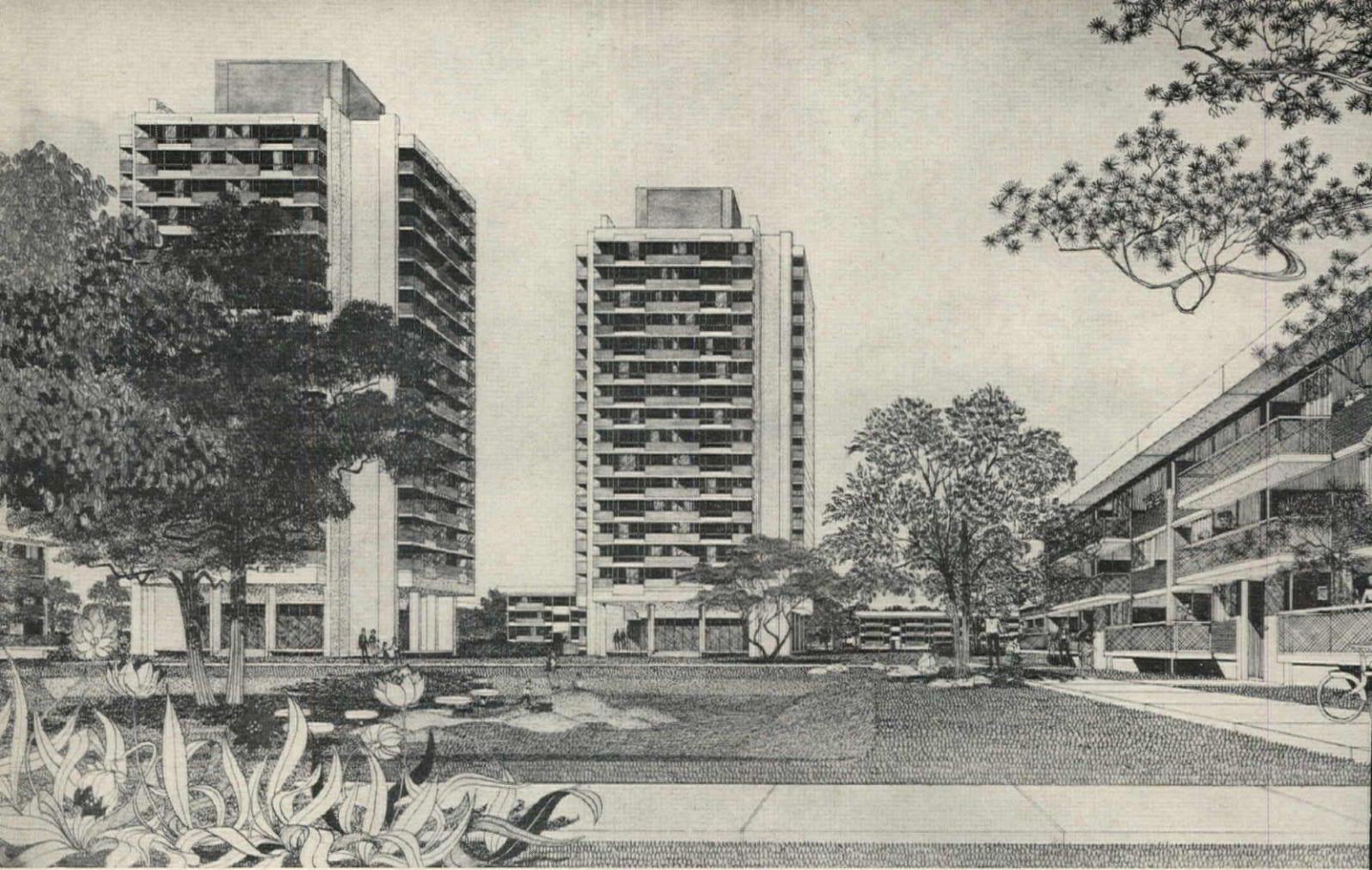
The site, located at the bottom of a slope on the edge of the athletic field, is flat; the different levels shown in the solution are artificial and will be done by fill. The outdoor spaces formed by the dormitory wings are in the scale of the Gothic campus quadrangle.

The dormitories are planned to contain a majority of single rooms. These are preferred by the students who

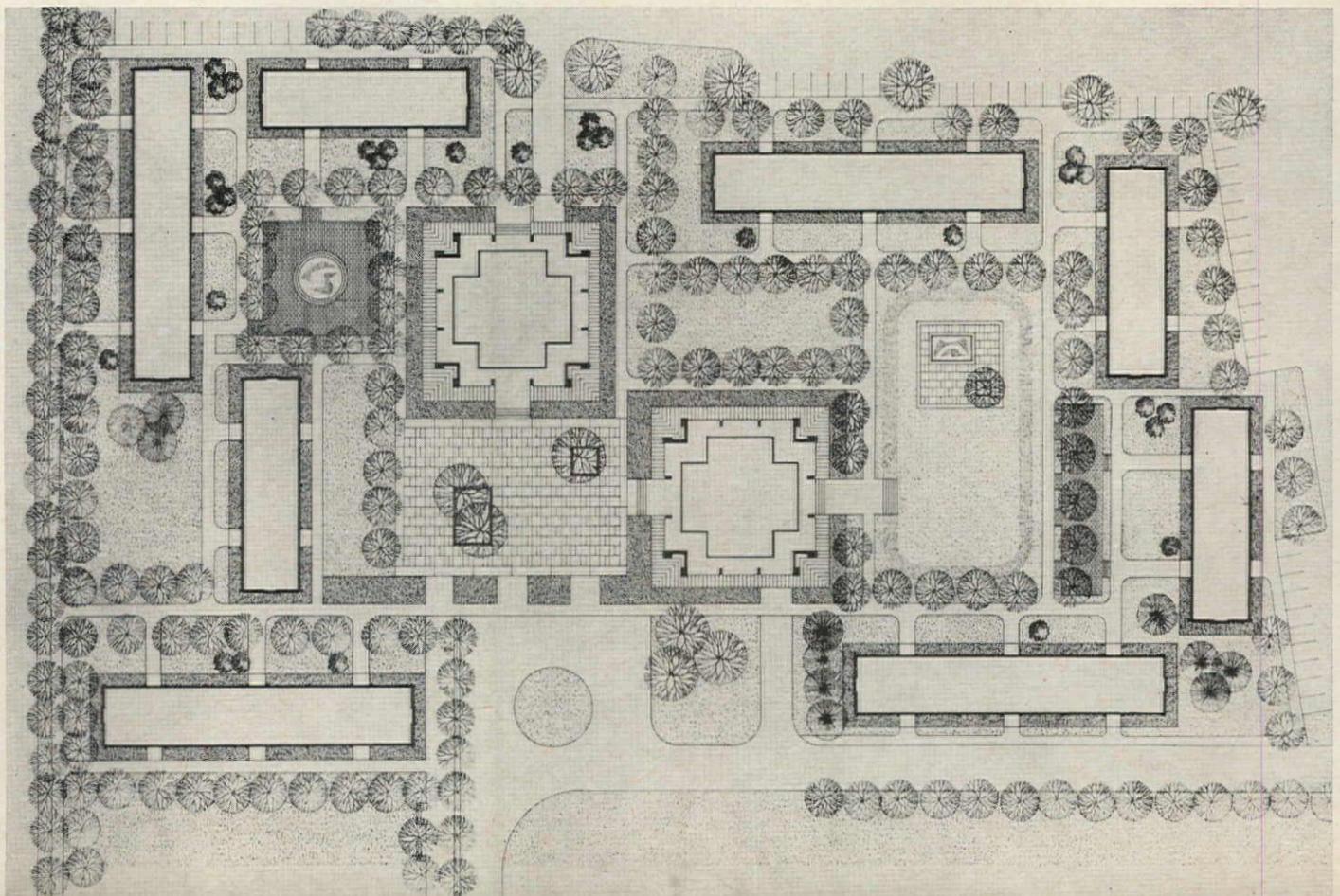
draw for them on the basis of seniority. (At Princeton, students are charged the same amount for their dormitory quarters whether they occupy single or double rooms.) Like other Princeton dormitories, these are planned on the entry system with several suites of rooms opening off each stair tower. Bathrooms interconnect entry complexes. These buildings have no communal rooms, nor eating facilities, since at Princeton the club system is still strong and the typical student manages to belong to one where he eats and associates with his peers. The three one-story elements within the scheme contain faculty suites.

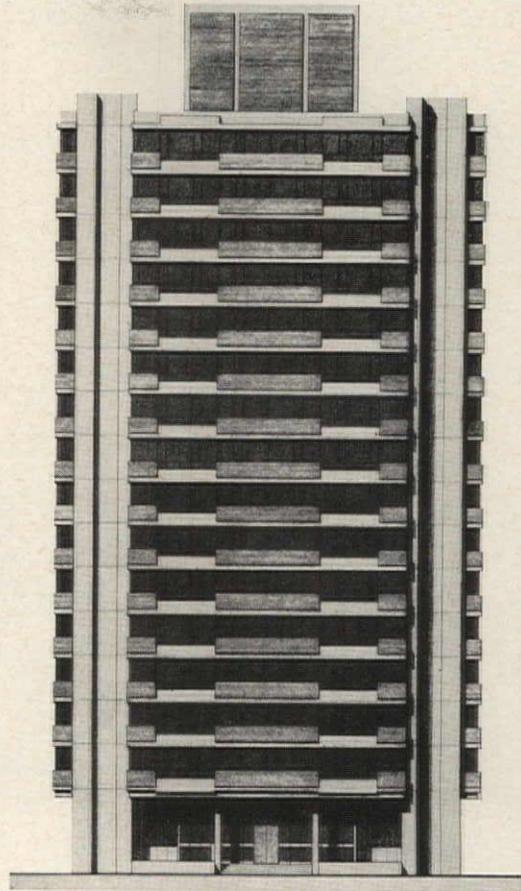
The use of a simple construction system consisting of masonry bearing walls of oversize brick, and waffle concrete slab floors exposed on the inside kept down costs. The avoidance of luxuriously scaled suites, in combination with the construction economies, has brought the total number of students housed to 361, which is 89 more than required in the original program.



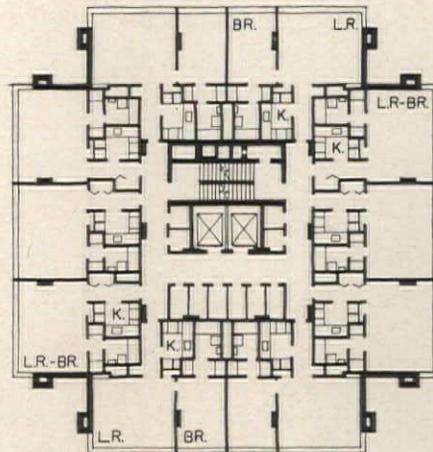


4. Married Students Housing at M.I.T.

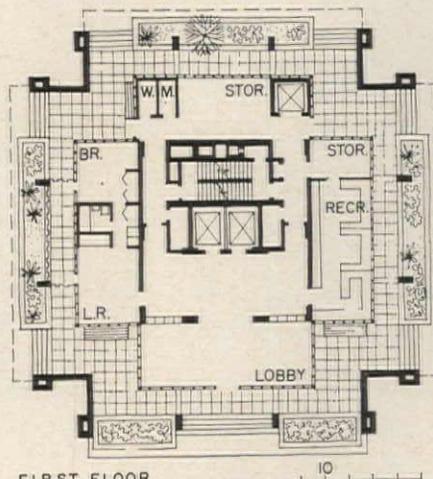




The site for this building group is located on the drive which follows the Charles River on the Cambridge side. At the southwestern edge of the Massachusetts Institute of Technology campus, it is separated from the campus proper by broad and extensive athletic fields. Since the dormitories will act as a visual terminus for the M.I.T. campus, preventing the playing fields from appearing to end inconsequentially, it seemed important to the architects that the new buildings be a strong, positive image. In the early feasibility studies, Stubbins determined that the required number of students and their wives could be housed most cheaply in a 20-story tower and a tall building seemed to be the proper accent for the big open spaces. M.I.T.'s architectural advisory panel, headed by Pietro Belluschi, thought the tower too high, and the scheme was restudied in the form of two 16-story towers with efficiency and one-bedroom apartments for married students without children, in combination with three-story walk-ups for families with children. The buildings, one half of which are under construction now are of exposed concrete with brick infilling, since the walls of most of the buildings along the river are of brick.

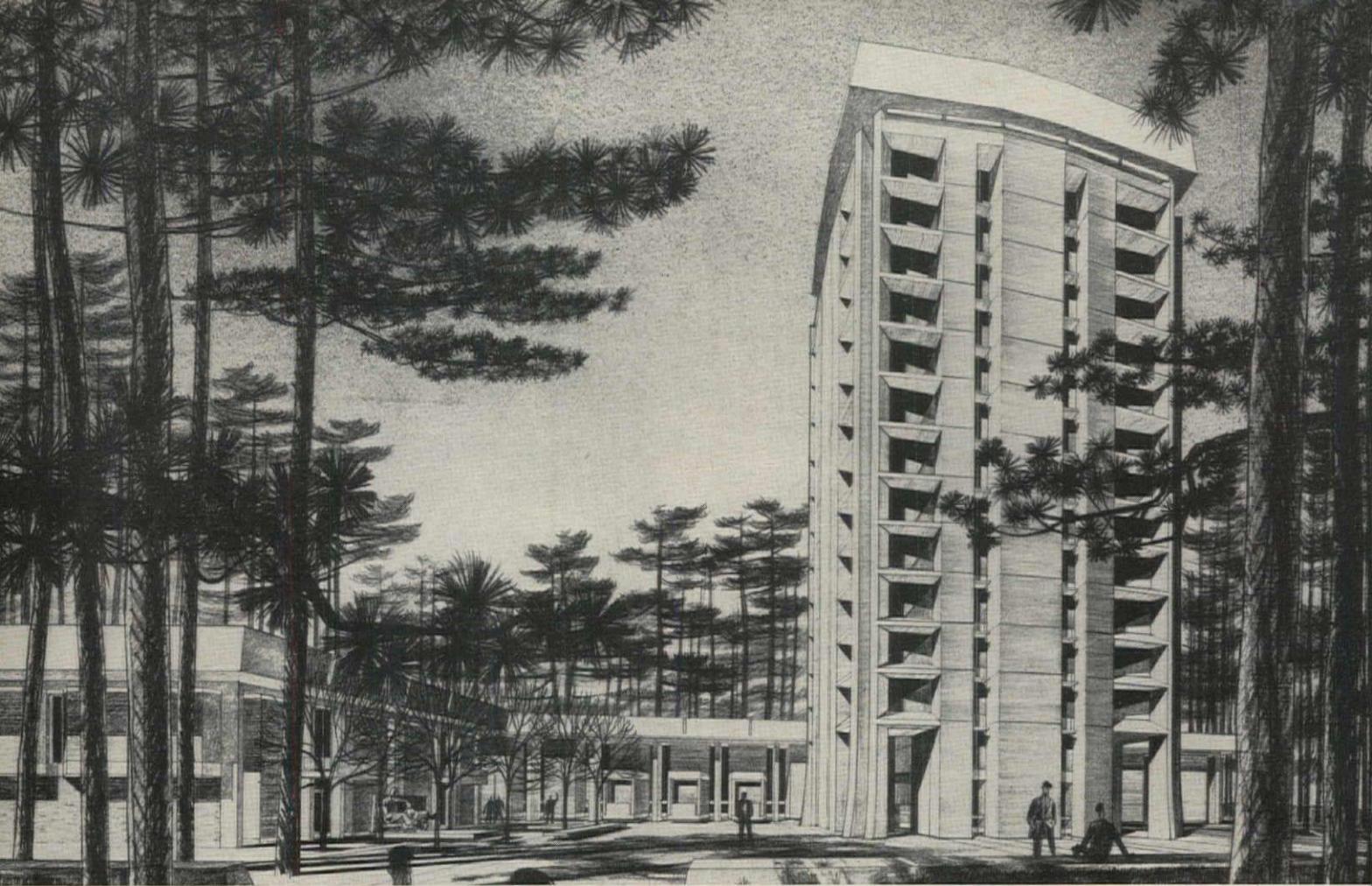


TYPICAL FLOOR

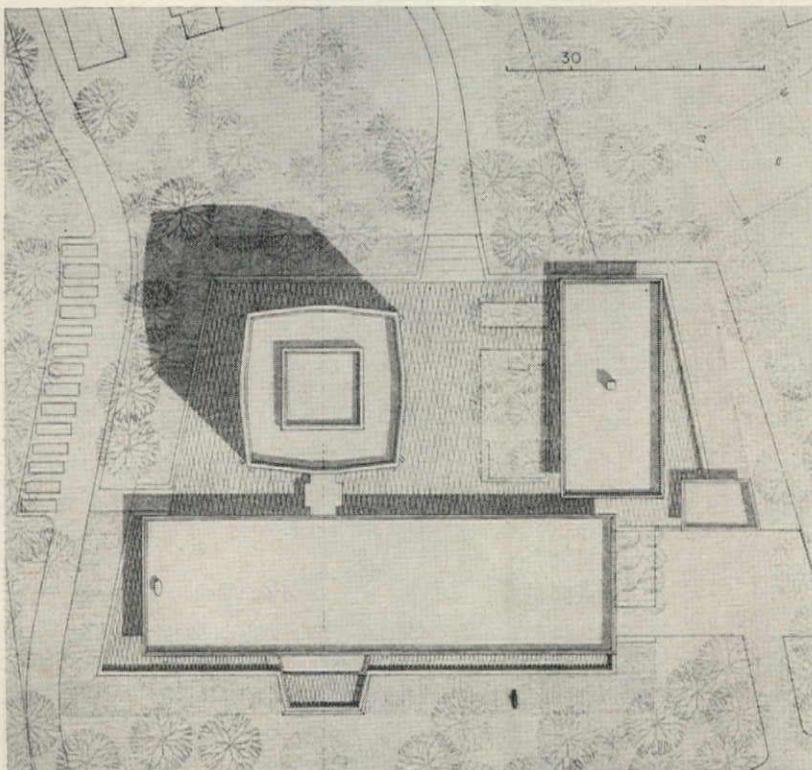


FIRST FLOOR



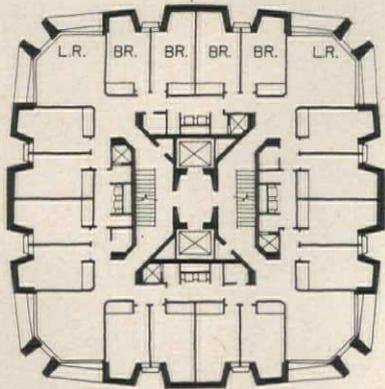


5. Bowdoin College Senior Center

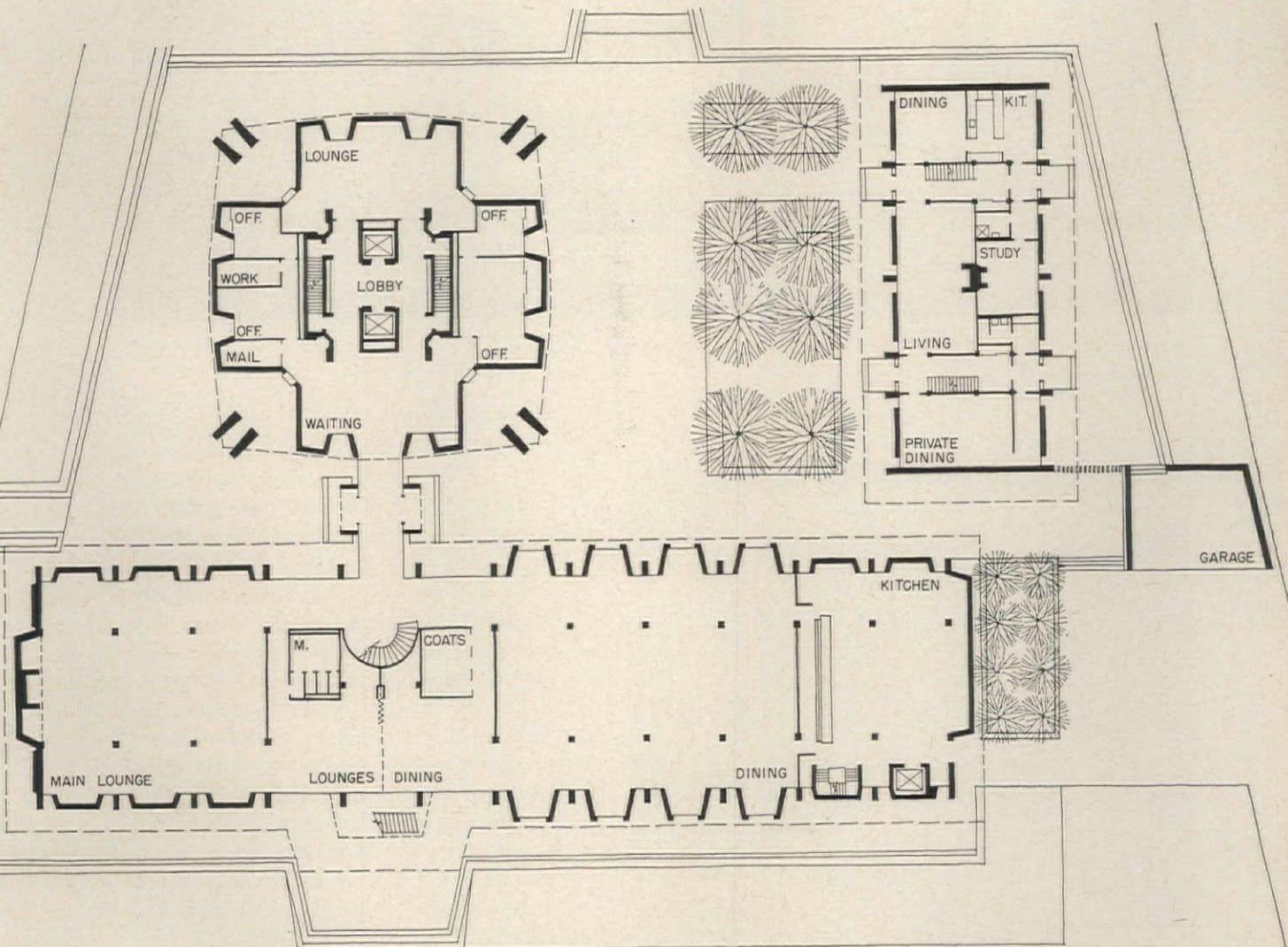


This senior center is designed to fulfill an educational concept which is close to that of the college system in British universities. Bowdoin asked the architects for a student residence which would implement its new program for seniors putting them in close contact with certain members of the faculty and distinguished visitors. Living quarters for the director and several faculty members had to be provided in this plan as well as guest suites for visitors, all of whom are to dine with the seniors and be available for informal conference. Rooms for unique senior seminars, outside the regular academic curriculum, are part of the residential complex which includes a library, lounges, a dining room and individual study bedrooms.

In approaching a solution to the ordering of these varied elements, Stubbins took Bowdoin's small classical campus into consideration. It is a quadrangle campus held together by trees and many of its buildings were



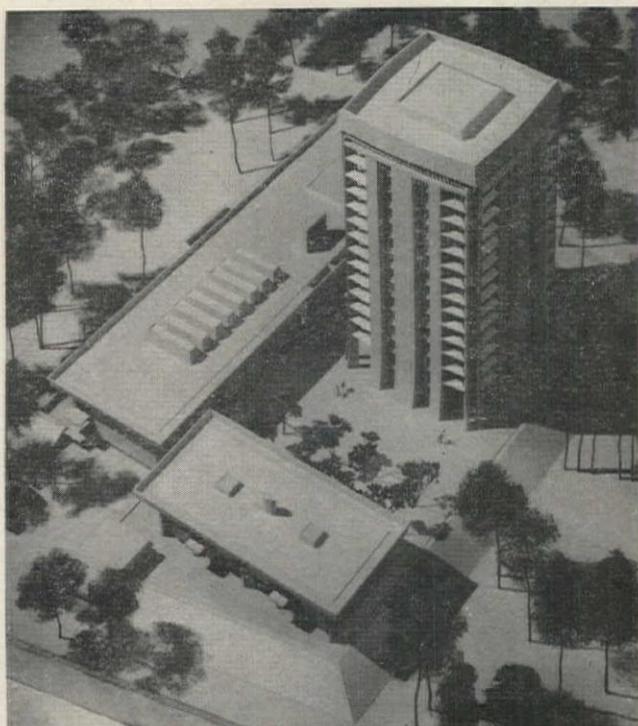
TYPICAL FLOOR



FIRST FLOOR

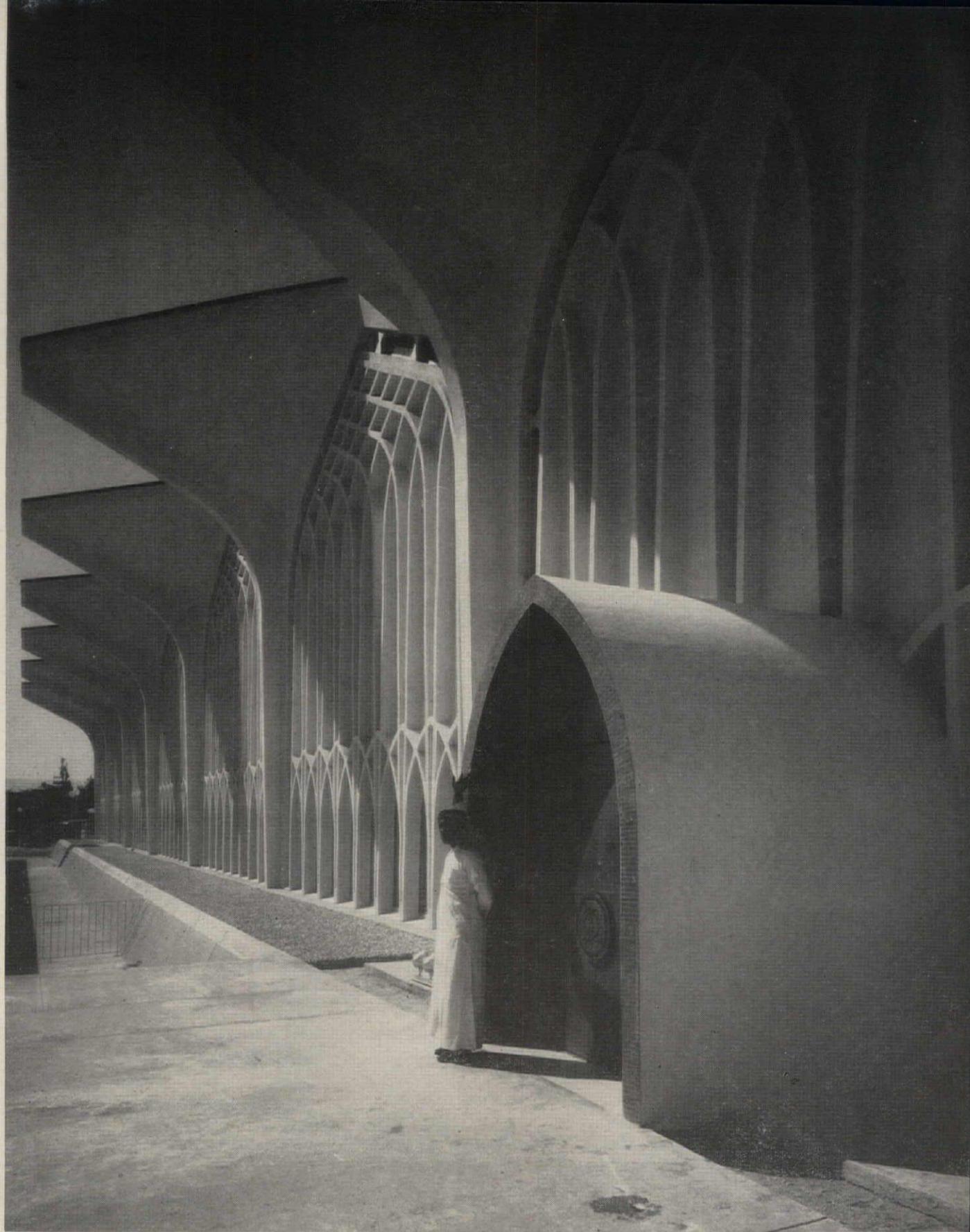


Robert D. Harvey Studios



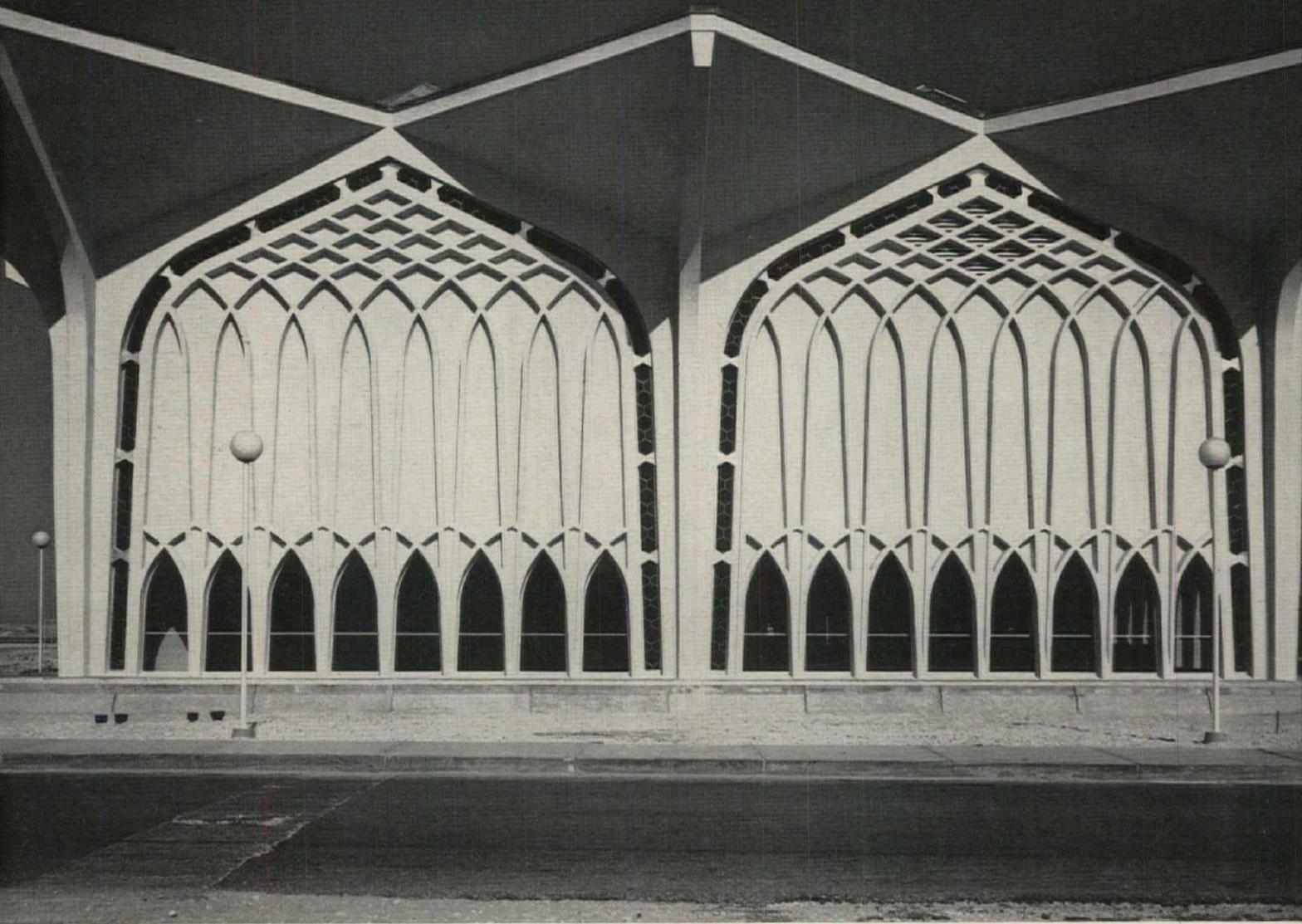
done by McKim Mead & White. He decided that the new building shouldn't sprawl, that it would be in the wrong spirit and out of scale if it did. Since the campus is flat, with no verticals in sight, the best resolution of the problem was to gather the elements into a wholly symmetrical 16-story tower as the major component of a three building scheme, which includes an adjacent two-story building containing the dining room and main lounge; and a third structure with apartments for the director and participants in the program. The three buildings are contained in a concave base which holds them like a sloped dish.

The building will be of concrete with a brick and limestone finish. The folded concrete columns were so designed primarily for their appearance, but engineer William LeMessurier reported an unforeseen dividend. They grip the floor on a wider area and therefore require less reinforcing.



YAMASAKI'S DHAHRAN AIRPORT

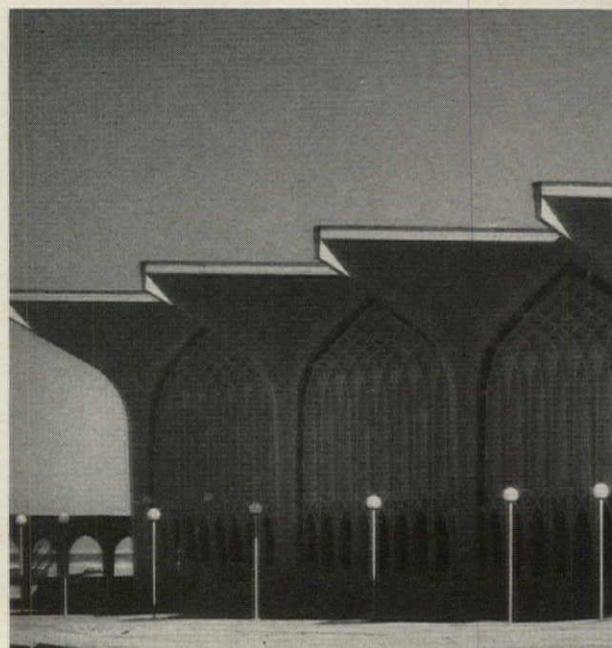
The new concrete technology and old Arabian tradition join in shaping
an exotic desert oasis for jet age travelers



Civil Air Terminal, Dhahran, Saudi Arabia

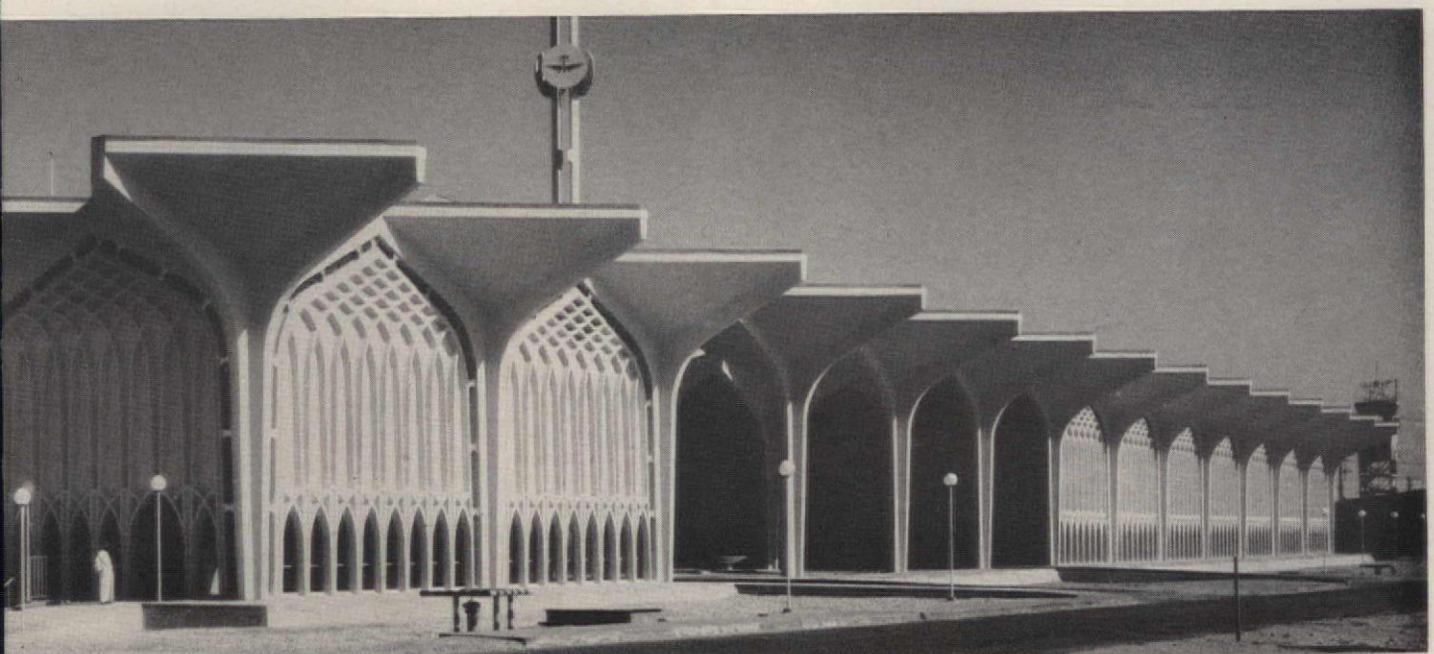
Three factors—environment, precast concrete technology and local tradition—were strongly influential in shaping this colorful desert airport in Saudi Arabia, now receiving its finishing touches of planting. The situation—hot, windy and dry—demanded small glass areas for air-conditioning economy, and as much outdoor shade as possible. A shaded garden-court (*above, right*), will, when planted, provide a cooling oasis in the baking aridity all about. The courtyard serves also to divide the building (*right*) into its two principal areas, domestic and international; and is bordered by a turn-around for automotive traffic.

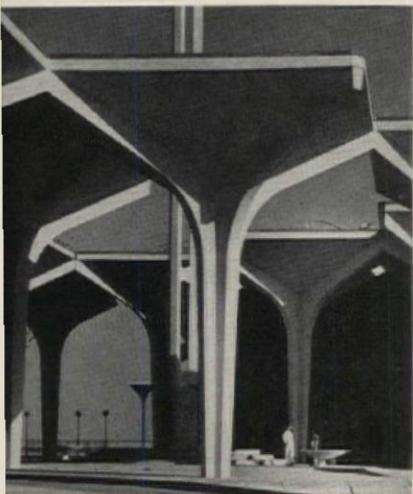
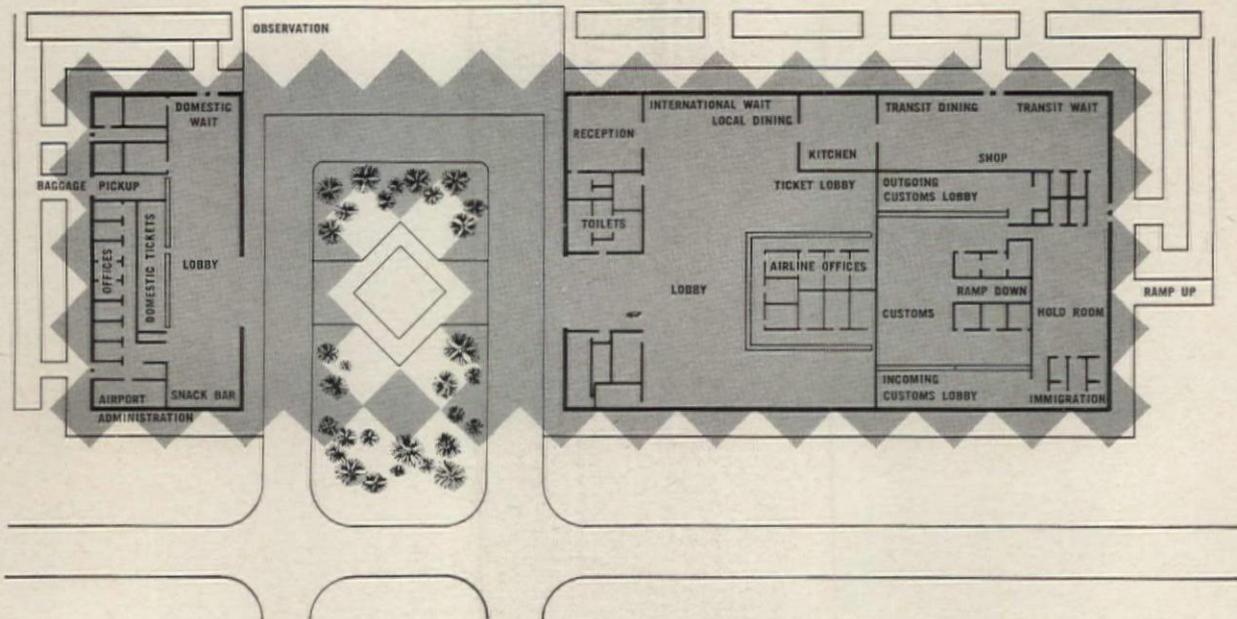
The \$4.9 million building was constructed by assembling precast column and roof elements. To give the structure its "Arabian look," the spreading column bents were shaped as segments of a Moorish arch; and the necessary stiffening ribs for the tilt-up wall panels (*above, left*) were designed to form a lacy pattern reminiscent of traditional Arabesque grillwork. Narrow bands of glass appropriately separate wall and frame.





Photos courtesy Ralph M. Parsons Company





The simple structural system—based on a 40-foot module—consists of a series of spreading columns made by tying together four precast, L-shaped bents; plus thin roof slab elements that serve to lock the entire frame together. The precasting operation was carried on at the site, and had to take place at night, due to rapid evaporation and the extreme daytime heat, often 130.

The interior continues the Arabian theme, with blue and gold mosaic tile in traditional patterns, and screens of terra cotta tile serving as partitions. Floors are terrazzo or asphalt tile.

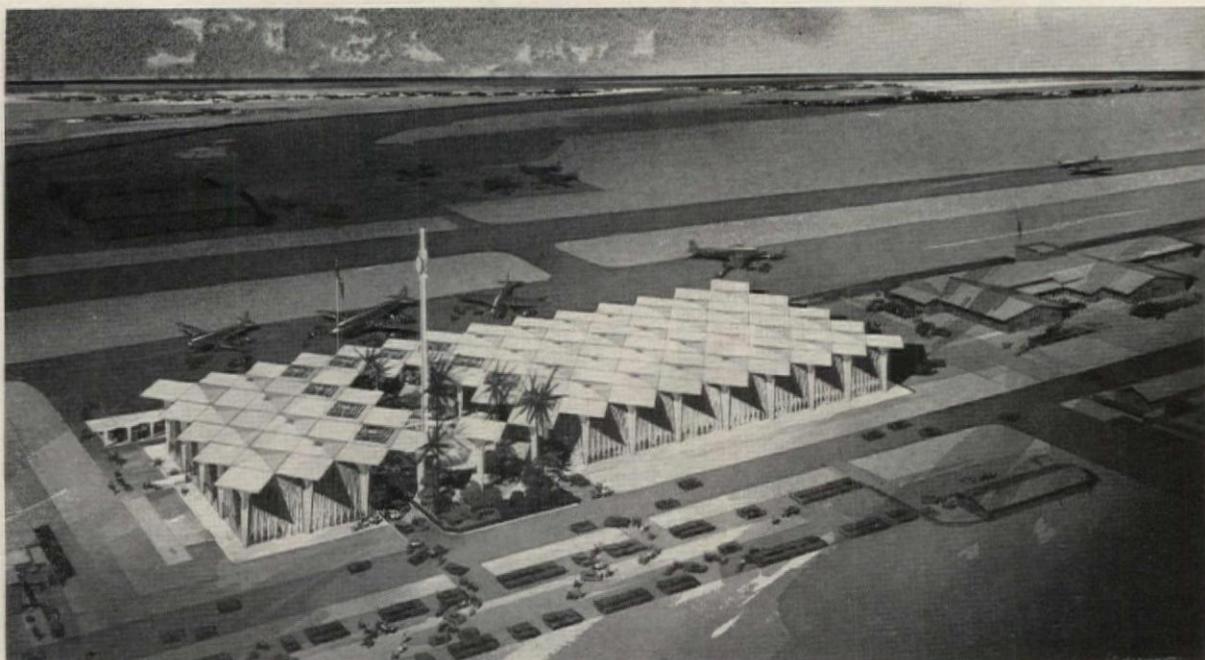
ENGINEERS-CONSTRUCTORS:
The Ralph M. Parsons Company

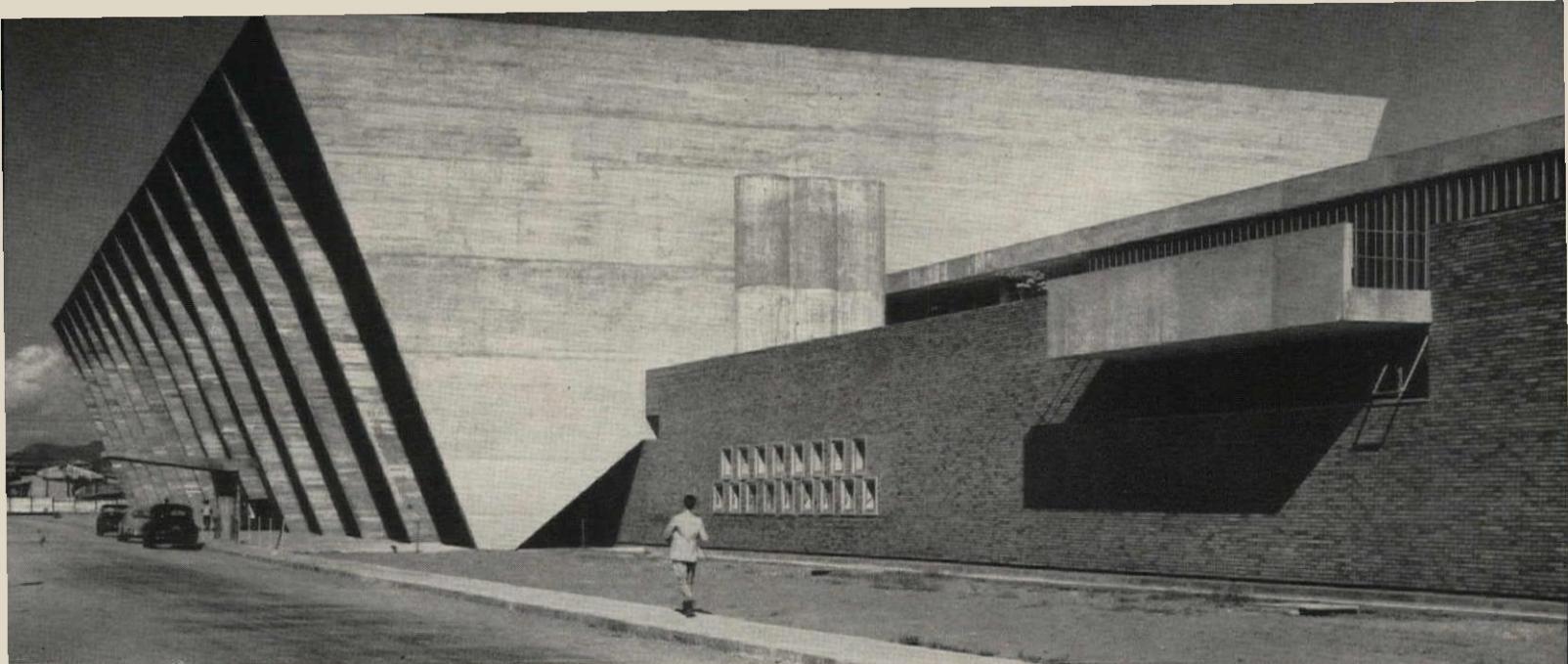
CONSULTING DESIGN ARCHITECT:
Minoru Yamasaki

PROJECT ASSOCIATES:
*Gunnar Birkerts,
Cass Wadowski, Henry Guthard*

AIRPORT CONSULTANTS:
Landrum and Brown

CONTRACTING AUTHORITY:
*The Corps of Engineers,
United States Army*

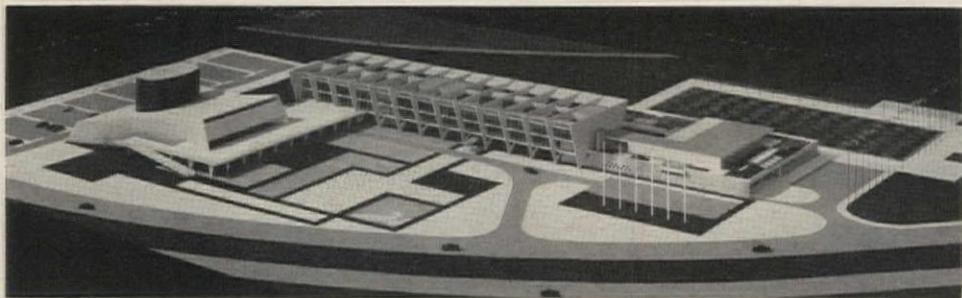




MUSEUM IN RIO CONCEIVED AS FINE ARTS CENTER

Affonso Eduardo Reidy's design for a three-element group includes theater, school and exhibition hall

The Museum of Modern Art in Rio de Janeiro is specifically designed to bring together the varied functions of a "living museum." Its three-element grouping thus includes—in addition to the usual art museum facilities for housing, maintaining, and displaying a collection plus acquisitions—large areas for teaching and creative work in the fine and applied arts, as well as a 1,100-seat, fully equipped theater for plays, concerts, movies and convention assemblies. The photo below shows the arrangement of the parts: at left, the theater, connected by walkways at ground and second floor level to the central, three-story exhibition hall, which is in turn connected at its other end to the low, spreading unit at right which houses school, workrooms, restaurant, library and administrative offices. At present, the exhibition hall and school units are finished; the theater will be built soon to complete the center. The group is located in a park area reclaimed from Guanabara Bay. Roberto Burle-Marx was landscape architect for the center.

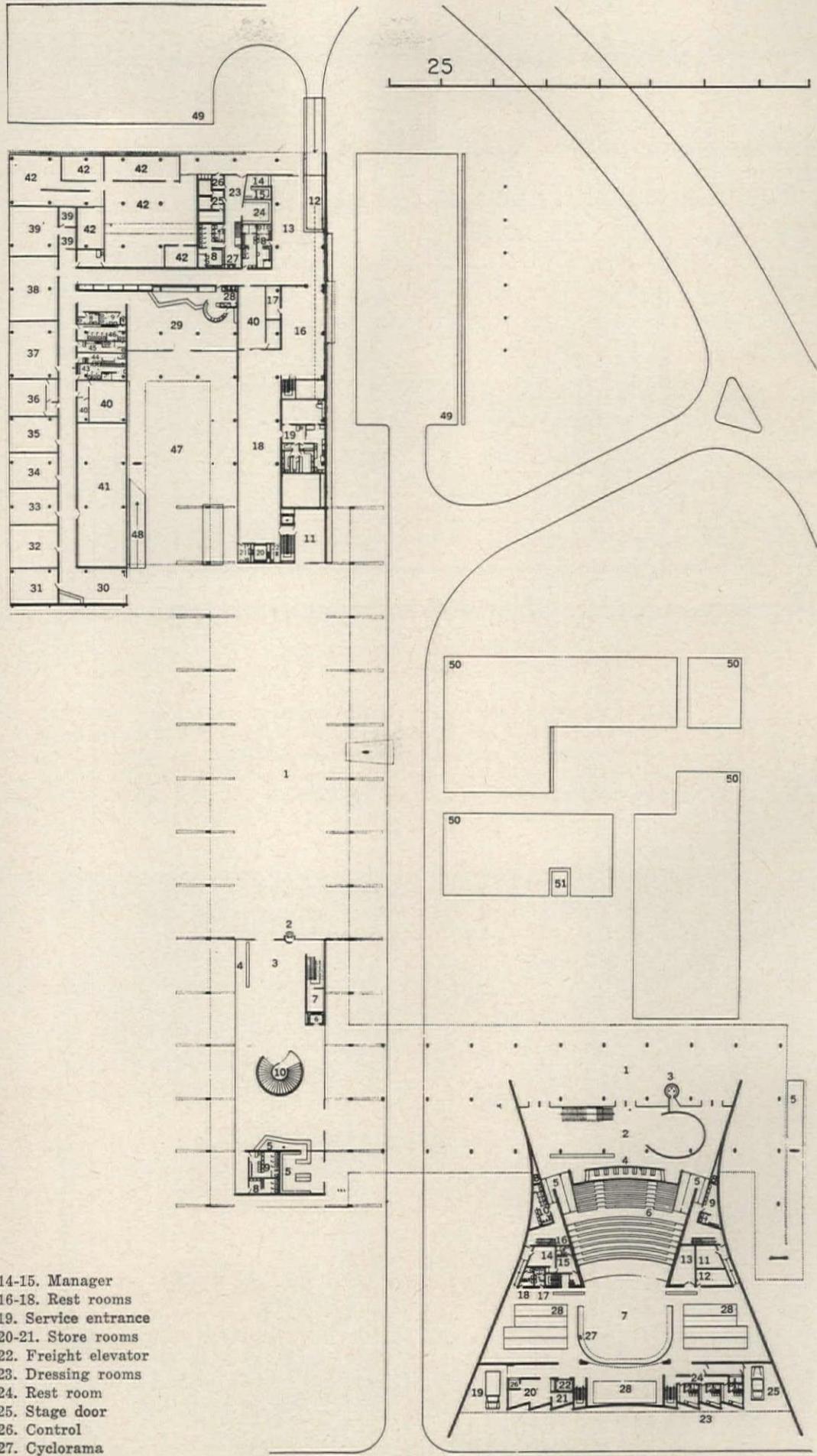


Aertseus Michel photos



The two photos on this page show the school garden (*area 47 in plan at right*), which serves as a focal point for the two-story unit, and is overlooked by the bridge to the exhibition area. The second floor of the school houses a restaurant and lounge for visitors, students and staff. The second floor of the long exhibition building is devoted entirely to a large area for art shows; its third floor houses administrative headquarters, library, painting storage and 200-seat auditorium





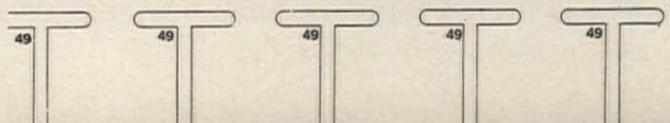
GROUND FLOOR

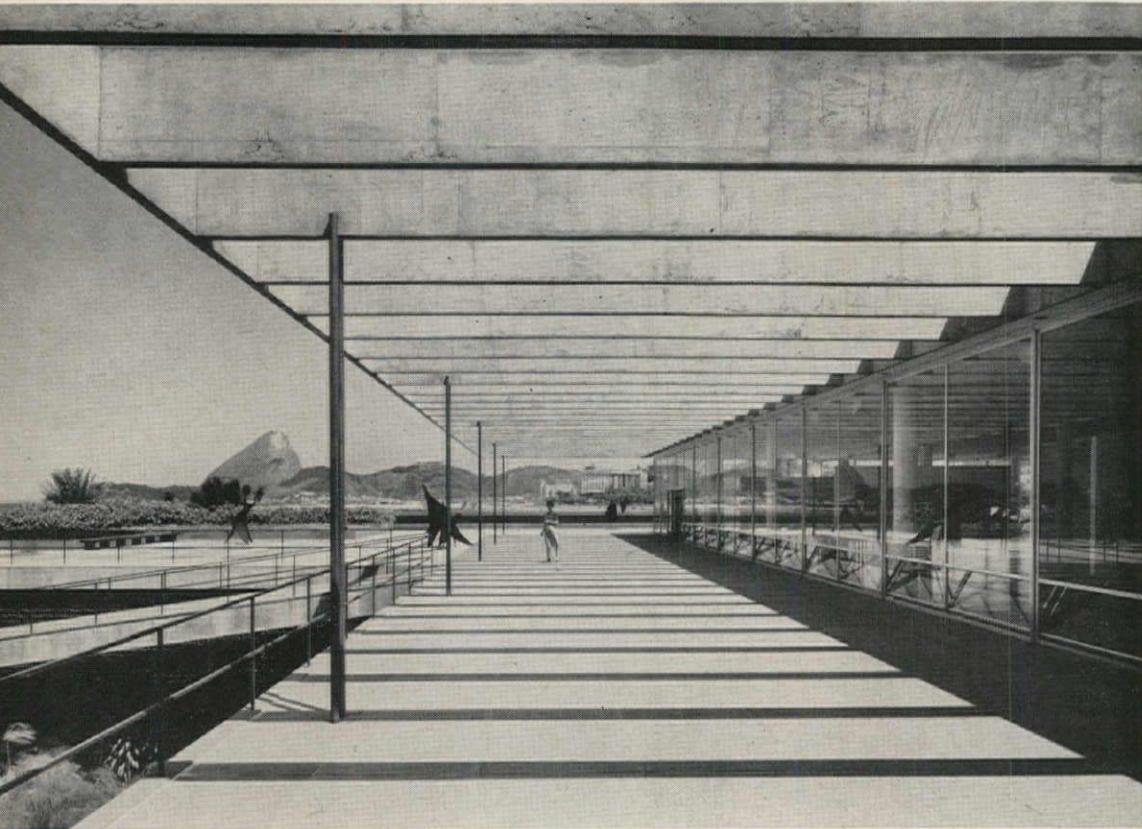
MUSEUM

1. Pillars
2. Ticket office
3. Hall
4. Information desk
5. Bookstore
6. Elevator
7. Machine room
- 8-9. Rest rooms
10. Stair
11. Entrance
12. Ramp
13. Loading
- 14-15. Control office
16. Identification, registration
17. Cataloguing room
- 18-19. Work rooms
20. Elevator
21. Rest room
22. Rubbish room
23. Service corridor
24. Pantry
25. Refrigeration
26. Rubbish room
27. Freight elevator
28. Service elevator
29. Canteen
30. Entrance
31. Faculty
- 32-33. Classrooms
34. Teachers
35. Studio
36. Classroom
37. Teachers
38. Studio
39. Dark room
- 40-41. Classroom
42. Graphic arts
- 43-46. Rest rooms
47. Garden
48. Ramp
49. Parking area
50. Ornamental lakes
51. Sculpture

THEATER

- | | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ol style="list-style-type: none"> 1. Pillars 2. Hall 3. Booking office 4. Checkroom 5. Ramps 6. Stalls 7. Stage 8. Mechanical 9-10. Rest rooms 11. Office 12. Green room 13. Television cabin | <ol style="list-style-type: none"> 14-15. Manager 16-18. Rest rooms 19. Service entrance 20-21. Store rooms 22. Freight elevator 23. Dressing rooms 24. Rest room 25. Stage door 26. Control 27. Cyclorama 28. Scene shifting equipment |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|





Above: A view of the terrace for the second floor restaurant, which looks out over Guanabara Bay to Sugar Loaf Mountain. *Below:* A portion of the temporary inaugural exhibit set up in the second floor lounge area overlooking the perimetral highway to the city beyond. The buildings were designed to take full advantage of the very attractive views in all directions, and at the same time offer full protection from the sun for air-conditioning economy. The structures are of concrete, poured in place



Small

OFFICE BUILDINGS



pages 154-155

AN INNOVATIVE DESIGN IN TEXTURE AND SCALE

*Headquarters Building, The Illinois Credit Union League
Bensenville, Illinois*

ARCHITECT: *Edward D. Dart*

STRUCTURAL ENGINEERS: *Samartano & Robinson*

MECHANICAL ENGINEERS: *F. Riederer & Associates*

LANDSCAPE AND INTERIORS: *R. Dirsmith*



pages 156-157

A TWO-LEVEL SITE SOLUTION

*Home Office, Frankenmuth Mutual Insurance Company
Frankenmuth, Michigan*

ARCHITECTS: *Oeming & Waters*

STRUCTURAL ENGINEER: *T. Torzynski*

MECHANICAL AND ELECTRICAL ENGINEER: *J. B. Olivieri*

LANDSCAPE ARCHITECT: *H. Redfern*



pages 158-159

FLEXIBILITY AND PRIVACY FOR MEDICAL OFFICES

Doctors Building

Tulsa, Oklahoma

OWNER: *Twenty-First Street Building Corporation*

ARCHITECTS: *Murray-Jones-Murray*

CONSULTING ARCHITECTS: *Toombs, Amisano, and Wells*

ACOUSTICAL CONSULTANTS: *Bolt, Beranek and Newman, Inc.*

ENGINEER: *James C. Netherton Jr.*

CONSULTING ENGINEERS: *Bernard Johnson Associates*



pages 160-161

TWO MOTOR CLUB OFFICES

TWO TRAFFIC SOLUTIONS

A.A.A. Office Buildings

Lakeland, Florida

Bradenton, Florida

OWNER: *Peninsular Motor Club*

ARCHITECT: *Mark Hampton*



page 162

AN ASSERTIVE COMPACT

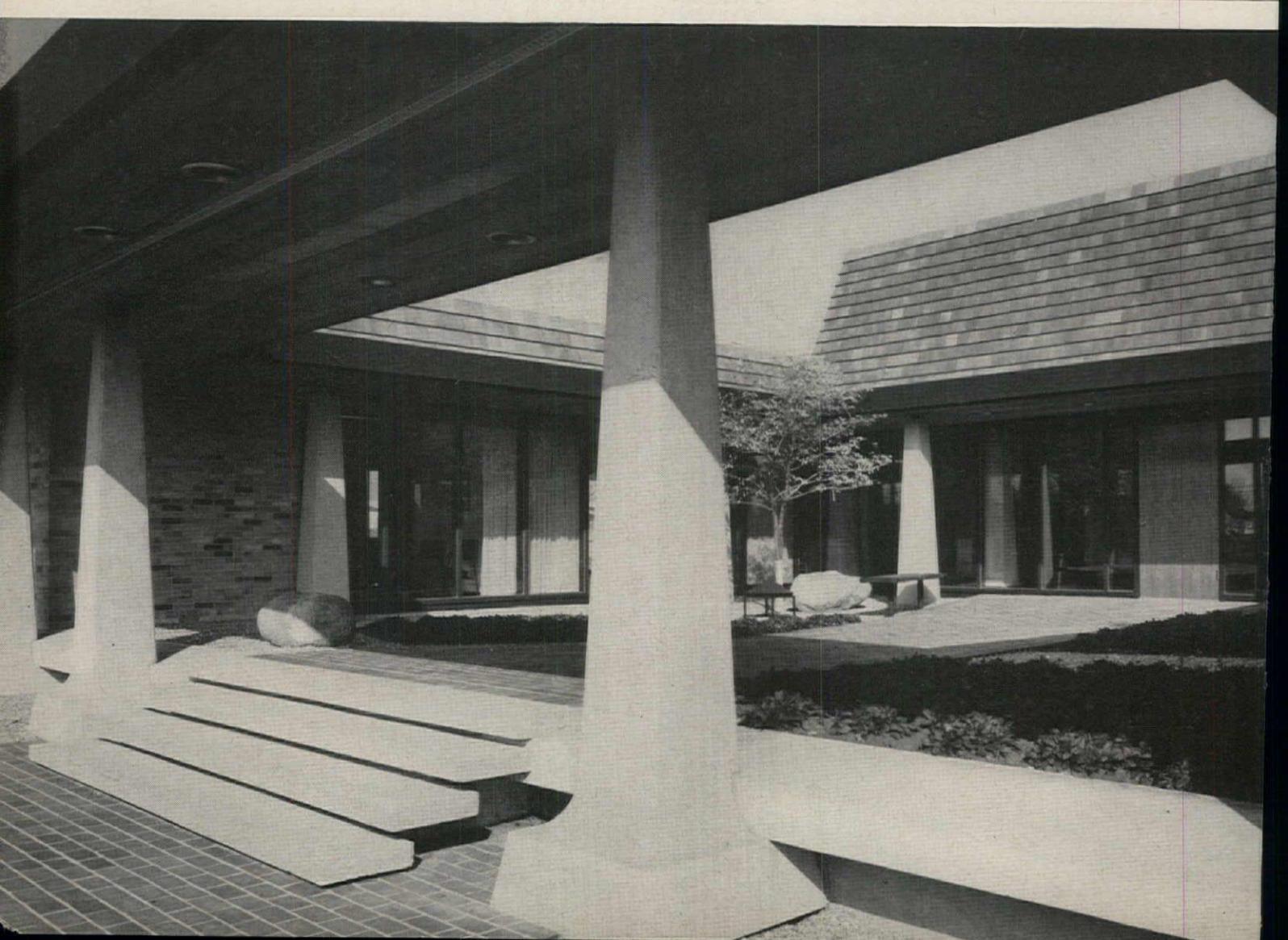
Real Estate Office for McElroy & Jordan

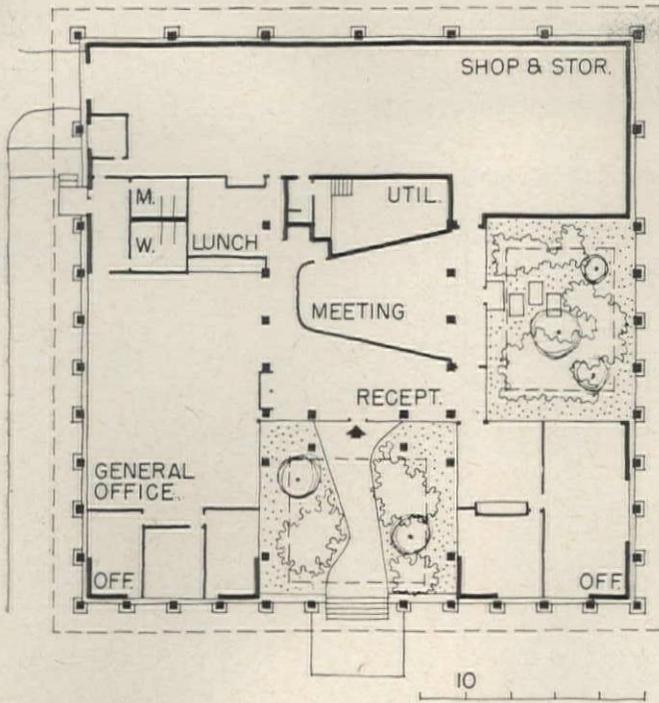
Winter Haven, Florida

OWNER: *Robert McElroy*

ARCHITECT: *Gene Leedy*

ENGINEERS: *Leap Associates, Inc.*





AN INNOVATIVE DESIGN IN TEXTURE AND SCALE

*Headquarters Building, The Illinois Credit Union League
Bensenville, Illinois*

ARCHITECT: *Edward D. Dart*

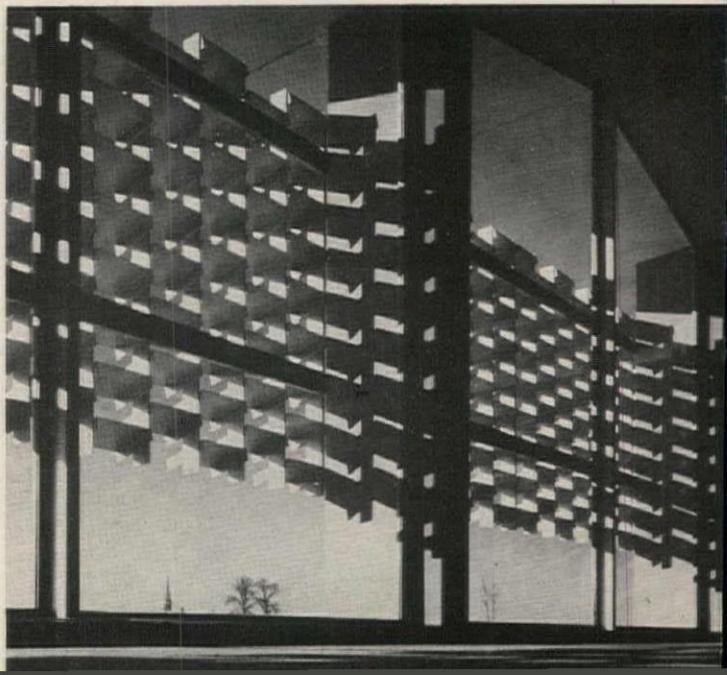
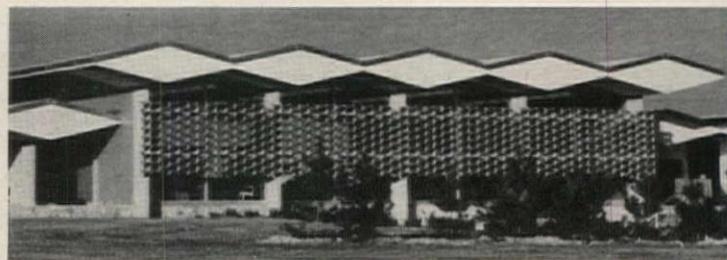
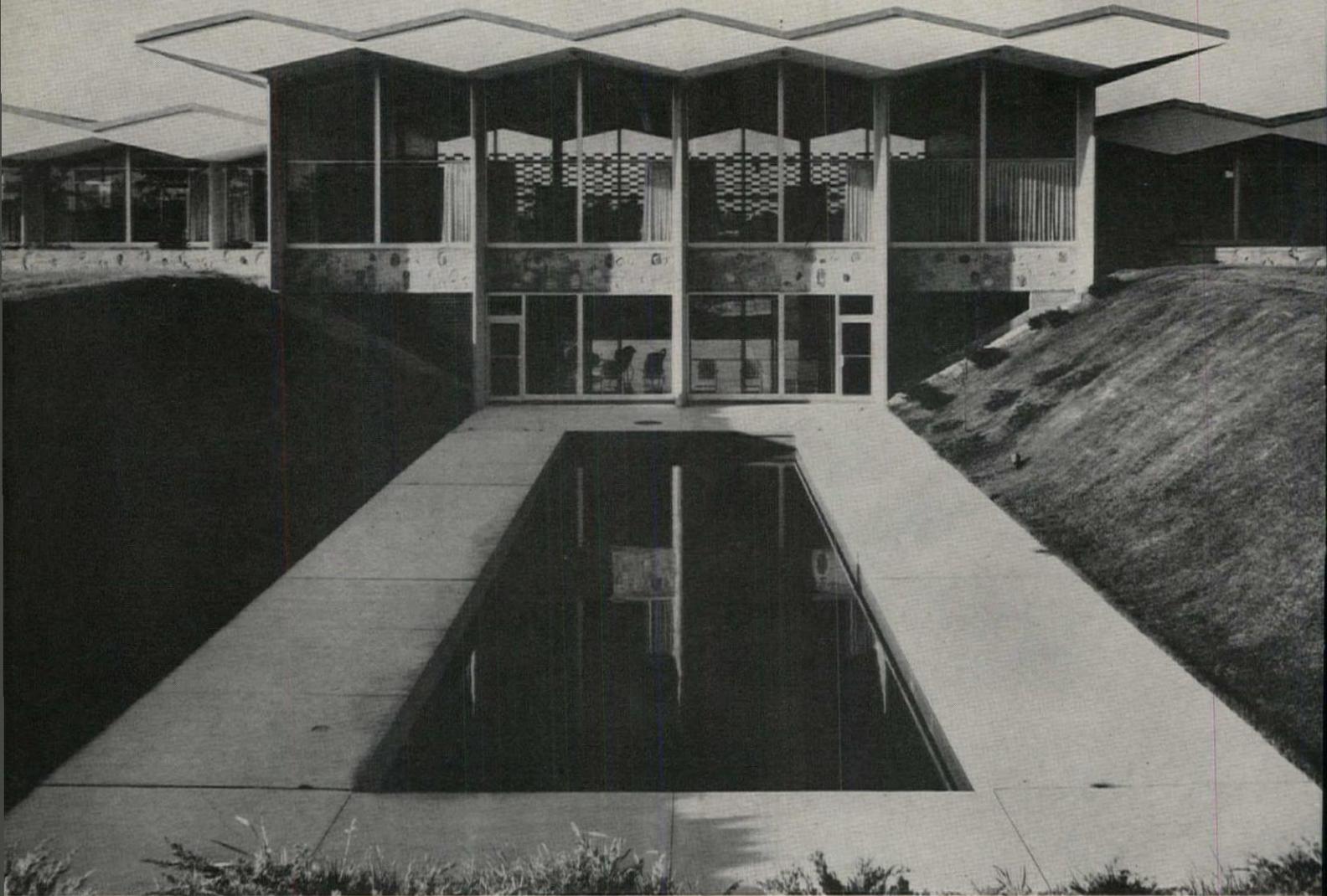
Variety of texture and profile is designed into this basically square, one-story building. Tapered exterior columns of precast concrete under a continuous horizontal overhang provide scale and line. Tiled roofing above the overhang inclines inward to flat roof decks at two levels. Resembling a mansard above walls of brick and glass, the roof tile contributes to profile and texture and suggests the pattern of connected rectangular spaces within the basic square.

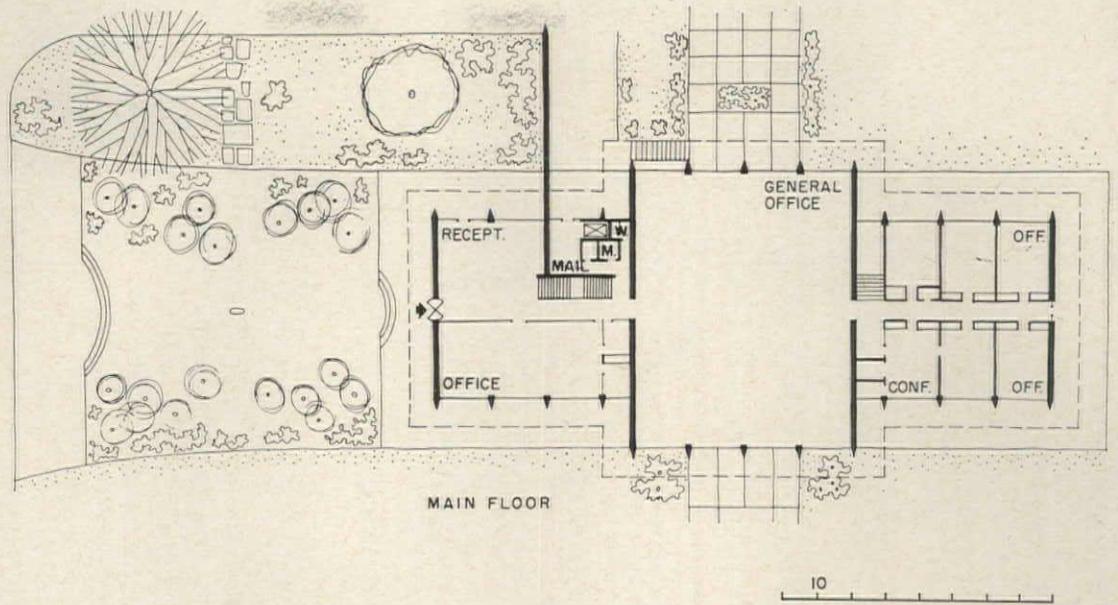
Main entrance is through a landscaped forecourt which separates executive and general office wings and is defined at the front by approaching stairs under a canopy continuous with the overhang. A second court similarly indents another side of the square plan, emphasizes separation of the executive suite, and is pleasant, standby space for future expansion.

Interiors also offer agreeable changes of pace. Walls are natural brick or wood or painted plaster. Floors are brick, terrazzo, carpeting or asphalt tile. Ceilings are band-sawn cedar, sand-finished plaster or acoustical tile.



General exterior Hedrick-Blessing photo; other photos Robert Nouvel Ward





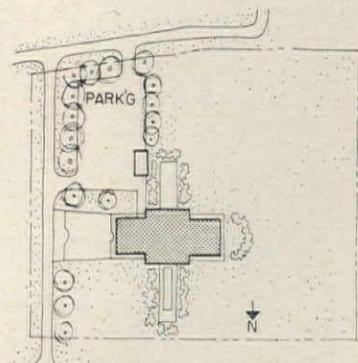
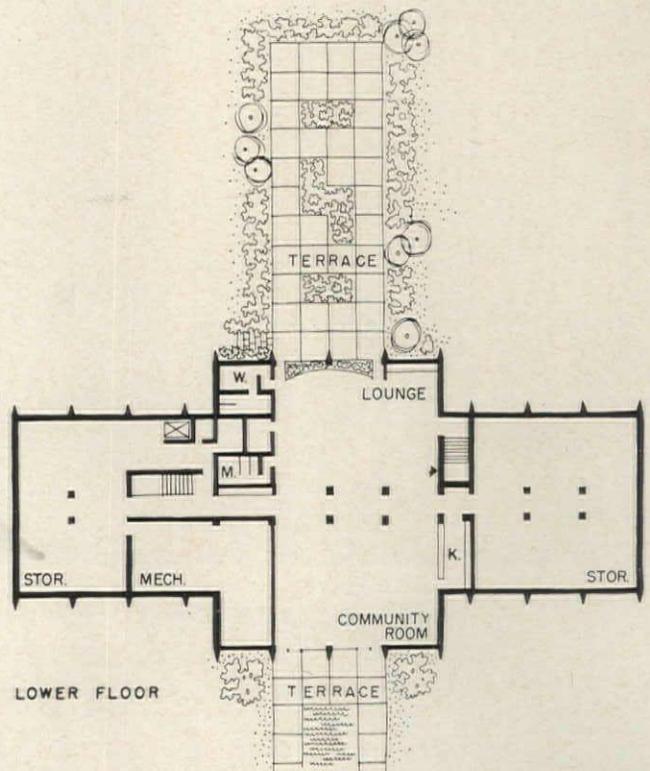
A TWO-LEVEL SITE SOLUTION

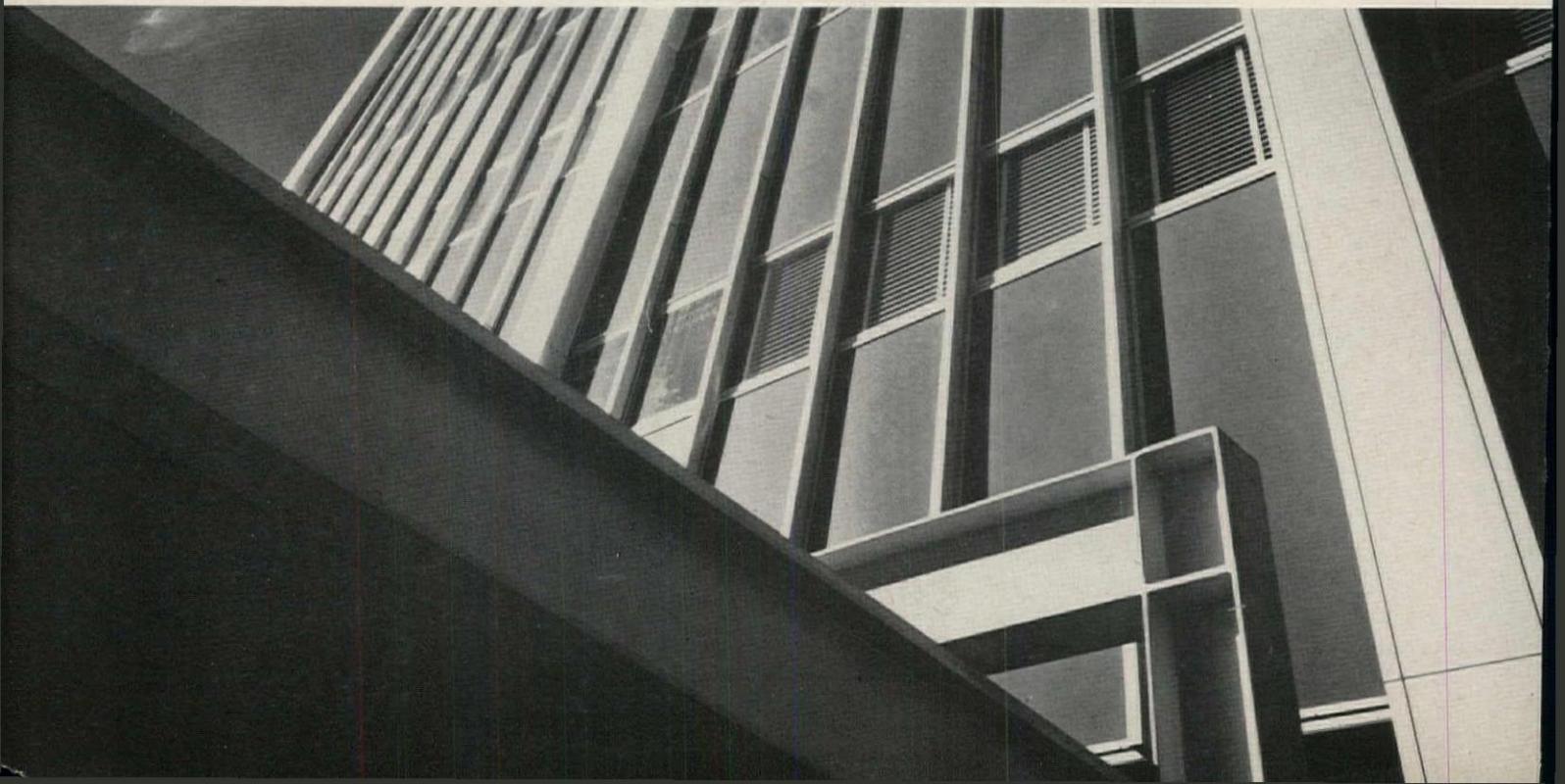
Home Office, Frankenmuth Mutual Insurance Company
 Frankenmuth, Michigan
 ARCHITECTS: Oeming & Waters

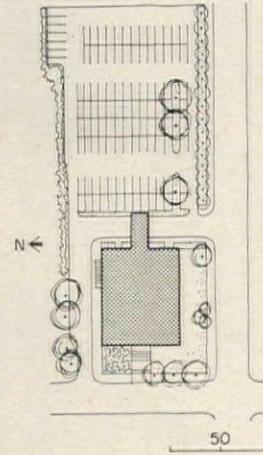
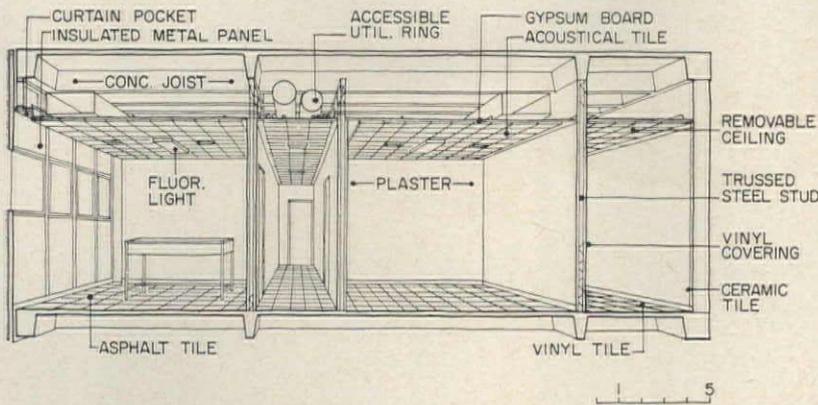
In their design for a two-level insurance office building, architects Oeming & Waters took advantage of a wide drainage ditch across the middle of a six-acre suburban site. Business facilities are on a concrete platform bridging the ravine. Lower-level lounge and community spaces open into the ravine, which has been landscaped with sunken gardens and a fountain pool that serves the air-conditioning system. Drainage water has been diverted in tile around the site.

Main entrance is from the east on the upper level. Reception area has a glass interior wall to show data processing equipment in adjacent space. Other interior walls are blue-glazed brick or wood paneling. Stair wells are black and gold ceramic tile.

Roof is structurally framed so that white ceramic fascias echo the diamond-shaped company seal. East and west exteriors are blue-glazed brick, north and south are glass. Wide overhang and aluminum sun screen on the south cut air-conditioning loads. Windows are plate glass in fixed aluminum sash. Outside edges of the concrete platform are studded with field-stone in random pattern.







FLEXIBILITY AND PRIVACY FOR MEDICAL OFFICES

Doctors Building

Tulsa, Oklahoma

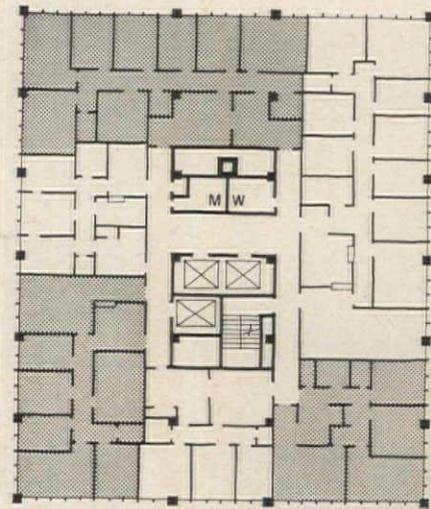
ARCHITECTS: *Murray-Jones-Murray*

The problem in the Doctors Building was to provide space for 52 independently practicing physicians, surgeons and dentists who share in a cooperative ownership. Flexibility of suite layout, acoustical privacy and provision for individual service requirements of various specialties were objectives.

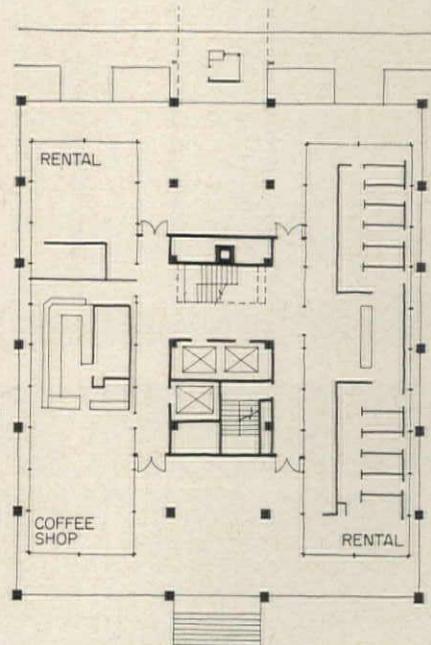
Entrance is from attended parking area or from the street. Ground floor is leased for pharmacy and restaurant operations. Six upper floors and basement are arranged around an "H" corridor. A typical floor comprises about six suites of various sizes. An overhead ring of utilities encircles each floor and has continuous accessibility from ceilings of suite corridors. A dual duct, high velocity system provides multi-zoned heating and air conditioning for each suite.

Acoustical problems were given special attention. Connections between partitions, walls and ceilings were made as air-tight as possible. Electrical outlets were located so that no two are back-to-back. Heavy gypsum board continuous ceilings, except over corridors, form the backing for acoustical treatment. Sound traps at air-conditioning return grilles also help to reduce sound transmission, a critical requirement in medical facilities.

Structure is reinforced concrete. Walls are insulated porcelain panels with aluminum mullions and column covers.

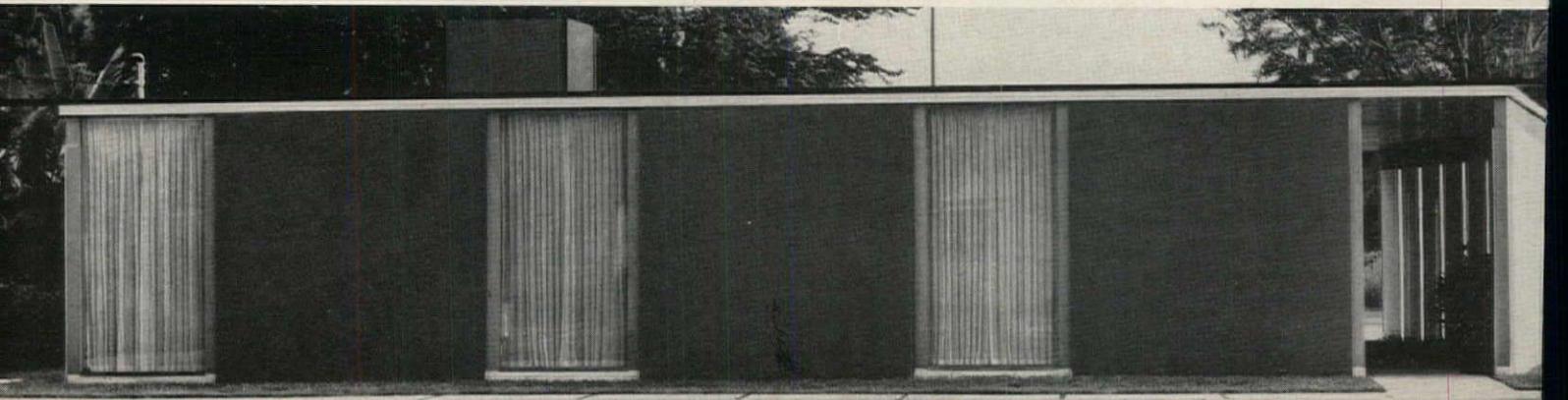
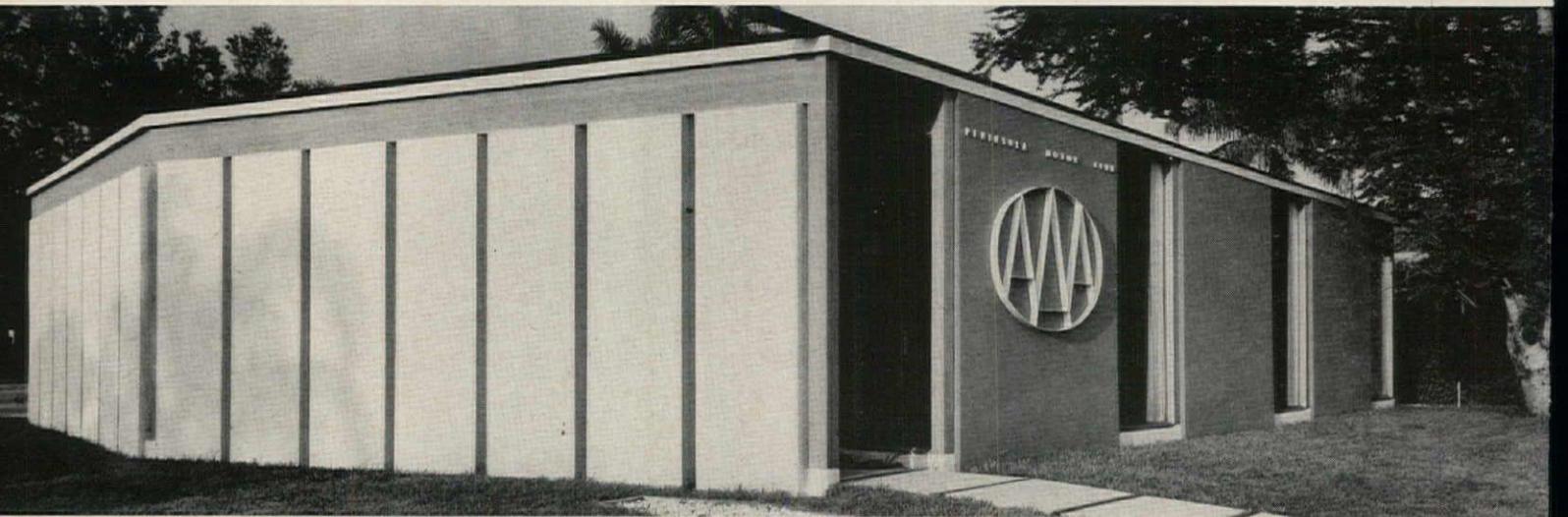
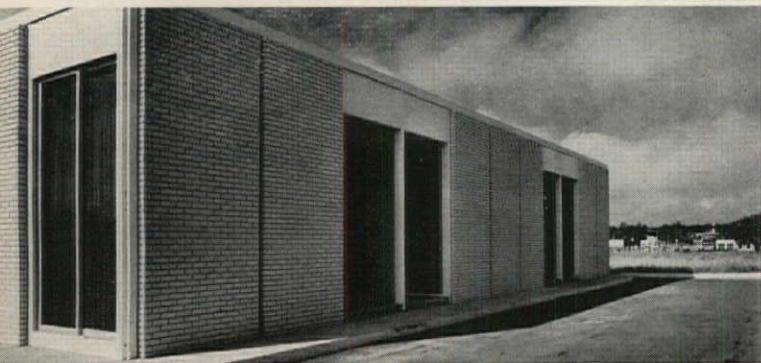


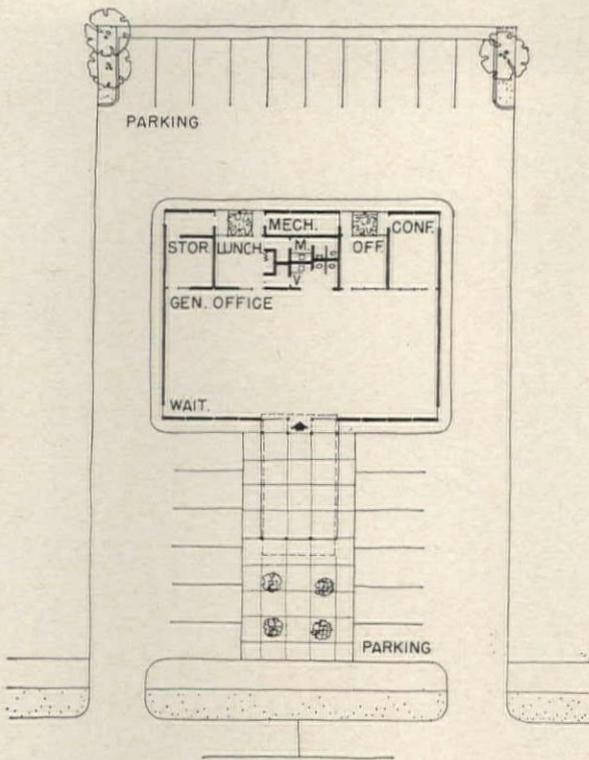
TYPICAL FLOOR



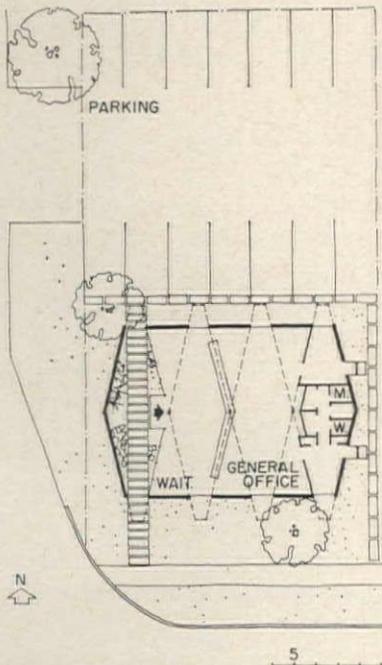
GROUND FLOOR

10





LAKELAND: How to build 3,000 square feet of office space on a small lot, leave parking for 24 cars, maintain both dignity and visibility among garish neighbors on a busy highway near downtown



BRADENTON: How to be a good neighbor in a quiet, semi-commercial district, show your facade but unobtrusively, provide access from both front and rear to one public entry, look big in small space

TWO MOTOR CLUB OFFICES — TWO TRAFFIC SOLUTIONS

A.A.A. Office Buildings

Lakeland and Bradenton, Florida

ARCHITECT: *Mark Hampton*

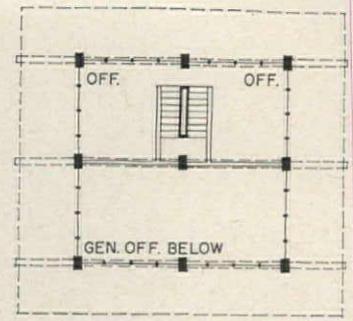
The pronounced differences between these two small offices of similar function reflect thoughtful interpretation of much less pronounced differences in program and criteria for a single client. Types of space required are duplicated in each, except for one office for salesmen in the expectedly busier Lakeland office. Both have public waiting space, map and international service areas, manager's office, employees' lounge, and storage and mechanical spaces. The real differences, other than in mere size, are generated by neighborhood and traffic conditions.

The Lakeland office is located on a major highway close to the downtown district. Its narrow site is among buildings of considerable variety of design. The problem was to invite high speed traffic into front-located parking, and to take advantage of the necessary setback. This was done by the development of an entrance portico and a walkway with planters to establish the parking area as setting for the building. A distinctive sign at the sidewalk was designed as an individual element while the main building is kept purposefully simple and symmetrical to gain as much illusion of size as possible. Walls are beige brick panels between white steel tube columns. Fascia and portico soffit are white asbestos cement. Windows are gray glass. Divisions of interior space were made as much as possible by furniture instead of partitions.

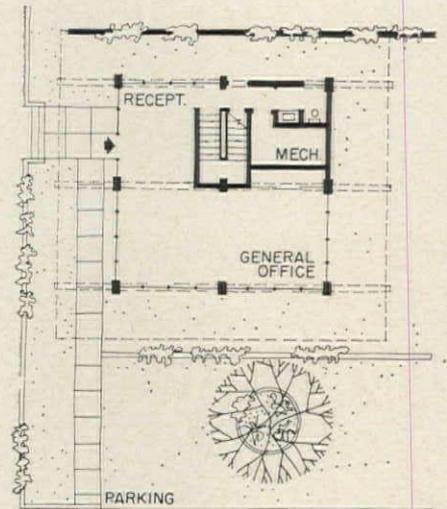
The problem at Bradenton was to belong in a quiet neighborhood of houses and small shops while retaining distinctive but compatible appearance. The building carries its own street-side insigne and parking is at the rear. Public entrance is at the end of the building and given equal importance from both street and parking by a covered walkway enclosed by concrete block panels painted white. Building walls are block painted on both sides in deep blue. Structure is laminated wood columns and beams. Beams cross at center columns establishing a ceiling pattern which is carried out by configuration of interior spaces and of the building itself.



Alexandre Georges photos



SECOND FLOOR



FIRST FLOOR

5

AN ASSERTIVE COMPACT

*Real Estate Office for McElroy & Jordan
Winter Haven, Florida*

ARCHITECT: Gene Leedy

To provide a simple, open, cheerful space for a small real estate firm on a corner lot, Gene Leedy designed a two-story scheme in which spatial variety and exposed structure combine in a compact but assertive departure from the cute miniatures that are sometimes built for this kind of occupancy.

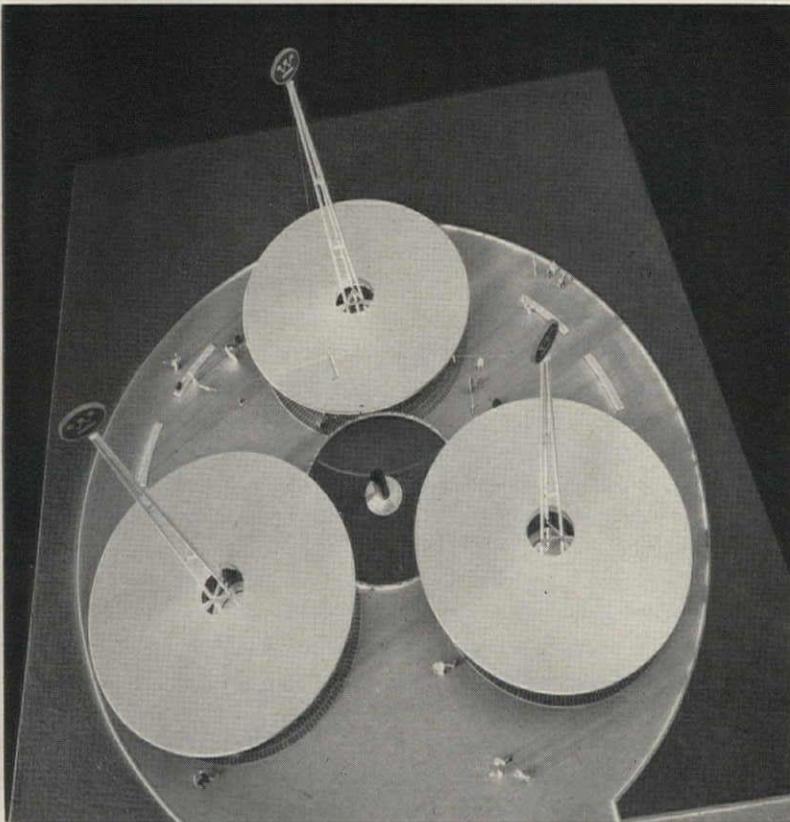
General office space, about half the first floor, has two-story ceiling height. The other half of the building has reception and utility space at ground level and two executive offices upstairs overlooking the general office.

Structure is prestressed concrete columns and beams. Roof is prestressed double tees of concrete with built-up roofing. Ceilings are exposed beams and tees. Walls are plate glass or painted concrete block.

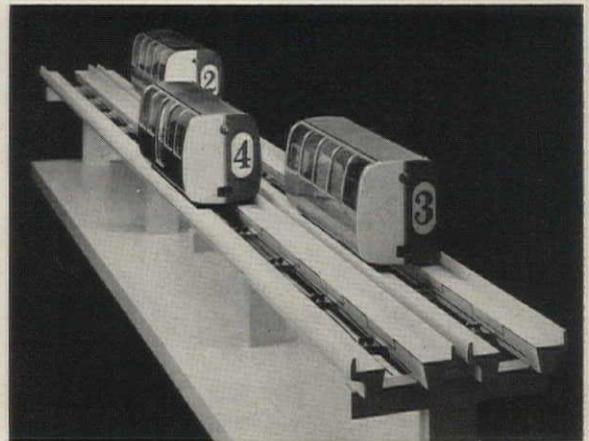
ORGANIZATION FOR EFFICIENT PRACTICE

8. Eliot Noyes & Associates

The office of Eliot Noyes & Associates practices architecture and industrial design, and does consulting work in both of these fields and in the complete design programs of companies. Increasingly, these activities have tended to overlap; consulting work nourishes design and vice versa. A growing number of projects are part-architecture, part-industrial design. Among the results have been broader study of design problems, better results for clients, a more satisfying practice



New York World's Fair Pavilion



New complete rapid transit system



Typewriter based on new principle

© Ezra Stoller



Standardized distribution building

Samuel A. Musgrave

The success of Eliot Noyes & Associates is founded on the principle that architecture, industrial design, and the complete design programs of clients can best be performed by a single firm prepared to produce or direct all of the design activities.

Eliot Noyes expresses it this way: "In a sense, a corporation should be like a good painting; everything visible should contribute to the correct total statement, nothing visible should detract. Thus a company's products, buildings, offices, graphic design, and so forth should all contribute to a total statement about the significance and direction of the company. At the same time, a cardinal point about design is that nothing exists or is used only by itself. A typewriter sits in a room in a building. There *must* be a sense of their relationships in the design of each of these.

"Good design, whether of a building, an office machine, or a company's operating statement derives from the nature of the problem; when the design problems have been solved, the end products will have in common a clarity and appropriateness of form and this will often be coupled with invention.

"Such values are the sort of contributions our office was set up to make in the over-all design programs of corporations."

Though its size varies somewhat, the Noyes firm now has 10 architectural people (all graduates or registered architects), an equal number of industrial designers (all graduates), three secretaries and two office boys. The architectural group is headed by Arthur DeSalvo, an associate of the firm; the industrial design section by another associate, Ernest Bevilacqua. As might be expected, the architectural people usually work on buildings, the industrial designers on products—but there is a considerable amount of cross-feed between the two groups.

An unusual aspect of the firm is that there are no specialists within either of the design groups. For example, each of the architectural people ranges all over the spectrum of architectural services, participating in design, drafting, and other phases of the work. The same is true of the industrial designers. Because of this, all professional staff members tend to become more rounded than is usually possible in other offices of the same size. A certain amount of semi-specialization does occur; this is because members of the staff often become deeply interested in some particular aspect of the work such as materials or a type of equipment; when this happens, other staff members tend to seek advice from those who have studied subjects more deeply.

When the size of a job, or its complexity or advanced nature requires it, the firm retains outside structural and mechanical engineers. Ordinarily outside consultants are also utilized for such specialized work as landscape architecture, acoustics, illumination and graphics. The firm does perform services in interior design under the direction of

Eliot Noyes' wife, Molly, who was trained as an architect.

The actual work of Eliot Noyes & Associates might be classified in these categories: architectural commissions for buildings; industrial design commissions for products; exhibition design commissions for trade shows and fairs; co-ordination, consultation, or direction of complete corporate design programs; and projects that are composed of various combinations of two or more of the functions named. A few examples of the firm's work in these various fields are shown on the pages following, along with some discussion of how each of the types of work is handled.

Some of the commissions of the firm are one-time jobs—in architecture, industrial design or consultation—for one-time clients, on a non-repetitive basis. However, the greatest portion of the work of the firm is on some sort of continuing basis for more or less permanent clients. Much of this work is in complete design programs of such corporations as I.B.M. and Westinghouse. This work divides into consultation on over-all design programs—and direction of portions of these—and designs of individual buildings and products. These pursuits are inextricably interwoven, complete programs leading to individual projects, projects to over-all programs.

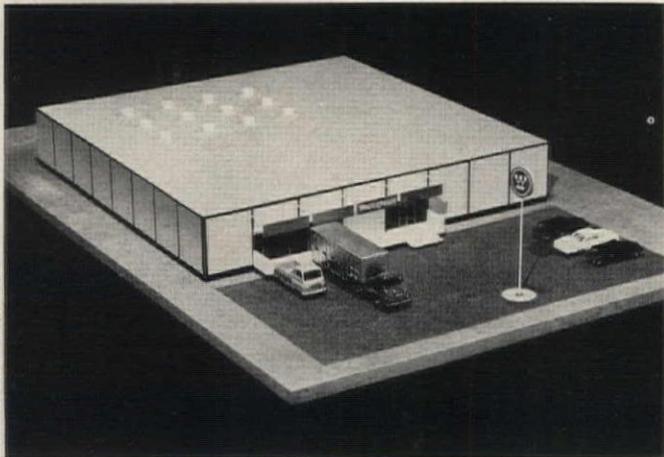
In complete design programs, Eliot Noyes acts as a personal consultant to the companies, helping them form design philosophies, and assisting them in the selection of architects for their buildings, of industrial designers for their products, and of graphic designers, artists and so on. He co-ordinates and correlates some of the work of these people to insure harmony with the rest of the companies' design. He directs the preparation of standards for interiors, furniture and furnishings, packaging, trademarks, logotypes and sign programs.

In every case, when working with such company design programs, Eliot Noyes insists on having direct contact with top management, from which he believes over-all design policy must flow. On the other hand, much of his actual work is with the sales, production, and other departments, but not under their control. A considerable amount of his time is spent traveling on behalf of these companies' over-all programs and specific design problems.

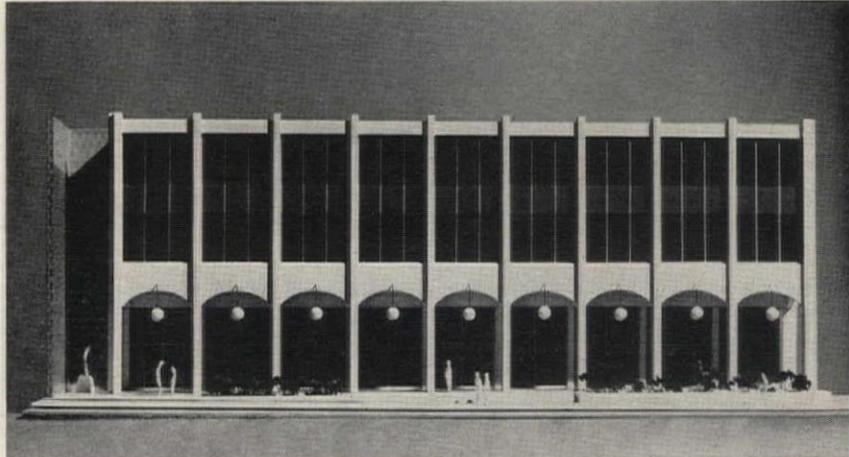
For this sort of work, Noyes gets a retainer that obligates him to assume responsibility for the companies' design programs, to devote a certain amount of his own time to this work, and sometimes to accomplish certain specific projects. For the most part, though, individual architectural or industrial design projects are accomplished under separate agreements. In addition special funds are usually set up by the companies to take care of the costs of handling special consultation or services performed by members of the Noyes staff on smaller design and non-repetitive problems.



I.B.M. Office Building, Alexandria, Virginia



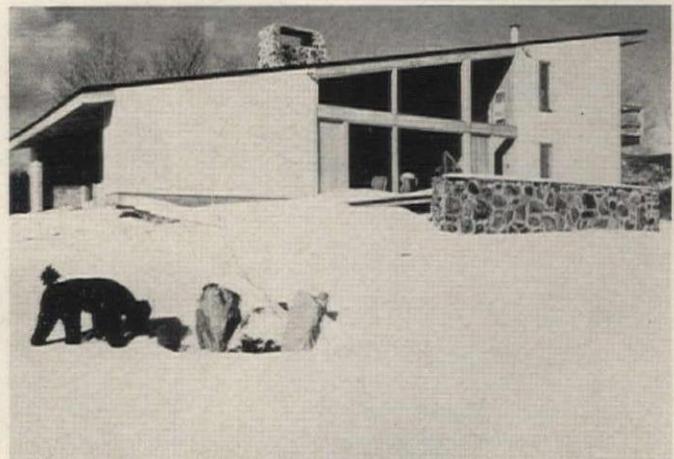
Westinghouse Wesco distribution warehouse and office



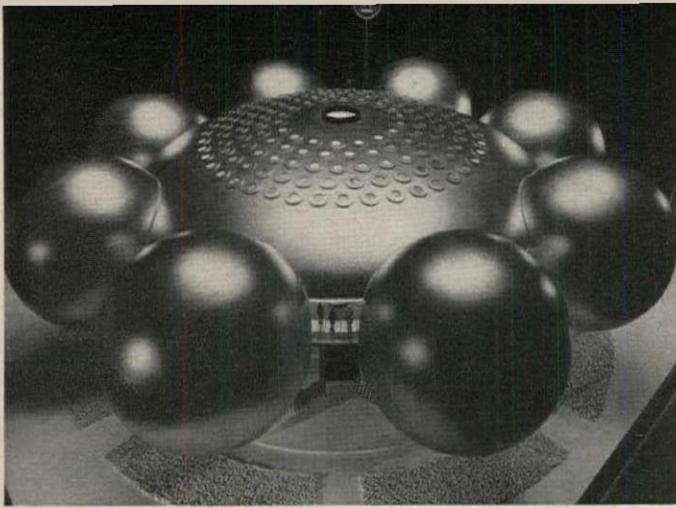
First Federal Savings and Loan of Hagerstown, Maryland

Private, corporate architecture

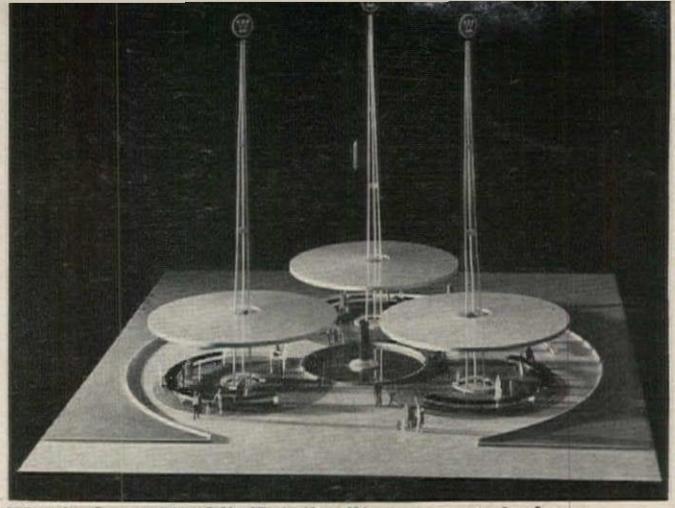
A portion of the work of Eliot Noyes & Associates is devoted to the general practice of architecture for both corporate and private clients. The office building shown is an example of a building accomplished as a separate commission by the firm for I.B.M., the firm's long-time complete design program client. The Wesco Distribution Warehouse was commissioned by another over-all design program client, Westinghouse, as a prototype for a chain of such buildings now under construction in a number of localities. The Noyes firm produced a standard design for this building; local architects are employed for site design, supervision, and necessary changes to meet local conditions. The building for First Federal (Coble & Burger, Associated Architects for Supervision) and the residence were produced by the firm for individual clients, with no relation to longstanding programs such as those of I.B.M., Westinghouse.



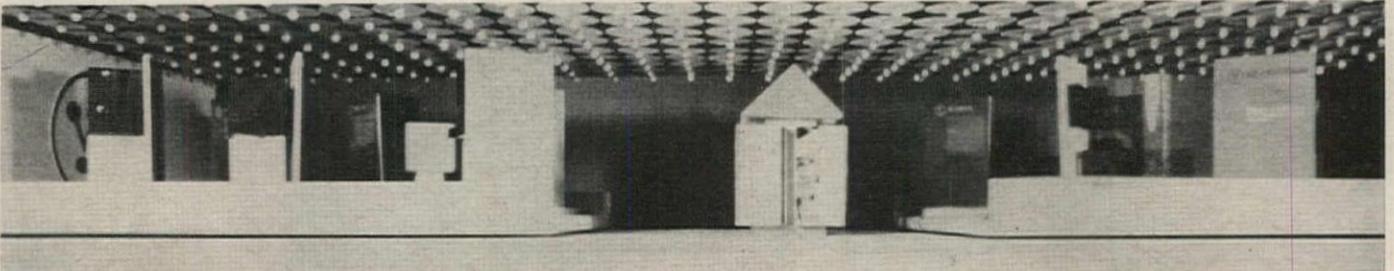
Ohly residence, Sherburne Center, Vermont



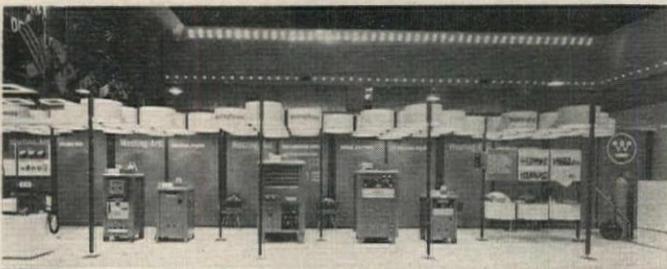
Westinghouse World's Fair Building—first scheme



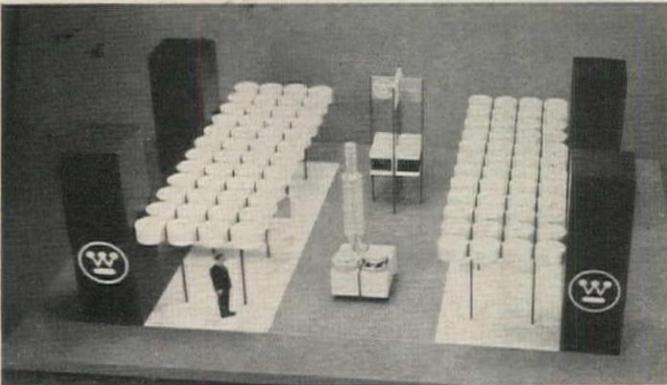
Westinghouse World's Fair Pavilion—accepted scheme



Study for Westinghouse N.A.H.B. exhibit



Westinghouse exhibit at Welding show



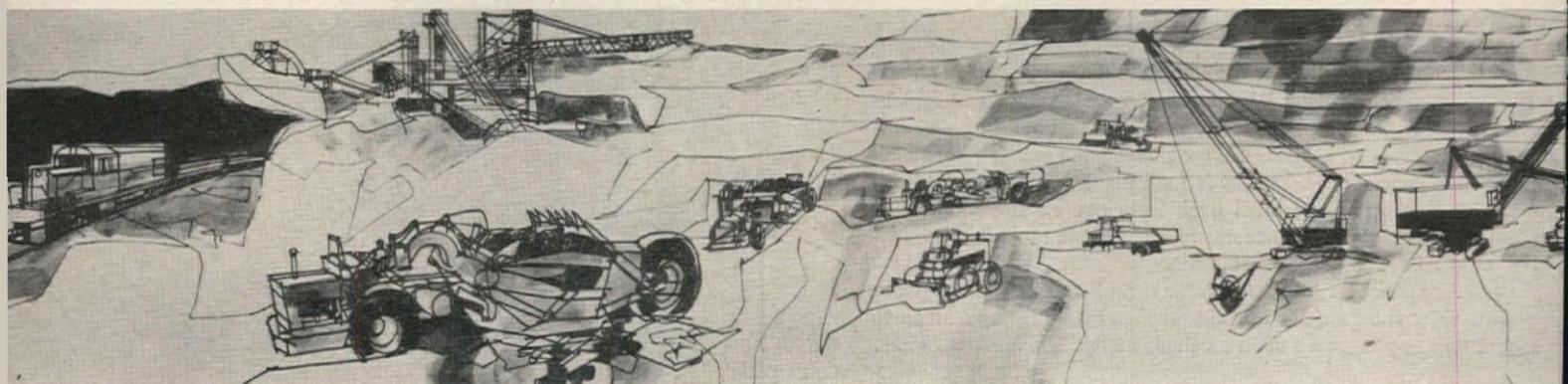
Study for Westinghouse trade shows

Back-drop for Cummins Engine Company show by Arno Sternglas

Design for exhibitions and fairs

In conjunction with their other work in complete corporate design programs, Eliot Noyes & Associates accomplishes a considerable amount of exhibition, trade show and fair design. Much of this work combines some of the elements of both architecture and industrial design, and the architects and industrial designers in the firm combine forces to accomplish the work. Some examples of this sort of work are shown here; among them are a scheme for a Westinghouse New York World's Fair Building with eight 45-foot-in-diameter theaters around a central area enclosing a lobby and moving sidewalks. For reasons of economy, this scheme will not be constructed. Instead, the other scheme shown will be built. This consists of three tower hung pavilions that shelter exhibits duplicating those in the 1939 Westinghouse time capsule 50 feet below ground level at the center of this building.

Other illustrations show studies made for Westinghouse trade shows and an example of an actual show in place. Across the bottom of this and the adjoining page is a reproduction of an 8-foot-high, 70-foot-long drawing by Arno Sternglas executed under the direction of the Noyes firm for a Cummins Engine Company show. Against this huge, black-and-white background were shown five Cummins diesel engines, gold in color and similar to that shown across-page; these engines were those actually used to power the machines depicted.



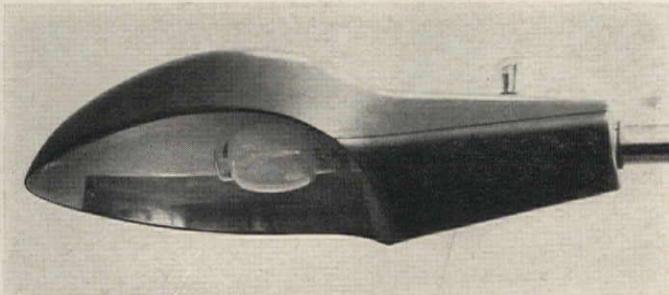
Products for consumers, industry

As consultant design director for Westinghouse and I.B.M. and to some extent for other companies, Eliot Noyes helps direct and coordinate the design of the companies' products, as well as buildings and other elements of their design programs. In addition, the Noyes firm does a considerable amount of actual product design work, as shown in the selected examples on this page. For I.B.M. the firm designed a complete office equipment line of dictating machines and the new electric typewriter which uses a type-laden ball instead of conventional type bars. The work of the firm in product design covers a wide range; this is exemplified by the New York City street light designed for elimination of glare and direct light on fronts of houses in residential streets and the pad-mounted transformer which is now in production; both of these were designed for Westinghouse. An unusual commission was the big marine diesel engine for Cummins. This design was first shown at the New York Boat Show this year, and will go into commercial production soon.



© Ezra Stoller

I.B.M. Executary dictating machine

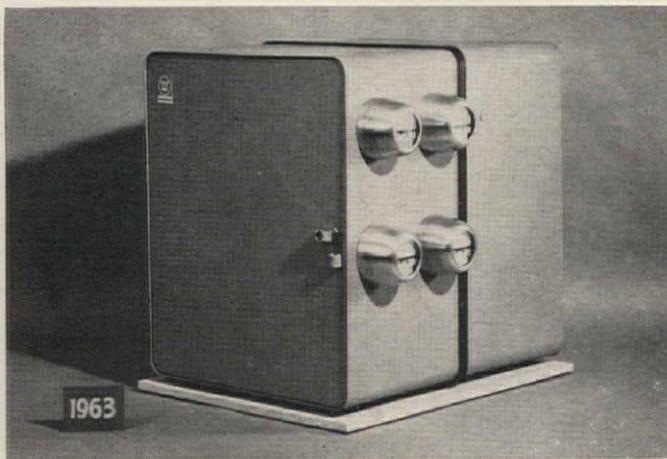


Street light study for Westinghouse

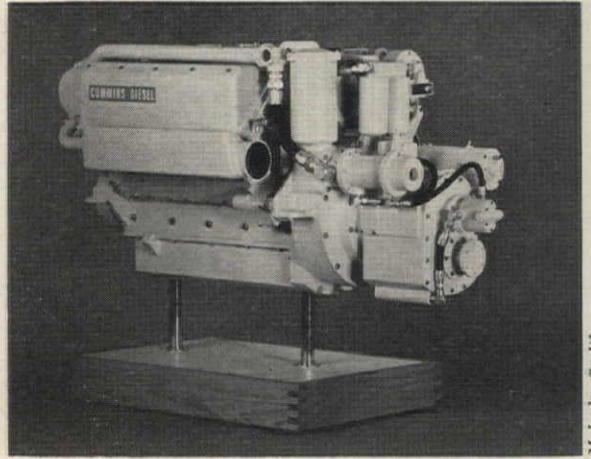


© Ezra Stoller

I.B.M. Portable Executary dictating machine



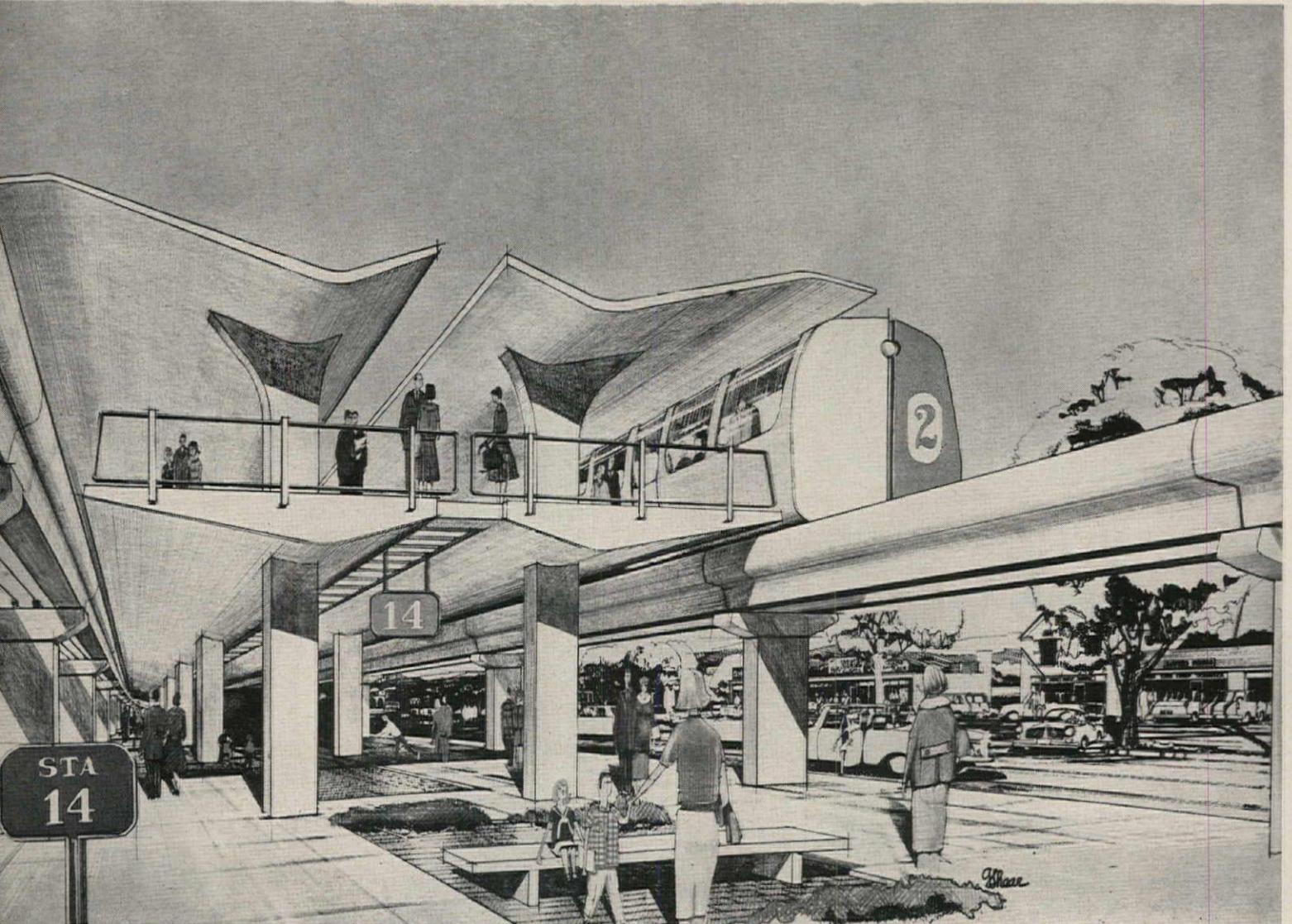
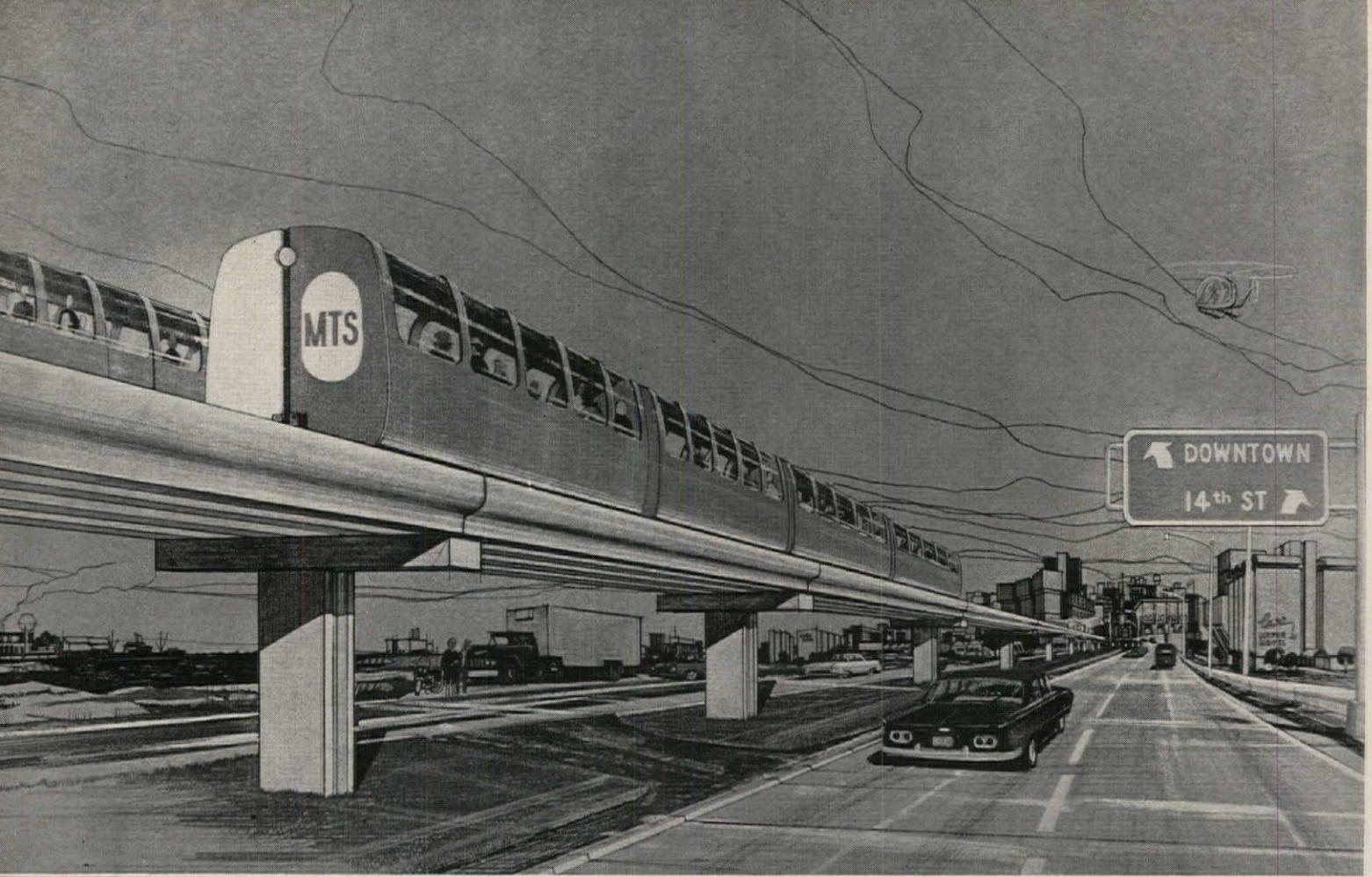
Westinghouse pad-mounted transformer

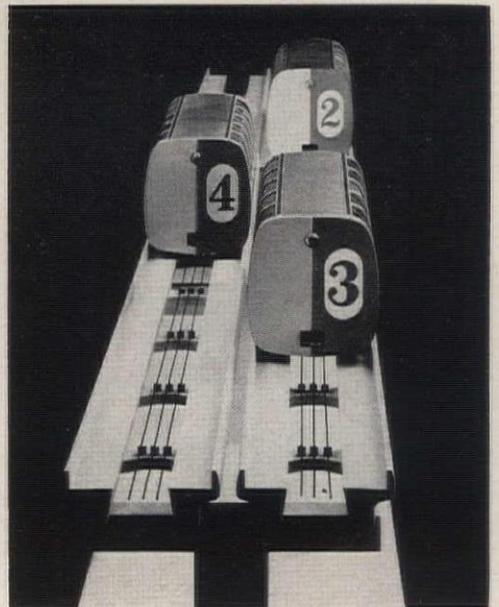
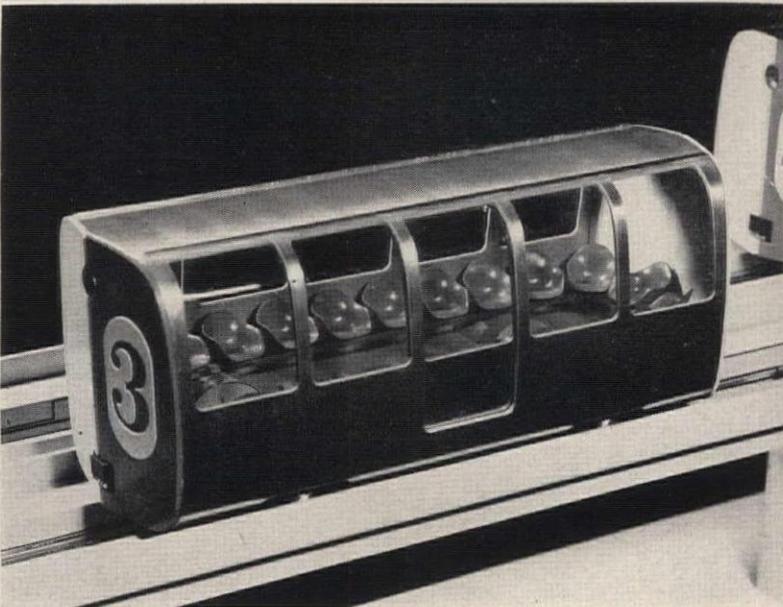
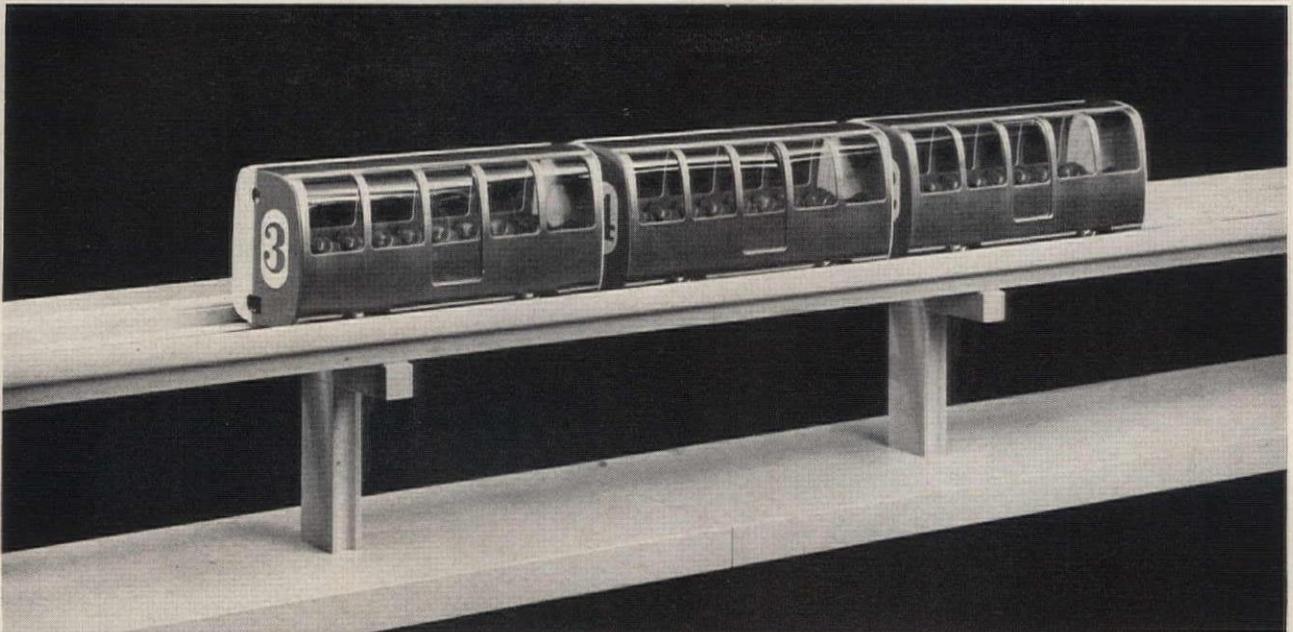


Malcolm Smith

Cummins 300 horsepower marine diesel engine

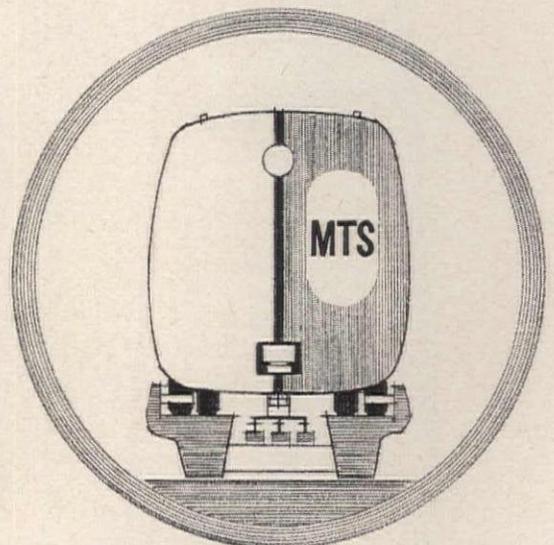


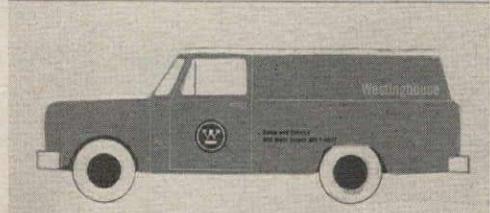
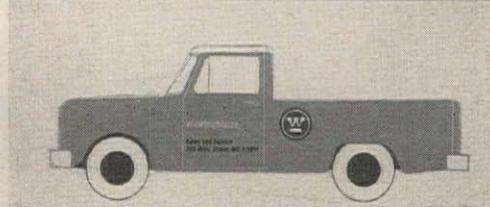
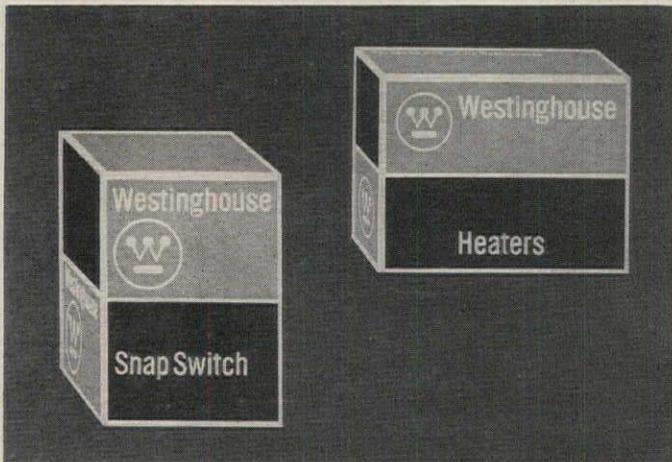
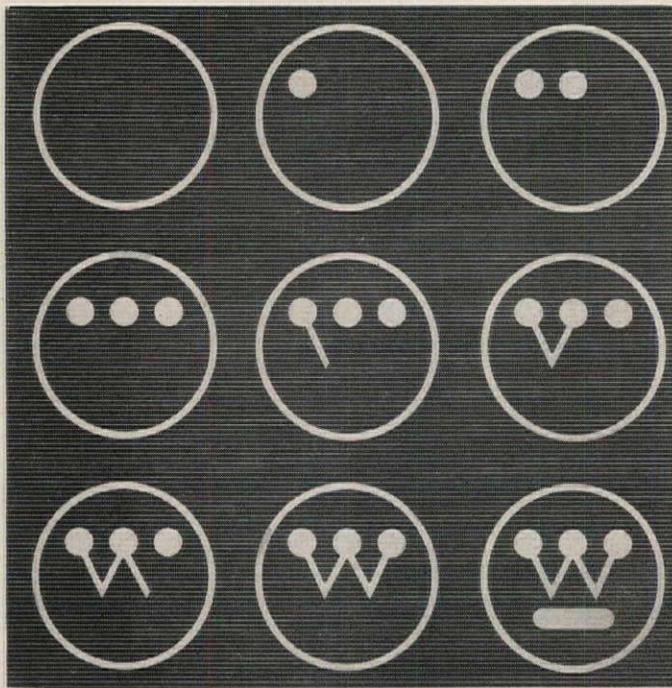




Complete rapid transit system

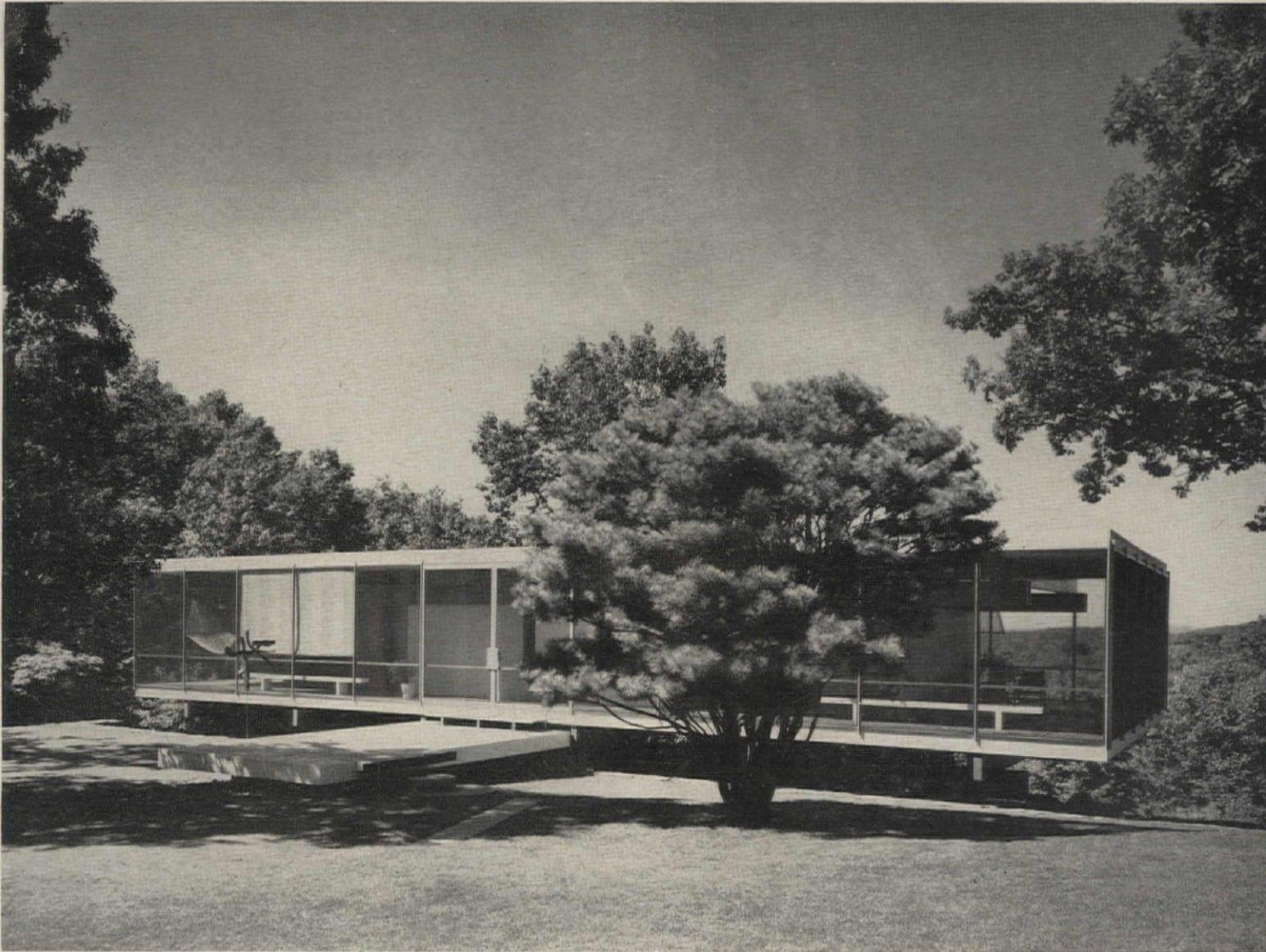
The results that are possible with the sort of philosophy and organization for practice of Eliot Noyes & Associates may be seen most clearly in a complex project such as this rapid transit system done for Westinghouse. Here the firm has designed a complete transit system for cities, including the master plan for routes, stations, structure and vehicles. The cars are automated, driverless; they may be run singly or in trains, on elevated platforms, on grade, or as shown at right, in underground tubes. The electrically-powered, rubber-tired vehicles are expected to be extremely quiet, smooth-riding and dependable; and they will not release exhaust fumes into the atmosphere of the city. The Noyes organization was responsible for the design of the complete, integrated system, working closely with a Westinghouse group headed by Charles Kerr Jr., transportation consultant of the company. The over-all scheme is the result of many talents used in combination; among them architecture, industrial design, urban design and engineering.





Consulting work for corporations

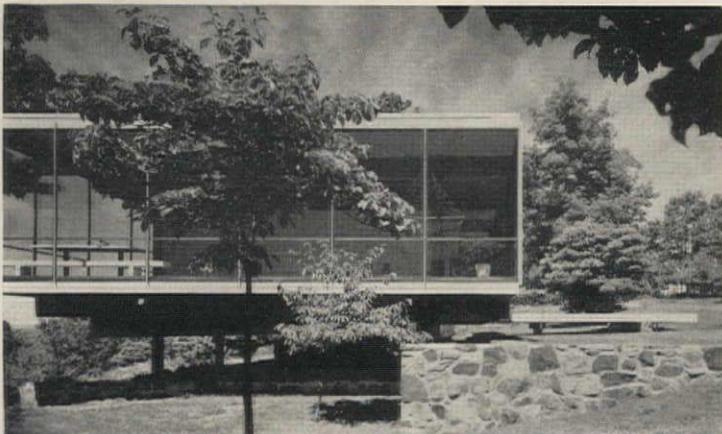
The direction or coordination of graphics program is an example of the type of work performed by Eliot Noyes & Associates for the companies for which they act as design consultants. The Noyes program for I.B.M. graphics is well-known. The newer program for Westinghouse is exemplified by the selection shown here. For both of these companies, Paul Rand executes the designs; the Noyes firm consults with him and with the companies. Shown here are designs illustrating typical uses of trademark and logotype on such varied things as a television commercial (*top, left*), packages, a label, truck signs and a water tank. The trademark and logotype, as well as the type face shown, the packages, and the signs were designed by Paul Rand. Others who have participated in the Noyes-directed programs of design for these companies include Charles Eames for exhibits and films; and Eero Saarinen, SOM, Harry Weese, TAC, Vincent Kling and John Carl Warnecke for buildings.



Robert Damora photos

IDEAS FOR SPACE IN A BUDGET HOUSE

A sensitively designed weekend house full of ways to add spaciousness to a small country home



ARCHITECT AND OWNER: *I. M. Pei*

LOCATION: *Westchester County, New York*



A Well-Articulated Post and Beam Structure is Key to Economy

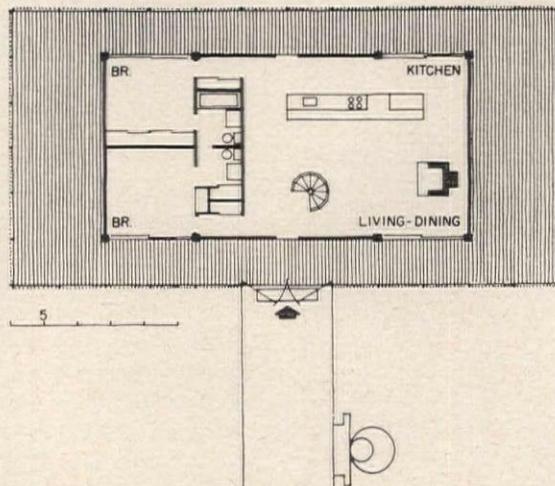
This classically simple little house is a good example of enduring freshness in thoughtful design. Actually built in 1952, the many devices used to add flexibility and visual space have reportedly functioned very well for the Pei family.

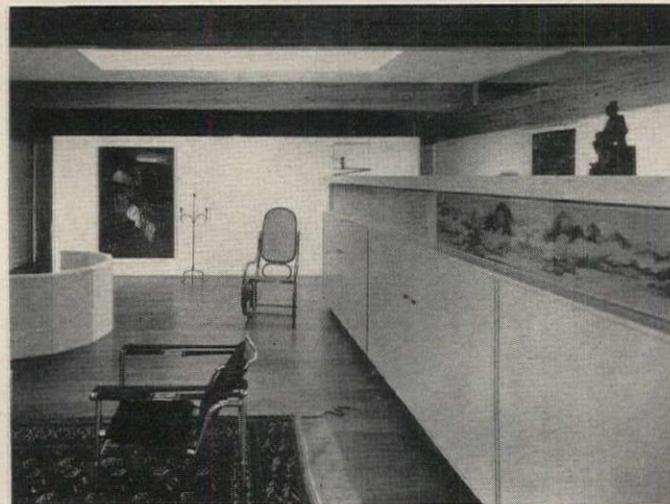
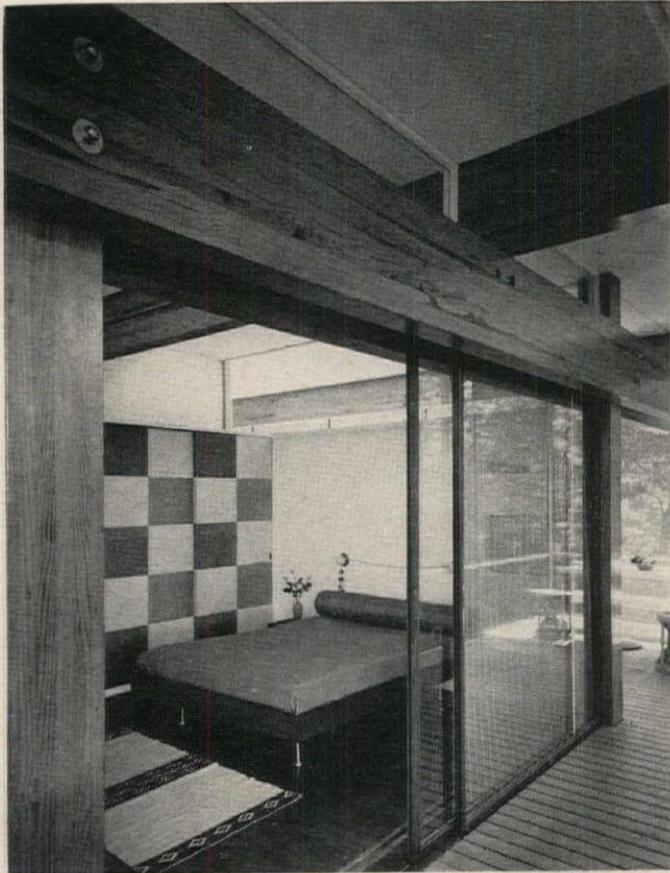
The structure permits the house to be raised above the sloping site on eight posts, and besides obvious savings in foundation work, gives considerable importance to the design. The frame was made of standard elements, and planned so that it was erected in a day, covered in a week and required no specialized craftsmen.

The internal spaces of the house are quite open—all living functions are in one big skylighted room, and all partitions are glass-topped. But there is enough shielding enclosure to give needed privacy. These areas are supplemented as living spaces by a broad surrounding porch which is largely cantilevered and closed by sliding glass panels. Awnings are used for sun control on the porch, and over the skylight in the living area. The internal partitions give a degree of "zoning" to the porch space for dining, sitting and sleeping. All interior rooms are closely linked with the porch by translucent or clear glass sliding doors in aluminum frames.

The main approach to the house is by a little wooden bridge in the front. This is supplemented by a circular stair as seen in the photo at right, leading to the ground level under the house in back.

The kitchen is a part of the living area, but amply screened from it by a shoulder-high cabinet unit.





The photo (*above*) shows one of the bedrooms of the Pei house, and clearly indicates the force and sense of continuity the well-defined structure gives to the house.

The other two photos show how effectively the cabinet unit houses the kitchen equipment and screens it from the living area. Above the cabinets on the living room side is a long glassed-in display strip



Maris © Ezra Stoller Associates photos

CASUAL SIMPLICITY FOR A SMALL COUNTRY HOUSE

George Nemeny uses a big two-story living area
for drama in this quietly stated design

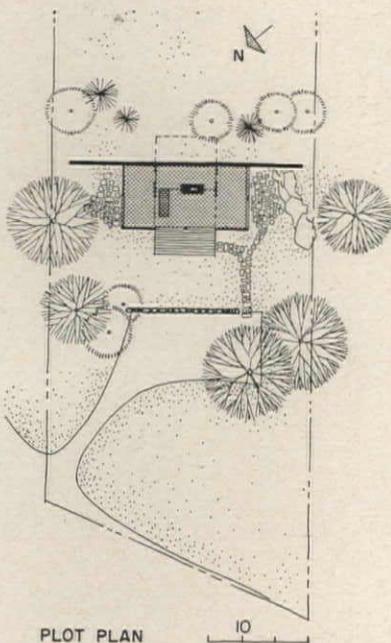
Ray Favata House

Dobbs Ferry, New York

ARCHITECT: *George Nemeny*

ENGINEER: *Edward S. Klausner*

MECHANICAL CONSULTANTS: *Batlan & Oxman*





The Favata House

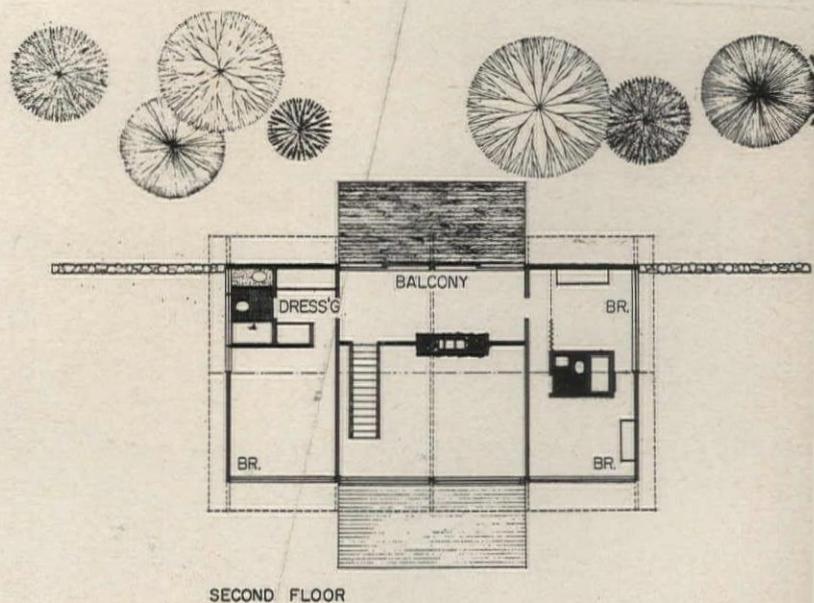
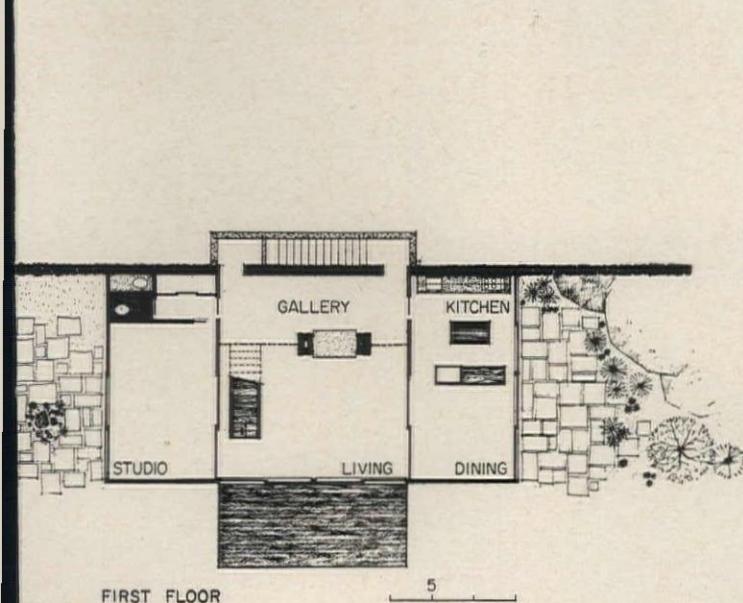
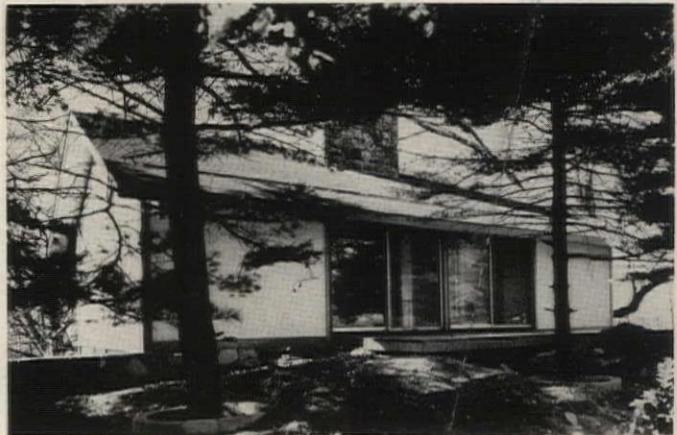
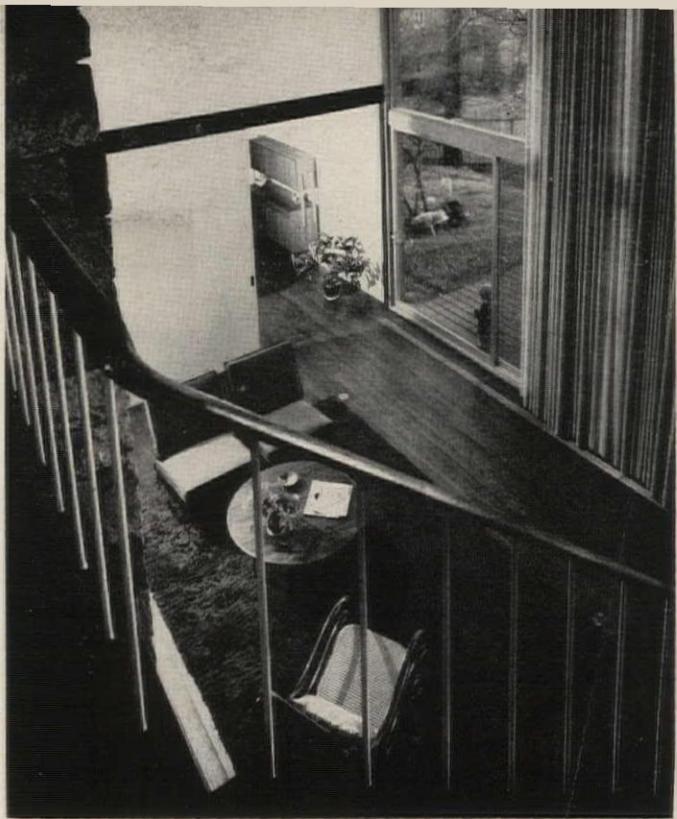
Variable Space Adds Livability

Several interesting devices were used in this house to avoid the series of cramped box-like rooms so prevalent in current smaller houses. The major portion of the house was allotted for one big living space. This area is given scale and more usability by the addition of an entrance balcony along one side, with a more intimate "gallery" space beneath. Other rooms in the house are correspondingly minimized in area; the lower floor rooms flanking the living area have sliding walls to add their space to the big one when desired.

The house is set into a rocky, sloping site, with a sweeping view of the Hudson River. The slope permits entrances and terraces at both levels of the house. A two-story window wall exploits the view.

The residence is for a commercial artist, his wife and two young sons. They expressed a desire for natural materials throughout, and a "country" feeling in the design; spaces were to be inter-related to provide an open feeling, but convertible for privacy when required. The design of the house fulfills this brief program with subtle skill in proportions and details.

A separate studio and a carport with extra storage space, are contemplated in the near future. The studio is to be located at the rear of the property, and the carport adjacent to the parking area in front of the house. The present studio area can then be converted into a family room.





The great care given to detailing and selection of materials throughout the house can be noted in these photos of the master bath and the kitchen.

The house is post and beam construction of Douglas fir. The exterior is of white stucco panels. All trim is stained natural cypress, as are the ceilings. Floors are random oak. Walls in kitchen and baths are white ceramic tile. Rubble stone is used for the fireplace and for the retaining walls. Heating is forced warm air.



HOSPITALS

PLANNING NURSERIES FOR NEWBORN IN THE GENERAL HOSPITAL

As one of the areas in the hospital where patients are most vulnerable to infection, the nursery should be planned to provide the best means for the care, safety and welfare of the infants. Although the plans and diagrams, shown here, have been developed for hospitals of specified sizes, the principles set forth apply to all hospitals, large or small, new or old.

Basic recommendations for planning nurseries that have been developed, based on clinical experience and study, include: limiting the number of infants in each nursery; wide spacing of bassinets within each nursery; separation of bassinets by cubicle partitions; promoting the use of aseptic techniques and individual care by providing, among other things, ample space and handwashing facilities; limiting the number of bassinets served by one nurses' station; separating facilities for premature infants and for observing infants suspected of having infectious conditions; and providing optimum conditions of temperature, relative humidity and ventilation.

Full-term nurseries should be located in the ma-

The study, from which this article was condensed, was prepared for the Division of Hospital and Medical Facilities, Public Health Service, and the Children's Bureau, Social Security Administration, by O. Bernard Ives, architect. Copies of the study may be obtained from Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C.

ternity nursing unit as close to the mothers as possible and away from the line of traffic of other than maternity services. An area of 30 feet per infant is recommended, exclusive of the nurses' station.

The extent of the spread of infection in a nursery can be reduced as the number of infants in each nursery room is reduced. The optimum number of full term infants that can be cared for by a member of the nursing staff is in the range of 8 to 10.

Bassinets should be at least 2 feet apart and, if partitions are used, cubicles should be large enough to permit bedside care. Partitions should be glazed or transparent so that the infants can be easily observed by the nurse. To facilitate cleaning, partitions should not extend to the floor. Cubicle partitions might extend only from the bottom of the bassinet to 24 inches above. The supporting frames of the partitions may be attached to the ceiling and wall. Where a wall is not available, as in an island arrangement, some supports must extend to the floor.

In nurseries without cubicle partitions bassinets are often crowded together side by side. Although cubicle partitions may be objectionable from the standpoint of cleaning (and are often unsightly), they help to ensure that bassinets are properly spaced.

Fixed-view windows between the nursery and the corridor permit visitors to view the infants from the corridor. These windows must be wire glass set in

steel frames and must conform to National Fire Code requirements. Fixed view windows in partitions between nurseries and the nurses' station or between two nurseries facilitate observation of all infants in the area. These windows may be of clear plate glass or lucite and should be as large as practicable.

A door direct from each nursery to the corridor is recommended to permit faster evacuation in case of fire and easier movement of bassinets from the nursery to the mothers at feeding time and to avoid traffic through the nurses' station. This door, hung in a steel frame, should have a wire glass panel and must conform to National Fire Code requirements.

Furnishings and equipment for each full-term nursery should include, in addition to the items shown in the plans, a suction bulb or a mechanical device with a soft rubber tip and individual catheters for individual infants for each full-term (and premature) nursery. Controls of the suction device should include a regulator to limit the suction to avoid injury to the infant. Suction should be provided from a central system.

A four-bassinet nursery lends itself well to the "cohort" system, in which babies born during the same interval (no more than 48 hours) are kept in the same nursery. Babies arrive and leave together. After the departure of each cohort, the nursery is thoroughly cleaned and disinfected before admission of the next cohort, thereby—in theory—breaking the chain of possible cross-infection by eliminating the overlapping of babies with infections.

The use of four-bassinet nurseries does not imply increased staff. Two four-bassinet nurseries may be under the care of one nursing person if she wears a scrub gown and scrubs properly between visits to each nursery. Two such nurseries may be considered the equivalent of one eight-bassinet nursery in assigning nurses' station and work space. Furnishings and equipment will be the same as those for full-term nurseries.

Since premature infants require more specialized care than full-term infants, a reasonable ratio of staff to premature infants is set at one to five. Thus, a premature nursery room should accommodate no more than five infants and should have a minimum area of 30 square feet per infant. A separate nursery is usually not indicated if less than five infants are to be cared for at one time. In such cases, space for them can often be provided in the full-term nursery. One nurses' station may serve two premature nurseries, or a premature nursery and a full-term nursery if the nurseries are paired.

In a premature nursery where suitable environmental temperature and humidity are maintained, only 50 to 75 per cent of the premature infants may require incubators. Furnishings for premature nurseries will be similar to those in full-term nurseries, aside from the incubators.

An observation nursery should be provided for infants suspected of infection. When positive diag-

nosis is made, the infant is transferred elsewhere in the hospital and placed on isolation precautions. However, if diagnosis is not positive the infant may be returned to the regular nursery provided he has not been exposed to an infected infant in the observation nursery.

The observation nursery should be a completely separate unit, but it should be located adjacent to a full-term nursery with a glazed partition between to permit observation by the nursery staff. A minimum of 40 square feet per bassinet is recommended to provide adequate space for bedside care and treatment of the infant.

Observation bassinets should be provided at the rate of 10 per cent of the full-term bassinets. A minimum of two—and a maximum of three—bassinets are recommended for each observation nursery. These nurseries may be repeated as many times as necessary to provide the required complement of observation bassinets. Furnishings and equipment will be similar to those in full-term nurseries.

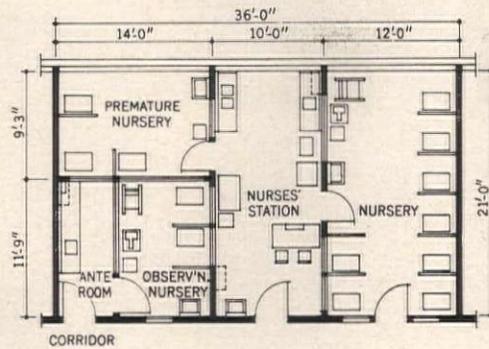
An anteroom should be provided between the nursery and the corridor. This area should contain the same facilities as the work and treatment areas for full-term nurseries.

The nurses' station serves as a control point and also provides workspace for the nurse and an area for treating infants. The nurse's desk should be placed so that the entrances from the corridor and from the station to the nurseries can be supervised. The nurseries should be visible through observation windows in the partitions.

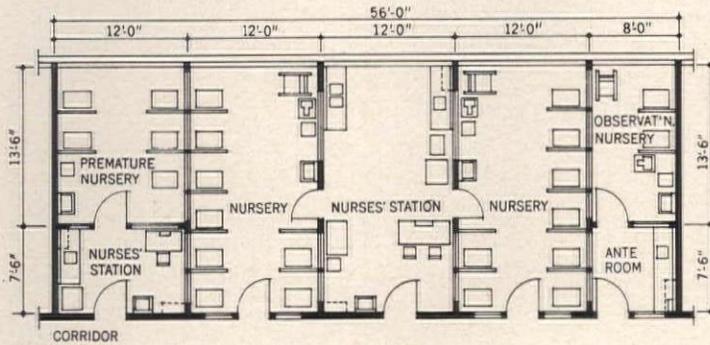
A station between two nurseries will require a double desk for two nurses. No more than two full-term nurseries, each housing 8 to 10 bassinets, should be served by one nurses' station. In the cohort system, four nurseries, of four bassinets each, may be so served.

The nurse's workspace should occupy a separate area at one end of the nurses' station. This arrangement affords the nurse full view of the infants while attending to most activities. The treatment area should be located near the entrance to the nurses' station so the physician need not walk through the workspace. Routine examinations and treatments should be carried out at the bassinets in the nursery. A physicians' scrub area should be located at the entrance of the nurses' station. The description of the full-term nurses' station also applies to premature nurseries, except that the treatment table is omitted. Other necessary areas, not shown in the plans, include formula rooms, nurses' locker rooms, demonstration rooms and storage.

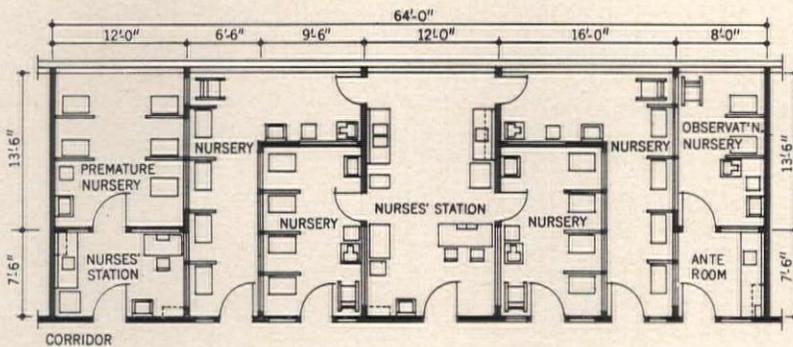
Air conditioning will be required for nurseries to ensure the constant temperature and humidity conditions so beneficial to care of the newborn. In addition, the air-conditioning system, through the ventilating features, will remove odor and will materially reduce the bacterial contamination of the environment.



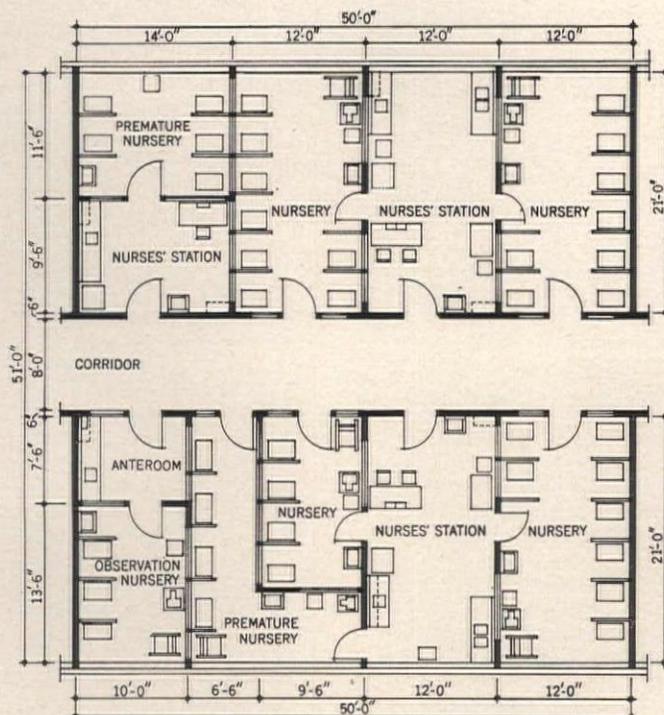
NURSERY FOR 440 LIVE BIRTHS PER YEAR IN HOSPITAL OF APPROXIMATELY 50 BEDS. The number of bassinets and maternity beds required is based on number of live births expected in hospital per year, rather than a rule-of-thumb relationship to the over-all bed complement. Six to 8 per cent (up to 12 per cent in poor economic areas) of the total live births will be premature (low birth weight of 5 pounds 8 ounces)



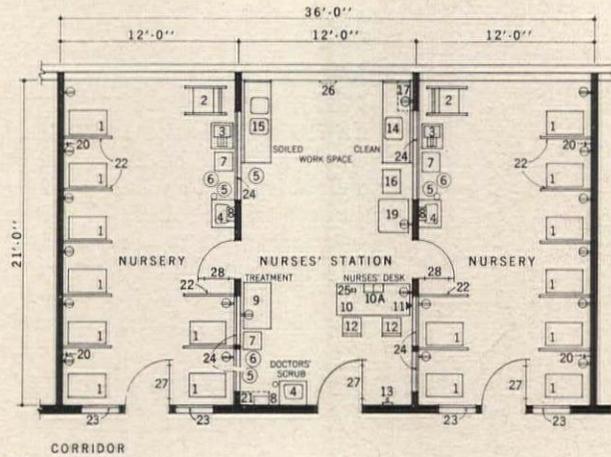
NURSERY FOR 880 LIVE BIRTHS PER YEAR IN HOSPITAL OF APPROXIMATELY 100 BEDS. The estimated number of premature births divided by 18 (number of 20-day average stay periods in a year) will equal the average number of premature bassinets or incubators required. This figure must be adjusted for 100 per cent occupancy (often assumed at 70 per cent). A premature center nearby would eliminate need for such facilities in the hospital



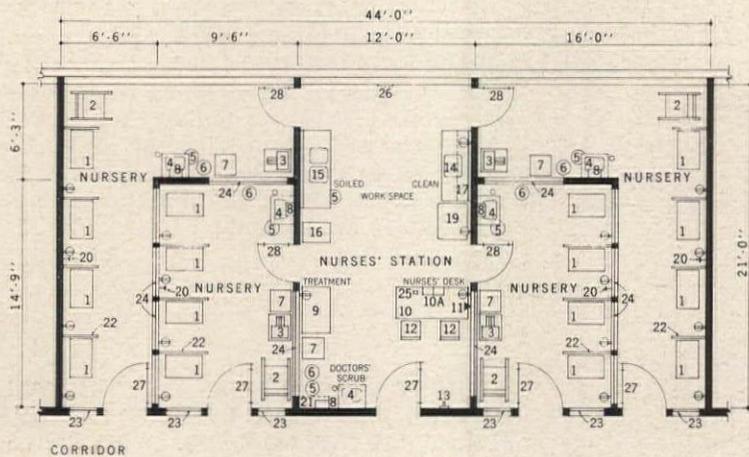
COHORT SYSTEM NURSERY FOR 880 LIVE BIRTHS PER YEAR IN HOSPITAL OF APPROXIMATELY 100 BEDS. In hospitals using the cohort system, babies born within 48 hours of each other are kept in the same nursery, arriving and leaving together, in theory reducing cross-infection through the elimination of over-lapping of babies with infections. Cohort nurseries are thoroughly cleaned and disinfected between discharge of one cohort and admission of the next



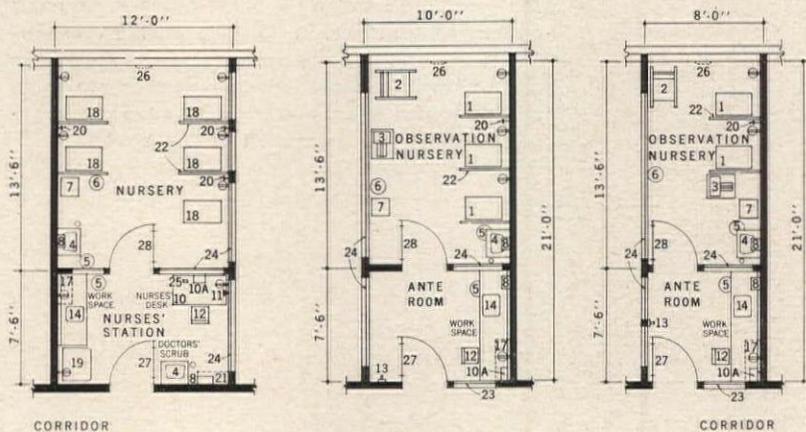
NURSERY FOR 1,500 LIVE BIRTHS PER YEAR IN HOSPITAL OF APPROXIMATELY 200 BEDS. Size of full-term portion of this nursery, as well as the others shown, is based on estimated number of live births per year less the premature births. This figure is then divided by 73 (the number of five-day average stay periods in a year) and adjusted from this 70 per cent occupancy total to a 100 per cent occupancy figure. Observation bassinets are provided at rate of 10 per cent of full-term bassinets, in nurseries with capacity of 20 or more. In smaller nurseries a minimum of two observation bassinets are provided



DETAIL PLAN, TWO EIGHT-BASSINET FULL-TERM NURSERIES AND NURSES' STATION. Typical arrangement of a pair of full-term nurseries with nurses' station between allowing two nurses to tend 16 bassinets (or a maximum of 20) from one position. Recommended items of furnishings and equipment are shown located in what is considered their proper relationship to each other and to the complete nursery-nurses' station layout



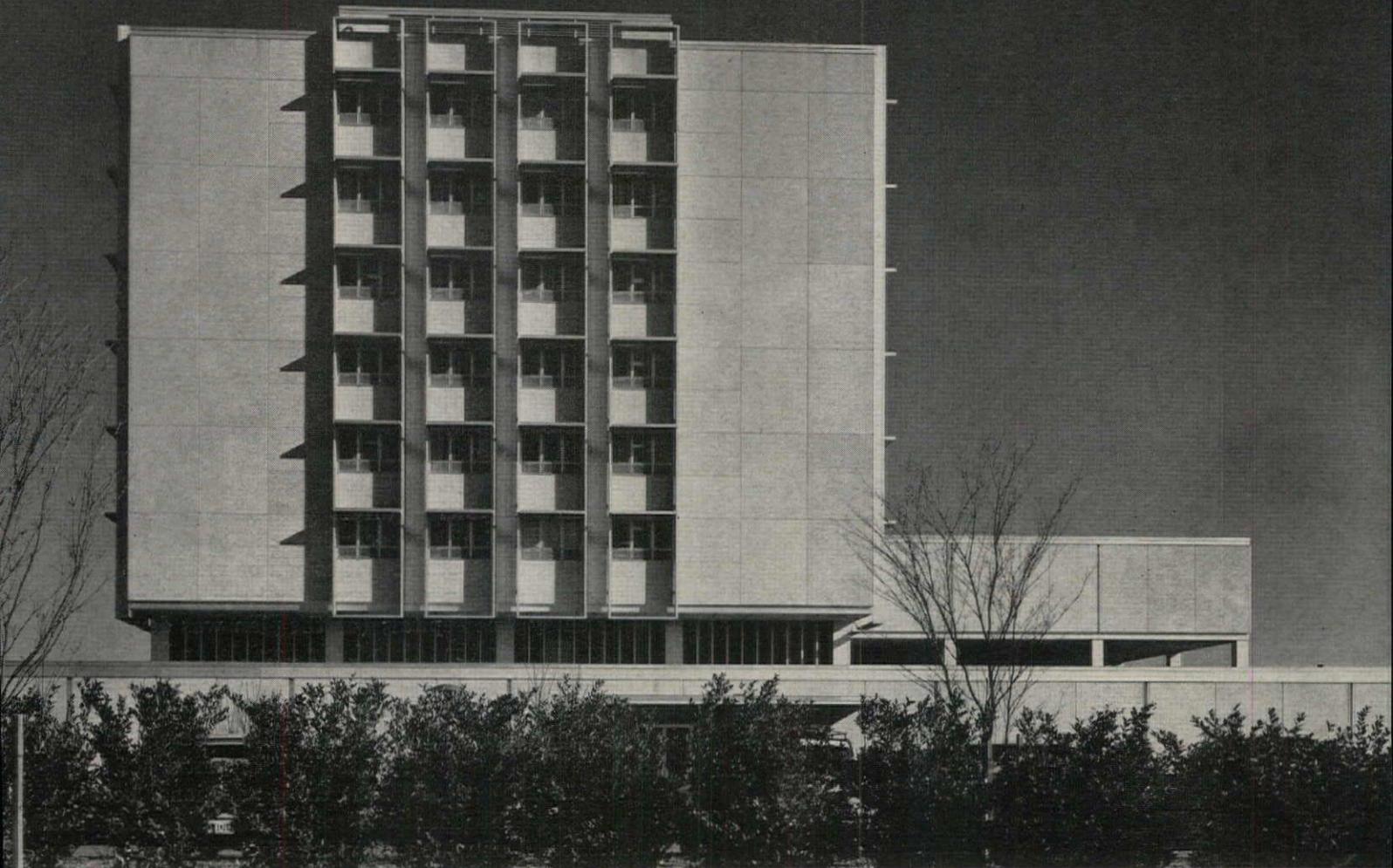
DETAIL PLAN, TWO PAIRS FOUR-BASSINET COHORT SYSTEM NURSERIES AND NURSES' STATION. A cohort system arrangement similar to the layout above, and of the same size. As in the conventional plan (*above*), the four cohort nurseries may be tended by two nurses working together from a single centrally-located nurses' station. Workspace required will be approximately the same in both types



LEFT: DETAIL PLAN, FIVE-INCUBATOR NURSERY WITH NURSES' STATION. MIDDLE AND RIGHT: MAXIMUM (THREE-BASSINET) AND MINIMUM (TWO-BASSINET) OBSERVATION NURSERIES. The minimum and maximum size observation nurseries have anterooms between nurseries and corridors, provided with approximately the same facilities as work and treatment areas of full-term nurseries

LEGEND

- | | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1. Bassinet with cabinet, pull-out shelf below, on 3-inch ball-bearing casters, with wheel lock</p> <p>2. Rocking chair with armrests, washable finish</p> <p>3. Utility table, 16 by 20 inches, with top drawer to hold infant scales</p> <p>4. Lavatory, 18 by 22 inches, with gooseneck spout, knee or foot controls, shelf over</p> <p>5. Waste receptacle, foot-controlled cover, removable waxed liner</p> <p>6. Soiled diaper receptacle, foot-controlled cover, removable waxed liner</p> <p>7. Soiled linen hamper on 3-inch ball-bearing casters, removable waxed liner, foot-controlled cover</p> | <p>8. Paper towel dispenser, enclosed type</p> <p>9. Treatment table, 24 by 36 by 36 inches high, on 3-inch ball-bearing casters, with wheel lock</p> <p>10. Nurse's desk, 30 inches high</p> <p>10A. Chart rack</p> <p>11. Telephone outlet</p> <p>12. Office chair, swivel, without arms</p> <p>13. Hookstrip</p> <p>14. Sink with gooseneck spout, knee or foot controls, in counter 36 inches high, open below</p> <p>15. Double compartment sink with gooseneck spout, knee or foot controls, in counter 36 inches high</p> <p>16. Bottle warmer on portable carriage</p> <p>17. Wall cabinet</p> <p>18. Incubator, on 3-inch ball-bearing casters, with wheel lock</p> | <p>19. Refrigerator, with built-in thermometer</p> <p>20. Double oxygen outlet, one for each four full-term—or each two premature—bassinets</p> <p>21. Shelves (three), starting 42 inches above floor, for clean gowns, supplies</p> <p>22. Cubicle partition, starting 30 inches above floor, with 2-foot-high clear glass or lucite panel, wall- and ceiling-hung metal frame</p> <p>23. Clear wire-glass view panel in steel frame, 1,296 square inches maximum, bottom 42 inches above floor</p> <p>24. Clear plate-glass or lucite view panel, bottom 42 inches above floor</p> <p>25. Hand-wind clock, desk type</p> <p>26. Electric clock</p> <p>27. Door with upper panel of wire glass</p> <p>28. Door with upper panel of clear glass</p> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



Joseph W. Molitor photos

BETTER CARE FOR PATIENTS THROUGH IMPROVED SUPPLY SYSTEM

*Holy Cross Hospital,
Silver Spring, Maryland*

ARCHITECTS:

Faulkner, Kingsbury & Stenhouse

HOSPITAL CONSULTANTS:

Gordon A. Friesen Associates, Inc.

MECHANICAL & ELECTRICAL ENGINEERS:

Frank J. Sullivan Associates

STRUCTURAL ENGINEERS:

Gongwer, Kraas & Webb

LAND PLANNING & SITE ENGINEERS:

Associated Engineers, Inc.

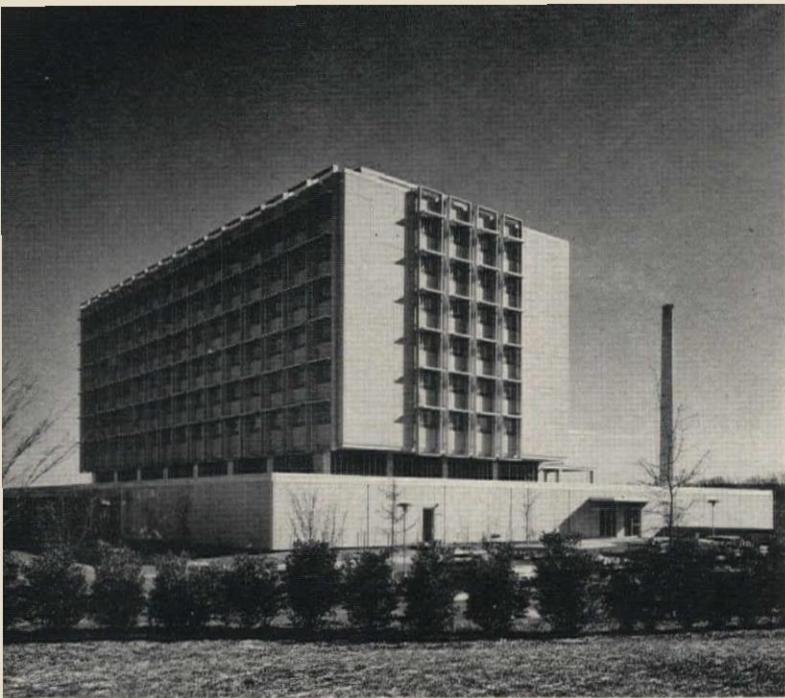
LANDSCAPE ARCHITECTS:

Collins, Simonds and Simonds

In this 225-bed hospital, medical personnel can spend most of their time caring for the sick and injured. Design organization of supply, circulation, and other systems helps make this possible.

Frederick L. Fryer, of the architectural firm, comments on this as follows: "The fundamental design concept is that all supplies are concentrated at the first level and distributed to floors from a vertical conveyor stem. The same idea is employed, on the third level, for food distribution. This approach led to a very compact plan. The double corridor arrangement around the vertical stem produced a number of economies: the exterior perimeter of the building was reduced, all rooms and their plumbing and air distribution facilities line up directly over one another, only two exit stairs were needed, air-conditioning loads and sizes of air handling equipment were reduced.

"The building is framed on a uniform structural module of 22 by 24 feet, with one set of beam, column and slab dimensions throughout. The long, regular spans made it possible to design various areas in an efficient manner and to make savings in time and labor. The grouping of areas around the vertical stem reduced horizontal distances and established facilities in logical relationships."



PLANNING HOLY CROSS FOR EFFECTIVE HOSPITAL CARE

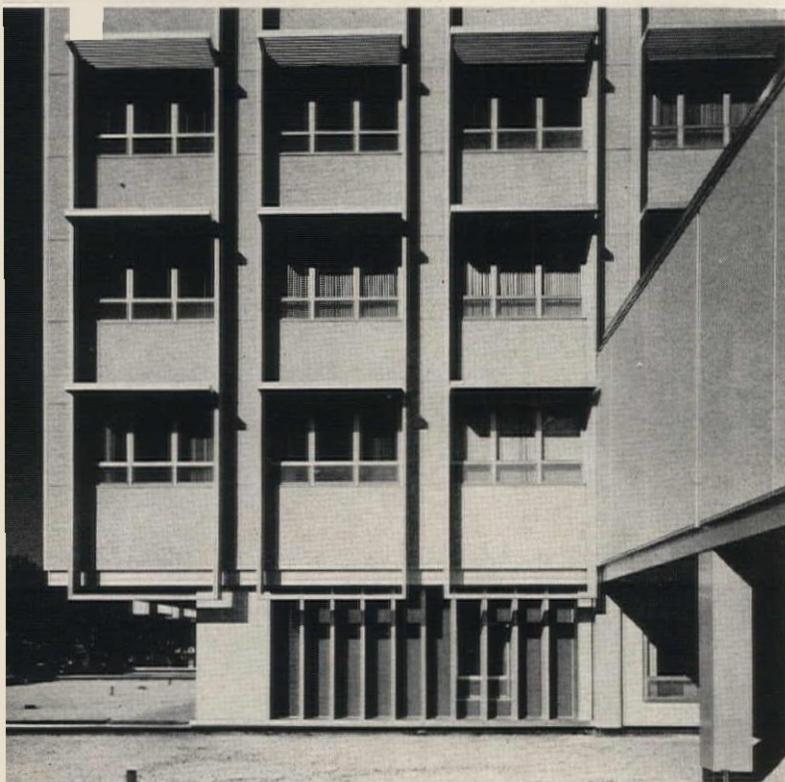
*By John L. Ryan, Vice President,
Gordon A. Friesen Associates, Inc.,
Hospital Consultants*

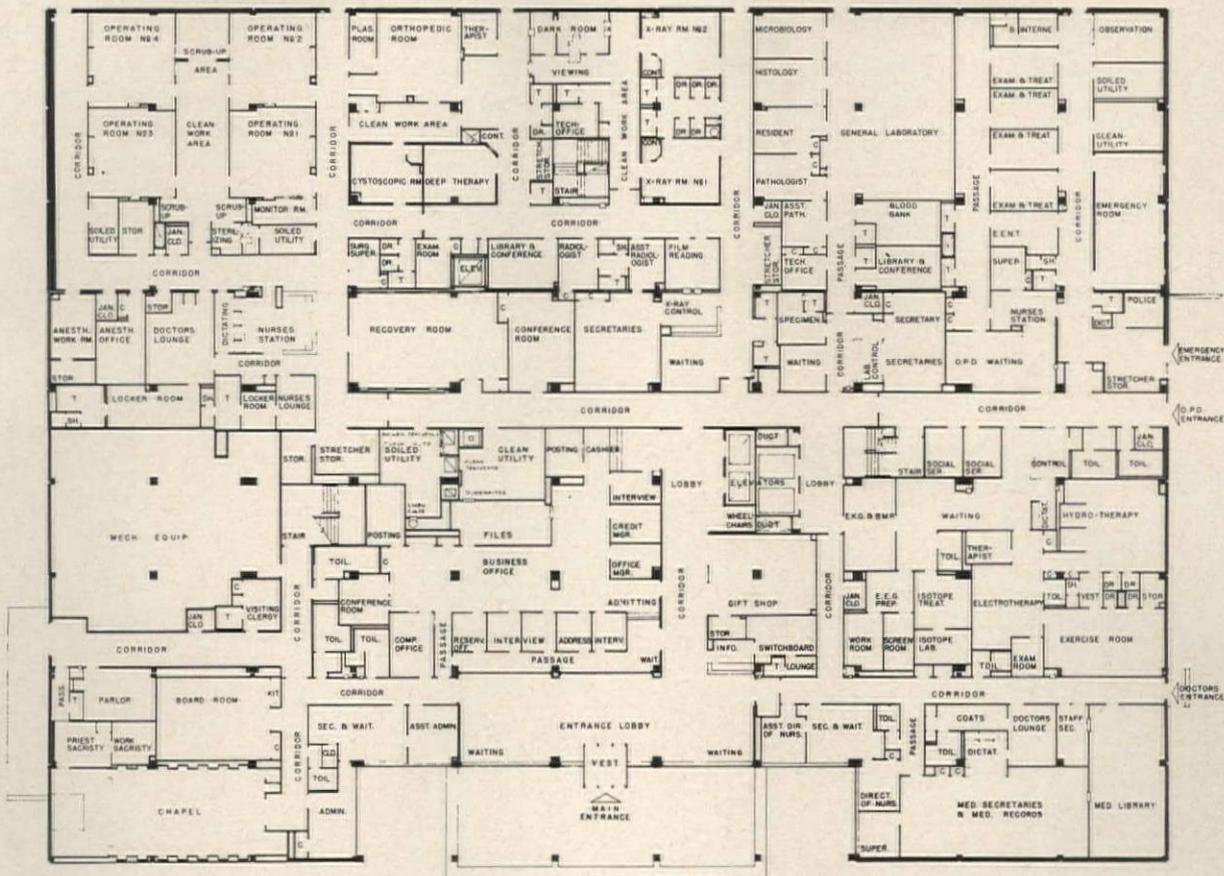
In the preparation of the master program for this hospital, four principles were followed: (1) advanced concepts for total patient care were incorporated into the facilities by functional planning starting with the patient's room; (2) labor-saving devices were utilized within a functional organization in order to reduce future operational expenses by making it possible to utilize the time of professional personnel in direct patient care; (3) educational and limited research facilities were provided in order that both activities can be vitally integrated parts in a balanced community health program provided by the hospital; (4) the plan was developed in such a way that it is both flexible and capable of expansion.

In application, these principles may be summarized as follows: in the hospital structure, all services have been developed with sufficient space to support a 100-bed addition; these additional beds will be provided on floors which have already been shelled-in or which are partially completed and are now serving temporary needs; all service areas can be expanded horizontally.

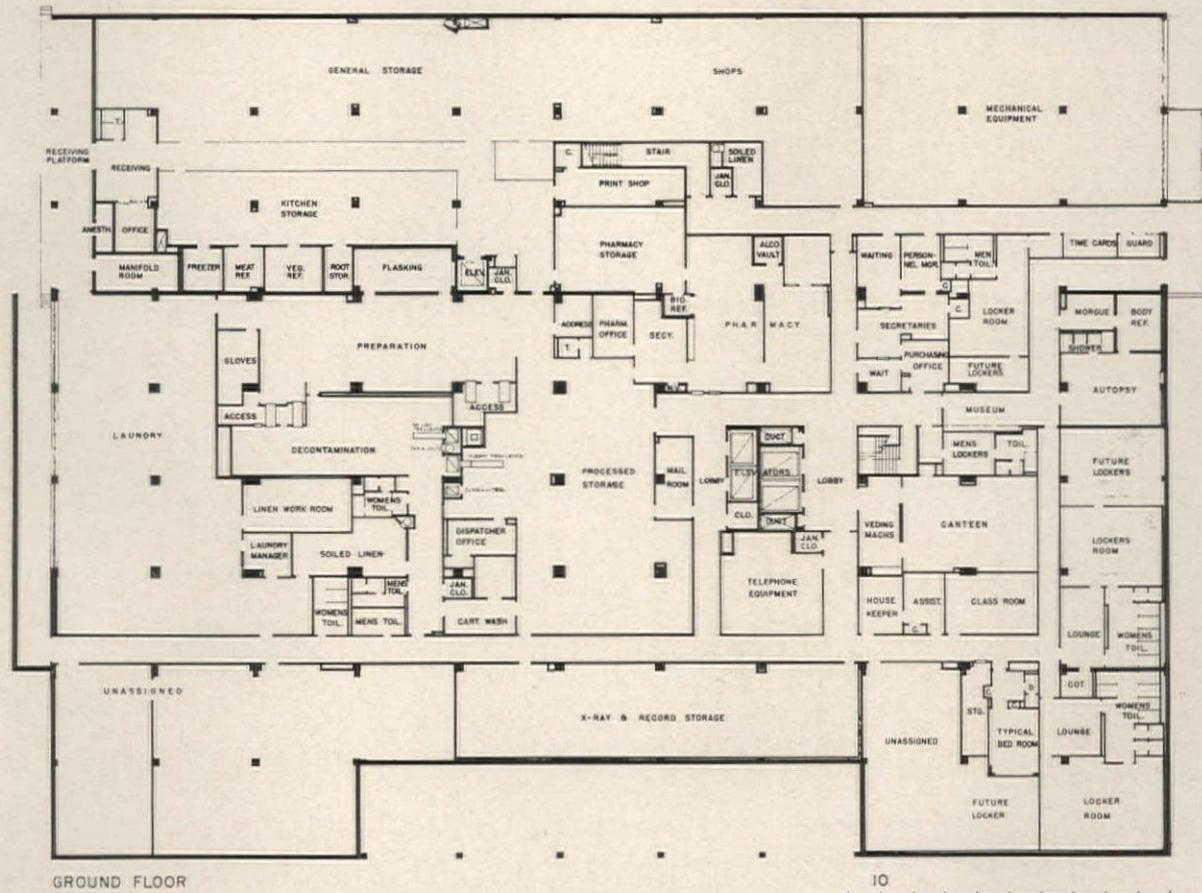
The first level of the hospital contains a supply service complex which centralizes all receiving, processing, storing, and issuing of all supplies for the entire hospital. As may be seen in the plan, this level contains some departments that heretofore may have been regarded as separate, and some new departments which are innovations. The pharmacy contains positions for pre-packaging and dispensing, and an office and research laboratory. Pneumatic tube outlets are located in the dispatch or issuing area and in the pharmacy.

The bulk storage area has an elevator which connects only with the kitchen located on the third level. The dispatch center is connected to all levels by an automatic-ejection vertical conveyor which delivers all pre-packaged items routinely, and on demand. The items transported are packaged in a standardized module of 16 by 22 inches with a maximum height of 18 inches and weighing 40 pounds. A separate vertical conveyor will return all soiled items except food trays, trash and soiled linen to the decontamination room. Food trays are returned to a central dishwashing area of the kitchen; trash empties into a trash chute which terminates in a receiving room which has an adjacent sorting area with incinerator. Soiled linen is dropped into a separate chute which empties directly into a receiving room adjacent to the laundry washing area. In addi-





FIRST FLOOR



GROUND FLOOR

10



Supplies are readied for dispersal in preparation area on first level



After preparation, supplies are sent to destinations from dispatch

Supplies are received on nursing and other floors in clean utility



tion, an auxiliary dumbwaiter connects all levels, primarily to take nourishment from the central kitchen to the patient floors; it may also be used to return clean supply trays and tote boxes from the clean supply cores on each floor to the dispatch center issue area.

Also located on the first level of the hospital are a special entrance for personnel, maintenance shops, canteen, housekeeping department, morgue, conference room, and a demonstration bedroom, which is a duplicate of a typical patient room.

As will be noted, service departments have all been grouped on this level to accommodate all purchasing, processing and distribution of supplies and to serve all of the hospital personnel. Patients are not directly served in any of these areas.

The second level, or main floor, of the hospital contains all ancillary services directly related to the admission, diagnosis and treatment of patients. The main, emergency, out-patient, and doctors' entrances are all to be found on this level. The information booth, switchboard, and admission offices will not have recurring traffic while the administrative suite, nursing service suite, medical records department and hospital library are intentionally located so as not to have unauthorized traffic. The direct patient care facilities of surgery, X-ray, laboratory, emergency-outpatient and special services, such as physical medicine and radioisotopes, are functionally related to service both in-patients and out-patients without confusion of patient, staff and visitor traffic patterns.

The emergency and out-patient entrances are located side-by-side and are served by a single administrative control and nurse station. These have individual traffic patterns. The emergency entrance opens directly upon the administrative control station. An uninterrupted traffic flow permits the patient to be taken immediately to a large four-bed emergency room, to a two-bed observation room, or to one of four examination and treatment rooms. The emergency and treatment rooms will also be utilized by the out-patient service on a scheduled basis. Their location in this area allows their full utilization and also their flexibility is facilitated in case of a disaster.

Immediately across from the out-patient waiting room, a number of services have been combined into a complex called "special services." One waiting-and-control area serves them all; this is convenient for both patients and physicians as well as for the hospital staff for efficient scheduling. Within this complex are the electrocardiogram suite, the radioisotopes suite, the physical medicine and rehabilitation department and the electroencephalogram suite.

The hospital laboratory, located next to the emergency and out-patient department, is divided into patient contact areas and work areas. This permits



Sterile supplies are stored in clean work area between surgeries



Food trays are assembled in kitchen, dispatched via conveyor



professional work to proceed without direct observation by patients. In the patient contact area, there is a specimen room and blood bank which are controlled by the receptionist who also oversees the department's private waiting room.

The laboratory is arranged so as to ensure an even flow of clinical work. Routine tests are run in a large open room which is separated into work areas by bench-high islands. All glass washing will be done in the decontaminating room on the first level. This permits more functional utilization of space in the laboratory as well as the more efficient clean-up possible with mechanical equipment.

The X-ray Department, with a private waiting room, is adjacent to a large room utilized for the departmental secretaries and film filing. Mechanized film files and the location of archives on the first level, containing all inactive records and films, reduce the space required. The control station is located to serve the physicians' film-viewing and reading room as well as the two radiologists' office which are contiguous. Initially, there are two X-ray rooms provided with accessibility to a private staff and supply corridor which leads directly into the dark-room furnished with automatic film processing equipment. Between the two diagnostic rooms there are six dressing booths and two toilets. This permits greater flexibility during the daily patient workload. The arrangement of the department permits the attending physician to consult films without interfering with the traffic of the departmental staff and patients. This department is also readily accessible to the emergency department.

The cystoscopic and orthopedic rooms are located midway between the surgical and radiological suite where they can be readily served by the personnel of both departments and yet be semi-independent in operation. In- and out-patient traffic is segregated.

The surgical suite is located in a far corner of the building where there is the least possibility of contaminating traffic. The entrance to the suite is controlled by an administrative station. Directly across from this administrative station is a large recovery room provided for all post-operative patients. Doctors' lounge and locker room are located so that doctors are able to change into surgical garb and enter directly into a clean work area where all clean sterile supplies are located as well as scrub-up sinks. Patients enter peripheral corridors and do not interfere with the flow of traffic of clean supplies or staff prior to entering or after leaving the operating room. There is a physical separation between clean and soiled supplies.

Located within the surgical suite is electronic monitoring equipment which will constantly record the bodily functions of each patient in an operating room. Closed-circuit television and intercommunication will keep anesthesiologists and surgeons informed as to patients' conditions.

Clean supply cores and soiled receiving rooms are located on this level and on all other levels above. Clean supply cores contain outlets for automatic ejection vertical supply conveyors; these are operated on a pre-selection basis from the issue area in the dispatch center located on the first level.

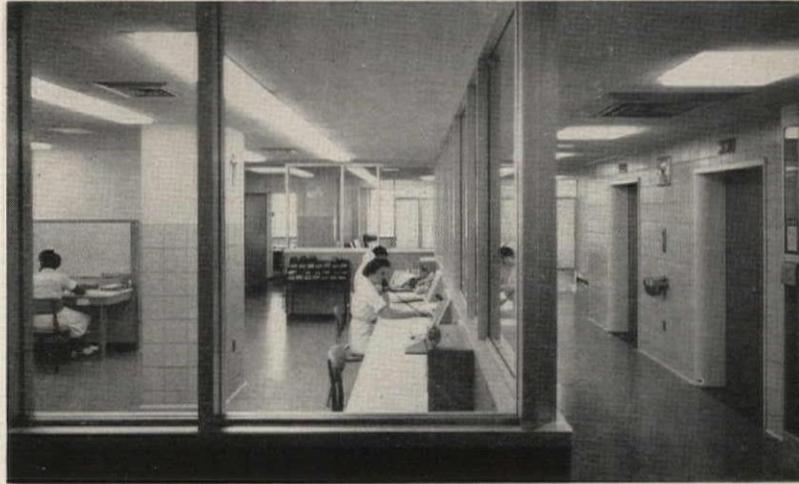
The third level is a secondary patient and public traffic area with a cafeteria, auditorium, private dining rooms and volunteer facilities.

The dietary department includes kitchen storage, preparation and central wash areas. The kitchen is connected to the receiving area on the first level by special hydraulic elevator. Distribution of food to patients is accomplished by a reversible vertical conveyor carrying pre-assembled trays from the kitchen to each of the nursing floors. This conveyor is augmented by a food service dumbwaiter, which will be used as an auxiliary to the conveyor during serving periods and for nourishment and special requests during off-hours. One central dishwashing area handles the cafeteria dishes and also food trays that have been returned from patients' rooms by reversing the vertical food conveyor.

The remaining upper levels have been developed into nursing floors. No major design distinction is made, on the nursing floors, between facilities for general medical-surgical, maternity, or pediatric orthopedic (adolescent) patients. This minimized construction costs and provides flexibility.

Typical patient floors contain convertible one- to two-patient bedrooms. Each bedroom is equipped with a service alcove containing a shower, toilet, washbasin-vanity counter, mirror, closet and a special supply unit. The supply unit is a double-door pass-through cabinet which permits routine restocking of clean supplies and removal of soiled supplies without entering patient rooms. From the service alcove within a patient's room, a nurse may remove the prepackaged supplies required to serve the patient from the clean side of the cabinet and place used materials in the other side of the cabinet. All material is regarded as contaminated and is placed in disposable plastic bags which can be sealed and later opened in the decontamination room or placed directly into the washing machines in the laundry. This procedure helps protect patients from the hazards of cross-infection. With this innovation, it is estimated that nurses will be able to spend 35 to 50 per cent more of their professional time in direct patient care. For privacy, the service alcove can be closed off from the rest of the room by a folding partition.

At the passenger elevator lobby on each floor is an administrative control and supply station, accessible for information. Next to the nurses' large, divided charting space is a special doctors' charting-dictation room. In addition, there is a medication room, supervisor's office, staff toilet facilities, a clean supply core and a soiled receiving room.



Nurses' stations are opposite elevators on all nursing floors



Clean supplies put in one side of cabinet, soiled removed from other



Bedroom: clean supplies obtained, soiled placed



Sheedy & Long photos

NEW TECHNOLOGY INCLUDES COBALT-60, AND SUPER-CLEAN SURGERIES

*South Building,
Hollywood Presbyterian Hospital,
Los Angeles, California*

ASSOCIATED ARCHITECTS & ENGINEERS:
Faxon, Gruys & Saylor—Hunter and Benedict

MECHANICAL ENGINEERS:
Levine & McCann

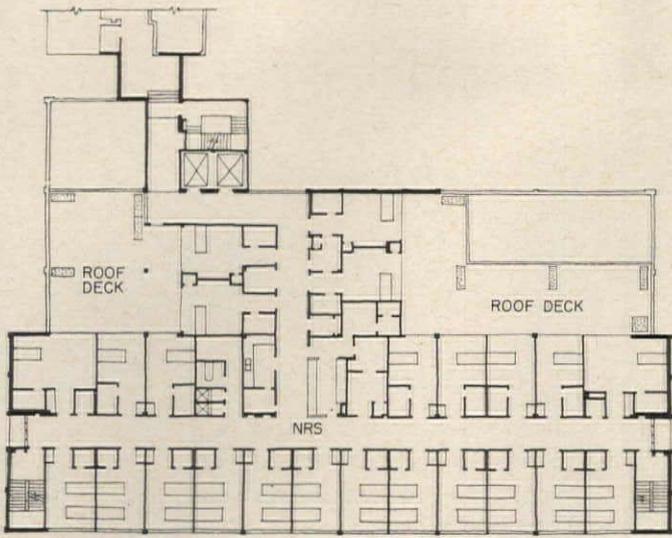
ELECTRICAL ENGINEER:
John E. Silver

GENERAL CONTRACTOR:
Myers Brothers

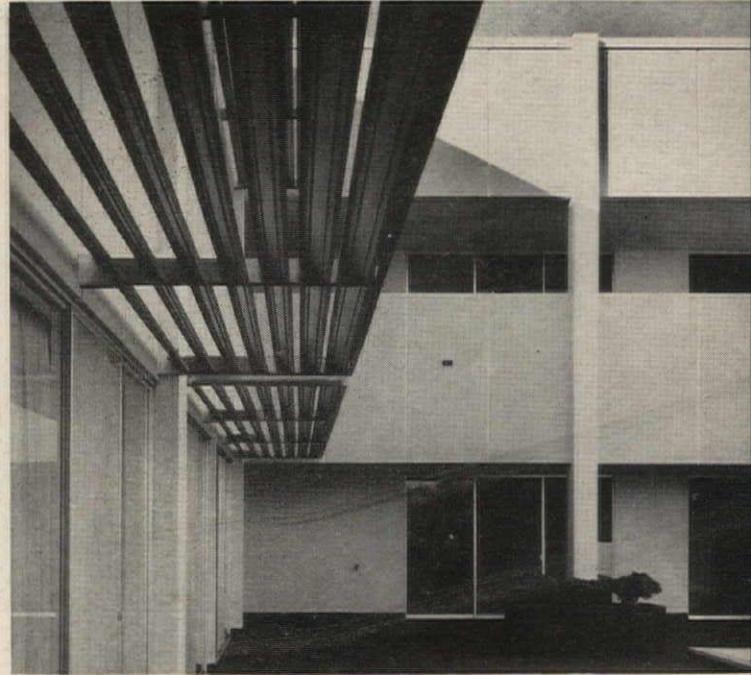
Keeping up with the latest developments in medical technology is apt to test the mettle of hospital architects these days. Yet the architects of this 72-bed addition have managed to provide its patients with at least three of the newer advances—a cobalt-60 unit, super-clean surgeries, and an audio-visual paging and intercom system with television sets in all patient rooms.

The first level of the hospital is almost entirely devoted to radiographic and X-ray therapy facilities. The cobalt-60 unit is located in a 25 by 30 foot room in one corner of this floor. This room is surrounded by 40-inch-thick concrete walls and has a 24-inch-thick concrete ceiling. As may be seen in the plan, walls were placed to control radiation scatter. A special control system prevents the room from being entered while the unit is in operation, but 8-inch leaded glass windows allow hospital personnel to view activities within the room.

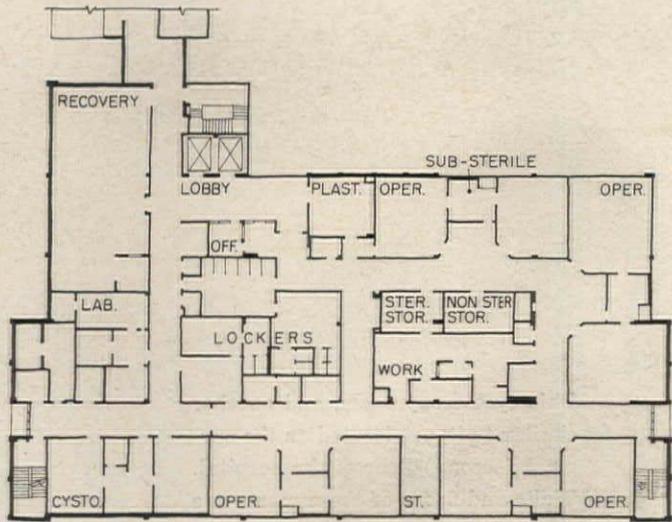
The surgical facilities, on the second level, are closed to visitors in order to allow the maintenance of high cleanliness standards. The third and fourth levels are devoted to two 36-bed nursing units. The building structure is steel frame with architectural concrete and glazed brick exterior walls. Interior partitions are movable metal or fixed plaster. Windows are aluminum, flooring vinyl-asbestos, ceilings plastered or acoustical tile.



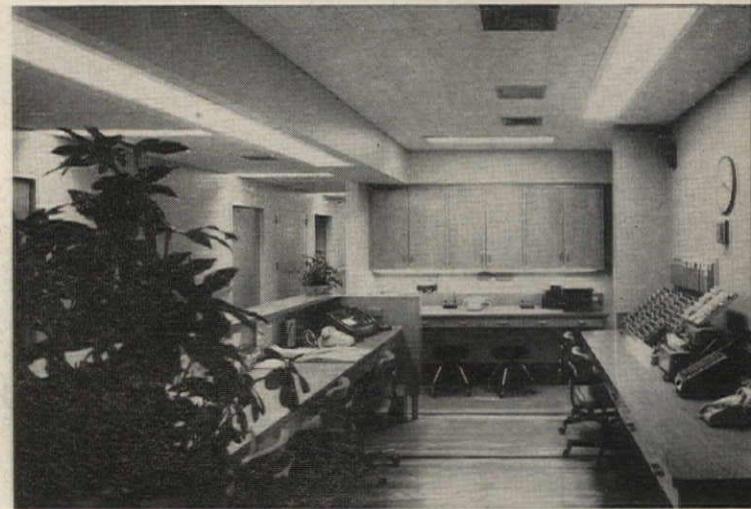
THIRD FLOOR



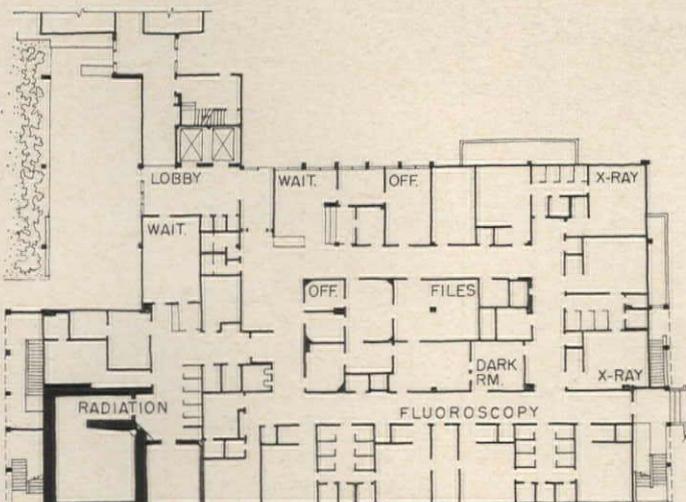
Aluminum sun controls protect all windows in hospital



SECOND FLOOR



Nurses' stations are centrally located on each nursing floor



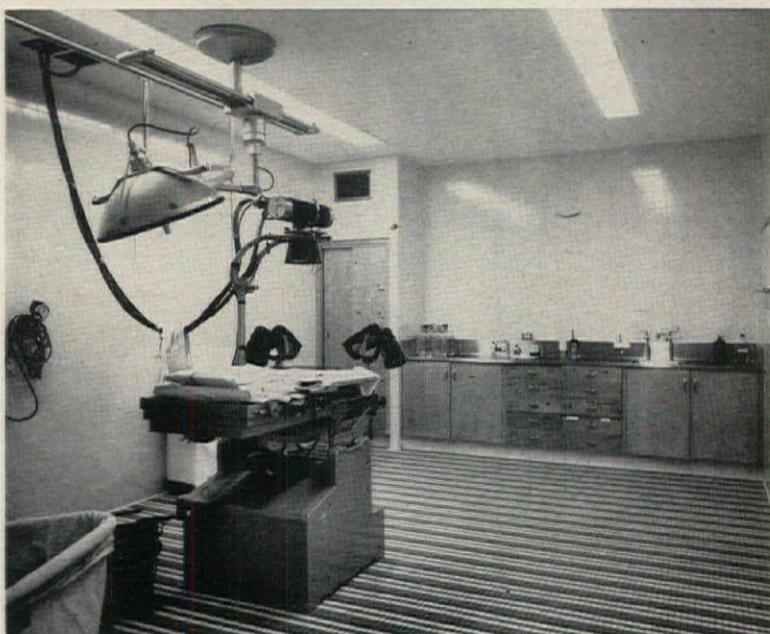
FIRST FLOOR



Typical bedrooms have television paging and nurse-call



The cobalt-60 unit is located in a room on ground floor, specially arranged and protected to lessen the hazards of radiation scatter. Walls are plaster; floors, vinyl tile



This cystoscopy room, and another similar to it, are located on the surgical (second) floor of the hospital. Walls and floors of these rooms are finished with ceramic tile



The second floor contains eight operating rooms, arranged in pairs, with sub-sterile supply and scrub rooms between. Walls are ceramic tile, and floors are conductive tile



PROGRESSIVE PATIENT CARE— ALL FIVE ELEMENTS IN ONE HOSPITAL

*Holy Family Hospital,
Atlanta, Georgia*

ARCHITECTS:

Aeck Associates

Chastain & Tindel

STRUCTURAL ENGINEERS:

MECHANICAL ENGINEERS:

Lazenby & Borun

ELECTRICAL ENGINEER:

C. F. Howe

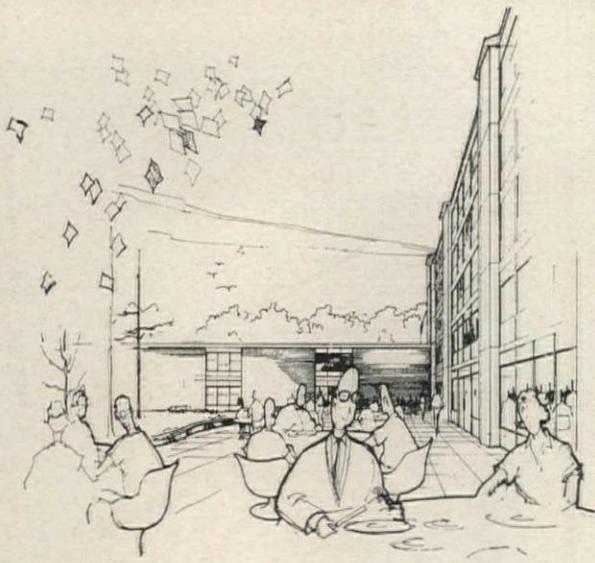
GENERAL CONTRACTOR:

Beers Construction Co.

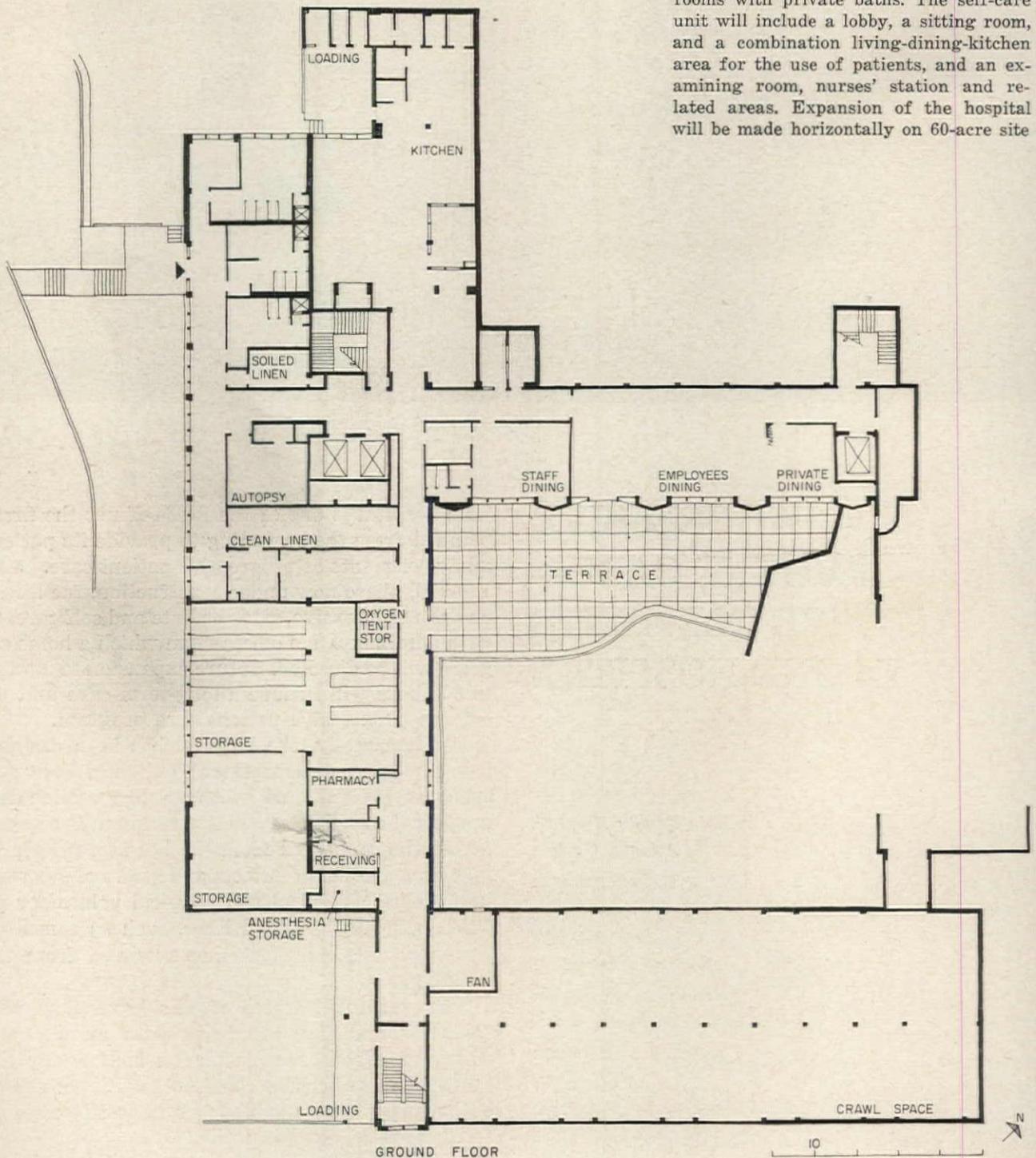
This hospital is one of the first—if not the first—to be planned from the beginning to provide its patients with all five elements of progressive patient care. In the first, 128-bed, phase now under construction, facilities are included for intensive, intermediate and self care, together with administrative offices from which a home care program will be directed. Future expansion to a total of 250 to 300 beds will include a long-term care unit to round out the progressive patient care program.

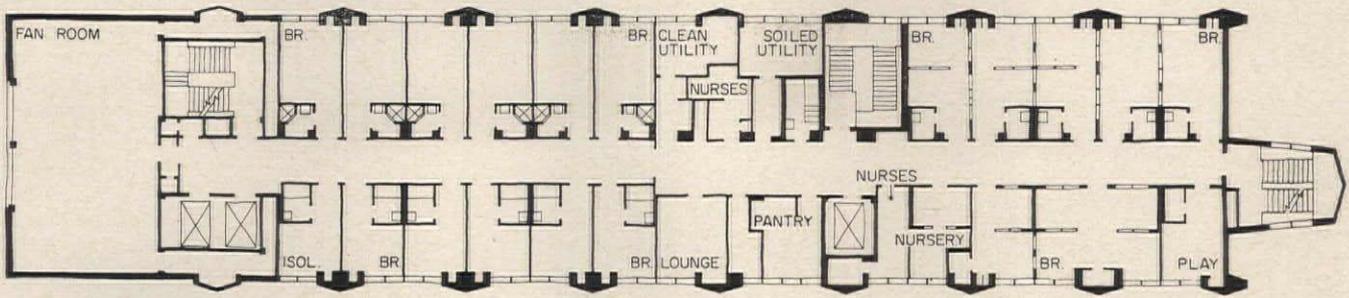
Fundamentally, the hospital has been designed as a low, one-story and basement building, built around a spacious courtyard, with a three-story section devoted to nursing floors. The obstetrics pavilion has been located across the courtyard from the hospital proper in order to gain what the architects and staff believe will be important psychological and physical values for patients. Other units to be added later, such as a medical office wing, will also be somewhat removed from the main building.

The structural frame of this hospital is reinforced concrete; exteriors are brick with aluminum curtain walls. Partitions are plaster on hollow clay tile, with movable metal in the office areas. Floors are concrete with composition tile floor or carpeting; ceilings are finished with acoustical tile.

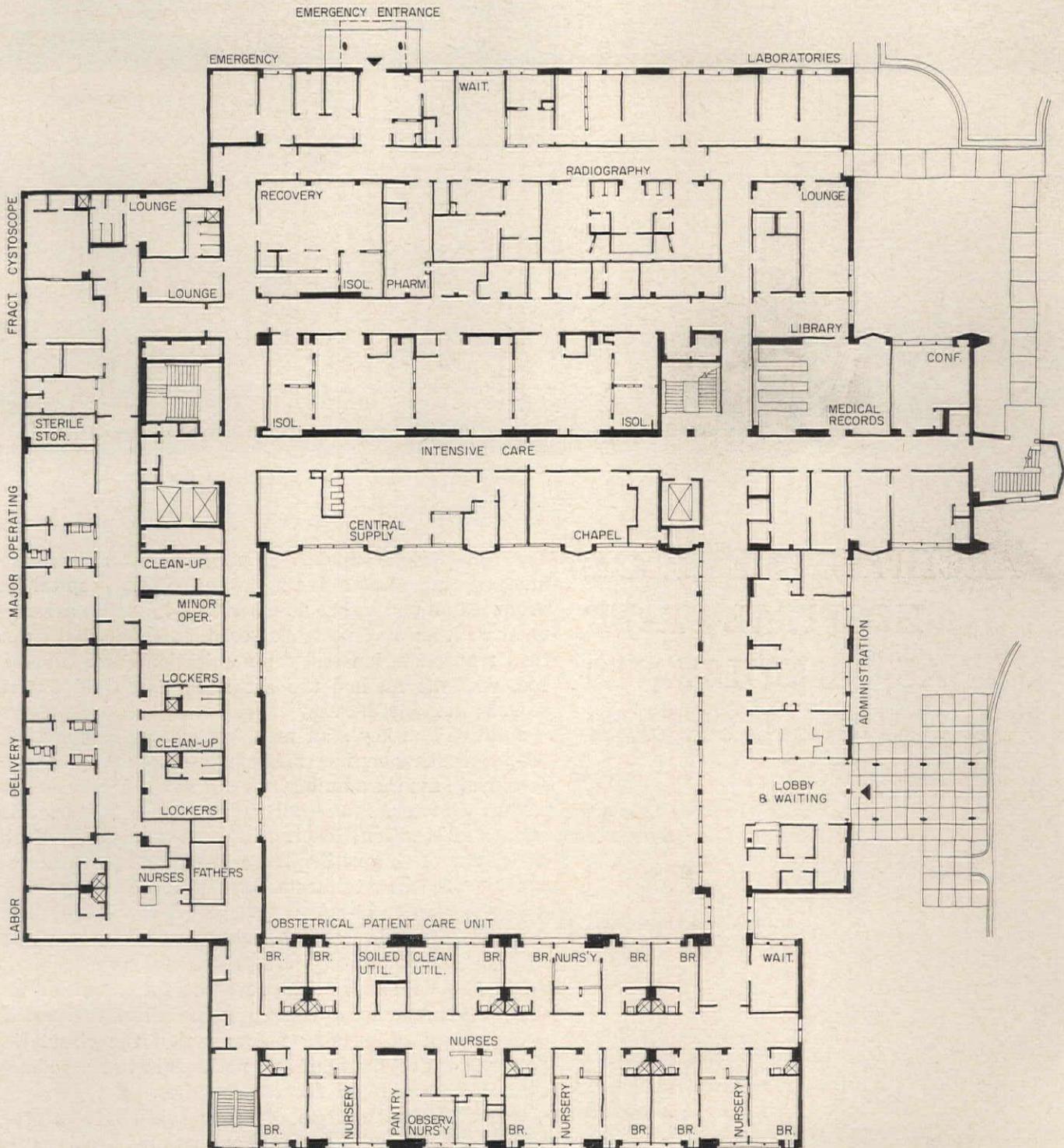


As shown in the sketch (left), the large courtyard of the hospital will be developed for the use of patients and staff. The basement of the hospital (plan below) is only partially excavated since only a few functions such as staff dining and kitchen, morgue, and storage are to be housed there. On the main floor (across-page, bottom) are located all of the major surgical-medical areas of the hospital, including emergency, surgery, obstetrics, laboratories and administration; and in addition three six-bed intensive care nursing units and the 16-bed obstetrical nursing pavilion. Upper floors of the hospital contain 50 intermediate care beds (50 per cent singles), a 24-bed pediatrics unit, and 20 single self-care bedrooms with private baths. The self-care unit will include a lobby, a sitting room, and a combination living-dining-kitchen area for the use of patients, and an examining room, nurses' station and related areas. Expansion of the hospital will be made horizontally on 60-acre site

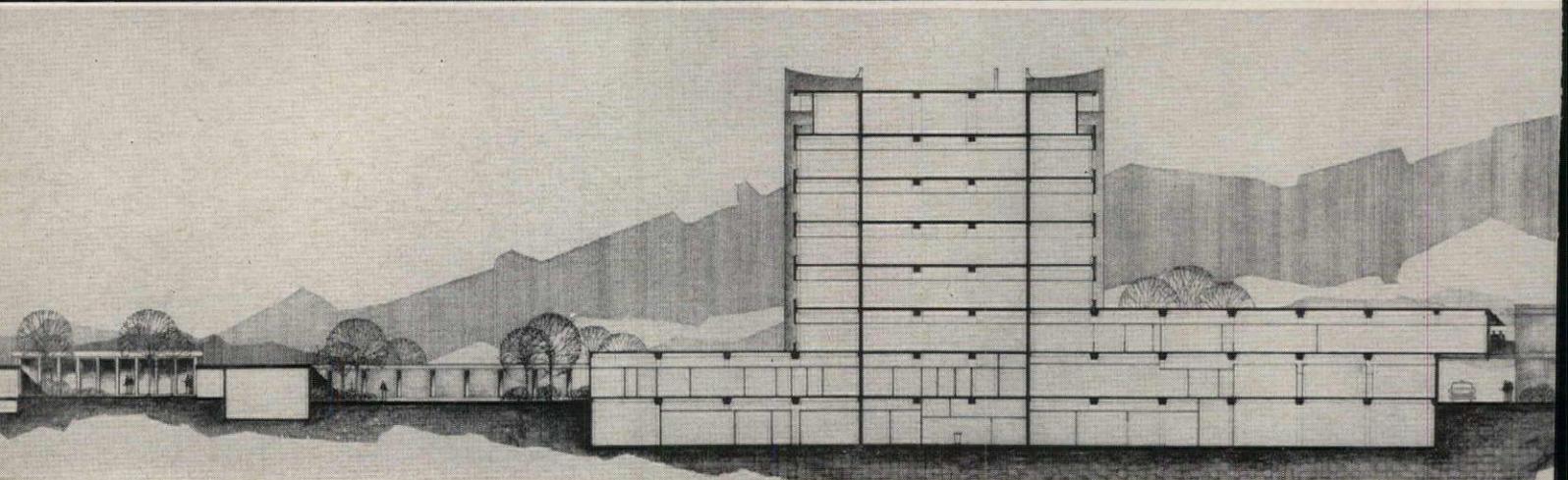
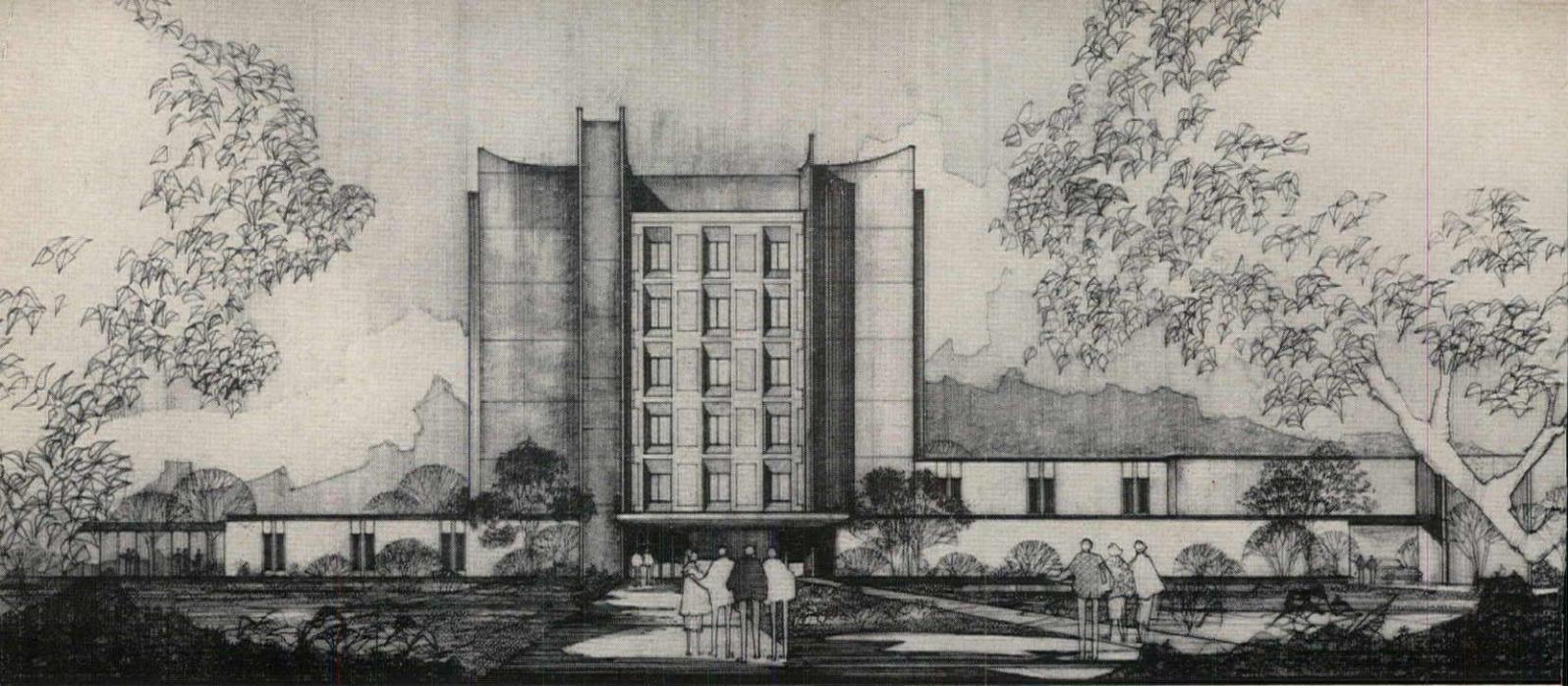




SECOND FLOOR (3rd & 4th SIMILAR)



FIRST FLOOR



ARCHITECTS EMPLOY HOSPITAL STAFF AS CONSULTANTS FOR UNUSUAL DESIGN

*Good Samaritan Hospital,
Santa Clara County, California*

ARCHITECTS:

Anshen & Allen

STRUCTURAL ENGINEERS:

Gould & Degenkolb

MECHANICAL ENGINEERS:

Eagleson Engineers

ELECTRICAL ENGINEER:

Charles Krieger

FOUNDATION ENGINEERS:

Brewer & Associates

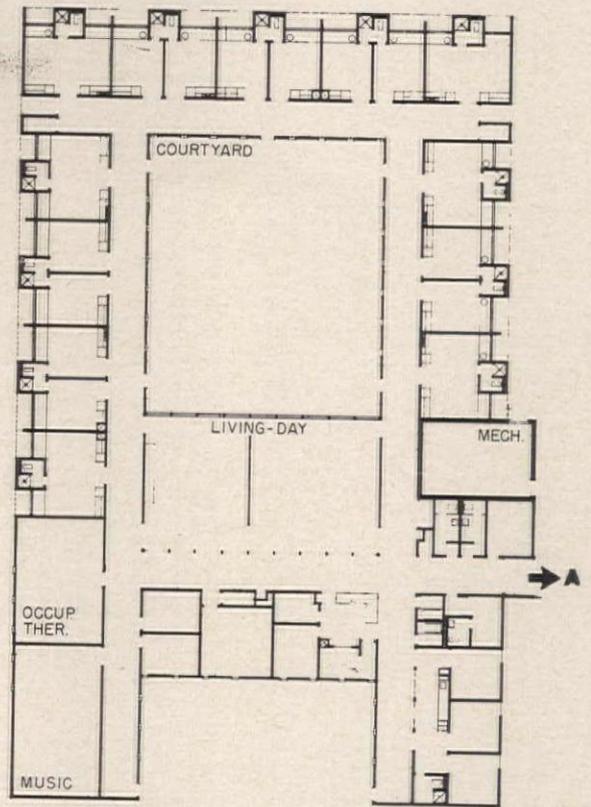
ACOUSTICAL ENGINEER:

Kenward S. Oliphant

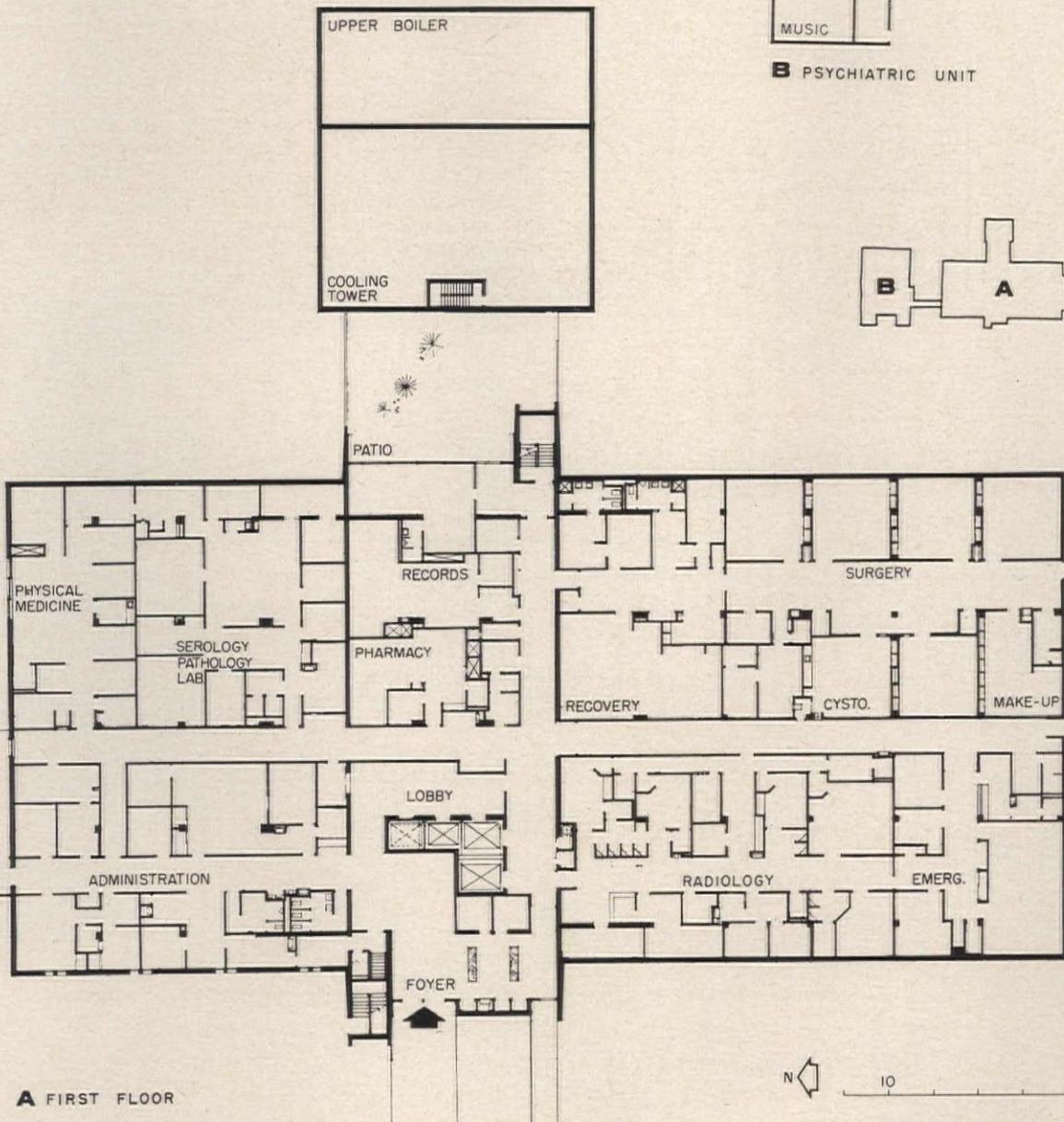
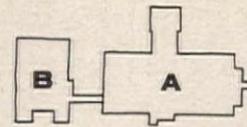
The considerable amount of programing research and analysis that went into the design of this hospital has produced an unusual basic scheme—a high-rise arrangement with nursing units clustered closely around a vertical transportation and communication core. Unusual, too, was the method the architects employed for research; not only did they consult with the architectural committee and key staff members of this hospital, and with consulting engineers, but in addition, they engaged as consultants the administrator, nursing supervisor, assistant director, industrial engineer, and dietary consultant of Mt. Zion Hospital in San Francisco. With the assistance of this rather large group of knowledgeable consultants, the architects have produced an efficient design for an eight-story, 200-bed general hospital, expandible to 400 beds by the addition of four stories to the tower. In addition, the hospital will have 25 intensive psychiatric beds, with provisions for expansion to a total of 50. Another advantage gained from the vertical arrangement of nursing floors is that the circulation patterns of doctors, staff and patients have been almost completely separated from each other.

The structural system of the hospital is reinforced concrete frame, with textured and painted architectural concrete exterior walls.

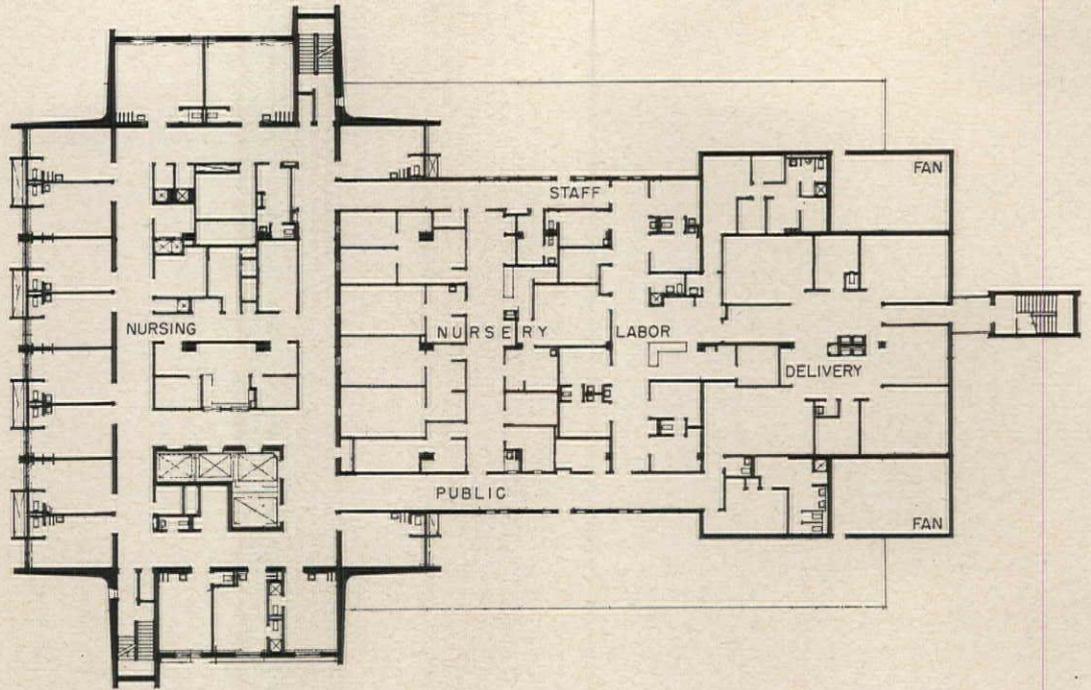
On the main floor are located most of the major departments including surgery, emergency, radiology, laboratories and administration. A covered passageway, on this level, connects the main building with the separate one-story psychiatric intensive care unit. Separate entrances are provided on this level for public and patients (front side), staff (rear side) and emergency (right side). There is also a separate entrance on the front side of the building for patients who, though not emergency cases, are non-ambulatory. Supplies coming into the hospital are delivered on the floor below. Vertical transportation of people is via three elevators; a fourth is to be added later



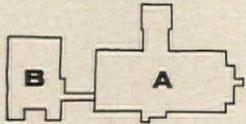
B PSYCHIATRIC UNIT



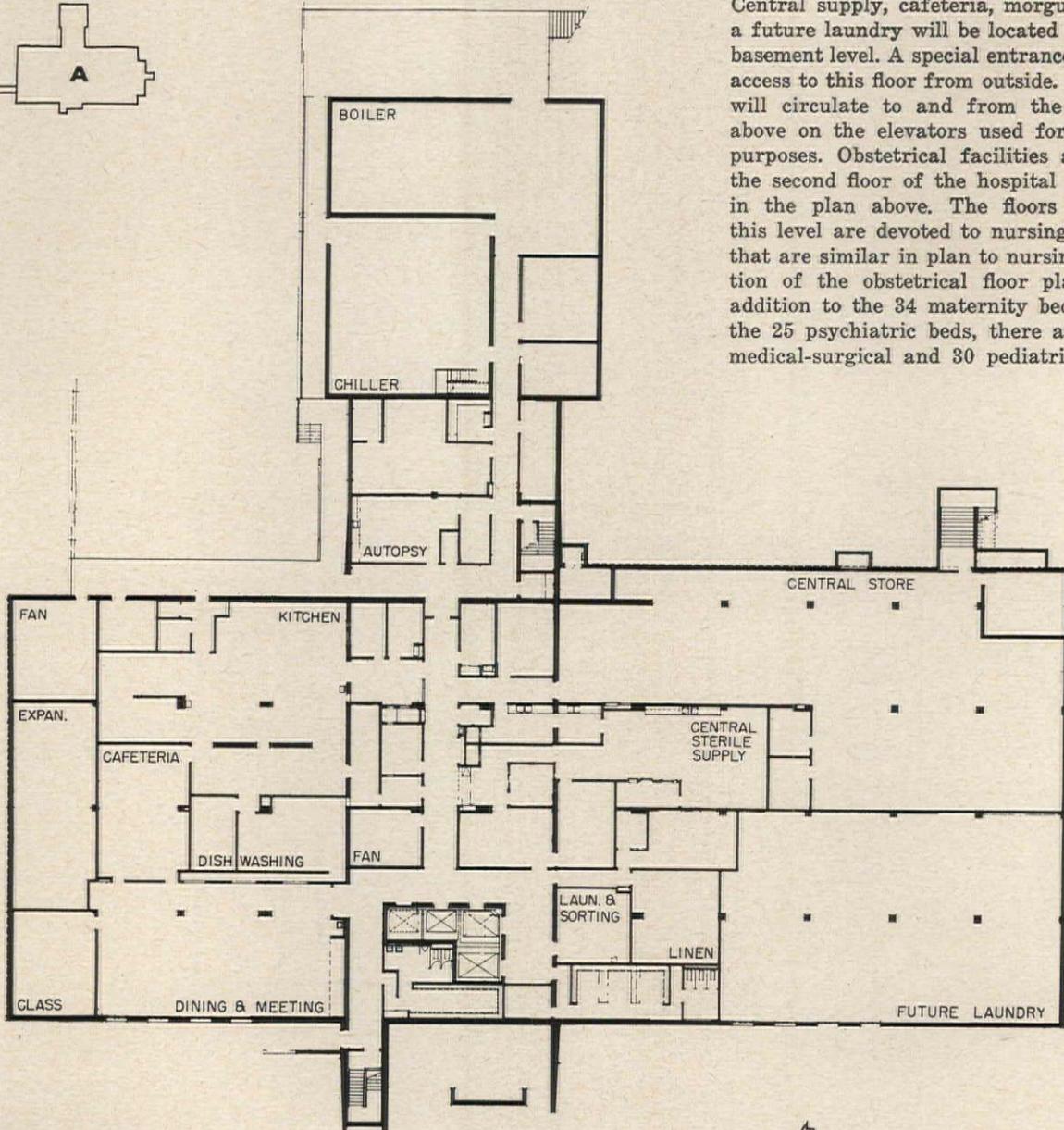
A FIRST FLOOR



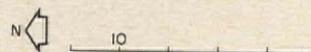
A SECOND FLOOR



Central supply, cafeteria, morgue, and a future laundry will be located on the basement level. A special entrance gives access to this floor from outside. Stores will circulate to and from the floors above on the elevators used for other purposes. Obstetrical facilities are on the second floor of the hospital shown in the plan above. The floors above this level are devoted to nursing units that are similar in plan to nursing units section of the obstetrical floor plan. In addition to the 34 maternity beds and the 25 psychiatric beds, there are 133 medical-surgical and 30 pediatric beds



A BASEMENT





Stewart Sorey Photos

REJUVENATION AND NEW GROWTH RESTORE USEFULNESS TO AN OLDER HOSPITAL

*Parkview Episcopal Hospital,
Pueblo, Colorado*

ARCHITECTS:
Fisher and Davis

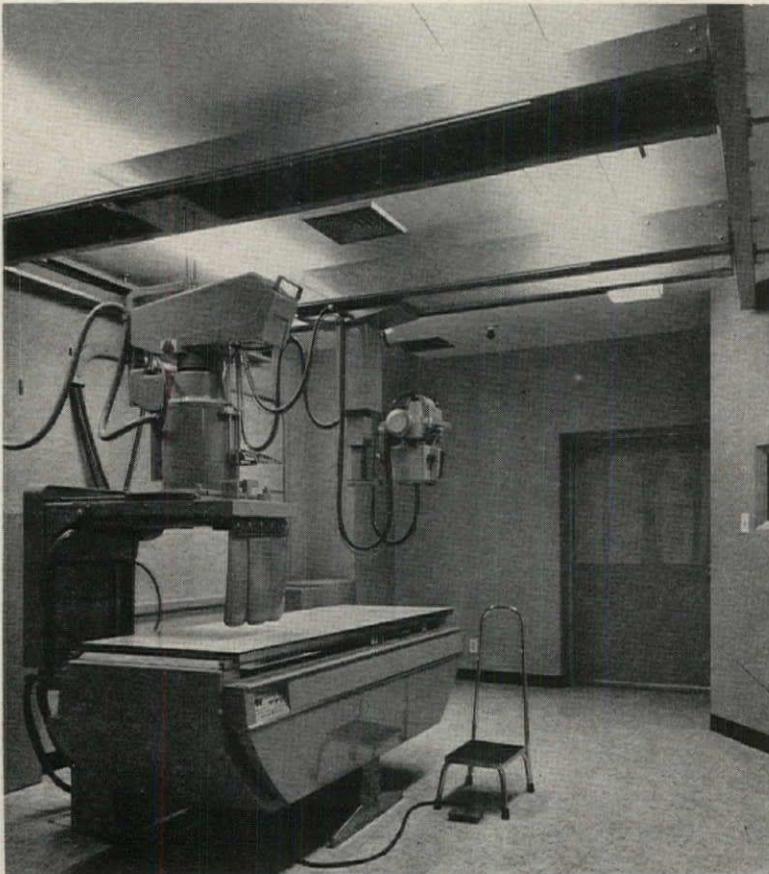
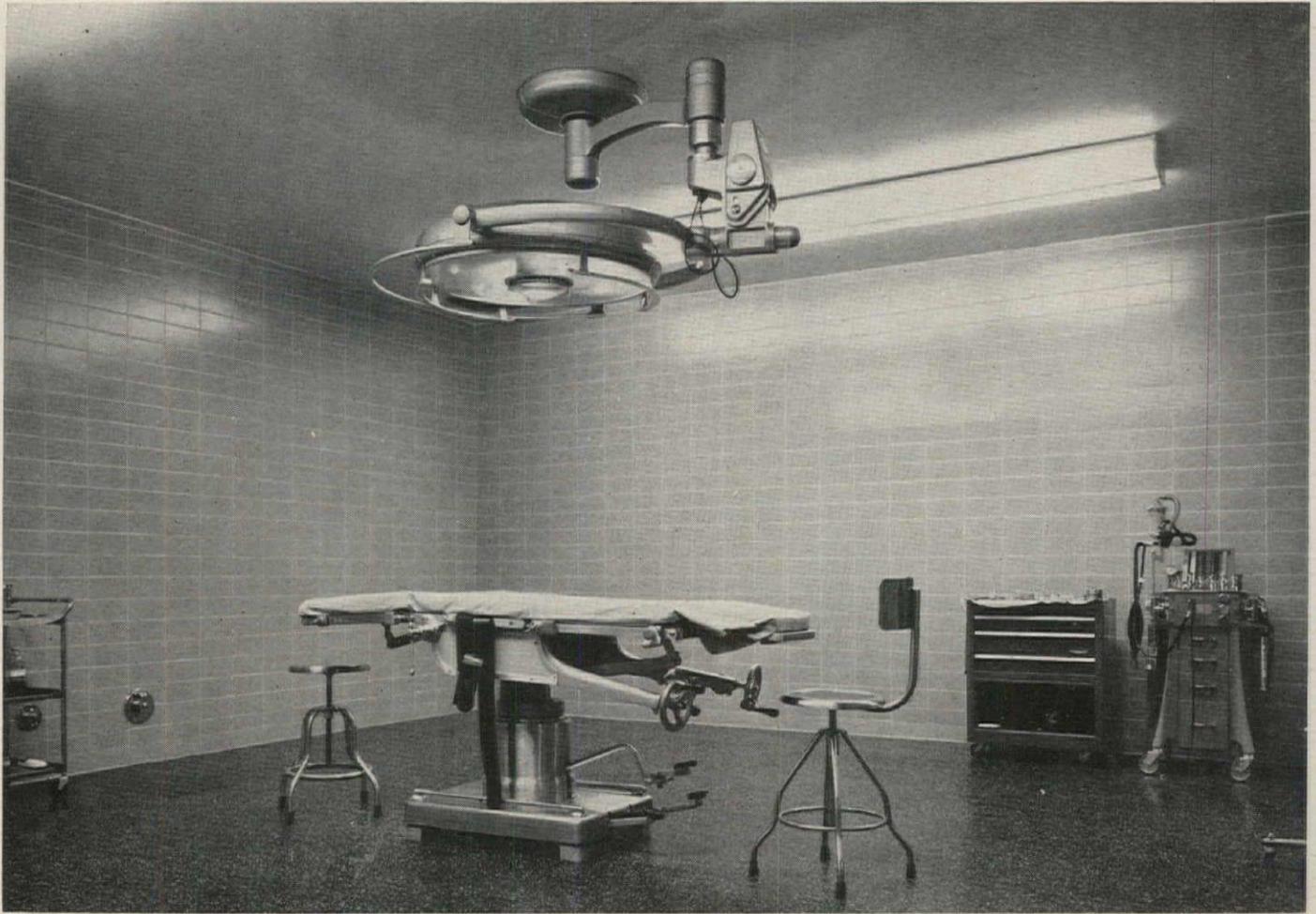
STRUCTURAL ENGINEERS:
Bierbach & Horton

MECHANICAL ENGINEERS:
Marshall & Johnson

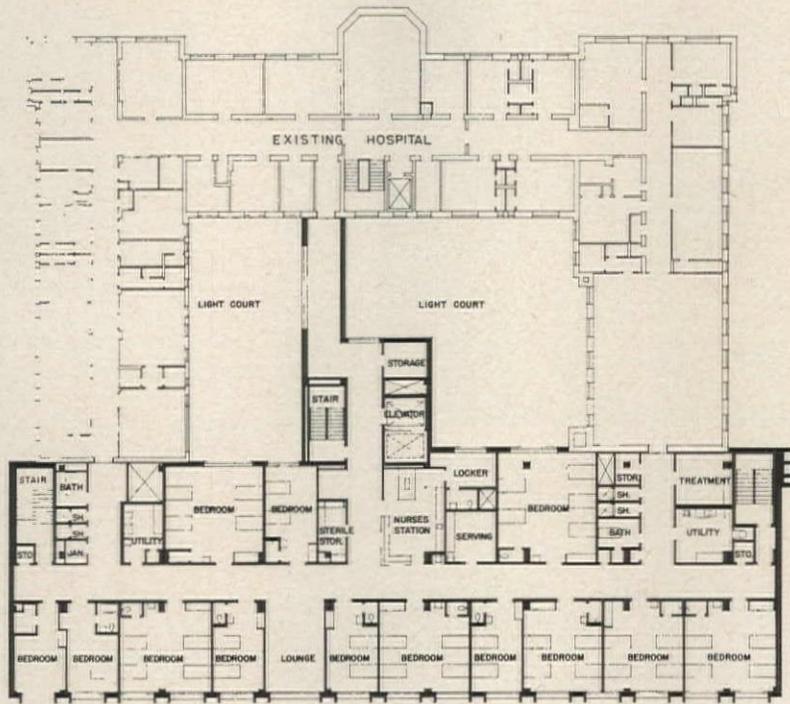
ELECTRICAL ENGINEERS:
Swanson & Rink

More times than not, it is less expensive—and much harder—to renovate and bring up to date an older hospital than it is to build a completely new one. Such was the case in this hospital. Not so common is the opportunity to come up with an end result that is not simply another remodeled hospital, but one that is rejuvenated and planned for further growth. Yet this also is true of the hospital shown here.

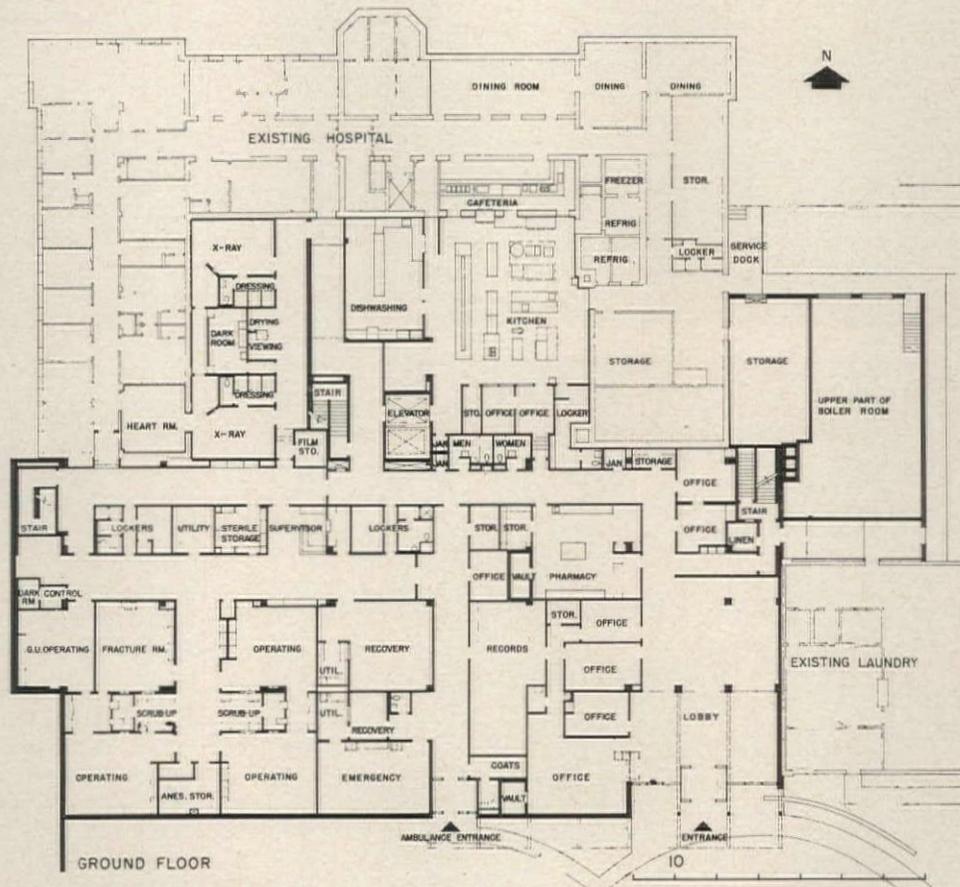
The architects spent a considerable amount of time studying the existing structure, its facilities, and their relationships to the projected renovations and additions. The result of this is a three-story addition, containing 72 beds, together with completely new surgical suite, emergency facilities, kitchen and X-ray. Provisions have been made for the addition of approximately 100 new beds in three nursing floors to be built above the new section of the hospital. Much of the older structure was rehabilitated to bring it up to the level of quality and efficiency of the new portion. One particularly difficult problem involved planning the new section around a recently completed laundry building that would have been expensive to tear down and replace. How this was handled is shown, on the right, in the illustration above and in the ground floor plan, page 201.



A typical operating room (*above*) and X-ray room (*left*), in the new section of this hospital give some indication of the handling of the new work. Older facilities were renovated to bring them up to the level of quality of the new work, so that the entire hospital is now pleasant and efficient. In ground floor plan (*across-page*) may be seen the relationship of the grade-level front entrance to the hospital proper. This level, now the main floor, was formerly the basement level of the old hospital. Before the addition was made, the main entrance was on the other side of the older building on the level above this, creating the hazard and nuisance of exterior stairs to the lobby and admissions office. Another addition, shown in ground floor plan, is boiler room for entire building



TYPICAL FLOOR



GROUND FLOOR



The new wing of this hospital has one centrally-located nurses' station on each nursing floor. From here, nurses care for 36 patients per floor. Storage for sterile supplies is directly across the corridor from nurses station, adjacent to storage



Most of the beds in the new hospital wing are in four-bed patient rooms; there are also four semi-private, and two private, rooms per floor. The last-named are similar to the example shown at left. All have large windows and toilets; private rooms also have individual bathtubs



This large recovery room is located on the surgical corridor, on the main floor of the new wing. A smaller emergency recovery room is adjacent, but separate from this room. Utility rooms of both recovery areas are backed-up for economy in their plumbing installation

Architectural Engineering

A British View of Housing Components

Factory-made housing components have aroused considerable interest in Great Britain. One reason is that construction time for large multi-story apartment buildings has been cut to one-third of that of traditional methods. In a recent paper given before the Cement and Concrete Association and reported in *The Architects' Journal*, Cleeve Barr, chief architect, Ministry of Housing and Local Government, cited techniques he saw in Scandinavia which he regarded as important harbingers. In Malmö, Sweden, for example, the Skanska Cement-gjuteriet Co. produces complete bathroom-kitchen units with floors, ceilings, walls, kitchen equipment, bathroom plumbing and even boiler and piping. This unit, called a "hjarat" or "heart" unit, weighs 10 tons and when set in place on pad foundations costs about 25 per cent of the total cost of the house.

A prerequisite to a wider interchange of components for which architects can build up a wide vocabulary of plan forms capable of being bid competitively, Barr states, is a common approach to standardization and dimensional coordination. For example in Scandinavia, floor-to-floor heights for apartment buildings have long been standardized. It has been possible, therefore, for the precast concrete industry to produce and stock standard concrete staircase flights in polished terrazzo.

Concerning design possibilities, Barr points out that ". . . good architects are anxious to discover the legitimate disciplines of a given technique, to work within it and fully exploit it, both planning-wise and for esthetic ends." While variety in texture and color for exterior wall materials is essential, it is no substitute, Barr asserts, for varying the plane, proportion and entire character of the wall itself.

"Underground" Models Simulate Effects of Nuclear Blast

More and more interest is being evinced in the use of models of building structures for determining their behavior under load. Now scientists at Iowa State University are employing models for studying the effect of shock waves on underground structures generated by a surface explosion, such as a nuclear blast. Using simple models buried in sand, the scientists drop weights on the sand and measure the effect of shock waves by means of a strain gage attached to the inner surface of the structure. For models the scientists are using various sizes of cylinders. The results of these model tests will be tested against much larger systems at Kirkland Air Force Base in New Mexico.

Environmental Factors in Survival Shelters

"Symposium on Survival Shelters," a collection of technical papers on environmental factors involved in fallout shelters presented before the American Society of Heating, Refrigerating and Air-Conditioning Engineers annual meeting last June, has now been published by the Society at \$1.50 per copy. Topics covered include: (1) tolerance limits of people to survive heat and cold for extended periods of time; (2) natural ventilation for maintaining tolerable conditions; (3) hazards of fire; (4) problem of air filtration; (5) toxic gas protection and odor control. Concluding the publication is a comprehensive bibliography.

Standards for Plastic Pipe

Standards for pressure-rated plastic pipe are now being considered by industry for adoption, according to the Commodity Standards Division, Office of Technical Services, U. S. Department of Commerce. The standards include criteria for classifying the materials used, nomenclature, requirements and methods of test, workmanship, dimensions, pressure ratings, chemical requirements and extrusion quality. The standards are based on proposals by the Thermoplastic Pipe Division of the Society of the Plastics Industry, Inc.

This Month's AE Section

OPERATING ROOM VENTILATION EVALUATED, page 204. *HIGH-STRENGTH STEEL "PRESTRESSES" PLEATED ROOF*, page 209. *GLASS SCREEN SHIELDS GLASS WALL FROM SUN*, page 210. *LIGHTWEIGHT PARTITIONS CUT SCHOOL COSTS*, page 212. *BUILDING COMPONENTS: A Guide to Stainless Steel Finishes*, page 217. *Products*, page 219, *Literature*, page 220.

OPERATING ROOM VENTILATION EVALUATED

The less air is churned up, the better its hygienic quality. But even when room turbulence is minimized, bacteria can be carried considerable distances from their source

By T. W. Kethley, W. B. Cown and E. L. Fincher,
Engineering Experiment Station, Georgia Institute of Technology

Standard ventilation procedures employed most commonly in operating rooms in the United States¹ have been evaluated recently at Georgia Institute of Technology on the basis of relative hygienic quality.

Purpose of the research was to determine to what degree air flow of ventilation systems acts as a transporter of bacterial particles. Systems varied from a directed stream, issuing from a comparatively small inlet, to a slower piston-like movement from a number of inlets.

The study was conducted in a simulated operating room, 12 by 16 ft in area and 10 ft high,² shown in Figure 1 and Figure 2. This research

facility was equipped with three different ventilation systems to cover the range of those currently being used. In order to simulate bacteria that could emanate from personnel,³ an atomizer stationed at position "X" on the plan produced an aerial suspension of a known number of bacterial particles of known size.

Four major aspects of ventilation were considered in the study: (1) ventilation effectiveness at various locations in the room; (2) ventilation effectiveness in the area of the surgical table; (3) the rate of particles settling at various locations in the room; and (4) the distance particles might be carried beyond their source by air movement.

Ventilation systems which produce the lowest turbulences (churn up the air less) have greater ventilation effectiveness, and deposit fewer particles than those having high turbulences. But even "draft-free" systems were capable of transporting bacterial particles for horizontal distances

of at least 8 ft. (Ventilation rates varied from 10 to 30 air changes per hour.)

While comparisons of various systems can be made based on relative aerial concentrations of particles, the deposition of particles, and the distances they move before dropping out, it is impossible to predict whether or not a reduction in numbers of particles would be accompanied by a reduction in wound infections. The reason why this cannot be foretold is that for the operating room we do not know the ineffective dose of airborne bacteria.

The three basic types of air supply systems studied included: (1) *end-wall grille* (air directed either straight out or down 45 degrees); (2) *single central ceiling diffuser* (air directed either in a flat, horizontal pattern, or down in a narrow vertical pattern); (3) *perforated ceiling panels* (two rows of five panels, spaced 3 ft apart, or three rows of five panels, spaced 1 ft apart; each

T. W. KETHLEY is head, Bioengineering Branch; W. B. COWN is research assistant; E. L. FINCHER is research assistant professor of applied biology. This study was supported in part by research grants from the Institute of Allergy and Infectious Diseases, National Institutes of Health, and the Division of Occupational Health, U. S. Public Health Service.

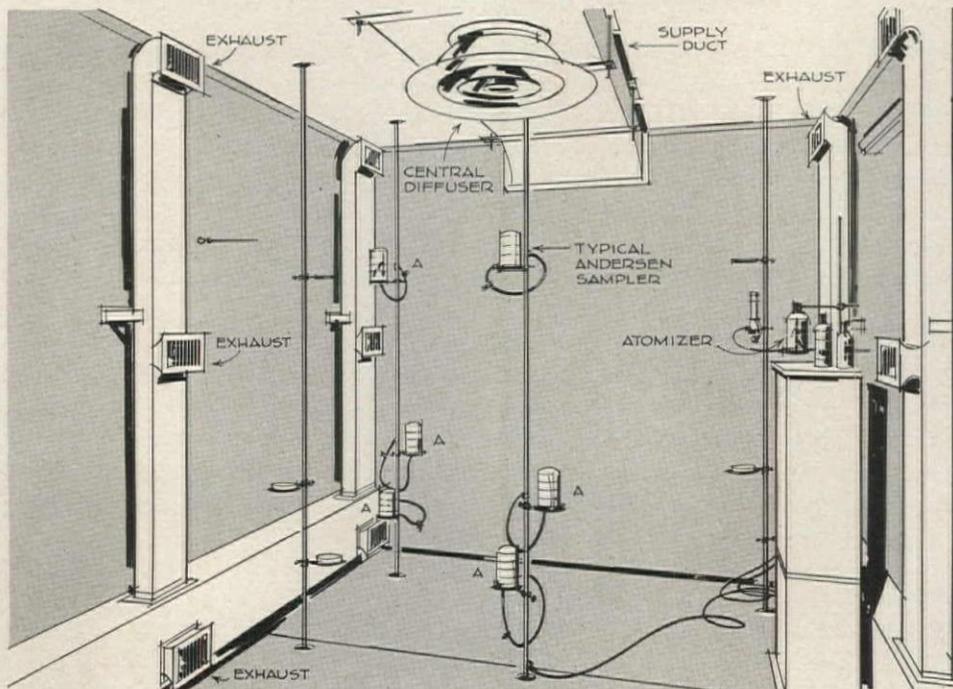


Figure 1: Experimental operating room showing ventilation and sampling apparatus

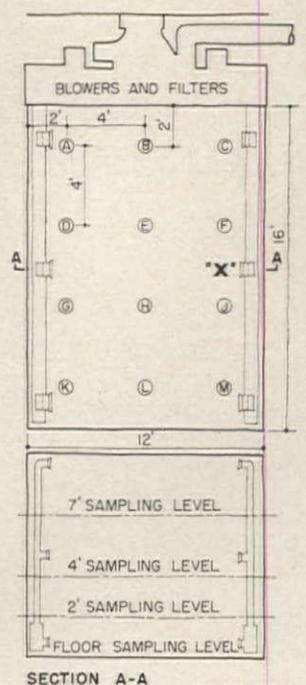


Figure 2: Sampling grid

TABLE 1
PERFORMANCE INDEXES FOR VARIOUS VENTILATION PRACTICES

Ventilation Procedure	Airflow (CFM)	Turb. (FPM)	Performance Index				
			Over-all	Section			
				Adjacent to Source	4 ft from Source	8 ft from Source	
End-wall grilles	300	46	1.0	1.1	1.0	1.0	
	600	70	0.8	1.0	0.8	0.6	
	900	101	1.2	1.3	1.2	1.1	
End-wall grilles— 45 deg inlet	300	50	0.7	1.0	0.7	0.5	
	600	64	1.0	1.4	0.8	0.8	
	900	100	0.6	0.9	0.6	0.5	
Single circular diffuser flat	300	15	1.0	1.3	1.0	0.8	
	600	28	1.0	1.3	0.9	0.8	
	900	40	1.0	1.3	0.9	0.6	
Single circular diffuser down	300	18	0.9	1.4	0.7	0.6	
	600	49	0.9	1.4	0.7	0.6	
	900	62	0.9	1.3	0.7	0.6	
Perforated ceiling panels (1 ft by 2 ft each)							
	2 rows of 5, 3 ft apart	600	21	0.5	1.4	0.4	0.2
	3 rows of 5, 1 ft apart	450	20	0.5	0.7	0.4	0.4
		750	33	0.4	0.6	0.3	0.2

Notes on Table 1:

Performance index is the ratio of bacterial particles actually sampled in the simulated operating room to those that would exist in a perfect aerosol chamber (completely turbulent air). The "Over-all" values of PI indicate the effectiveness for general removal of airborne bacteria from the room. The values "Section Adjacent to Source" indicate effectiveness in removing airborne bacteria from the area around the source of contamination.

Turbulence is not the sole determining factor in distinguishing the various procedures; otherwise there should have been an in-

TABLE 2
CONCENTRATION OF PARTICLES
FROM HYPOTHETICAL SURGICAL TEAM

Ventilation Procedure	Airflow (CFM)	Concentration Per Cu Ft of Air				
		Over-all	Section			
			Adjacent to Source	4 ft from Source	8 ft from Source	
End-wall grilles	300	14	15	14	14	
	600	8	10	8	6	
	900	9	10	9	8	
End-wall grilles— 45 deg inlet	300	10	14	10	7	
	600	10	14	8	8	
	900	5	7	5	4	
Single circular diffuser flat	300	14	18	14	11	
	600	10	13	9	8	
	900	8	10	7	5	
Single circular diffuser down	300	12	19	10	8	
	600	9	14	7	6	
	900	7	10	5	5	
Perforated ceiling panels (1 ft by 2 ft each)						
	2 rows of 5, 3 ft apart	600	5	14	4	2
	3 rows of 5, 1 ft apart	450	6	8	5	5
		750	3	5	3	2

crease in the PI values for a procedure as the ventilation rates and turbulences increased, but this is notable only in the case of end-wall grilles. Although this suggests that increasing the airflow is a practical method for increasing the hygienic quality of the air, it must be remembered that concentration level is not a linear function of ventilation rate because of particle fall-out. A ventilation procedure which has PI values of 1.0 for 300, 600 and 900 cfm would have relative aerial concentrations of 1.0, 0.72 and 0.56 per cu ft. The source of contamination (atomizer) was located centrally near one long wall of the simulated operating room, 5 ft above the floor

AIR PATTERNS

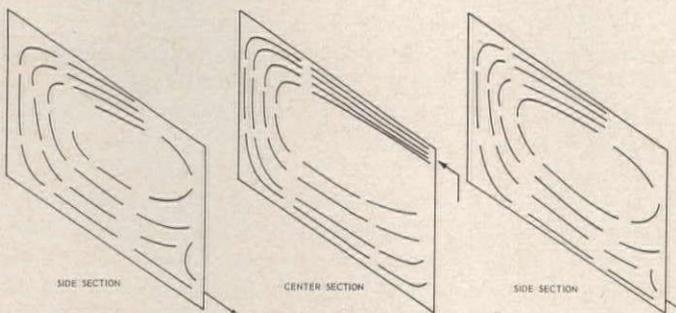


Figure 3: End-wall grille air distribution

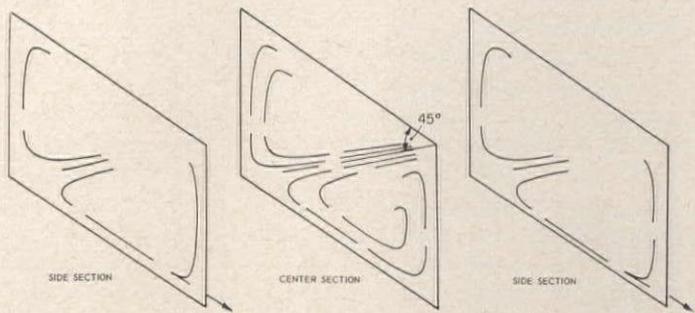


Figure 4: End-wall grille air distribution, 45 per cent inlet

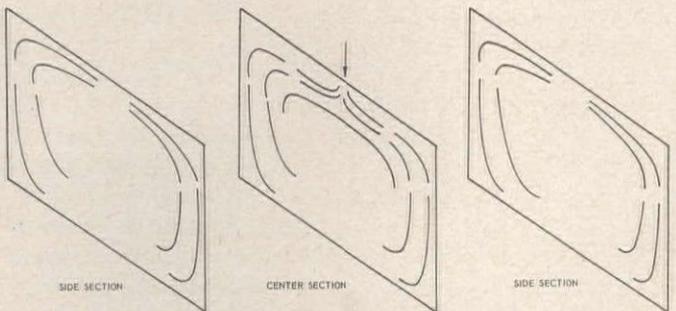


Figure 5: Central diffuser air distribution, horizontal

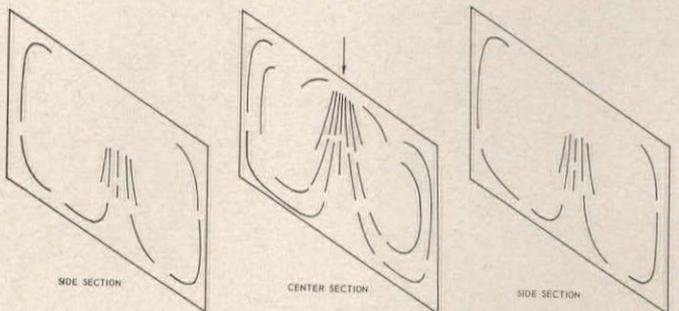


Figure 6: Central diffuser air distribution, vertical

panel measured 1 by 2 ft).

For all studies there were at least two room air exits, positioned uniformly near the floor.

Ventilation Effectiveness

Differences in ventilation effectiveness in the room, over-all, and in the vicinity of the operating table were rated by means of a Performance Index (PI).^{4, 5}

Concentrations of bacterial particles in the air at particular locations within the room for the three systems were compared directly with the theoretical concentration that would be expected if the room air were completely turbulent, and if there were no losses of particles other than natural unhindered settling.

The PI can be numerically either a fraction or a whole number. For hygienic ventilation, as affected by degree of dilution, the smaller the PI value (i.e., less than 1.0), the better the condition. A PI value greater than 1.0 indicates a concentration of particles greater than that expected in a perfect aerosol chamber.

PI values for the three basic systems are given in Table 1. In Table 2, the PI values have been translated into particle concentrations, based on an estimated minimum contamination of 10,500 bacterial particles per minute arising from a well-gowned and masked team of seven persons engaged in no talking and minimum motion.

Particle Settling

Relative rates of particle settling were measured by means of a Sedimentation Ratio (SR). Numerically the SR is the ratio between the numbers of particles actually settling (per minute, per sq ft) to the numbers that would be expected to settle in a theoretical aerosol chamber (assuming the same concentration of particles being introduced).

SR has the same import for settling as PI does for aerial concentrations: the less the value of SR, the lower the number settling. An SR

value greater than 1.0 means that excessive numbers were deposited, due either to impaction, or to the fall-out of droplets. An SR value less than 1.0 means that fewer numbers are settling than expected, due to aerial suspension of the particles by uprising air currents or small eddies.

While the PI values decrease generally with increasing quantities of air, the SR values increase with turbulent ventilation. More air increases dilution, but at the same time increases impaction.

Nevertheless, the PI and SR values show the same trends regarding systems; i.e., the more turbulent systems have the highest values of both indexes. Any ventilation procedure which gives high SR values, such as the end-wall grille (especially at 45 degree supply, in which impaction is increased) should be looked upon with disfavor.

SR ratios for various ventilation practices are given in Table 3.

Transport of Particles

All of the ventilation procedures studied are capable of carrying individual particles 50 microns or more in diameter for horizontal distances of at least 8 ft.

It appears highly probable that the ventilation procedures now employed in hospital operating rooms are capable of transporting airborne particles emanating from personnel for great enough distances to insure their distribution throughout the operating room.

Even internal disturbances associated with "draft-free" ventilation are sufficient to keep the larger particles airborne long enough for them to be transported considerable distances. (Ventilation rate during these tests on the perforated ceiling panels was either 10 or 16 air changes per hour.)

Transport of particles was measured in several ways—quantitatively in two series of tests, qualitatively in a third.

Object of the first series of tests

was to determine the maximum particle size that could be transported by any of the ventilation systems over specified distances. It is logical to assume that a turbulence, eddy or directed air current that carries a maximum size particle a certain distance can carry smaller particles at least the same distance. Results of these tests are given in Table 4.

In the second series of tests, transport of particles was compared for the most turbulent system tested (end-wall grille) versus the least turbulent system (perforated ceiling panels). Parameters measured were maximum size of particle and aerial concentration of particles collecting at the end of the room—a net horizontal distance of 12 ft. For both systems, tests were conducted with the atomizer at one end of the room, with particle studies being made at each end of the room. The end-wall grille ventilation creates a pattern of air movement which is parallel to the length of the room, and there are directed air currents between the origin of the particles and the far end of the room. In the case of the perforated ceiling the only direction of the air is downward and then upward, at right angles to the long axis of the room. Comparison of results obtained is shown in Table 5.

In the case of the low-turbulence system, there was a marked drop in concentration between the origin of the particles (atomizer) and the end of the room. Such was not the case for end-wall grille ventilation.

A qualitative estimate of the ability of low-turbulence ventilation to transport large particles is demonstrated in Figure 9. The two graphs show the relative numbers of particles that settled at different points in the room when the atomizer was placed at one side of the room, 2 ft above the floor. The first graph indicates the relative number of particles settling during a five-minute period (in open, agar-filled Petri dishes set on the floor) for the perforated ceiling system operated at a ventilation rate of 600 cfm. The second graph shows results obtained under the same conditions, except for the fact that there was no mechanical ventilation.

The striking difference between the distribution of particles in tests with and without ventilation, even though the ventilation pattern was "draft-free" in one case, dramatically

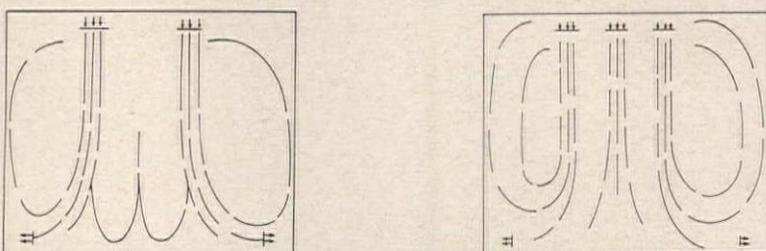


Figure 7: Perforated panel air distribution; two rows (left), three rows (right)

TABLE 3
SETTLING RATIOS FOR VARIOUS VENTILATION SYSTEMS

Ventilation Procedure	Airflow (CFM)	Turb. (FPM)	Settling Ratios				
			Over-all	Section			
				Adjacent to Source	Section 4 ft from Source	Section 8 ft from Source	
End-wall grilles	300	46	1.6	2.1	1.4	1.1	
	600	70	1.6	1.9	1.7	1.2	
	900	101	2.2	2.4	2.3	1.9	
End-wall grilles— 45 deg inlet	300	50	1.7	2.5	1.2	1.0	
	600	64	2.1	2.8	1.8	1.0	
	900	100	4.7	7.3	3.4	2.4	
Single circular diffuser flat	300	15	0.9	0.9	0.9	0.8	
	600	28	1.0	1.1	1.0	1.0	
	900	40	1.8	1.4	2.7	1.2	
Single circular diffuser down	300	18	1.4	2.1	0.8	0.6	
	600	49	0.9	1.1	0.8	0.5	
	900	62	1.6	2.1	1.9	1.1	
Perforated ceiling panels (1 ft by 2 ft each)							
	2 rows of 5, 3 ft apart	600	21	0.7	0.7	0.8	0.6
	3 rows of 5, 1 ft apart	450	20	0.7	0.6	0.9	0.6
		750	33	0.5	0.6	0.5	0.5

TABLE 5
TRANSPORT OF PARTICLES
BY DIFFUSE AND DIRECT SYSTEMS

Ventilation Procedure	Turb. (FPM)	SMD (Microns)		98% Size (Microns)		Particles per cu ft	
		End of		End of		End of	
		Origin	Room	Origin	Room	Origin	Room
Perforated ceiling panels 750 cfm	33	21	16	45	38	213	100
End-wall grille 300 cfm	46	18	15	44	36	298	276
	900 cfm	101	23	18	55	43	149

demonstrates the ability of ventilation to distribute large particles.

In connection with the information presented on distribution of larger particles, it should be emphasized that the general results presented in this article are not necessarily applicable to situations other than the operating room.

In this country, operating rooms generally are more highly ventilated than other areas. This fact results in a greater distribution of larger particles in the operating room than will be found in other areas with less ventilating air. As a result, the number and size of bacterial particles in air of corridors and waiting rooms

will not necessarily be similar to those within operating rooms.

Conclusion

The evaluation of standard ventilation procedures employed in hospital operating rooms in the United States has been carried out in terms of relative hygienic quality, utilizing airborne bacterial particles which simulate those which can issue from personnel.

Four major factors were considered: (1) over-all ventilation effectiveness; (2) the ventilation effectiveness in the area of the operating table; (3) the deposition of particles; and (4) the transport of particles.

TABLE 4
TRANSPORT OF LARGER PARTICLES BY VARIOUS SYSTEMS
(For horizontal distance of at least 8 ft)

Ventilation Procedure	Ventilation (CFM)	Turb. (FPM)	SMD (Microns)		98 Per Cent Size (Microns)		
			Across		Across		
			Origin Room	Room	Origin Room	Room	
End-wall grille	300	46	27	22	70	62	
	600	70	22	19	72	55	
	900	101	21	20	56	45	
End-wall grille— 45 deg inlet	300	50	34	20	90	64	
	900	64	29	24	75	55	
Single ceiling diffuser flat	300	15	26	19	57	50	
	600	28	20	20	73	57	
	900	40	46	31	100	64	
Single ceiling diffuser down	300	18	19	19	52	44	
	600	49	23	15	72	43	
	900	62	40	20	85	49	
Perforated ceiling panels (1 ft by 2 ft each)							
	2 rows of 5, 3 ft apart	600	25	30	19	76	50
	3 rows of 5, 1 ft apart	750	33	41	21	100	54
Airborne bacterial particles shed by personnel				20		53	

Notes on Table 3:

Sedimentation Ratio (SR) has the same import for settling that Performance Index (PI) has for aerial concentration; i.e., the less the value of SR, the lower the number settling. An SR value greater than 1.0 means that excessive numbers of particles were deposited, due either to impaction, or to the fall-out of droplets. An SR value less than 1.0 means fewer particles are settling than expected due to air currents keeping them suspended.

Notes on Tables 4 and 5:

"Settling Mean Diameter" (SMD) is the diameter of hypothetical particles which settle out at a rate representing the average deposition of the aerosol cloud. "98 Per Cent Size" signifies that 98 per cent of the particles settling out were smaller than this diameter.

For the first three of these factors, the multiple ceiling diffusers, which produce low turbulences, are superior to all other standard ventilation procedures evaluated. For the final factor, the transport of particles, all systems evaluated appear equally capable of transporting the largest bacteria-carrying particles emanating from personnel for horizontal distances of at least 8 ft.

Differences in performance are not sufficient, however, to warrant any statement concerning the probability of reducing the incidence of surgical wound infections by equipping surgeries even with the most effective ventilating equipment evaluated here.

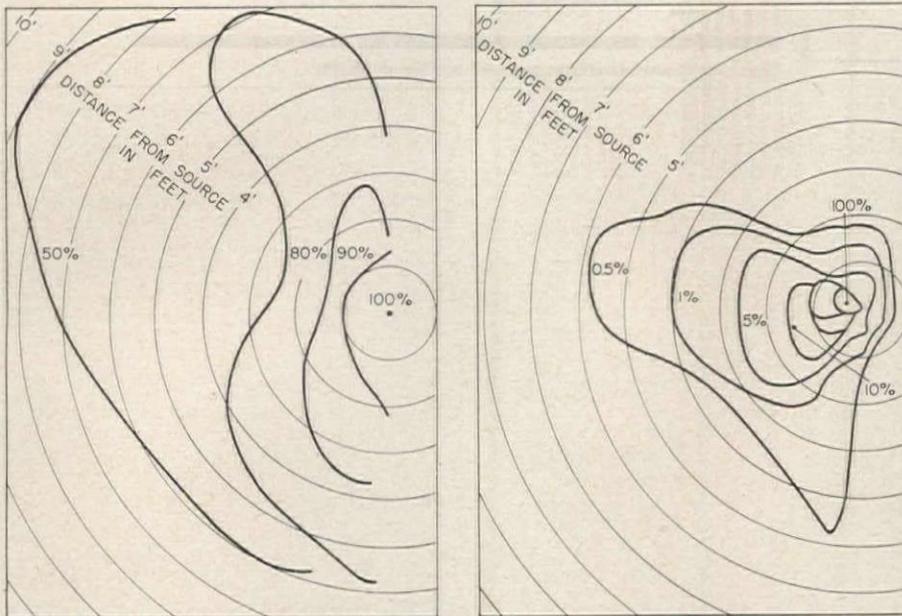


Figure 8: Distribution of settled bacterial particles for perforated ceiling (left), no mechanical ventilation (right)

APPENDIX

The hospital operating room situation was simulated as nearly as possible in the experiments, the notable exceptions being: (1) a constant, uniform source of bacterial particles within the room was employed, yielding a constant level of concentration rather than variable concentration as would occur in operating rooms, and (2) the aerial concentration employed was approximately five times greater than ordinarily encountered. All other possible factors were simulated, even to the point of having personnel walking around in the simulated operating room during experiments.

Temperature and humidity were maintained at 75 F and 55 per cent relative humidity which are average values for operating rooms in the United States.

For the evaluation of standard ventilation procedures, a modified DeVilbiss No. 40 all-glass atomizer was stationed at "X" (Figure 2). This atomizer produced a standardized aerosol of bacterial particles of known size simulating that produced by personnel. (Count median diameter of 10 microns, settling mean diameter of 20 microns. The settling mean diameter is the diameter of the hypothetical particles which settle out at a rate representing the average deposition of the aerosol cloud.⁶)

In order to determine the distribution paths of the airborne bacterial particles, a single source of particles was employed. In the actual hospital situation there are multiple sources, but it is a simple matter to predict the probable distribution of these sources once the exact pathways have been determined with a single source.

With the atomizer at a fixed central position near one long wall of the oper-

ating room, the geometrical relations are symmetrical. The aerial concentrations were determined in three longitudinal sections of the room.

The sampling grid shown in Figures 1 and 2 was designed to yield the maximum information concerning the effectiveness of a ventilation procedure in reducing the bacterial load of the air. On the floor plan of Figure 2 are marked sampling stations, A through M, located at the centers of equal areas. Sampling was carried out at each station: Andersen samplers⁷ at the 2-ft, 3½-ft and 7 ft levels; settling plates at the same levels, and also on the floor.

Data for determination of PI values were obtained from the 36-point Andersen sampling grid. Concurrently, sedimentation data was obtained from the 48-point settling-plate grid.

Sedimentation Ratio

Since the number of particles settling out demonstrates the actual danger of contamination of the surgical wound and the sterile area, settling plates were exposed concurrently with the taking of aerial samples. The SR is obtained by comparing the calculated Petri ratio for the standard bacterial aerosol supplied by the atomizer to the Petri ratio obtained experimentally in the various areas of the operating room.

Transport of Particles

Particle size determinations were made for all evaluation studies since bacterial contamination which can arise from personnel is in the form of large as well as small particles.

Various methods of expressing the results obtained were attempted. Expressions which quantitated the numbers (or relative numbers) or particles of differ-

ent sizes were unsatisfactory. The problem basically is one of attempting to quantitate two separate functions simultaneously—numbers of particles and then particle size.

Further consideration led to the development of expressions describing limiting conditions of transport, the object being to determine the maximum particle size that can be transported by any ventilation procedure over specified distances.

The detailed studies of the distribution of airborne bacterial particles by various ventilation procedures were carried out with aerosols generally having count median diameter (CMD) values of approximately 10 microns. Such aerosols simulate those produced by personnel and are generally within the sizing capacity of the Andersen sampler. The experimental data was scanned for the largest CMD values at the origin for each of the ventilation procedures in order to obtain an estimate of the size of the largest particles that can be transported across the room by each procedure.

The size data for the various ventilation procedures for those runs employing the largest CMD values obtained for each ventilation procedure are tabulated in Table 4.

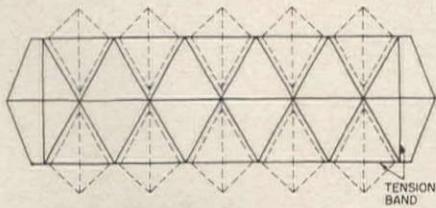
The data presented in Table 4 shows that all ventilation procedures studied are capable of carrying individual particles of at least 50 micron diameter, or aerosol clouds having SMD of 20 microns for distances of at least 8 ft horizontally. The true significance of this finding is indicated by the average characteristics of bacterial particles shed by personnel: the cloud has an SMD of 20 microns, and a 98 per cent size of 53 microns.

References

1. Oviatt, V. R: "Survey of Design Practices of Hospital Operating Room Air Conditioning and Ventilation Systems," A.J.P.H. 51:1902-6, 1961
2. Kethley, T. W., Cown, W. B. and Fincher, E. L: "The 'Staph' Problem," Res. Eng. 15:No. 5, 4-10, 1960
3. Lidwell, O. M: "Impaction sampler for size grading air-borne bacteria-carrying particles," J. Sci. Instrum. 36:3, 1959
4. Lidwell, O. M. and Williams, R. E. O: "The Ventilation of Operating Theatres," J. Hyg. Camb. 58:499-64, 1960
5. Blowers, Robert and Crew, Beryl: "Ventilation of Operating-Theatres," J. Hyg. Camb. 58:427-48, 1960
6. Hatch, T. and Choate, S. P: "Statistical Description of the Size Properties of Non-Uniform Particulate Substances," J. Franklin Inst. 207:369-87, 1929
7. Andersen, A. A: "New sampler for the Collection, Sizing and Enumeration of Viable Airborne Bacteria," J. Bacteriol. 76:471-484, 1958

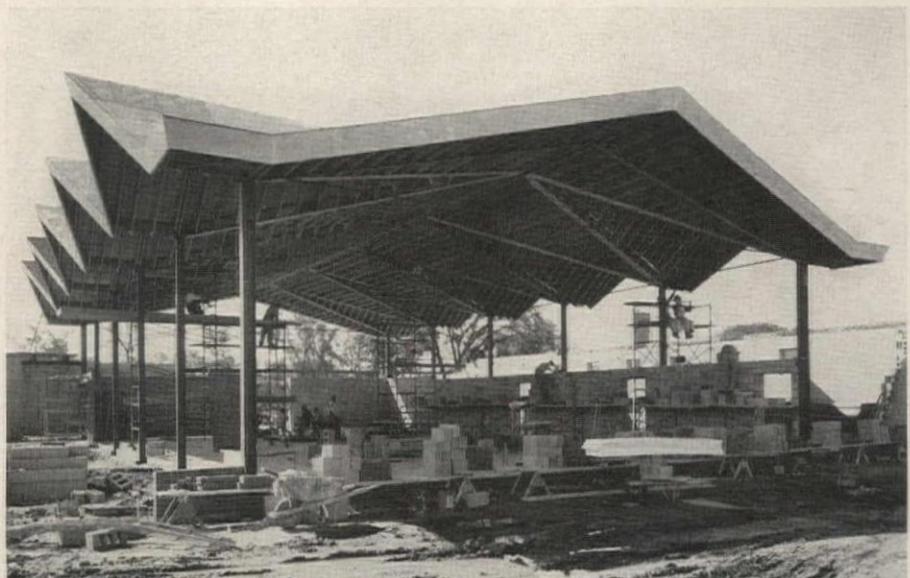
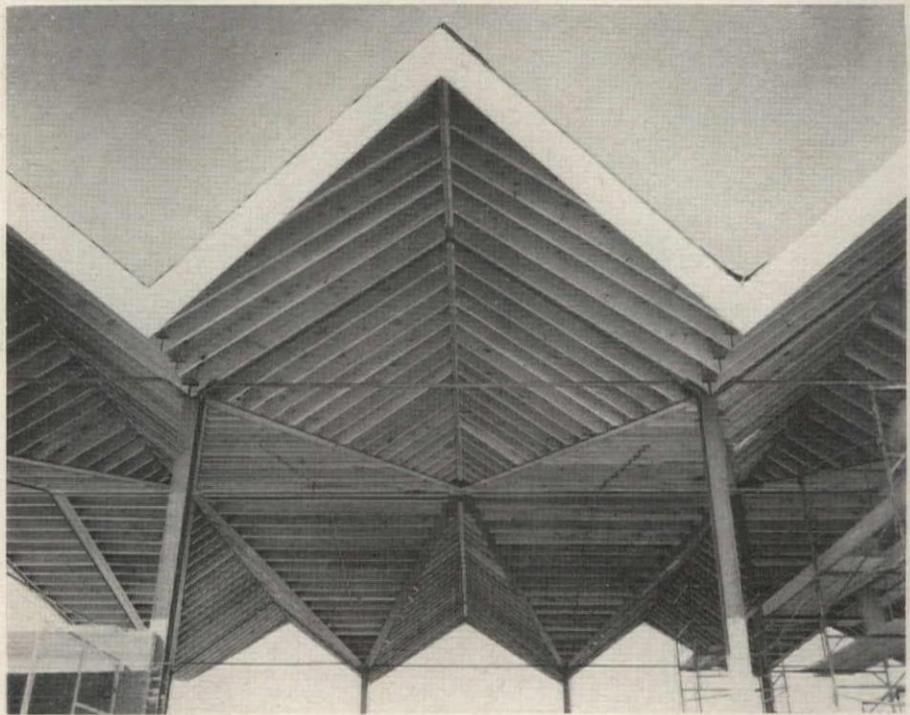
TENSION BAND "PRESTRESSES" PLEATED ROOF

Lightness of columns to support this pleated roof was made possible by a tension band of high-strength steel bars which prevents thrusts from being thrown into columns. The roof structure can be analyzed as two inclined trusses with the ridge beam serving as the compression chord, the inclined steel beams as diagonals, and the steel bars as tension chords. Spread of the "trusses" is prevented by the end tension bars. Design ob-

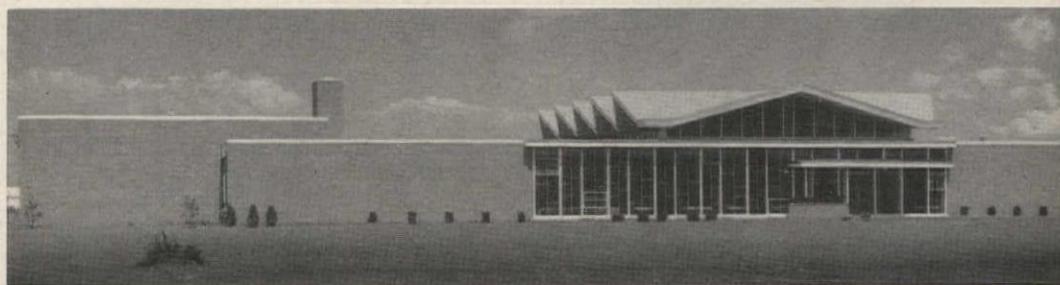


jectives for the First Baptist Church in Monroe, Michigan called for thin lines and a feeling of openness. Architects were Samborn, Steketee, Otis and Evans of Toledo, Ohio.

Alex M. Cytrynowicz, structural engineer in this office, calculated that ordinary steel bars would have had to be almost 3 in. in diameter, which would have spoiled the appearance. Art Iron and Wire Works, Inc., a Toledo steel service center, suggested that the engineer employ a special high-tensile steel used in the metal working industry called *e.t.d 180*, developed by LaSalle Steel Co. of Chicago. This steel which has a guaranteed ultimate tensile strength of 180,000 psi permitted the tension band bars to have a diameter of only $1\frac{5}{8}$ in. diameter.

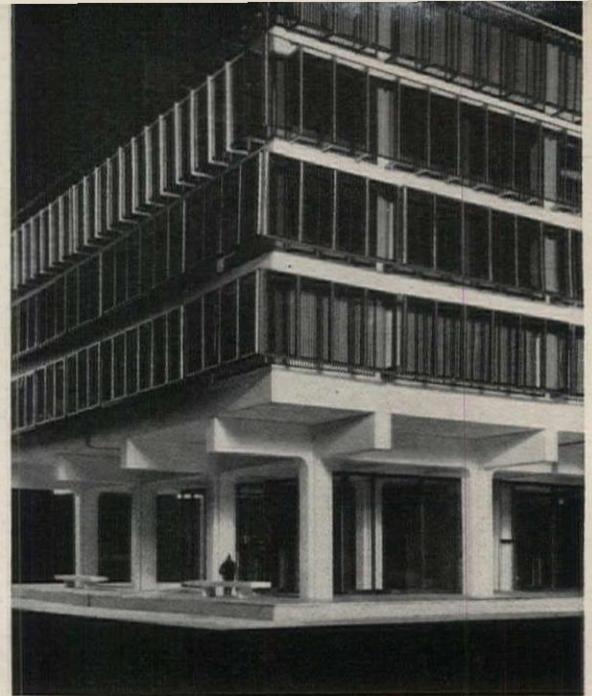


Tension band of high-strength steel bars in effect "prestresses" wood roof to let it float atop the steel columns. Walls have large expanses of glass to give spacious feeling. Project includes sanctuary plus connecting classroom building. Architect in charge of design was John Evans; engineer was Alex M. Cytrynowicz



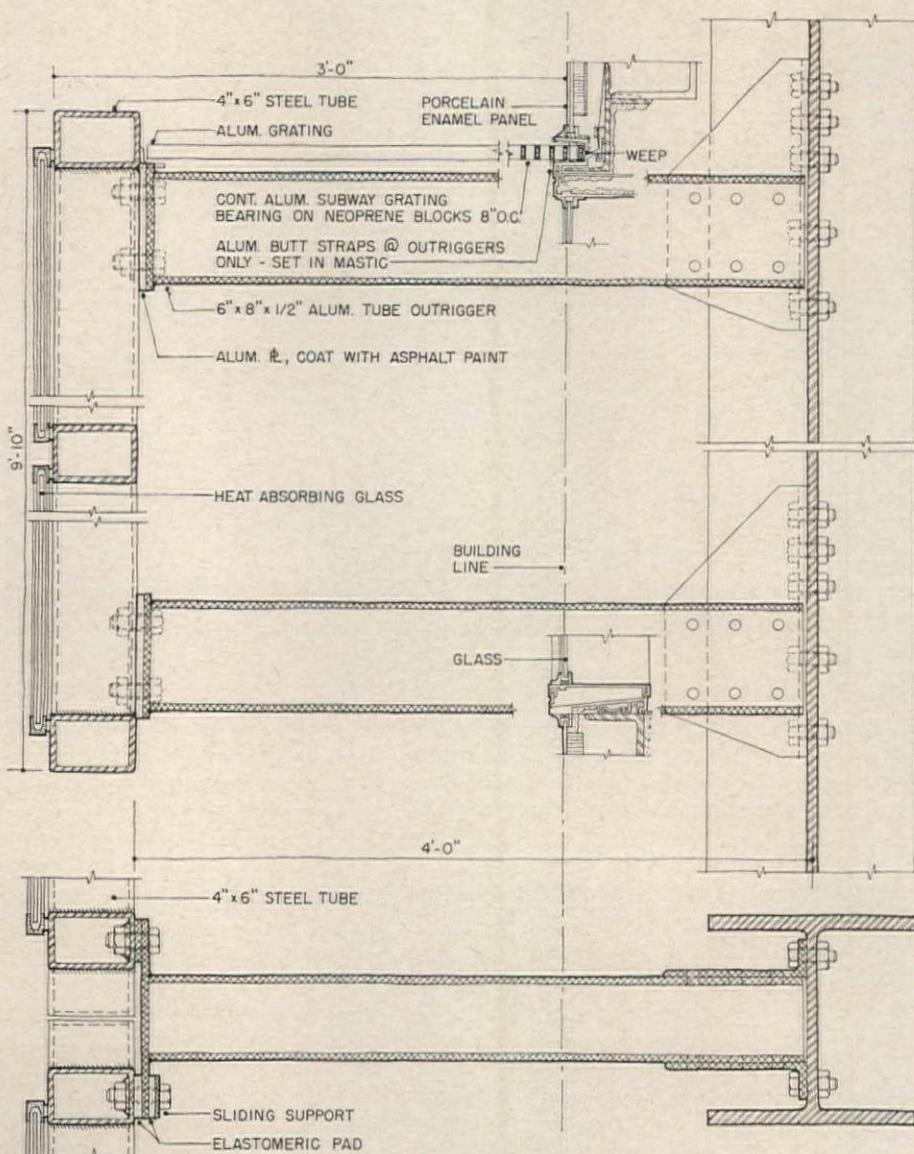


Architect Vincent G. Kling's design for Norfolk's new 14-story municipal office building features heat-absorbing glass sun screen



Structural consultant was Fraoli, Blum and Yesselmen; mechanical consultant, Charles S. Leopold

GLASS SCREEN SHIELDS GLASS WALL FROM SUN



A solar- and glare-reducing screen of tinted glass which surrounds the Municipal Office Tower of the Norfolk, Virginia Civic Center will cut heat gain sufficiently to make the glass facade between spandrel beams equivalent to a wall of 53 per cent glass and 47 per cent 12-in.-thick masonry.

The building has 9-ft-high, floor-to-ceiling, $\frac{3}{8}$ -in.-thick clear plate glass; spandrel beams are covered by porcelain enamel panels. The sun screen of $\frac{3}{8}$ -in. warm-gray heat-absorbing glass projects from columns on tubular aluminum outriggers. The outriggers are of aluminum to avoid any chance of rust staining the marble fascia.

The welded steel-tube framework for the screen forms a 9-ft-deep Vierendeel truss having considerable rigidity. The frame had to be rigid to resist unbalanced loads due to gusty hurricane winds, and to prevent any warping. Steel framing was hot-dipped galvanized, and metalized at joints after welding.

To compensate for rapid, large temperature changes, sliding expansion joints are provided at the two center outriggers.

The upper floors will have a higher heat gain from conductive transmission because of the column of increasingly warm air rising between the sun screen and the face of the building. The column of air is warmed by dissipation of heat from the glass screen.

Heat Gain (Btu/hr/sq ft)

1. 100 per cent clear glass; Venetian blind

Solar	22.6
Transmission	85.6
Total	108.2
2. 100 per cent clear glass; Venetian blind, sunshade

Solar	72.9
Transmission	22.6
Total	95.5
3. 40 per cent clear glass; 60 per cent wall (U = .30); Venetian blind

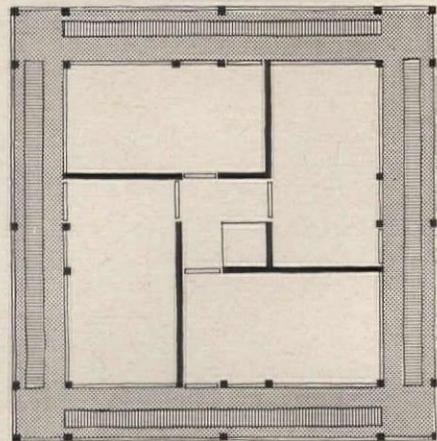
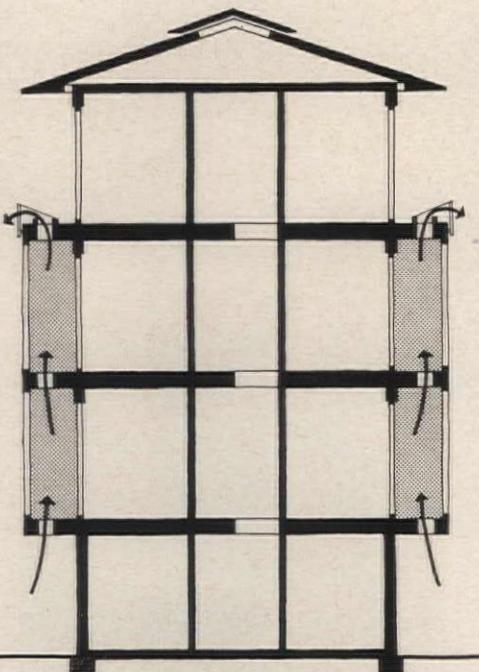
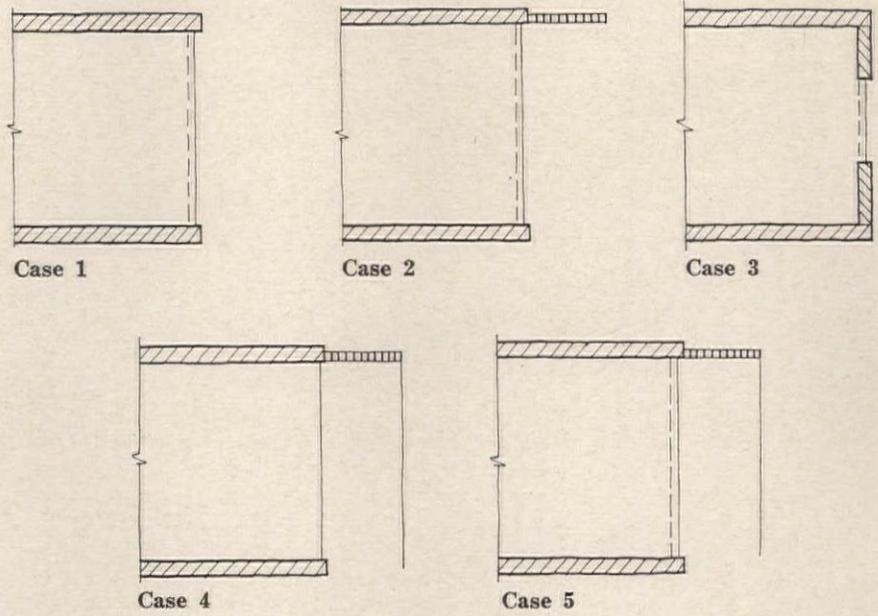
Solar	34.6
Transmission	13.6
Total	48.2
4. 100 per cent clear glass; sunshade; heat-absorbing (50 per cent) glass screen

Solar	52.2	<i>52.2*</i>
Transmission	22.6	<i>29.4</i>
Total	74.6	<i>81.4</i>
5. 100 per cent clear glass; sunshade; heat-absorbing glass screen; Venetian blind

Solar	37.5	<i>37.5*</i>
Transmission	22.6	<i>29.4</i>
Total	60.1	<i>66.0</i>

*Italics are values for upper floors where column of air is warmer

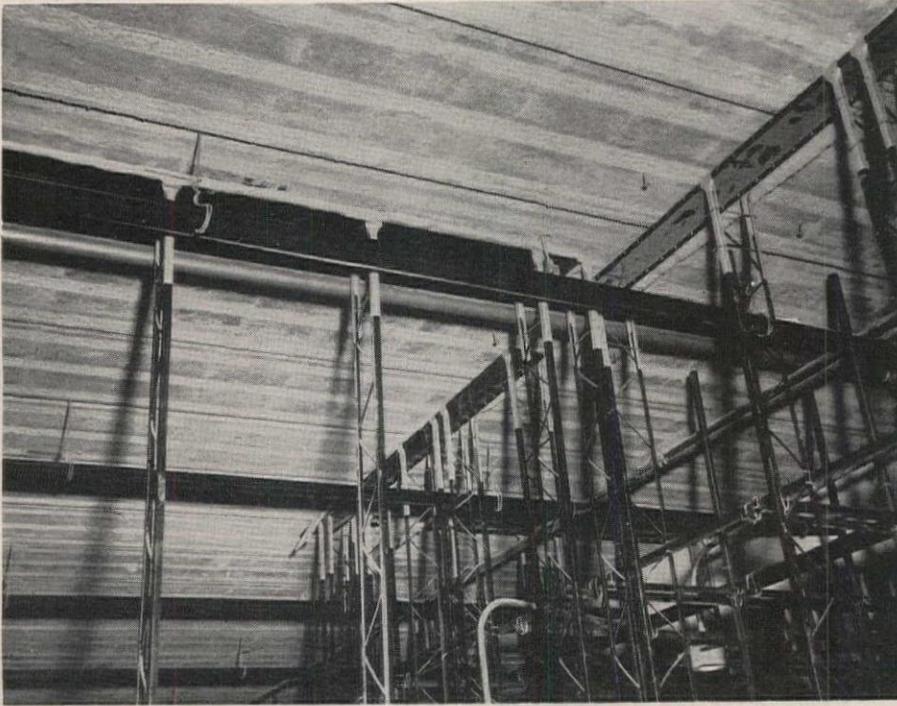
HEAT GAIN COMPARISONS FOR VARIOUS WALL CONDITIONS



RESEARCH ON AIR-TYPE WALL AT PENN STATE

This research building at The Pennsylvania State University was designed by the College of Engineering and Architecture, and built under a grant from Pittsburgh Plate Glass Company, to study various means for controlling heat gain for buildings having large expanses of glass. The walls had operable vents to permit comparison of heat gain with or without air movement within the air-type wall. White or black draperies were installed within the wall to determine the relative rates of heat dissipation. Less heat gain was experienced with the black draperies than the white, since they absorbed more heat which was dissipated by convected air. Director of the project was A. William Hajjar

LIGHTWEIGHT PARTITIONS CUT SCHOOL COSTS



Metal lath partitions are isolated from ceiling deck by a ½-in. fiber glass pad

Construction cost savings of over \$4 per sq ft under the regional average have been achieved in the new Pinnacle Hill School, Rochester, N. Y. largely due to the over-all design of a lightweight structure, according to Detlev Kohlstaedt of Stickney & Konoff, Rochester architects. Most of the saving has been made possible by use of metal lath and plaster partitions and long-span tensioned concrete block planks. Lightweight partitions eliminated the need for columns or bearing walls beneath each partition run.

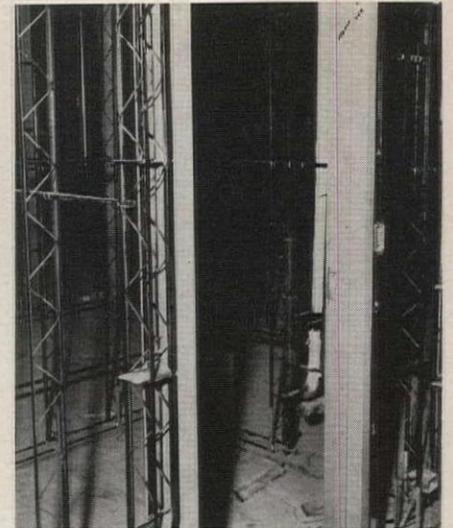
In addition, pipes and wiring can be completely concealed within the partitions.

Isolation of metal lath partitions precludes cracking due to deflection of the precast planks.

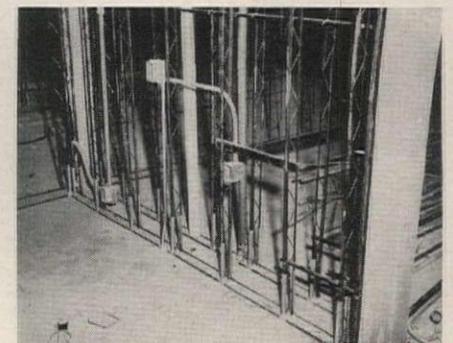
Radiant heating pipes attached to a metal-pan ceiling provide heating for the school.



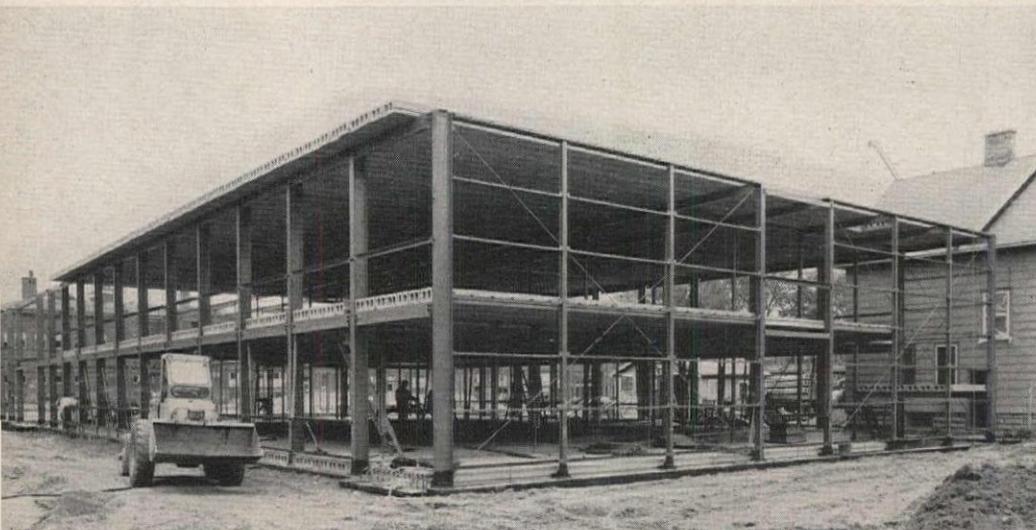
Pinnacle School, Rochester, New York designed by Stickney & Konoff, Architects



Welded clips tie door frame to partition



Hollow core provides space for wiring



Lightweight partitions avoided the need for intermediate support of precast slabs



For significant new homes

Like this house in Laguna Niguel, South of Laguna Beach, California
Architects: Ladd & Kelsey, AIA. Builder: L N C Construction Co.

A SIGNIFICANT NEW CEILING

An elegant tile ceiling that looks monolithic. Each Armstrong Fashiontone® Tile has precisely square-cut edges that fit snugly together to form a unified ceiling with almost invisible joints. The flowing effect of this rated acoustical ceiling is a handsome asset for today's open-planned homes.

Fashiontone is rated "Class A — Incombustible" under Federal Specification SS-A-118b. Because of its mineral-fiber composition it's ideal for bathrooms, kitchens, and other high-humidity areas.

WRITE FOR FREE SAMPLE. Write direct to Armstrong for a sample tile and data. Address your request to Armstrong, 4203 Rock Street, Lancaster, Pennsylvania.

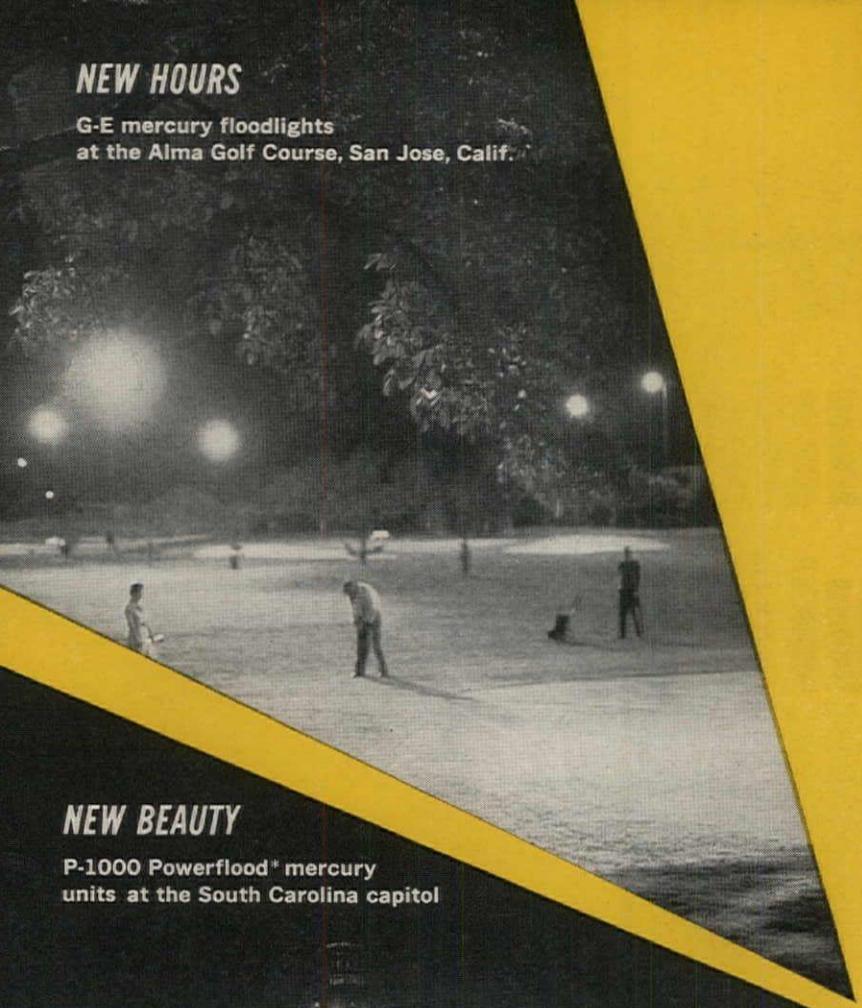
Armstrong
CEILINGS



For more data, circle 76 on Inquiry Card

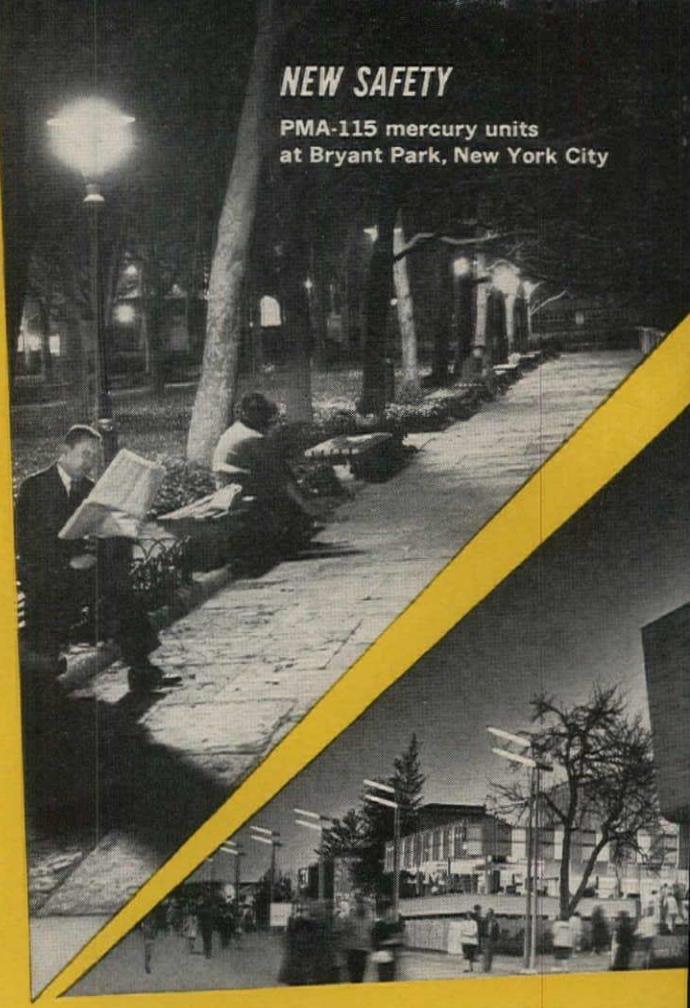
NEW HOURS

G-E mercury floodlights
at the Alma Golf Course, San Jose, Calif.



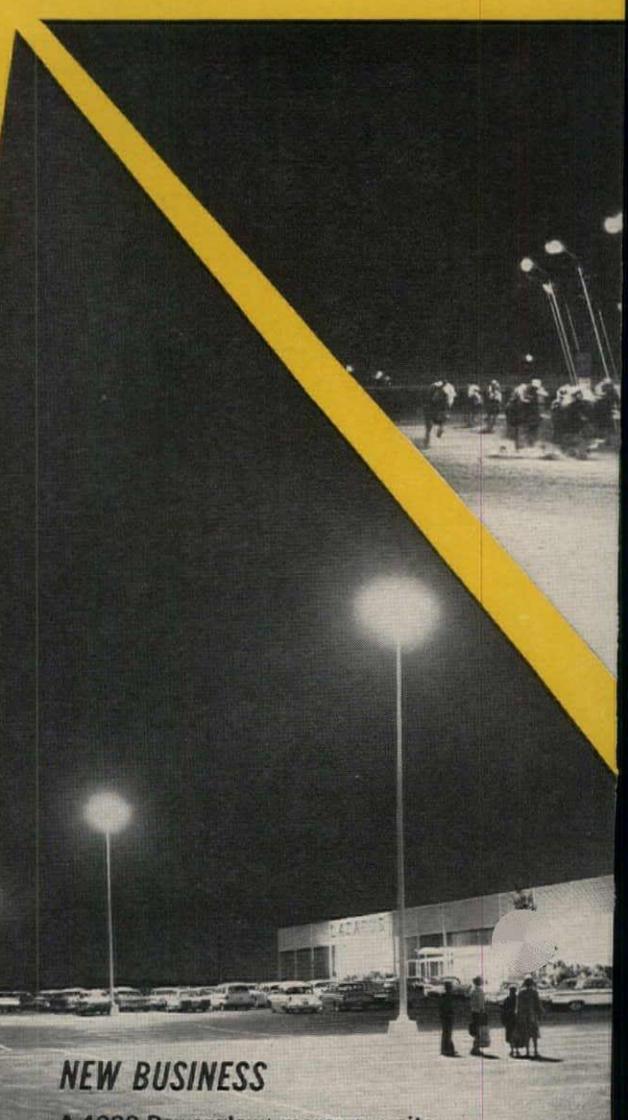
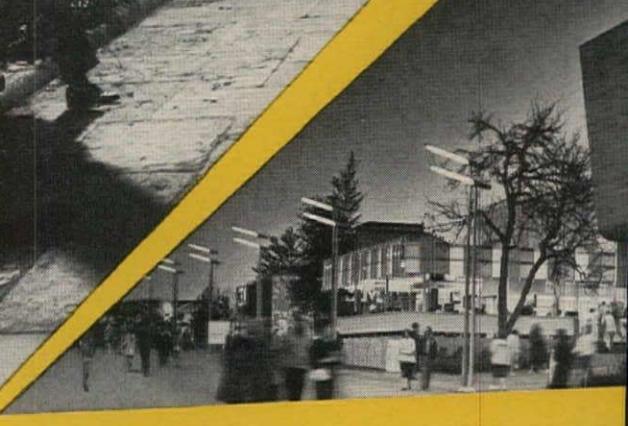
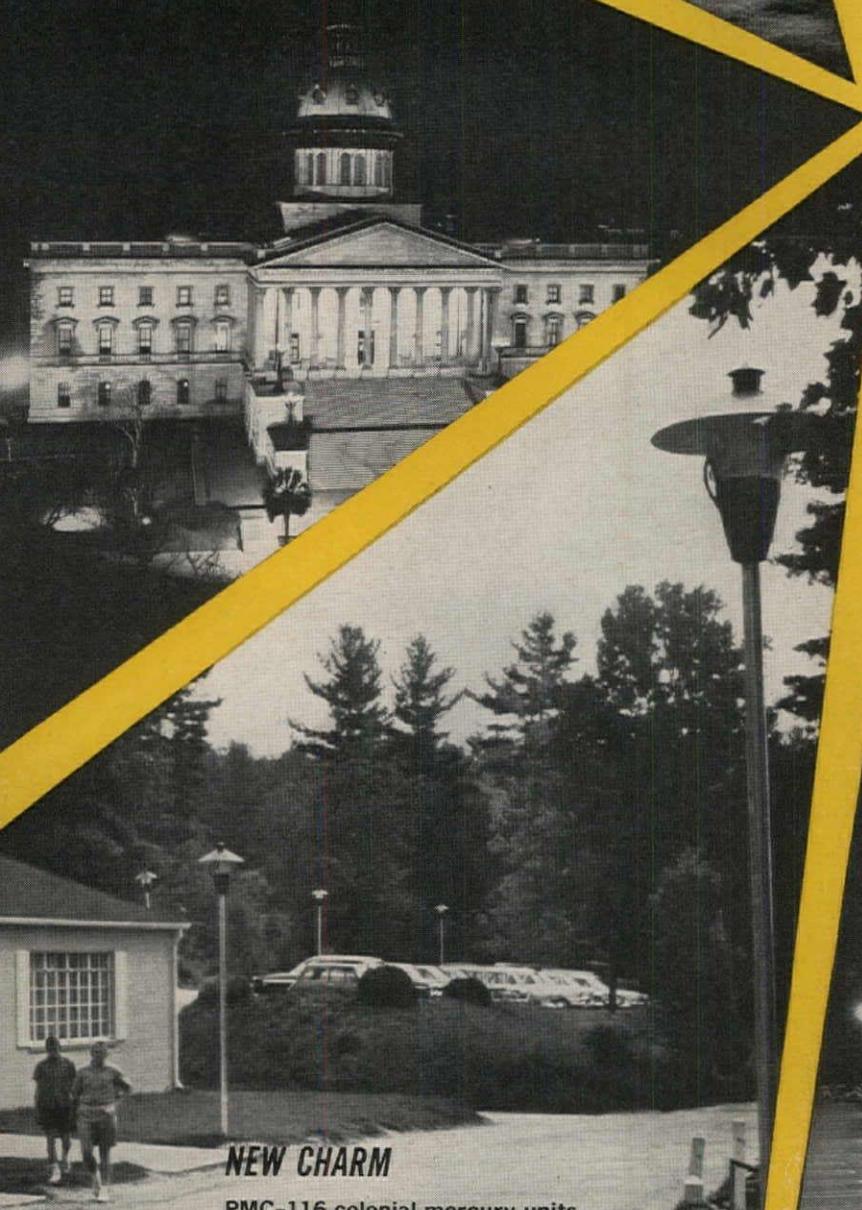
NEW SAFETY

PMA-115 mercury units
at Bryant Park, New York City



NEW BEAUTY

P-1000 Powerflood* mercury
units at the South Carolina capitol



NEW CHARM

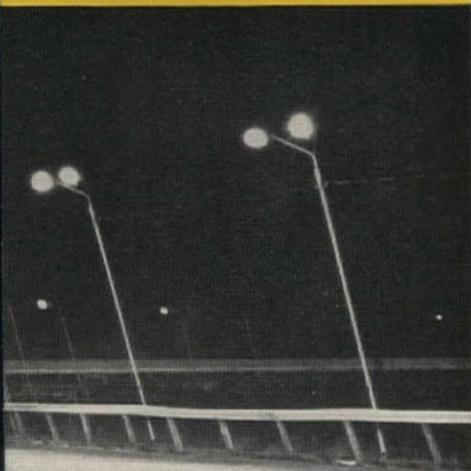
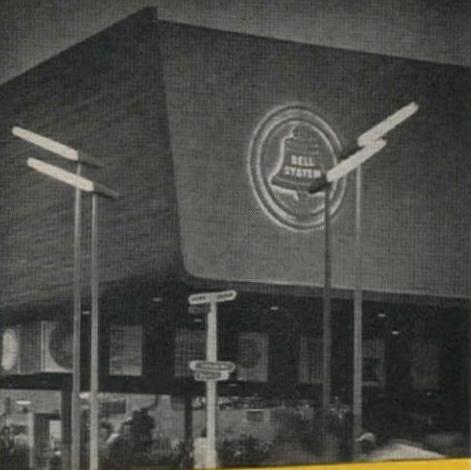
PMC-116 colonial mercury units
at the Hendersonville, N.C., Country Club

NEW BUSINESS

A-4000 Powerglow† mercury units
at Lazarus West, Columbus, Ohio

NEW ATTRACTION

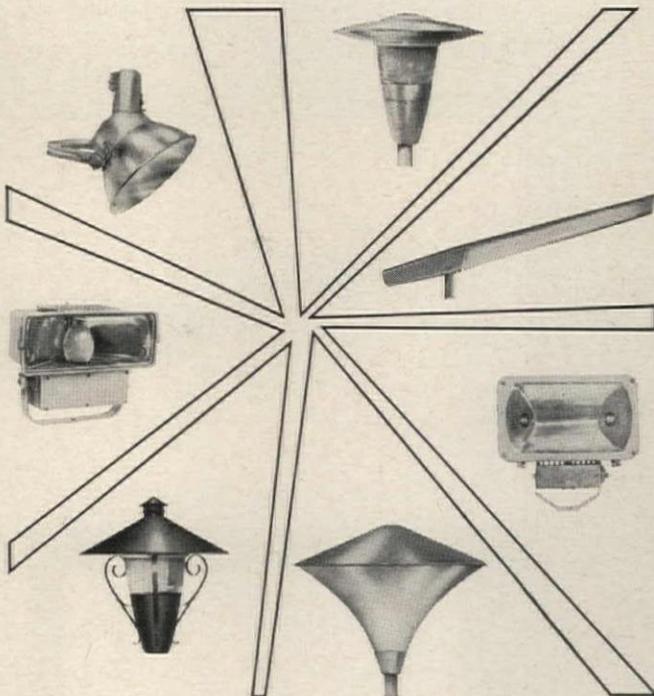
PMF-104A fluorescent units
at the Seattle World's Fair



NEW THRILLS

QF-1500 Quartz-flood* units
at Scarborough Downs Track,
Portland, Me.

7 ways to add new value with light



 **ACCENT** The General Electric luminaires that added the values
ON VALUE

Seven examples of how imaginative planners are using good-looking General Electric luminaires to add value to their projects. For more information on the industry's most complete line of luminaires and poles, see your G-E Area Lighting Agent or write for our new designer's and buyer's guide to Sect. 460-19, General Electric Co., Schenectady, N.Y. *Outdoor Lighting Department, Hendersonville, North Carolina*

*Trade-mark of General Electric Co. †Brand name of General Electric Co.

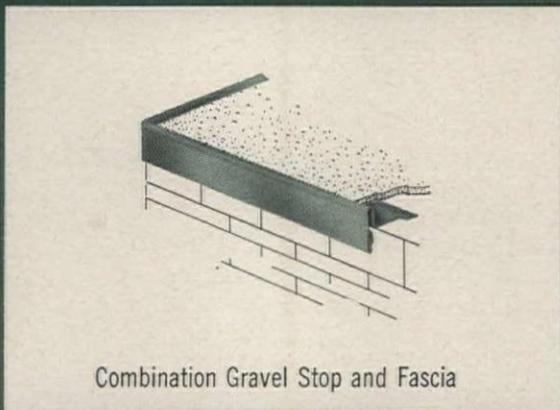
Progress Is Our Most Important Product

GENERAL  ELECTRIC

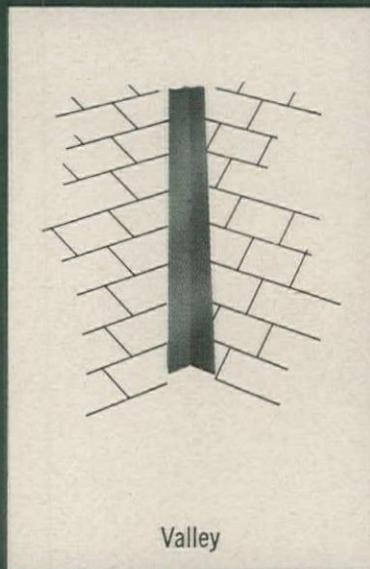
For more data, circle 77 on Inquiry Card

TERNE METAL: The Accessories

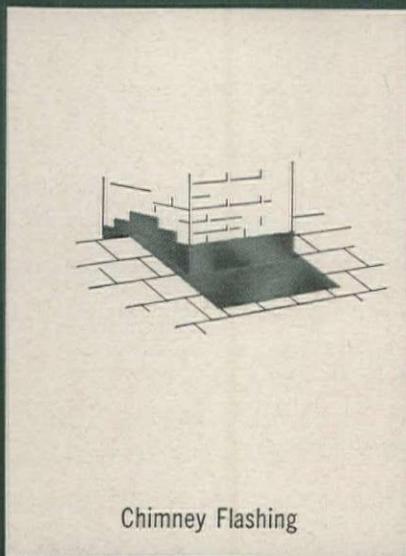
We believe most architects are now aware of terne's nearly unique design potential for visually significant roofs in the contemporary idiom. But terne is also among the best of accessory metals—probably the best when initial cost is balanced against durability. If considerably fewer architects are aware of it in this context, the fault is largely our own, for we frankly haven't found too many exciting things to say about gutters, flashings, valleys and gravel stops. Exciting or not, however, these commonplace items still play an important role in most buildings, and any failure can be very troublesome indeed. When next specifying them, therefore, why not give Follansbee Terne a trial? It should not only save your client money, but under normal exposure has a life-expectancy measured in generations rather than years.



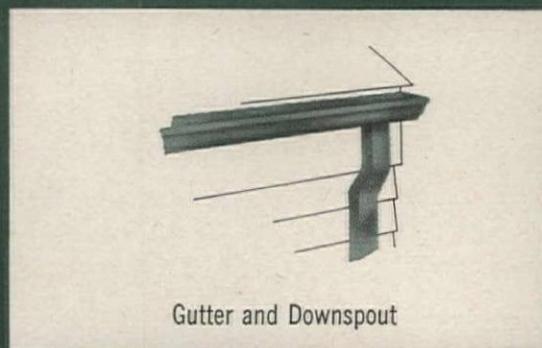
Combination Gravel Stop and Fascia



Valley



Chimney Flashing



Gutter and Downspout



FOLLANSBEE STEEL CORPORATION

Follansbee, West Virginia

Follansbee is the world's pioneer producer of seamless terne roofing.

A GUIDE TO STAINLESS STEEL FINISHES

By D. W. Pettigrew

While strength and corrosion resistance are important considerations when stainless is specified for architectural purposes, the architect is especially concerned with its use where appearance matters. This article, consequently, will deal with stainless steel finishes and their modification through textured surface patterns and colors.

Briefly, stainless steel is a family of high-strength steels alloyed with several other metals, principally chromium, nickel and manganese. Of the 100 or so different kinds of stainless, only a few are commonly used in architecture: types 202, 302, 304, 316 and 430. Each of these is compounded for particular characteristics and is applicable to different service conditions.

Because it is not necessary to design for corrosion allowance with stainless steel, it is possible to specify lighter material and thinner sections than with other materials.

Available Finishes

Eight basic mill finishes are available to the architect using stainless steel sheet. These are numbered for convenience and run from No. 1, a dull matte gray, to No. 8, a highly polished mirror-like finish. However, only three finishes are commonly used in architecture: No. 2D, No. 2B and No. 4.

No. 2D is a dull, cold-rolled finish with a clean but non-reflective appearance. Since its uniform color gives off a minimum of reflected sunlight, it is widely used in exterior panel construction.

No. 2B is a bright cold-rolled finish. Since it is a rolled finish, it retains a gray matte-like appearance when viewed close-up, but it reflects

enough light to accent detail, mullions, fascia, trim and the like, where lustrous depth is desirable.

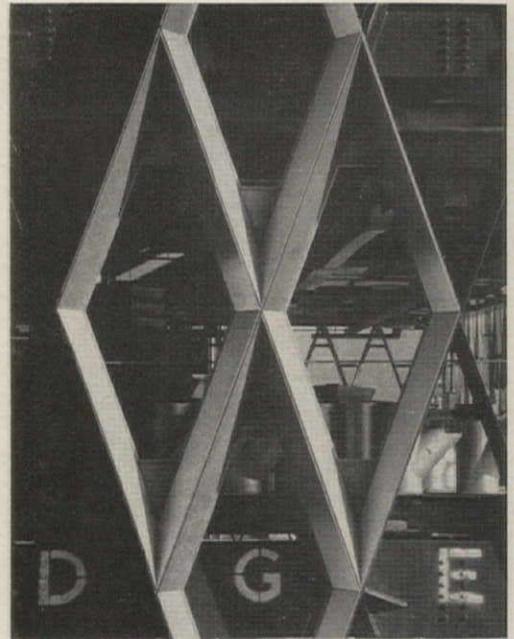
No. 4 is a brilliant machine-polished finish specified for "dress-up" effect in such uses as building entrances, marquees, elevator doors, column covers and food service equipment. The abrasive lines from mechanical polishing, visible on close inspection, tend to elongate reflected light in a direction at right angles to the direction of polishing. The No. 4 finish is recommended where there are visible welds, since subsequent finishing with suitable abrasive materials will blend welds into the over-all pattern of the original mill finish.

Finishes brighter than No. 4 find limited use in architecture, since they can distract with overly-bright reflections.

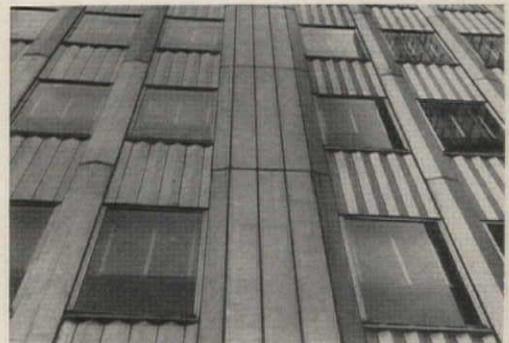
In the use of all these finishes, especially the brighter ones, care should be taken to avoid optical distortion in large areas. This condition, caused by expansion and contraction of the metal during thermal changes, is not unique to stainless steel; it exists with any reflective material. But its control is often more critical with stainless, which maintains its original reflectivity over a long period of time.

There are many ways to control this distortion. The surest is to specify thicker panels, while a more economical approach is to eliminate or minimize flat areas. Successful solutions by architects include the following:

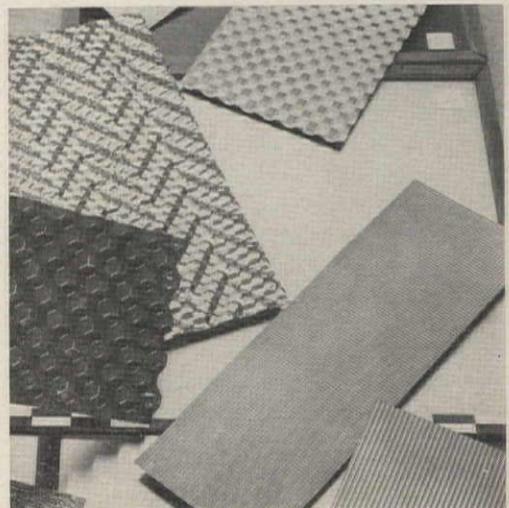
1. A broad, shallow design, die-pressed into the facing panels; breaks up flat areas, also stiffens the panels.
2. Slightly concave panels tend to eliminate flat areas.
3. Fluted and textured designs break up the reflective surface. Tex-



Lattice-like truss wall of I.B.M. Building, Pittsburgh, is sheathed in textured stainless



No. 2D finish gives metallic luster without glare on Gateway Center buildings, Pittsburgh



Textured stainless steel, with or without color coatings, comes in a number of patterns

D. W. PETTIGREW is secretary, Committee of Stainless Steel Producers, American Iron and Steel Institute, New York City

tured panels impart additional rigidity, so lighter gages may be used than would be necessary with untextured sheets.

In addition to the mill finishes, there is a wide variety of proprietary finishes from which the architect can choose different effects. These include one which combines a matte appearance with a sparkle. Like the No. 4 finish, it has enough brilliance for decorative applications, but its matte surface eliminates high reflections and avoids optical distortion.

Another is a transparent inorganic treatment that can be applied to all stainless steel finishes to eliminate fingermarks and other signs of mild abuse, but will not be damaged in fabrication. Although still in the research stage, this treatment is available for special applications.

Another special finish simulates the ground or brushed No. 4 finish, but is obtained by compressing the sheet between metal rolls. Rolled finishes can be less expensive than mechanically polished ones.

Also available from many producers is a new bright annealed surface. This surface, annealed in a controlled atmosphere, has a finish that is considerably more reflective than conventional cold rolled finishes.

Installation Precautions

Care should be taken to maintain the surface of stainless building components during construction. Two protective coverings are available that can be applied by the fabricator and left in place during on-site storage and construction: a pressure sensitive paper and a strippable plastic coating, usually applied by spraying. The latter is particularly applicable when there are complex contours. Coatings tend to age and lose their toughness and strippability, consequently when there is any prolonged storage their condition should be checked at increasingly frequent intervals.

Textured Stainless Steel

To further broaden the applications and effects available from stainless steel, textured stainless is available from several sources in a number of different patterns. Ranging from flutes, ribs and beads to non-directional patterns, both regular and

random, textures come in many varied sizes and depths and may involve both surfaces or only one.

Esthetic advantages of textured stainless include a bright but non-reflective surface for broad areas of metal facing, and a tonal variation that can be a great advantage in design. Textured stainless is durable, since the pattern distracts attention from scratches expected on kickplates and other heavy traffic areas.

New patterns are constantly being developed. One new product is produced by rolling a pattern of broad raised bands into a sheet of stainless with a No. 2D finish, then highlighting raised portions to a No. 4 finish by grinding.

Perforated stainless panels are available from the same companies that produce textured panels.

Colored Stainless Steel

Colored coatings on stainless steel may seem to be "gilding the lily." The fact is, however, that the corrosion resistance of stainless steel serves to protect the coating, and thus permits wider design possibilities.

Colors are generally produced by applying a porcelain enamel or an organic coating. Porcelain enamel provides perhaps the most durable color; only one coat need be applied, and the metal need be coated only on one side. Many organic coatings, on the other hand, are elastic enough to permit working the metal.

An even more recent development in this field is the production of colored and highlighted patterns. After a pattern has been rolled into a sheet of color-coated stainless steel, the coating is removed from the raised portions by grinding or polishing, and the metal need be coated only on No. 4 finish.

Maintenance

Every architectural metal has its own specific set of advantages. Perhaps the greatest single advantage of stainless steel is its corrosion resistance and the resulting ease of maintenance.

The American Society for Testing and Materials reported in 1961 on older stainless architectural applications. In discussing the stainless tower pilasters and mullions of the Empire State Building erected in

1931, A.S.T.M. comments: "From all indications, there has been practically no deterioration of the stainless steel since its erection 29 years ago. From a distance, in spite of adhering dirt, the stainless steel shines brightly, particularly on sunny days."

In discussing the Flamingo Theater, Miami Beach, A.S.T.M. states: "Located about 1,200 feet from the ocean. The entrances and sign boards, erected in 1946, are made of type 302 stainless steel, No. 4 finish. They are obviously cleaned regularly and are in perfect condition."

In some coastal locations where sea spray deposits are heavy and where no maintenance is performed, A.S.T.M. points out that "stainless steels seem to develop a limited number of rust spots on boldly exposed areas beyond which no further deterioration in appearance proceeds." To combat this in severe marine atmospheres, the report recommends type 316 stainless.

Regular maintenance of stainless steel is quite simple. For ordinary deposits of dirt and light grease, all that is needed is washing with soap and water, a detergent, or one of the many good stainless steel cleaners on the market. Washing should be followed by fresh water rinsing to remove all loosened dirt. Using these methods, stainless steel spandrels, mullions and window framing members can be cleaned regularly along with window washing.

Heavy deposits or tightly adhering dirt may require pumice or another fine and mildly abrasive powder. In cold weather a thin oil and grade FF pumice should be used, applied with a stiff fibrous rubbing brush or felt pad. All rubbing should be in one direction, with the grain, in the case of a brushed finish like No. 4, never against it or with a circular motion, since visible scratches will show.

When rust stains appear, they almost always result from ferrous metal in contact with the stainless steel—often carbon steel screws, particles of steel wool, or tramp material picked up during fabrication or erection. Whenever possible, stainless fasteners should be used with stainless steel, and when abrasion cleaning with metal wool is necessary, only stainless steel wool should be used.

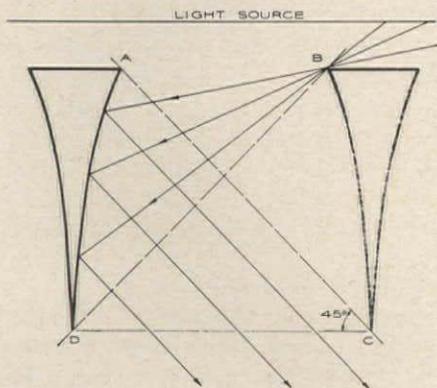
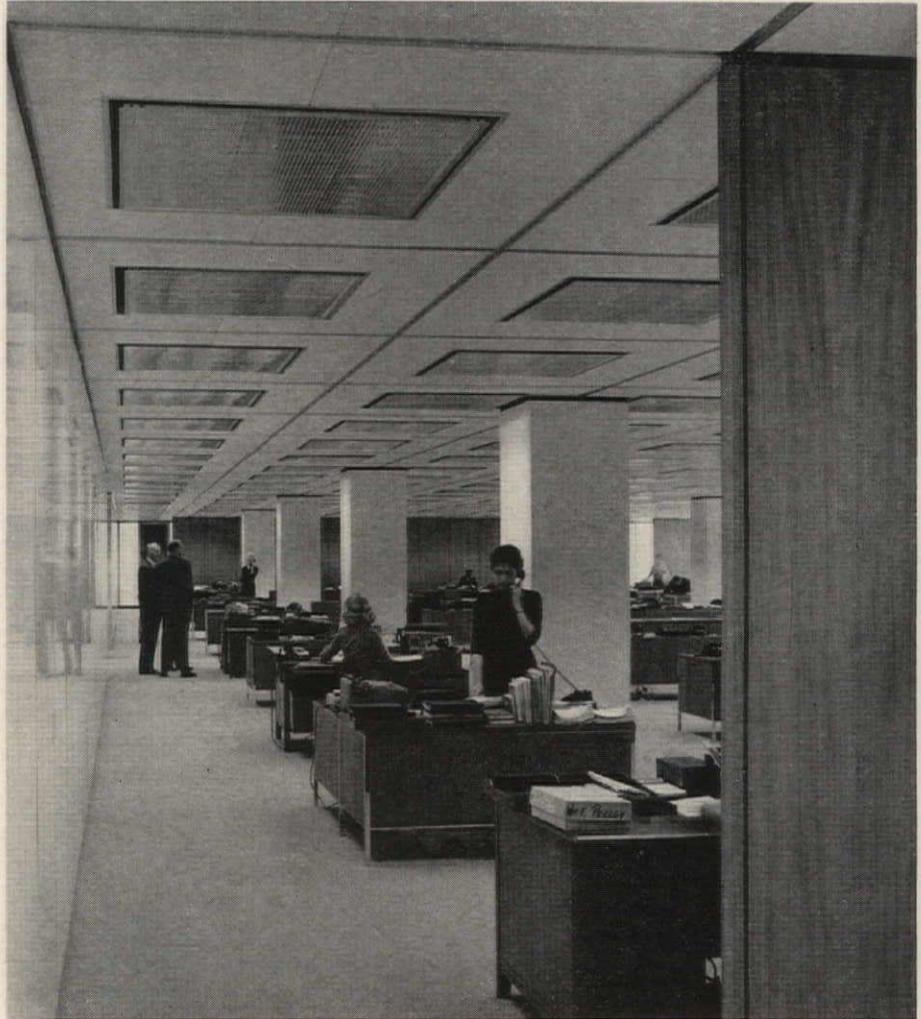
For more information circle selected item numbers on Reader Service Inquiry Card, pages 263-264

WEDGE-SHAPED LOUVERS CUT LIGHTING FIXTURE GLARE

A new ceiling light shows as one of the darkest surfaces in a room—instead of the brightest—due to a wedge-shaped louver which gives one-tenth the brightness of conventional lighting fixtures. Attention is thus drawn to the working area, not the ceiling and lights. The louver consists of a plastic grid with aluminized parabolic reflecting surfaces which direct the light downward instead of toward the eye.

The louver was designed, patented and licensed by General Electric. Louvers for the fixtures shown in the picture were made by the Kent Lighting Corp. of Brooklyn, N.Y. *General Electric, Nela Park, Cleveland 12, Ohio*

CIRCLE 300 ON INQUIRY CARD

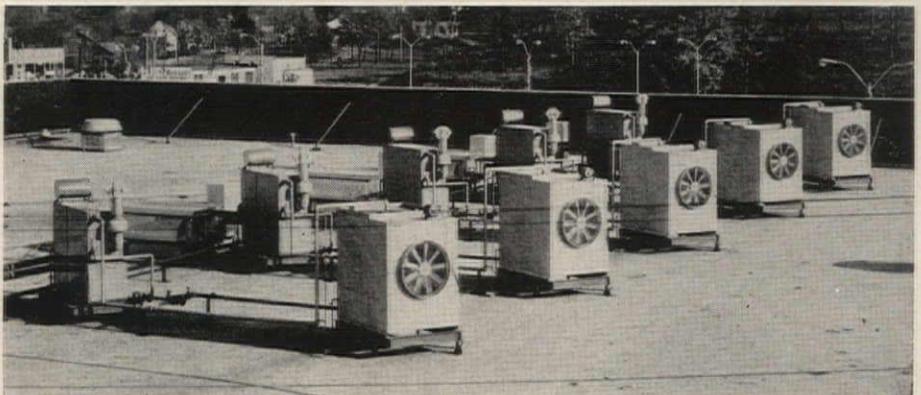


DIRECT-FIRED GAS HEATING, COOLING UNIT

Year-round air conditioning is provided by packaged roof-top gas-fired water chiller-heaters. The absorption units are direct fired, so there is no need for boilers and converters. The 25-ton unit has a chilling capacity of 300,000 Btuh and a heating capacity of 440,000 Btuh. Controls are factory-wired, piped and mounted in place. *Arkla Air Conditioning Corp., 812 Main St., Little Rock, Ark.*

CIRCLE 301 ON INQUIRY CARD

more products on page 226



For more information circle selected item numbers on Reader Service Inquiry Card, pages 263-264

MASONRY REINFORCING

Research reports on masonry wall reinforcement are given in a 34-page booklet. Studies included were made by various government agencies, associations and research foundations. *Dur-O-wall, P.O. Box 150, Cedar Rapids, Iowa**

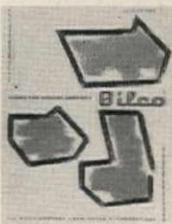
CIRCLE 400 ON INQUIRY CARD

STANDARDS

The 1963 catalog of American Standards has 84 pages with more than 2,000 listings. *American Standards Association, 10 E. 40th St., New York 16, N.Y.*

CIRCLE 401 ON INQUIRY CARD

SPECIAL SERVICE DOORS



(A.I.A. 14-N, 14-A-2, 14-B-9) Scuttles, smoke hatches, floor doors, ceiling access doors, steel base-ment doors are described and illustrated in 12-page booklet. *The Bilco Co., New Haven 5, Conn.**

CIRCLE 402 ON INQUIRY CARD

LUMINOUS CEILINGS

Folder shows several residential and commercial applications of *Artcrest* luminous ceilings. *Artcrest Products Co., Inc., 255 W. 79th St., Chicago 20, Ill.*

CIRCLE 403 ON INQUIRY CARD

INSULATING GLASS

Data on savings in air-conditioning and heating costs when *Therm-O-Proof* insulating glass is used are included in eight-page booklet. *Thermoproof, 4815 Cabot Ave., Detroit 10, Mich.**

CIRCLE 404 ON INQUIRY CARD

STAINLESS STEELS

Properties, advantages and economics of *200-Series* stainless steels are given in 28-page booklet. Special attention is given to the 40 per cent higher yield strength of the *200* vs. the *300-Series*. *Union Carbide Metals Co., 270 Park Ave., New York 17, N. Y.*

CIRCLE 405 ON INQUIRY CARD

FOUNTAINS



Fountain kits and custom designed fountains are illustrated in 20-page booklet. Details are given on equipment, such as lighting kits, spray rings, pumps and color-changing units. *Shalda Mfg. Co., Inc., P.O. Box 507, Burbank, Calif.*

CIRCLE 406 ON INQUIRY CARD

SKYLIGHTS

(A.I.A. 12-J) *Marcolite* skylights with extruded aluminum frames and shatterproof panels of glass fiber reinforced plastic are described and illustrated in brochure. *The Marco Co., 45 Greenwood Ave., East Orange, N.J.**

CIRCLE 407 ON INQUIRY CARD

APARTMENT DOORS

Steel doors and frames for apartments are described and detailed in folder which includes information on entrances and lobbies. *Amweld Building Products, 138 Plant St., Niles, Ohio**

CIRCLE 408 ON INQUIRY CARD

RIGID VINYL PANELS

Technical data, including results of flame resistance tests, and specifications are given for rigid polyvinyl chloride panels. *Kaykor Products Corp., Yardville, N. J.**

CIRCLE 409 ON INQUIRY CARD

PORCELAIN ENAMEL WALLS

(A.I.A. 15-M) Buildings featuring porcelain enamel facings and curtain wall panels are illustrated in eight-page catalog. *Davidson Enamel Products, Inc., 1104 E. Kibby St., Lima, Ohio**

CIRCLE 410 ON INQUIRY CARD

"WHITE ROOM" CONTROL

Layouts and engineering data on air filtration, temperature and humidity control for "white rooms" are given in 12-page booklet. *American Air Filter Co., Inc., 214 Central Ave., Louisville 8, Ky.*

CIRCLE 411 ON INQUIRY CARD

SNOW MELTING

Bulletin 300-SM gives engineering details about snow melting with *Nellex* mineral insulated electric heating units. *Nelson Electric Manufacturing Co., Tulsa, Okla.*

CIRCLE 412 ON INQUIRY CARD

WASHROOM EQUIPMENT

(A.I.A. 29-J) Twelve-page catalog shows 84 models of washroom accessories. Isometric drawings are included. *Bobrick Dispensers, Inc., 503 Rogers Ave., Brooklyn 25, N.Y.**

CIRCLE 413 ON INQUIRY CARD

FOLDING PARTITIONS

(A.I.A. 16-M) Details on sound-control factors, construction methods and covering materials are given for the complete line of *FolDoor* folding partitions. *Holcomb & Hoke Mfg. Co., Inc., 1545 Calhoun St., Indianapolis 7, Ind.**

CIRCLE 414 ON INQUIRY CARD

INDUSTRIAL FLOORING

Folder gives details on industrial asphalt tile that provides a low-maintenance floor covering over a variety of bases. *The Philip Carey Mfg. Co., 320 S. Wayne Ave., Cincinnati 15, Ohio*

CIRCLE 415 ON INQUIRY CARD

PLASTIC LENSES



Pictures, cross sections and photometric reports from Electric Testing Laboratories, Inc. are given in 12-page booklet on plastic lighting lenses. *The Rotuba Extruders, Inc., 8725 Fourth Ave., Brooklyn 9, N.Y.*

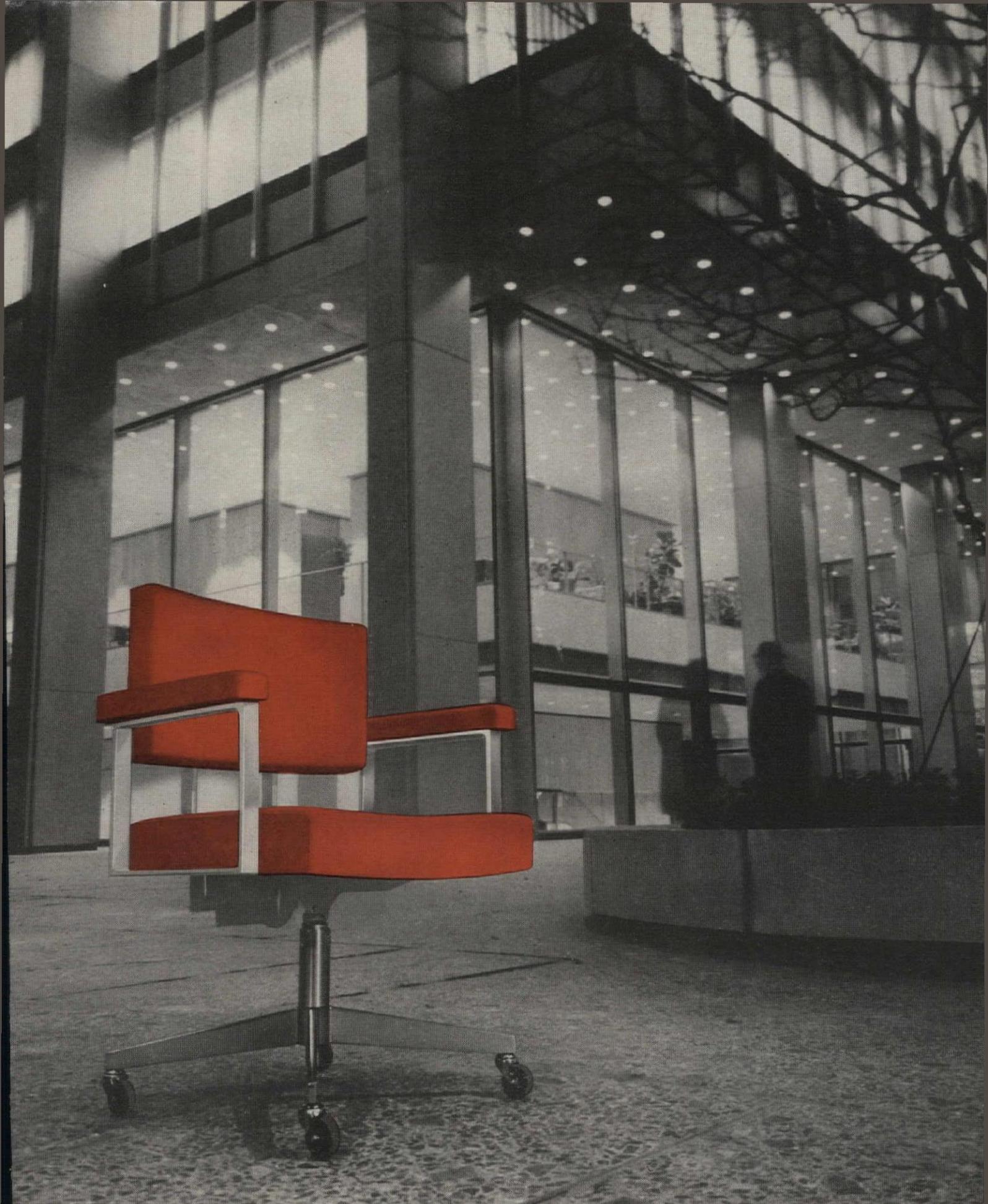
CIRCLE 416 ON INQUIRY CARD

REFRIGERATOR DOOR

Brochure gives details on walk-in cooler and freezer door with neoprene edges and frame and a self-seating gasket. *The Jewett Refrigerator Co., Inc., Buffalo 13, N.Y.**

CIRCLE 417 ON INQUIRY CARD

* Additional product information in *Sweet's Architectural File*
more literature on page 279



6051-A, one of the Goodform 600 Chairs selected by The Chase Manhattan Bank for their new offices.

chair with the architectural flair... IT'S THE GOODFORM 600 BY GF, styled to complement today's smart business interiors. Here's proof that office chairs needn't sacrifice comfort for beauty. The complete line, including side chairs, is available in a variety of fabrics and finishes to carry out any decorative theme. See Goodform 600 at your nearby GF branch or dealer. Or write Dept. AR-15 for descriptive literature. The General Fireproofing Company, Youngstown 1, Ohio.

For more data, circle 79 on Inquiry Card

GF
BUSINESS FURNITURE

NO. 8

folded plates

a.i.a. file: 4-a

Prepared as a service to architects by Portland Cement Association

clip along dotted line

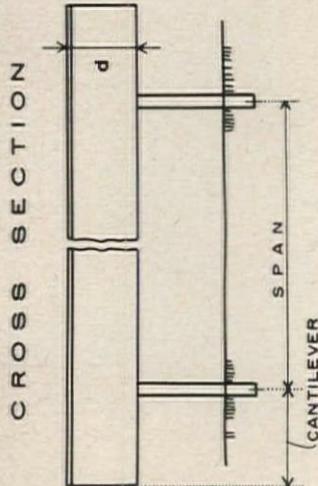


Tremendous span and load-carrying abilities characterize concrete shell roofs in the form of folded plates—also known as F/P's. In industrial construction folded plates are being used more and more to provide great areas of column-free space for manufacturing or storage.

The ability of folded plates to cantilever can be applied advantageously in the design of schools, stores and hangars.

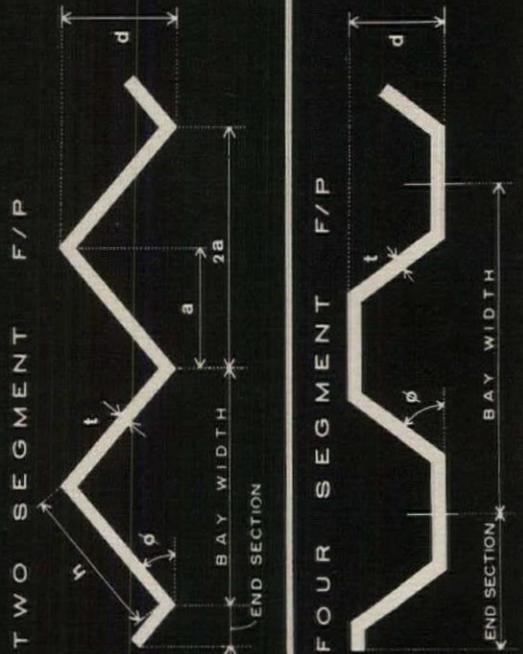
There are three basic types (two shown below) of folded plate shells—V-shaped, Z-shaped and a modified W-shape. The economy of F/P's is increased with form re-usage.

Typical span data for V- and W-shaped plates are shown in the tables below. For more information, write for free technical literature. (U.S. and Canada only.)



Sufficient cantilever can help to counterbalance the span. The usual span-to-depth ratio varies from 1:10 to 1:15. Example: If span is 40' long, the usual minimum depth is about $\frac{40}{10}$ or 4'.

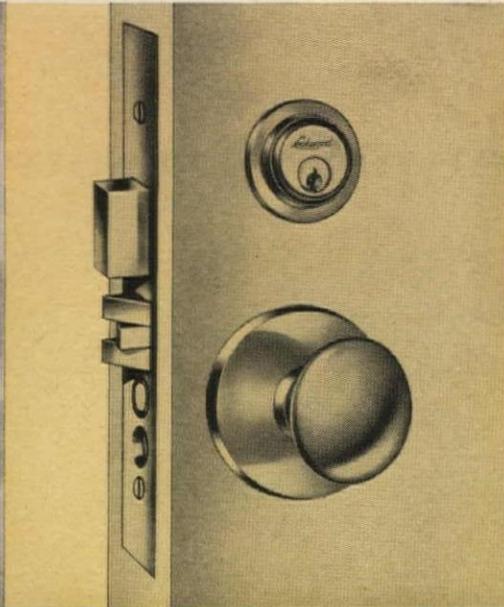
Formula:
 VOLUME OF CONCRETE IN SQ. FEET = $\frac{th}{324a}$
 h = ft.
 t = in.
 a = ft.



SPAN	max.	min.	θ°	d		2a	t	(3)
				min.	max.			
40'	45°	25°	4'-0"	2'-9"	15'	4"	1.2-1.6	
60'	45°	25°	6'-0"	4'-0"	20'	4"	1.9-2.7	
75'	45°	25°	7'-6"	5'-0"	25'	4"	2.6-3.7	
100'	45°	25°	10'-0"	6'-9"	30'	5"	4.0-5.2	
40'	45°	30°	5'	2'-6"	20'	3"	1.5-2.0	
60'	45°	30°	6'	4'	25'	3"	2.0-3.0	
75'	45°	30°	7'-6"	5'	30'	3"	2.5-4.0	
100'	45°	30°	10'	6'-6"	40'	4"	4.0-6.0	

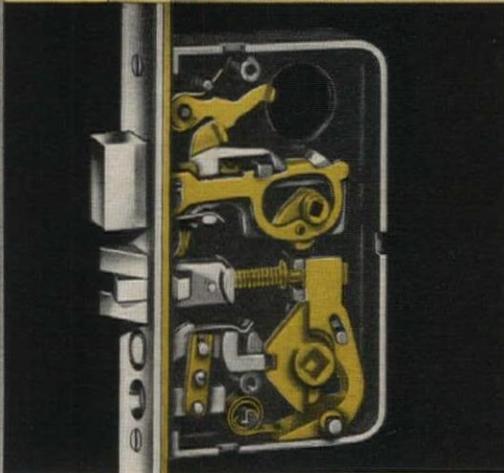
* max. recommended slope is 45°
 (1) values shown may vary with architectural design
 (2) average thickness in inches
 (3) pounds per square foot of projected area

The Lock



that's built like a Clock

.....and



here's what makes it tick

This will probably be your only look at the inside of a Lockwood Mortise Lock. Seldom does anyone have the occasion to take one apart—it's designed to last.

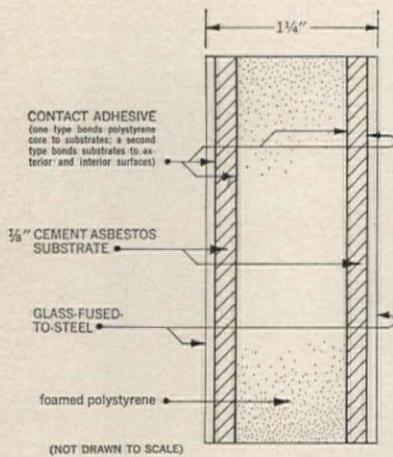
Lockwood takes no production shortcuts in building these fine mortise locks. All important internal parts are forged or extruded of brass or bronze for corrosion resistant, dependable operation. Each lock is carefully hand assembled by true craftsmen who make sure each lock works perfectly.

No wonder it is known as "The finest mortise lock in the world."

LOCKWOOD

LOCKWOOD HARDWARE MANUFACTURING COMPANY, FITCHBURG, MASS.

For more data, circle 80 on Inquiry Card



Bands of panels bonded with Armstrong adhesive brighten pleated façade



Park Arlington Motel, a Quality Court, and Schrafft's Restaurant, Arlington, Va. Architect, Ronald Senseman, Washington, D. C.; Contractor, Stewart Bainum, Washington, D. C. Panels made by Mirawal Company, Port Carbon, Penna.

A band of laminated panels brightens this restaurant with up-and-down stripes of color. And the panels hold their color with almost no maintenance because they're glass-fused-to-steel, inside the restaurant and out.

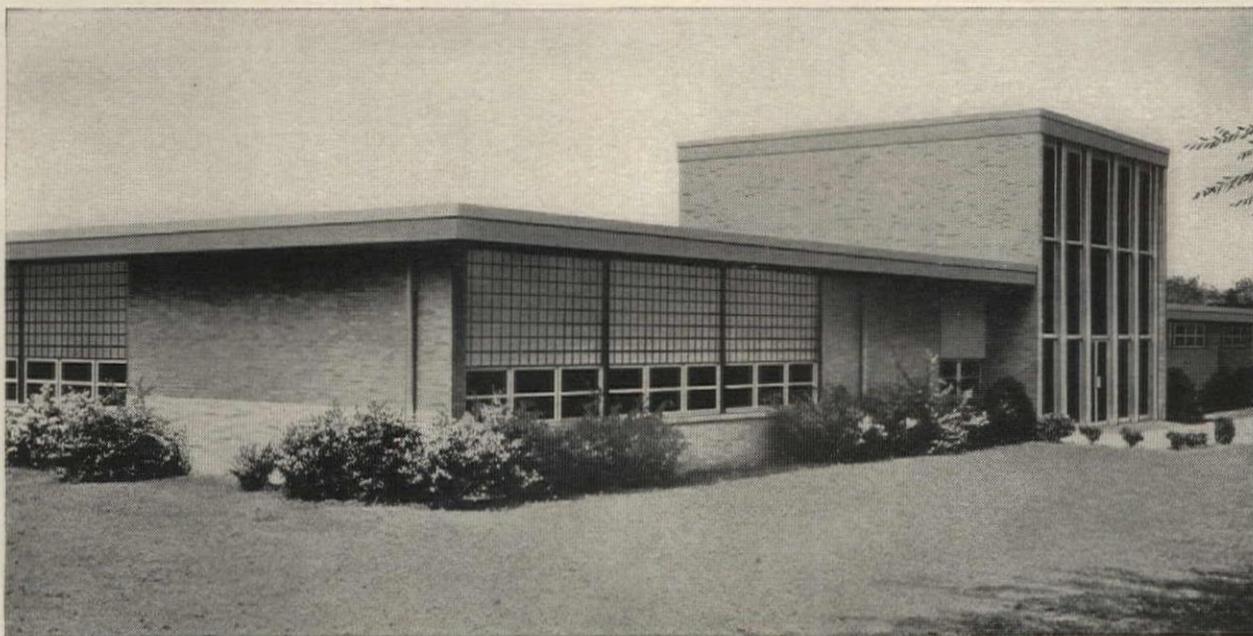
In these panels, both interior and exterior skins are bonded to cement-asbestos substrates with one type of Armstrong contact adhesive. The substrates are bonded to the insulating core with another type. These 1 1/4-inch laminated panels are strong and rigid, yet lightweight.

Armstrong contact adhesives are used to form panels of almost any combination of core and skin materials. These adhesives have superior weathering and aging properties and high resistance to static load and heat. They contribute to creative design in architecture by lending strength to panels faced with slate, granite, aluminum, and a variety of other attractive skins.

Write Armstrong for more information on using contact adhesives in laminated panels. Armstrong Cork Company, 8003 Dunedin Drive, Lancaster, Pennsylvania.

Armstrong ADHESIVES

eye appeal



through the use of attractive Natco face brick

Anyone coming into visual contact with the Palmer Memorial Center in Kingsport, Tennessee, is immediately impressed with its beauty, modernity and architectural grace.

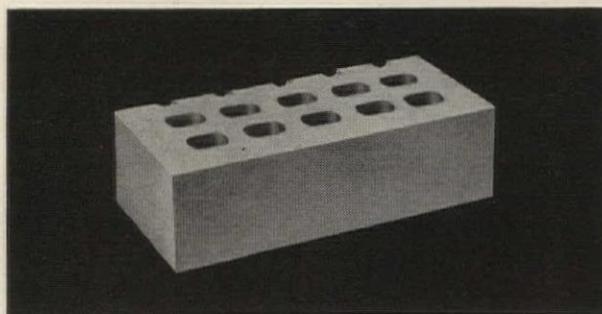
The architects and planners of this cerebral palsy center purposely selected Natco face brick for all exterior walls to help create this desired effect.

But face brick is only *one* Natco product that is ideal for hospital construction.

For *interior* wall construction there's colorful Natco Vitritile. Ceramic glazed Vitritile is a fireproof, sanitary, structural clay tile product that is completely durable and will last the life of any hospital in which it is installed.

For interior *and* exterior wall construction—both "laid-up" at the same time—there's Natco Uniwall. Uniwall is a single structural clay tile unit with two faces: An *exterior* face with an unglazed, textured finish. An *interior* face with a permanent ceramic glazed finish.

For full information, write for our general catalog Number S-63, our Uniwall catalog UW-100-5 or our face brick catalog SB-63.

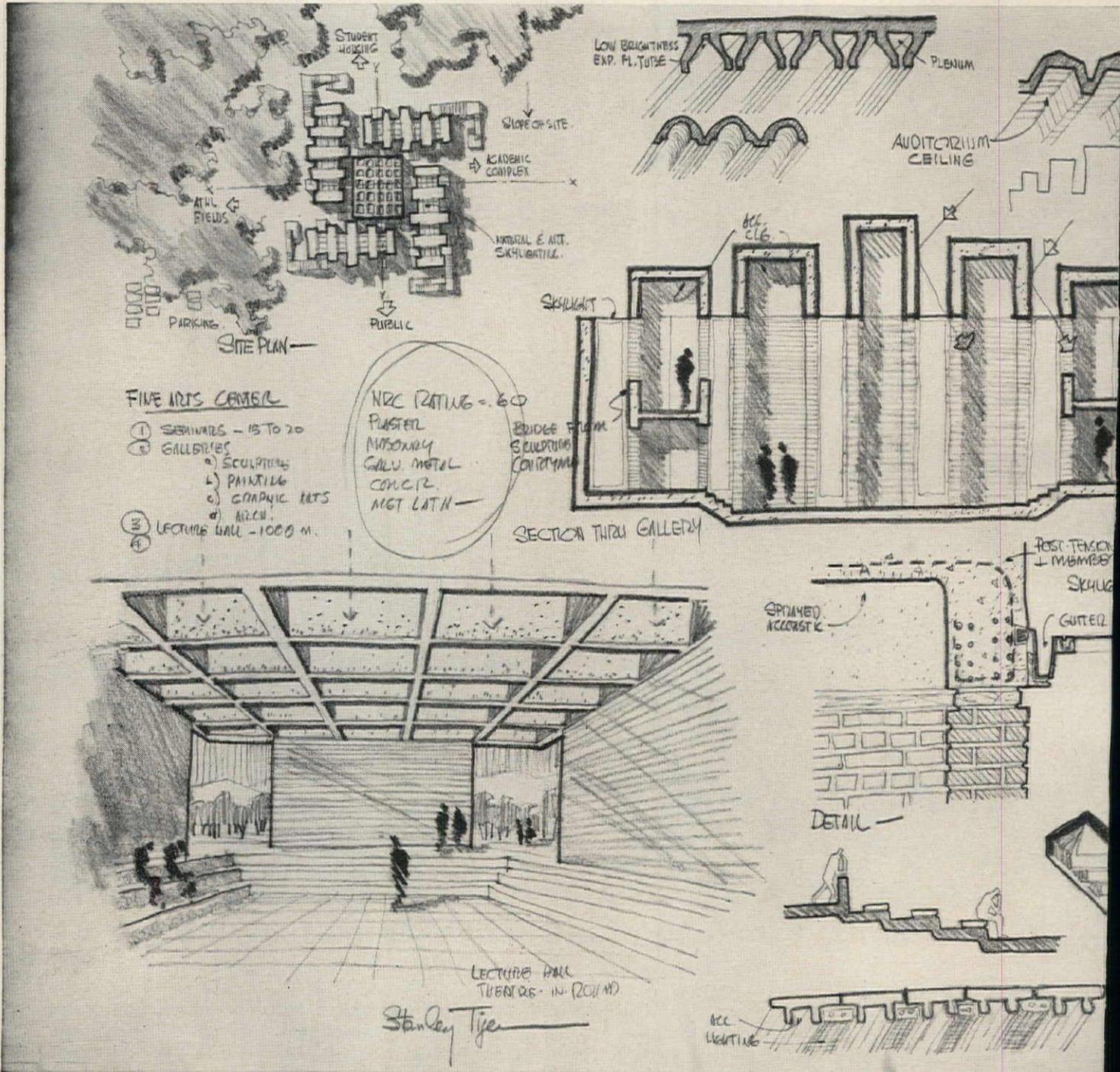


natco corporation

GENERAL OFFICES: 327 Fifth Avenue, Pittsburgh 22, Pennsylvania

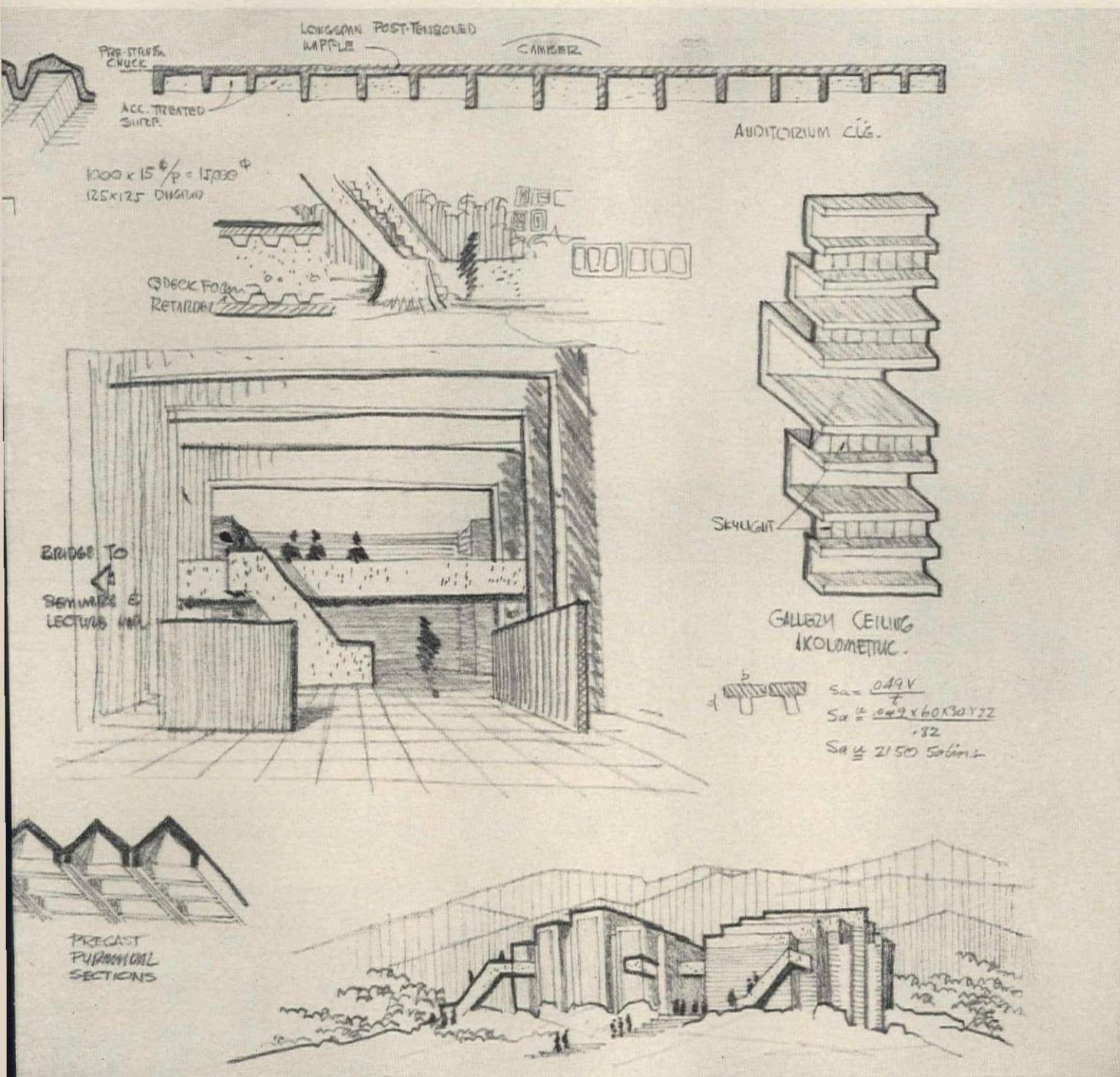
BRANCH OFFICES: Boston • Chicago • Detroit • Houston • New York • Philadelphia • Pittsburgh • Syracuse • Birmingham, Alabama • Brazil, Indiana

IN CANADA: Natco, Clay Products Ltd., 55 Eglinton Avenue, East, Toronto, Ontario



Acoustical ceilings are designable

Architect Stanley Tigerman gives us a few of his ideas regarding three dimensional, acoustical ceilings. Mr. Tigerman is a principal of the firm of Tigerman and Koglin, 100 West Monroe St., Chicago.



now that Zono-Coustic is here

Enough is enough. The number of flat acoustical ceilings made out of itty-bitty squares has reached the saturation point.

Three dimensions and the play of light and shadow are the elements that make ceilings interesting.

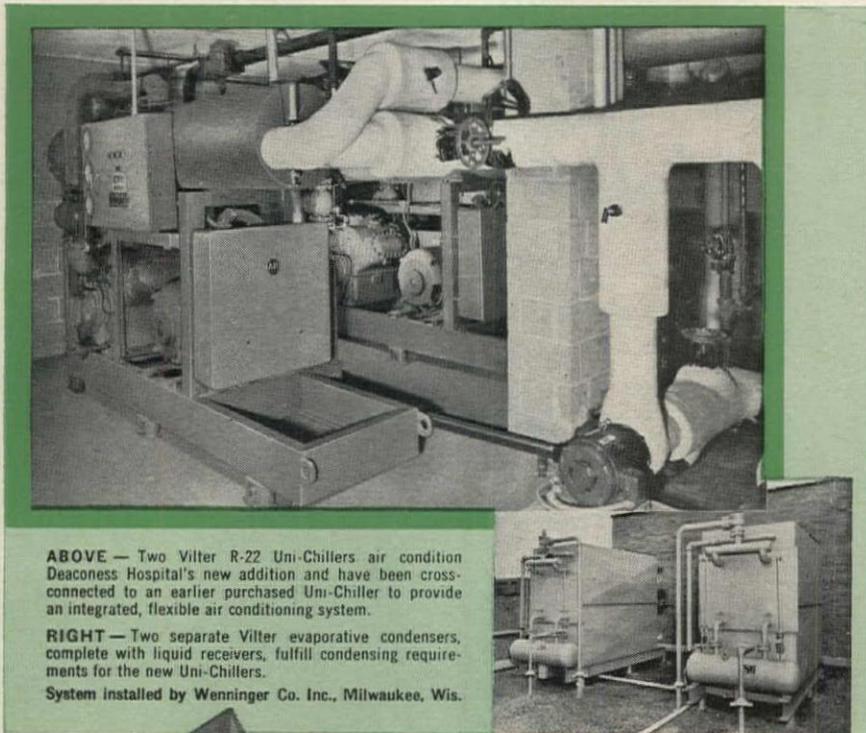
Zono-Coustic Acoustical Plaster will stick to the shapes you design, add the texture you want, and give you an N.R.C. rating of .60.

It can be machine applied over any clean firm surface such as base coat plaster, masonry, galvanized metal, concrete or metal lath surfaces.

Help stamp out flat, dull, acoustical ceilings. For complete information about Zono-Coustic, write for Bulletin #PA-59, to: Zonolite Company, 135 South LaSalle Street, Chicago 3, Illinois.

ZONOLITE

For more data, circle 92 on Inquiry Card



ABOVE — Two Vilter R-22 Uni-Chillers air condition Deaconess Hospital's new addition and have been cross-connected to an earlier purchased Uni-Chiller to provide an integrated, flexible air conditioning system.

RIGHT — Two separate Vilter evaporative condensers, complete with liquid receivers, fulfill condensing requirements for the new Uni-Chillers.

System installed by Weninger Co. Inc., Milwaukee, Wis.



Deaconess Hospital
expands Vilter
air conditioning system

... GAINS FLEXIBILITY and RELIABLE STANDBY CAPACITY

With exacting control of temperature and humidity prerequisites for patient comfort, today's hospitals place a premium upon an air conditioning system offering *flexibility and adequate standby capacity*.

The practical answer to the requirements of many hospitals is the Vilter Uni-Chiller, a packaged water chiller offered in capacities up to 200 tons. Uni-Chillers are built around durable and easily serviced VMC reciprocating compressors. The entire package is exceptionally compact enabling its installation on upper floors, in penthouses or basements. It is often practical to install two or more separate units, thereby gaining optimum flexibility in case of shutdown.

Deaconess Hospital, Milwaukee, Wis., is now benefiting from this approach to the air conditioning of its new wing. Seven years ago the hospital installed a 75-ton Uni-Chiller. It has now added two additional R-22 Uni-Chillers each incorporating a 6-cylinder VMC compressor to air condition its new wing, and supplement the earlier installation. The new equipment has been interconnected with the older water chilling system to achieve an integrated system which provides *ample standby capacity and optimum flexibility*.

Why not let Vilter help you the next time you require flexibility and efficient performance in an air conditioning system. See your nearest Vilter representative or distributor, or write direct.

Ask for Bulletins 220 and 143.



MANUFACTURING CORPORATION
2217 SOUTH FIRST STREET • MILWAUKEE 7, WIS.

REFRIGERATION AND AIR CONDITIONING

- Air Units • Ammonia and Halocarbon Compressors • Two-Stage and Booster Compressors • Water and Brine Coolers
- Blast Freezers • Evaporative and Shell and Tube Condensers • Pipe Coils • Liquid Transfer Systems
- Valves and Fittings • Pakice and Polarflake Ice Machines • Air Agitated Ice Builders

For more data, circle 93 on Inquiry Card

Product Reports

continued from page 226

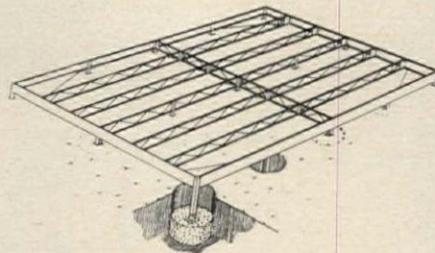
MULTI-ZONE HEATING

Standard Hydrotherm oil- and gas-fired boilers can be converted for multi-zone heating applications with *Zone-Pak*, which consists of a power supply, a switching relay and two, three or four zone valves mounted on compact manifolding. *Hydrotherm, Inc., Northvale, N.J.*

CIRCLE 304 ON INQUIRY CARD

STEEL FOUNDATIONS FOR HOUSES

House building can be started in winter with a steel foundation system. The only excavation required is the boring of holes 2 ft in diameter down through the frost line in order



to accommodate the legs. The perimeter has four 12-gage galvanized "C" members. Exterior beams are further protected with coal tar. The perimeter beams rest on four corner posts and eight intermediate posts. Concrete is poured around bottoms



of posts to stabilize them after the entire system has been squared and leveled. *U. S. Steel Corp., 525 Wm. Penn Place, Pittsburgh 30, Pa.*

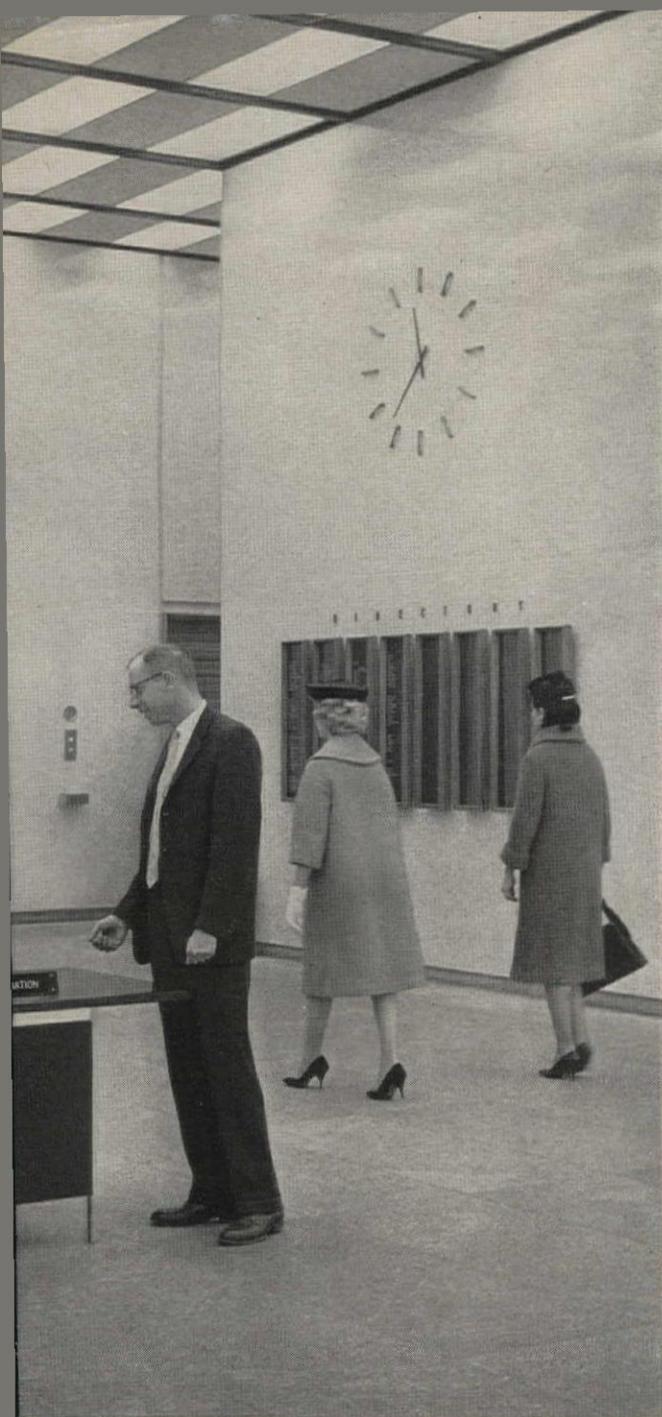
CIRCLE 305 ON INQUIRY CARD

WEATHERPROOF ENCLOSURES

Sky-Cap weatherproof enclosures for roof-mounted equipment are made of color-impregnated fiber glass. They are available in sizes large enough to cover vents as large as 4 ft sq and for all sizes of roof fans. *Brod & McClung-Pace Co., 9800 S.E. McBrod Ave., Portland 22, Ore.*

CIRCLE 306 ON INQUIRY CARD

more products on page 250



Shaded rooms may be heated, rooms on sunny side may be cooled—at the same time.

PIPE AIR CONDITIONING that assures lowers heating-cooling costs!

the pace in raising comfort standards for home, business and industry. For specification data on the Yorkaire Three Pipe air conditioning system, call your nearby York Representative; or write York Corporation, York, Pennsylvania. In Canada, Shipley

Company of Canada, Ltd., Rexdale Boulevard, Toronto, Canada. Get complete facts on the York Certified Maintenance Program, and the York Lease Plan that lets your customers install air conditioning equipment now, without capital investment.

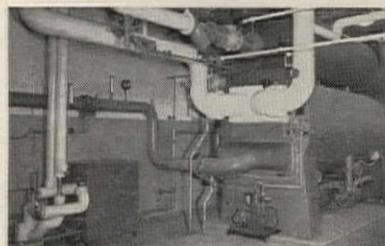
**Patented*

YORK CORPORATION
Subsidiary of Borg-Warner Corp.
YORK, PENNSYLVANIA



THE QUALITY NAME IN AIR CONDITIONING AND REFRIGERATION

ANOTHER YORK SOLUTION!



Cool with steam or hot water! This York absorption type unit provides economical water chilling for air conditioning wherever there is a source of low-cost steam or hot water.

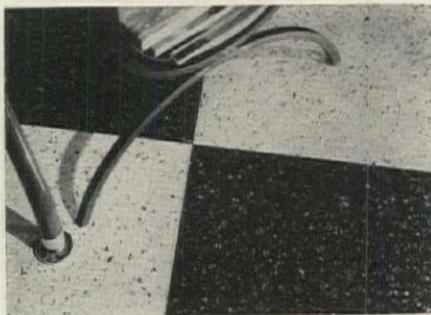
For more data, circle 108 on Inquiry Card

Product Reports

continued from page 258

RESILIENT FLOOR TILE

Vistelle Corlon tile, made with Du Pont's Hypalon, is a flexible, resilient vinyl tile that is said to have superior resistance to chemicals, stains, burns and indentation. Designed for commercial and institutional interiors, the tile is made in 9- and 12-in. square sizes. *Armstrong Cork Co., Lancaster, Pa.*



CIRCLE 317 ON INQUIRY CARD

CLEAN ACOUSTICAL TILE

Kleentone acoustical ceiling tile has a vinyl surface that absorbs noise, but won't absorb dirt. No painting is needed. *U.S. Gypsum Co., 300 W. Adams St., Chicago 6, Ill.*

CIRCLE 318 ON INQUIRY CARD

SHEET STEEL PANELS FOR LONG SPANS

An arched building system capable of clear-spanning up to 1,000 ft uses a stressed skin design consisting of two layers of sheet metal panels



which are roof, ceiling, structural frame and shell of the building. Steel struts separate and connect the two skins. *Behlen Mfg. Co., P.O. Box 287, Columbus, Neb.*

CIRCLE 319 ON INQUIRY CARD

Most practical
classroom unit
you can specify



vandal-proof push-button valve



This is Haws Model 2284 in stainless steel—featuring the new Haws push-button valves that send vandalism worries down the drain! Slow-closing valves work smoothly under slight pressure: can't be jammed or pried. And the gooseneck is extra-heavy $\frac{3}{8}$ " brass pipe: even you can't bend it! Same valves available on all Haws receptors, including enameled iron. Ask for the specs: write for details on Haws push-button valve.



DECK-TYPE RECEPTOR/FOUNTAINS

products of
HAWS DRINKING FAUCET COMPANY
1441 Fourth Street • Berkeley 10, California

For more data, circle 109 on Inquiry Card

PRODUCT BRIEFS

Factory-primed plywood is treated with lead-in oil and oven cured. *Roseburg Lumber Co., Roseburg, Ore.*

CIRCLE 320 ON INQUIRY CARD

Decorative telephone booths use plastic laminates to coordinate booth colors and finishes with surroundings. *Wavell Showcase & Fixture, Inc., 1395 Coronado Ave., Long Beach 4, Calif.*

CIRCLE 321 ON INQUIRY CARD

Flat conductor wire with adhesive backing is designed for low-voltage installations. It can be installed wherever nails or other fastening cannot be used. *Koiled Kords Inc., Whitney Blake Co., New Haven 14, Conn.*

CIRCLE 322 ON INQUIRY CARD

Extruded plastic louvers of colored rigid polyvinyl chloride resist weather and chemical damage. *Arrow Louver & Damper Corp., 41 Box St., Brooklyn 22, N.Y.*

CIRCLE 323 ON INQUIRY CARD

Ceram catalyzed finish, applied by roller or brush, gives a hard ceramic tile-like surface. *Luminall Paints, National Chemical & Mfg. Co., Chicago, Ill.*

CIRCLE 324 ON INQUIRY CARD