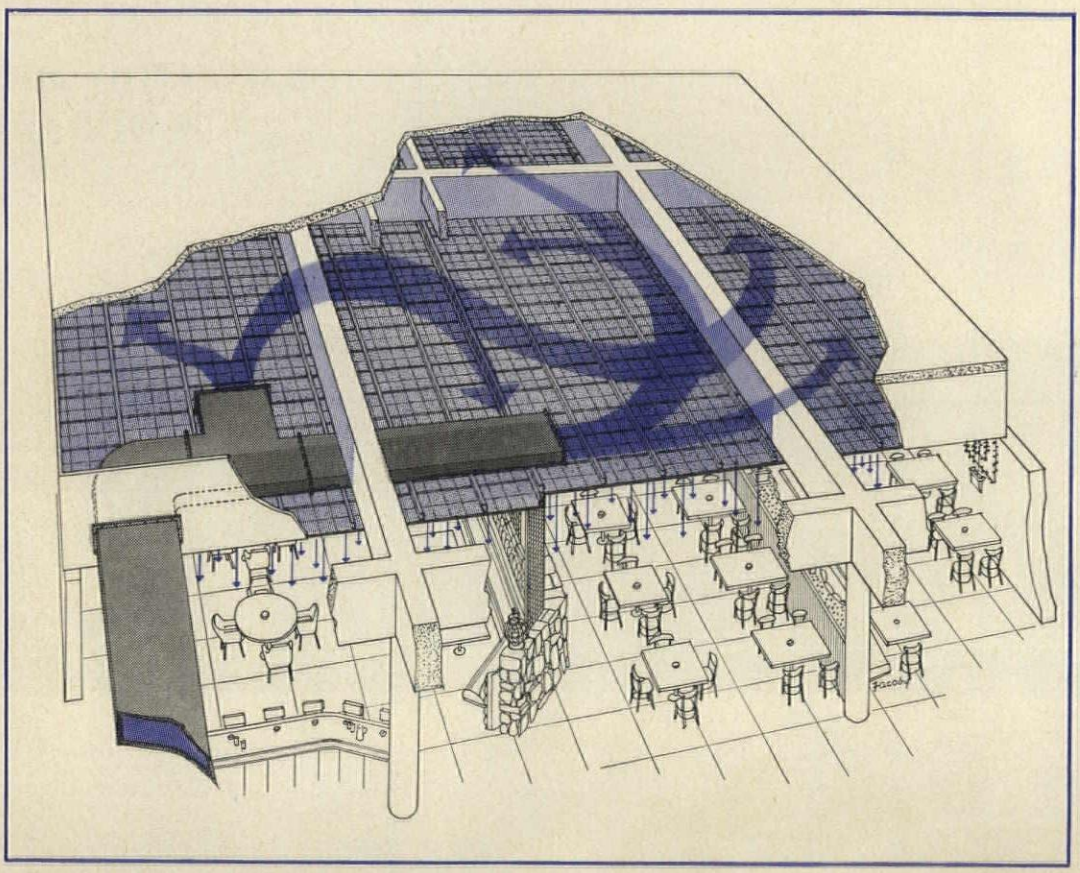
PROGRESSIVE ARCHITECTURE *February 1963*

In this Oregon motel, Armstrong Ventilating Ceilings achieve superior air distribution with simplicity of design



The attractive motel lounge pictured on the opposite page illustrates how an Armstrong Ventilating Ceiling contributes to interior décor—with an uncluttered ceiling that diffuses air. The rendering above shows how uniform air distribution is designed into the ceiling system for this area. This ceiling at the Doric Portland Motor Hotel, Portland, Oregon, is one of thousands of operating Armstrong Ventilating Ceilings across the nation. For more information write Armstrong, 4202 Watson Street, Lancaster, Pennsylvania.

Doric Portland Motor Hotel, Portland, Oregon. *Architect:* Douglas Bacon, 10025 Main Street, Bellevue, Washington. *General Contractor:* University Enterprises Inc., Seattle, Washington. *Mechanical Engineer:* Richard Stern, Seattle, Washington. *Structural Engineer:* George Runciman, Seattle, Washington. *Acoustical Contractor:* Johnson Acoustical & Supply Co., Portland, Oregon.

Photography by Lawrence S. Williams
Rendering by Helmut Jacoby

Armstrong CEILINGS / *acoustical fire-retardant ventilating*

For more information, turn to Reader Service card, circle No. 300

SERVICEABILITY STUDY ALUMINIZED STEEL TYPE 2

RESEARCH REPORT

ARMCO

Research and
Technology Division

Armco Steel Corporation
Middletown, Ohio

New steels are born at Armco

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To help evaluate the architectural advantages and applications of Armco ALUMINIZED STEEL Type 2, a research report of a thorough inspection of some 55 installations in 7 areas of the country has been released. In all cases, the report verified the economy and durability of this metallic-coated steel.

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This survey confirmed that in industrial atmospheres the coating on ALUMINIZED STEEL Type 2 lasts at least 4 times as long as an unpainted commercial galvanized sheet coating. Also, the report contains recommendations on where this aluminum-coated steel should, or should not be used for best results.

"Serviceability Study on ALUMINIZED STEEL Type 2," is free to architects, engineering firms and building products manufacturers. Send coupon for your copy. **Armco Division, Armco Steel Corporation, Dept. A-523, P. O. Box 600, Middletown, Ohio.**

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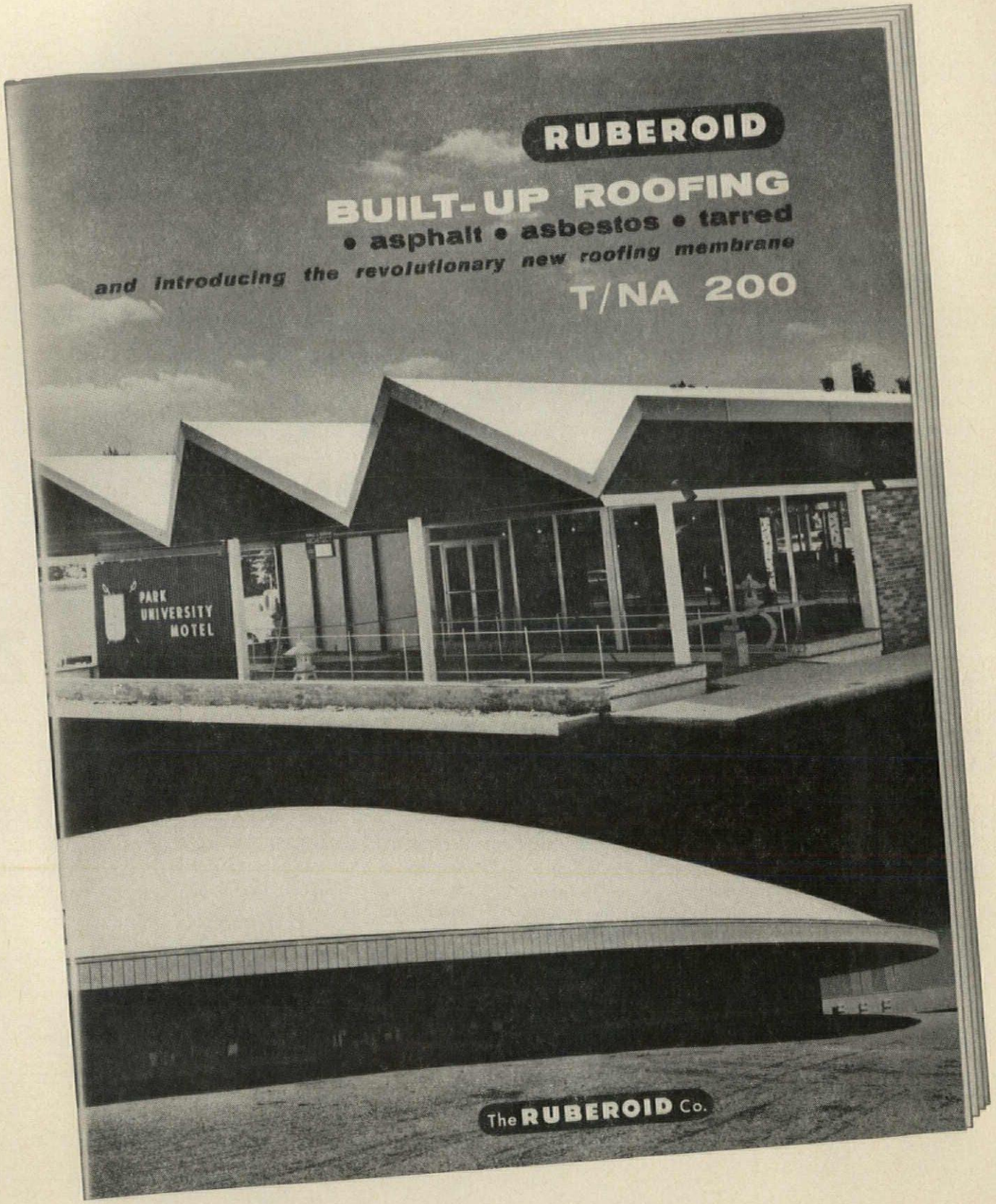

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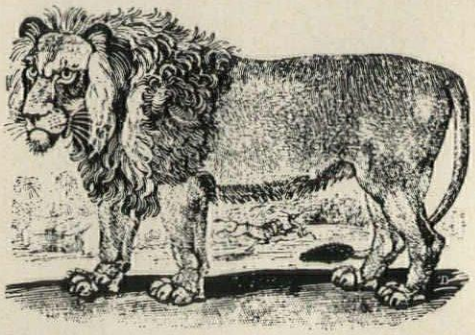
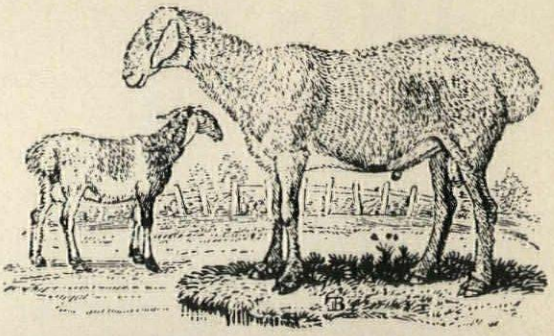
VOLUME XLIV, No. 2

Cover VIEW BETWEEN COLUMNS, IBM RESEARCH CENTER (page 132) Photo: Robert Mottar

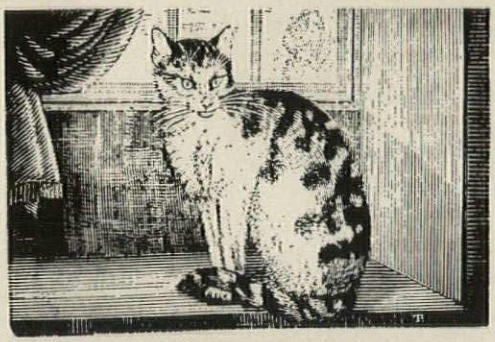
Frontispiece MONTAGE, IBM RESEARCH CENTER AND NEIGHBORING MEDIEVAL TOWN (page 132) Photo: Robert Mottar



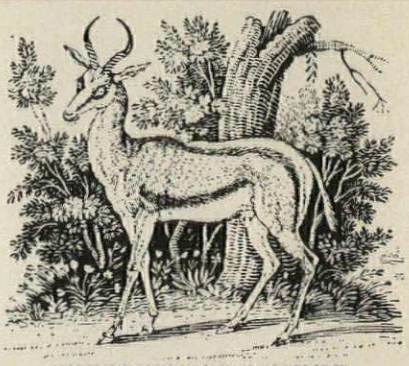
STRONG AS A LION



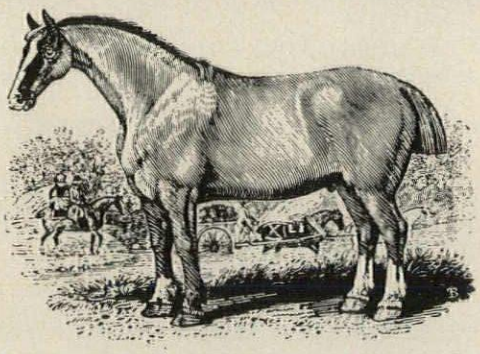
SOFT AS A LAMB



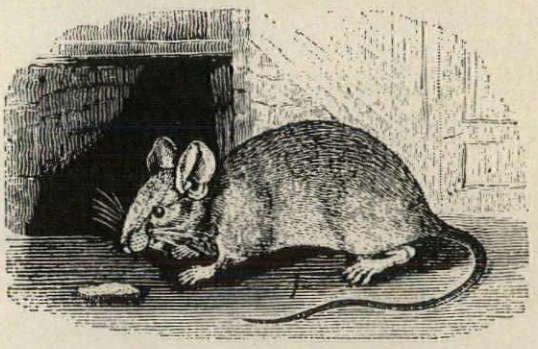
ELEGANT AS A CAT



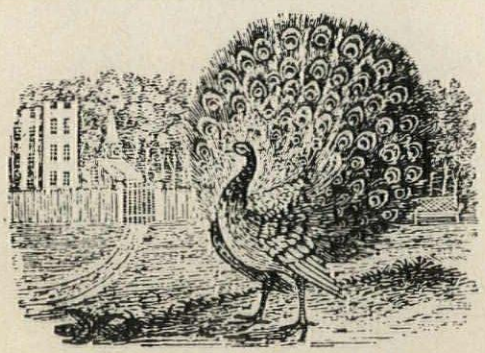
SPRINGY AS A DEER



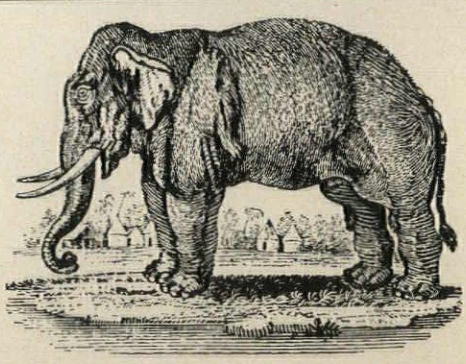
DEPENDABLE AS A HORSE



QUIET AS A MOUSE



COLORFUL AS A PEACOCK

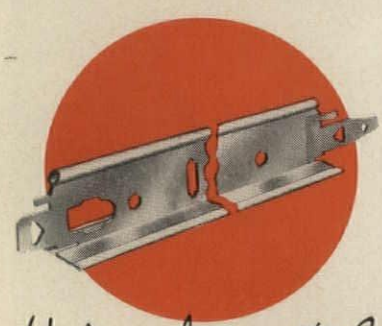


LONG-LIVED AS AN ELEPHANT (almost)

Commercial Carpeting by Callaway

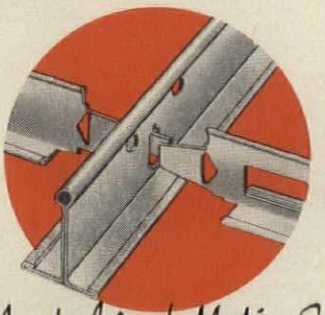
FOR INFORMATION, WRITE OR PHONE WAYNE ARIOLA, SALES MANAGER, COMMERCIAL CARPET DIVISION, CALLAWAY MILLS, INC., 295 FIFTH AVE., NEW YORK, MURRAY HILL 9-7800

How would you design a fire-protective suspension system?



Universal cross tee?

Firesafe's 4' tees are center routed to receive 2' members for economical 2'x2' layouts.

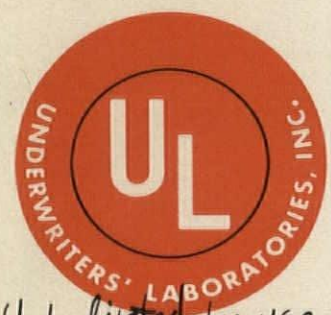


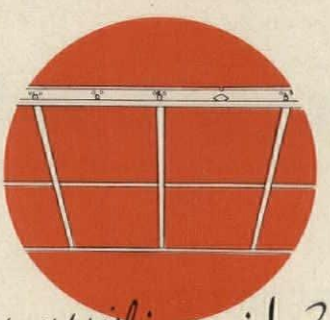
No-tool installation?

End tabs on tee, as well as beam splice, require no tools, will not hinder movement.

Uniform expansion?

Helix and rout in main beam make web fold vertically while flange buckles downward.



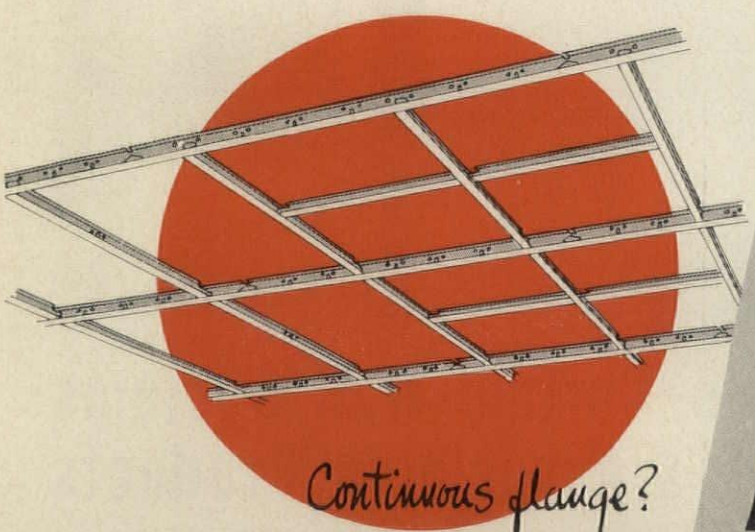


U.L. listed for use in fire-retardant 2'x2' and 2'x4' ceiling grids?

Firesafe is U. L. listed for installation under wood or concrete deck construction.

Firesafe has been tested for time-rated design with lighting fixtures and diffusers.

Firesafe also provides a time-rated economical bridging system where cost is a factor.



Continuous flange?

Firesafe Grid has no visible links, sleeves, expansion joints. Exposed flange can be specified in white enamel or with natural aluminum cap.

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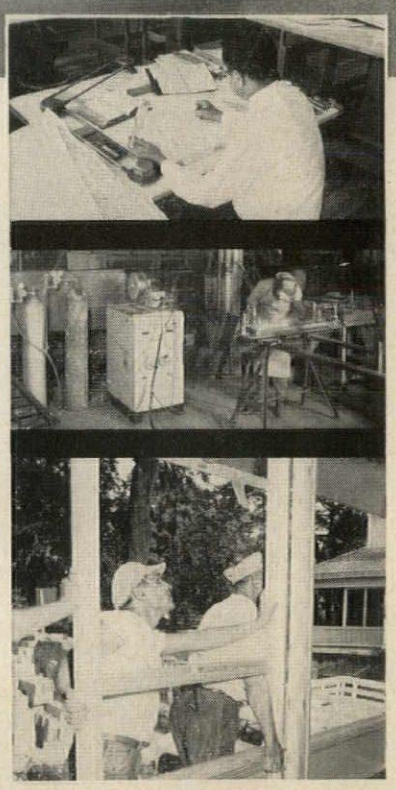

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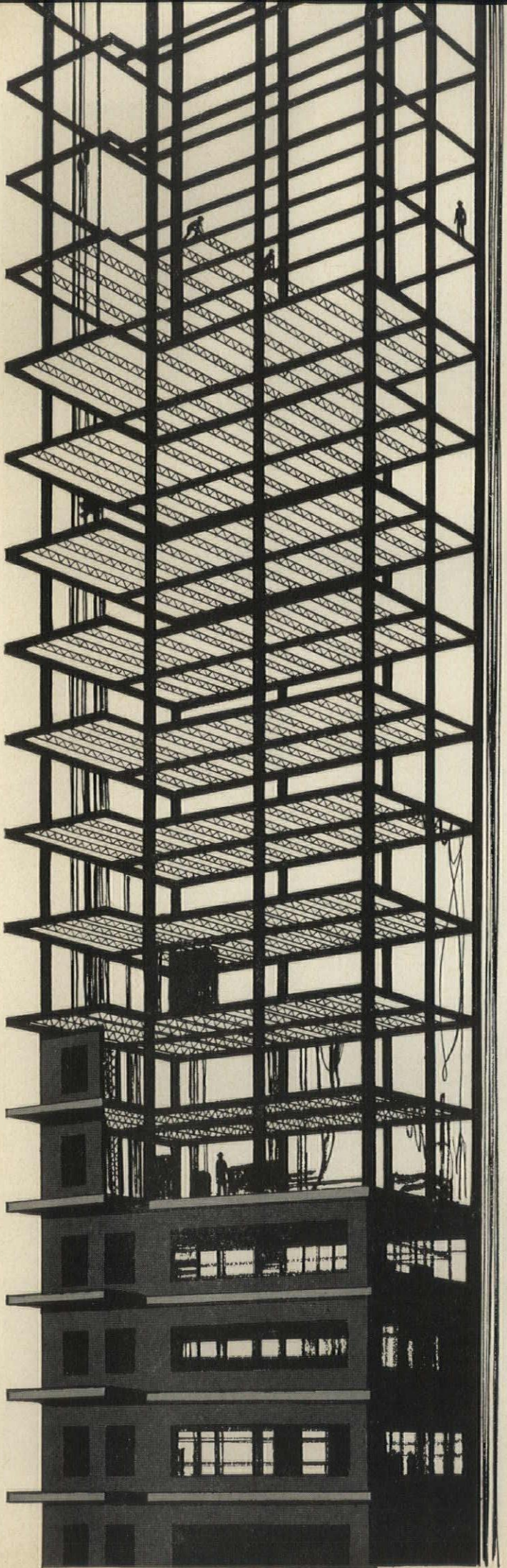

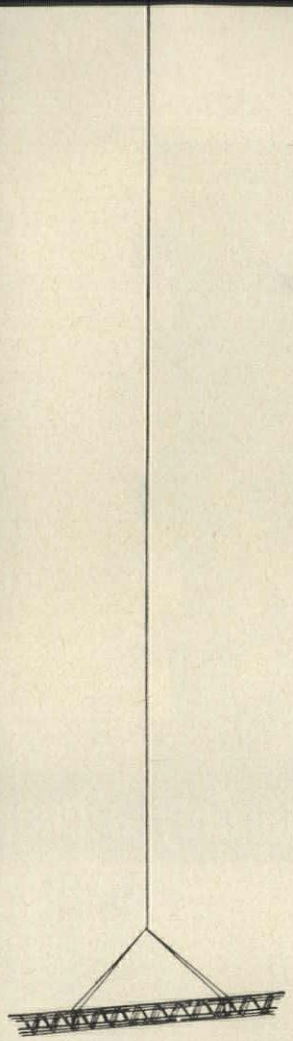

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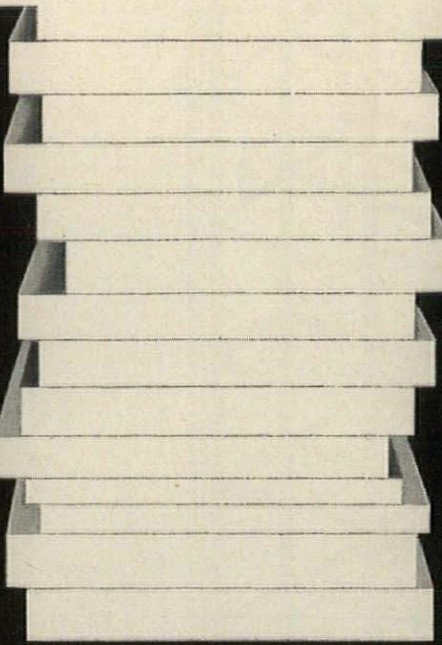

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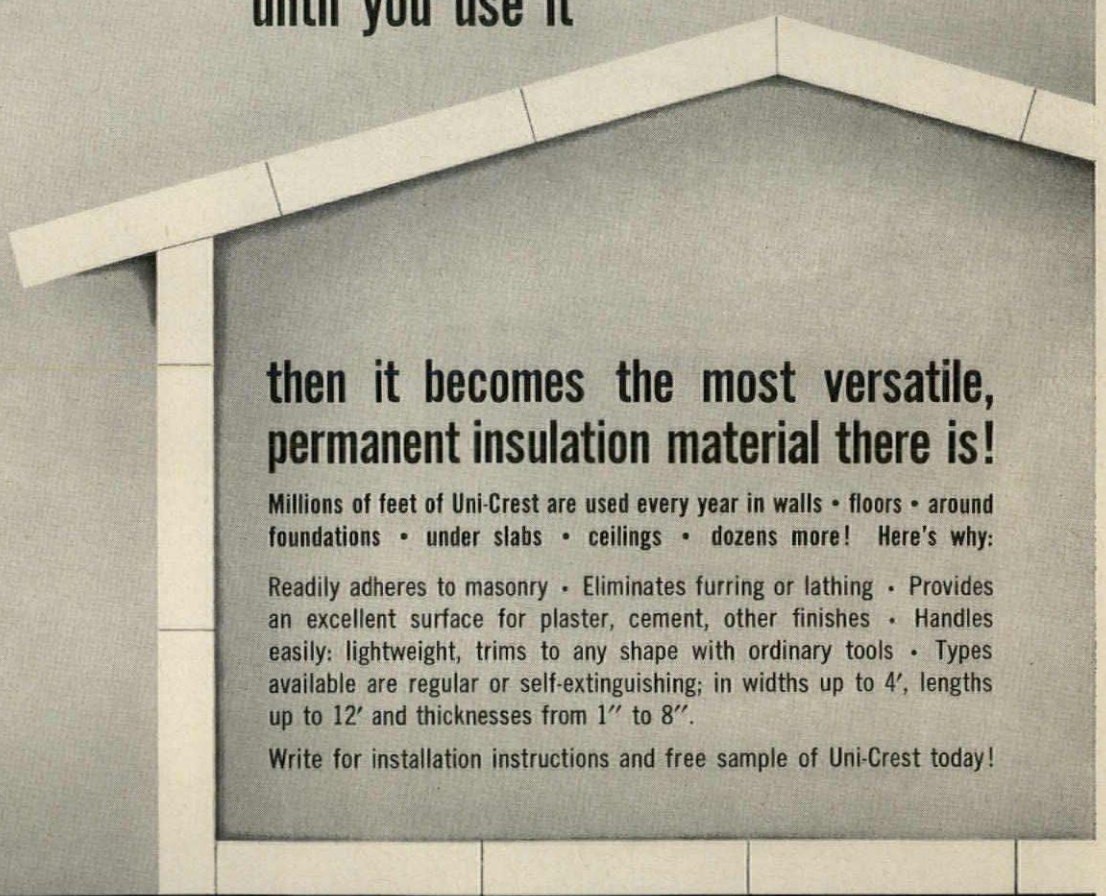

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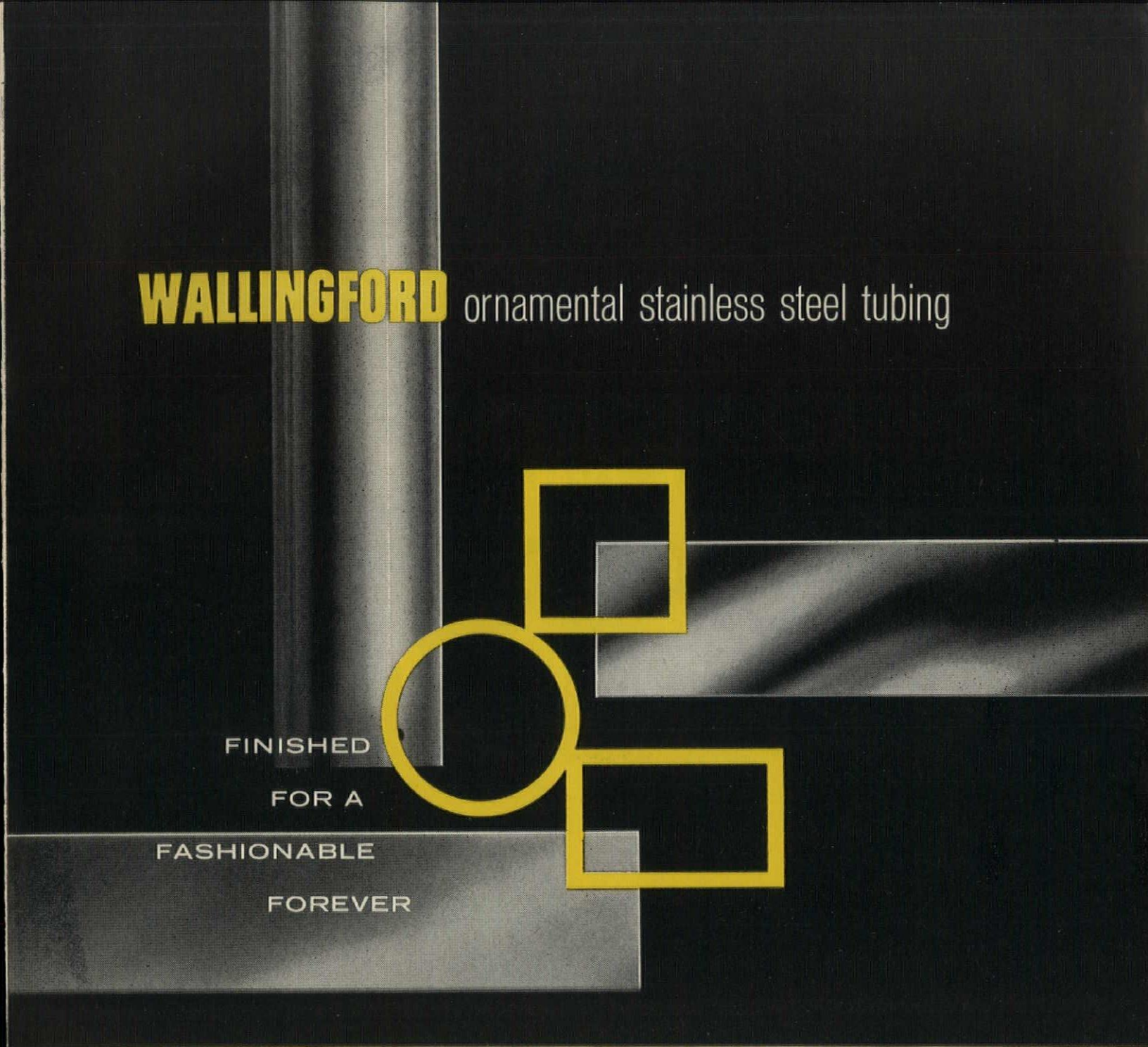

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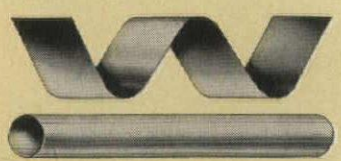

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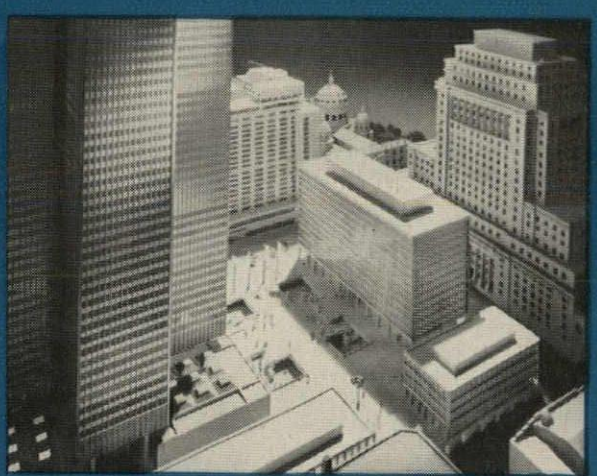

Place Ville Marie, Montreal. Architect: I. M. Pei & Associates, with Affleck, Desbarats, Dimakopoulos, Levensold, Michaud & Sise, Montreal. Consulting Engineer: Jas. Keith & Associates of Montreal, with Cosentini Associates, New York. General Contractor: The Foundation Company of Canada, Ltd., Montreal. Mechanical Contractors: John Colford Contracting Company, Ltd., and Kerby Saunders (Canada) Ltd., a joint venture.

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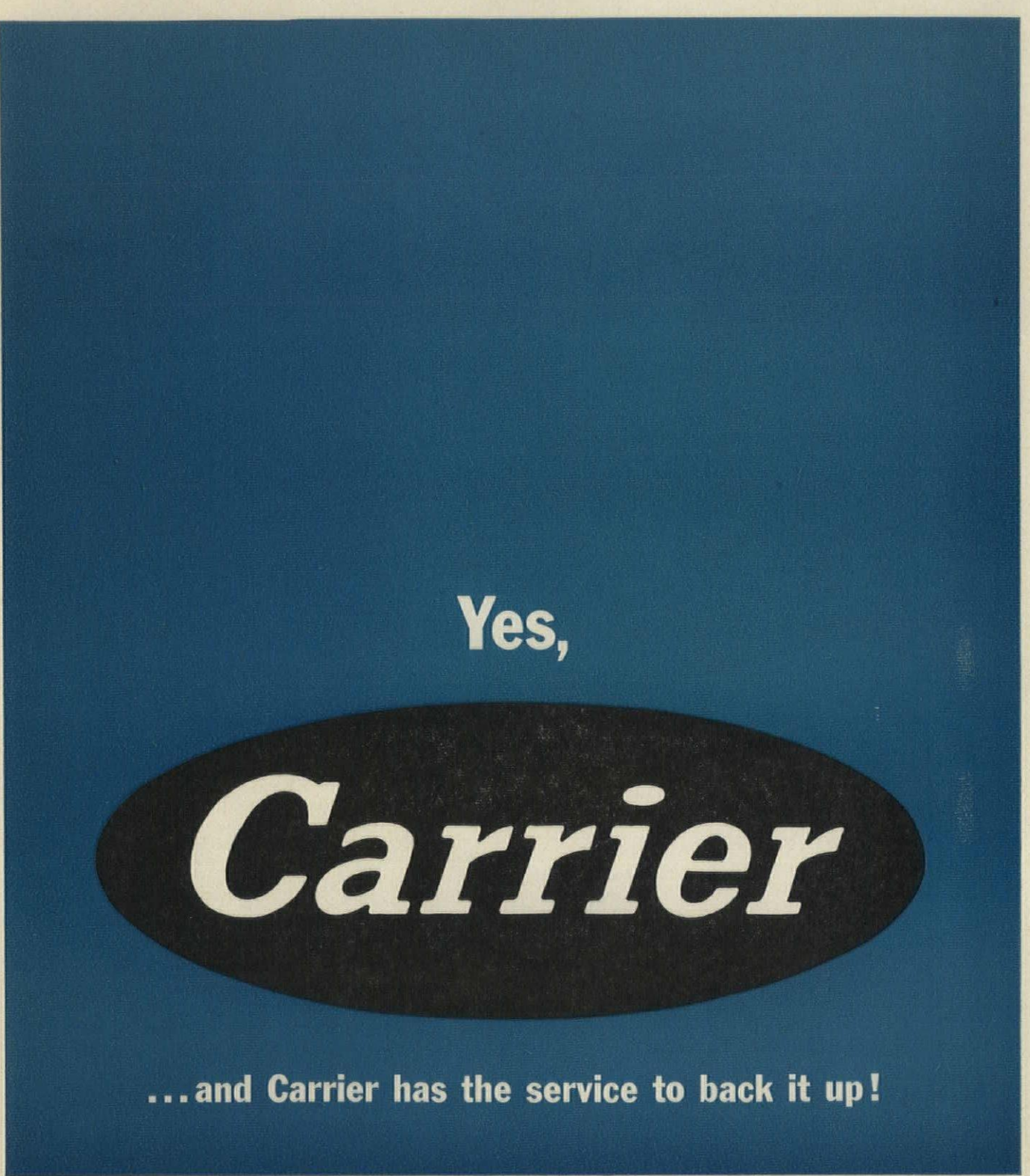

is the fountainhead for everything from delivery schedules to certified prints.

And after the plant has been turned over to the owner, responsibility for proper equipment performance continues to be centered on the same reliable shoulders.

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Carrier Air Conditioning Company

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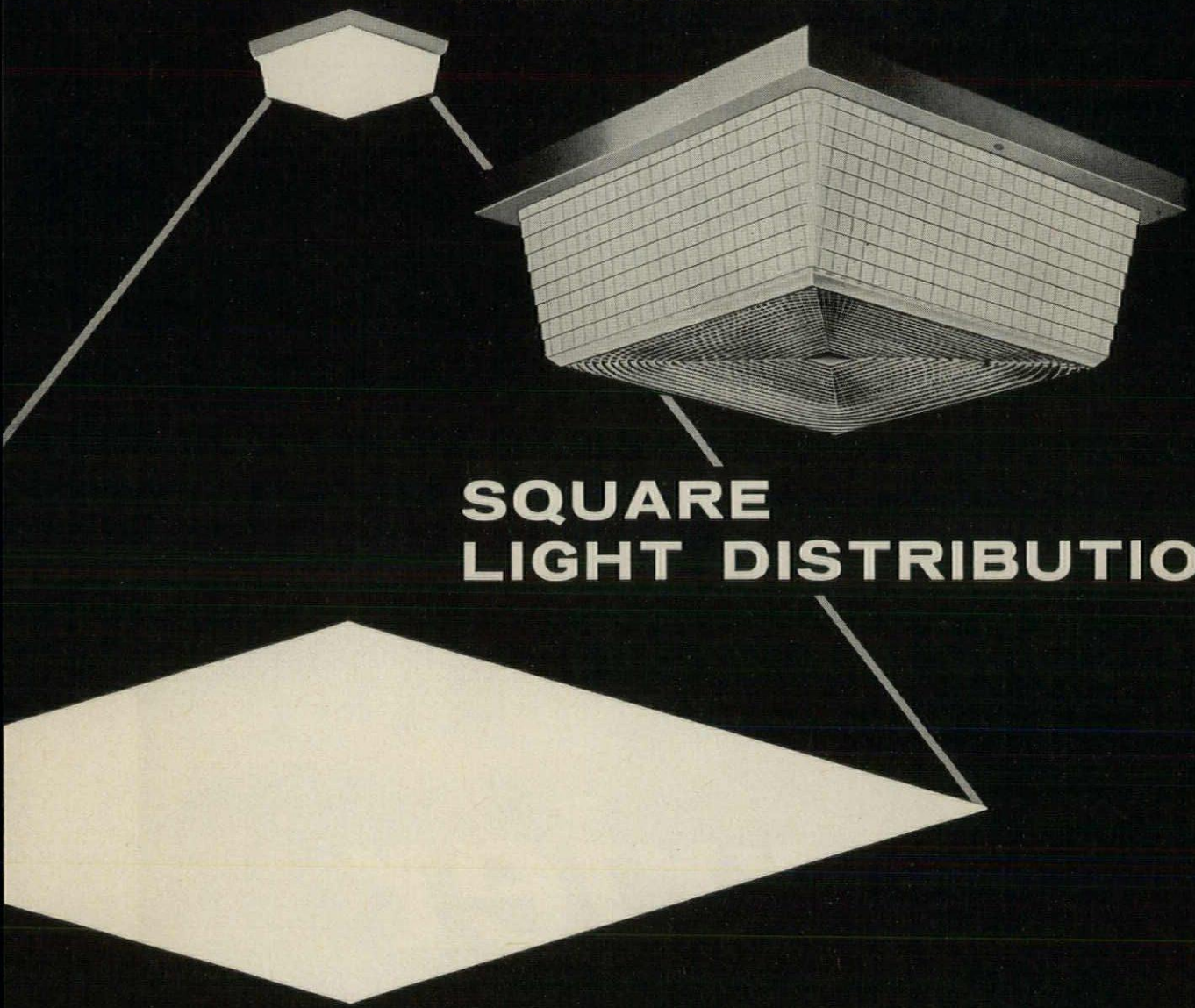

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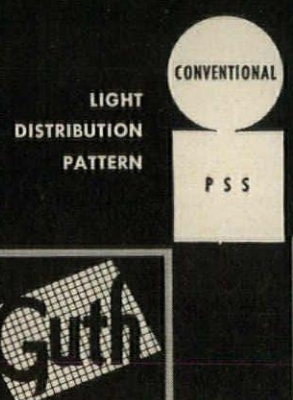

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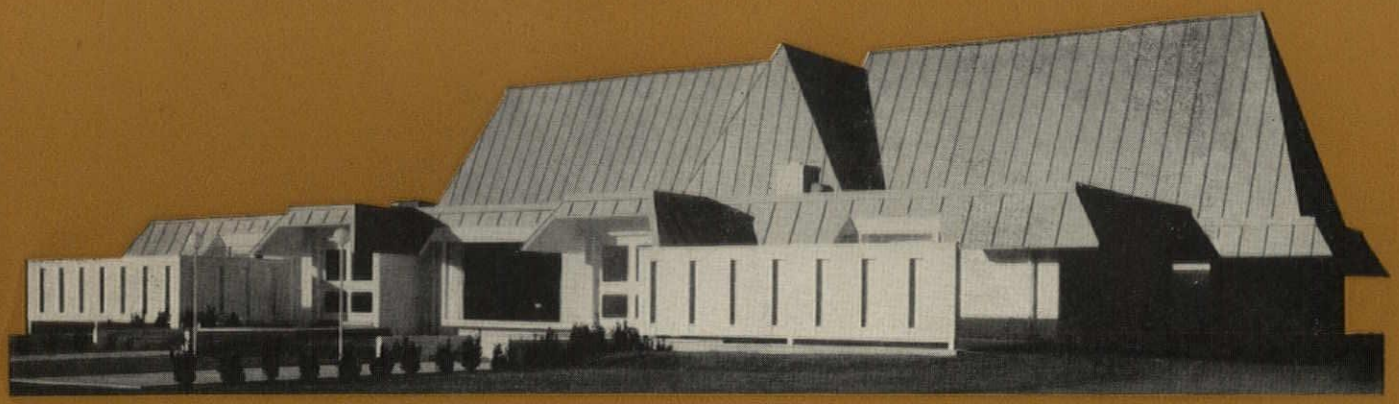
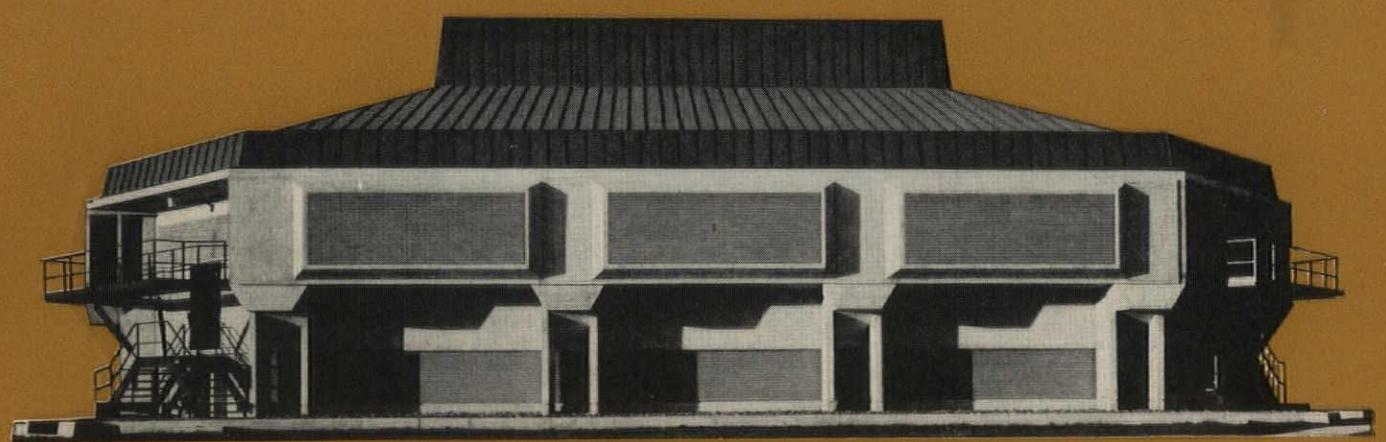


Haley Funeral Home, Highland Park, Michigan. Architect: Birkerts and Straub, Birmingham, Michigan. Contractor: J. Fred Steyer Roofing Co., Detroit, Michigan.

Alexander Memorial Arena Building, Georgia Tech. Architect: Aeck Associates, Atlanta, Ga. Contractor: R. F. Knox Company, Inc., Atlanta, Ga.



Arena Stage, Washington, D.C. Architect: Harry Weese, Chicago, Ill. Contractor: The Mathy Company, Washington, D.C.

"...THE VERY OLD BECOMES THE VERY NEW." Thus the late Frank Lloyd Wright described Follansbee Terne Roofing. It does seem a singularly apt characterization, for the material's functional integrity is matched by an almost unique affinity to the contemporary idiom. Terne's finest testimonial is the roster of distinguished American architects who have recently specified it for major projects. May we send you further information?

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For more information, turn to Reader Service card, circle No. 320

This high school girl does less giggling and whispering in class and she's paying more attention to her work. What's the reason?

Carpeting.

Carpeting in schools is past its pioneer stage. Many schools, public and private, all over the country have had carpeting for some time now, and some remarkable things have happened.

As expected, carpeted floors improved classroom acoustics and cut down on corridor noise.

But—and this came as a surprise—carpeting had interesting psychological effects on students of all ages.

For example, at Shaker High School in Newtonville, N.Y., there was less fooling around, less dropping of books and pencils. It was quieter in the halls. Students showed more pride in the looks of their school, more interest in studying.

And—this may come as another surprise—carpeting is actually very economical to maintain. A few quick minutes with the vacuum every day and classrooms and corridors are in shape.

What kind of carpeting should you pick for a school? A good choice is carpeting made with Acrilan® acrylic fiber in the pile.

Acrilan is the man-made fiber that is as practical as it is luxurious: in one classroom, at Shaker High, carpeting made with Acrilan has been down 4 years, has not shown signs of wear, has never needed a complete cleaning.

Thinking of putting acoustical floor covering in a school? Trust the big red "A."

For more information contact School Carpet Department, Chemstrand, 350 Fifth Avenue, New York 1.

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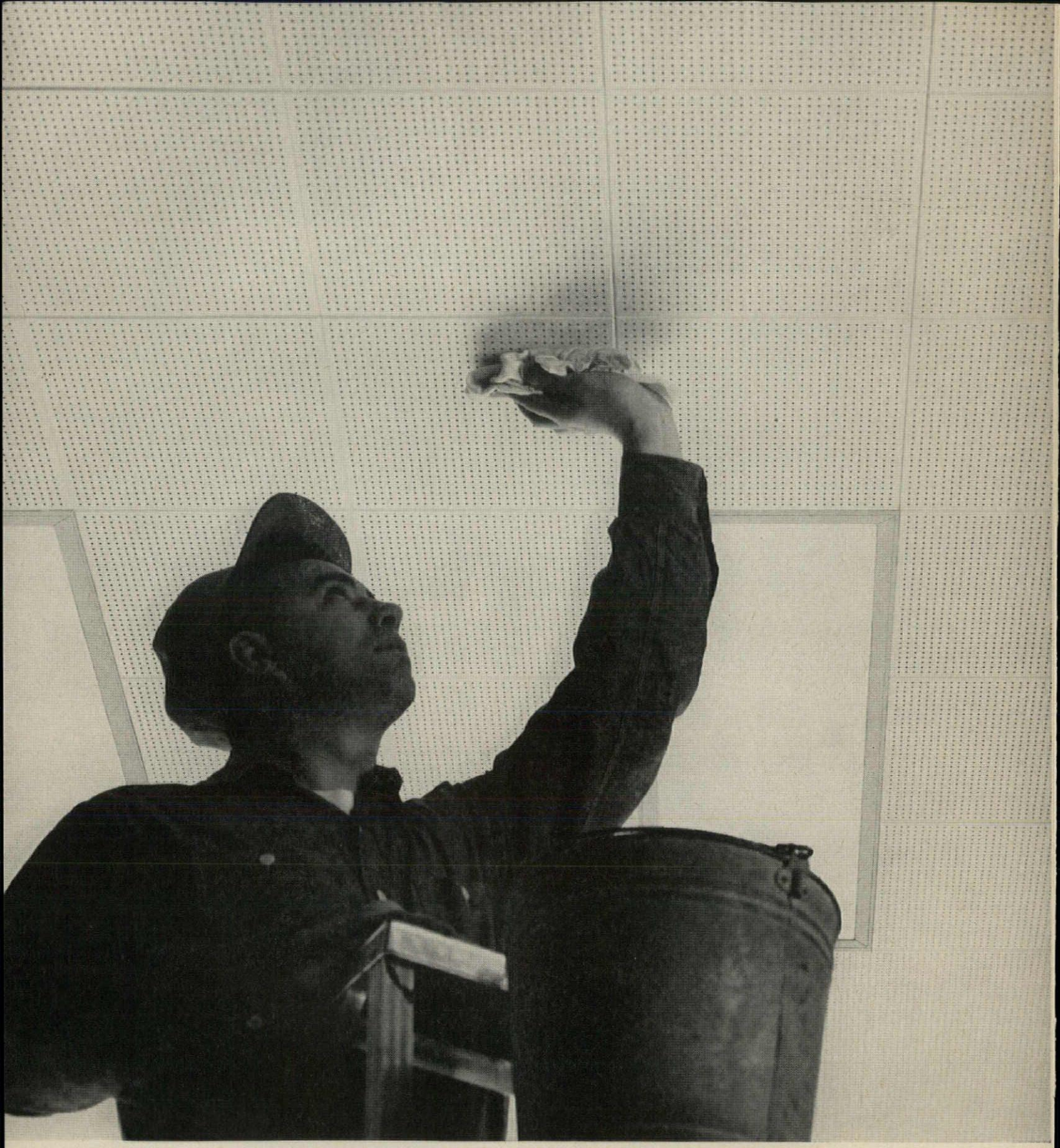
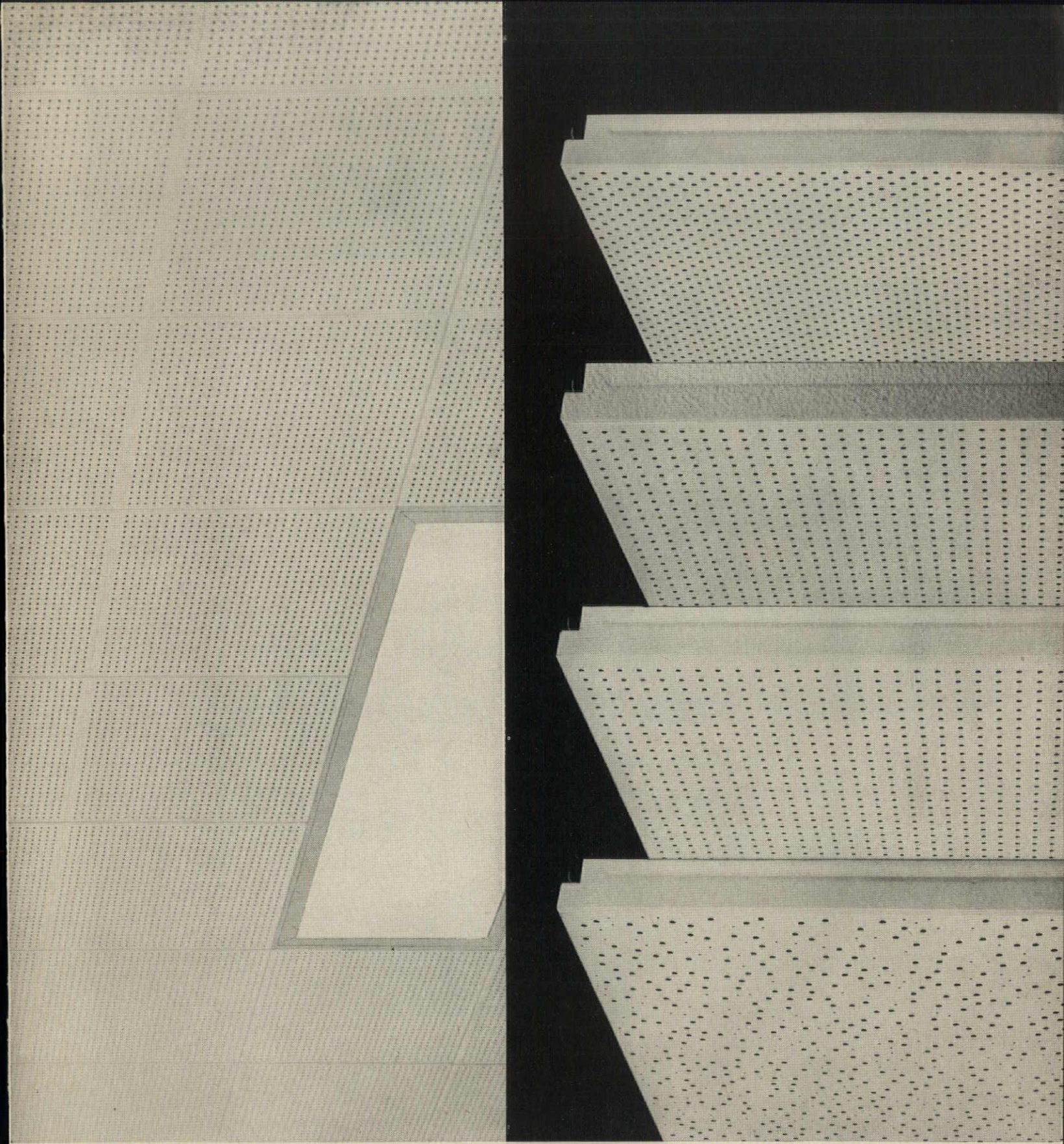
REDWOOD HELPS THE ARCHITECT put a school in a class of its own. This handsome new pattern is called Santa Rosa.® One side is Factrisawn® to provide an interesting texture, the other is smoothly surfaced. Either side may be exposed or they may be alternated for interesting variety. CRA Certified Kiln Dried Santa Rosa is economical because it employs standard 3/4-inch boards over 1/2-inch battens. It is packaged to stay fresh and bright and can be left completely unfinished or treated with an invisible water repellent. For an informative folder detailing the advantages of Santa Rosa, write: Department A-16, California Redwood Association, 576 Sacramento Street, San Francisco 11.

CRA



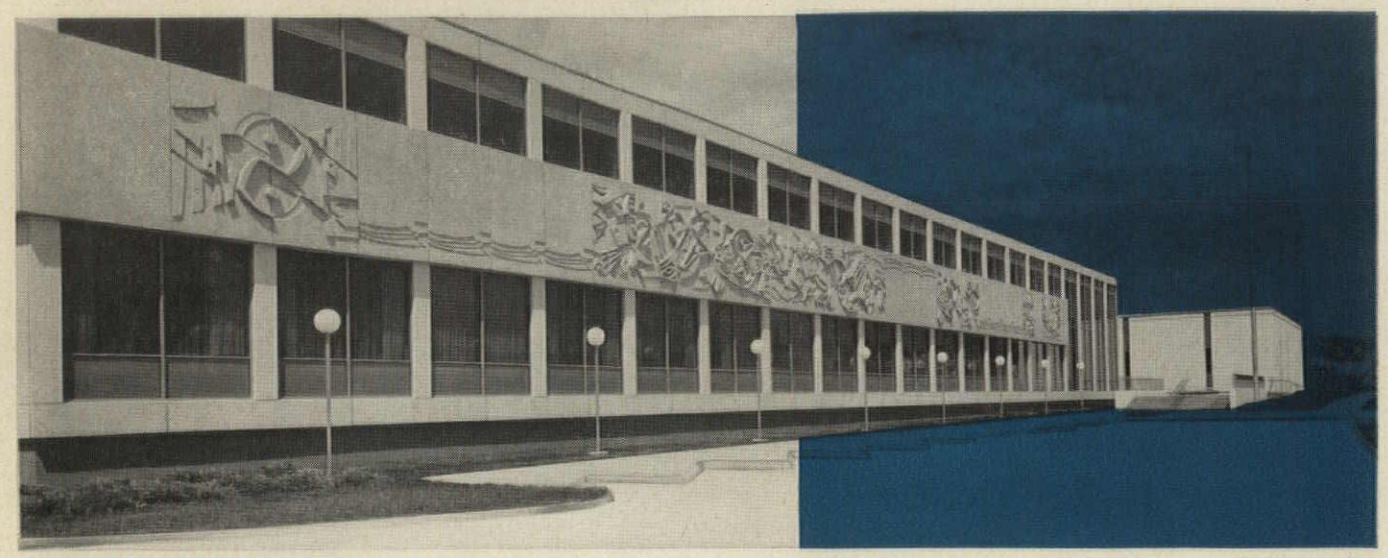
The Gold Bond difference: **Acoustimetal ceilings are washable, paintable, and almost indestructible**



When you take a 24-gauge-steel or an aluminum perforated pan, bake a surface of enamel on the exposed side, and add a noncombustible sound-absorption unit, you have an acoustical ceiling that will last as long as the building. Gold Bond Acoustimetal comes in units one foot wide, one to four feet long, in 12" increments (center scored to simulate 12" x 12" tile). Requires little or no cutting and fitting to get around snap-in flush lights or drop lighting. And units snap out of carrying channels for easy access to areas above. New, small bevel gives the ceiling that flat plane and evenly finished look you want. The new patterns to choose from are: Needlepoint, Diagonal, and Square. All are available in either smooth finish or Rippletone. Acoustimetal can soak up 90% of the noise that reaches it. And that's a lot of noise . . . anywhere. Ask your Gold Bond® Representative about Acoustimetal. National Gypsum Company, Dept. PA-23, Buffalo 25, N.Y.

Gold Bond
ACOUSTICAL PRODUCTS

Gold Bond materials and methods make the difference in modern building



PRECAST "MEDUSA WHITE" CONCRETE,

The Miracle Material for Modern Design

Today on the building horizon we see many magnificent buildings of modern design erected with custom precast concrete units of White Portland Cement. These units are truly *miracle materials* for attaining freedom of expression in newer architectural concepts, at the same time saving on construction and maintenance. They include plain and sculptured curtain wall panels, in unusual shapes, with white and tinted backgrounds and colorful aggregates, often spanning 2 and 3 stories . . . decorative block in a myriad of designs . . . and beautiful white or tinted split block.

Using Medusa, "the original" White Portland Cement and new techniques, concrete products manufacturers are precasting these architecturally designed units to most exact creative requirements in shape, size, color and texture. When designing with precast concrete units, specify Medusa White for its true white color and dependability. Send the coupon for detailed precast concrete unit information.

CENTRAL NATIONAL INSURANCE GROUP, OMAHA, NEBRASKA
Architect — Leo A. Daly, Omaha, Nebraska
General Contractor — Hawkins Construction Co., Omaha, Neb.
Panels by—Midwest Concrete Industries, West Des Moines, Iowa

OBERLIN CONSERVATORY OF MUSIC, OBERLIN, OHIO
Architect — Minoru Yamasaki — Smith, Hinchman & Grylls
Associated Architects and Engineers, Detroit, Michigan
Contractor — Jenning & Churella Const. Co., New London, Ohio
Panels by — Marietta Concrete Division
Martin Marietta Corp., Marietta, Ohio

"Ask Your Products Manufacturer"

medusa portland cement company

P. O. Box 5668 • Cleveland 1, Ohio

Gentlemen:
We are interested in detailed information on Medusa White Portland Cement for precast units.

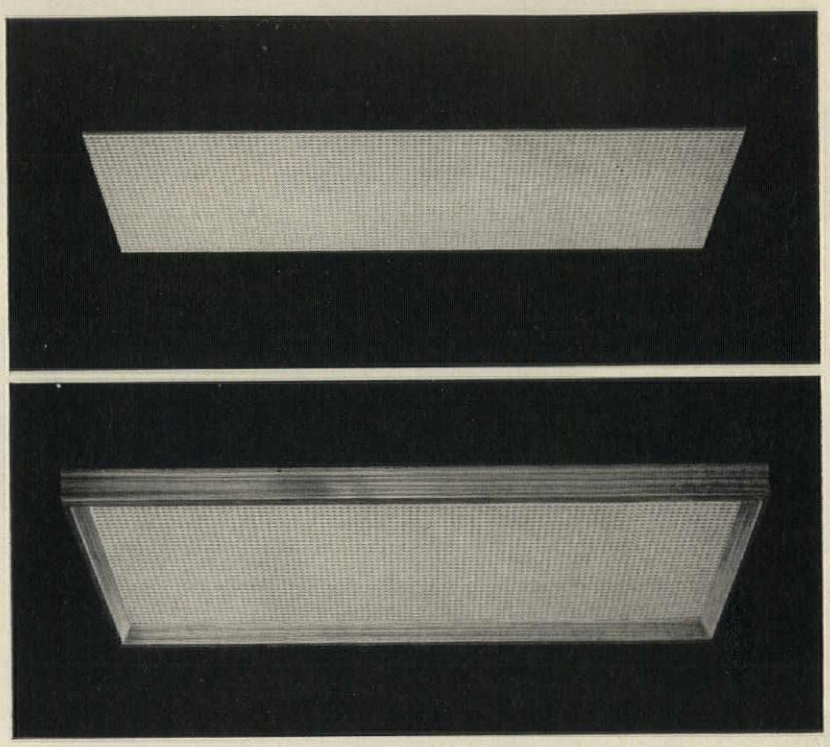
Name_____

Address_____

City_____ State_____

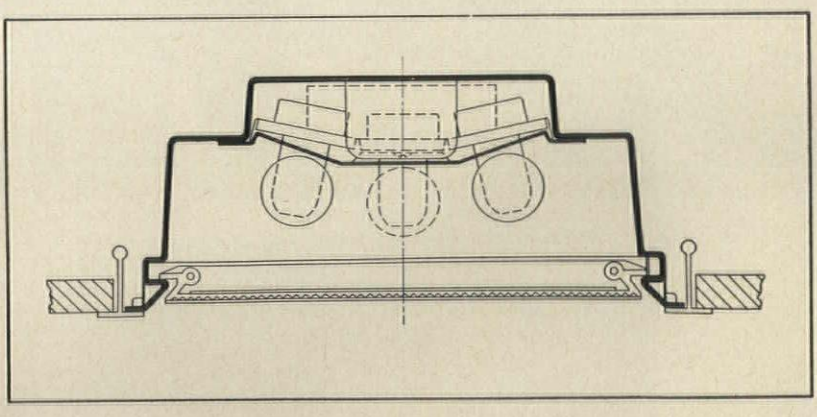
For more information, turn to Reader Service card, circle No. 395

No visible means of support!



No hardware, no gaps, no "frame-within-a-frame." All that meets the eye is a clean, precise rectangle of light. The diagram on the left reveals the secret: ingenious self-supporting shieldings. These were devised by Lightolier engineers to eliminate the mechanical look of so many of today's recessed fixtures.

Lightolier's advanced recessed designs are also available with decorative walnut frames, so that important areas can be accented while over-all design continuity is maintained. Built to Lightolier's high standards of construction and efficiency, these fluorescents are available in 1′ x 4′, 2′ x 4′, and 2′ x 2′ sizes and in a range of wattages—with prismatic or diffuse shieldings—to meet virtually any performance, budget or ceiling requirement. For further information, write for Brochure 39, Lightolier, Jersey City 5, N.J., Dept. PA-2.



LIGHTOLIER®

New York, Chicago, Dallas, Los Angeles

See the Yellow Pages for the name of your nearest Distributor.

For more information, turn to Reader Service card, circle No. 333

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 ½ in. and ¾ in.

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

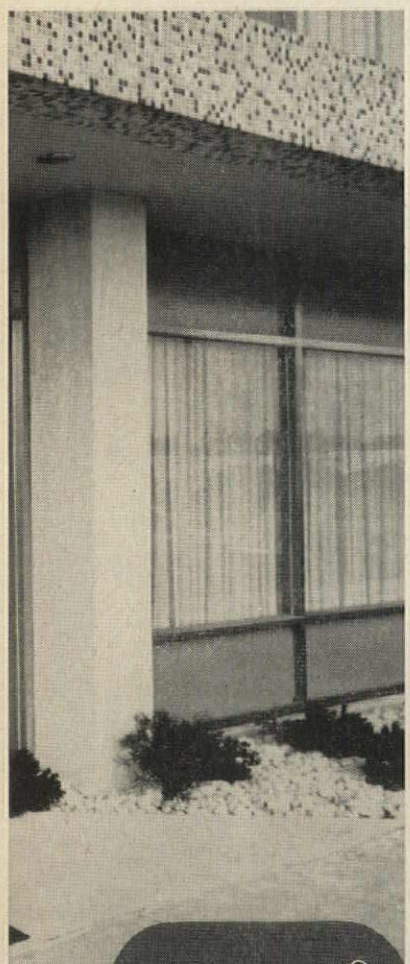
Stylish, aluminum-framed TUBELITE Doors have an exclusive interlocking feature to assure rigidity. Exposed seams and fastenings are eliminated by dovetailed, hollow construction. A reinforcing structural channel is available when required.

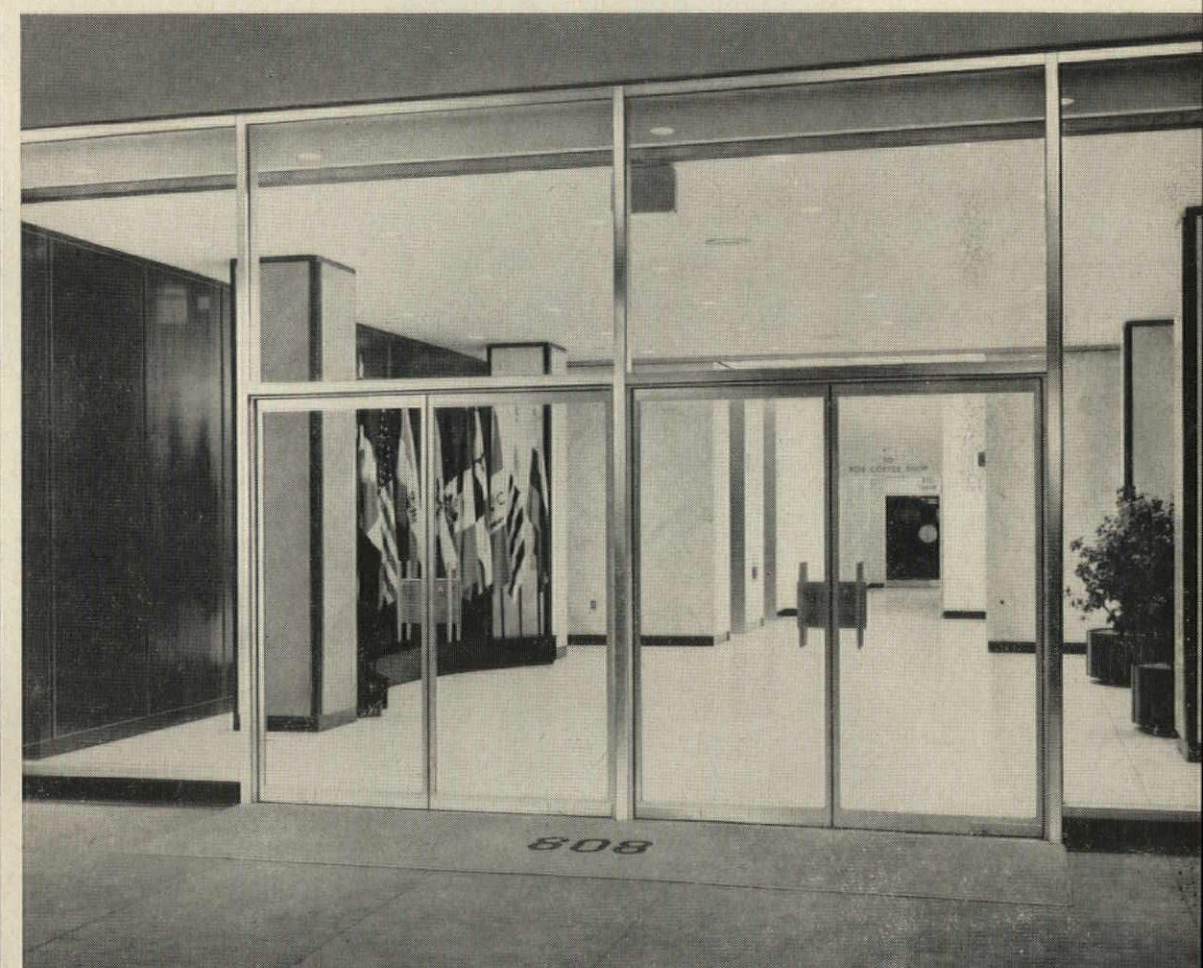
Simplicity of line and appealing design give Modern Doorways by PPG the look of distinction and elegance that naturally fits in with today's varied architectural requirements. An extensive range of sizes and styles gives you almost limitless design flexibility.

PPG offers three basic doorway units—HERCULITE®, WEST and TUBELITE®—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





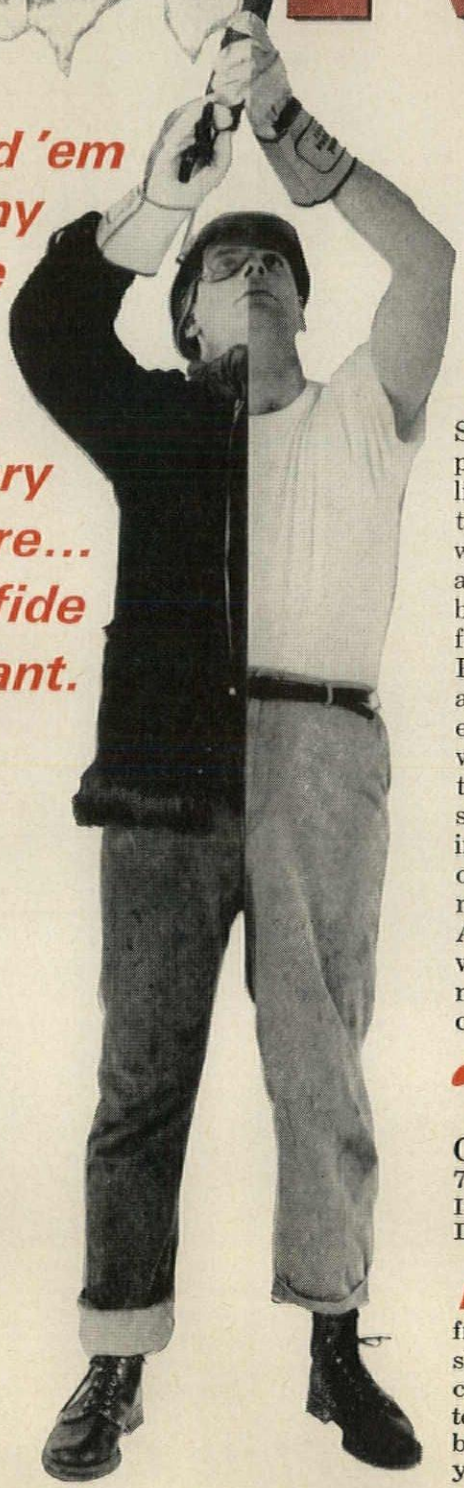
808 Office Building, Washington, D.C. Vlastimil Koubek, Architect

Elegant, slender-framed WEST Tension Doors have ½ 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

JOINTS



Rubber-weld 'em at any temperature for stand-up leakproofing through every temperature... with polysulfide base sealant.

Sealing compound with THIOKOL® polysulfide polymer (synthetic rubber in liquid form) can be applied at any temperature at which a man can work. It welds itself to all building materials with an adhesive and cohesive bond that bears the brunt of seasons—season after season. Let it freeze. Let it bake. Let the wind blow. Properly applied polysulfide base sealant absorbs shock and vibration, will expand to better than twice its original width and shape—and recover—without tearing, sagging, or diminishing in serviceability. One or two-part systems installed by caulking gun custom fit any joint on the job site. Polysulfide-base sealants meeting American Standard Specification A116.1 produce the most satisfying weatherproofing job you can get. You may pay more for sealant, but you can't buy better.

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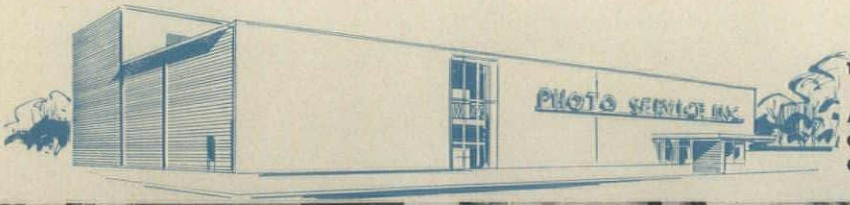
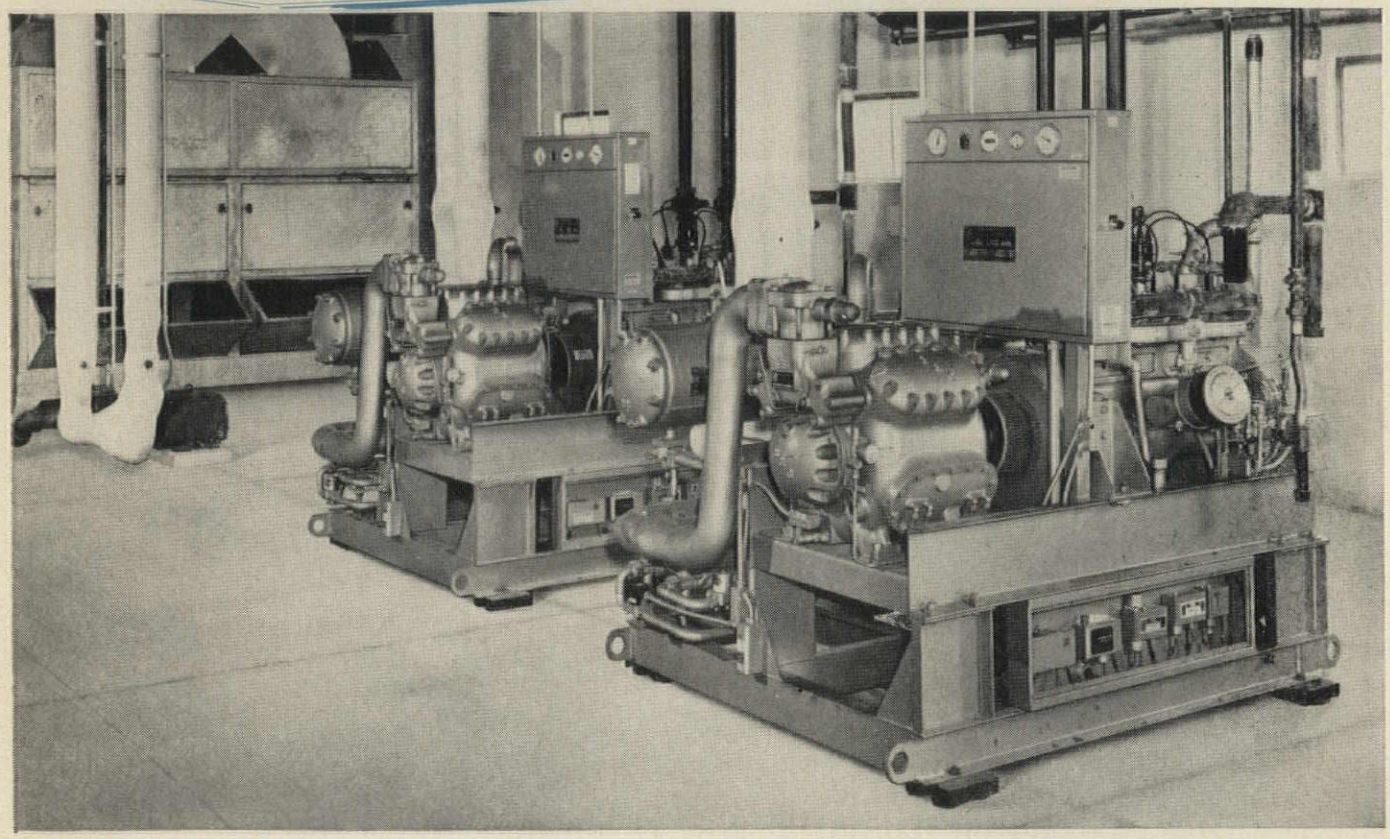
Here's how...

free application handbook shows joint preparation, correct mixing and handling techniques for polysulfide base sealant. Write on your letterhead to Thiokol.

Thiokol makes raw material only. Names of manufacturers of finished sealants furnished on request



THE BUILDING:
Photo Service, a subsidiary of Crown-Bremson Industries, Inc.
ARCHITECT: Robert Stauber, Des Plaines, Illinois
CONSULTING ENGINEER: John T. Cartland, Park Ridge, Illinois
CONTRACTOR: James W. Hardy, Des Plaines, Illinois



DOUBLE-DUTY GAS LIQUID COOLER SAVES $3,200 YEARLY

The air conditioning system for Photo Service, Inc., is designed around two 50-ton B&G gas engine driven package liquid coolers. These units not only cool a 45,000 square foot building but also warm the water used for processing films.

This dual service results in operating savings estimated to be $3,200 per year. Between the economies achieved by gas fuel and the reclaiming of waste heat from the engine cooling water, the overall operating cost is reduced to 36¢ per hour. Similar economies can be expected in areas where gas rates are favorable.

B&G gas powered package liquid coolers are equipped with an industrial type, low speed engine which operates at a maximum of 75% of rated horsepower, an assurance of long life and minimum maintenance. Lubrication is needed only once a cooling season. They are equipped with complete electrical control panels.

An exclusive advantage of B&G Coolers is that they are the only units on the market in which all major components (except the engine) are built and guaranteed by one manufacturer —a single source of responsibility. They are checked, tested and started by a factory serviceman to assure that the equipment is started under optimum conditions.

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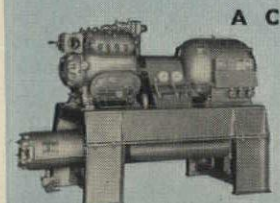
Dept. HL-37, Morton Grove, Illinois
Canadian Licensee: S. A. Armstrong, Ltd., 1400 O'Connor Drive, Toronto 16, Ontario

A COMPLETE LINE OF AIR CONDITIONING COMPONENTS AND PACKAGES

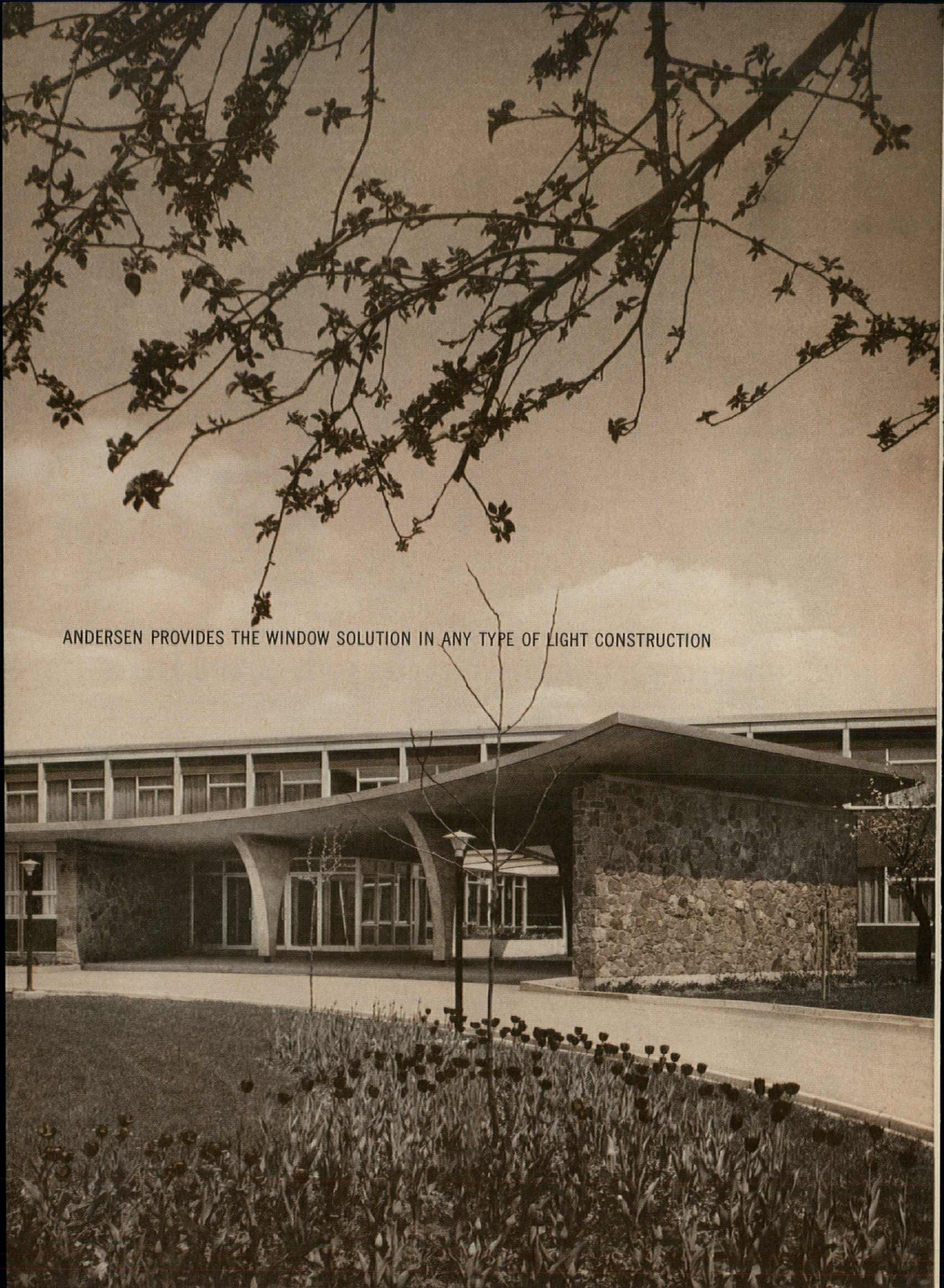

Condensing Units


Compressors

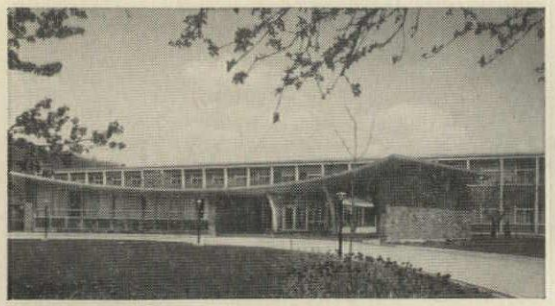

Centrifugal Pumps


Condensers


Evaporators



ANDERSEN PROVIDES THE WINDOW SOLUTION IN ANY TYPE OF LIGHT CONSTRUCTION



Parkside High School Dundas, Ontario, Canada
Architects: Kyles & Kyles, Hamilton, Ontario

Stock windows contribute to excellent modular design of this Ontario high school

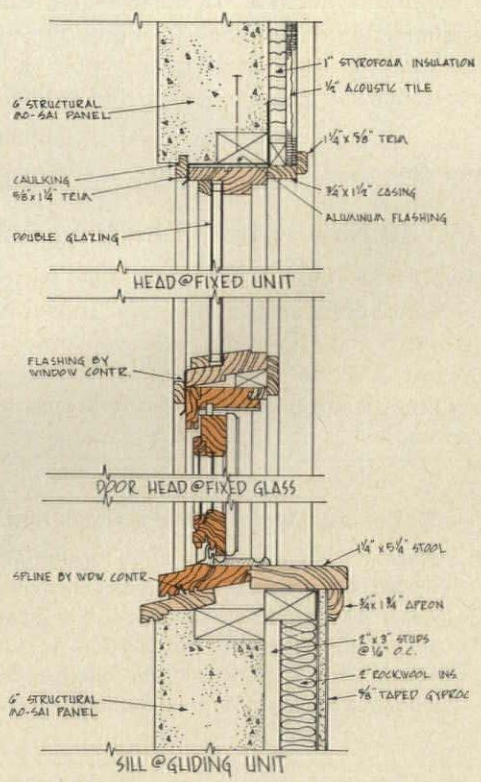
Extra weathertight Andersen Windows permit large glass areas without sacrificing insulating effectiveness

Design problem facing Kyles & Kyles: how to create a modular, panel structure . . . with emphasis on unusually large window areas . . . without being plagued by excessive heat loss in Ontario's severe winter cold.

Solution? A combination of stock Andersen Windows . . . Flexivents® to accent the single-floor entry design . . . Gliders set in fixed glass units in the two-story classroom section. All selected from Andersen's broad line: 7 basic styles . . . over 600 sizes . . . limitless combinations . . . tremendous design flexibility that provided superior design at a sensible cost.

And these remarkably weathertight Andersen Windows (up to 6 times tighter than the industry standards) not only keep fuel bills low, they are precision-built to last as long as the building itself. It's trouble-free quality backed by 27 field-based specialists who are ready, at a moment's notice, to help solve window problems.

Check Sweet's File—or contact your Andersen distributor for Tracing Detail File and added data. Andersen Windows are available from lumber and millwork dealers throughout the United States and Canada.



Andersen Windowalls
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America's most wanted windows
ANDERSEN CORPORATION • BAYPORT, MINNESOTA

RUBEROID
STEPS AHEAD WITH
NEW IMPROVED

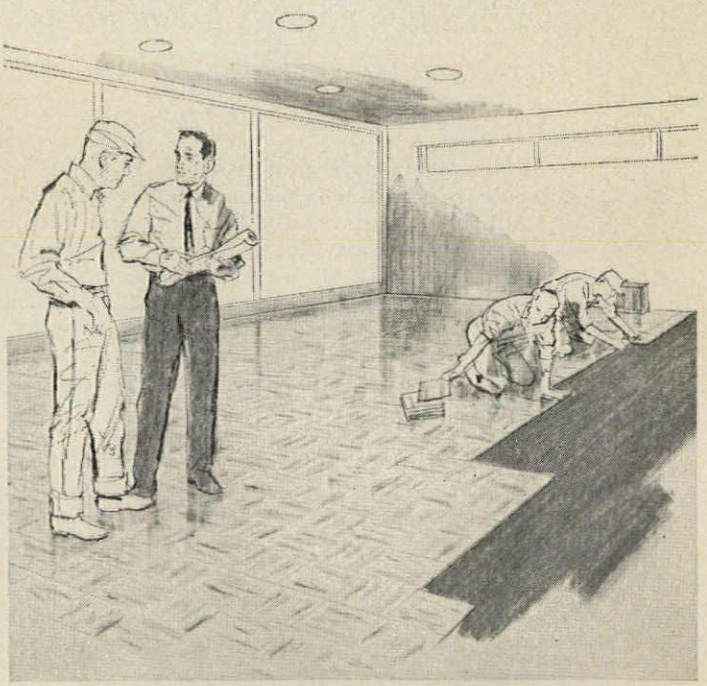
Ruberoid Asphalt Floor Tile!

36 smart, attractive patterns in Asphalt Tile

A completely and beautifully re-styled line providing fine quality in asphalt tile. All the popular patterns and colors are available, including exciting new "Wood Hues" and "Tweeds."

Ruberoid's superior quality in asphalt tile means improved performance. It will provide easier and more economical maintenance than any other asphalt tile on the market. New brighter and more attractive colors make this tile pre-eminent in the asphalt tile industry.

To see the newest, the finest in asphalt tile you must see Ruberoid, the brand that's stepping out in 1963.



13 New Patterns in Vinyl Asbestos

Lovely new colors in Ruberoid Vinyl Asbestos tile make the job of color selection far easier. New "Wood Hues," "Corks," and "Tweeds" add rich color and authentic texture. And the "Stoneglow" series gives you a different and unique group of patterns from which to choose.

Better quality for the discriminating architect.
Ruberoid has just finished spending close to $3,000,000 in its floor tile plants to provide increased capacity, improved service, and the most advanced techniques of quality production. In 1963 and the years ahead...look to Ruberoid for the finest in floor tile styling and manufacture.

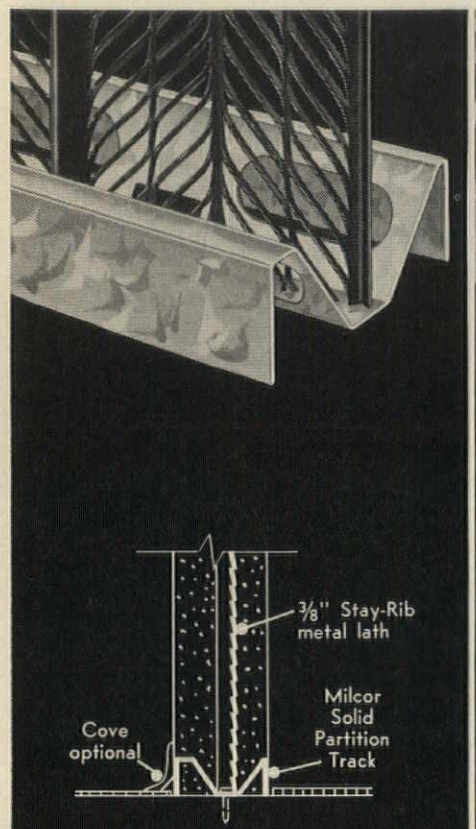
RUBEROID®

FLOOR TILE

The RUBEROID Co., 733 Third Avenue, New York, N. Y.

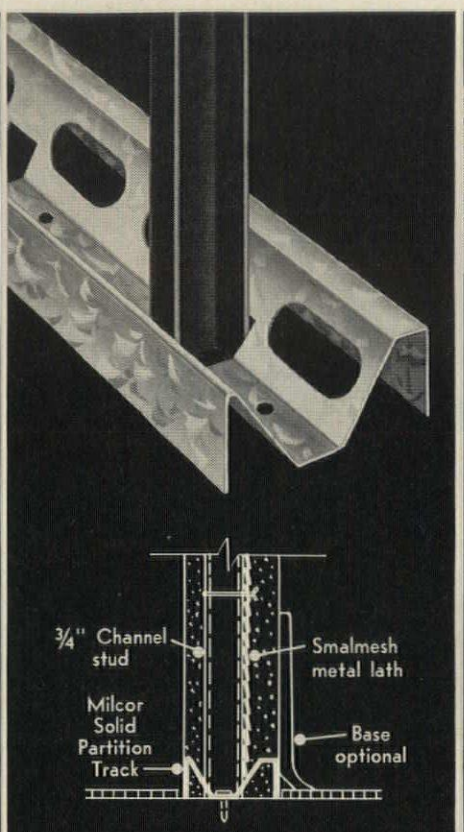
VINYL ASBESTOS, ASPHALT
VINYL-POLYMERITE, SOLID VINYL TILE

For more information, turn to Reader Service card, circle No. 371



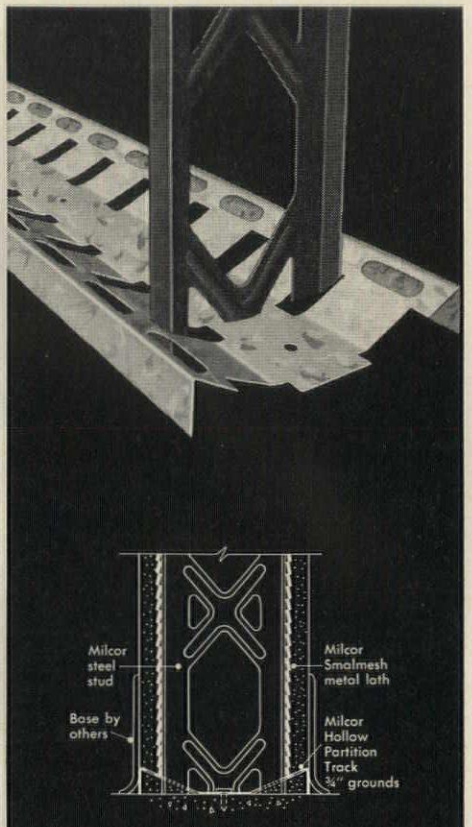
V-groove holds lath without need for ties. Track is galvanized steel, furnished in 2", 2¼" or 2½" widths.

Studless solid plaster partition



Retaining slots 4" o.c. hold channel studs. Track is galvanized steel, furnished 2", 2¼" or 2½" wide.

Channel stud solid partition



Retaining slots 2" o.c. hold Milcor Steel Studs. Track galvanized. Furnished for 3¼" or 4" studs, ¾" or ⅞" grounds.

Steel stud hollow partition

New Milcor Partition Tracks

speed and improve installation of non-bearing plaster walls!

Strong, fire-resistant, metal reinforced plaster walls can be installed faster than by previous methods, because erection is simplified. These new Milcor floor tracks: 1. Eliminate ties, stud shoes or other supplemental fastening of studs at the floor; 2. Save installation of separate plastering grounds; 3. Provide desired stud spacing without premeasuring. ◆ Straight, level walls with full plaster thickness are assured. Retaining slots automatically align the studs. The sides of the track provide strong, true, uniform plastering grounds — protected against damage from on-site traffic by the strength of the inverted channel design. ◆ For further information, see Sweet's section 12a/In or write for Cat. 202.

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ML-63

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AEROFIN *Smooth-Fin* Heating and Cooling Coils

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High air velocities without excessive friction or turbulence

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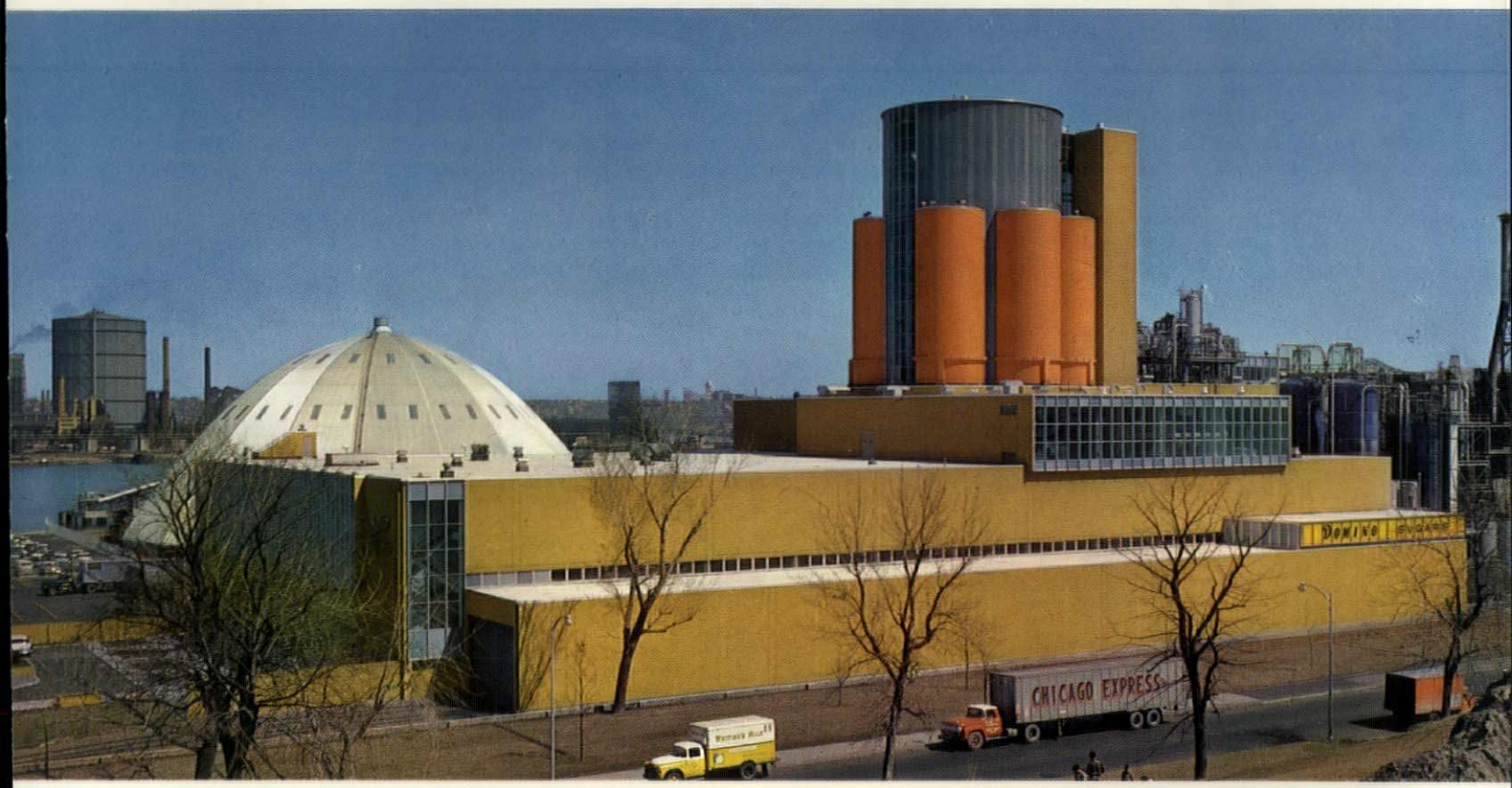
Double-duty walls constructed in one operation with Natco Uniwall



The American Sugar Company's new Bunker Hill Refinery in Charlestown, Mass., constructed of Natco Uniwall, was chosen as one of the country's "top 10" industrial plants of 1961. Engineer-Contractor: Bechtel Corp.

Natco Uniwall is a single load-bearing, structural clay tile unit with two finished faces. Its *exterior* face has an unglazed rugg-tex finish with the texture and appearance of high-quality face brick. Its *interior* face has a permanent, durable ceramic glazed finish available in a variety of attractive colors.

"Laying up" both inside and outside walls in a single operation with only one building trade involved not only saves time, but also saves on labor costs . . . when compared to other building methods.

Uniwall is completely fireproof, vermin proof, chemical resistant, and is easily maintained at minimum cost. Consider attractive, functional Natco Uniwall when planning your new building.

Write for technical handbook UW-100-5.

Two Natco Uniwall units showing the interior ceramic glazed face and the exterior unglazed rugg-tex face.

Today's idea becomes tomorrow's showplace . . . when Natco structural clay products are in the picture

natco corporation

GENERAL OFFICES: 327 Fifth Avenue, Pittsburgh 22, Pennsylvania . . . Branch Offices: Boston • Chicago • Detroit • Houston • New York • Philadelphia • Pittsburgh • Syracuse Birmingham, Ala. • Brazil, Ind. . . . IN CANADA: Natco Clay Products Limited, Toronto

What's he hiding? Cost or saving?

At the crucial moment the roofer lays the felts over the insulation, he covers up future cost or constant saving for your client. If the insulation is FOAMGLAS-BOARD®, savings start the minute it goes down. Anything else's a gamble. **Nothing but FOAMGLAS-BOARD** gives the assured insulation permanence. Even if a roof leak should develop, FOAMGLAS will not absorb water, constant insulating value is guaranteed. FOAMGLAS-BOARD's new 1½" thickness in a 2 x 4′ board size presents an economical savings in material and in installation costs. FOAMGLAS cuts heating and air conditioning costs, so savings begin with the specification. Write for our Building Insulation Catalog: Pittsburgh Corning Corp., Dept. AB-23, One Gateway Center, Pittsburgh 22, Pa.

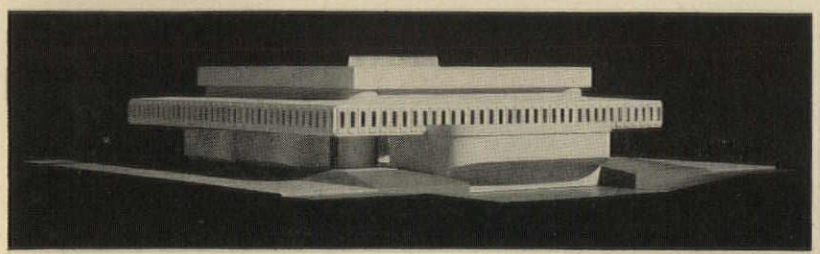
PITTSBURGH CORNING

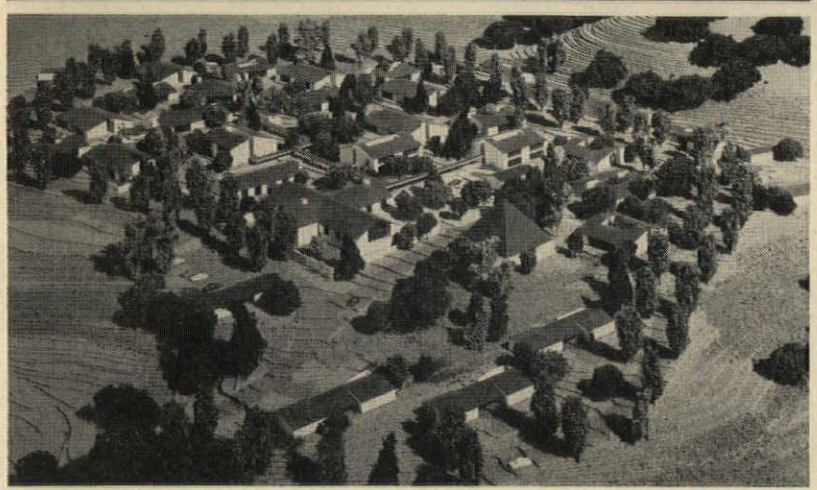
For more information, turn to Reader Service card circle No. 388

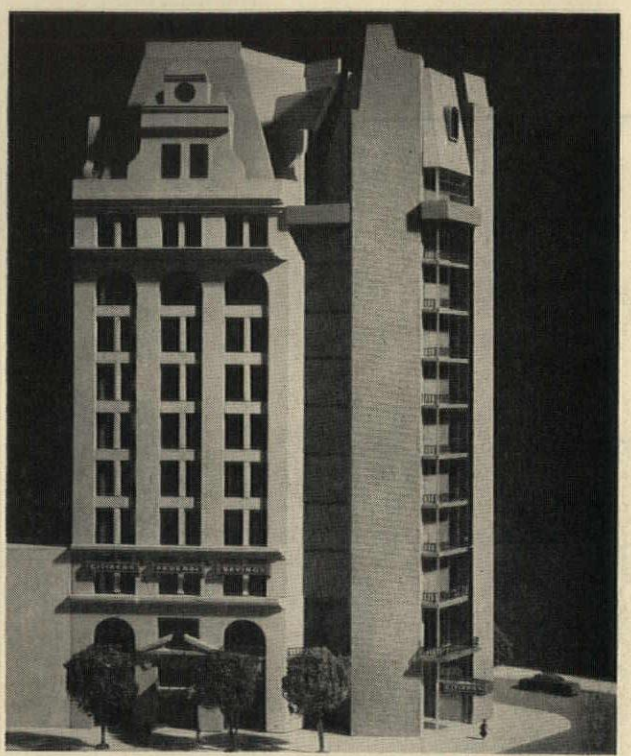
PROGRESSIVE ARCHITECTURE FEBRUARY 1963

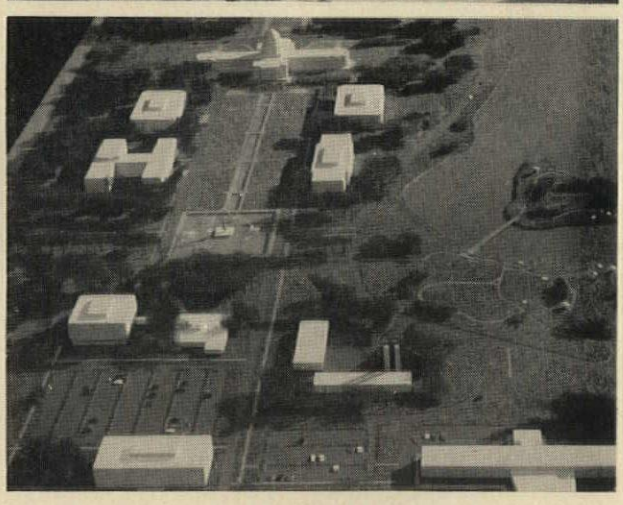
NEWS REPORT

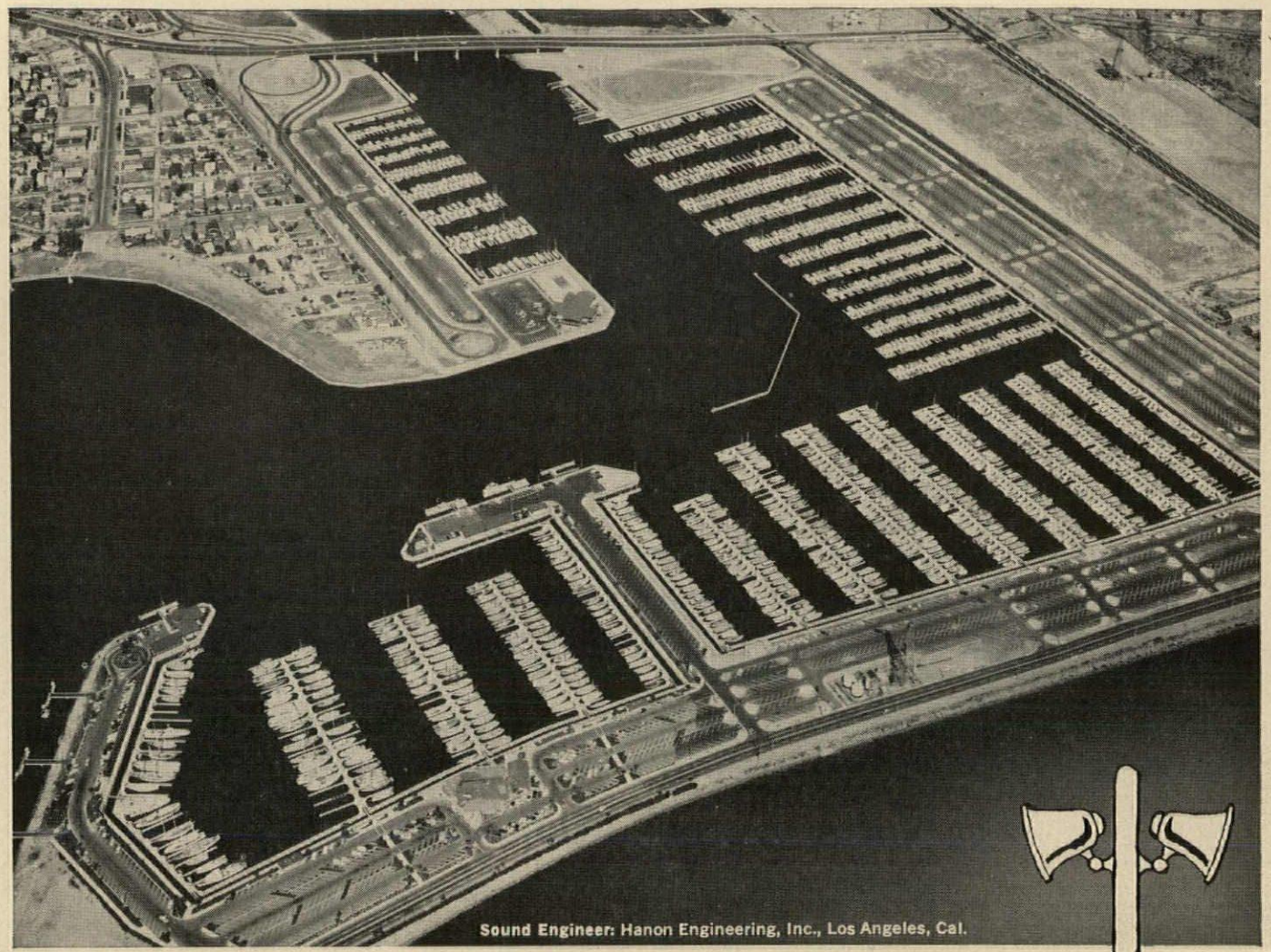
Architecture's Monthly News Digest of Buildings and Projects, Personalities, New Products











Long Beach Marina: world's largest . . .

sound planned with WEBSTER COMMUNICATIONS

Formerly a quiet anchorage, Alamitos Bay at Long Beach, California is now a busy place. 1800 boats up to 100 feet long tie up here; 2700 cars fill an adjacent parking area; there's a restaurant, marine supply store and a fuel dock to serve the boaters' needs. It's the largest municipally owned and operated marina in the world!

And it's sound planned with Webster Electric Communications! A Consolette dual channel sound center — combining Teletalk intercommunications and public address — is used for paging individuals at each of the 37 rows of slips. To reach an across-the-channel docking area, Webster Telecom — a private telephone-type intercom — is used in conjunction with a leased line. Each area can be contacted separately, and monitored "after hours."

The versatility and compatability of Webster Communications provide a wide latitude in integral sound planning. Your Webster Electric dealer* is ready to work with you . . . call for details and a demonstration.

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

COMMUNICATIONS DIVISION

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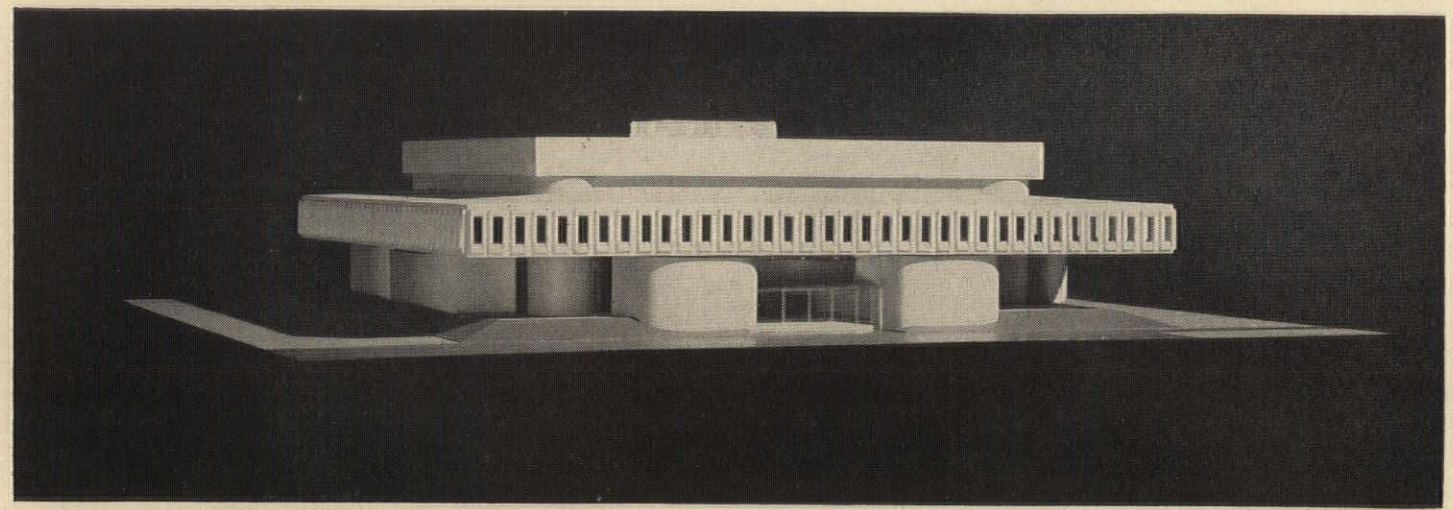
PRIVATE DIAL TELEPHONE • LOUD-SPEAKING INTERCOM • SOUND & PAGING SYSTEMS • TAPE RECORDERS & TEACHING LABORATORIES

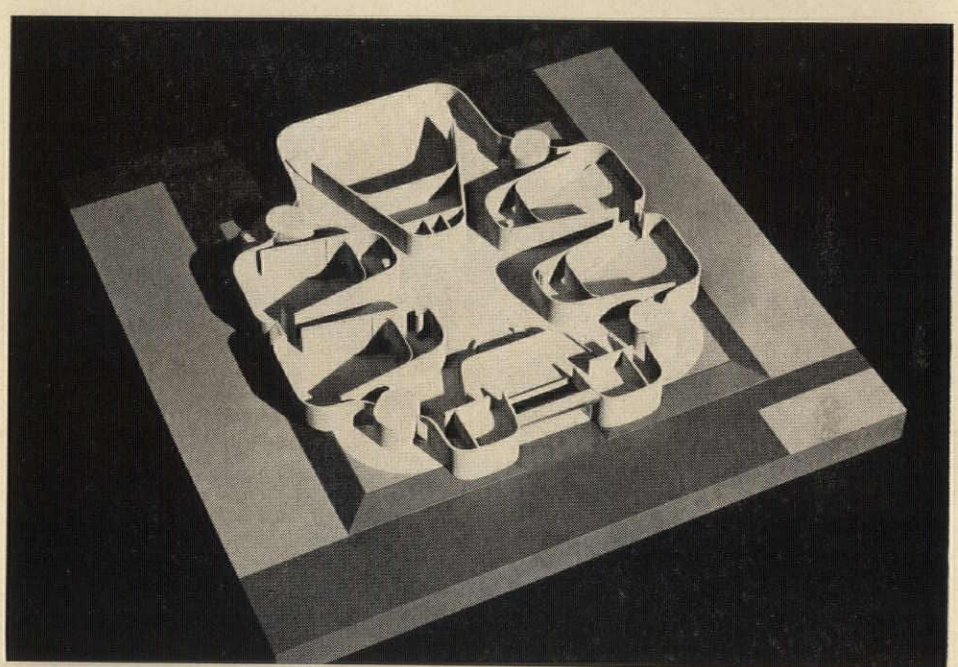


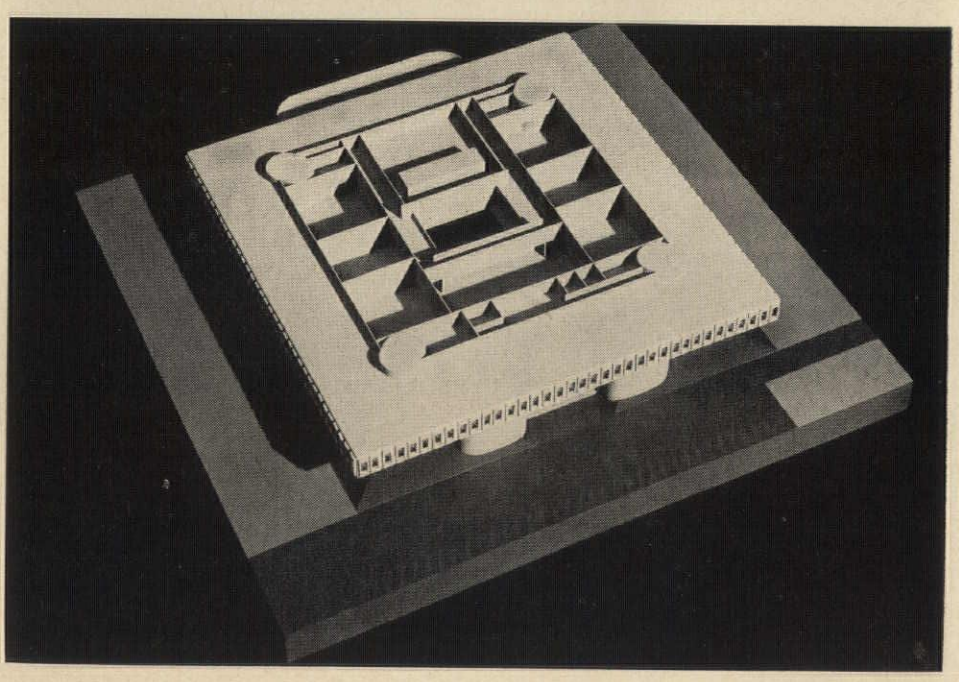
Competition for New-Type Science Building

TROY, NEW YORK An invited competition for the design of an Instructional Research and Communications Center for Rensselaer Polytechnic Institute drew the talents of six well-known firms: The Architects Collaborative; O'Neil Ford & Associates; Hellmuth, Obata & Kassabaum; Kump Associates; Perkins & Will; and Richard W. Snibbe. Judges were P/A Editorial Director Thomas H. Creighton; George A. Dudley, new Dean of the School of Architecture at RPI; George D. Stoddard, Chancellor of New York University; John O. Amstuz, First Deputy Commissioner, Department of Commerce, State of New York; and Edward D. Stone. Michael M. Harris was Professional Advisor. Winner: Perkins & Will.

The center was required to include lecture halls equipped with many instructional aids and media; adjunct projection, storage, and preparation areas; television, film, and instructional materials production areas; communications research and administrative areas; and service, maintenance, and shop areas.

The winning submission separates production and instructional areas (a requirement of the program) by placing the more public lecture areas on the ground floor between the major production spaces and the basement preparation and storage areas. The majority of the instructional spaces (*ground-floor model plan at right*) were felt to be static, so that defining walls are nonmovable (except for the large lecture room, which is divisible). Auxiliary production spaces on the next floor occur at the perimeter of the building, with main production studios at the center of the floor beneath a Vierendeel truss system in which a suspended frame furnishes a high, working plenum (*upper floor model plan, right, below*). Materials are brick, glass, precast concrete.

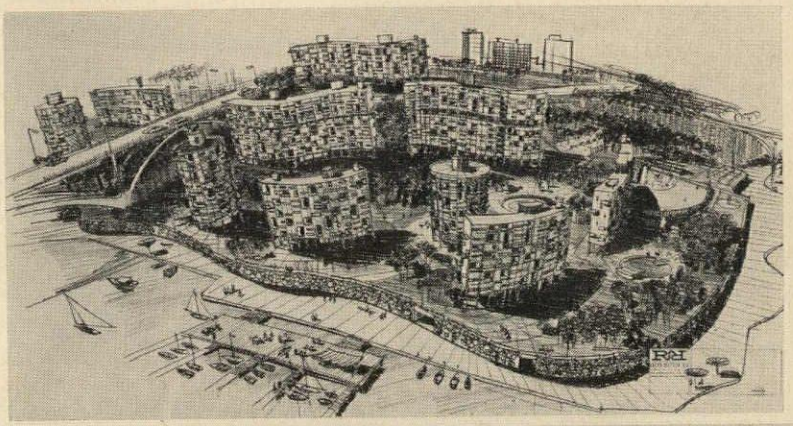


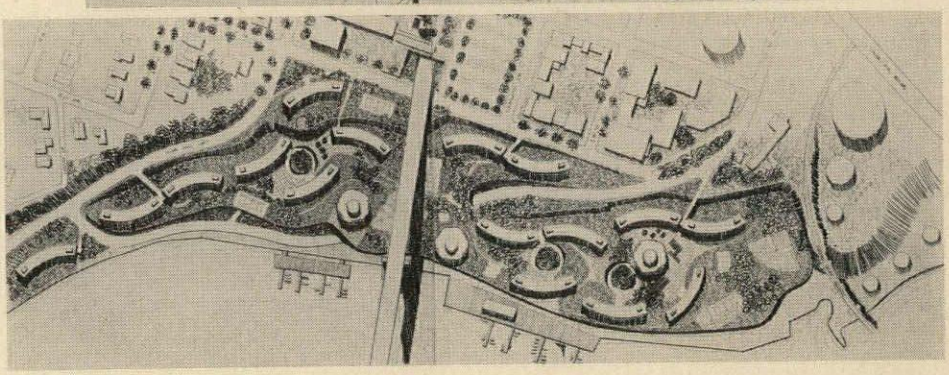


Curvilinear Digs on the Mississippi

MINNEAPOLIS, MINNESOTA For a magnificent site on the Mississippi River gorge as it winds between East Bank (old) and West Bank (new) campuses of the University of Minnesota, Ralph Rapson has designed a series of apartment buildings which will writhe down the slopes in a series of curves, arcs, and returns.

The project will provide more than 1000 units, ranging from studio and efficiency units to four-bedroom apartments. Each apartment will face the river, and all will have generous balconies. Price range of the project will be medium to higher income. Automobile access will be at midpoint on the site and from below, where the River Drive will provide direct access to the university, Minneapolis, and St. Paul. To avoid conflict with the buildings of the new campus, which is on the high ground to the west, most of *these* buildings will not rise more than five or six stories above the high land. The structure will be of reinforced concrete for all units, and precast exposed aggregate wall panels will be utilized on all façades.

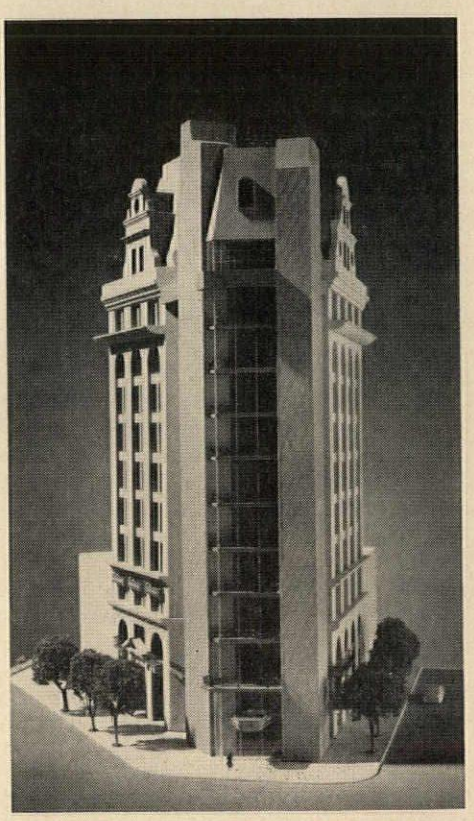


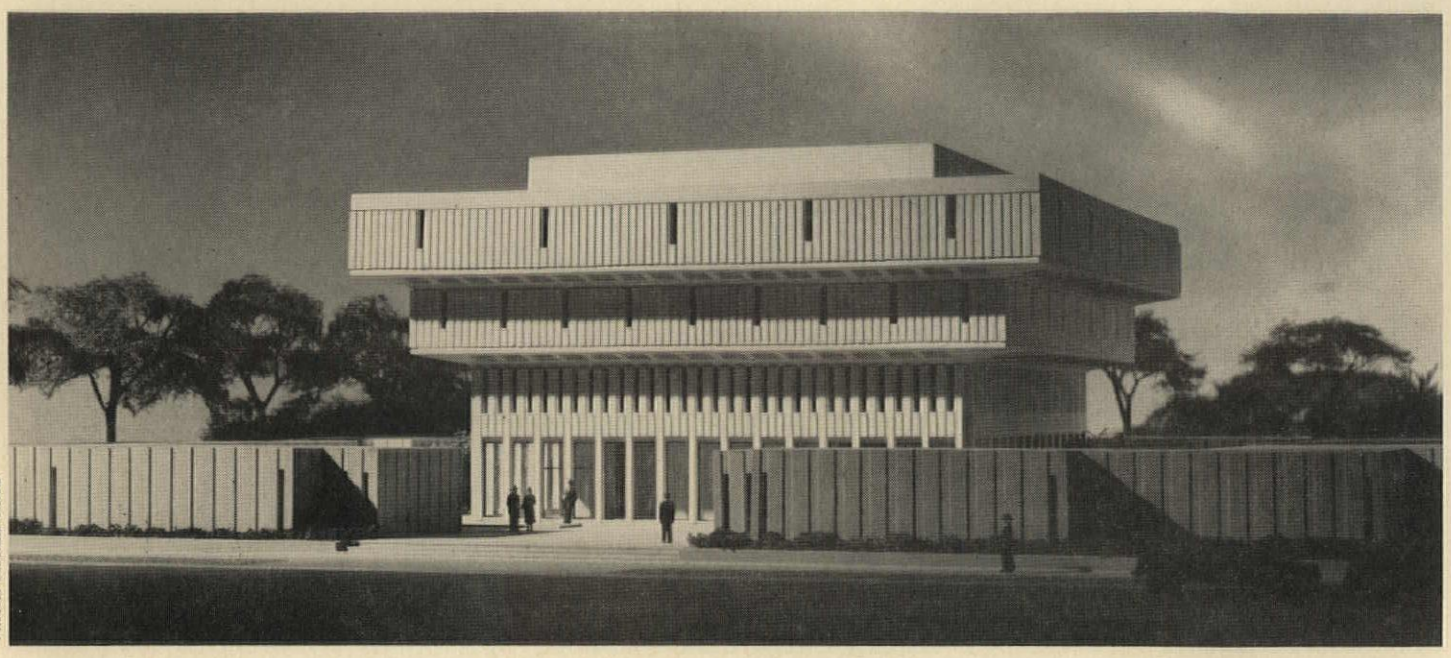


Flatiron Renovation in San Francisco

SAN FRANCISCO, CALIF. The Citizens Federal Savings and Loan Association Building (*left*) is one of the "flatiron" buildings whose shape was determined by the diagonal intersections of Market Street and side streets in the business district. As noted on page 60, Market Street is in for a thorough scrubbing-up and redevelopment, and the proposed renovation of this venerable landmark (*right*) may well be the first step in the process.

Utilizing what the architects, Clark & Beuttler, call a "core on the gore" scheme the remodeling would create a building-high core for elevator, lobbies, and stairway at the apex of the triangular site. While not tied to the existing building structurally, the new addition will respect its eclectic design by use of brown brick, copper roof, and sash and marquees of bronze, repeating colors and materials found in the older structure. Ground floor of the building will be completely redesigned and updated as a public banking room. Upper floors, with elevator and stairs removed to the "core on the gore," will be open, flexible spaces for the Association's offices.





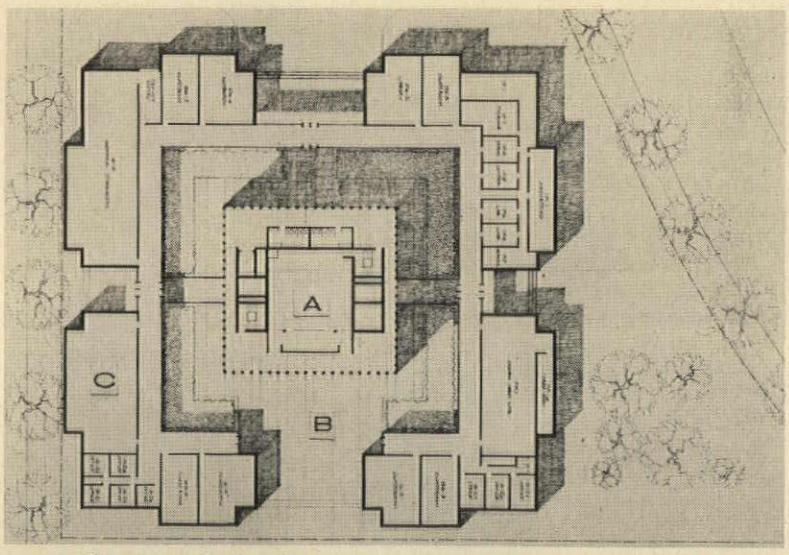
Photos: Baltazar Korab

Stepped, Inverted Cone to Form Pharmacy College

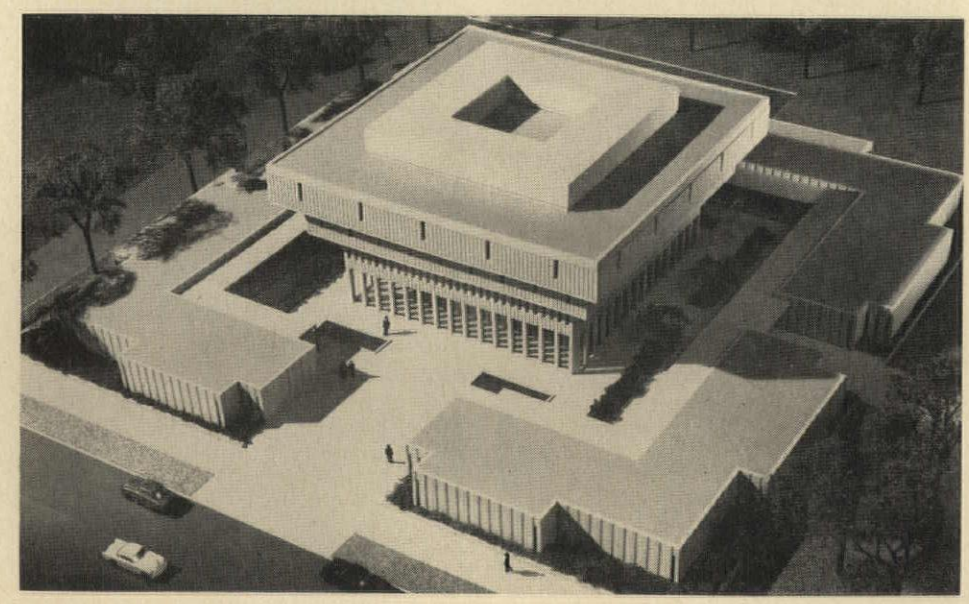
DETROIT, MICHIGAN Although the proposed new Shapero Hall of Pharmacy at Wayne State University will not be built from the top down, it may seem so to the layman's eye. Actually, the striking design by Paulsen, Gardner & Associates is a literal expression of the spaces and services it houses.

To be built in two phases, the college will start with the four-story main element. Major spaces on the first floor will be the large lecture hall and the lobby. On the second floor will be the dispensing and prescription laboratory complex. The third floor will be larger, containing college offices, general stockroom, and pharmacognosy facilities. The fourth floor will require even more space to accommodate the pharmacology laboratory and its related areas. Light will reach the fourth-floor corridor, and the corridor and student lounge on the third floor, through a baffled skylight on the roof. The architect describes the system of the poured-in-place, reinforced concrete structure as follows: "The basement, first floor, and second floor are directly in alignment. The third floor is a box which rests on the structure below, and the fourth floor is a larger box which rests on the third floor."

Stage two of the building program will see the erection of a one-story structure that will surround the main building on three sides, creating an imposing entrance at the front of the site, and intimate court spaces for student relaxation and enjoyment. This building will contain facilities supporting the larger structure, such as additional offices and classrooms.



(A) lecture hall; (B) forecourt; (C) second stage building

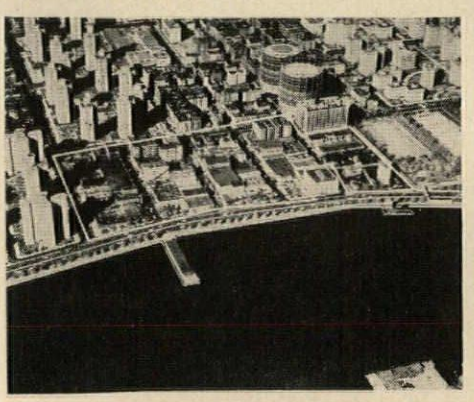


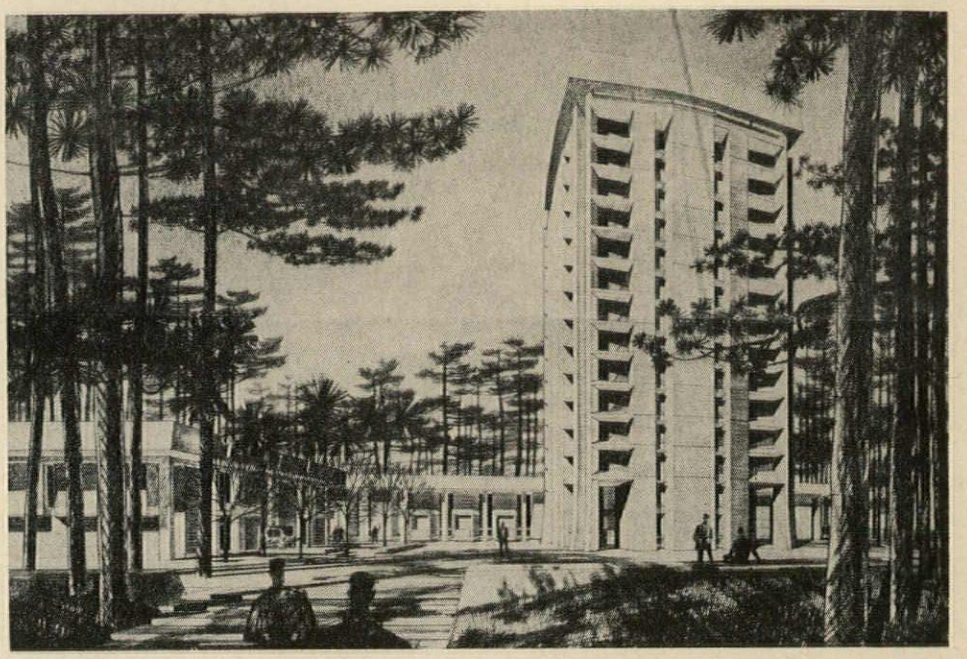
N.Y.C. AND RUBEROID COOPERATE IN CONTEST

NEW YORK, N.Y. For the first time in this city, an urban renewal project is the subject of a national competition in architectural design. The city's Housing and Redevelopment Board further announces that the winning concept in Ruberoid's Fifth Annual Design Competition will be considered for incorporation in the final planning for the area and the winner will be considered for selection as project architect. These incentives are in addition to 16 prizes that total $25,000.

The site—of "unique challenge and potential"—is a 16-acre tract in East Harlem to be replanned with middle-income housing, schools, shops, and riverfront and recreational facilities.

B. Sumner Gruzen is Professional Advisor, and the distinguished jury is composed of Albert Mayer, Milton Mollen, David A. Crane, Dr. Herbert J. Gans, Lewis E. Kitchen, Sir Leslie Martin, and Harry Weese. Competition is open to practicing architects and students; closing date is June 29, 1963; and prospectus is available from The Ruberoid Co., P.O. Box 129, New York 46, N.Y.



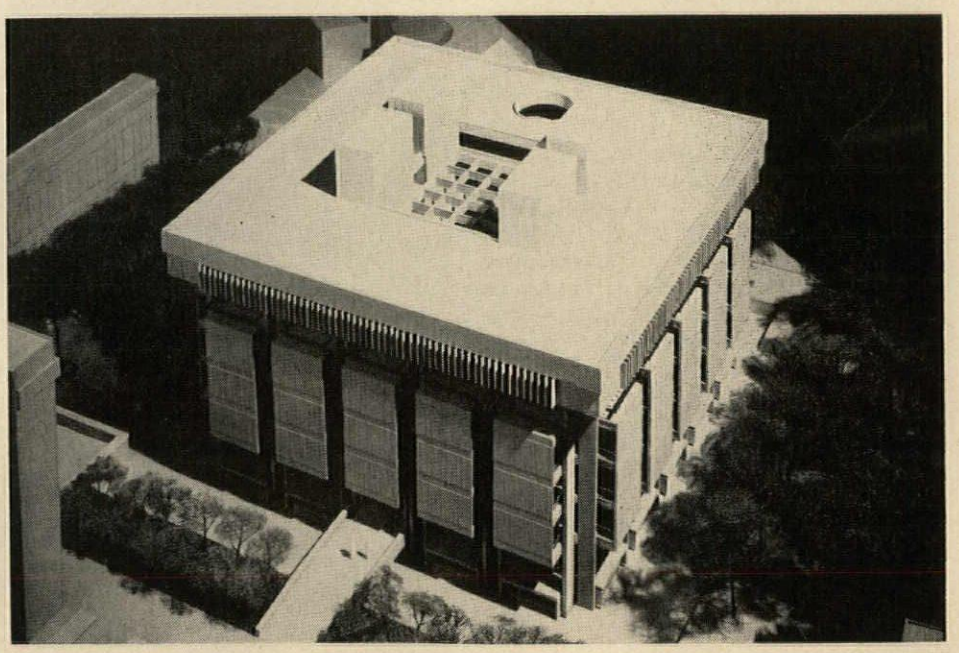


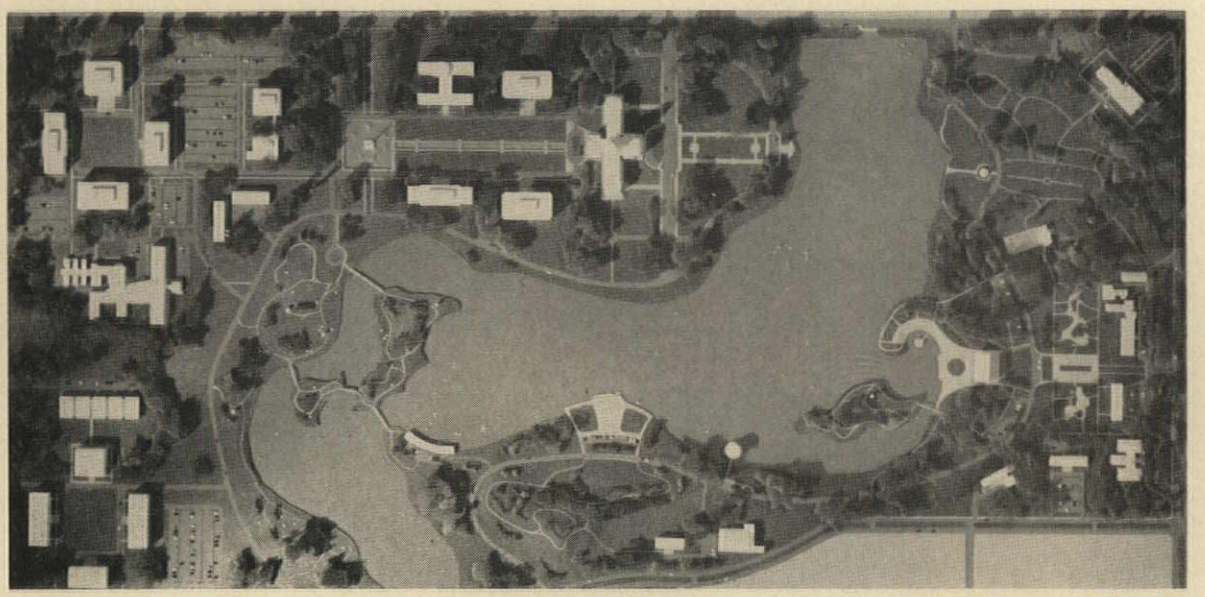
Two by Hugh

Two current projects of interest in the office of Hugh Stubbins & Associates are the Senior Center at Bowdoin College in Maine (*above*), and the Francis A. Countway Library of Medicine at Harvard (*below*).

The Bowdoin Senior Center will house a new educational concept in which the senior year of college will be made more meaningful and valuable by providing "expanded opportunities for independent study and the introduction of senior seminars." Three buildings will make up the Center: a 16-story building (tallest in the state) containing living and study quarters, seminar and conference rooms, a small library, and guest rooms; a two-story dining room and main lounge; and a faculty residence.

The Harvard project—expected to be the largest university-centered medical library in the world—will be an eight-level building of stone, steel, and glass surrounding a central light court. It will contain approximately 450,000 volumes, the combined collections of the Boston Medical Library and the Harvard Medical Library. The two top floors will house quarters for the Massachusetts Medical Society, the *New England Journal of Medicine*, and the *Journal of Bone and Joint Surgery*, in addition to suites for display of rare and historical medical books. Major library facilities will occupy the other four above-ground floors, and storage stacks will be in the two subsurface levels. Library will be near Harvard Medical School.





Top, legislative area; right, cultural area; picnic islands in lake.

Yamasaki's Master Plan for Saskatchewan Capital

REGINA, SASKATCHEWAN, CANADA. At the heart of this regional capital is a green area surrounding Wascana Lake which, if present plans work out, will be developed into a large-scale governmental, educational, cultural, and recreational center using plans and designs by Minoru Yamasaki and Landscape Architect Thomas Church.

An entire new campus for the University of Saskatchewan would be created on the site, to include married faculty and student housing, residences and dining halls, academic complex, a research center, and sports facilities. A ring road would surround the institution for university use.

A number of buildings already exist in the government center section of the project, notably the capitol. To these, Yamaski and Church propose adding more new buildings, and developing the area in a formal manner appropriate to governmental functions. An existing nursery here would be retained as a "land bank."

A cultural center, civic auditorium, and extensive parklands and recreational areas would complete Wascana Center. The old university building would be developed as the cultural center, along with new buildings on the lake shore for the visual and performing arts. The present museum, nearby, would be preserved. Recreational facilities would include a swimming pool, a pavilion in the lake (to be used for administrative purposes during construction of the Center), picnic islands, a waterfowl park, conservatory and botanic garden, and track, football, baseball, and tennis playing grounds.

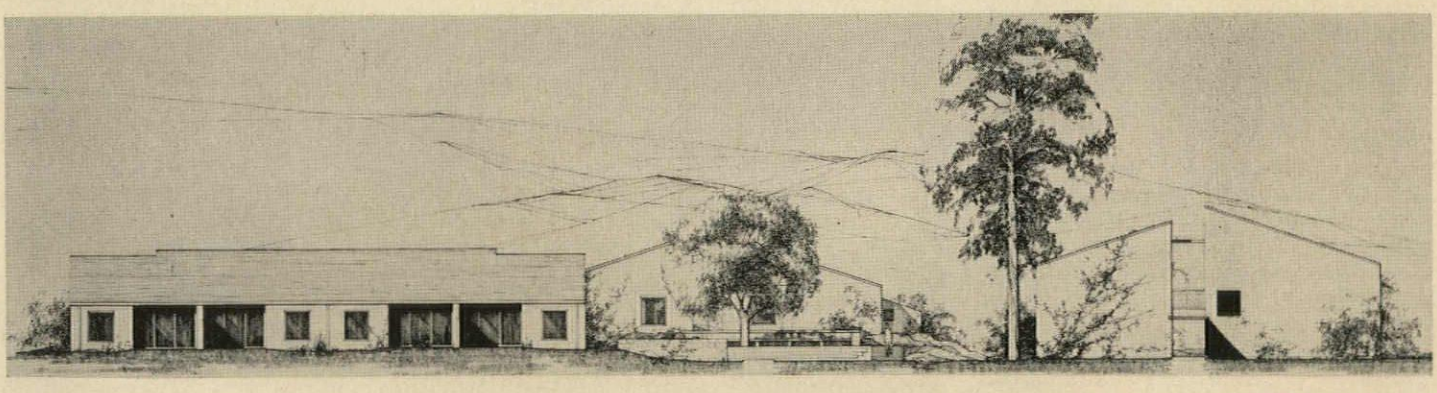
Foreground, educational center; left background, legislative area.

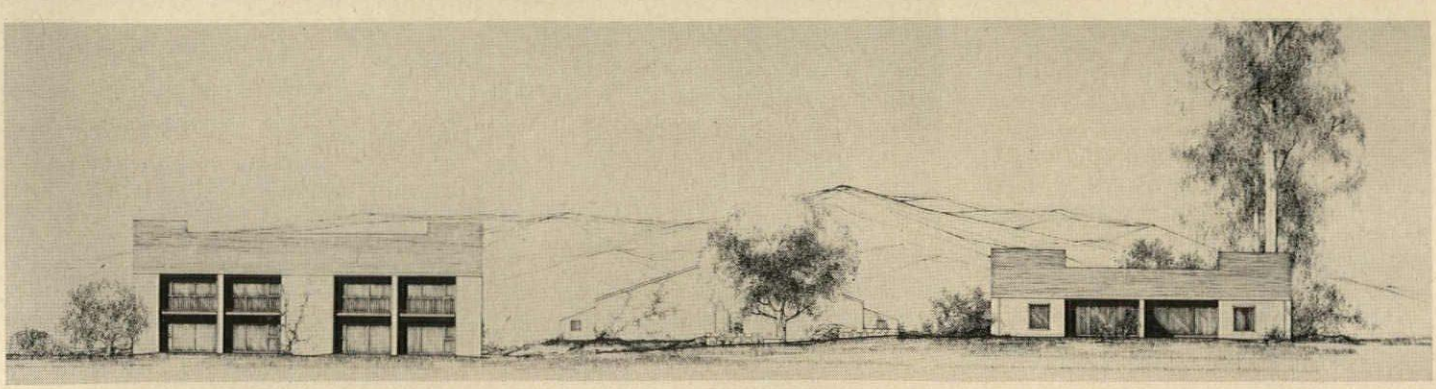
CALIFORNIA RETIREMENT CENTER TO HAVE BUCOLIC MOOD

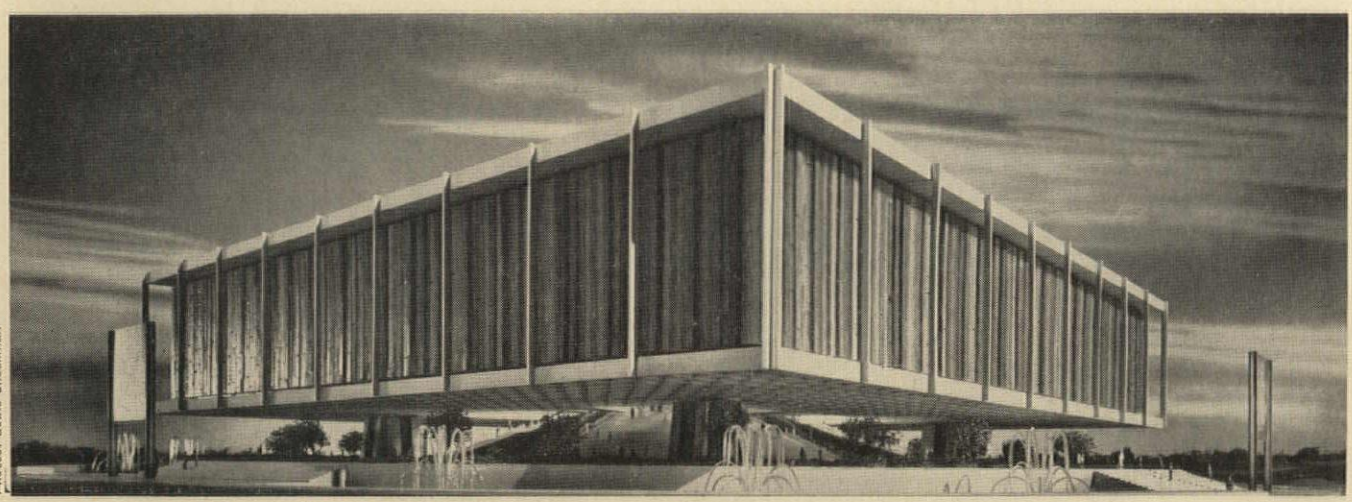
CARMEL VALLEY, CALIFORNIA Carmel Valley Manor will be a retirement community in the foothills of the Coast Range five miles from Carmel. Designed by Skidmore, Owings & Merrill of San Francisco, the project will emphasize the natural landscape through wide spacing of buildings, use of meadow grasses and indigenous trees, and a minimum amount of man-made interruptions to nature (buildings, walks, drives, etc.). Sasaki, Walker & Associates are Landscape Consultants.

The manor will house 225 people in 170 units ranging from studio apartments to two-bedroom cottages. There will be a central building containing a lounge, beauty parlor, barber shop, offices, and an 11-bed infirmary. A main dining room will seat 225 people. The pyramidal-roofed chapel will function for meetings and social activities as well as for religious services. Two parlors with fireplaces and kitchenette will be used for intimate parties. Recreational facilities will include swimming, shuffleboard, croquet, horseshoes, putting, and gardening.

Purpose of the design was to emphasize a feeling of openness throughout. The over-all plan is a pinwheel form in which relatively small buildings are separated as much as possible to allow for grassy meadows onto which the apartments or houses can look, or circulation courts permitting the use of graded ramps between buildings. The buildings themselves will be "opened up" by the slicing of the high gable ends at their centers to emphasize height and to minimize interior corridors. Circulation will consequently feature a succession of open courts, passages, and skylit spaces.







Photos: Louis Checkman

DESIGN FOR U.S. PAVILION REVEALED

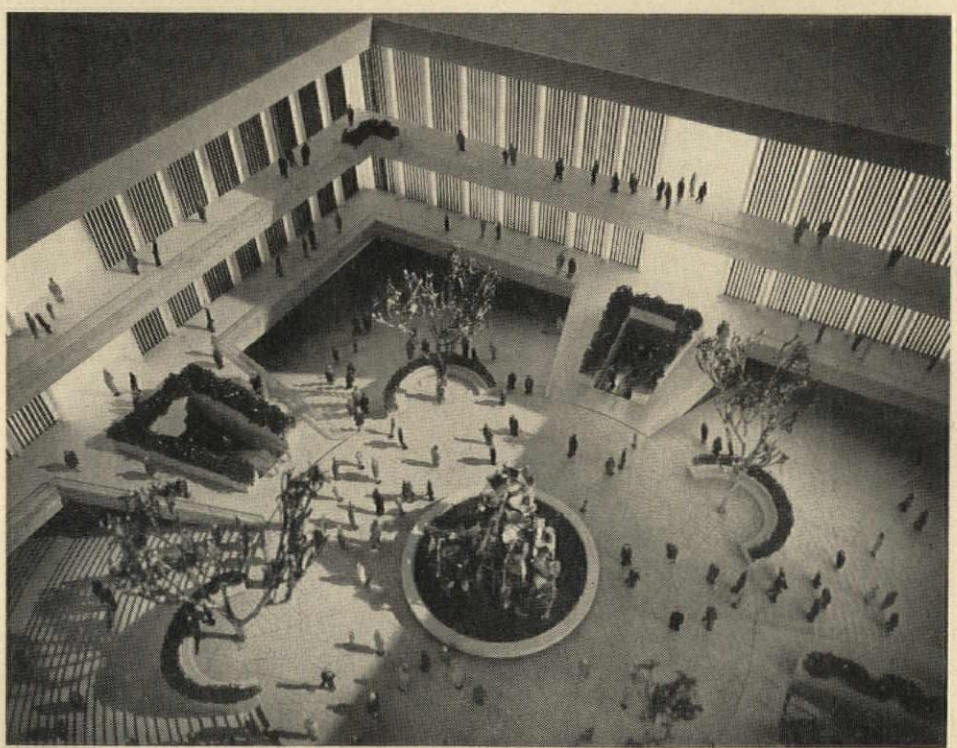
NEW YORK, N.Y. The long-awaited design for the U.S. Pavilion at the New York World's Fair has at last been unveiled, and potential critics can take a deep breath of relief, for while not the most significant architectural expression since Cheops or Praxiteles, the design is perhaps the most mature and thoughtful to come out of the Fair to date. Designed—as anyone who has not been wearing earplugs and eyepatches for the last six months knows—by Charles Luckman Associates, the 330-sq-ft pavilion will be a monumental structure raised on four massive pylons around a large court.

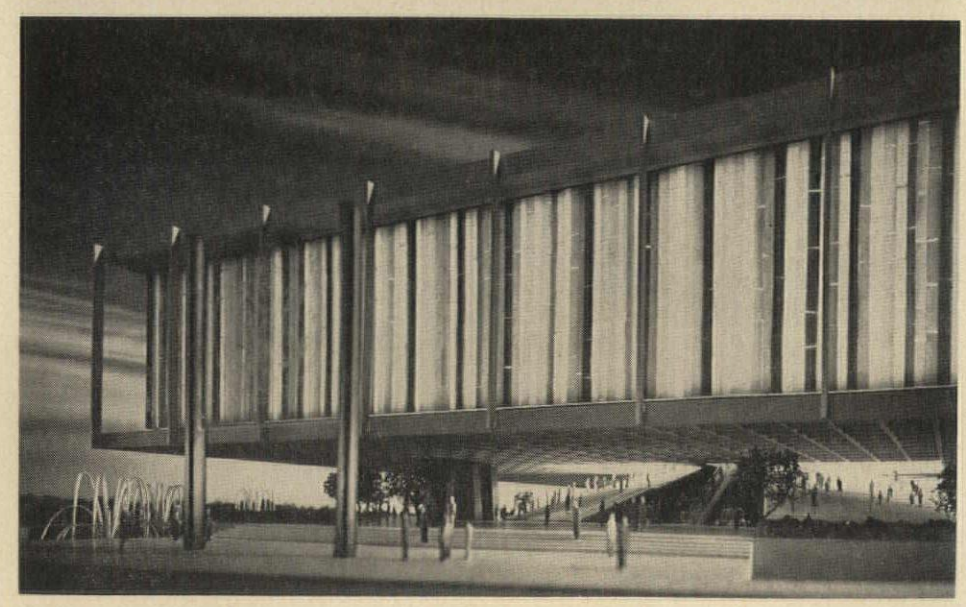
Visitors will approach the court over a moat and up an impressive ziggurat of steps (or up escalators rising between waterfalls). From this area, bridges will carry fair-goers to two levels of exhibits based on the theme, "Challenge to Greatness." Included in the interior spaces will be a moving belt to carry viewers around the major, second-level exhibit area, a museum for historical displays, and an auditorium.

Chief feature of the façade will be a translucent wall of colored glass and/or plastic that will be illuminated from behind at night, and, because of a heavily textured surface, glisten in the sunlight during the day.

Major elements of the structural system will be a series of four inner trusses 57 ft high by 172 ft long and four outer trusses 57 ft high by 330 ft long, the outer members being supported and their weight transferred inward by means of hangers. The system is designed to allow the structure to cantilever an impressive 75 ft out from the four columns.

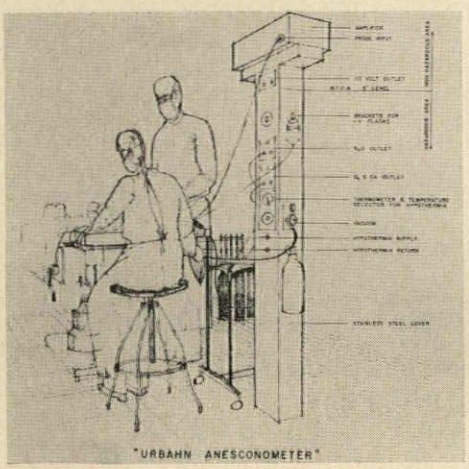
Design concept is by Leon Deller of the Luckman office, and the director of design is Richard Niblack. Structural engineer is Severud-Elstad-Kreuger, and mechanical-electrical engineer is Slocum & Fuller.





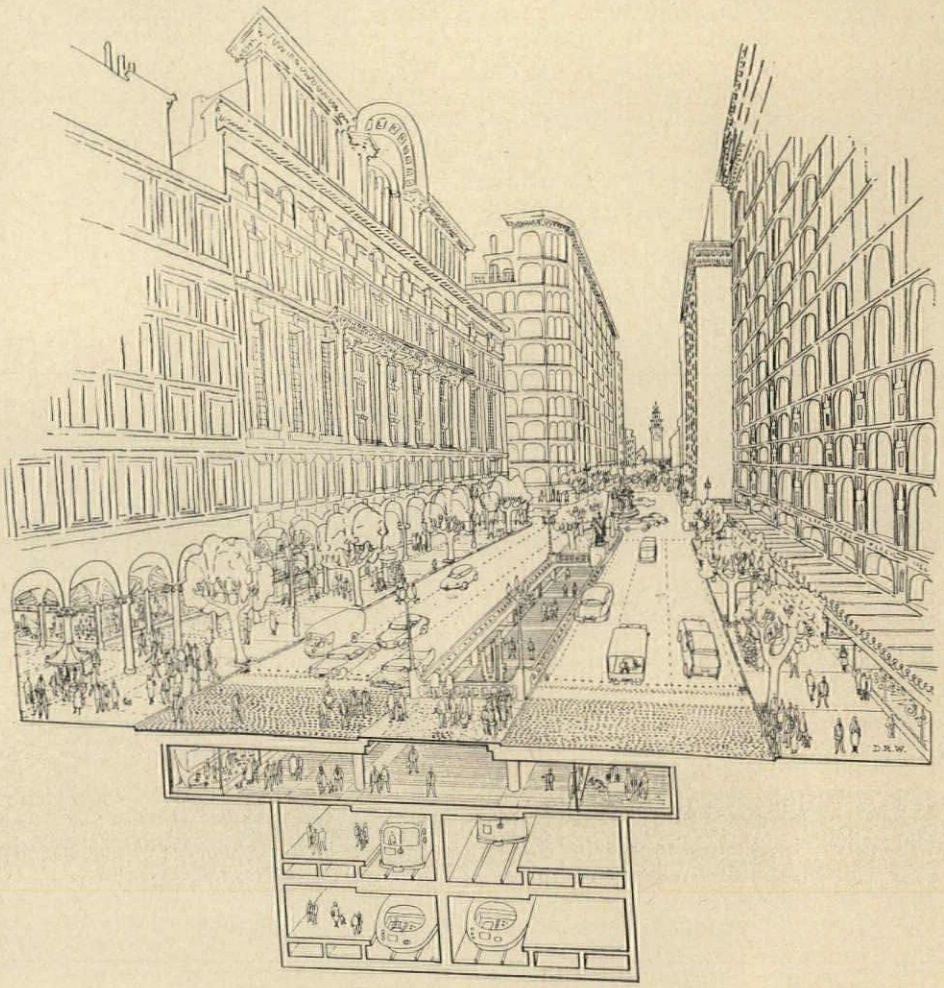
PACKAGE SCHOOL

Instructor Joseph Schiffer of the MIT Department of Architecture, working with Assistant Professor Marvin E. Goody, has designed a prefabricated school (a classroom of which has been built on the MIT campus) which utilizes fiber glass over plywood core sandwich panels supported by a columnar "tree" structure. In the finished classroom, eight of the trees form a 32-ft-sq room. Professor Goody states that "the room is manufactured, packed, shipped to the site, and erected for the same cost as the solid, inflexible classroom that is built today." Interesting interior note: classroom floors are carpeted with 3-ft-sq rug tiles which can be easily replaced if damaged. Educational Facilities Laboratory, Inc., sponsored the project.



Architect Invents Surgical Pedestal

Architect Max O. Urbahn has designed a utility pillar, or pedestal, for operating rooms that integrates many vital surgical uses within one small area. Intended for use at the new Downstate Medical Center, which his firm designed, the invention, named the "Urbahn Anesconometer," places conventional surgical needs—oxygen, water, compressed air, vacuum, monitoring devices—in the pedestal, with all service lines entering the device through the floor, thereby eliminating a severe safety hazard in most hospitals. Up-to-date electronic equipment in the system will make a record of



Regeneration Proposed For Market Street

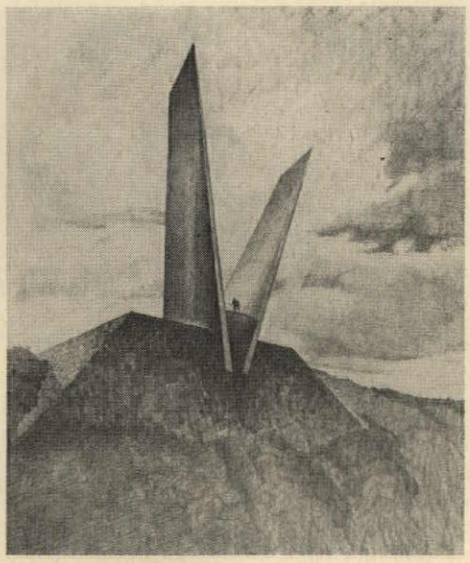
San Francisco's Market Street, which cuts a wide swathe through town from the Ferry Building to Twin Peaks, is decaying, depressing, and in serious need of redevelopment. Such is the verdict of many city government officials, planners, and property owners on the street. In an illustrated report on the present and possible future of Market Street sponsored by the Market Street Development Project, an affiliate of the San Francisco Planning and Urban Renewal Association, the present state of the street was deplored, but a bright future is seen if private development is undertaken in close relation to a projected Market Street subway system. In the report, prepared by Livingston & Blayney, Planners; Lawrence Halprin & Associates, Landscape Architect; Rockrise & Watson, Architect; and Larry Smith & Company, Real Estate Consultants, auguries for the thoroughfare were seen bright if the subterranean transit system and its associated subsurface promenade were brought to fruition, and if merchants and businessmen along the street cooperated in a massive campaign to upgrade the area. (That some are already underway can be seen on page 54.) Starting at the Ferry Building and traversing the commercial section of the street, the report divided the area into five sectors: the gateway sector, the financial sector, the central retail sector, the amusement sector, and the general commercial sector. Each of these sectors could have its own particular flavor, the study said, and contribute to San Francisco's famous colorful character. Rather than proposing hidebound rules and designs for redevelopment, the report said that denizens of Market Street should work out their own plan—together with professional consultants—to achieve a new, exciting street; but that they should do it *quickly*.

many simultaneous physiological processes valuable not only for diagnostic purposes, but also for research and experimental data. This equipment is in the upper part of the unit, conforming with National Fire Protection Assoc. code requiring equipment that has not been treated to be nonexplosive to be at least 5 ft above the floor, away from settling gases.

New York's Uptown Bus Terminal Dedicated

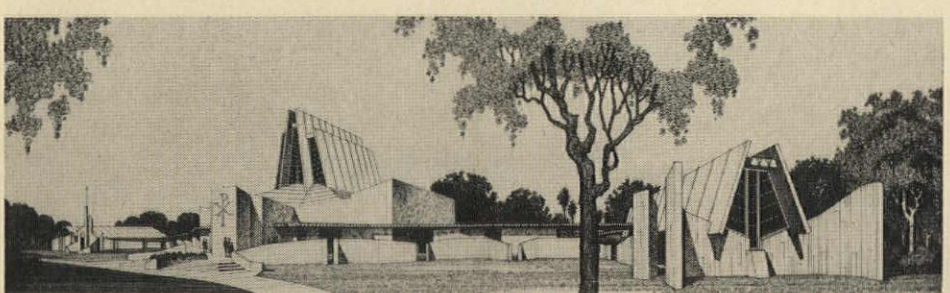
Pier Luigi Nervi, whose name was invoked repeatedly at the recent dedication of the George Washington Bridge Bus Station, for which he was consulting engineer, might be a little bemused (we hope) if he could walk through the interior of the structure. Endowed with a striking—if disturbing, for its urban residential neighborhood—Nervi roof, the station on the lower floors reflects all the mediocre design precepts shown by its downtown sister, the Port Authority Bus Terminal. Speaking at the opening, together with New York and New Jersey Governors Rockefeller and Hughes and Mayor Wagner, Robert Moses, in his guise as Chairman of the Triborough Bridge and Tunnel Authority, took the occasion, as usual, to roast his critics and reinvoke the shades of Al Smith and Fiorello LaGuardia (not mentioning whether they might agree with him if they were still around). In particular, Moses bemoaned the fate of two of his pet projects, the Lower Manhattan Elevated Expressway (recently defeated by the city) and the moribund Midtown Manhattan Elevated Expressway. Calling these potential scars across the face of the city "links in the great metropolitan chain," Moses disagreed, in effect, with most architects and many planners who would place the individual above the automobile. "Is there a sane economist who proposes to curtail the production of motor cars?" he cried, missing the point that it's not production but indiscriminate use of the automobile which is at fault.

At the same affair, a chilly cordiality existed between Rockefeller and Moses, since the Governor recently prevailed upon Moses, in view of his responsibilities at Flushing Meadows, to relinquish one post—Chairman of the State Council of Parks—and the New York World's Fair czar resigned *all* his state jobs in a huff.



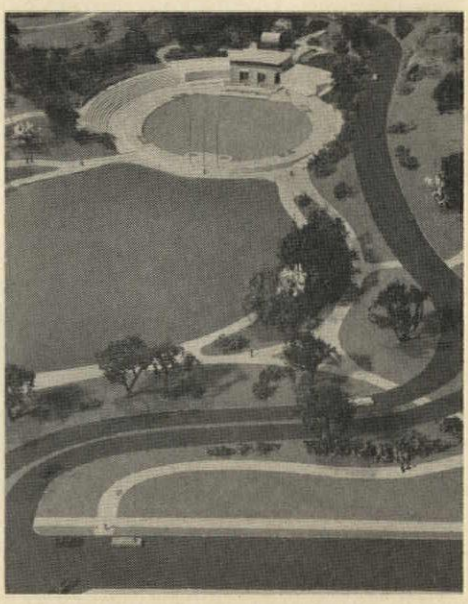
"V" FOR OKINAWA

For the American Battle Monuments Commission, the Office of Alfred Easton Poor has designed a memorial to be erected on a ridge opposite Naha Port, Okinawa, where much of the severe fighting to secure that island took place during World War II. The memorial will consist of two 70 ft-high, wing-shaped elements of reinforced, prestressed concrete rising from a sloping platform of local travertine. These wings will form the famous V-for-Victory symbol, to be floodlighted at night.



Church "Compound" to Feature Slanting Roofs

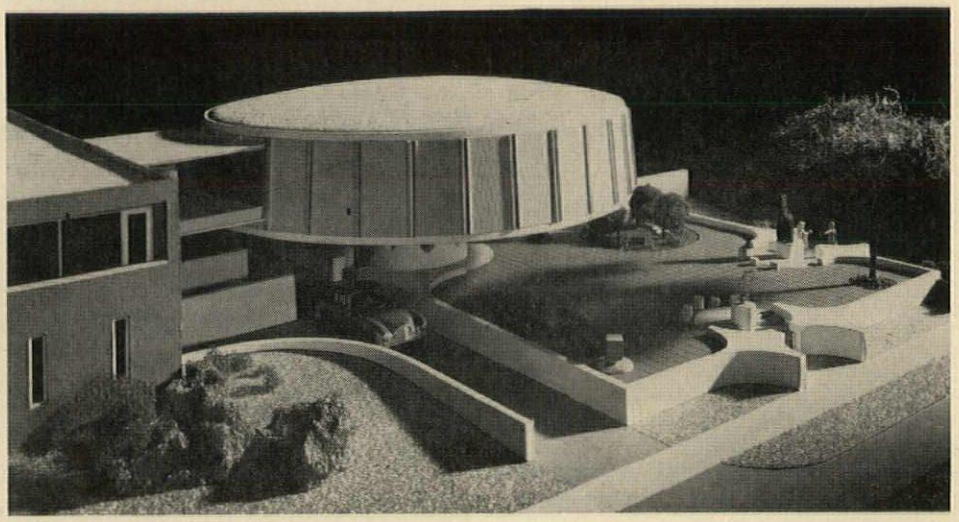
Designers Nils M. Schweizer & Associates call their project for the Prince of Peace Lutheran Church in Orlando, Florida, a "compound," since it will house—in related structures—a 550-capacity sanctuary, church school and educational wing, pastor's study and offices, choir rooms, chapel, social hall, and an existing building. Structure will be poured concrete, and all sloping roofs will be sheathed in copper. Copper and wood embellishment will adorn fascias and lighting fixtures, and liturgical symbols will be sandblasted at the main entrance, in the narthex, and at the altars.



When in Doubt, Put It in the Park

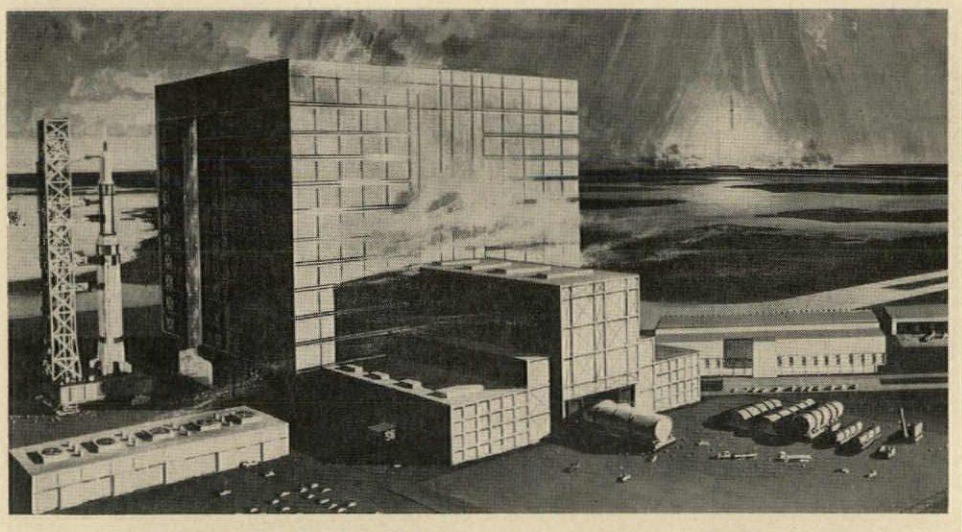
The design by Fordyce & Hamby for the proposed Loula D. Lasker Memorial Swimming Pool and Skating Rink in New York's Central Park at least has the advantage of combining two uses within one facility. Since West Side mothers fought Bob Moses to a standstill over using park land for parking lots, and the public uproar over the Huntington Hartford–

Continued on page 62



MEATHE, KESSLER ADD TO BREUER LIBRARY

For an auditorium addition to the Marcel Breuer-designed public library in Grosse Pointe, Michigan, Meathe, Kessler & Associates of Grosse Pointe have designed a circular structure supported above a sculpture terrace on concrete "fingers." The architect felt that use of such a "nondirectional mass would preserve the architectural integrity of the existing structure and yet permit the new addition to express itself." Site limitations, including parking areas and an adjacent high-school track, dictated the decision to raise the auditorium above ground. Structure will be of reinforced ribbed concrete with lightweight precast exposed aggregate panels on the exterior. Stainless-steel pins will support the hall over the pedestal.

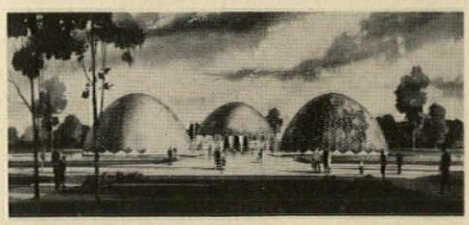


IMMENSE BUILDING FOR MOON PROBERS

One of the world's most incredible structures will be the focal point of Launch Complex 39, the base for flights of American astronauts to the moon. Designed by a team known as Urbahn-Roberts-Seelye-Moran (Architect Max O. Urbahn, Managing Partner), which is under the supervision of Col. J. V. Sollohub, District Engineer, Jacksonville District of the Corps of Engineers, the building will rise at NASA's Launch Operations Center, Merritt Island, Fla. It will cover more than 10 acres and will be more than 500 ft tall. Its chief purpose will be to "mate" and check out the rockets and spacecraft being developed under Project Apollo. Initially, one bay will be erected to house the Saturn C-5 rocket. Eight smaller bays, for preparation of upper stages, will also be built. The addition of six or more giant bays will be possible in the future. Impressive statistics include: world's largest doors, measuring 456 ft high; air-conditioning system sufficient to ventilate the Empire State Building; 45,000 tons of steel in the frame; volume of 130,000,000 cu ft; outside wall area of 1,250,000 sq ft; population of 2,500.

Continued from page 61

Ed Stone restaurant proposed for a site facing the Plaza, New Yorkers have been extra sensitive about increasing encroachments on the park (and about time, many say). Word has also reached P/A that, with the continuing development of the West Side, many of the private stables there are losing their space. New York's tentative answer: put 'em in one big stable. Where? In Central Park!



Horticulture in Milwaukee

New horticultural conservatories in Milwaukee, Wis., by Donald L. Grieb, are housed in three huge domes, each 140′ in diameter and 80′ high. The domes are constructed of a framework of precast concrete covered with a tubular aluminum framing system, and glazed with ¼″ polished wire plate glass. Each dome will contain different types of plants, and will consequently have its own temperature and humidity system. The glazing system of the project has been utilized to remove excess condensation from the domes. Utilizing the gravity drain system, the aluminum framing conducts moisture to the base of the domes, where it is released. (Photo courtesy Bohn Aluminum & Brass Co., aluminum supplier for the project.)

PERSONALITIES

LEWIS MUMFORD was elected president of the American Academy of Arts and Letters for 1963 . . . Winner of the 5th Annual Pan Pacific Architectural Citation of the Hawaii chapter AIA is ARTHUR C. ERICKSON of Vancouver, B. C., Canada . . . Retiring after a long career with the National Park Service was CHARLES E. PETERSON, Supervising Architect, Historic Structures; he will continue to practice as a consulting architectural historian, restorationist, and planner . . . Rice University bestowed a Medal of Honor for Distinction in Architecture on JOHN LYON REID . . . JEFFREY ELLIS ARONIN has been made an Honorary Member of the Colegio Nacional

Continued on page 66

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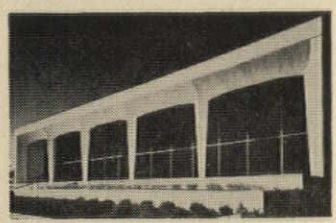
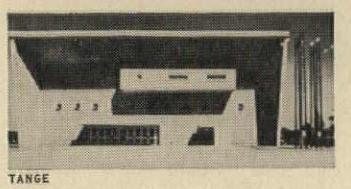


JOHNSON



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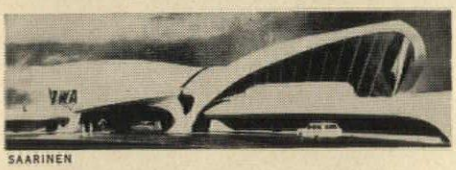

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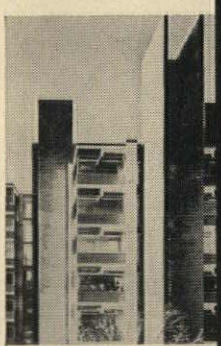

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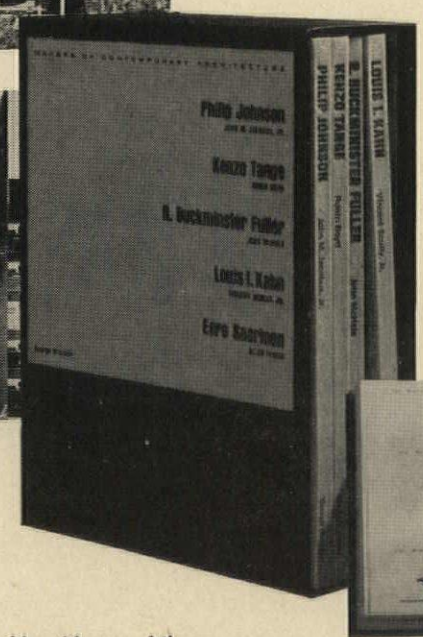

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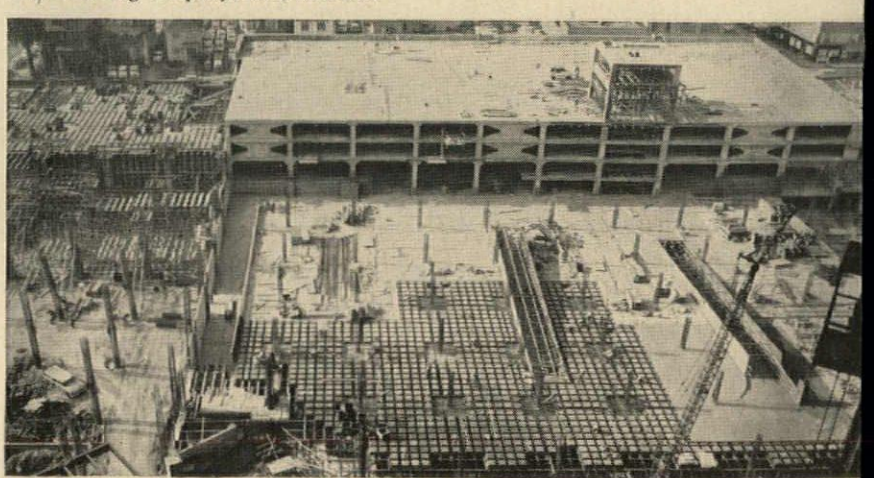

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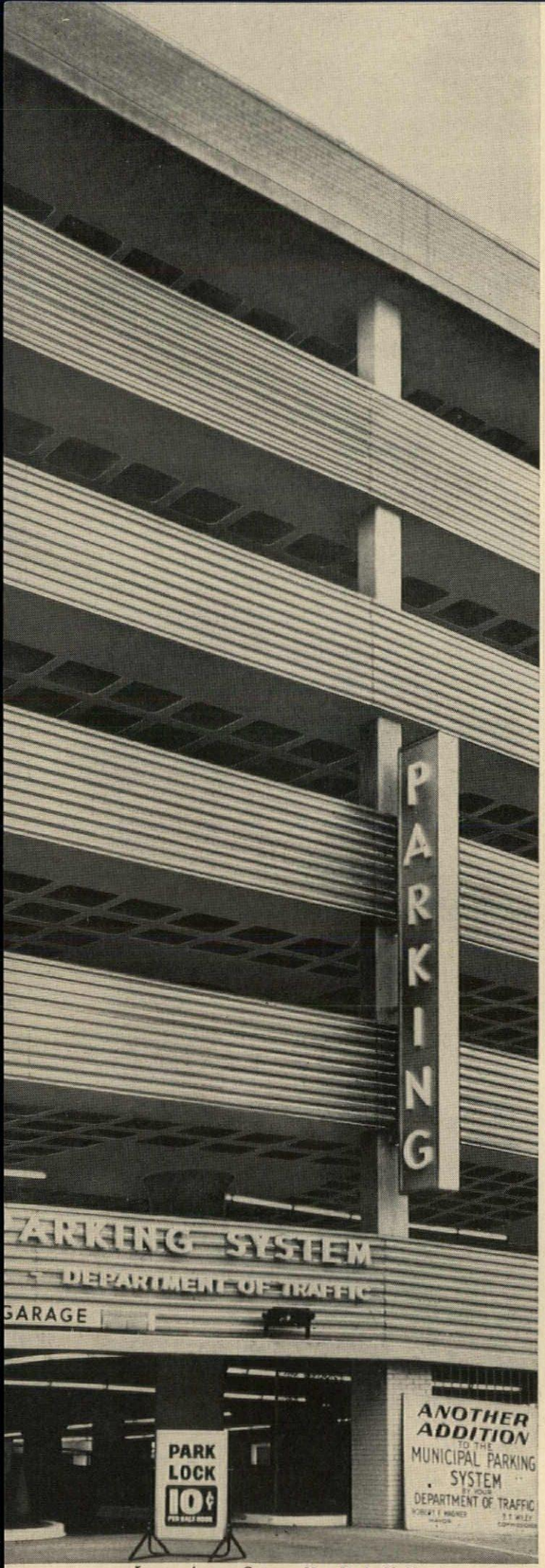

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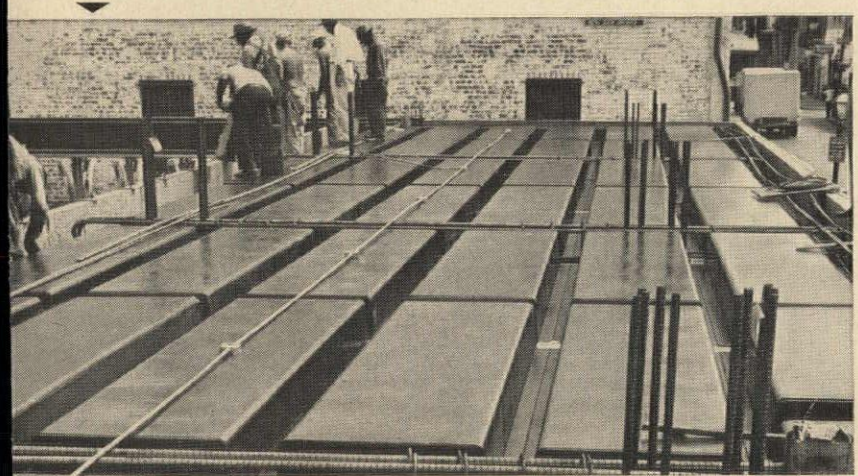

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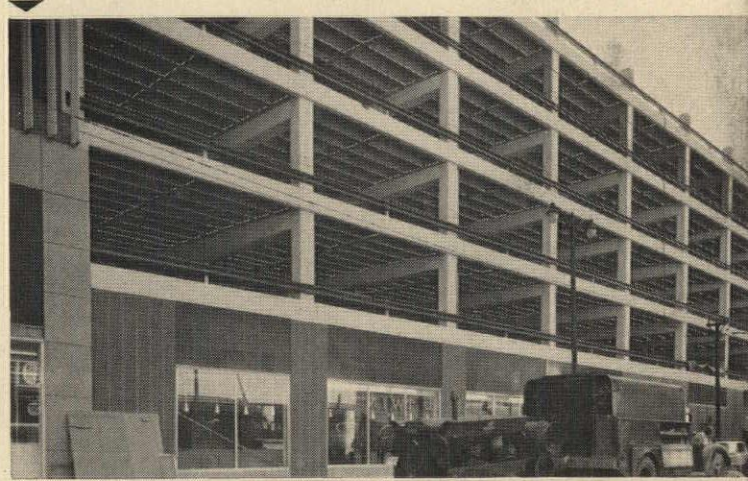

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Continued from page 62

de Arquitectos de Mexico . . . JOSEPH R. PASSONNEAU, Dean of the School of Architecture at Washington University, St. Louis, will join the Harvard University faculty for the 1963–64 academic year as professor of architecture . . . New Chief of the Building Research Division of the National Bureau of Standards, U. S. Department of Commerce, is A. ALLAN BATES . . . RICHARD ROTH, head of Emery Roth & Sons, was the architect recipient of the Sidney L. Strauss Memorial Award of the New York Society of Architects . . . American Medical Center at Denver honored as its "Man of the Year" EDWARD D. STONE . . . National grand prize winner in the National School Fallout Shelter Competition was ELLERY C. GREEN of Tucson . . . EDMUND FRIEDMAN of Miami is new president of the American Society of Civil Engineers . . . GERSHON CANAAN, special architectural adviser and consultant for the Public Housing Administration, Fort Worth, has been named honorary consul in that area for the Federal Republic of Germany.

New Magazine Group for Construction Industry

PROGRESSIVE ARCHITECTURE and its recently acquired sister publications, *Heating, Piping & Air Conditioning* and *American Artisan,* have been formed by Reinhold Publishing Corporation and its subsidiary, Keeney Publishing Company, into a group serving the building and construction field. Name of the group is The Reinhold Group for Building Design, Engineering, and Contracting, according to Reinhold President Philip H. Hubbard. Publishing Director of the three magazines is P/A Publisher D. B. Wilkin. The magazines, each of which will continue to maintain its own style, format, and identity, will reach more than 71,000 architectural and engineering professionals, mechanical and sheet metal contractors, dealers, and distributors.

Competitions, Awards, Scholarships

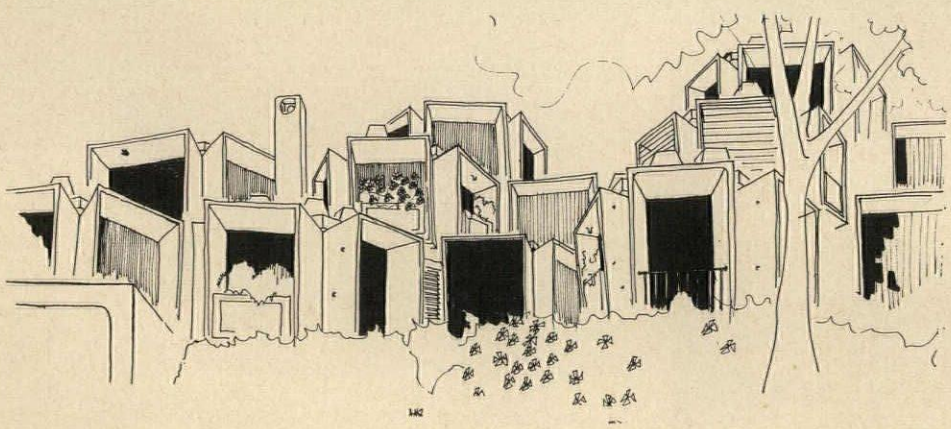
Jury for 1963 AIA Honor Awards is: Robert L. Durham, William W. Caudill, Mark Hampton, Ernest J. Kump, and Hugh Stubbins . . . This year's jury for the Reynolds Aluminum Prize for Architectural Students consists of Philip D. Creer, Robert Anshen, and William W. Esbach . . . The Prestressed Concrete Institute has originated an annual awards program for outstanding applications of prestressed concrete in the U.S. and Canada. Any project completed or under construction before April 1, 1963 is eligible, and programs of the competition, for which Harry Weese is jury chairman, are available from the Institute, 205 W. Wacker Drive, Chicago 6 . . . Fifth annual Copper & Brass Research Association Competition is open for entries until March 31; prize is $500 and a bronze trophy . . . City Club of New York has started the Albert S. Bard Award for Excellence in Civic Architecture, named for the 94-year-old civic leader who has fought for better architecture and planning in New York for more than 60 years; first award will be made at a luncheon on April 22 . . . $20,000 Kaufmann International Design Award went to Italy's Olivetti firm for its advance of good design in many fields; Volkswagon got a special commendation . . . Royalmetal Corp. has announced a $1,000 student competition for the design of an executive office interior; deadline for submissions is April 1, and details can be received from Royalmetal, 1 Park Ave., New York 16.

CALENDAR

Fourth National Lighting Exposition will take place at the New York Coliseum March 3–6 . . . Joint Conference on Church Architecture, sponsored by the Department of Church Building and Architecture, National Council of Churches of Christ in the U.S.A., and the Church Architectural Guild of America, will be held in Seattle, March 4–8 . . . 25th Annual Convention of the National Association of Architectural Metal Manufacturers will be held April 21–27 in Coronado, Calif. . . . 1963 Spring Conference of the Building Research Institute will be in Washington, April 23–25 . . . "The Quest for Quality in Architecture" will be the laudable, if belated, theme of the American Institute of Architects Convention in Miami, May 5–9 . . . The seventh Congress of the UIA will take place, unless various rumors going around displace it, in Havana, from September 29 to October 3.

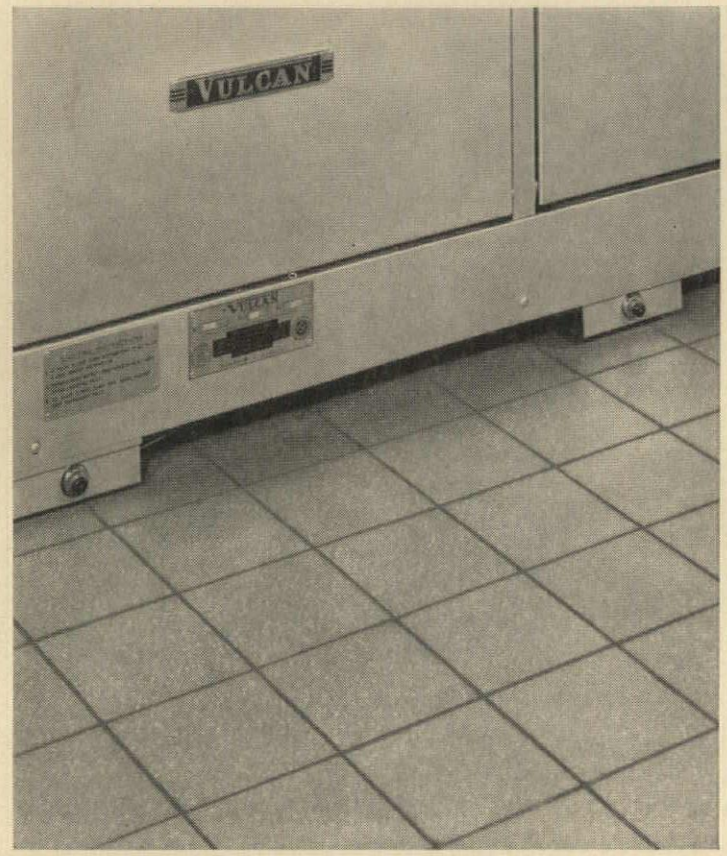
OBITUARIES

DON GRAF, former technical editor of *Pencil Points* (predecessor of PROGRESSIVE ARCHITECTURE) and author of *Don Graf's Data Sheets,* died on November 6 . . . EDWARD Y. WING, partner in the Baltimore firm of Cochran, Stephenson & Wing, died on November 10 . . . JAMES RUSSELL COLEAN of Kiff, Colean, Voss & Souder, New York, died November 12 . . . HENRY R. SHEPLEY of Shepley, Bulfinch, Richardson & Abbott, known particularly for his college and hospital work, died November 24 . . . RITCHIE LAWRIE, JR., co-founder of the Harrisburg, Pa., firm of Lawrie & Green, died on December 29.

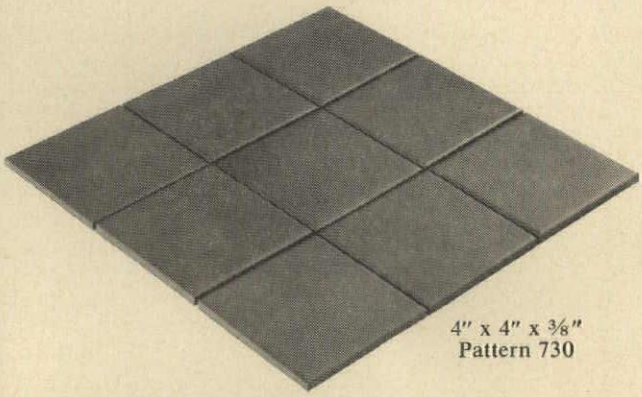


HILL-CLIMBING APARTMENTS

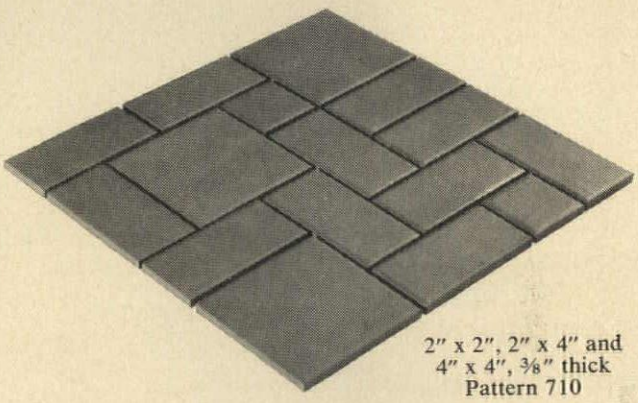
The San Gimignano effect is evoked by San Francisco Architect Raymond Mathis in a four-unit apartment complex he designed to climb a wooded hillside in Berkeley. Project will be constructed of lightweight precast concrete units, with bolted connections, heating, electrical and plumbing work housed under an elevated wooden floor, which will rest on rubber pads to deaden impact noises from below. Although wall units will house a variety of living functions, they all will be the same shape; they will also serve as frames and sun control for windows, covered decks, and entrances. Use of a multilevel, hexagonal module plan will result in prime use of the site.



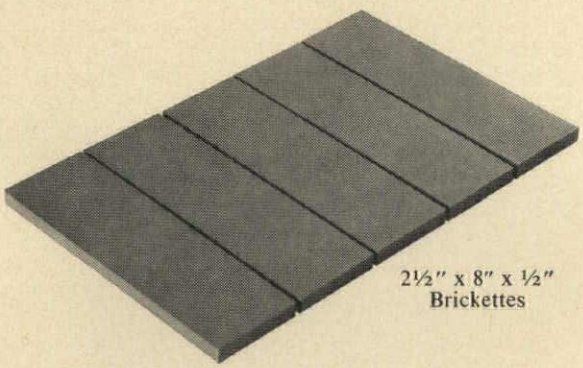
This typical kitchen application makes use of 6" square Orsan Pavers. Notice in particular how the thin joints add greatly to the floor's appearance. There's another plus-value, too. The thin joint means easier cleaning . . . lower maintenance costs for a building lifetime.



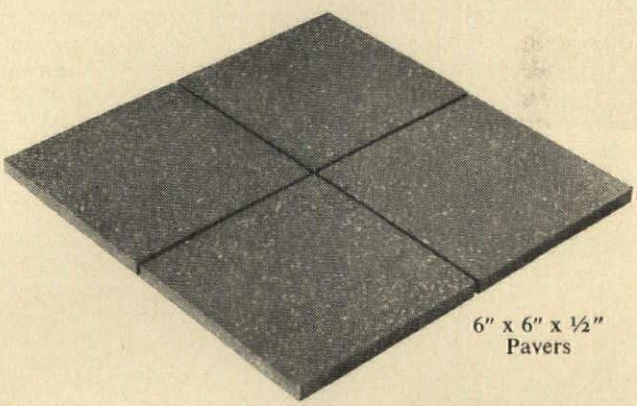
4" x 4" x ⅜"
Pattern 730



2" x 2", 2" x 4" and
4" x 4", ⅜" thick
Pattern 710



2½" x 8" x ½"
Brickettes



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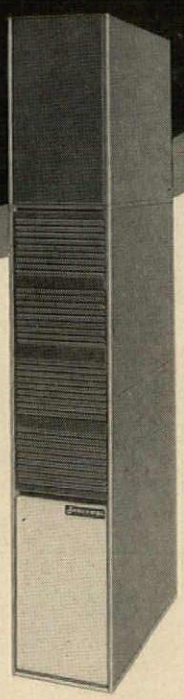

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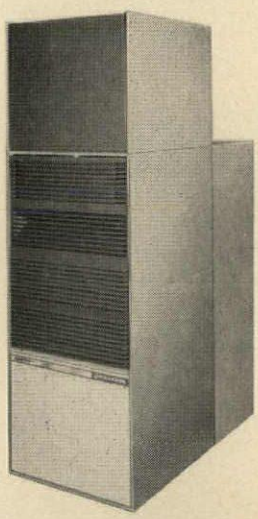

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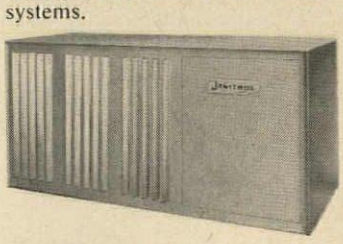

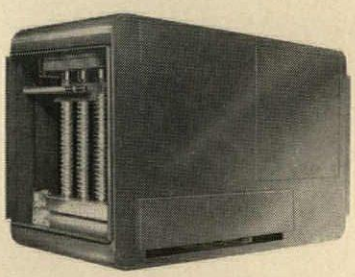

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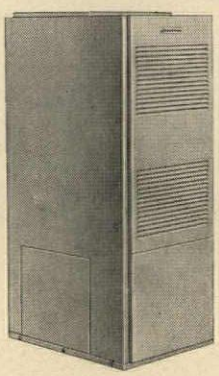

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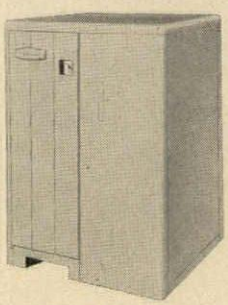

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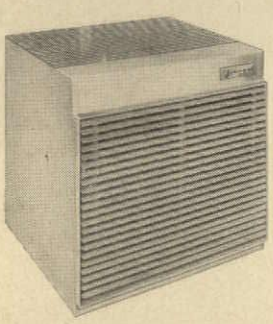

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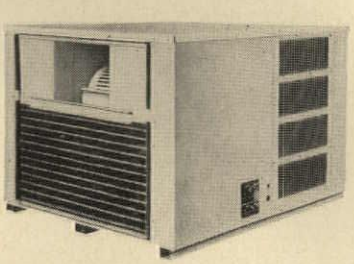

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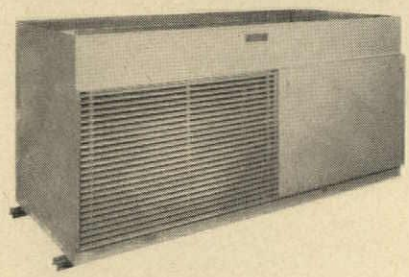

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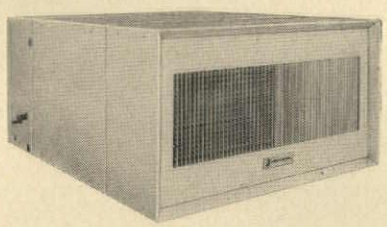

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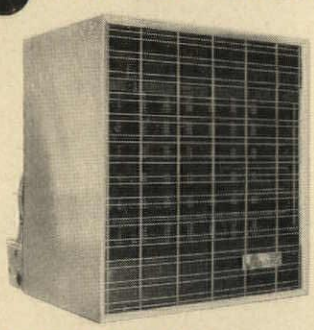
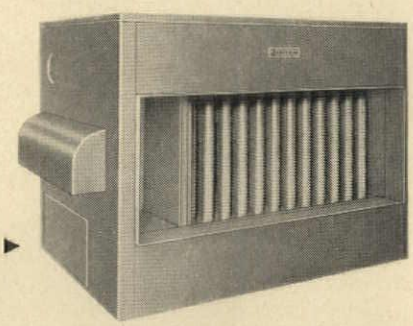
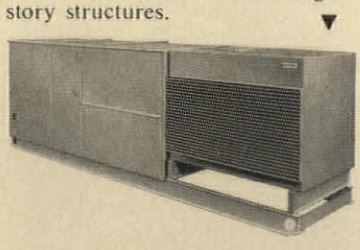


◀ **Gas-Fired Unit Heaters,** the Janitrol 67 Series, leader in design, with eleven models from 30,000 to 250,000 Btu./hr. inputs. Includes complete control system, and durable aluminized steel heat exchangers, with stainless steel optional.

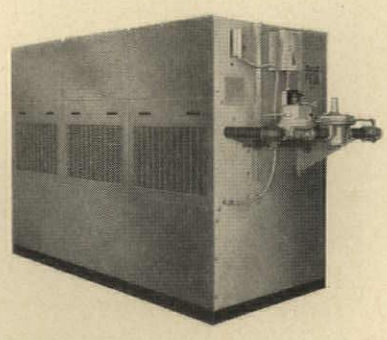


Gas-Fired Duct Furnaces, ▶ weatherproof model shown, is designed for outdoor installation; also available in standard models. For heating circulated air or tempering make-up fresh air. Available with either aluminized or stainless steel heat exchangers.

Skyliner Rooftop Units, for any combination of heating-cooling-ventilating. Factory-assembled, require no inside space. Heating is by natural, LP, mixed or manufactured gas; cooling may be either electric or gas engine powered. An ideal unit for modern single-story structures. ▼



Heavy Duty Gas-Fired Blower Heaters ▶ for either free discharge or central system use. Equipped with high capacity blowers and aluminized steel heat exchangers with inputs from 250,000 to 1,750,000 Btu./hr.



see our catalog in Sweet's (S)

More Information? Detailed specifications and engineering information on all of these models are available from your local Janitrol representative. He's an expert in equipment utilization and ready to provide personal assistance. Give him a call, he's listed in the yellow pages. Or, you may write to the Product Application Manager at the factory in Columbus.

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Washington Responds to Criticism

By E. E. Halmos, Jr.

There was no doubt about the biggest architectural news in Washington in January—it was the 96-page special issue of the *AIA Journal*, devoted to the capital city and its development.

In a city that takes inordinate interest in such matters, the local press, in lengthy reviews of the special issue, inevitably seized upon the architects' criticisms: the depressing uniformity of newer business buildings; continued lack of provision for open spaces; totally inadequate public transportation, and so on.

In view of pre-issue criticism already made by Washington's Engineer Commissioner [DECEMBER 1962 P/A], these accounts also seized on some rather harsh wording concerning plans for freeway and other road construction.

Equally inevitably, the stories were hastily enough written to overlook some constructive suggestions in the voluminous reports: the need for apartments, hotels, and other structures to encourage round-the-clock use of the downtown business areas; the need for parking structures to be built as integral parts of new buildings rather than as separate projects; the connection of underground parking areas with freeways to facilitate access and ease surface traffic problems; the need for co-ordination or consolidation of the numerous agencies that have some voice in city and regional planning; and some kudos for attempts to fuse "Federal" architecture with contemporary design without radical departures.

On the question of freeways and their effect on the city—or any city, for that matter—there was room for public debate as to the degree of architectural concern with such matters. But the AIA criticisms seemed justified to an extent: Indiscriminate construction can chop a city into segments as effectively as railroad tracks did in bygone eras, and the effects of such cutting up should be carefully considered before new projects are authorized.

Whether the architects' strong stand in favor of underground or rail rapid transit as a first—rather than a last—answer for transit problems was good business politically was also open to debate. But at least the statements served one purpose: they would bring a long-standing debate on the question well out into the open for examination.

Fall-out Shelters

Nothing daunted by the comment already appearing on their report on the capital, architects also plunged into a full-scale fight over the Government's plans to spend $350 million for fall-out shelters that would protect the public against radiation after a nuclear attack.

A powerful group of dissident members of AIA issued what amounted to a manifesto, declaring that ". . . planning for destruction is an architectural absurdity." The group attacked the program of AIA to co-operate with the Defense Department in providing professional advice in the design of shelters—including a national competition for school fall-out shelter design. (For P/A's comment on this problem, see p. 240, MAY 1962 P/A.)

Increase for Federal Construction Expenditures

The roughly $99 billion budget message President Kennedy left on Congress' doorstep late in January actually represents an increase in Federal expenditures for construction, despite its "tight" label. Any savings that might occur are expected to come from reduction of postal deficits and agricultural programs.

But the President has called for increased funds for the Defense Department, the National Aeronautics and Space Agency (largely for buildings and installations), and the Interior Department (to enable more work on natural resource projects). Significantly, he also seeks the rest of the $900 million Congress authorized (but didn't fund) for his emergency public works programs—just in case unemployment gets hard to manage.

On the basis of recent Congressional sessions, there is, of course, a long time gap between the budget message and actual passage of appropriation bills. The 87th Congress, for example, took nine months to accomplish this. This year, with an obvious battle looming over tax reductions and tax reforms, it may take just as long.

New Architectural Consultant

The Federal Housing Agency has now engaged an architectural consultant on a full-time basis for its experimental housing program.

He is Orville G. Lee, a 1953 architectural graduate of the University of Washington, who was most recently a partner in the Pullman, Wash., firm of Lee & Snell.

In his new assignment, Lee is to interpret and evaluate research data pertaining to proposals submitted to FHA under the experimental housing program set up by the Housing Act of 1961.

FINANCIAL

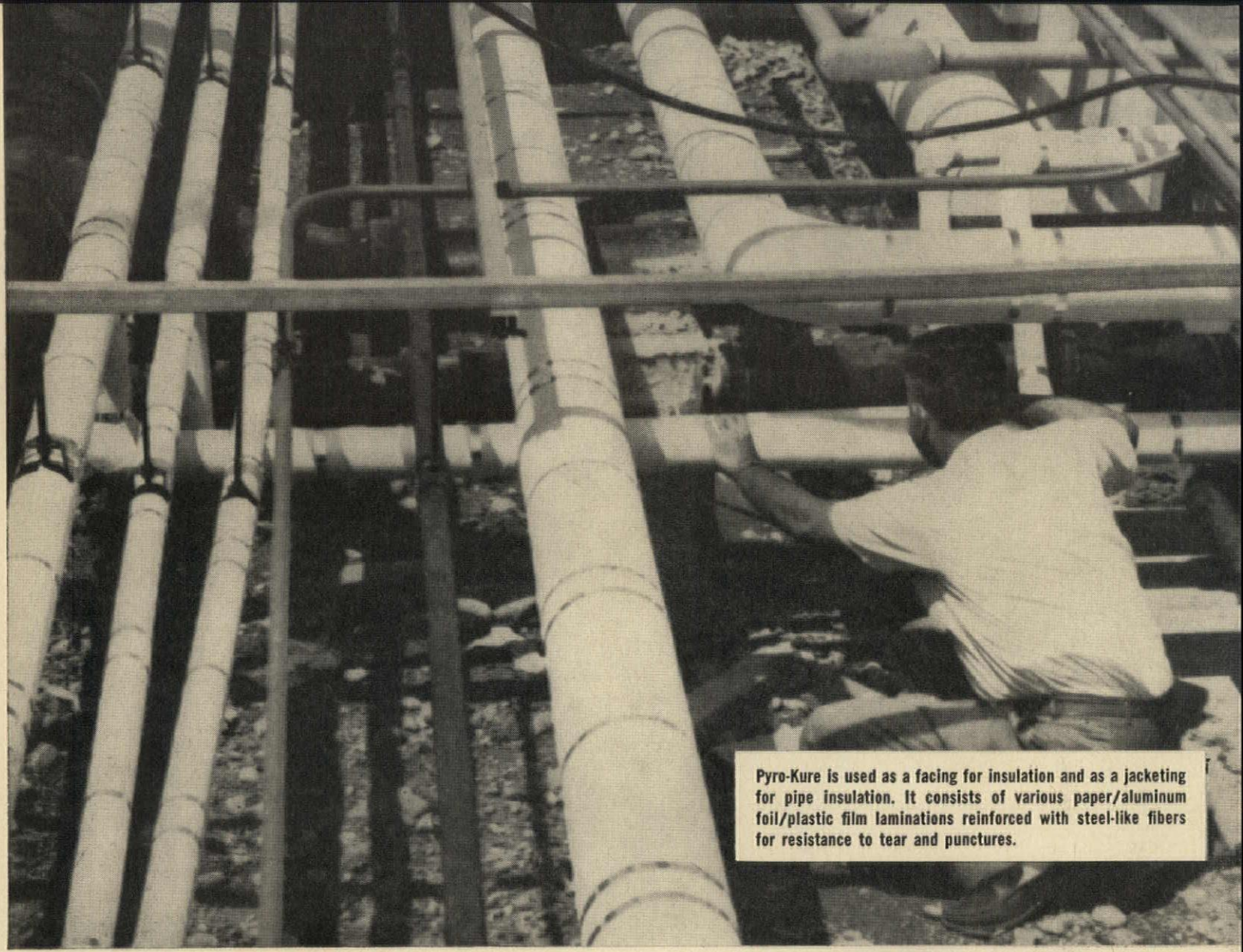
Best financial news for architects is the continuing strong performance of municipal bonds in the general market; and the continuing support of voters for municipal construction financing on matters of architectural business interest.

According to preliminary totals, sales of municipal bonds in 1962 will top $7.3 billion—up about 2 per cent from the previous record high in 1961. That's in direct contrast to corporate securities for construction purposes, which showed a drop in 1962, though it still held at a respectable level of $3.2 billion. Reason isn't hard to find, of course: investors like the tax-exempt features of the municipal bonds.

As in 1962, voter support of bond issues continued to center on an overwhelming number of approvals of educational construction projects and water and sewerage construction. Voters still didn't care for projects concerned with recreation, new municipal office buildings, or the like.

In October, according to the Investment Bankers' Association, voters approved 80 per cent of all educational-construction bond issues; 76 per cent of water and sewerage proposals. But they turned down more recreational programs and office buildings than they accepted.

And a financial note for architects is contained in latest salary surveys by the National Science Foundation: median annual salary for U.S. scientists in 1962 was $10,000.



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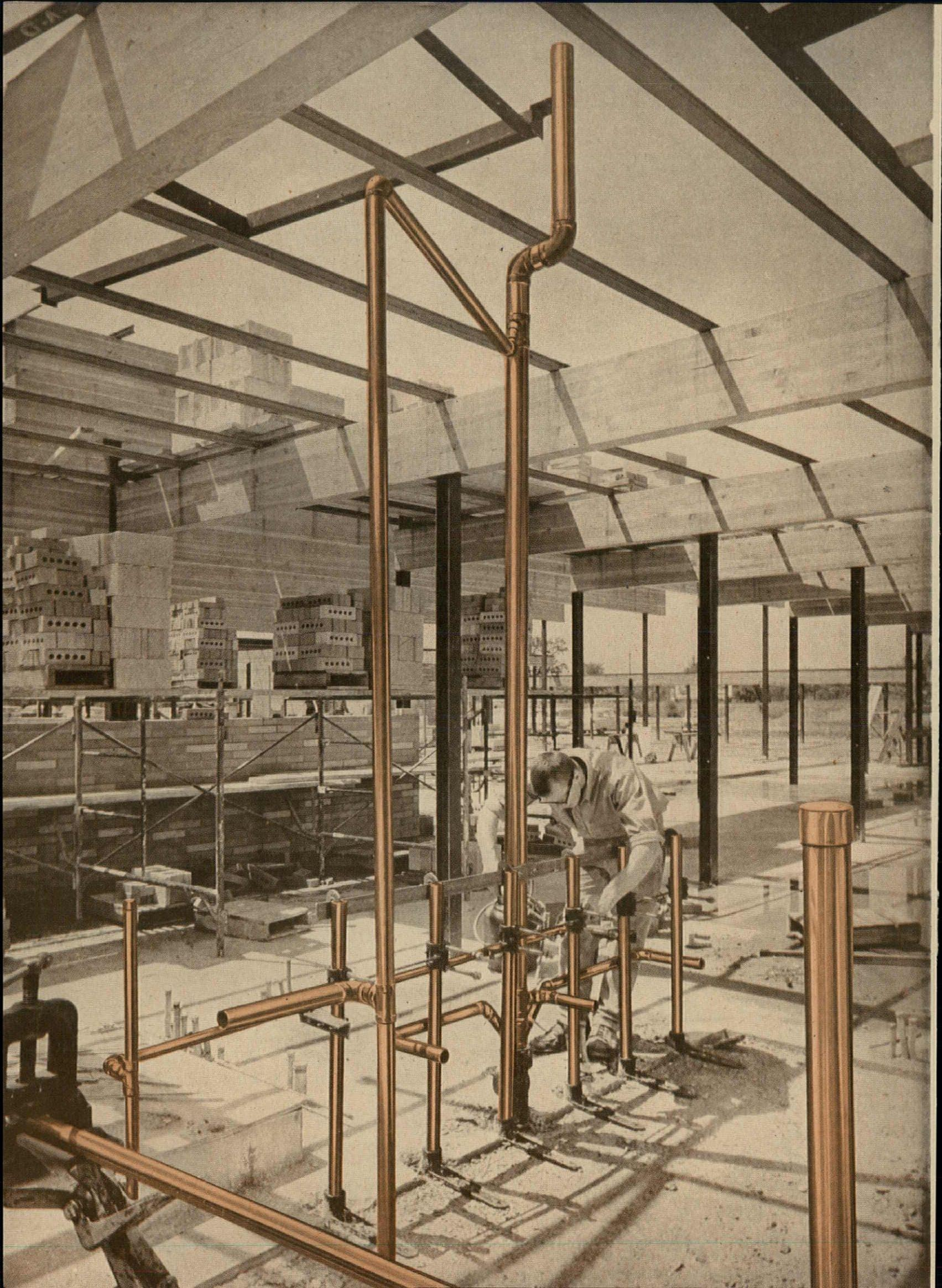
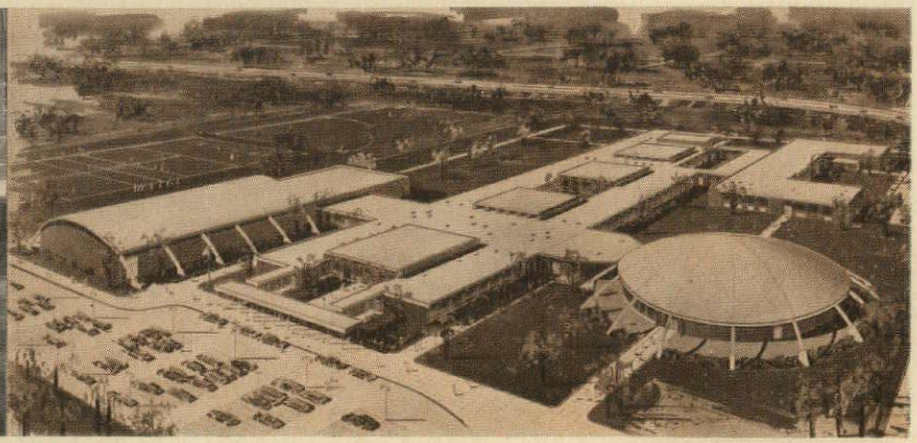
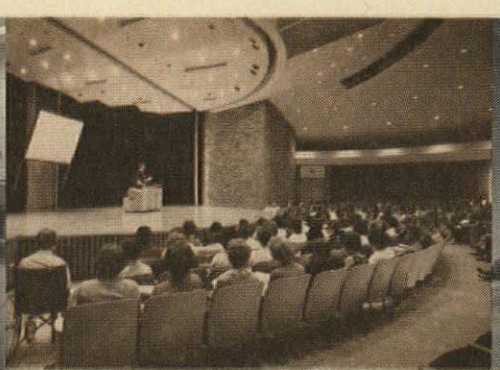
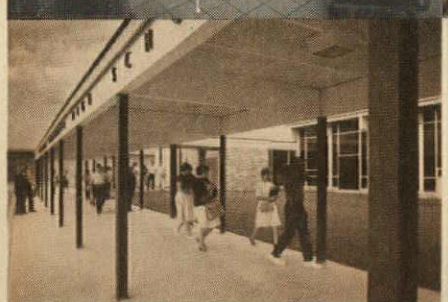


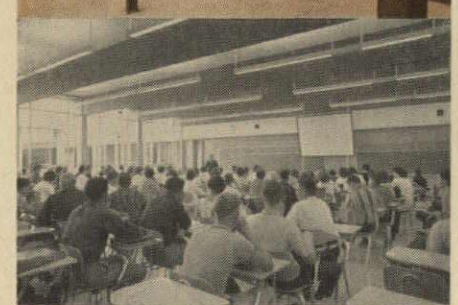


OUTSTANDING NEW HIGH SCHOOL INCORPORATES ALL MODERN FEATURES—INCLUDING Streamline® COPPER TUBE AND FITTINGS— FOR BOTH SUPPLY AND DRAINAGE PLUMBING

Architect: Frederick E. Wigen Architect & Associates, Inc., Saginaw, Michigan
Mechanical Engineering Consultants: Hyde & Bobbio, Inc., Detroit, Michigan
General Contractor: Consolidated Construction Company—Bay City, Michigan
Mechanical Contractor: Budd-Eurich Plumbing & Heating—Saginaw, Michigan







This striking new $2.5 million dollar Community High School in Bridgeport, Michigan, is completely modern . . . inside and out. Built to accommodate 1500 students, the school employs all modern educational aids . . . closed circuit television . . . language laboratories . . . and adjustable classroom areas. This new school has been classed as one of the most outstanding in the nation to be constructed in recent years. The plumbing is as modern as the teaching methods because both the supply and drainage systems were fabricated from Streamline copper tube and solder type fittings. Copper costs no more than rustable materials and the school will enjoy a lifetime of dependable service. All windows, curtainwalls, and entrances were supplied by Valley Metal Products Company, a subsidiary of the Mueller Brass Co.

MUELLER BRASS CO.
PORT HURON 27, MICHIGAN

For more information, turn to Reader Service card, circle No. 338

BEAUTY THAT ENDURES

From Wood Conversion Company — one ceiling system for effective acoustical control, heating, cooling and ventilating with new Lo-Tone ceiling board or tile.

Lo-Tone acoustical ventilating products are available in both regular mineral and Fire-Rated types. All Fire-Rated Lo-Tone ventilating tiles and ceiling boards are listed by Underwriters Laboratories, Inc., and carry UL labels.

The engineered design of Lo-Tone ventilating ceiling systems provide adjustable and balanced downward flow of air, maintain a clean ceiling and high light reflectance of 75% or more. And gone are the unsightly, localized soiled areas frequently found in conventional ventilating installations.

A new Lo-Tone ventilating ceiling installation costs no more than a conventional air-distribution system. In many cases a Lo-Tone ceiling will actually cost less. Large amounts of duct work are eliminated, plenum areas can often be fed with one stub duct, and branch ducts are seldom necessary.

See AIA File No. 39-B in Sweet's Catalog. For samples, literature, or technical data—find your local Lo-Tone Acoustical Contractor in the Yellow Pages, or write us: Wood Conversion Co., St. Paul 1, Minnesota.

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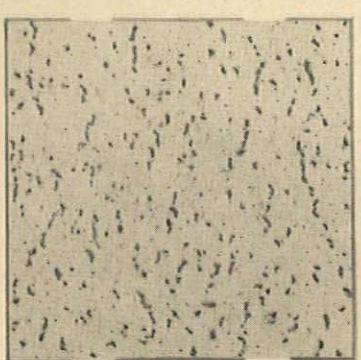
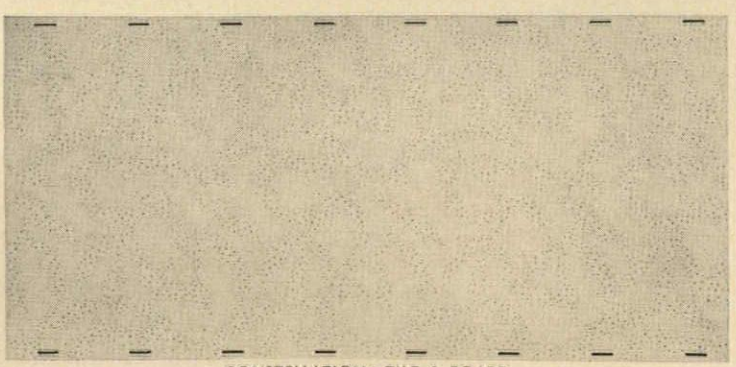
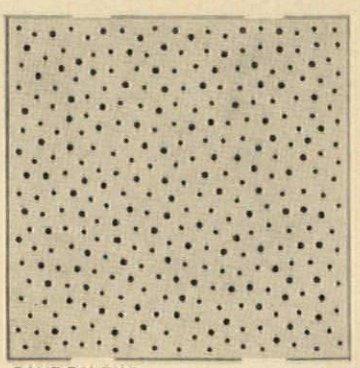


FISSURED TILE & BOARD

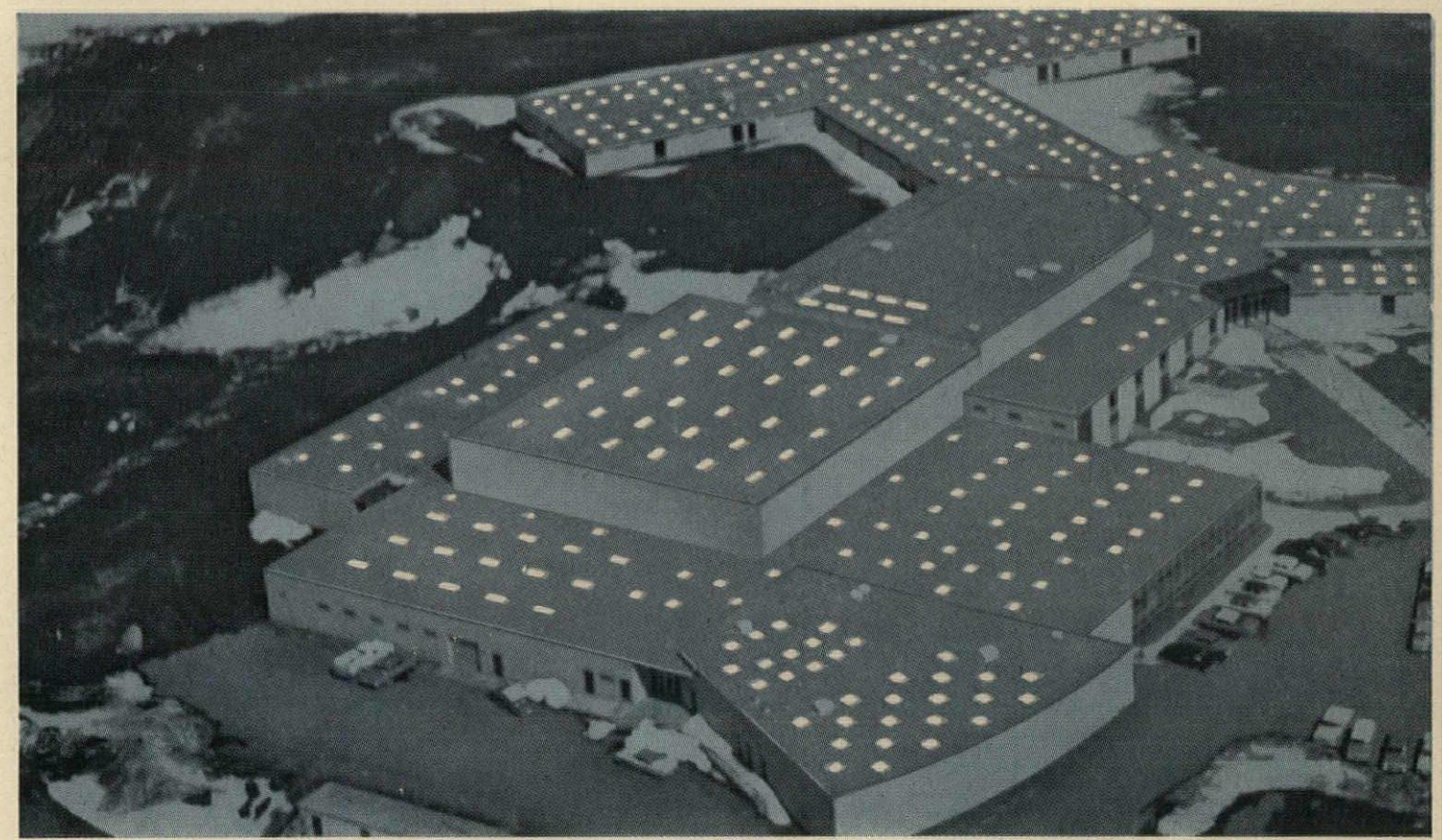


CONSTELLATION® TILE & BOARD



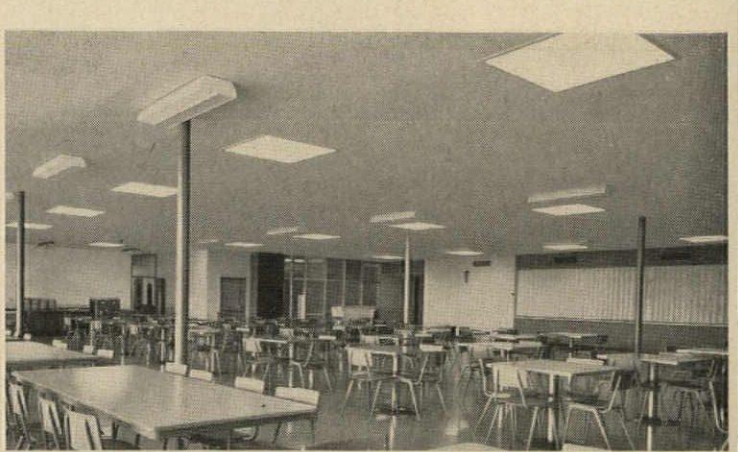
RANDOM TILE

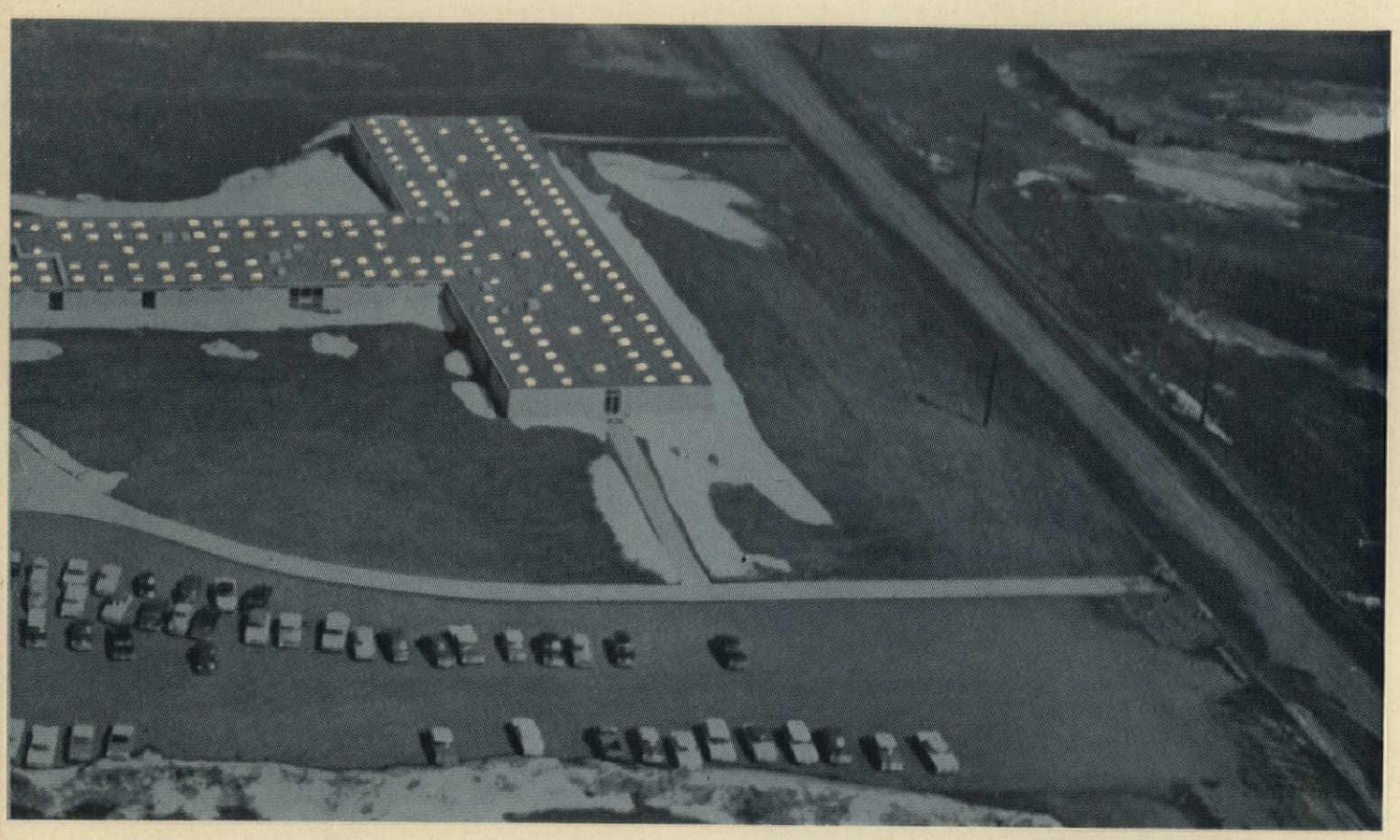
Centurion at the Foot of the Cross, a Byzantine mosaic dating from the 11th century.



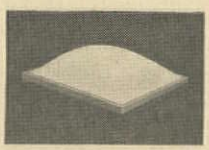
Architect: Howard Parezo and Associates, AIA, Sioux Falls

Quality lighting and operating economy with





570 Dome Skylights of PLEXIGLAS®



Dome skylights of PLEXIGLAS acrylic plastic provide natural lighting of the highest quality at the O'Gorman High School, Sioux Falls, South Dakota. In classrooms, corridors, gymnasium, auditorium, cafeteria, library and lobby, the high-level daylighting is uniform in distribution and free of glare. In addition, an appreciable saving in electric power costs is realized because the school's incandescent and fluorescent lighting is needed only on the relatively few days when the sky is totally cloudy.

This daylighting installation was engineered to control the sky and sun conditions of its geographical location —through selection of the proper density of white translucent PLEXIGLAS for the diffusing domes of the skylights. *Five densities of white translucent* PLEXIGLAS *are available for skylights*, a choice that insures successful daylighting under any sky and solar conditions.

Through the use of the proper density of white translucent PLEXIGLAS, the following interior lighting goals were achieved at O'Gorman High School:

- The predetermined light level for the visual task involved—an average reading of 60 foot candles in the case of classrooms—is attained during at least 75% of the school year through the skylights alone.
- Daylight is distributed uniformly throughout the skylighted areas.
- Brightness of the light source—the skylight opening in the ceiling—is controlled to insure visual comfort.
- Output of heat per foot candle is lower with the skylights than the output produced by either incandescent or fluorescent light alone.

You can obtain these advantages through Daylight Engineering with dome skylights of PLEXIGLAS. Our engineering services and those of skylight manufacturers are available to help you. We will be pleased to send you the names of dome skylight manufacturers who use PLEXIGLAS.

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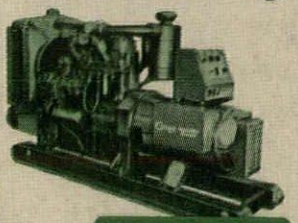
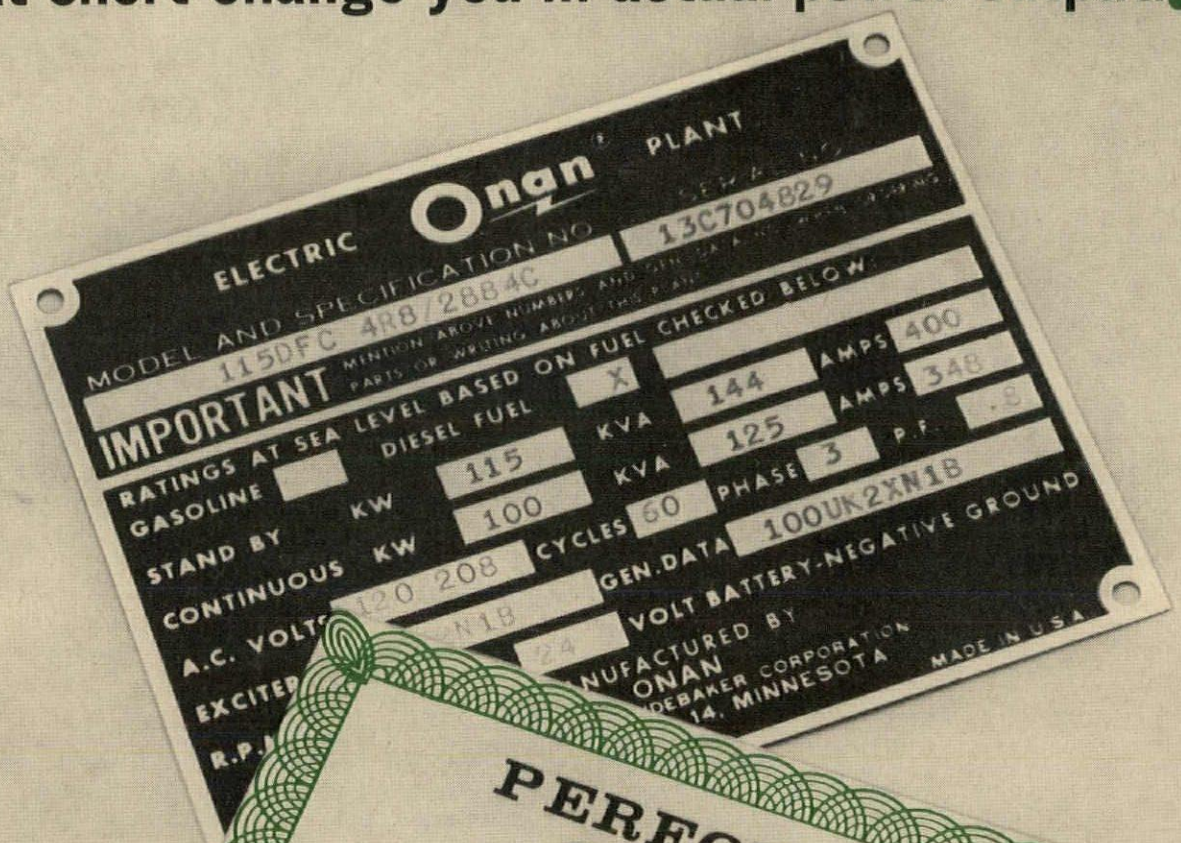


Onan



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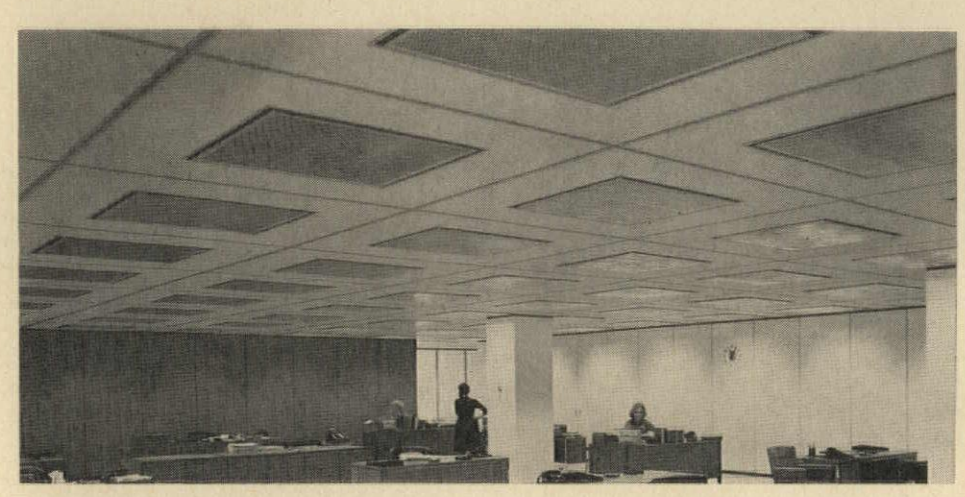
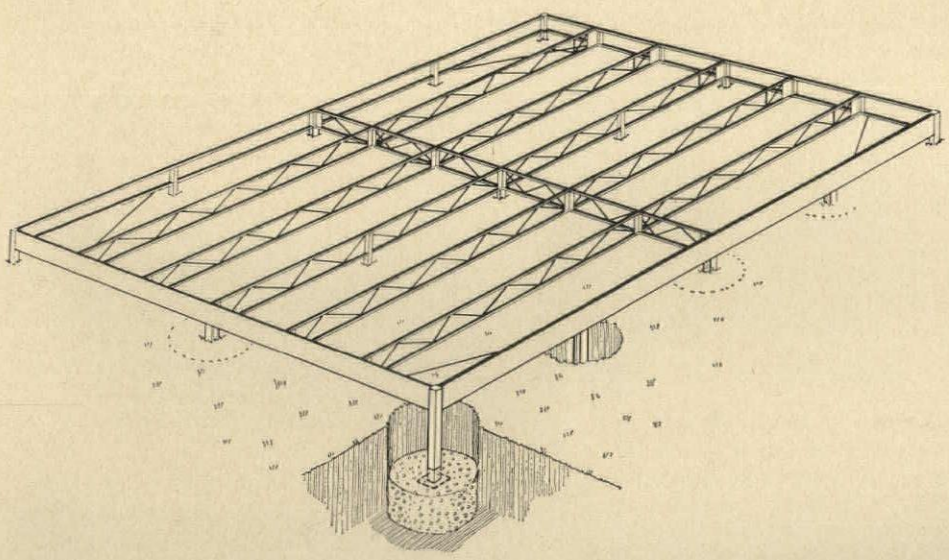
NEW PRODUCTS



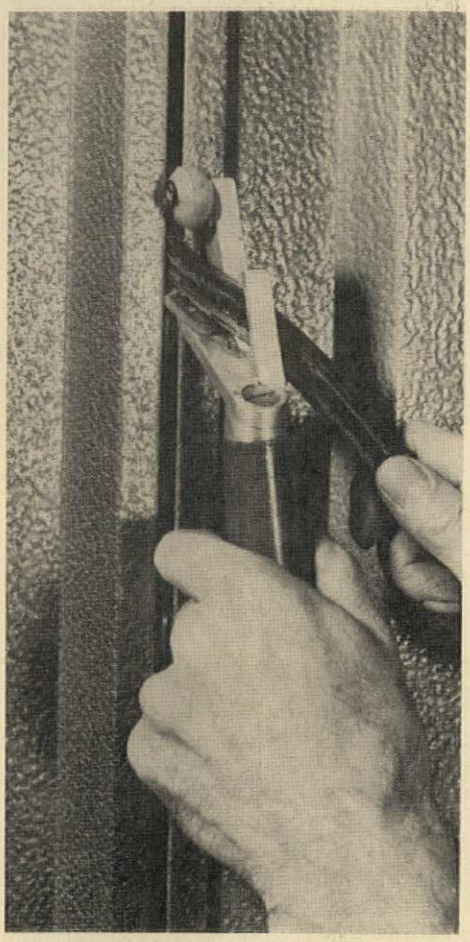
One of the unique features of the Bankers Trust Building which recently opened in New York [p. 44, JANUARY 1963 P/A] is its ceiling lighting system. Designed by General Electric with Consultant Richard Kelly, the units consist of a plastic grid louver with aluminized reflecting surfaces that are parabolic in shape. This system creates a low-brightness lighting in which the light is directed downward instead of into the eye. Thus, even if an interior is completely illuminated, the fixtures will appear to be turned off when observed from a 45-degree angle. The fixtures, which contain 20,736 reflecting surfaces each, are 3′ square and recessed in the ceiling on centers 6′ apart. Employed in the Bankers Trust installation is a new 30-w rapid start fluorescent lamp with "Premium 3" construction using "Wattage Miser" electrodes that save watts. General Electric Co., Nela Park, Cleveland 12, Ohio.

On Free Data Card, Circle **100**



A new steel foundation system that will permit all-weather house construction has been announced by U.S. Steel. The foundation consists of 4 cold-formed "C-shaped" steel perimeter beams, 15 support posts, 4 diagonal corner braces, and 12 interior steel joists. In construction, perimeter beams and posts are assembled on the ground by mechanical fasteners, then tilted into position in holes 24″ in diameter which have been augered to below frost line. Corners are then joined by connecting wings on corner posts in ends of beams. Interior joists are assembled and "V-locked" to the perimeter frame. Entire foundation is then completely leveled with either blocking or auto jacks, and corner braces are affixed. Concrete is poured around bases of all posts to stabilize the system. Foundation interior can then be graded and post holes backfilled. U.S. Steel Corp., 525 William Penn Place, Pittsburgh 30, Pa.

On Free Data Card, Circle **101**

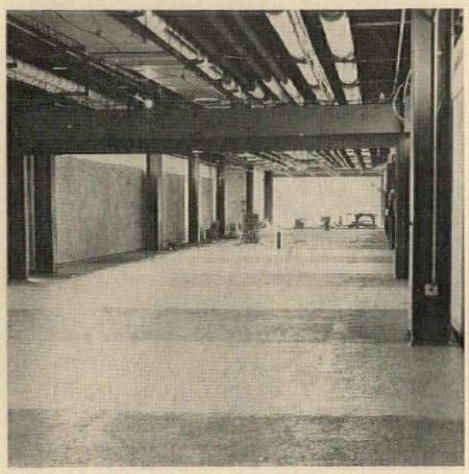


Walls of residential, commercial, and industrial buildings now may be "zipped" together using "Snug Seam," a new development of Alcoa recently unveiled.

The joint system consists of a pair of specially designed extruded aluminum shapes and mating neoprene extrusions, which, as the name implies, snugly join adjacent building panels and eliminate exposed fastener heads. Although the system was created mainly as a neat, simple method of joining Alcoa's "Alply Panels" (in which polystyrene foam is sandwiched between aluminum panels), it can also be adapted for assembling corrugated sheet wall or roof panels for commercial and industrial structures (*as shown*). R. L. LaBarge, designer of Snug Seam, thinks that it "will stimulate studies of frameless buildings by economically joining structural panels, thus performing the functions of studs, sheathing, and siding in conventional construction." Aluminum Co. of America, 1501 Alcoa Building, Pittsburgh 19, Pa.

On Free Data Card, Circle **102**

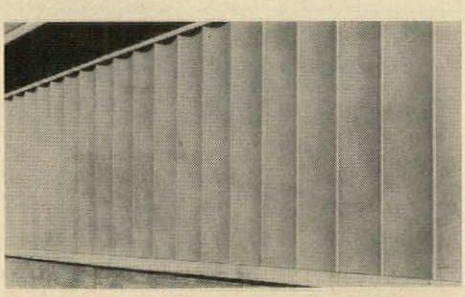
Continued on page 80



Durable Flooring in New LaGuardia Terminal

Harrison & Abramovitz's specification of epoxy terrazzo for the flooring in the fingers of the new terminal at New York's LaGuardia Airport is said by the manufacturer to furnish a good test of all of the material's notable qualities. Among these advantages are light weight, ease of application, flexibility, resistance to cracking, ease of maintenance, resistance to abrasion caused by high traffic, and resistance to water, acids, alkalis, grease and solvents. Surface of "Dura-Lan" is machine polished after application; no protective coating is needed. Lancaster Chemical Corp., Dura-Lan Div., Carlstadt, N. J.

On Free Data Card, Circle **103**



Fluted Wall Panel

A new effect in curtain walls is achieved with H. H. Robertson's new "FM Panel." The curved panels, 24" wide, are rugged and weathertight, and can be erected quickly in any kind of weather. It is suggested by the manufacturer that panels be either matched or contrasted in color and texture; they are available in Robertson "Galbestos," aluminum, porcelain on aluminum, or stainless steel. Mullions are aluminum, with snap-in trim caps of aluminum or porcelain on aluminum. H. H. Robertson Co., Farmers Bank Building, Pittsburgh 22, Pa.

On Free Data Card, Circle **104**

Adjustable Cab Height for New Elevator

A passenger elevator cab that can double for freight service because of a unique false ceiling has been developed by Dover Corp. For passenger use, ceiling height of the "Extenda-Cab" is the standard 7′ to 7½′. A button on the cab control panel, however, raises the ceiling approximately 2′ to give the additional height required for tall or long items. (The adjustable ceiling does not interfere with lighting, fan, or escape door.) In many buildings, manufacturer points out, this feature can save the cost and space of a separate freight elevator; apartment houses are cited as a particularly appropriate use. Elevator Div., Dover Corp., 1054 Kansas St., Memphis 2, Tenn.

On Free Data Card, Circle **105**

New Drawing Ink Solves Many Problems

Citing a long list of outstanding qualities, Koh-I-Noor describes its new "No. 3080 Universal Rapidograph Drawing Ink" as "the perfect ink." (1) It is an all-round ink, for paper and film; (2) it has good adhesion, will not smear or flake off when dry; (3) it is completely waterproof, will not dissolve when a Mylar drawing is cleaned; (4) it is dense enough to photograph well; (5) it dries quickly, will not smear drawings or halt work; (6) it flows well in the Rapidograph pen, will not cake or clog. All this, and an unbreakable plastic bottle, too. Koh-I-Noor, Inc., Bloomsbury 2, N. J.

On Free Data Card, Circle **106**

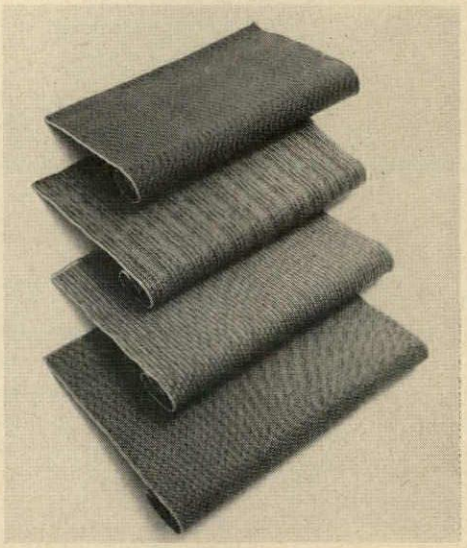
Gypsum Studs in New Partition System

Barrett's "Delta Stud Gypsum Partition System" is a completely new concept for non-load-bearing partitions. The assembly consists of standard gypsum wallboard bonded to an intrinsically strong delta-shaped (triangular) gypsum stud. The stud is made of gypsum board 12" wide and ½" thick that is pre-scored front and back alternately on 2" centers. On the site, it is easily bent into the zigzag form. Installed, it extends the full wall height and is designed to be spaced 24" o.c. The system claims a number of advantages over other assemblies: greater rigidity and easier installation than steel-stud gypsum partitions, at less cost; higher fire ratings and greater space savings than wood-stud gypsum partitions; lighter weight and fewer components than prefabricated or job-laminated gypsum panels. Barrett Div., Allied Chemical Corp., 40 Rector St., New York 6, N. Y.

On Free Data Card, Circle **107**

Fabrics from Dux

Dux, Inc., carries a line of handsome upholstery textures that are offered for use not only on Dux furniture but also on a cut-order basis. There are 42



Scandinavian fabrics in 309 colors. Fibers are mixtures of natural and man-made materials, 100% linens, and 100% nylons. The color range is from soft, rich, muted tones to vivid, clear colors; some of the colorways are combinations of the two. Fabric widths are 54" to 60". Most of the numbers are Scotchgarded. A significant aspect of Dux's fabric line is delivery: complete stock on a cut-order basis is available for immediate shipment both in New York and in California so that delivery time is equalized across the country. Dux, Inc., 305 E. 63 St., New York, N. Y. or 1633 Adrian Road, Burlingame, California.

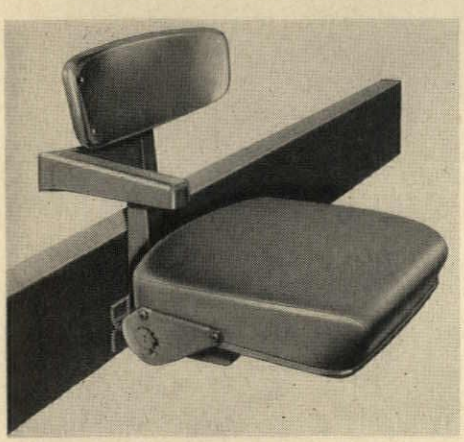
On Free Data Card, Circle **108**

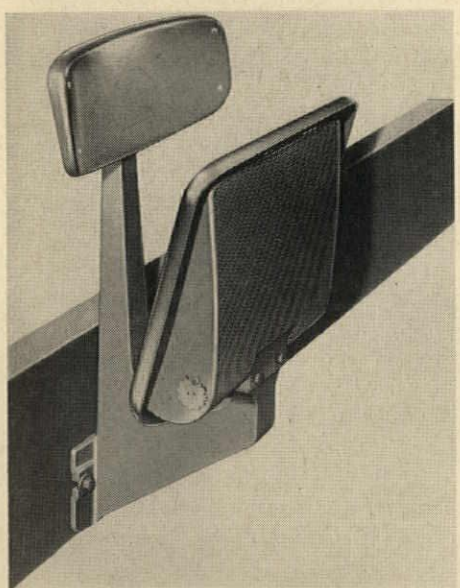
Maintenance Hangar Is Maintenance-Free

Making extensive use of asbestos-protected metal siding, the new Eastern

jet-maintenance hangar at O'Hare Field in Chicago is virtually maintenance-free. The building's walls—including the skin on six huge sliding doors on each side—are faced with 22-gage "Steelbestos" by Bowman. To avoid end-laps on the siding, sheets were roll-formed as long as 38'. Glass-fiber batts and a metal liner applied to the interior face complete the economical wall assembly. Desmond & Lord, of Boston, are the architects. Bowman Steel Corp., P.O. Box 2129, Pittsburgh 30, Pa.

On Free Data Card, Circle **109**





Stadium Seats of Two Varieties

Glass-fiber-reinforced stadium seats—15,900 of them—are being installed in the University of Illinois field house in Urbana. All seats are riser-mounted on cast-iron standards, giving a clean and unobtrusive appearance; seats swing up to allow free passage between rows. Three-quarters of the seats are of gray plastic, and are designed so that arms may be added if desired. The remaining seats are luxuriously upholstered in a gray Naugahyde, and have cast-iron arm rests with plastic inserts on top of the casting. American Seating Co., 901 Broadway N.W., Grand Rapids 4, Mich.

On Free Data Card, Circle **110**

Vanishing Venetian Blinds

Narrow slats 1" wide and a tapeless support system permit the "Roll-Vue" venetian blind *(illustrated)* to become relatively inconspicuous in the open position. The shade is operated by a single, continuous cord of nylon, which both raises and lowers the blind and tilts the slats. Slats are held only by tabs; since no cords pass through them they can be easily removed for cleaning. The Alcoa aluminum slats come in 14 colors. Artcraft Venetian Blind Manufacturing Co., 3958–72 Olive St., St. Louis 8, Mo.

On Free Data Card, Circle **111**

Two Lines For Offices

Leon Gordon Miller has designed two lines of wood and metal office furniture for the S. J. Campbell Company. Both lines comprise chairs, desks, and cabinet pieces; flexible assemblies are planned for. The Wall Street Line is made of walnut and cast aluminum; it has a characteristic wishbone-shaped motif in the metal members. The market Street Line (*chair illustrated* is of walnut and steel. This furniture can be seen at the Merchandise Mart in Chicago, and at John Stuart, Inc., Park Ave. at 32 St., New York, N.Y. S. J. Campbell Co., 6–171 Merchandise Mart, Chicago 54, Ill.

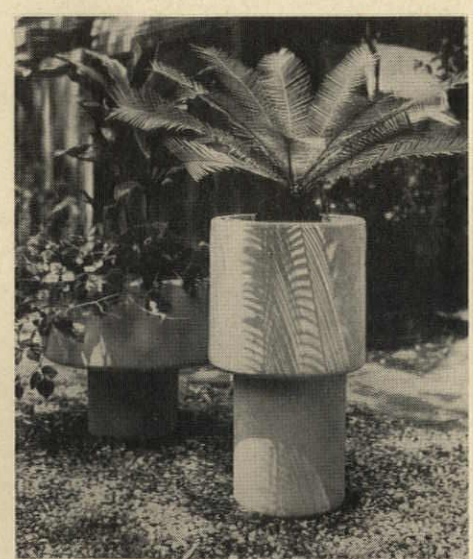
On Free Data Card, Circle **112**

Scandinavian Area Rugs

What is said to be the largest selection of Scandinavian area rugs in this country is imported by Scandinavian Marketing Associates and sold under the label of the Scanmark Collection. Six designs are offered in 150 color-

ways. "Birgitta" (*illustrated*) is a Rya-weave that is available in four handsome color combinations. The rugs are on display at F. Schumacher & Co., Stark Carpet Co., and Treganowan Inc. Scandinavian Marketing Associates, Inc., 281 Fifth Ave., New York, N.Y.

On Free Data Card, Circle **113**



Ceramic Planters

A collection of hand-pressed, high-fired ceramic planters designed by

Krevolin & Constantine offers variety of form and finish as well as flexibility of interchangeable stacking forms. Natural clay colors are available—terracotta, buff, and brown—and also several glaze finishes: black, white, brown, and gray. Krevolin & Constantine, 61 W. 74 St., New York 23, N.Y.

On Free Data Card, Circle 114

Vinyl-Covered Wallboard

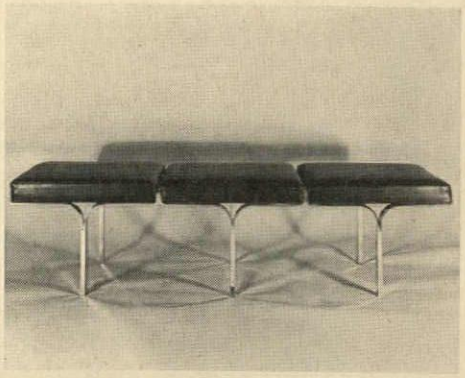
New vinyl-covered wallboard from Kaiser can be used wherever regular gypsum wallboard is used, installs in the same way, yet provides a permanent finish against fading, scuffing, cracking, or chipping. The vinyl surface does not impair fire-resistant properties of the gypsum wallboard. In the stock 4′ x 8′ size ⅜″ or ½″ thick), long edges are beveled and the vinyl surface is carried around; ends of sheets are cut square and the vinyl is finished flush. Once installed, cuts or punctures can be healed with an electric iron; stains and smudges are removed with a sponge. Although the vinyl wallboard serves as a finished surface, without additional protection, the surface can also receive a vinyl-base paint. Currently available (for distribution in the western half of the U.S.) are three linen-textured shades and two wood patterns. Kaiser Gypsum Co., Room 2480, Kaiser Center, 300 Lakeside Dr., Oakland 12, Calif.

On Free Data Card, Circle 115

Copper Protection Lasts Indefinitely

A protective coating system that preserves the natural color of copper and copper-base alloys indefinitely, in indoor applications, has been announced by INCRA after extensive field tests over the past three years. The multi-coat lacquer system combines silicone with acrylic resins in thicknesses to suit the category of use. It can be applied to copper products already in use, as well as to newly fabricated metal, and is expected to bring about a substantial increase in the use of copper for interior architecture and hardware. There are two methods of application: one requiring thermosetting, the other air-drying. Costs of material are less than for chrome-plating and anodizing, more than for standard nitrocellulose lacquers. International Copper Research Assn., Inc., 1271 Avenue of the Americas, New York 20, N. Y.

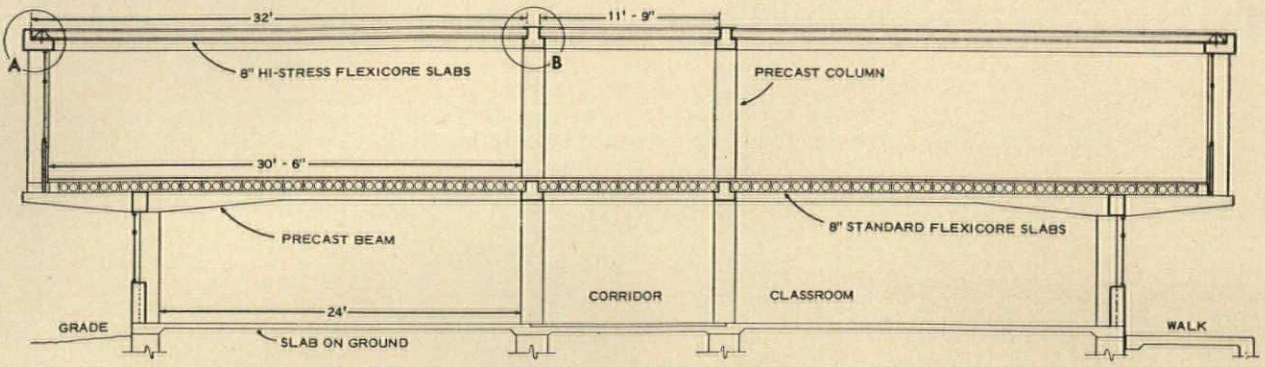
On Free Data Card, Circle 116



Component Bench

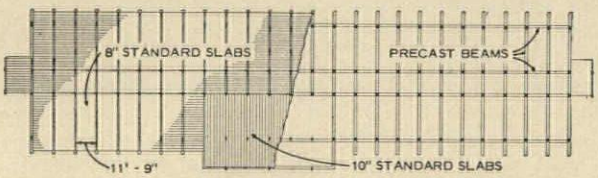
The "Link Bench" *(illustrated)* is made of polished, chrome-plated steel cradles and upholstered seats; these components can be assembled in units of two or expanded to any desired length. Designed by John Behringer, the Link Bench is planned for use in public spaces. Fabry Associates, 301 E. 63 St., New York, N.Y.

On Free Data Card, Circle 117

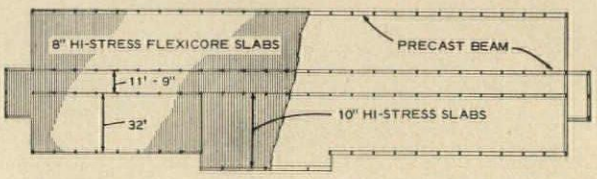


LATERAL SECTION. Hi-Stress Flexicore slabs, 32' in length, are used for long-span ceilings on second floor of classroom wing of Rutherford B. Hayes High School, Delaware, Ohio. The entire frame is precast concrete columns and beams.

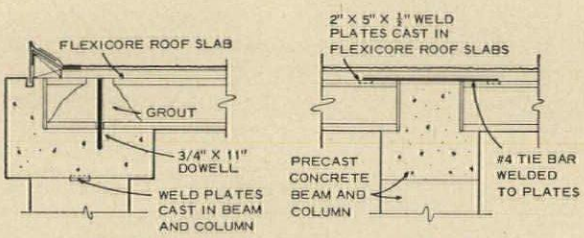
New Hi-Stress Flexicore Slabs Give Improved Performance On 32-Foot Roof Span



SECOND FLOOR FRAMING, CLASSROOM WING. Lateral precast beams serve as bearing for standard Flexicore slabs. Both 8" and 10" slabs used.



ROOF FRAMING, CLASSROOM WING. Longitudinal precast beams support Hi-Stress roof slabs which are tied to beams to provide lateral bracing.

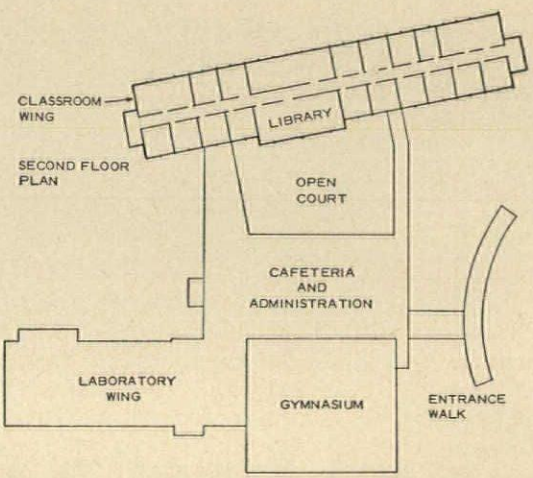


New Hi-Stress Flexicore slabs use high-tensile 7-wire stress-relieved strands to produce fully prestressed units. These slabs provide long, clear spans, high load carrying capacity and give improved performance.

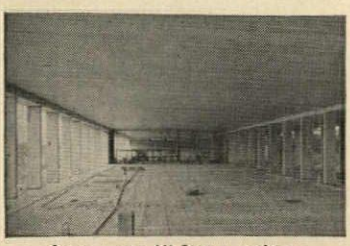
The steel strands are accurately pretensioned, before the slabs are cast, and introduce a controlled camber into the units.

In this project, Hi-Stress Flexicore slabs were used for 32-foot roof spans, and 12 months after erection, show excellent performance. Standard Flexicore units (with mildly pre-tensioned reinforcing rods) were used for floors at second story.

Ask for "Flexicore Facts 96" on this project and "Hi-Stress Flexicore" Bulletins. Write The Flexicore Co., Inc., Dayton 1, Ohio, the Flexicore Manufacturers Association, 297 South High Street, Columbus 15, Ohio, or look under "Flexicore" in the white pages of your telephone book.



RUTHERFORD B. HAYES HIGH SCHOOL, Delaware, Ohio has frame of precast concrete columns and beams, and floors and roofs of Flexicore precast decks. Kline & Swartz of Chillicothe, Ohio are the architects.



Long span Hi-Stress ceiling before partitions installed.

Lateral beams at second floor cantilever 7'-3".

AIR/TEMPERATURE

Gas Lithographs

Portfolio of color lithographs is being offered to architects by the AGA to illustrate the growth of the gas industry from ancient times and as an in-

dication of future potentials of this fuel. Several prints are suggestive of the history of gas in industrial use; others symbolize gas as used for heating, cooling, water heating, cooking, refrigeration, clothes drying, dishwashing, incinerating. Portfolio also includes bibliography of reference materials published by the AGA. Available through local gas company, or write (enclosing 25¢) to: American Gas Assn., 420 Lexington Ave., New York 17, N. Y.

Separate Manual for System Design

A compact 30-page technical manual includes performance and selection data on the complete Air Control line of registers, grilles, and diffusers. According to the manufacturer, this technical data has been separated from product information to provide a ready reference for layout and design, with pertinent information for the specific job at hand. Complete product descriptions are found in new 44-page catalog, which has a new visual index for easy location of information. Air Control Products, Inc., Coopersville, Mich.

On Free Data Card, Circle **200**

CONSTRUCTION

Dry-Wall Stud System

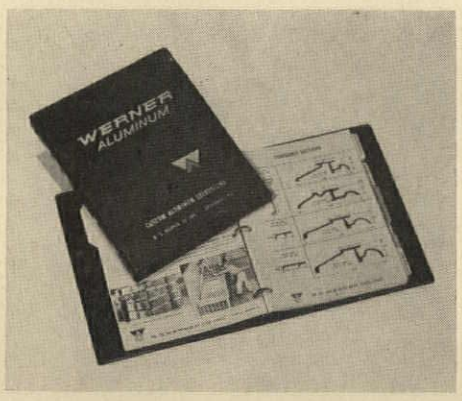
Folder, 4 pages, introduces Eastern's new metal stud system, which offers simple, fast, durable, and economical dry-wall installation. Telescoping action makes studs self-splicing; installation requires no extra parts, and an exact fit is automatic. Ample knockouts allow for service lines and bridging. The system consists of roll-formed metal track and stud in three versatile widths, in heights up to 16′. System may be used with almost any type of wallboard in non-load-bearing construction. Eastern Products Corp., 1601 Wicomico St., Baltimore 30, Md.

On Free Data Card, Circle **201**

New Sealing Material of Foam and Asphalt

Brochure, 4 pages, describes new "Compriband," a patented combination of polyurethane foam and asphalt that can seal virtually any construction joint above or below ground. The material has several unique properties. Compressed to one-quarter of its original volume, it becomes completely dustproof, draftproof, and waterproof. It will bond positively to contact surfaces when under compression. It has total memory and recovery. Brochure gives some typical details for a variety of joint seals (curtain-wall, window, concrete panel, expansion joint, etc.), and shows installation details for Compriband either compressed in place or precompressed. Specifications are included, along with a sample of the material. Secoa Inc., 8020 Monticello Ave., Skokie, Ill.

On Free Data Card, Circle **202**



Aluminum Extrusions

New catalog of custom aluminum extrusions and stock dies is available from the R. D. Werner Company—50 pages in a loose-leaf binder that permits the insertion of additional pages as they become available. Illustrations and detailed specs cover Werner's entire line of extrusions. Among the items included are threshold sections, chalk-board sections, store-front sections, rods, bars, and angles. R. D. Werner Co., Inc., P.O. Box 580, Greenville, Pa.

On Free Data Card, Circle **203**

New Partition System Is Translucent and Colorful

Brochure from Panel Structures describes the architectural possibilities of "Sanpan" translucent building panels and window walls, and introduces new "Colorscreen" translucent partitions and screens. The Colorscreen system is composed of bands of panels fastened to aluminum framing. According to the manufacturers, it provides economy, performance, and permanence in any size installation, indoors and out. Plastic panels and anodized-aluminum supports make the system lightweight, easy to assemble, rigid, and durable. The 8-page brochure gives construction details, design ideas, and specs. Panel Structures, Inc., 45 Greenwood Ave., East Orange, N.J.

On Free Data Card, Circle **204**

Elastic Roof Flashing

"Nervastral 600" elastic roof-flashing material is described in new 4-page bulletin. The resilient sheeting has a high degree of elongation and flexibility, permitting it to be stretched tightly over complicated contours; it has high tensile strength, puncture resistance, and resistance to abrasion. Brochure gives a full description of properties and installation methods, and shows details of typical uses. According to bulletin, labor costs on major jobs can be reduced by as much as 25% because time-consuming fabrication and soldering are eliminated. Rubber & Plastics Compound Co., Time & Life Bldg., New York 20, N.Y.

On Free Data Card, Circle **205**

Open-Web Steel Joists

The Steel Joist Institute has published the 1963 edition of its *Standard Specifications and Load Tables for Open-Web Steel Joists*, a 60-page book that serves as a general standard for the steel-joist industry. Described and tabulated in the book are the J-Series, based on components having a minimum yield strength of 36,000 psi; the LA-Series, long-span joists compatible with the J-Series; the H-Series, high-strength joists made from steel with a minimum yield strength of 50,000 psi; and the LH-Series, a

new series of long-span joists compatible with the H-Series. The book contains all information needed for fast and accurate specification of joists to carry uniform loads on spans up to 96′. Steel Joist Institute, Du-Pont Circle Bldg., Washington 6, D.C.

On Free Data Card, Circle **206**

Savings with Metal Deck

The True Cost of Full Fire-Resistive Construction, 8 pages, compares construction and insurance costs of a "full fire-resistive" building and a sprinklered noncombustible one. Detailed cost breakdowns indicate that noncombustible steel-deck construction can reduce capital outlay for the structure and produce interest savings. Extensive comparisons are made for a factory, warehouse, shopping center, and school. Metal Roof Deck Technical Institute, 53 W. Jackson Blvd., Chicago 4, Ill.

On Free Data Card, Circle **207**

DOORS/WINDOWS

Heat-Excluding Window

A new and practical method of cutting heat-transmission through windows by reflection has been developed by Kinney Vacuum Coating Department, in co-operation with Laminated Glass Corporation of Detroit. As presented in 4-page brochure, new "Reflectovue" has unusual properties. Interiors of a building cannot be seen from the exterior even when brightly lit during daylight hours. For those inside, interiors are provided with a soothing pleasant light. True landscape and sky colorings are maintained because of the relatively neutral transmission of the glass. Up to 68.9% of solar energy is excluded, making for considerable savings in initial and operating costs. Laminated construction guards against accidental breakage. Three types are available: infrared, gold, and silver; a sound-reducing feature is optional. Kinney Vacuum Coating Dept., Div. of New York Air Brake Co., 1325 Admiral Wilson Blvd., Camden 11, N.J.

On Free Data Card, Circle **208**

Manual on Curtain Walls

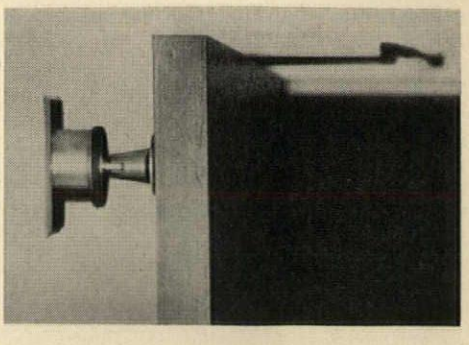
A manual of recommended practices and criteria for design, fabrication, and installation of aluminum curtain walls has been published by the AAMA. Purpose of the 16-page brochure is to provide architects and engineers with easy-to-read, condensed information for writing specifications. Features of the publication include AAMA's warranty for curtain walls, a glossary of terms, and discussions of design criteria, clearances and tolerances, and finishes. Write (on letterhead) to: Architectural Aluminum Manufacturers Assn., 35 E. Wacker Dr., Chicago 1, Ill.

Wind-Load Calculator

A simple calculator for estimating thickness requirements of flat glass has been devised by American-Saint Gobain. Measuring 4½″ in diameter, the slide-calculator can be used for any vertical window supported on four sides. Starting with the dimensions of the window, the user selects the design wind speed in mph, then reads pressure in psf and the required glass thickness directly from the calculator. A safety factor of three is already included in the formula. Strength of patterned glass windows can also be calculated if the thickness at deepest point of pattern is used. Write (enclosing $.20) to: American-Saint Gobain Corp., P.O. Box 929, Kingsport Tenn.

Fail-Safe Device for Fire Doors

A unique electromagnetic door holder, which instantly releases self-closing fire and smoke barrier doors without fail, is described in new 6-page folder. The device controls spread of fire and smoke by automatically releasing doors, from an open position, for simultaneous closing, upon signal from any fire-detection system or manual switch. The "MagnaMatic" door holder is the first self-contained, nonmechanical automatic door-releasing device that complies with the National Fire Code. In fire-prevention terms, it is a



"fail-safe" device: that is, if there is any failure or interruption in the electric system, the doors are released to close. Folder gives specifications and shows typical application. Sargent & Co., New Haven 9, Conn.

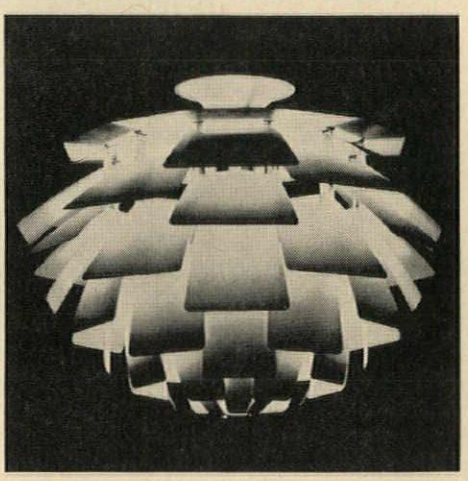
On Free Data Card, Circle **209**

Glazing Factors

Glazing Manual, 36 pages, outlines the important variables related to glazing which affect the performance of sealants, so that the proper sealant for a particular job can be selected. With text and detail drawings, the manual illustrates general facts about glazing, classes and types of glazing sealants, and conditions affecting sealants. There are ten pages of typical glazing installations for metal and wood sash. Also included are full specifications (Federal and American Standard), several pages of terminology, and ten pages of typical glazing installations. Pecora, Inc., 300-400 W. Sedgley Ave., Philadelphia 40, Pa.

On Free Data Card, Circle **210**

ELECTRICAL EQUIPMENT



Danish Lighting

Handsome contemporary lighting from Louis Poulsen & Company of Denmark is presented in new 30-page catalog.

BUILDING PRODUCTS NEWS from Dow Corning

The mellow charm of brick

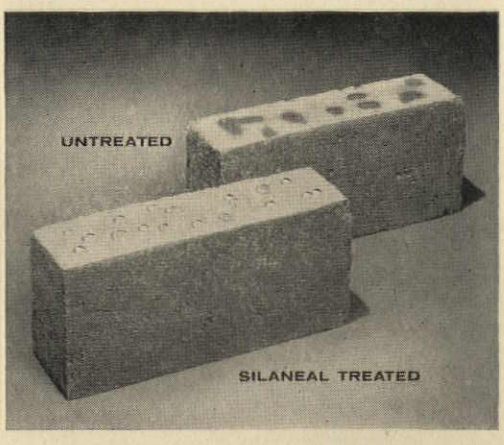
Carroll Hall, Bennett College, Millbrook, New York.
Brown, Lawford & Forbes — Architects

Silaneal® protects it from dirt, efflorescence, leakage

Brick — for texture and richness — was the architect's choice for this dormitory. Set among the warm tones of Bennett College, Carroll Hall's antique white brick enriches the campus complex. Specification of brick factory-treated with Silaneal assures lasting protection against unsightly discoloration from water-borne dirt . . . efflorescence . . . leakage.

Keeps Brick Clean Many brick, particularly light and pastel shades, have high suction rates and offer little resistance to water penetration. Water carries dirt *into* the brick, causing discoloration; water leaches soluble salts *out* of the brick, causing efflorescence. Factory-applied Silaneal makes brick water repellent so dirt stays on the *outside*, where it's easily washed away by rain, and efflorescence due to water leaching is minimized.

Controls Water Absorption High suction brick absorb water from fresh mortar so rapidly that improper hydration and mortar shrinkage may occur. As a result of poor bond between brick and mortar, hairline cracks may develop to allow leakage. But Silaneal *controls* water absorption; proper hydration of mortar is assured for maximum bond, less leakage.



Proven By Tests Hundreds of transverse pressure tests — and tests simulating wind-driven rain — have demonstrated that wall sections built of Silaneal-treated high suction brick prove stronger and resist leakage better than similar untreated brick.

For brochure and list of sources, address your letterhead to Dept. 8714, Chemical Products Division, Dow Corning Corporation, Midland, Michigan.

Dow Corning

The collection includes a variety of pendants, ceiling-mounted fixtures, wall brackets, floor and table lamps, and multiple units. Among the designers represented are Alvar Aalto, Arne Jacobsen, Jorgen Bo, and Finn Monies. Svend Wohlert Inc., 473 Jackson St., San Francisco 11, Calif.

On Free Data Card, Circle 211

Electrical Specs for N. Y. World's Fair

GE has published a 70-page *Electrical Specifications Guide for the New York World's Fair* to help architects select, design, and install the appropriate electromechanical systems and equipment. The apparatus and systems recommended are tailored to the 4160-v service provided by the Fair Corporation. In addition to specs for power system distribution equipment and for power utilization equipment, the booklet also contains a table for determining exhibit-building kva requirements and shows typical power-system arrangements for buildings of various sizes. Industrial Sales Operation, General Electric Co., 570 Lexington Ave., New York 22, N. Y.

On Free Data Card, Circle 212

Fluorescent Ballasts

New catalog on Universal ballasts, 32 pages, includes their full range of "Service Guaranteed" ballasts for all indoor and outdoor applications, commercial, industrial, and residential. In this edition, a separate section discusses weatherproof ballasts. There are also a number of new units catalogued for the first time—ballasts of low heat-rise design, multi-lamp ballasts, and additional rapid-start ballasts for various conditions. Complete technical data is tabulated. Dept. CGC, Universal Manufacturing Corp., 29-51 E. Sixth St., Paterson 4, N. J.

On Free Data Card, Circle 213

Variety of Fixtures

Condensed catalog of fluorescent and incandescent lighting fixtures is available from the Edwin F. Guth Company. The 12-page catalog illustrates and describes a wide range of fixtures, among them recessed fluorescent troffers, air-handling fluorescent luminaires, and a large variety of incandescent units. Prominently featured in the catalog are "Gratelite" ceilings for over-all illumination, with exclusive 3/8" open plastic cubicles. The Edwin F. Guth Co., 2615 Washington Blvd., St. Louis 77, Mo.

On Free Data Card, Circle 214

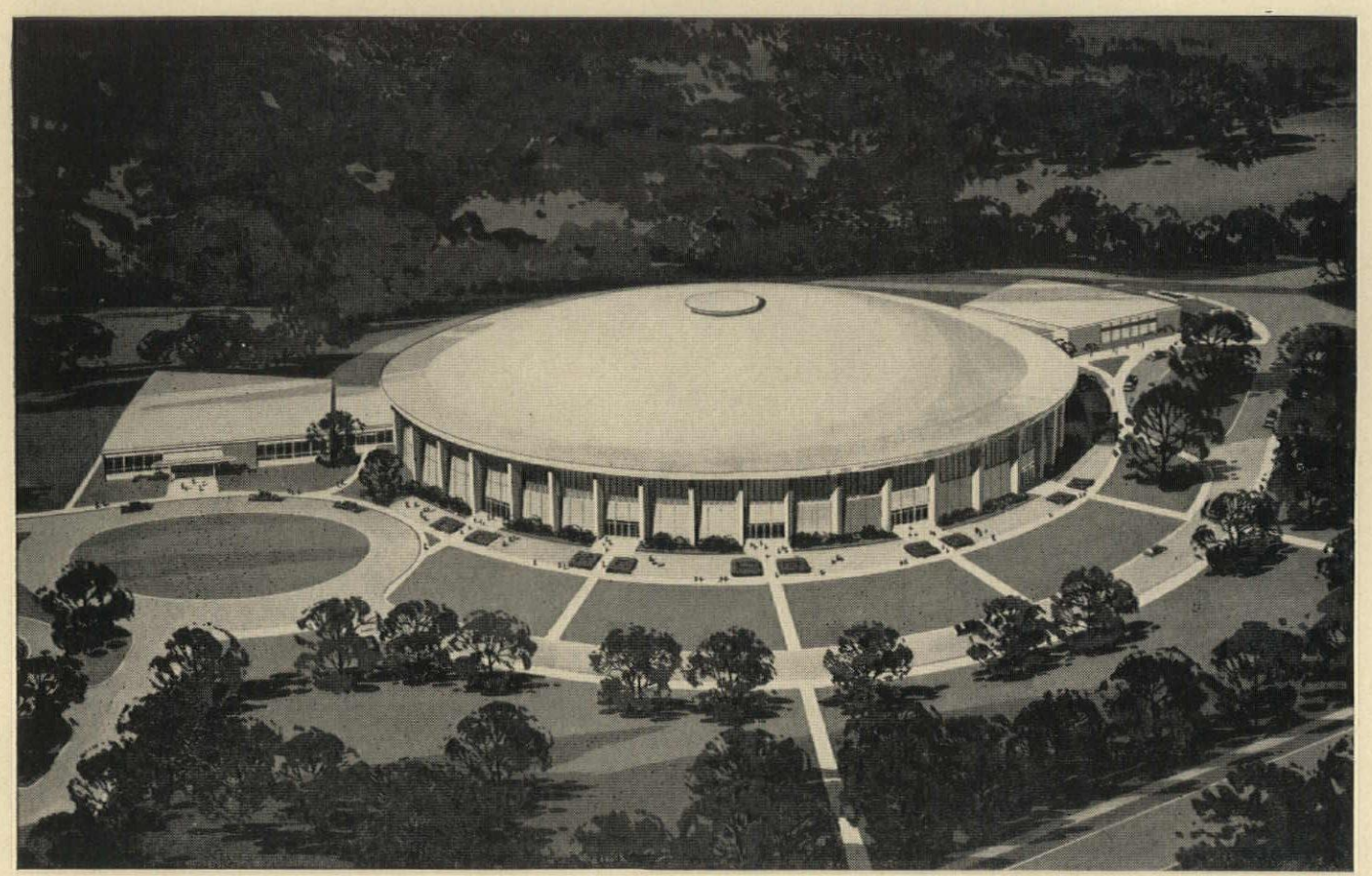
Low-Voltage Switchboards

New *Engineering and Layout Manual* on I-T-E "Uni-Power" switchboards has been published by I-T-E's Walker Division. These switchboards are pre-engineered, pre-bussed, front-connected, free-standing sections that can be used singly or in a variety of combinations. The 18-page manual details how the standard sections can be applied, without custom-engineering, to most commercial and industrial low-voltage systems. Diagrams show a number of arrangements of line and branch circuits; other data includes product descriptions, application tables, dimensional drawings, and specifying guides. Walker Div., I-T-E Circuit Breaker Co., P.O. Box 2384, Station D, Atlanta, Ga.

On Free Data Card, Circle 215

Rx for Drug Stores

New technical publication, *Drug Store Lighting,* has been issued by GE's Large Lamp Department. The 12-page



Architects: King & King, Syracuse, New York
Structural Engineers: Eckerlin & Klepper, Syracuse, New York

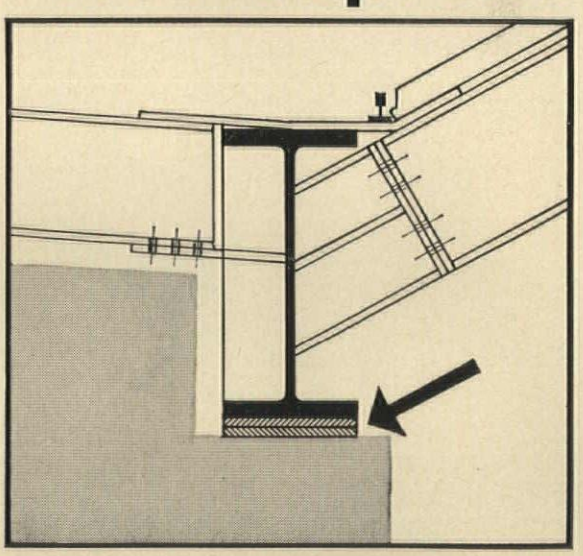
Arena Roof "Floats" on Neoprene Bearing Pads

The 300-ft.-diameter steel dome of the new Syracuse University fieldhouse is supported by 36 concrete columns. Installed at the top of each column is a Neoprene bearing pad to permit thermal and physical movement between the dome's tension ring and the columns. (See sketch.) Total weight of the dome's structural steel is 700 tons.

Each bearing pad is 16 in. by 18 in. It consists simply of a $^1/_{16}$-in. steel plate sandwiched between two 1½-in. sheets of Neoprene. The Neoprene is firmly bonded to the steel to form an integral unit.

Neoprene was chosen because of its functional efficiency and excellent resistance properties. It will not deteriorate like most other rubbers since it has excellent resistance to weather, ozone and aging. Neoprene is also resistant to compression set and creep, and will remain serviceable during the severest winter temperatures. The cost of Neoprene bearing pads is low compared with other types of bearing devices. Equally important, no maintenance is required, and Neoprene has an estimated service life of several decades.

Learn more about this simplified approach to structural bearing design. For a list of manufacturers of Neoprene bearing pads, write E. I. du Pont de Nemours & Co. (Inc.), Elastomer Chemicals Department PA-2-NB, Wilmington 98, Delaware. In Canada, write Du Pont of Canada Ltd., 85 Eglinton Ave., E., Toronto, Ontario.



NEOPRENE
ANOTHER RELIABLE
DU PONT
REG. U. S. PAT. OFF.
ELASTOMER
BETTER THINGS FOR BETTER LIVING...*THROUGH CHEMISTRY*

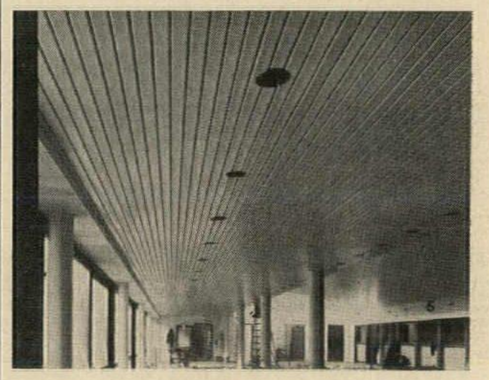
booklet discusses the objectives and techniques of drug store lighting, using many photos and sketches with the text. Various sections are devoted to such aspects as design criteria, general lighting systems, effective lighting of interior areas (prescription departments, displays, fountains, and lunchrooms) and exterior areas (signs and store fronts). Inquiry Bureau, Dept. TP-113, General Electric Co., Nela Park, Cleveland 12, Ohio.

On Free Data Card, Circle **216**

INSULATION

Metal Acoustical Ceiling

"Mirawal-Dampa" metal acoustical ceiling systems, developed in Denmark several years ago (and manufactured and marketed in America exclusively by Mirawal), are presented in new

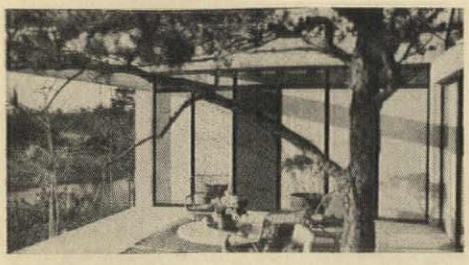


12-page technical bulletin. As stated in the booklet, these patented systems "incorporate all the features considered essential in a ceiling — sound absorption, reasonable material cost, ease of erection, versatility, and decorative appeal—with plus values." No transverse bracing is required, since the system becomes a monolithic unit once erected. Panels are made of aluminum alloy, for a lightweight and noncombustible construction; finish is baked enamel. Four basic types of strip are available: for precise requirements of sound attenuation, ventilation, economy, and aesthetic effect. Mirawal Co., Div. of Birdsboro Corp., Birdsboro, Pa.

On Free Data Card, Circle **217**

4 Cores, 4 Facings

New 8-page brochure covers Johns-Manville's "Transitop," the asbestos-cement building panel that is now available with four different cores and four facings. The 3-in-1 panel combines outside wall, insulating core, and inside wall in a single component to



be used in curtain walls, window walls, partitions, and post-and-beam construction. The four insulating cores offer a variety of qualities to suit a particular job; and the four "Flexboard" facings offer a variety of surfaces in durable asbestos-cement. Dept. T862, Johns-Manville, 22 E. 40 St., New York 16, N.Y.

On Free Data Card, Circle 218

SANITATION/PLUMBING

Laboratory Fixtures

Encyclopedic loose-leaf catalog of laboratory service fixtures is available. Large-scale drawings on separate pages show the comprehensive line of items —laboratory hose cocks and mountings, remote-control assemblies, foot-control valves, combination foot-pedal and water-faucet assemblies, and water faucets. There are also manifolds and

tube washers, lead drains and traps, electrical mountings and boxes, aluminum support rods, and special fittings. Among new items in the "Lab-Flo" line are an all-plastic panel-mounted flange tip for fume hoods, which has special characteristics of high heat stability and resistance to corrosion, and a rigid gooseneck faucet constructed of polyvinyl chloride to

maintain the original purity of distilled or deionized water. T&S Brass & Bronze Works, Inc., 128 Magnolia Ave., Westbury, Long Island, N. Y.
On Free Data Card, Circle **219**

Copper Piping Data

Nibco announces publication of its *Copper Piping Manual*, a comprehensive 18-page guide for the specification and installation of copper tubing and fittings. Included in the manual are descriptions of the various types of joints used in copper tube installations, specifications and tolerances on fittings and tubing, expansion and contraction tables, and friction-loss charts. Nibco Inc., 500 Simpson St., Elkhart, Ind.
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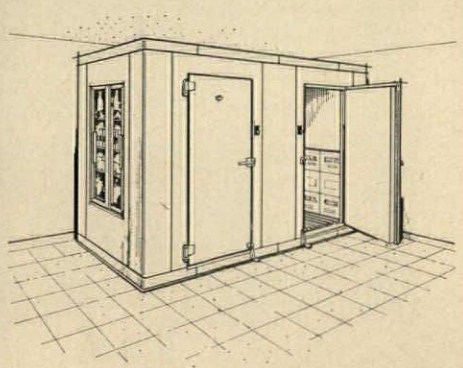
SPECIAL EQUIPMENT

Walk-In Refrigerators with Insulating Advance

Prefabricated metal-clad walk-in refrigerators, with the unique feature of foamed-in-place urethane insulation, are presented in 12-page catalog. The urethane, poured as a liquid, becomes



STAIN . . . OR PAINT?

Architect: Pietro Belluschi, Cambridge, Mass.
Builder: Eichler Homes, Palo Alto, Cal.
Cabot's Stains on exterior & interior

To answer this question, an architect weighs the advantages and limitations of each against the job at hand . . . effect, durability, and cost on wood surfaces inside and outside the home. Cabot's Stains, for example, answered all requirements for the home above. Here are the reasons for today's architect-led trend toward stains:

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- Penetrate deeply, dyeing and preserving the wood fibers.
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For best results, the best in Stains . . . Cabot's Oil-base or Creosote Stains.

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228 South Terminal Trust Bldg., Boston 10, Mass.
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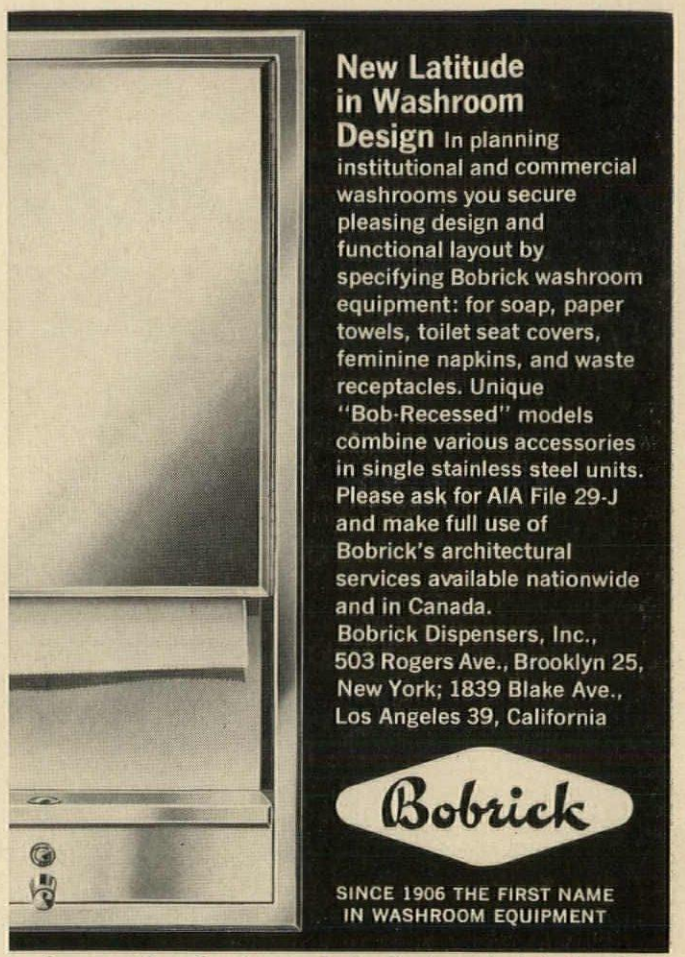

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Next to school shoes, school steps and corridors take the hardest abuse.

That's why safety and budget-conscious officials insist on Melflex step treads and flooring products. For new construction or replacement, they're unbeaten underfoot for safety, quiet, easy cleaning and long wear. Let us send you a useful catalog.

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rigid and binds tenaciously to the metal for great strength. The need for structural members is thus eliminated, and the space is filled instead with highly efficient insulation—4″ of urethane equals 8½″ of conventional insulation. With 97% closed cells, the insulation does not pick up moisture; peak insulating values are maintained indefinitely. Catalog describes other features of the sectional units—their easy joining, accurate alignment, and easy alteration. Specifications, engineering data, and installation drawings are also included. Bally Case & Cooler, Inc., Bally, Pa.

On Free Data Card, Circle 221

Loudspeaker Arrangements

RCA is offering a 4-page folder entitled *Select-A-Guide for Auditorium Speaker Arrangements* as a convenient reference for architects and engineers who specify sound-reinforcement systems. A representative number of typical speaker arrangements is diagrammed (auditoriums seating from 300 to 2000 people), to cover the situations in approximately 90% of all auditoriums. In addition to these schematic layouts, the folder provides an easy formula for calculating speaker requirements, and gives data on several RCA loudspeakers. Audio Products Dept., Radio Corporation of America, Meadow Lands, Pa.

On Free Data Card, Circle 222

Louvers and Sunscreens

1963 Lemlar catalog, 20 pages, presents their complete line of aluminum louvers and architectural sunscreens. Models include horizontal and vertical louvers, solar canopies, and venetian awnings; vanes may be fixed or adjustable, and are controlled manually, electrically, or automatically. Detailed product information gives technical data, engineering specifications, scale drawings, and photos of many installations. Catalog also includes sun charts and a discussion on the relationship of louvers to air conditioning. Lemlar Manufacturing Co., P. O. Box 352, Gardena, Calif.

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New Contract Collection

New "Embassy" collection of chairs and tables from Woodard was specifically designed to meet the requirements of contract usage. The two primary needs—long life and easy main-

tenance—are built-in by such features as an all-steel welded frame, rust-inhibiting finish, foam-rubber cushions topped with dacron, easily replaced upholstery. Folder, 6 pages, illustrates the complete line and gives full data on dimensions and construction. All heights and depths are modular, so that seating units may be attached to any length desired. Lee L. Woodard Sons, Inc., Owosso, Mich.

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SURFACING MATERIALS

New Drapery Hardware

New 16-page catalog for the architectural and interior design professions features the complete line of "Architrac" aluminum drapery track and parts. The company's two lines of enameled-steel, cut-to-measure drapery hardware are also shown. Architrac hardware was introduced within the past year for "original equipment" use in the commercial, institutional, and residential fields. Among the track designs are types that recess in plaster or acoustical tile, and install in ceiling, wall, or mullion. All track can be used at wide or narrow openings, with light or heavy fabrics; some can be curved. Kirsch Co., Sturgis, Mich.

On Free Data Card, Circle 225

Vinyl Flooring Samples

Sample folder of new "Galaxie" solid-vinyl floor tile is offered by Nafco. Ten actual samples of the glittering patterns are enclosed, as well as one sample of the accent feature lines available with each Galaxie color. Tiles are produced in 12″ x 12″ size; accent strips are available in a variety of widths from ¼″ to 2″. General information on the series is printed on back-cover of the folder. National Floor Products Co., Inc., Florence, Ala.

On Free Data Card, Circle 226

Flooring Workbook

Third edition of *Workbook for Architects and Builders,* 52 pages, is a comprehensive guide to the proper selection and installation of resilient flooring. A number of full-page selector charts tabulate such data as approximate installed costs of the various Kentile products, recommended uses, light reflectances, recommended adhesives, suitable underfloors, static loads, relative quietness, and K factors for radiant heating. Other sections give instructions for preparing the underfloor, removing oil-base paint from concrete floors, fitting tile to irregular shapes. Kentile, Inc., 58 Second Ave., Brooklyn 15, N. Y.

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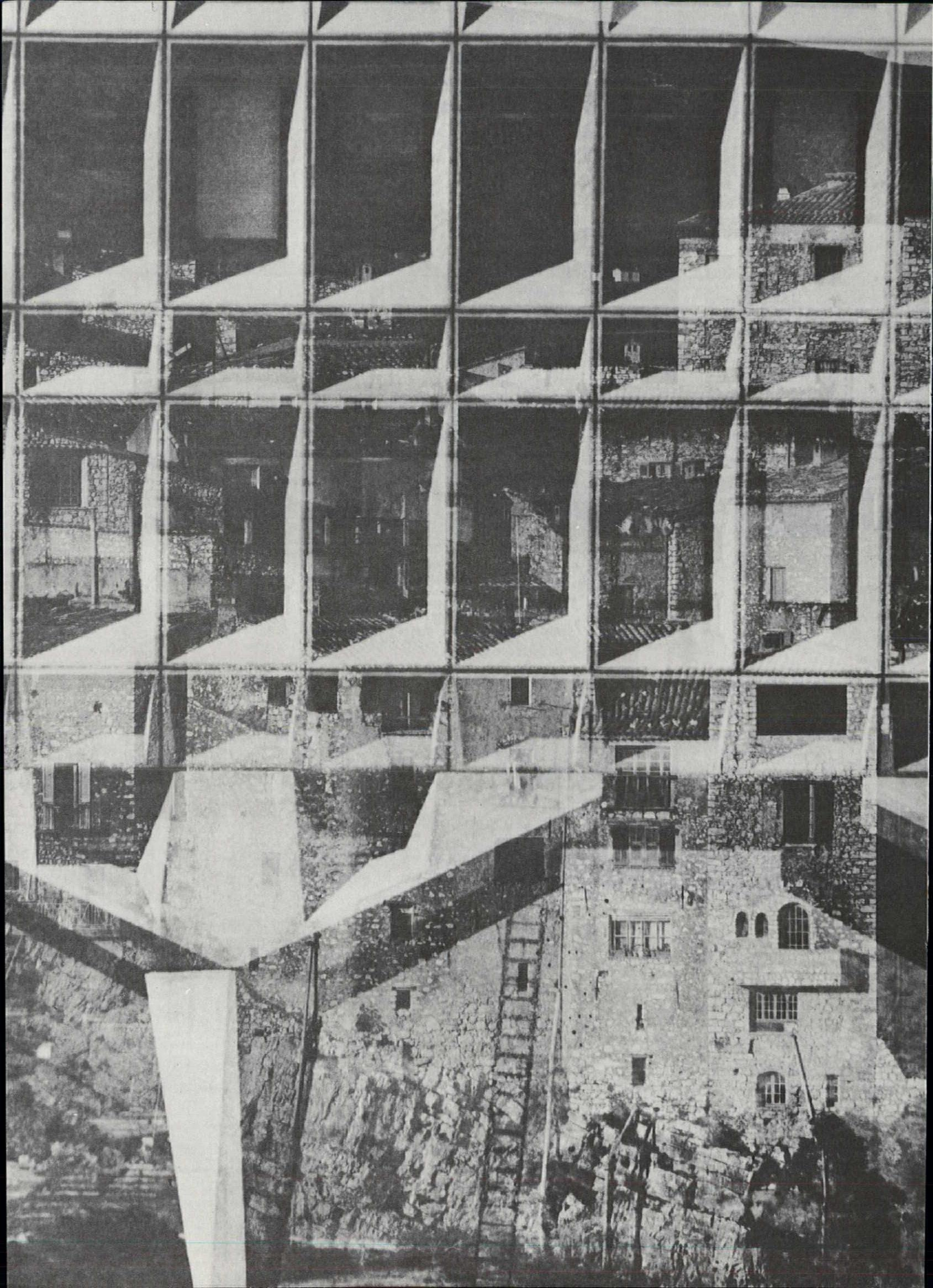


FOREWORD

The period of my Editorship of P/A spanned sixteen eventful years. Since this editorial page is now a Foreword to the issue, rather than a personal Postscript as it was in the previous location, it is not really the place for reminiscences. Nevertheless, as Jan Rowan moves to the Editor's position and I assume a less arduous advisory task so that I can reenter the actual practice of architecture, I feel that I still do want to write some personal words. By no means is this a P.S. to a journalistic career; rather, an introduction to a view of architecture from a different position. I have never agreed with the opinion that only a practicing architect is qualified to write about architecture. The objective evaluator of any of the arts—the trained critic—has an enviable and an important post, recognized and respected more, perhaps, in other creative fields than in architecture. And yet I find now that I have a strong urge to return to the area of active practice, after a considerable spell as solely a commentator—to *do*, in architecture, in addition to documenting what has been done.

At the end of the last war, the direction of contemporary architecture seemed fairly well pointed. My first full-scale task for the magazine was a review of work accomplished and prospects ahead, at the beginning of the postwar period, and my conclusion was that the primary tenets of the modern movement—straightforward solutions of problems presented, proper use of available materials and technologies, direct aesthetic expression of the means and the result, and even then the extension of architecture into broad aspects of planning—had been substantially agreed upon. It seemed then that the only problems were the training of the coming generations in the newly accepted principles, and the persuasion of enough clients that eclecticism was ended so that new, contemporary practices could be firmly established.

Yet, somehow, this postwar period has never led to any final result except confusion. We have witnessed the sometime vicious arguments between the Wright-influenced organicists and the Mies-oriented purists ("You can never know what I have suffered at the hands of that gang; they deserve everything I have said about them," Wright wrote me a decade ago); the degeneration of the first approach into fantasy and prettiness and of the other into the now deplored urban monotony; the growing search for sensual form and the articulated disruption of the modern classic facade, demonstrated by Le Corbusier, exploited by the individual sensationalists; the rationalization of plastic topological freedom as brutalist or activist or expressivist strength of character. All these moves have made the profession of architecture restless, unsure, sometimes interesting to its puzzled society, and sometimes ridiculous. One has an increasing suspicion, despite brilliant individual achievements, that the admitted and self-admired chaos is largely an expression of uncertainty rather than creative imagination.

In short, rather than finding a situation in architecture where documentation of a maturing period is necessary, one finds oneself again in a time of changing concepts of practice and dynamic approaches to design. Analysis and appraisal of the projected or constructed result are certainly required, and this surely will continue to be P/A's role. However, whatever evaluative abilities I possess, I would like to apply also at the conceptual stage.

These recent years have been a time of great pleasure to me as well as a period when I have learned and absorbed a great deal from others. The architects who have become my friends, either despite or because of our publisher-published relationship, have taught me much from which I hope I can now benefit. And their support and encouragement of the magazine's policies, I am sure, will continue as Jan Rowan guides its documentary, exploratory, analytical study of architecture's direction in the coming years. ■

Thomas H. Creighton

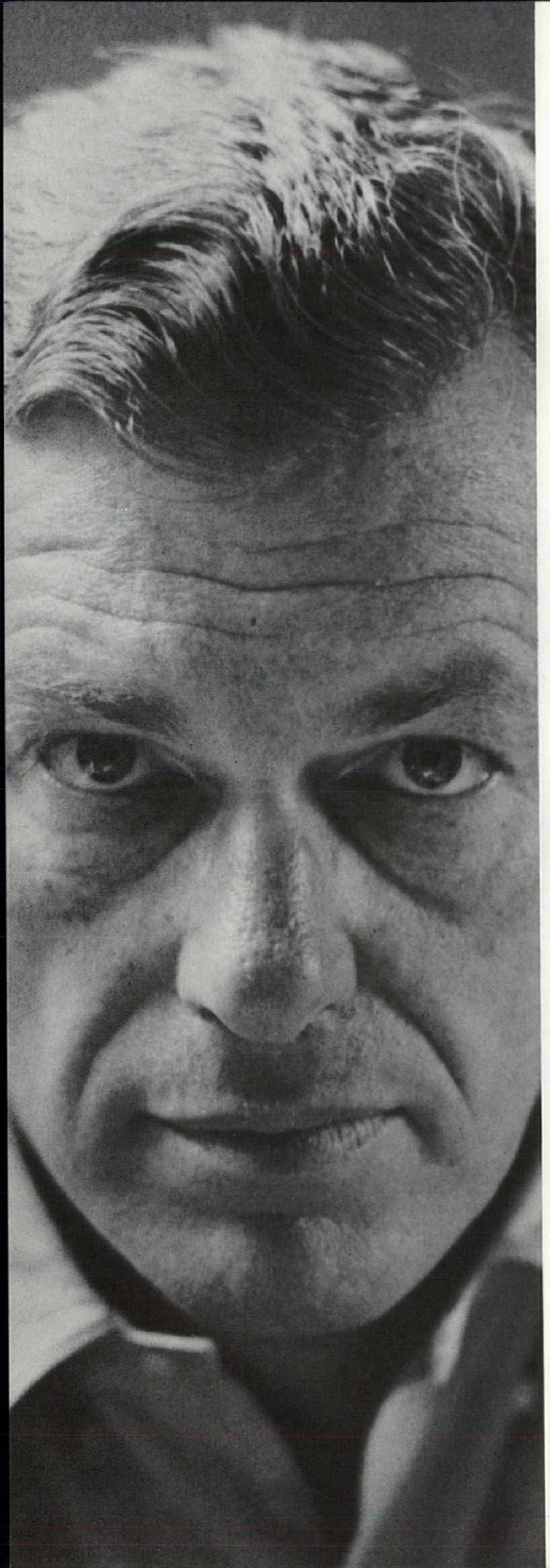


PHOTO: JOHN BROOK

THE SCHOOL ENVIRONMENT:

One Architect's Approach

School design, like other architecture, is based on human needs, but its special considerations are obviously children and environment for learning. I believe the environment that satisfies these needs is informal and small in scale. Where possible, it must be articulated to create small worlds for the children, yet organized simply for total clarity.

I have always felt that schools—perhaps more than any other building type—must in themselves educate, so that the users may, by unconscious assimilation, learn good taste, prudence, and quality.

These five schools are the products of widely divergent factors: urban and suburban sites; sectarian and public support; varying financial limitations, educational programs, and even construction bid procedures. All are alike, however, in the expression of an underlying structural rhythm that draws together less regular masses and spaces. HUGH STUBBINS

Hugh Stubbins' office has completed 25 schools in the Boston area in the past 10 years and currently has several more on the boards. Stubbins has, however, avoided having any member of his staff specialize in schools. Each of the five schools included in this presentation was designed and built under a different job captain, but all of them show the imprint of Stubbins' own experience in the field.

Stubbins' first completed school, in Needham, Massachusetts, was published in the APRIL 1954 P/A. Schools designed for Weston and Lowell, Massachusetts, received P/A Design Awards in 1954 and 1956 and were published in P/A upon completion. For a period in the late 1950's, schools constituted the major part of the firm's work, but its output since then has been quite diversified. Except for the well-known Congress Hall in West Berlin and the U.S. Legation in Tangiers, all of Stubbins' projects have been in New England.

In executing school commissions, the firm depends almost entirely on its own staff. No educational consultants were involved in any of these five schools. John Wacker, a member of the firm, has done the landscape design and site engineering for all of the firm's recent projects. Goldberg, LeMessurier & Associates were the structural engineers for all of these buildings.

Stubbins has no standard approach to dealing with the school client, because, in his experience, no two clients have been alike. For the five schools presented here, the clients included the trustees of a sectarian school, a permanent town school building committee, and committees appointed for the specific projects. In two cases, the committee concerned had little effective power, the actual decisions being left to the city manager's office in one instance and the superintendent of schools in the other. Stubbins has found that committees tend to suffer from a lack of leadership or leave all decisions to one capable member; officials may be either enlightened or hidebound. The best client, he feels, is the specially appointed committee, in which the members often take great personal interest in the project.

There are no revolutionary concepts in the programs or planning of these five schools, but the architectural principles they

illustrate would apply equally to unconventional programs.

The proper scale for school buildings has been a major design consideration, particularly since all of Stubbins' completed schools, except for one included here, have been elementary schools. The reiteration of modular units of domestic scale and the use of finely scaled details and surface patterns do much to make the child feel at home.

The modular order of bays is introduced not only for efficiency, but also to give the children a clear understanding of the organization of the building. The module of the classrooms has been maintained in the larger spaces such as the gymnasium. Major structural elements, such as beams and vaults, have been emphasized by contrast with small-scaled details and surface materials.

The relation of the building to the land is also carefully developed to give the child a sense of orientation and a feeling of familiarity. Views of the outside are provided wherever possible. Although the extent of the landscape is made visible from inside, it is always approached by degrees, through landscaped areas similar in scale to the residential yard.

Despite all these common characteristics, each of the schools has a particular character that is in part a sensitive reaction to the program and site, and in part a creation of a distinct design team.

The newest of the five schools, Ryal Side and Maimonides, reflect an increasing interest in massive and plastic forms, contrasted with the precise detail of the underlying functional tradition. There is noticeably more conscious manipulation of form in the chimneys of these two schools, for example, than in the chimney of the Hingham school.

Stubbins decided years ago that classrooms should be designed for artificial illumination, since sunlight is far from dependable in Massachusetts. The elaborate schemes of the late 1940's and early 1950's for providing even distribution of natural light were, he feels, merely an "expensive preoccupation." Massachusetts law, however, is still based on the presumed necessity of natural light. The law requires window area equal to 20 per cent of floor area, except when natural light is introduced in the ceiling, in which case this percentage can be reduced to 12 per cent. Bilateral lighting is often the only alternative to excessive ceiling height. Although Stubbins has always provided large areas of window to establish an effective relationship to the outdoors, he has advocated the easing of these technologically obsolete requirements.

Colors in elementary schools, Stubbins feels, should be subdued. Since the children themselves produce brightly colored displays and wear brightly colored clothing, neutral backgrounds are needed to prevent visual chaos. His exclusion of vivid color extends even to the chalkboards, which are of natural slate in all of his recent schools; he considers its color not only aesthetically preferable, but also superior to other colors in terms of visibility.

Stubbins is opposed to applied art in school buildings, at least in the form it generally takes. "Tile murals of children playing with ducks," he says, "add nothing to the environment or to the child's appreciation of art." It is far better, he believes, to rely on the children to produce their own murals and sculpture, which can be changed frequently to have topical meaning. The large areas of tackboard provided for this purpose are vividly colored, unlike the other surfaces, so that they will remain positive visual elements even at the rare times when they are bare.

The firm's experience with school design is summarized by Douglas Smith, who has been Associate in Charge of Construction for these five projects: "School architecture," he says, "must satisfy Vitruvius' old 'commodity, firmness, and delight' formula—but with a lot of economy thrown in."

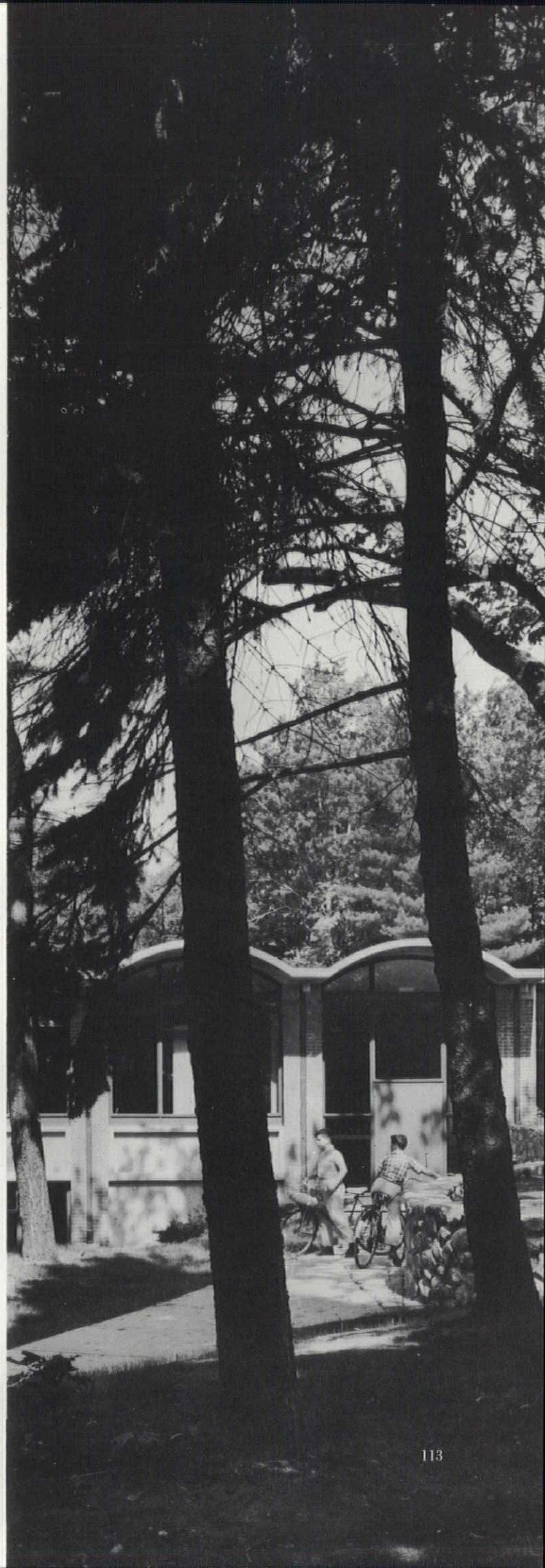


PHOTO: DAVID HIRSCH

MAIMONIDES SCHOOL • BROOKLINE, MASS.

The character of this private school for Orthodox Jewish children is derived directly from the old estate on which it is situated. The property, which comprises an entire block in the wealthy Chestnut Hill area, is well endowed with trees and surrounded by a high masonry wall.

The appearance of the property, as seen from the stately houses around it, has changed little. The existing wall has been interrupted only at the entrance to the school, where it has been turned inward to meet the new building. The concrete vaults and brick-covered piers appearing above the wall are related in form and color to the stuccoed wall and its clay tile cap.

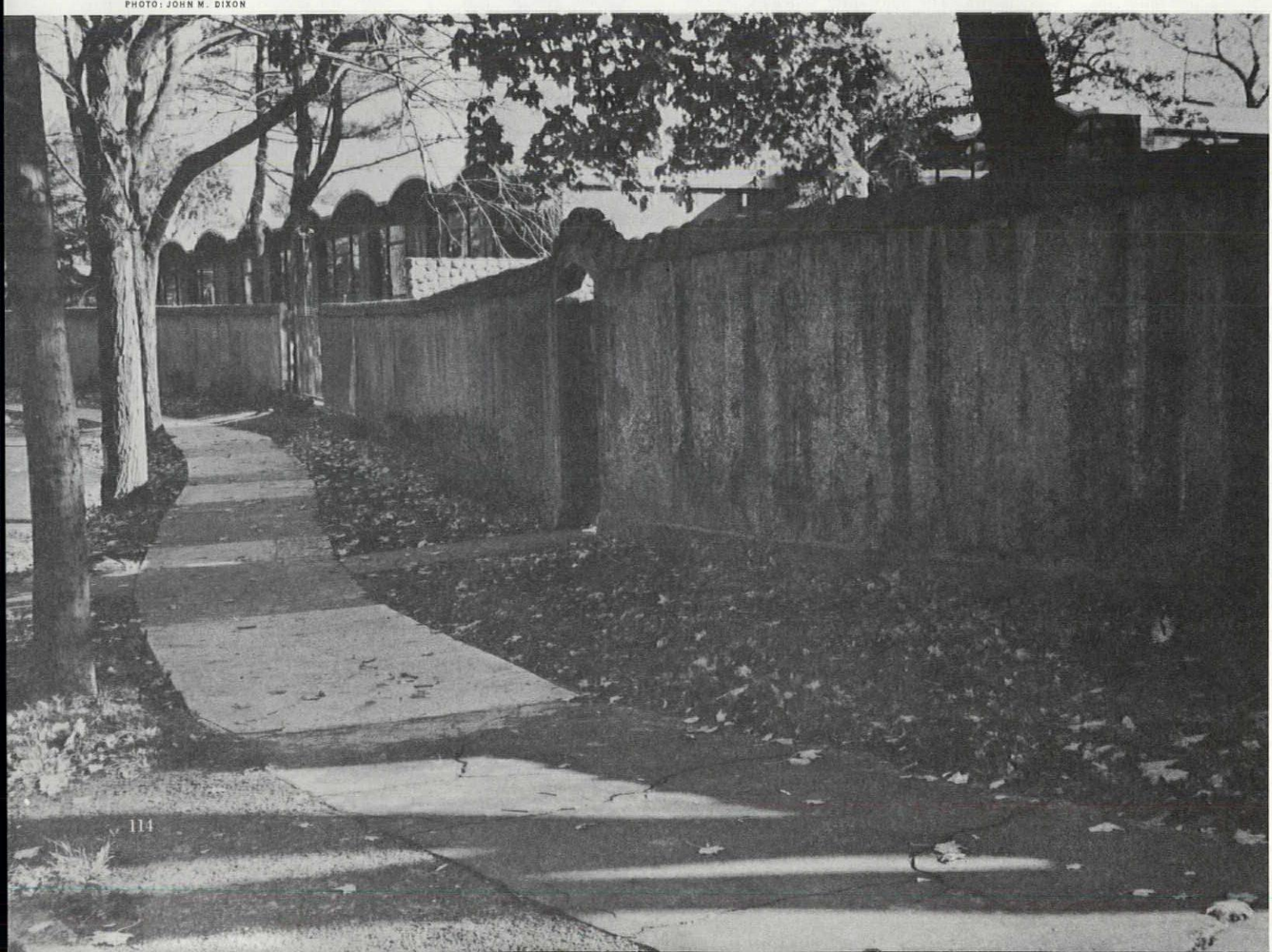
The school, originally established in the Roxbury neighborhood of Boston, is being moved to the Brookline site, since the families it serves have gradually moved from one neighborhood to the other. In its first stage of development, the new school includes classrooms for grades 9 through 12 and a secluded kindergarten with its own play space. A chapel, a multipurpose room, and kitchens, designed for the ultimate student population, have also been included. According to the job captain, Robert O'Nell, future plans call for an elementary school wing on the east and a gymnasium wing on the south, which will complete a quadrangle.

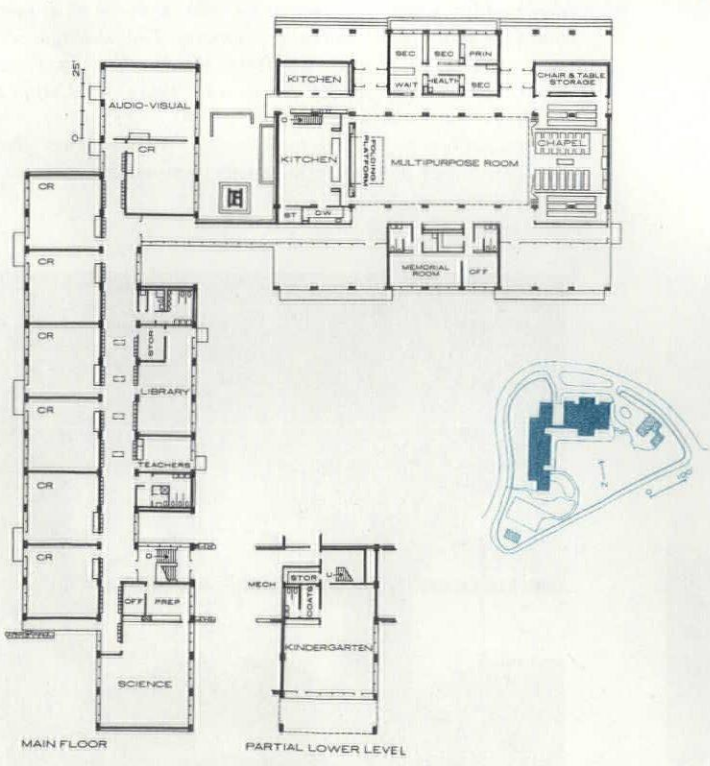
The poured-in-place concrete structure (for which Goldberg, LeMessurier & Associates were the engineers) consists of vaults with a uniform span of 13′-6″ supported on rectangular beams and brick-encased columns. The copper downspouts between the vaults have been integrated into the design of the columns.

Sprayed asbestos applied to the undersides of the vaults provides both acoustical absorption and thermal insulation. Artificial lighting is provided by downlights recessed into the lower surface of the beams and baffled lighting strips at the bases of the vaults.

Beneath the vaults, steel-framed glass extends to the floor. In order to obtain the high rate of fresh-air input required by Massachusetts law without the use of unit ventilators, engineers Greenleaf & Wong designed a system in which air from a central source enters the room though fin tube units at the exterior sill.

PHOTO: JOHN M. DIXON





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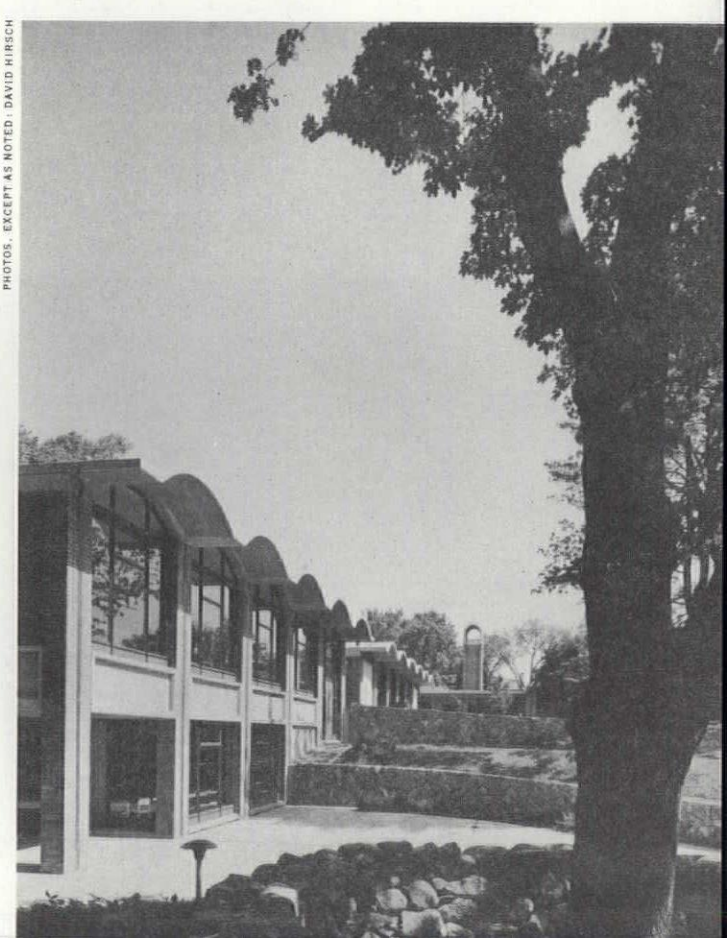
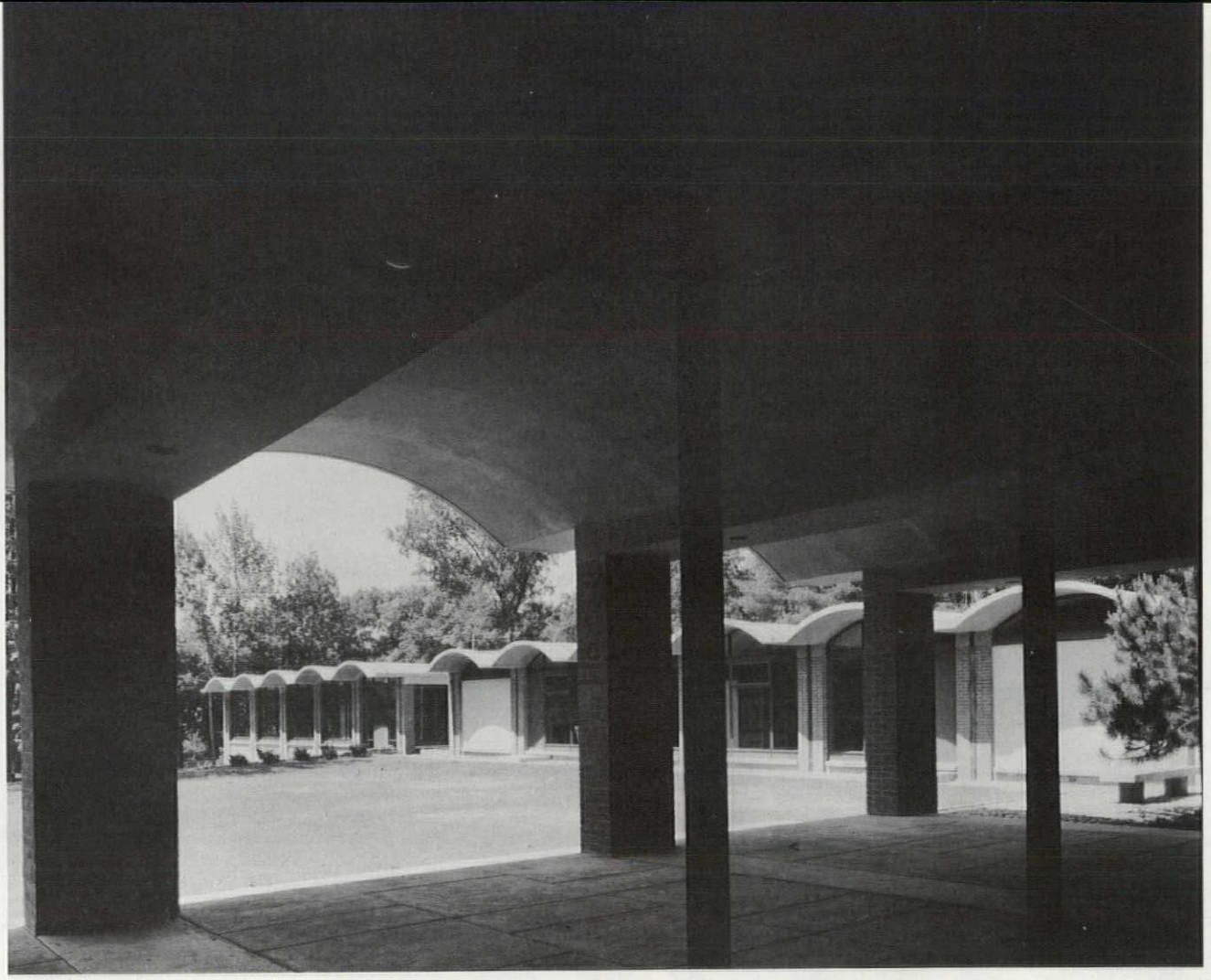
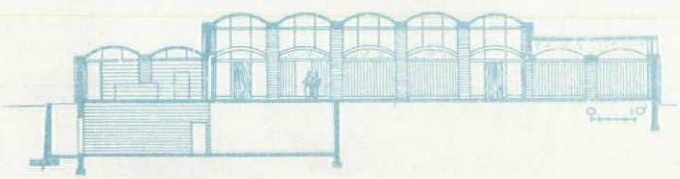
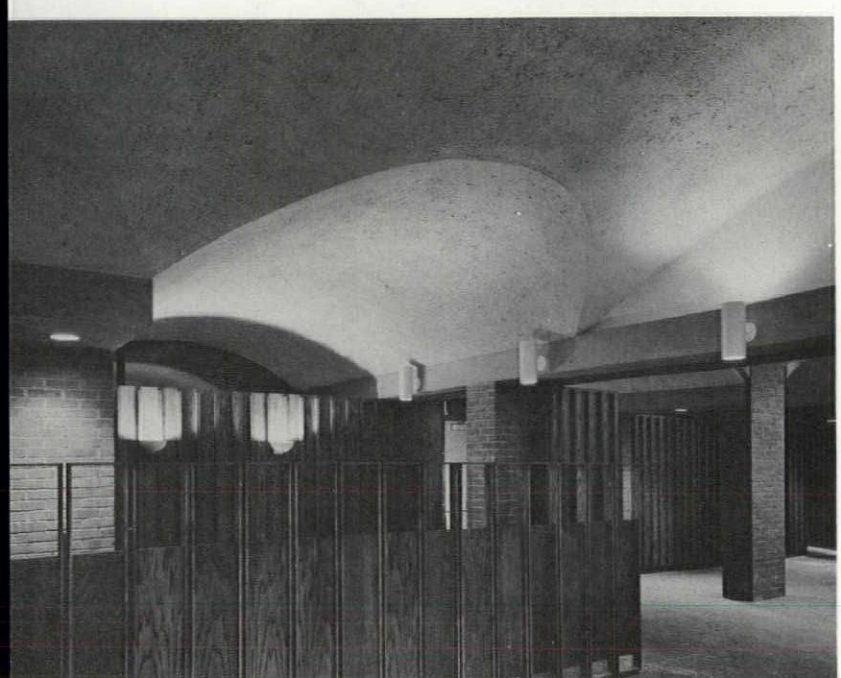
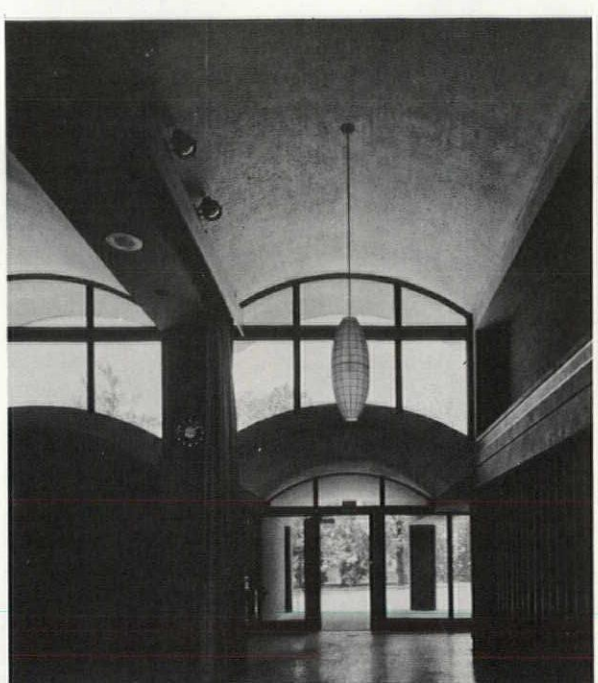


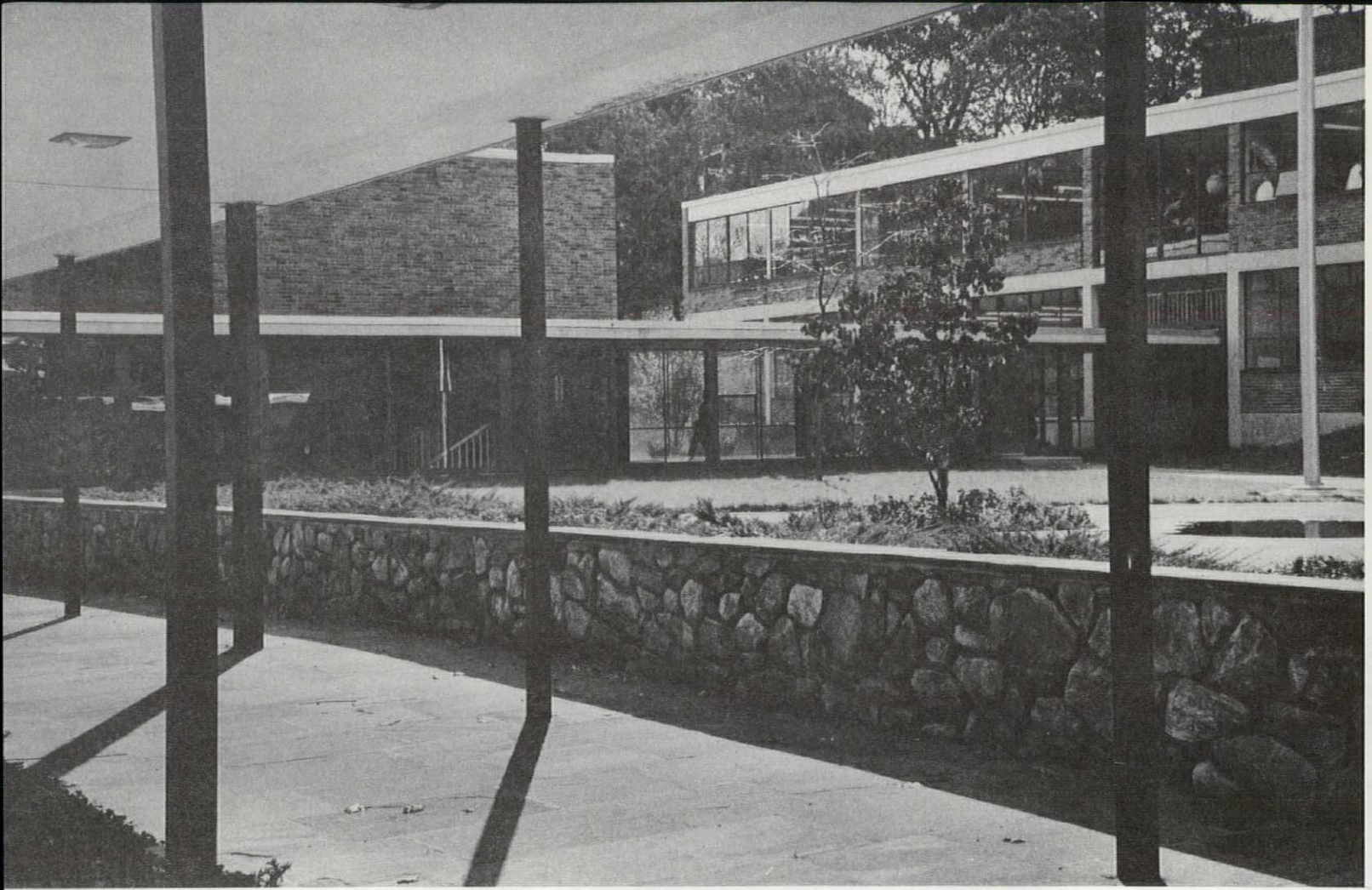




The rhythm of uniform bays, which integrates the entire building, is maintained even in the paving (above). *The repetition of vaults has been varied over the multipurpose room and the chapel* (section left). *The chapel* (below left) *has a single large vault running along its axis, intersecting the smaller transverse vaults to give the room a more plastic quality than the other spaces. The multipurpose room* (below) *is a tour de force of detailing in which doors and folding panels have been made to disappear in a uniform pattern of walnut boards and battens. The pocket garden at the intersection of the two wings* (facing page) *incorporates local, easily maintained materials.*







PHOTOS, EXCEPT AS NOTED: JOHN M. DIXON

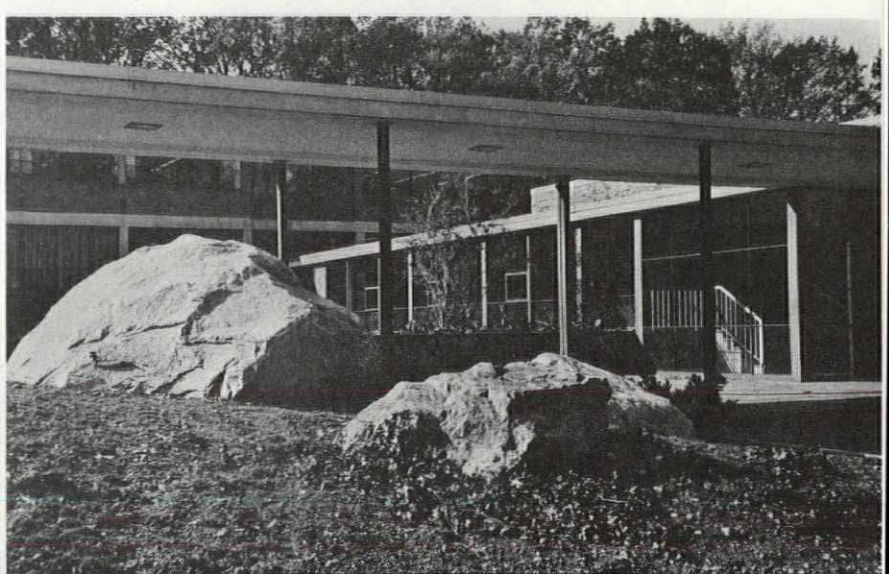
HEATH SCHOOL • BROOKLINE, MASS.

Situated in a pleasant residential neighborhood only a few blocks from the Maimonides School (shown on the previous pages), this school was built to replace a public school that previously occupied the site. The property slopes steadily up from the street to a wooded hillside at the rear.

A two-story classroom block, built over the existing excavation, is set into the slope, permitting exits at grade from both floors. (The pierced block embellishments at these exits were added after the building was completed, without the advice of the architect.) Two separate wings for common facilities are linked to the classroom block by glass-enclosed passages.

The flat roofs and rectangular forms were dictated by budgetary considerations, since construction costs had to be held to approximately $1 million. A light steel structural system was used, except in the lower story of the classroom block, the concrete frame of which is frankly expressed on the exterior. It may be merely coincidental that this school, designed under a British-born job captain, Edwin F. Jones, has austere forms and industrial details reminiscent of the restrained Brutalist work produced in England.

The landscape treatment includes an artificial mound, studded with boulders, placed between the front entrance walks. This mound stabilizes the school visually by interrupting the slope and enhances the privacy of the landscaped court. Walter F. Chambers was the consultant on landscaping and site engineering.



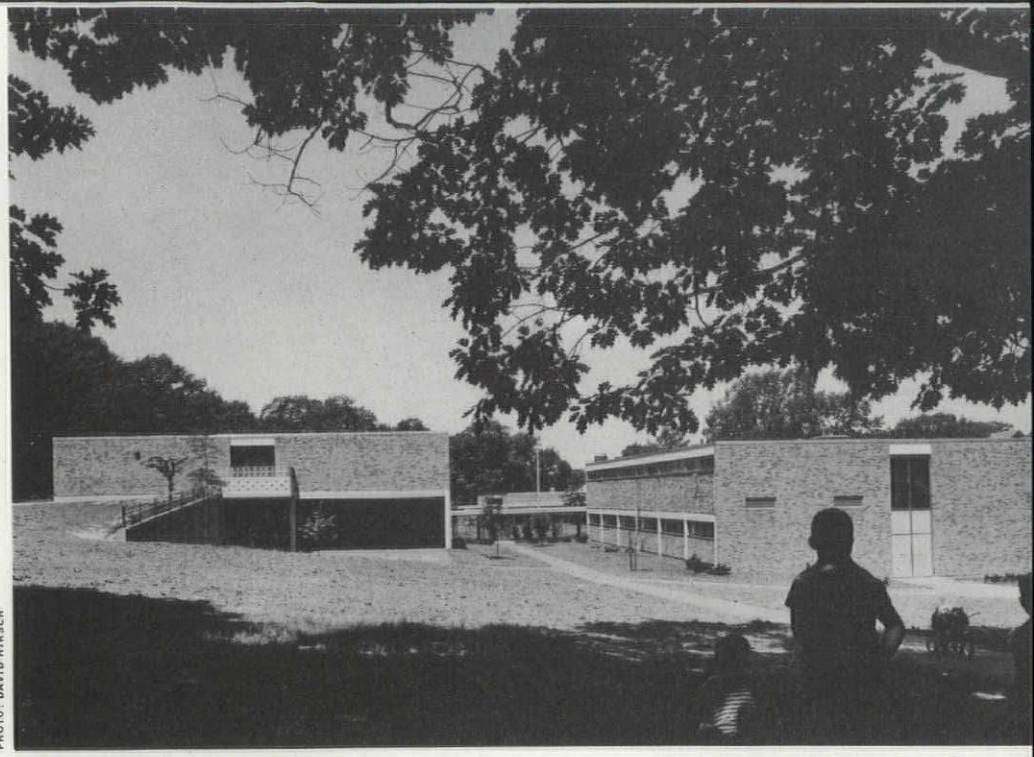
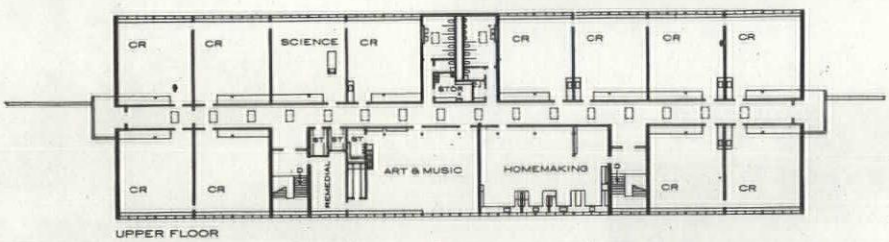
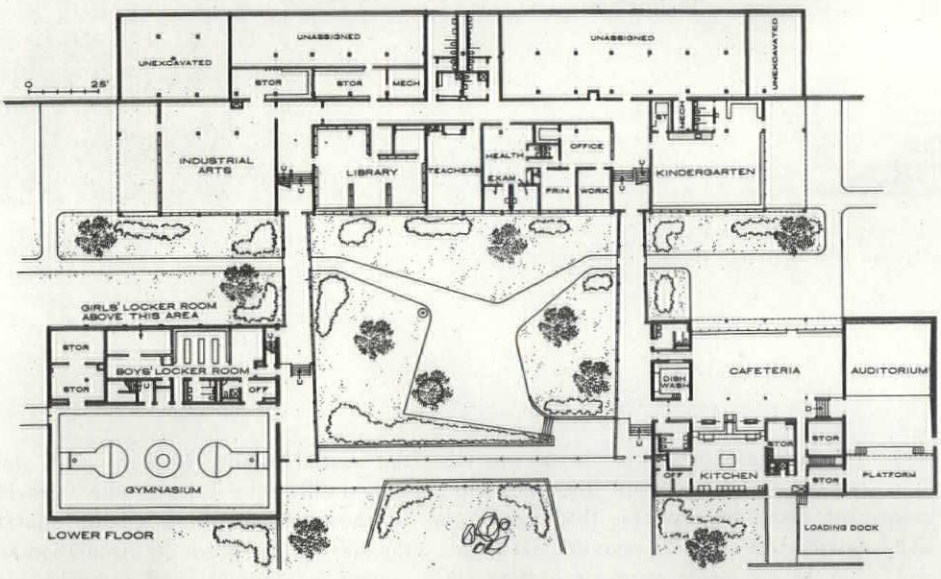


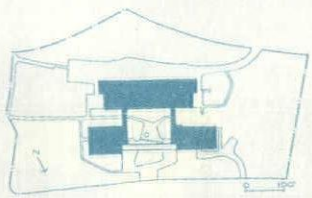
PHOTO: DAVID HIRSCH



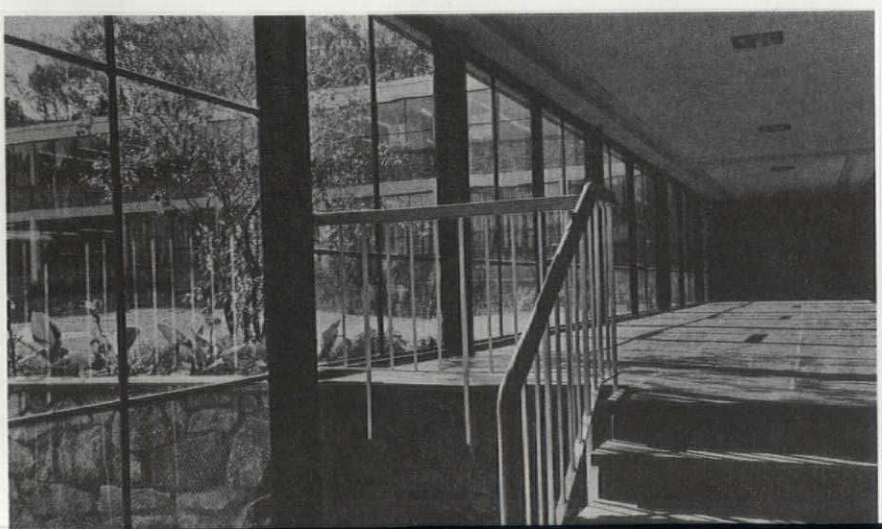
UPPER FLOOR



LOWER FLOOR



The school is divided into three distinct blocks connected by glass-walled passages (above). *The main approach leads to a covered walk of appropriate scale for children* (facing page, top and bottom). *The two-story classroom block is set back, behind a gardened court. The transparency of the glass-enclosed lobbies is emphasized by the continuity of the stone retaining wall* (below, left). *The basically rectangular shape of the small auditorium* (below) *has been disguised by slightly angling the planes of ceiling, floor, and side walls.*



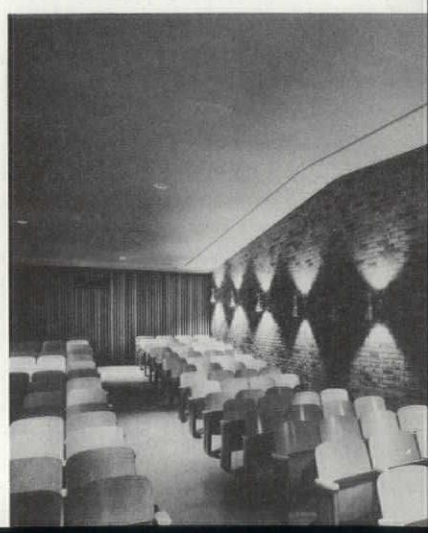


PHOTO: DAVID HIRSCH

PHOTOS, EXCEPT AS NOTED: DAVID HIRSCH

EAST SCHOOL • HINGHAM, MASSACHUSETTS

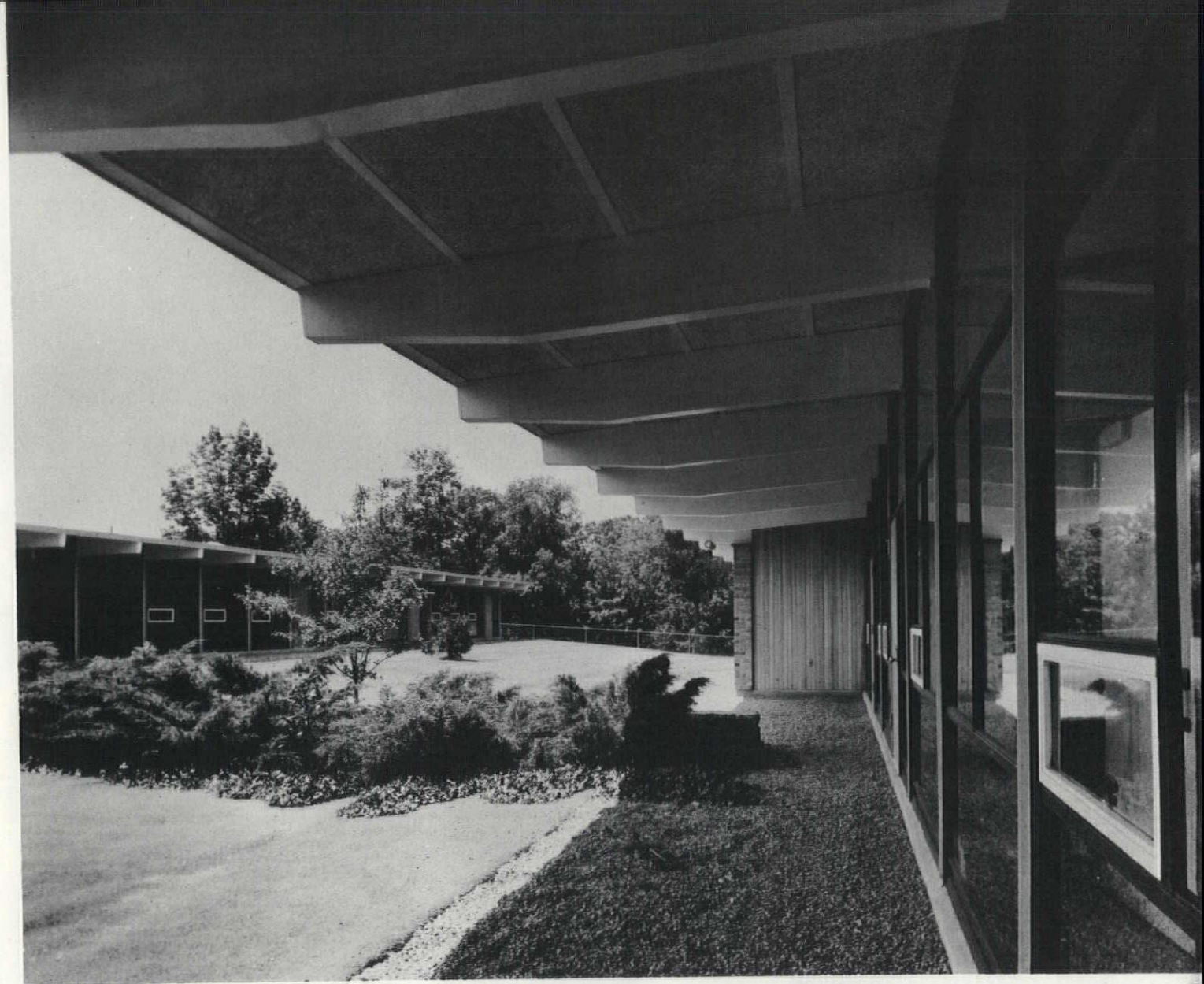
A 15-acre tract of former farmland provides an ample setting for this rambling one-story school. The building is secluded at the end of a cul-de-sac, in an area of old farmsteads that is only now being infiltrated by suburban development. There is no hint as one approaches the school of the extent of either the building or the property.

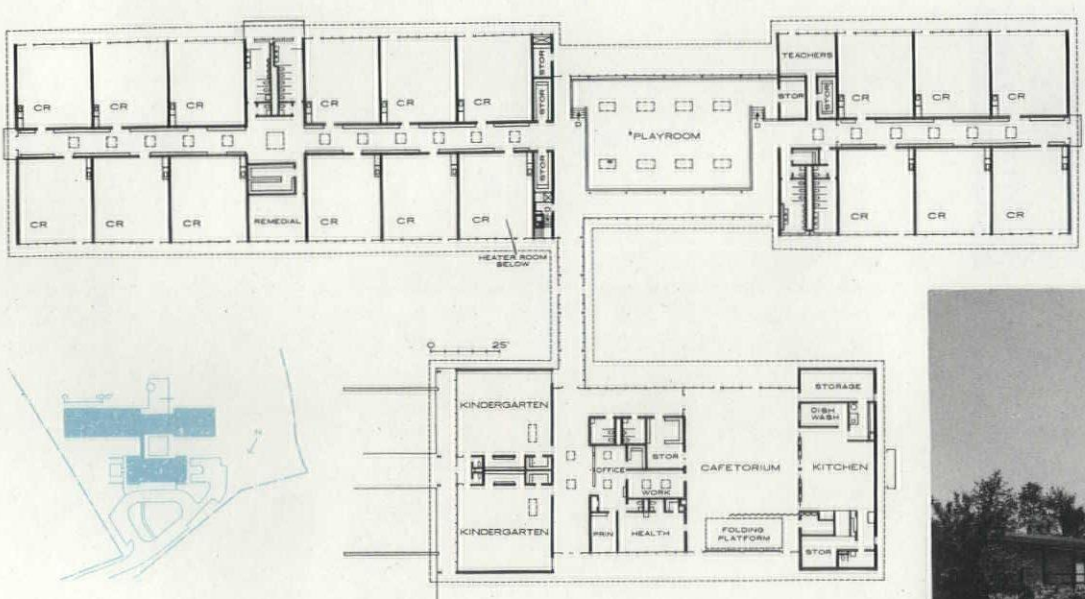
Gently sloping roofs, which project 4 ft beyond the walls on all sides, give the building a ground-hugging appearance. The laminated wood roof beams are supported on steel columns. Rigid insulating roof deck, exposed on the interior, is carried between the beams on steel angles.

A high-velocity warm-air heating system eliminates the need for unit ventilators, permitting the steel-framed glass walls to extend to the floor. In the kindergartens, where children play on the floor, the system has been augmented to incorporate radiant "air-floor" heating.

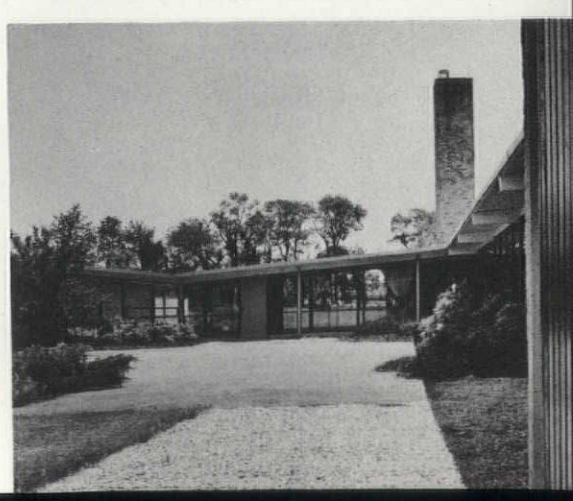
The circulation pattern of the entire school converges on the play space at the center of the classroom wing, which has the spatial quality of a covered plaza. Only a difference in level, which provides for the required ceiling height, separates the playing floor from the circulation area around it. Skylights and extensive glass walls give the space a close identification with the exterior.

The landscaping of courts and terraces is informal, but it has an underlying rectangular geometry that relates it to the surrounding farmland. Site engineering and landscape consultants for the project were Chambers and Moriece. The job captain for the school was Fletcher Ashley.




CR
REMEDIAL
HEATER ROOM BELOW
TEACHERS
STOR
KITCHEN
PLAYROOM

25'
KINDERGARTEN
KINDERGARTEN
OFFICE
STOR
WORK
PRIN
HEALTH
CAFETORIUM
STORAGE
DISH WASH
KITCHEN
FOLDING PLATFORM
STOR



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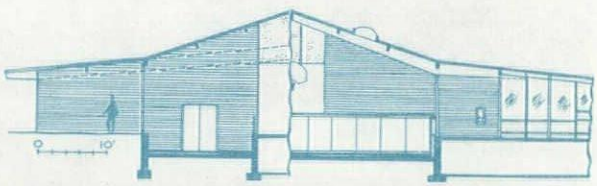
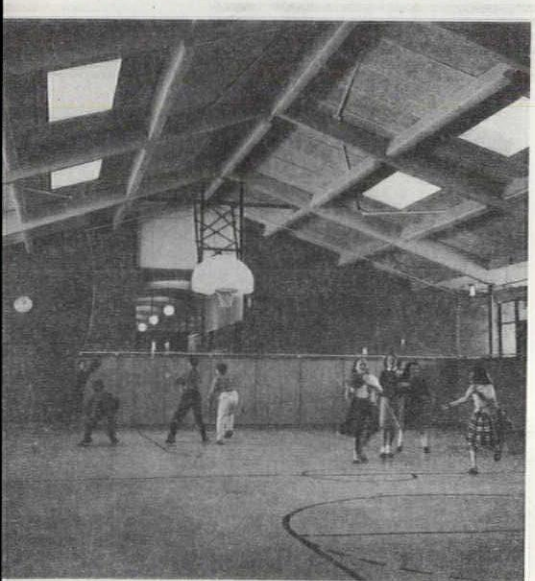


Large glass areas at the top of the corridor walls (above left) *make the sweep of the roof visible from any point in the interior. The proportions of the glass panes and steel frames are consistent with those of the exterior window-wall. The wall-hung coatracks, seen as a series of thin projecting planes, do not seem to encroach upon the volume of the corridor. The lighting globes are more than merely utilitarian, adding a note of graciousness.*

The play area at the center of the classroom wing (below left and section above) *is confined only by a parapet that separates it from the circulation space. Over this columnless area, the basic roof structure has been reinforced by a system of steel rods within the roof planes. Lighting strips run along the undersides of the purlins.*

The finely detailed window-wall (facing page) *contrasts effectively with the large-scaled roof structure. The pattern of thin, charcoal-gray steel members is punctuated by the white-painted projecting sashes, which have the practical value of being clearly visible when open.*



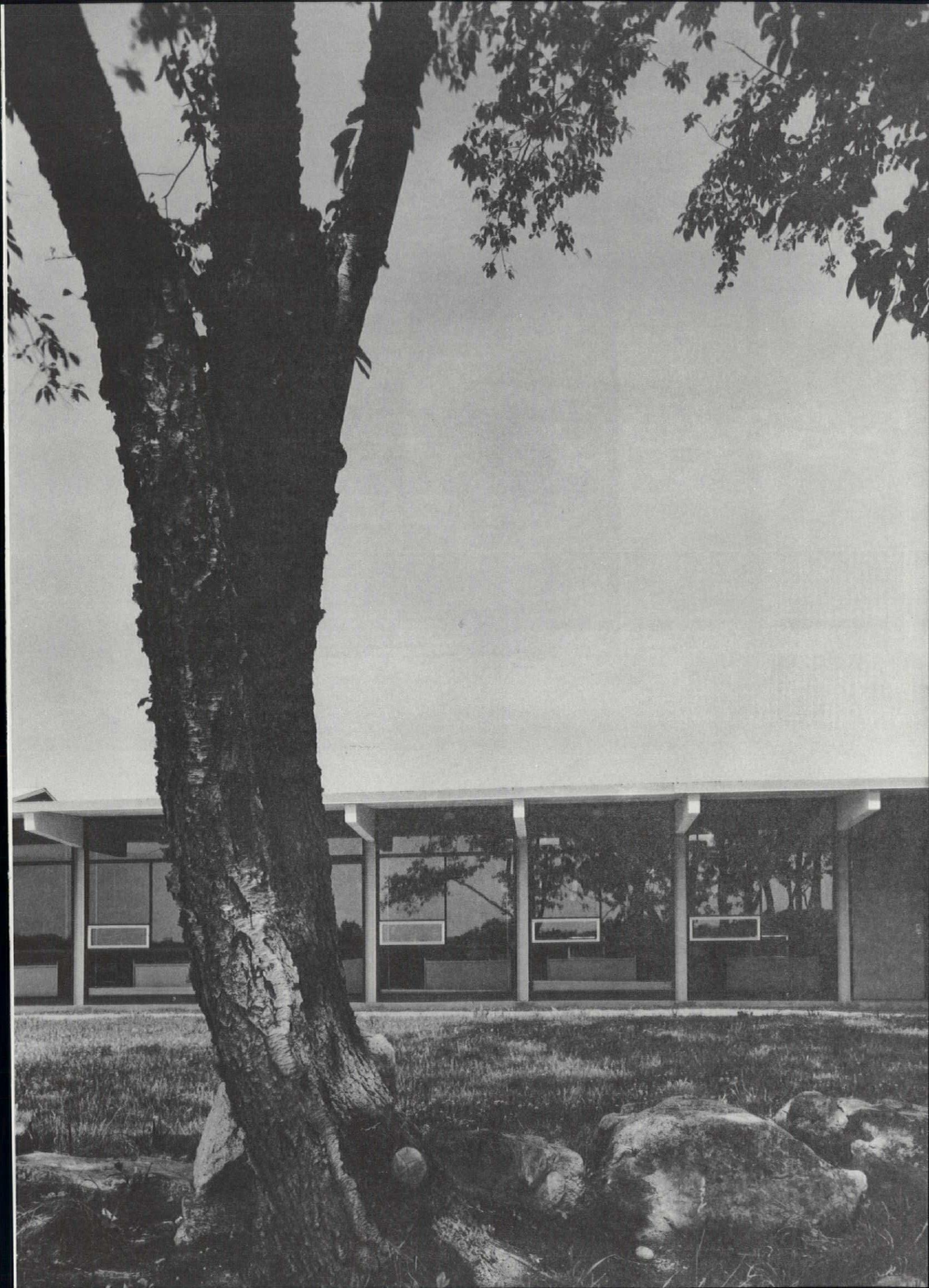


PHOTO: DAVID HIRSCH

PEABODY SCHOOL • CAMBRIDGE, MASS.

The design of this elementary school was determined by its urban setting. The sheer bulk of the building on its constricted site demanded a disciplined form. The classical architecture of surrounding structures —private residences, apartment houses, and Radcliffe College dormitories—is reflected in the formal treatment of the elevations.

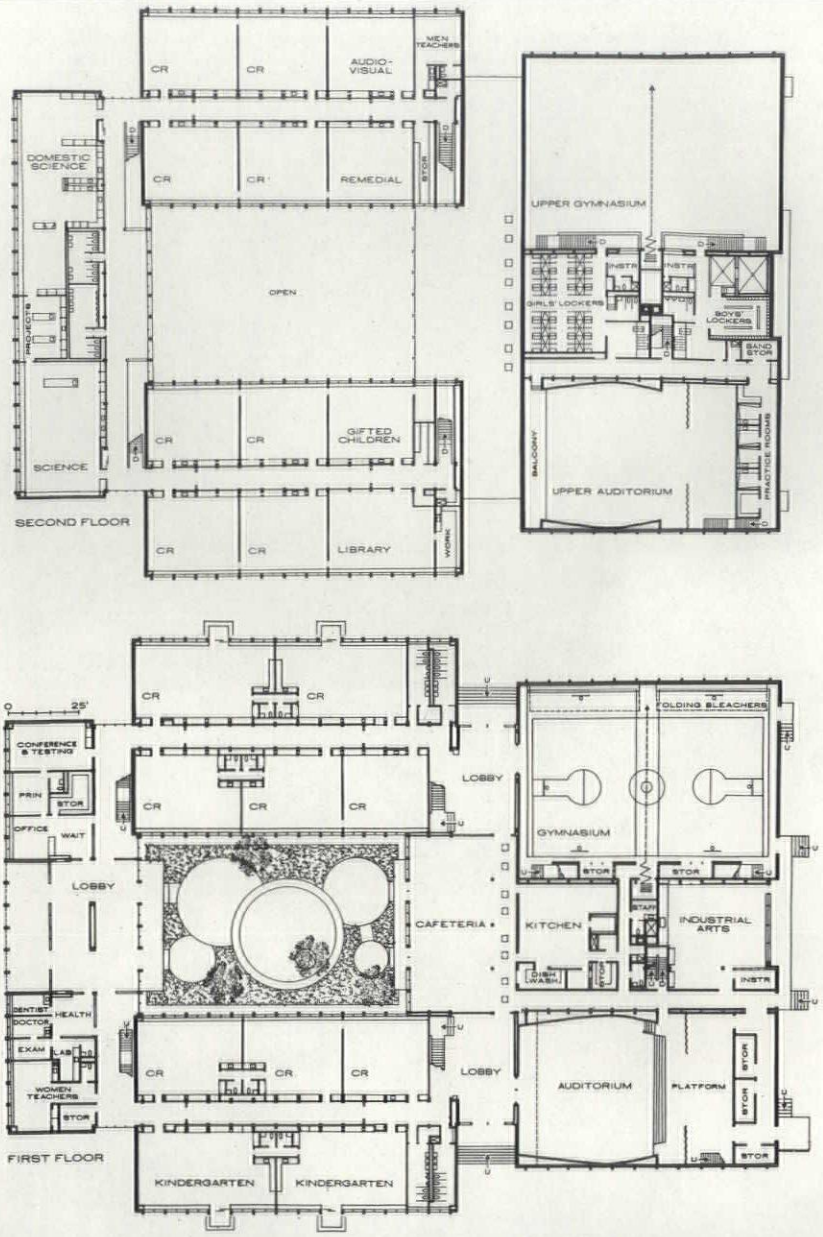
Exposed concrete columns with a uniform spacing of 8 ft express the structural order on the exterior. The concrete roof beams over the classrooms terminate in outriggers that carry a 4-ft overhang. The use of a steel roof structure over the gymnasium-auditorium block is indicated by a different treatment at the roof line.

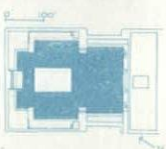
Exterior classroom walls are composed of aluminum windows and red brick spandrel panels. Unit ventilator grilles have been integrated into the pattern of the spandrel brickwork.

The structural frame of the classroom blocks was designed to eliminate beams over the corridors, where the 18-in.-deep beam space is used for a return-air plenum. The storage walls along the corridors are separated from the plenum by a continuous band of glass.

The auditorium, the gymnasium, and the cafeteria were designed to be used for community functions. There was no attempt, however, to equip the auditorium as a theater; the stage has no provisions for hanging or moving scenery. The dressing rooms above the stage, intended for visiting performers, were designed to double as individual music practice rooms.

The school has a capacity of about 600 students, considered by the city to be roughly the maximum for an elementary school. If expansion is required, however, any of the special classrooms could function as standard classrooms, and four classrooms could be added at the front corners of the building.





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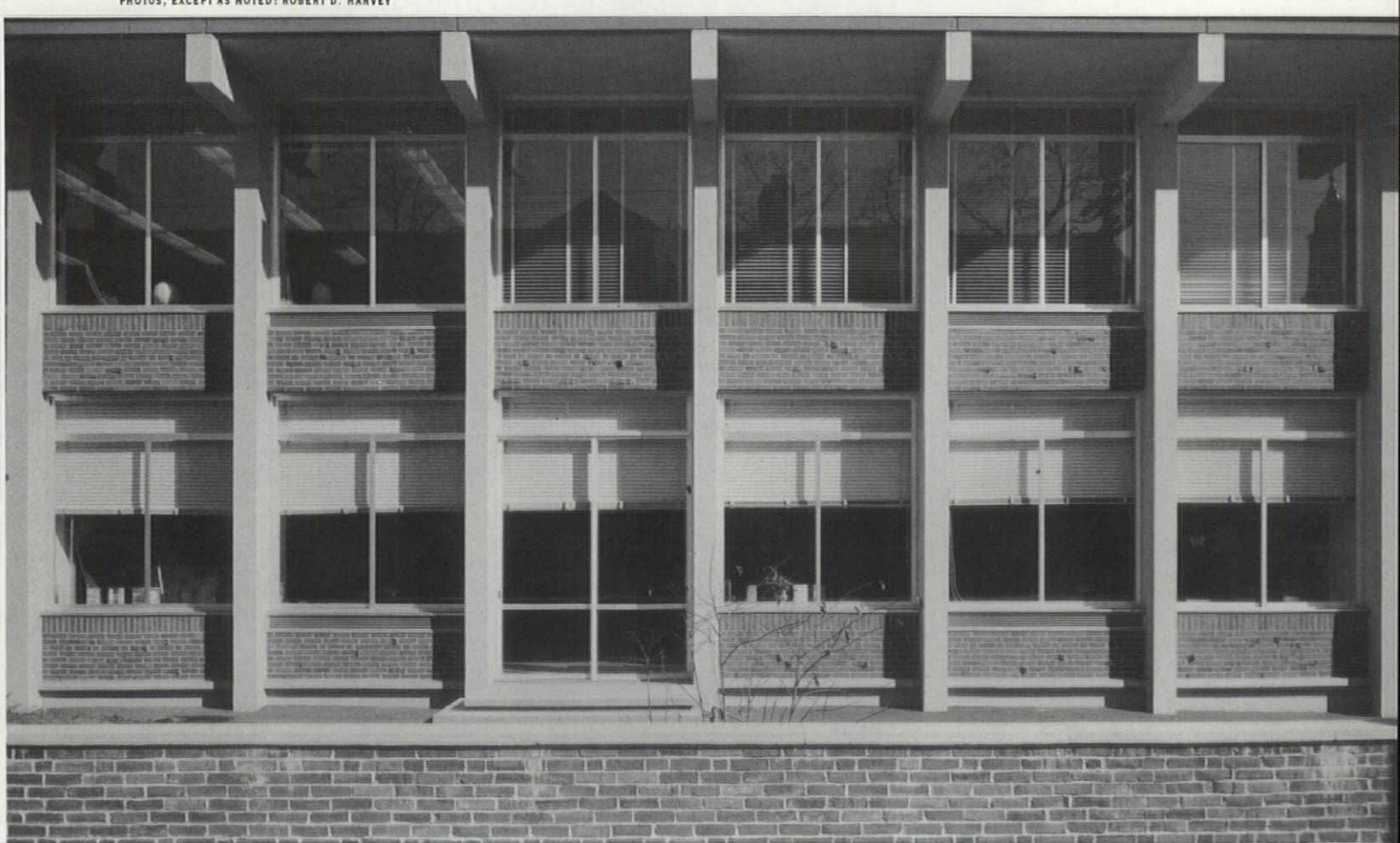
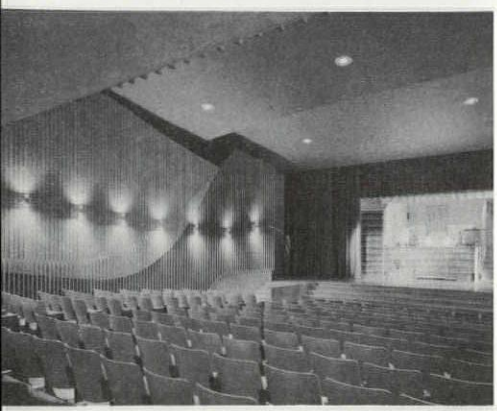
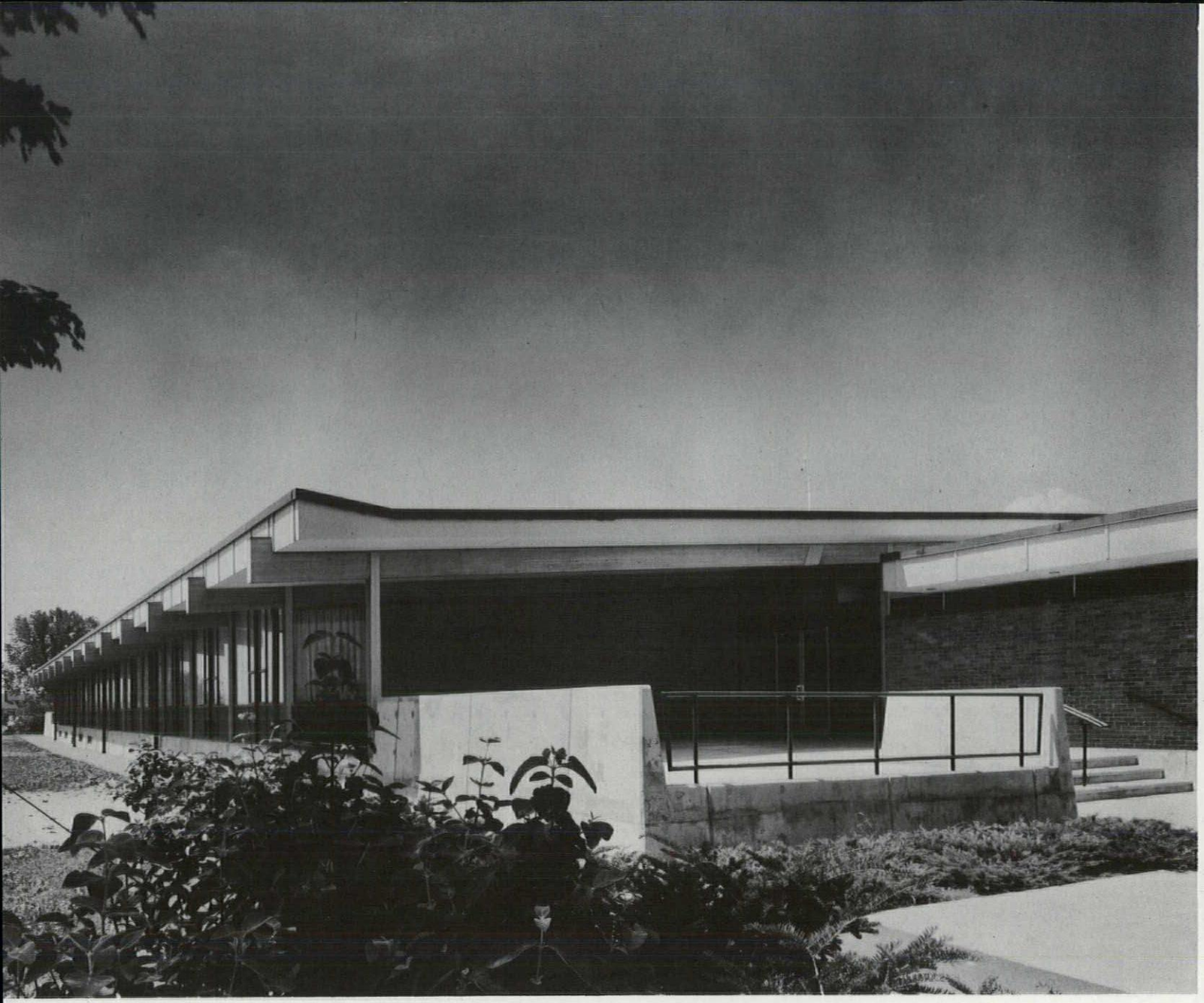




The sinuous pattern of the auditorium walls (above) *is produced by the overlap of two surface treatments used for acoustical purposes—hardwood battens over glass fiber, and vertical boards. Steps along the entire front of the stage are convenient for many school functions.*

The view of the court from the cafeteria (right) *shows the dense planting set off against the regular pattern of the exposed structure.*

PHOTO: DAVID HIRSCH



PHOTOS: DAVID HIRSCH

RYAL SIDE SCHOOL • BEVERLY, MASS.

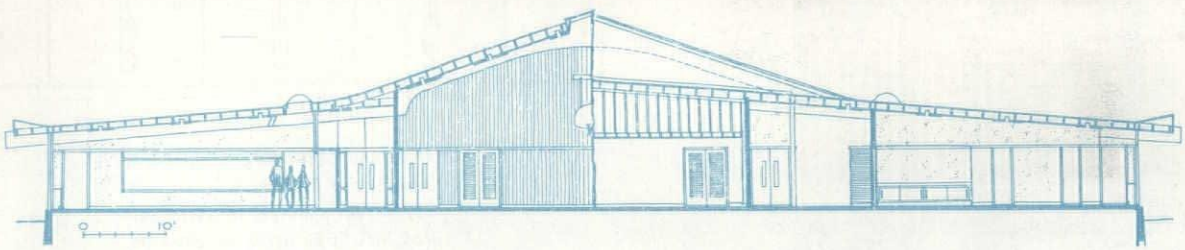
Designed for a site on the northern fringe of the Boston area, this elementary school is a refinement of a scheme that Stubbins has used in two previous schools. The basic plan, developed as a drafting-room research project several years ago, has a central gymnasium-auditorium with classrooms placed around it to form a compact rectangle. The design minimizes costs of construction and site preparation and leaves a maximum area free for other uses.

In this latest version, job captain Tetsuo Takayanagi has introduced refinements of forms and detail. The several pitches of the roof are expressive of the spaces beneath it. The reversal of the lower slope at the eaves to form a rain gutter and the projection of the beams beyond the fascia produce an effect reminiscent of Japanese roofs.

The depth of the overhang and the delicate linear pattern of the classroom walls emphasize the scale of the roof and give it a floating quality. The walls between the exposed steel columns are composed of steel windows and porcelain-enamel panels. The cornice is of asbestos cement panels between vertical battens.

The batter of the concrete foundation walls complements the upswinging angle of the roof edges. At the ends of the building, the concrete slab turns up to form monolithic parapets that visually counterbalance the floating effect of the expansive roof.

The plan of the school is well adapted to its large, level site. Since the school can be approached from any quarter, four entrances of equal importance have been provided. The disposition of classrooms around the perimeter of the building takes advantage of the omnidirectional views across the countryside.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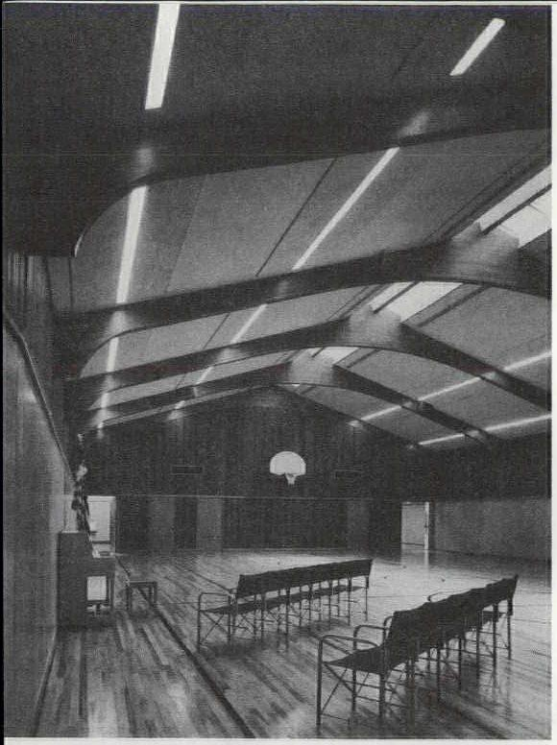
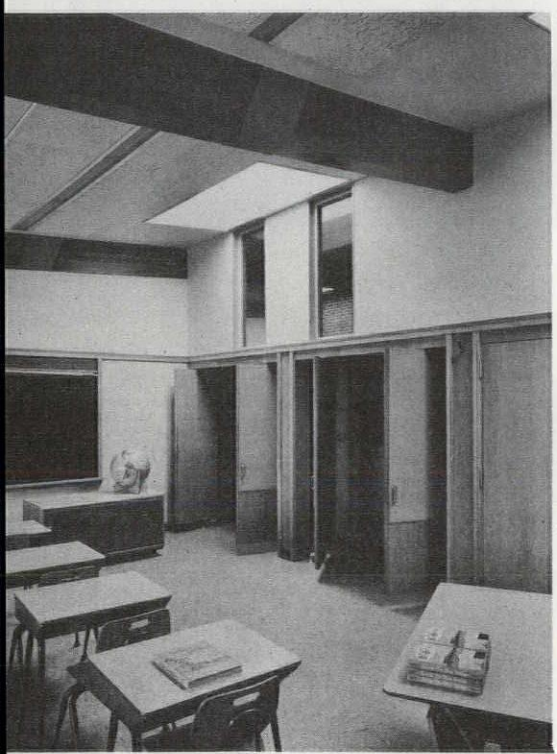
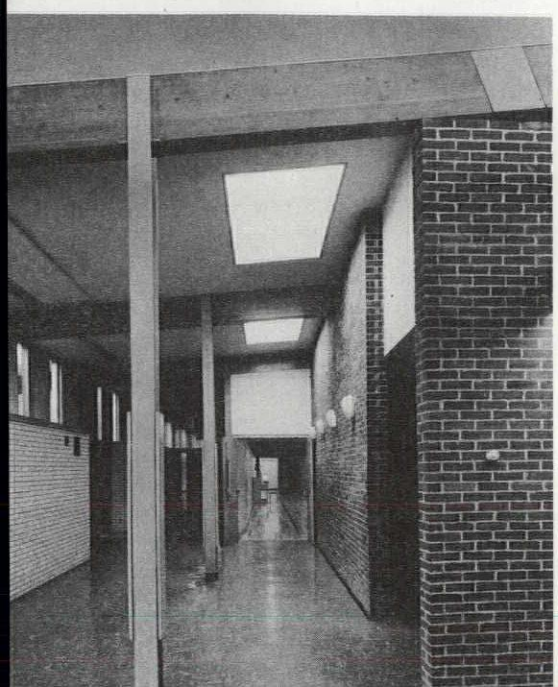
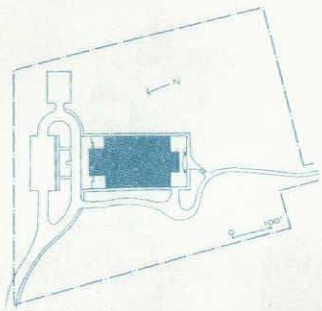
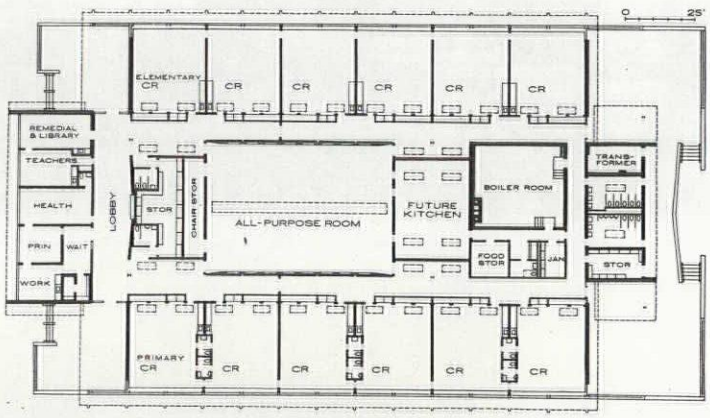






The laminated wood beams rise to a peak over the central all-purpose room (top left). *The carefully composed ceiling incorporates fluorescent lighting troffers, panels of acoustical tile, and a continuous skylight at the ridge. The room can be equipped to serve as a cafeteria by replacing the removable wall panels with folding*

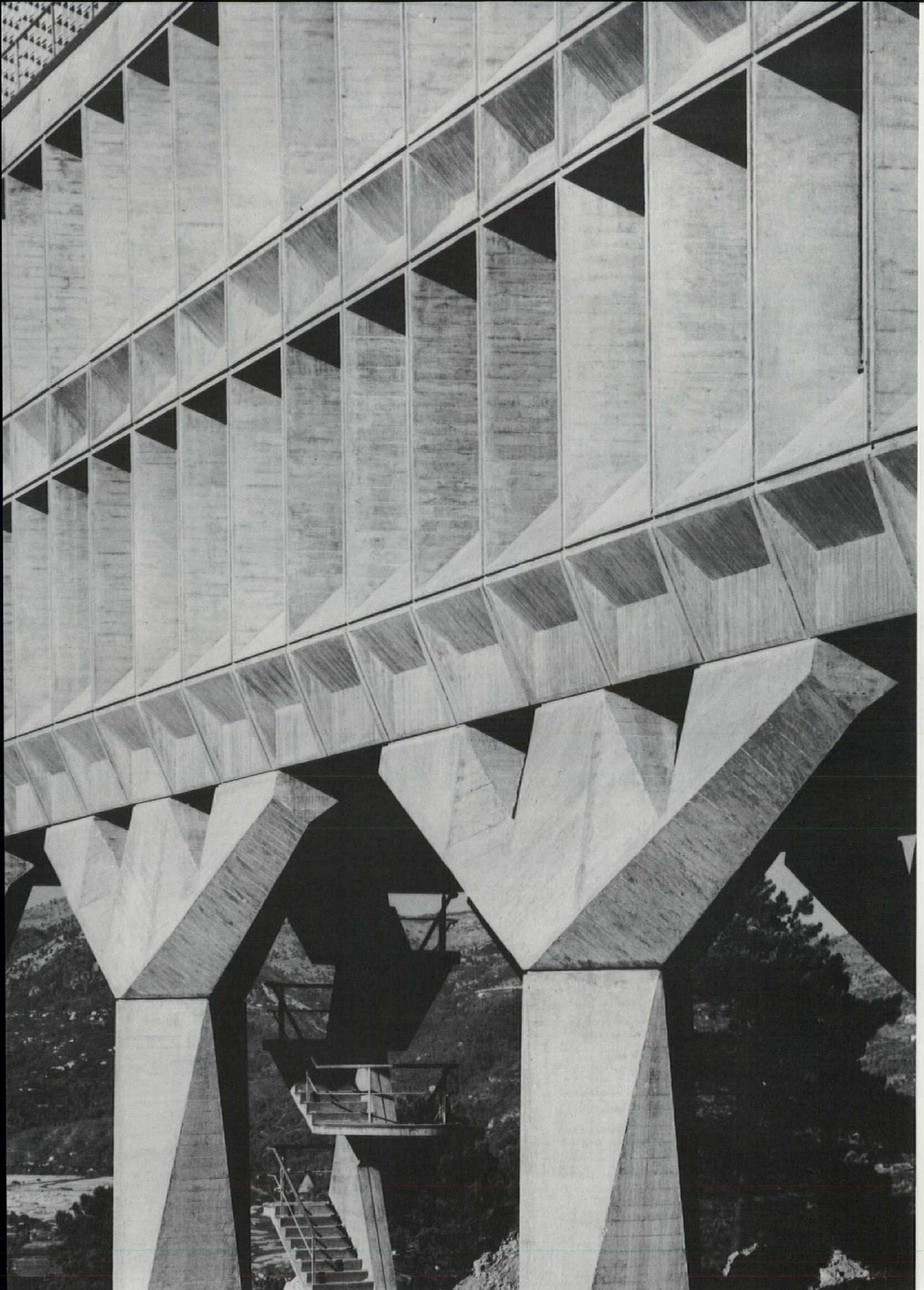


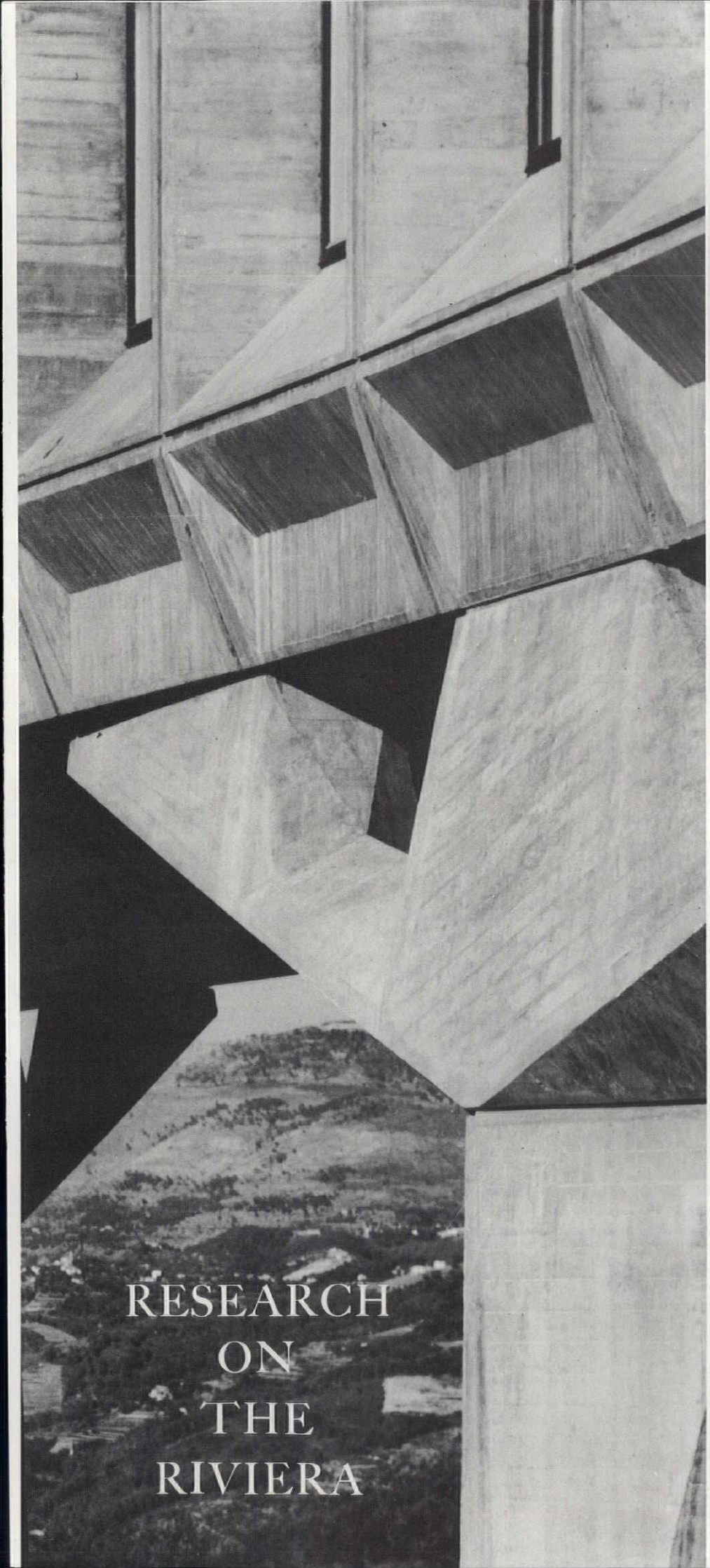


tables and converting an adjacent room into a kitchen.

A recent change in state law prohibits large areas of glass between the classrooms and the corridor, like those in the East School at Hingham (page 120). The small openings permitted are related in proportion to the storage walls below (middle left) *and dispersed to give optimum distribution of natural light in the corridors* (bottom left). *The corridor walls are of buff glazed structural tile with red joints. A uniform molding, with a shallow V-shaped profile, is applied at door height throughout the interior.*

The internal organization of the building is clearly discernible from the exterior (facing page). *The characteristic angles of the roofs are echoed in the battered walls of the corner terraces and in the silhouette of the chimney.*





RESEARCH ON THE RIVIERA

IBM DEVELOPMENT ENGINEERING LABORATORY • LA GAUDE, FRANCE • MARCEL BREUER, ARCHITECT • ROBERT F. GATJE, ASSOCIATE • RICHARD AND MICHEL LAUGIER, SUPERVISING ARCHITECTS

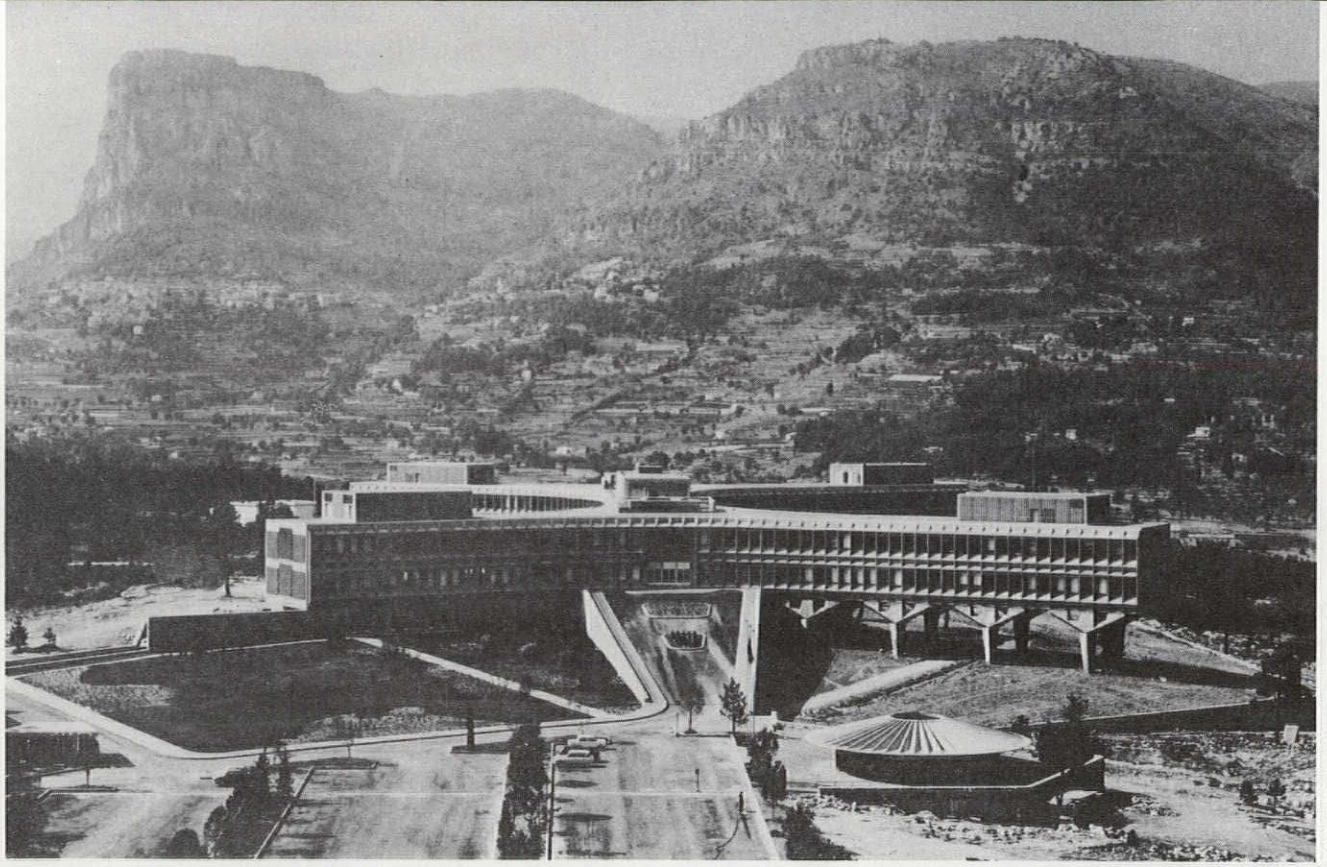
Since Marcel Breuer believes that only the architect has the necessary background to explain his own building, the following discussion written by his associate, Robert F. Gatje, is presented here in toto.

Driving north from Nice along the broad Valley of the Var, one quickly leaves the near-tropical vegetation that hugs the Mediterranean coastline and enters a land of red rocks, pale sand, and scrub pine not unlike the American Southwest. About 30 years ago, Marcel Breuer took just this route while on a vacation and made particular note of an especially striking plateau some ten miles from the coast and high above the river bed. On later trips to the Côte d'Azur, he found himself repeatedly drawn to this dramatic area. In 1960, to his surprise and delight, he found himself on the same plateau when IBM World Trade officials took him to see one of the sites they had under option.

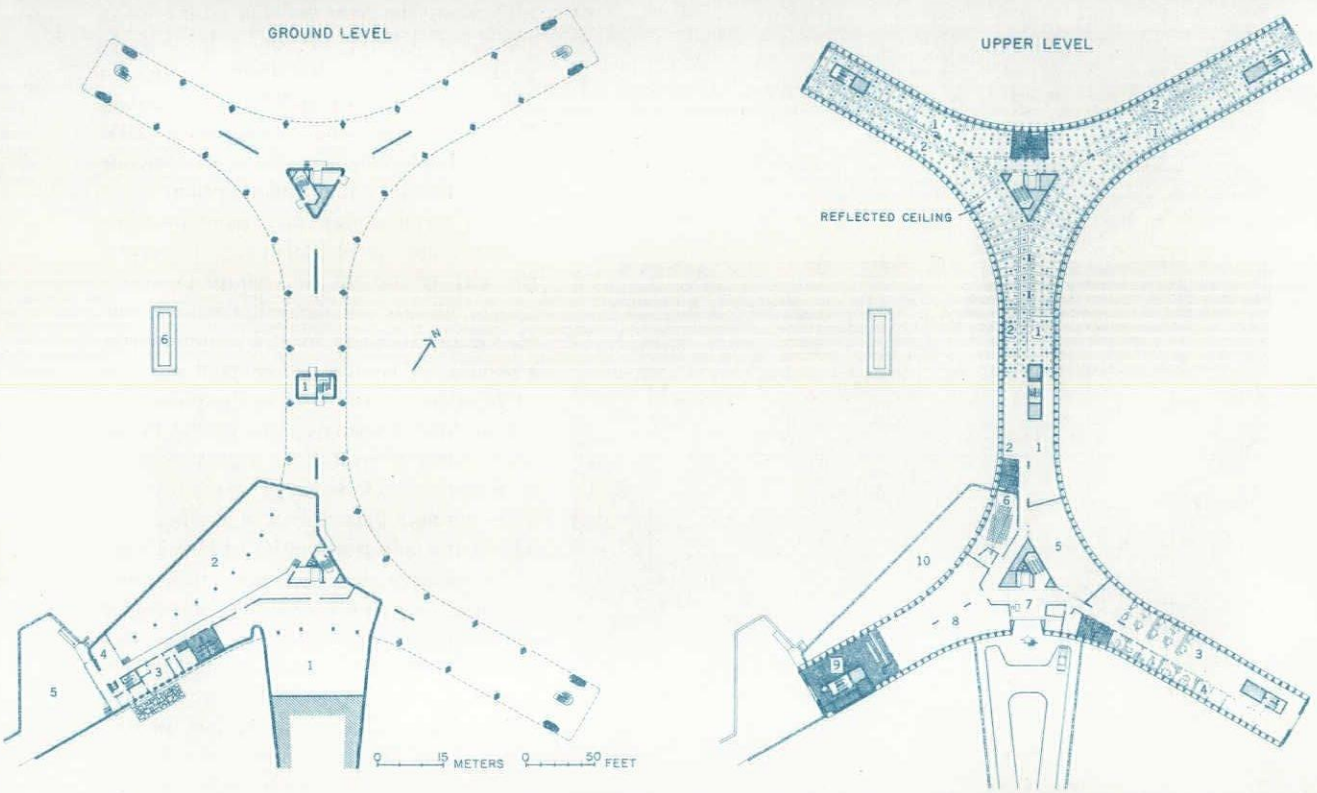
IBM faced a need to expand its Paris research and development labs to several times their size. In an attempt to decentralize the present concentration of commerce and industry in and around Paris, President de Gaulle had enacted a system of regulations designed to discourage, if not prohibit, expansion of existing industry within the capital. To a great number of Frenchmen, however, Paris is France. The company feared that, in moving elsewhere, it would run the risk of losing most of its research staff, and, more important, would be in a poor position to compete for the trained personnel it had to attract from all over the Continent to meet the demands of its expanding research program.

Perhaps the only exception to the "Paris-is-all" point of view was the Côte d'Azur, so it was to this initially unlikely pleasure area that the company was finally attracted. The vicinity of Nice also has certain practical advantages: a good airport, a new university, and a low cost of living. Shortly after selecting Breuer as their architect, the company purchased the 50-acre site on the plateau above the Var, near La Gaude.

The towns of La Gaude and its neighbor, St. Jeannet, are both medieval fortress towns—clusters of old stone buildings high in the folds of rocky hills that rise to a jagged crest, which is known



PHOTOS: ROBERT MOTTAR



GROUND LEVEL

1 *Storage*
2 *Mechanical Equipment*
3 *Caretaker's Apartment*
4 *Shipping and Receiving*
5 *Service Court*
6 *Cooling Tower*

UPPER LEVEL

1 *Laboratories*
2 *Research Offices*
3 *General Offices*
4 *Administrative-Executive Offices*
5 *Exhibition and Display*
6 *Auditorium*
7 *Lobby*
8 *Cafeteria*
9 *Kitchen*
10 *Terrace*

The IBM Research Center at La Gaude is elevated on columns to minimize interruption of the dramatic landscape (above). *The circular building at the foot of the entrance ramp was intended as a bicycle shelter, but since almost all employees now commute to work by car, it is being converted into an open meeting hall.*

The client desired a two-story scheme to preclude reliance on passenger elevators. The double "Y" plan was designed to exploit views of the landscape and avoid having windows directly facing each other. Both floors are similar in layout, but most of the special facilities are on the first floor to eliminate interruptions in the pattern of flexible laboratory space on the second floor.

Suspended ceilings (facing page) *are comprised of panels of metal acoustic tiles with wedge-shaped segments between them to negotiate the curves of the plan. Lighting fixtures have circular fluorescent tubes with plastic grid diffusers. Partitions are of plywood or corkboard panels on expendable wood frames, rather than any "movable" system. Floors are of an acid-resistant terrazzo that includes broken tile.*

locally as the Table d'Orient. Both towns look across the broad, sloping plateau on which IBM proposed to build, and the townspeople asked only that the company and its architect respect the rugged integrity of the rocky terrain.

Breuer's first major design decision was to preserve the existing quality of the site insofar as was possible by raising the building on columns and allowing the land with its cover of scrub pine to run uninterrupted below. This also permitted minimal excavations, which had to be blasted out of a rock shelf of uneven quality barely below the surface. Elevating the building put every office and laboratory in a position to command some part of the magnificent view: the great bizarre rock to the north (*facing page*), wooded hills to the west, the river valley to the east, and, on the southern horizon, a long blue line of the Mediterranean itself.

Something deep in the French temperament seems to demand daylight for effective work; with the view available on all sides, windows for all offices and labs became a requirement. This led Breuer to the Y-shaped plan, which may be considered the second major design decision. The distances from centralized vertical cores are shorter in this plan than those found in a long rectangular plan, and the 120° angle of the interior corner avoids the diagonal view into opposite windows for which cross-shaped plans are frequently criticized. By converting the interior corners into long curves, it was possible to widen the plan at its core so as to avoid any bottlenecks which might otherwise have resulted. One "Y" was built as the first stage of construction, but such were the demands for space once the company began its move that construction was started on the second "Y" before the first had been completed.

In order to allow maximum flexibility, interior columns were to be kept to a minimum. In fact, most of the interior space has a clear span of 40 ft from one exterior wall to the other. All floors were designed for a live load of 125 lbs per sq ft, since the location of heavy equipment was unpredictable.

Mechanical installations were divided into those which could be considered permanent (lighting, air conditioning, sanitary plumbing lines) and those which were necessarily changeable (electric and telephone lines, piping for chilled water, steam, chemical waste, and various gas lines). Permanent installations were made above suspended acoustical ceiling panels, which need be removed only rarely for servicing. Interior utility chases, which are frequently found along corridors in laboratory plans, had been rejected together with interior columns in the search for flexibility; therefore, changeable installations were put in the exterior wall behind readily removable panels of marble-smooth asbestos-cement. The air conditioning load is great (up to 32 air changes per hour), since much of the laboratory equipment produces heat; large rooftop penthouses were therefore required.

Textured concrete was a natural choice for exterior walls in this rugged, rocky landscape. In order to facilitate prefabrication, the walls were divided into units reflecting the modular planning within. The prefabricated units were faceted in deep crystalline shapes whose converging planes would allow the units to be withdrawn after casting without expensive dismantling of the forms.

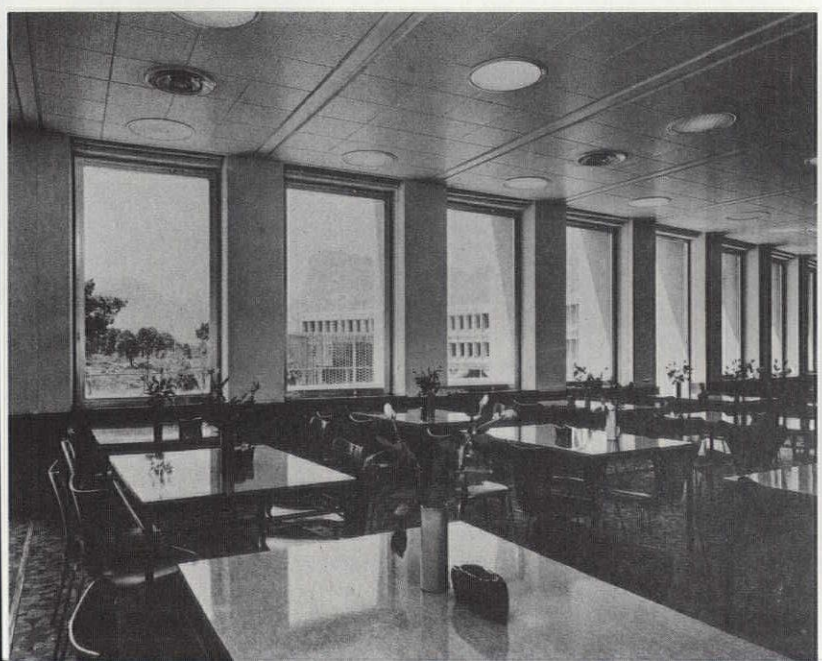
Each of the several demands made upon the exterior wall—ability to bear heavy loads, space for vertical and horizontal distribution of changeable installations, sloping planes—played a part in the development of a 3-ft-deep, folded wall surface which also protects the windows from the Mediterranean sun and whose texture gives the building its rugged sculptural character.

Beam loads are transmitted through the vertical folds in the wall to the columns below, where they are gathered into a form reminiscent of a tree. Like the wall above, these columns are textured and faceted in such a way as to age and weather well, showing to advantage the natural variations of concrete within a strong discipline of rough board forms, heavy joints, and planes that contrast with one another in changing patterns of sun and shade as they follow the curving lines of the building.

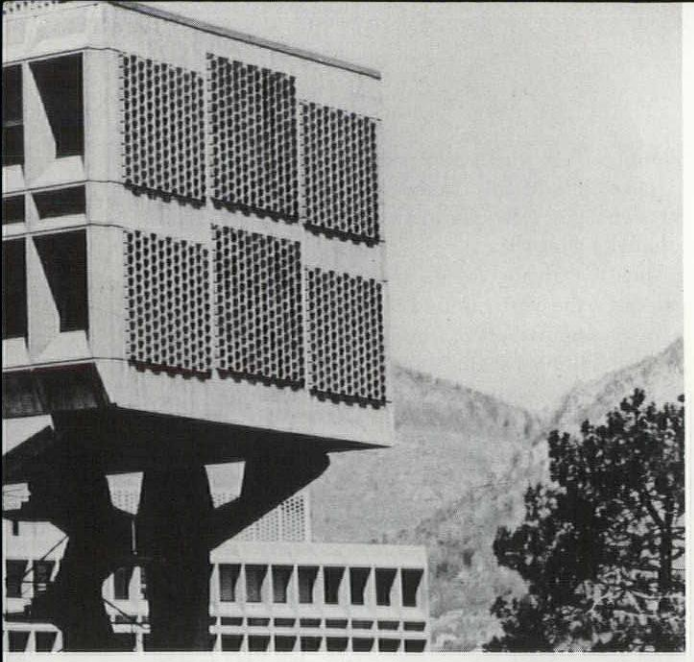
Breuer has used native stone for retaining walls and those parts of the building that were necessarily located at grade. The building is enclosed at ground level only at the entrance ramp and under the wing to its left. Several huge cisterns, which provide a reservoir in these arid hills, occupy much of the volume under the entrance ramp. Mechanical facilities and an apartment for the caretaker are placed under the wing to the left of the entrance. The native stone and other building colors, such as the terra cotta flue tile that is used to enclose mechanical penthouses and to shield end windows, all reflect the palette of the surrounding landscape. The result, however, is no quaint extension of the countryside, but, instead, a most independent form which stands out in proud relief from the terrain, of which it is paradoxically very much a part.

Several initially skeptical observers of the project have remarked that in the form of its columns and the warm gray color of its concrete, the building has achieved a scale and feeling associated anachronistically in their minds with the nearby masonry monuments left by the colonizers of Imperial Rome.

Dining Room



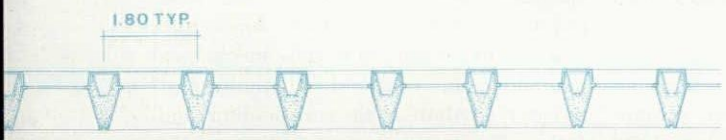
Exhibition Area



The salient feature of the research center is a concrete structural frame comprising massive, poured-in-place columns and a wall system of precast units. Bracketed columns collect loads from the wall; the girder at the base of the wall is not expressed but broken into facets. Faceted wall units incorporate both vertical and horizontal channels for laboratory service lines, and their 3-ft projections shade windows from direct sun. The shapes of the units permit easy withdrawal after casting without dismantling the forms; steel subframes for the aluminum windows were cast in with the faceted window panels.

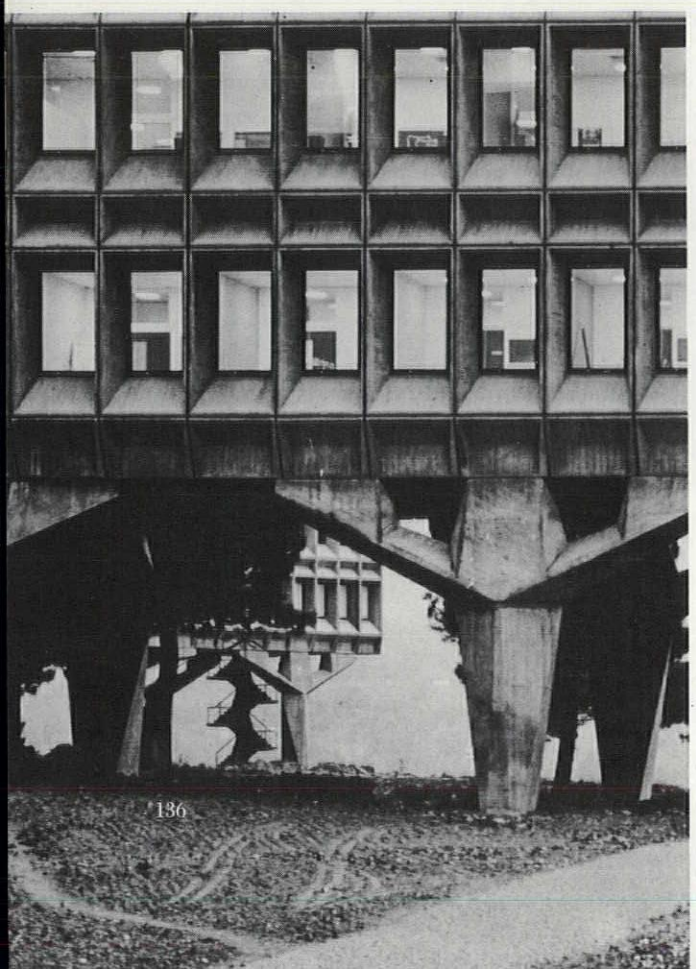
Most of the interior space has a clear span of 40 ft from one exterior wall to the other. All floors are designed for a live load of 125 lbs per sq ft, since the location of heavy computers and other equipment is flexible. The columns are massive, therefore, in order to carry a greater load than one would expect of a two-story building standing on pilotis.

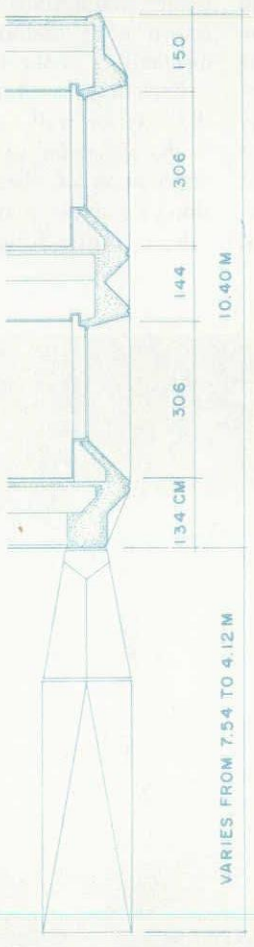
The end walls and penthouse walls are covered with screens of hollow tiles, some filled with concrete, to cope with various requirements for openings.



PLAN SECTION

CROSS SECTION





URBAN RENEWAL IN EUROPE

BY LEO GREBLER

The author describes in this article recent European planning trends and discusses what U.S. planners can learn from them. Mr. Grebler is Professor of Real Estate and Urban Law Economics at the University of California.

Western Europe is increasingly shifting from its traditional slum-clearance and housing programs to the broader urban renewal approach. Together with the rebuilding of war-destroyed cities, which is a special case of renewal, this activity has by now produced impressive evidence of recent planning tendencies in European redevelopment of built-up urban areas. Can we learn from them? The answer is yes and no.

Most of the physical planning problems and many of the solutions are quite similar to our own. In fact, urban renewal projects in Europe are typically judged by the populace to be too "American"—faint praise which at the same time testifies to the high degree of universality of the reasons for renewal and of the physical aspects of redevelopment under fairly similar economic and social conditions. Nevertheless, one can detect several distinctive features of instructional value. This report, based on a 6-months study tour in the latter part of 1961, attempts to identify and assess some of these. None is uniquely European, and one can without difficulty point to examples of similar tendencies in the United States. But the difference is a quantitative one; the planning features highlighted here are more frequent and pervasive in Europe than in the United States.

Comeback of Multiple Land Uses

One of the most impressive changes of planning practice in Europe that manifests itself in urban renewal and reconstruction is the restoration of multiple land use to its rightful place in city design. In recent decades, planners on both sides of the Atlantic, in a revolt against the indiscriminate, chaotic, and often obnoxious mixture of land uses that became common in the era of industrialization and sometimes extended well into the 20th Century, were inclined to go to the other extreme of excessively "orderly" land-use segregation. The early plan for the reconstruction of a heavily bombed medium-sized British city, for example, provided for separate "precincts" for shopping, offices, hospitals, clubs, cultural facilities, and residences. This was an extreme case, fortunately somewhat modified in the execution of the plan, but it illustrated the general aversion to nearly any kind of land-use admixture that has also been reflected in our own zoning practice. Now, a reaction is clearly visible in European countries. Planners recognize increasingly that some land uses are not at all incompatible and that a judicious admixture economizes on transportation resources and intra-urban travel, avoids monotony, and adds interest and excitement to a city.

In the view of this observer, the acceptance of multiple-use planning is one of the reasons why the reconstruction of Rotterdam's center is, by common consent, considered to be a superior accomplishment. Most of the rebuilt area is thoroughly alive at all hours of the day and evening. The pedestrian, low-rise shopping plaza of the Lijnbaan is commingled with high-rise apartment houses. Even the nearby giant Wholesale Merchandise Building, an enterprise inviting a single-use solution, is enriched by a large café and two movie houses. In several sections of the downtown district and adjoining areas, the planners of Rotterdam did not shy away from the conventional 19th-Century solution of apartment houses with stores at the street level, and have alleviated the problem of merchandise delivery by providing large interior courts with access to the stores. In other cases, especially in West Germany, the admixture of shopping with residential structures takes the form of low-rise stores along the street front and high- or medium-rise apartments built away from, and perpendicular to, the street.

The planners of the new Warsaw started out with the idea of an exclusive governmental center and have only in recent years recovered from it by using remaining sites for hotels and apartment buildings. According to ugly critics, the process was helped by a downward revision of original estimates of the office capacity needed for the performance of central governmental functions. In Coventry, the early reconstruction plan for an exclusive commercial center has also been modified by injection of residential land uses in the form of tall apartment houses.

In Italy and Spain, office and residential facilities are often provided in the same new structures, the former being located on the lower floors. Investors consider this admixture advantageous from the viewpoint of risk diversification, and tenants do not seem to mind. In Rotterdam, too, at least one building in the new center incorporates the same principle.

In capitals and other large cities, the urban renewal plans involving public offices for the performance of the vastly increased governmental functions deliberately avoid completed concentration, although they seek locational consolidation of activities now often spread over many buildings in separate places. Departments requiring frequent face-to-face contacts of their personnel or joint trips by "customers" are to be grouped together, but this principle allows a large degree of dispersion. This is indeed a far cry from the sterility of civic centers that excel in monotony during the day and are devoid of any life thereafter, in addition to requiring huge parking facilities inadequately used in the evenings.

The same holds true for cultural facilities. A hard look at the emerging multiple-use land planning in large European cities, as well as cold analysis, might have persuaded those responsible for New York's Linclon Center for the Performing Arts and their followers in other American cities that the massive concentration of theaters and concert halls offers few advantages while entailing great diseconomies, manifested conspicuously by the inevitable traffic jams at opening and closing time. No observer of European city building and rebuilding can fail to be impressed with the quantity and quality of new theaters, opera houses, concert halls, and auditoriums of any kind. In fact, they put many of the comparable facilities in our "affluent society" to shame. The current efforts in the United States to build for cultural activities deserve

applause. But the physical form of concentration that some of these efforts take is in urgent need of reconsideration and has no counterpart in Europe. We can do better without trying to be bigger.

One type of land-use segregation, however, emerges unimpaired in European renewal and rebuilding projects. This is the removal of industrial establishments from residential neighborhoods. Many European slums are characterized by even greater admixture of small industrial shops and housing than can be found in American cities. Not only are whole residential areas dotted with industrial and semi-industrial buildings, but artisans' and repair shops are located in the interior of housing blocks and even in old apartment buildings themselves. Some urban renewal or reconstruction areas, such as those in Birmingham and Neu-Altona near Hamburg, are large enough to group industrial uses together in sufficient separation from residential neighborhoods, without long-distance relocation. In other instances, industry is being completely removed from residential renewal areas. In either case, the provision of "flatted factories" by the municipality at space rents reflecting the lower cost of public financing, often combined with temporary subsidies for making up the difference between rents in the new and old place, has become a fairly common means of facilitating transfer. But despite the impressive accomplishments to date in reconstruction and renewal, most of the European cities still have a long way to go before this type of land-use segregation will be achieved.

Pedestrian Shopping in City Centers

In the United States, where the principle of pedestrian shopping has been so thoroughly revived in the new, planned suburban shopping centers of nearly any size or type, the adaptation of the older central business district to the same principle seems to encounter almost irremovable obstacles. In contrast, pedestrian shopping is rapidly gaining ground not only in the new European suburbs and towns but also in city centers. Rotterdam's Lijnbaan, "Europe's Fifth Avenue," has by now won worldwide acclaim. Even more impressive is the fact that the Lijnbaan is being extended to accommodate additional shops with a combined store-front of nearly 700 feet. In addition, Rotterdam boasts still another, smaller but equally charming pedestrian shopping plaza at the New Market, somewhat off the main center. A major business street in the rebuilt center, Hoag Straat, will soon be converted to pedestrian use although it was not designed for this purpose. Kassel's "Treppenstrasse" (Step Street) and limited pedestrian areas or streets in the centers of Exeter, Kiel, and Duesseldorf are other examples.

While these and similar cases may be considered the frosting on the cake of otherwise conventional shopping arrangements, accounting for only a small and sometimes minute portion of a city center's total retail trade, Coventry's pedestrian shopping district is *the* retail center for that city's 300,000 people and its hinterland. Here, all major stores are located in the pedestrian precinct of 101 acres. And an earlier compromise with the pedestrian principle that had resulted in a major street bisecting the center is now being given up; the street will revert to pedestrian use as originally planned.

In Coventry, as well as in the previously mentioned cases, the installation of planned pedestrian shopping in city centers was made possible by large-scale war destruction that permitted a completely new layout. But pedestrian shopping in central areas is also coming to the fore in large peacetime renewal projects. Probably the biggest of the pedestrian shopping plazas now in existence is an integral part of Stockholm's Nedre Norrmalm renewal project. Comprising about 100 stores, a number of restaurants, and a movie theater, the plaza has a pleasantly irregular (trapezoid) shape and provides a most effective contrast to the five tall office towers in parallel formation which form the core of the project. The plaza's two-story buildings are capped by charming roof terraces with gardens and, among other things, space for a supervised playground where mothers can "park" their children while they shop. Flower pots, kiosks, and benches add to the enjoyment of the center. Footbridges connect the

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A small pedestrian shopping street in the rebuilt downtown of Duesseldorf ***(1)*** *is one of several similar German examples, less publicized than Coventry's pedestrian center or Rotterdam's Lijnbaan. The reconstructed Old Town market square in Warsaw* ***(2)*** *is a rare instance of intimate arrangements of space.*

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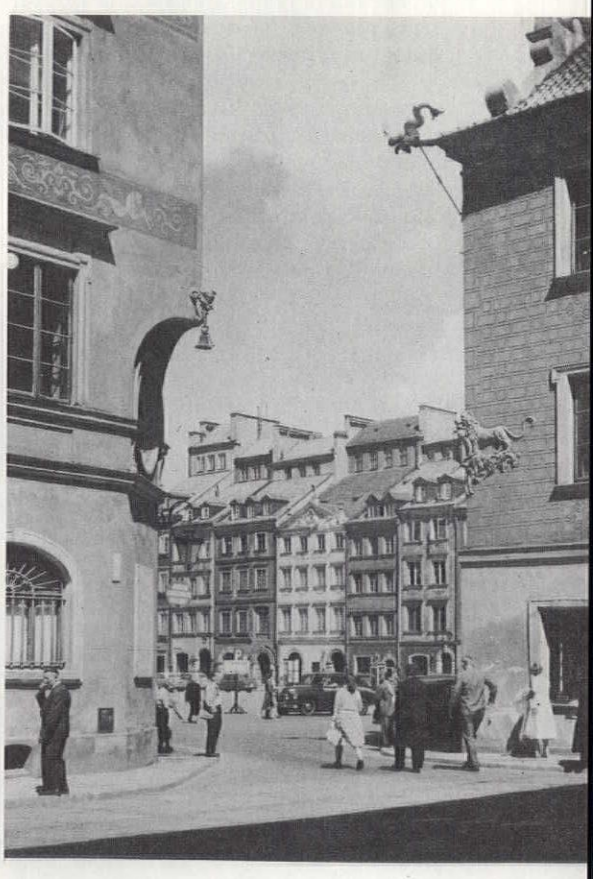

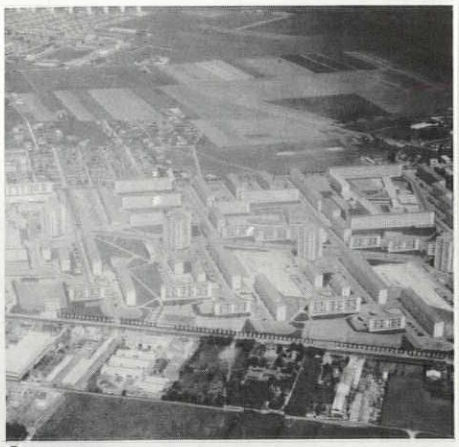

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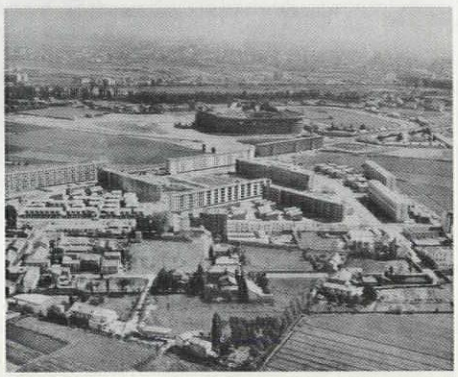

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In The Hague can be found a case of suburban apartments arranged in formless "open planning," no better and perhaps worse than our most dreary single-family house developments of the postwar period ***(3)****. Another illustration of the bad postwar apartment suburbia, even in medium-sized European cities, is an example from Caens* ***(4)****. In Milan (Zone S. Siro), open-planning poorly applied also shows the startling increase in scale compared to earlier development* ***(5)****. Stockholm's central area renewal (Nedre Norrmalm) is a good example of land use mixture; the five office towers are balanced by the low-rise pedestrian shopping plaza and the older opera house, and, in summer, the outdoor market fronting the opera* (lower right in photo) *further enriches the scene* ***(6)****.*

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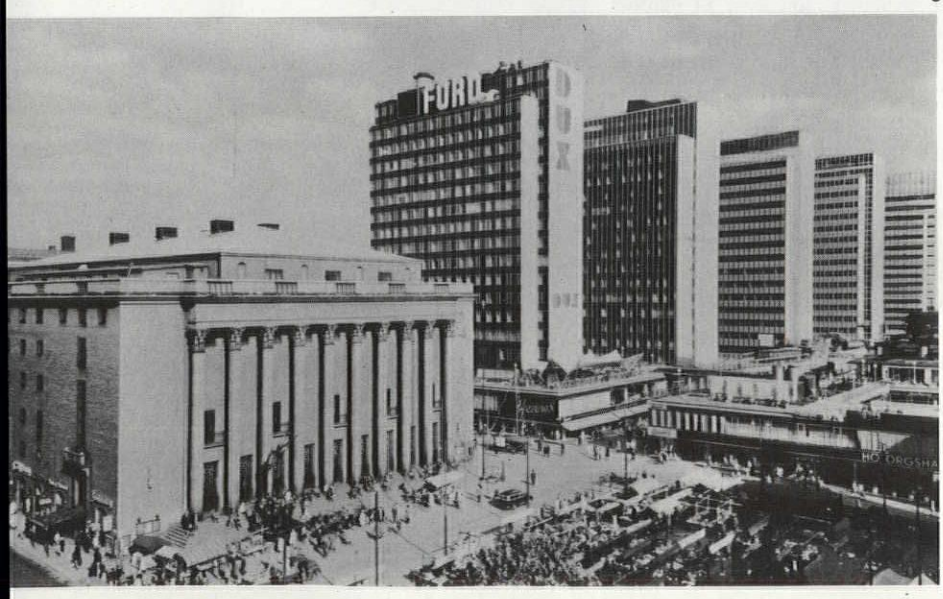

buildings in the shopping plaza with the office towers, and, at the upper level, with each other. The pavement in the pedestrian plaza can be heated for easy snow removal. The combination of the pedestrian shopping area with a major office center has created a thoroughly alive, new section of the city. The Dutch city of Vlaardingen furnishes another example of a smaller pedestrian shopping plaza planned as part of a central district renewal project.

Even where the maintenance of existing street patterns militates against the full-fledged adoption of the pedestrian shopping principle, compromise solutions seem to be more readily accepted than in the United States. Following in the tradition of Amsterdam and a few other European places, an increasing number of cities are closing streets to vehicular traffic during the main shopping hours and limit merchandise delivery to less busy periods of the day. As an afterthought to the reconstruction of their centers, Bremen, Essen, and Munich, for example, have installed—or are planning or extending—pedestrian shopping streets and areas. On the other hand, Coventry seems to be the only case in which the entire business center has been revamped on the pedestrian principle in such compact fashion that shoppers are saved from excessive walking. To this writer's knowledge, no other European city has accepted the radical solution of removing vehicular traffic altogether from its entire center, which has been advocated by a few planners in the United States. Even in a relatively small city such as Delft, the central area is felt to be too large to keep traffic completely out of it, given a street and building pattern that cannot be changed without destroying the town's historical character.

It would be an exaggeration to say that the new pedestrian shopping facilities in central areas have been an unqualified success. In cases of "two-tier" (multiple-level) shopping arrangements, for example, the space in the upper story is not easily rented to stores of lower rent-paying capacity for which they are designed, and the main stores at street level often are not interested in this additional space. Public stairs to the upper level keep out the old and infirm and are in danger of becoming play-space for children. If parking facilities are provided on roofs of buildings along the rim of the pedestrian shopping plaza, as they are in Coventry, entry

from and exit to the traffic streets surrounding the plaza are difficult during main shopping hours. An analysis of experience with the various types of pedestrian shopping arrangements, including a record of investment experience, still remains to be written. Nevertheless, some *prima facie* evidence of satisfaction is provided by the current expansion of postwar projects such as Rotterdam's Lijnbaan and the Coventry center, as well as the adoption of the principle in urban renewal areas and its spread to central business districts originally not designed for pedestrian shopping.

Is The Block-Front Doomed?

As one reviews the new shape of European cities, expressed mainly in recent suburbs as well as in reconstruction or renewal areas, what is striking is the extent to which the built-up block front has been abandoned in favor of the "open-planning" principle that orients buildings to prevailing winds, sun, and air. Few will question the superiority of this principle or the weaknesses of the closed-block system as practiced in the 19th and the early part of the 20th Centuries. Few will doubt the liberating effect on planners and designers of the super-block and the economic and amenity advantages that can often be realized from it. Yet, one cannot but wonder whether a revolt against an unsatisfactory system, or perhaps merely its unsatisfactory application, has degenerated into a new fad. It almost appears that no planner or any self-respecting group of city fathers wants to be caught dead with a project so old-fashioned that it maintains and improves the block-front. In this case, we might learn from Europe's faults (as well as our own) and try to avoid them.

The trouble with the open-planning principle is that it is now often applied with little attention to the technical features that warrant its adoption. Moreover, it relegates streets to the sole function of accommodating traffic and ignores their other purposes: to facilitate and encourage trade or social mingling, and to provide protection against wind and weather. Further, structures placed on the new principle often fail to give occupants the sense of enclosure that many people seem to prefer. Worse, few designers have been able to arrange the open spaces between buildings in such fashion that they add up to a visually meaningful and therefore aesthetically satisfactory pattern replacing the form values of "corridor" streets. There is a dearth of contrasts or unexpected vistas. One is reminded of Lewis Mumford's statement that many projects of the open-planning type show "purely capricious and aimless free forms." Or they give the impression of strict regimentation and utmost monotony. In some of the large new suburbs in the Netherlands, for example, all buildings are arranged in a rigid rectangular pattern apparently caused by the physical shape of the "polders" reclaimed from the sea, on which the development takes place. Some of the London County Council projects, on the other hand, show a more imaginative and additive treatment of open spaces.

As open planning becomes a fashion, other possible arrangements of buildings seem to be forgotten. Except for pedestrian shopping areas, one rarely finds enclosed squares and plazas of a more intimate character. The residential superblocks with large interior courts, which characterized much of the "progressive" housing of the 20's, are seldom duplicated in current projects. Improved versions of the closed block front, in the form of buildings punctured by open spaces between them, are few and far between.

So widespread is the adoption of the open-planning principle, and so poor is its execution in many instances, that the few cases of regular street-fronts in large reconstruction or renewal projects offer the observer a feeling of positive relief. Warsaw is a case in point. Not only have the block-fronts in the rebuilt Old Town been religiously restored, but the residential structures back of them and elsewhere have often been arranged around large courts, with bridge buildings over streets and with footpaths offering surprising vistas as one wanders from one area to the next. The landscaping and maintenance of the public courts and other spaces are mediocre by Western standards, but to this reporter the planning seemed richer and more varied precisely because it was not controlled by one single idea. The much more elegant and architecturally more distinguished Hansa Viertel in West Berlin, where a large residential quarter in a fairly central location was rebuilt completely on the open-planning principle, appears to be poorer on this score. Again, the reconstruction of Rotterdam emerges as a superior achievement because it shows a judicious admixture of corridor streets and open planning. One shudders to think what Rotterdam would look like if its planners had been tempted by the theoretical possibility of a large center built solely on the principle of informally arranged building masses.

A reaction against the open-planning fashion is already being felt in some of the European countries, especially in France. To provide a sense of enclosure and social cohesion, for example, some of the newer suburban courts, and the residential portion of the Région de la Défense renewal project in Paris, will be executed on the same plan.

Other Notable Characteristics

There are still other instructive planning characteristics in European renewal that deserves at least brief mention. One of these is the bold and frequent combination of redevelopment or reconstruction with major traffic improvements for which there are few parallels in the United States. In this respect, our strict legal, administrative, and financial separation of the urban renewal program from city planning and urban transportation may be a handicap. Another distinctive feature of many of the larger European projects is the separation of traffic between pedestrians, moving and stored individual vehicles, and public transportation. The degree of traffic segregation that is being accomplished in the Nedre Norrmalm area of Stockholm, in London's Barbican scheme, and in the Région de la Défense project of Paris, has few counterparts in our own renewal efforts. Finally, one is impressed with the growing attention to the conservation and rehabilitation of historic town centers and architectural ensembles of cultural value, as well as individual monuments and buildings. This is, of course, no new development, but it has been intensified in recent years and is rapidly becoming a significant ingredient in European city renewal. Our own motive for the conservation and rehabilitation approach to urban renewal is mainly economic. This motive is strongly reinforced in Europe by the desire to preserve the rich cultural heritage embodied in its cities and towns. Although the American observer may sometimes feel that not all of the objects are worthy of the zeal of "preservationists," he can only applaud the general objective and wish for a more positive public attitude and policy concerning our own, much poorer and more scattered assets of this type.

GUEST APARTMENT

INTERIOR DESIGN DATA • APARTMENT FOR HALLMARK CARDS INC. • KANSAS CITY, MISSOURI • INTERIOR DESIGN BY ALEXANDER GIRARD, ARCHITECT

A novel point of the program for Hallmark's guest apartment was to carry out a corporate image in a residential interior. The apartment, designed for reception and accommodation of dealers and guests, is located on the top floor of the company's headquarters building. To some, Hallmark is known only as a purveyor of sentimental greeting cards, but the firm is also one of the country's most progressive card manufacturers, as anyone familiar with their Skira reproductions of the "old masters" recognizes. Further, Hallmark has sponsored a superb series of dramatic productions on television, among which the recent "Macbeth" starring Dame Judith Anderson and Maurice Evans was notable. It was in keeping with this image that the firm commissioned Alexander Girard to design the interiors which are shown on these pages.

The apartment has a central reception hall (*this and facing page*), which is flanked on each side by bedrooms and baths; a living area with dining room, study, and serving kitchen is at the far end of the central space. All has been designed for easy maintenance as well as for comfort and convenience. But in this, as in his other work, Girard has gone beyond these essential requirements to produce a composition that has an aesthetic of its own.

The composition is most intricate in the central space (1), which is used as a conference room—informal since it has no conference table, but not without grandeur. This space also serves as the central circulation area to the other rooms of the apartment. Its white tile flooring, then, is not impractical for the greater amount of traffic this room will bear; but the tile grid is used visually as well. A thick rug laid on top of it (5) has a pattern of squares and diamonds set diagonally to the grid of the tile. Rising above a garden pool (4) is a fountain, the square troughs of which are set in tiers placed diagonally one above the other (3); the pattern of squares is thereby extended vertically from plane to plane. Along one wall of the conference room is a showcase containing part of Hallmark's antique card collection and related objects that Girard

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has assembled. The display has been arranged as a "three-dimensional mural" by extending the cards from the wall on pins **(2)**. The placement of the square and rectangular cards at different distances from the wall is analogous to the various levels of squares in the fountain, rug, and tile.

This kind of pattern-on-pattern manipulation is shown dramatically where the malaga onyx seems to fuse with the pattern of the rug **(9)**. The use of pattern-on-pattern is a technique not frequently attempted in the modern interior.

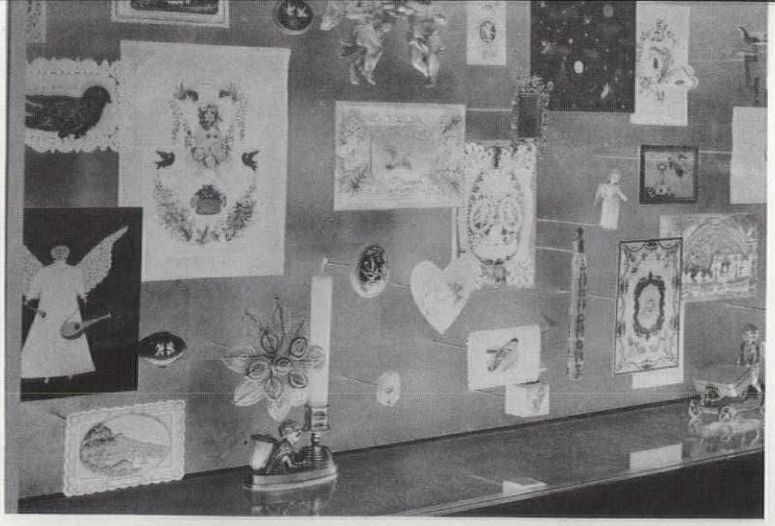
Girard manages to turn many of the elements in this interior to both practical and aesthetic advantage. The fountain and plants, for instance, are included in the room not only for visual effect but also to give life to a windowless interior space. The square skylight above the pool contributes visual interest, as well as providing illumination for the sustenance of plants. End tables are attached to the sofas as part of the over-all visual design; this construction also facilitates maintenance.

An equally intensive analysis cannot, perhaps, be made of the aesthetic of the other rooms, but the same interaction of practical results and visual effects is evident in them. In the bedrooms **(7)**, the bedside tables are wall-hung; electrical outlets are incorporated in them for telephones and dictating equipment; the box springs are upholstered, rather than having floor-length covers, and the spreads are tucked in simply all around **(8)**. The functions of these rooms have been anticipated so that no extraneous elements, such as electrical wires **(14)**, hinder either the practicality or visual effect.

The colors in the living areas are muted: earth-tones — dark sienna and sepia, terra cotta and orange—are used within white backgrounds punctuated occasionally by gold foil panels. The bedrooms and baths have brighter colors.

In the dining room, Girard has achieved a subtle combination of patterns, colors, and of old and new furnishings **(10, 15)**. As in his other interiors [p. 148, October 1962 P/A], he has used some antique furniture. Here, Regency chairs, which complement the sinuous lines of the Saarinen pedestal table, are also perhaps analogous to the antique greeting cards in the conference room. The backs of the chairs are caned; the seats reiterate this pattern in a checked upholstery of bright red and yellow squares. From a distance, these colors fuse into a muted gold.

Photos 1, 2, 4, 6, 7, 8, 10, 12, 16: Warren Reynolds, Infinity, Inc., Photos 3, 5, 9, 11, 13, 14, 15: Charles Eames



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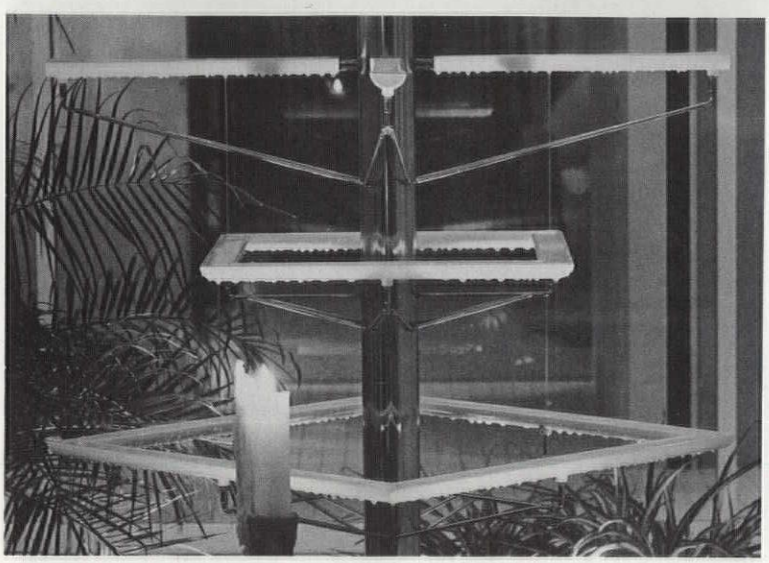

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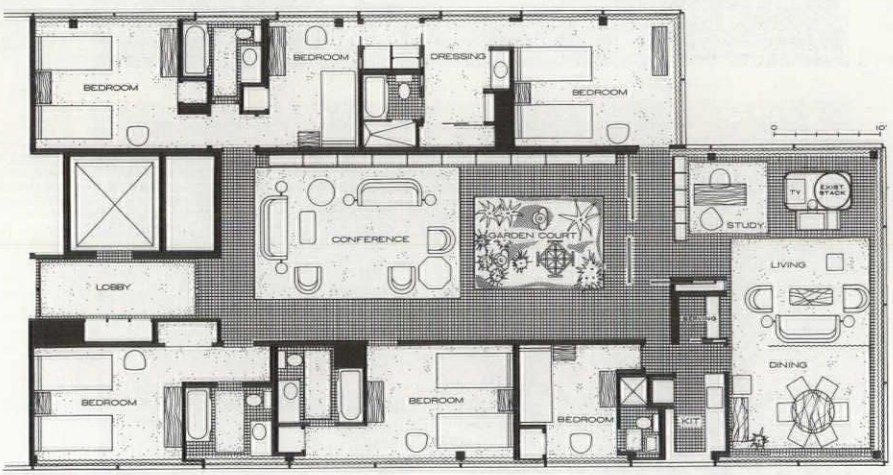

DATA: descriptions and sources of the major materials and furnishings shown.

CONFERENCE ROOM: Walls: white painted plaster; wallpaper / gold / Japanese / Kneedler-Fauchere. **Partitions:** aluminum / baked enamel / white / glass / Arcadia. **Flooring:** vitreous tile/white/unglazed/American Olean Tile Co. **Ceiling:** white painted plaster. **Doors:** teak/pivoted floor and ceiling/Girard design. **Door Hardware:** vinyl/white/Girard design/custom-made. **Carpet:** wool/rust, orange, pink, terra verte, terracotta, white, raw sienna/Girard design/from Morocco. **Lighting:** downlights / recessed / Lightcraft. **Sofas, armchairs, stool:** Girard design/custom-made/brass legs. **Upholstery:** sofas, chairs/sepia and sepia dark/"Caravan"; stool/dark sienna "Woodlot"/both Girard design/Herman Miller Inc. **End tables:** brass/attached to sofa/Girard design/custom-made. **Side table:** inlaid top/silver, brass/Girard design/custom-made. **Coffee table:** malaga onyx/brass legs/Girard design/custom-made. **Dimensional mural:** old greeting cards from Hallmark Collection, related objects/Girard design; gold wallpaper background. **Pool:** venetian glass mosaic/green/Italy. **Fountain:** seven tiers/vinyl coated metal troughs/chrome plated post and brackets/Girard design/custom-made. **Pottery figures:** Teodora Blanco. **Drapery hardware:** Silent Gliss.

LIVING-DINING ROOM: Carpet: wool/pale terra verte/Ernest Treganowan. **Sofa, armchair upholstery:** off-white/"Super Wool"/Herman Miller Inc. **Coffee table:** marble/brass/Girard design/custom-made. **Fireplace:** brass/Girard design/custom-made. **Sideboard:** marble/wall hung. **Dining table:** marble/white plastic/Saarinen design/Knoll Associates. **Dining chairs:** English/antique; cotton and nylon/"Millchek"/red, yellow/Girard design/Herman Miller Inc. **Curtains:** wool/natural/sheer/Moroccan. **Draperies:** Tussah silk/natural/East Indian.

STUDY: Carpet: wool/sienna/Ernest Treganowan. **Bookcase:** teak, brass, plate glass shelves; milk glass backs/Girard design/custom-made. **Desk:** teak, brass, beige Formica/Girard design/custom-made. **Armchairs:** natural leather/brass/Saarinen design/Knoll Associates. **TV-Photograph cabinet:** white/Formica. **Clock:** white enamel face/Girard design/custom-made. **Desk lamp:** white painted metal, chrome/telescoping stem/Altamira.

BEDROOMS: Carpets: browns and greens/Ernest Treganowan. **Beds, bedside tables:** teak, white plastic coated legs/Girard design/custom-made. **Chairs:** Eames design/Herman Miller Inc. **Fabrics:** all curtain and upholstery fabrics except as noted/Girard design/Herman Miller Inc. **Drapery hardware:** Kirsch.

The central space ***(6)*** *is officially a conference room—although it has no conference table—and the president of the firm uses it for informal meetings. The effect of luxuriousness in this space is due to a manipulation of forms and patterns* ***(9)*** *more than to colors—primarily earth tones—or textures, although these contribute to the effect.*

In some of the bedrooms ***(7)*** *and baths, draperies of a square-and-diamond-patterned material have been used. Other elements of the bedroom interiors are designed for easy maintenance, simple convenience, and the uncluttered look of these two aspects of efficiency* ***(8)***.

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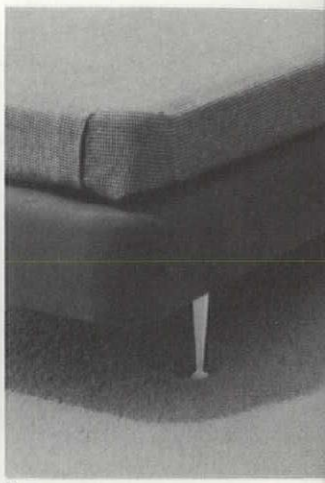

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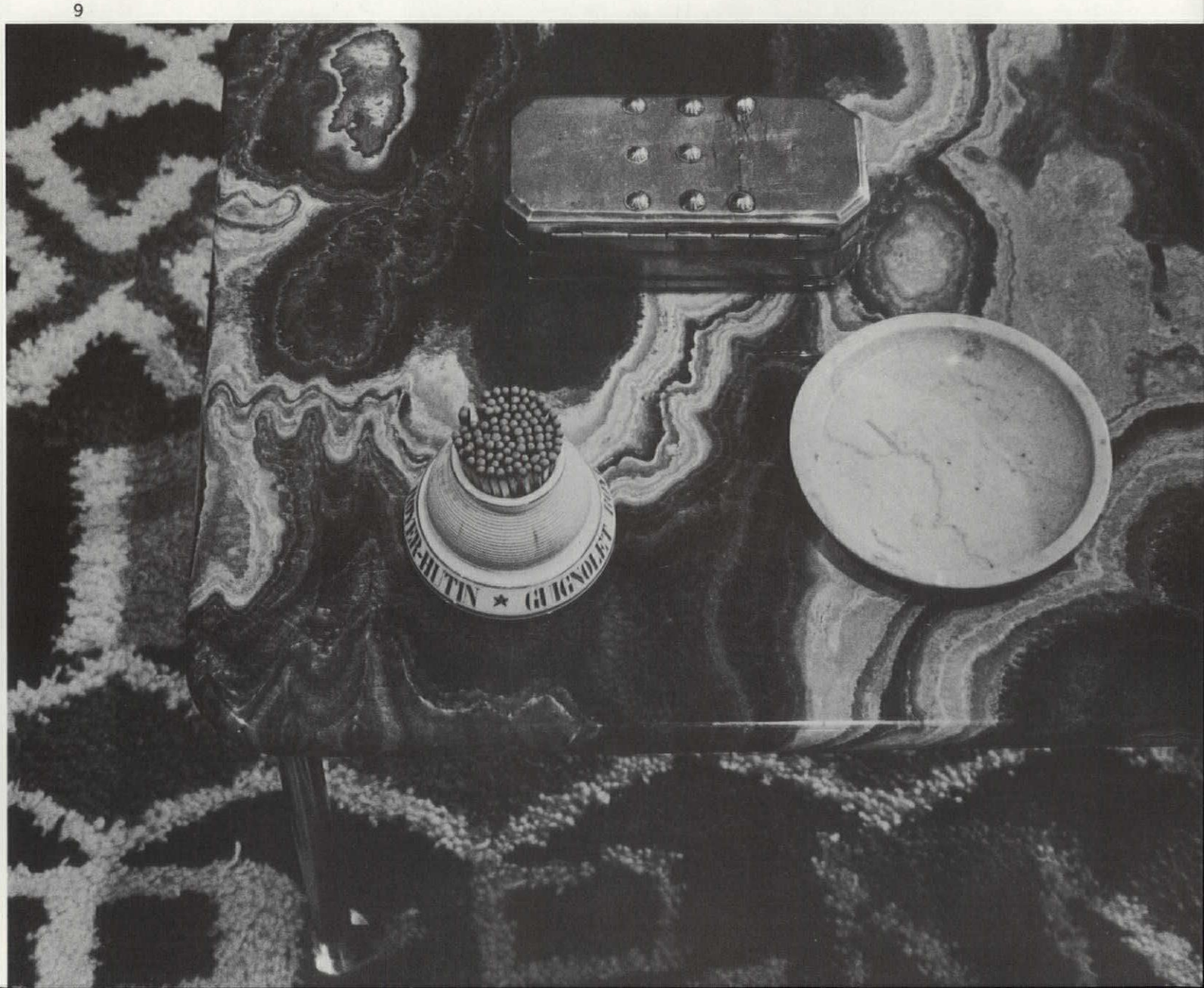

The living-dining room and study (this and facing page) *comprise an open-plan living area that is linked to the conference room by the use of tile flooring and area rugs throughout. In contrast, wall-to-wall carpeting is used in the bedrooms. The living area is separated from the conference room visually by a bookcase wall* ***(11)****, which has a milk glass backing, and acoustically by a glass and aluminum partition and sliding door. The dining room can be screened from the living room by drawing a drapery between them along a recessed ceiling track* ***(10)****. The atmosphere of this living area is calm, owing to a restrained use of pattern, but a dramatic view of the city can be revealed by opening the window coverings* ***(12)****.*

In these rooms, Girard's attention to the details of interior design is exemplary. The functions of the spaces have been worked out so thoroughly in advance that no extraneous element mars the intended visual effect. For instance, television and phonograph are neatly built in ***(12, 13)****; outlets are set conveniently in the floor to accommodate portable reading lamps (identical telescoping lamps are used for both floor and desk positions); the cord of the desk lamp is concealed in a leg of the desk* ***(11, 16)****; connections for dictating equipment and telephone are also incorporated in the desk* ***(14)****, as they are in the bedside tables. Finally, meticulous alignments and proportions* ***(15)*** *are evident here, as they are throughout the apartment.*

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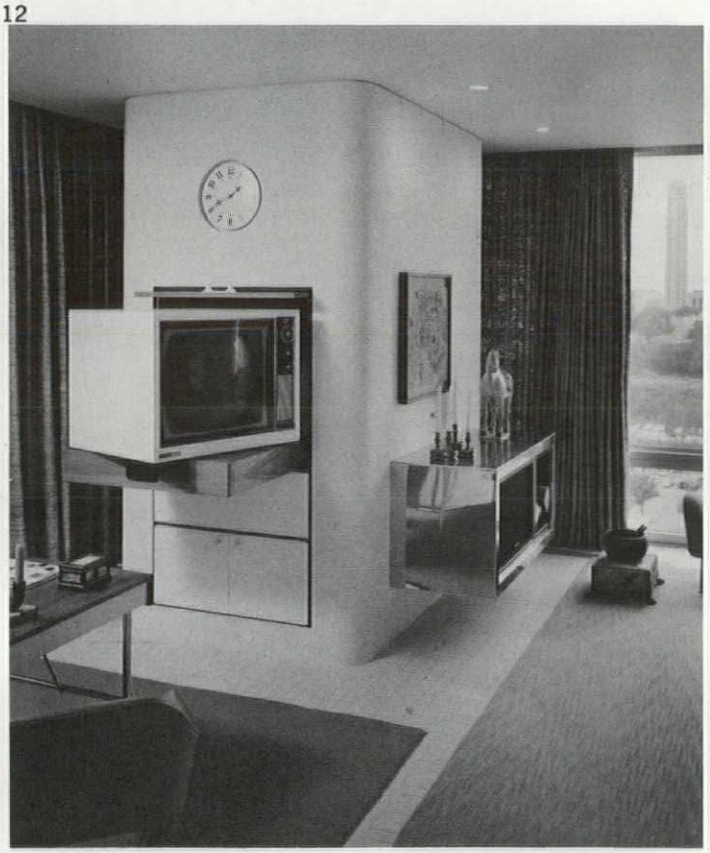

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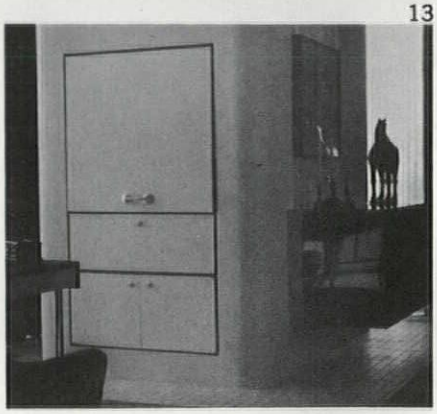

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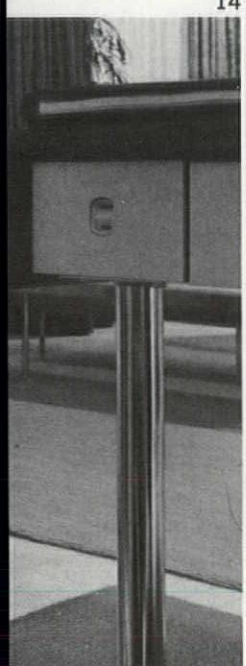

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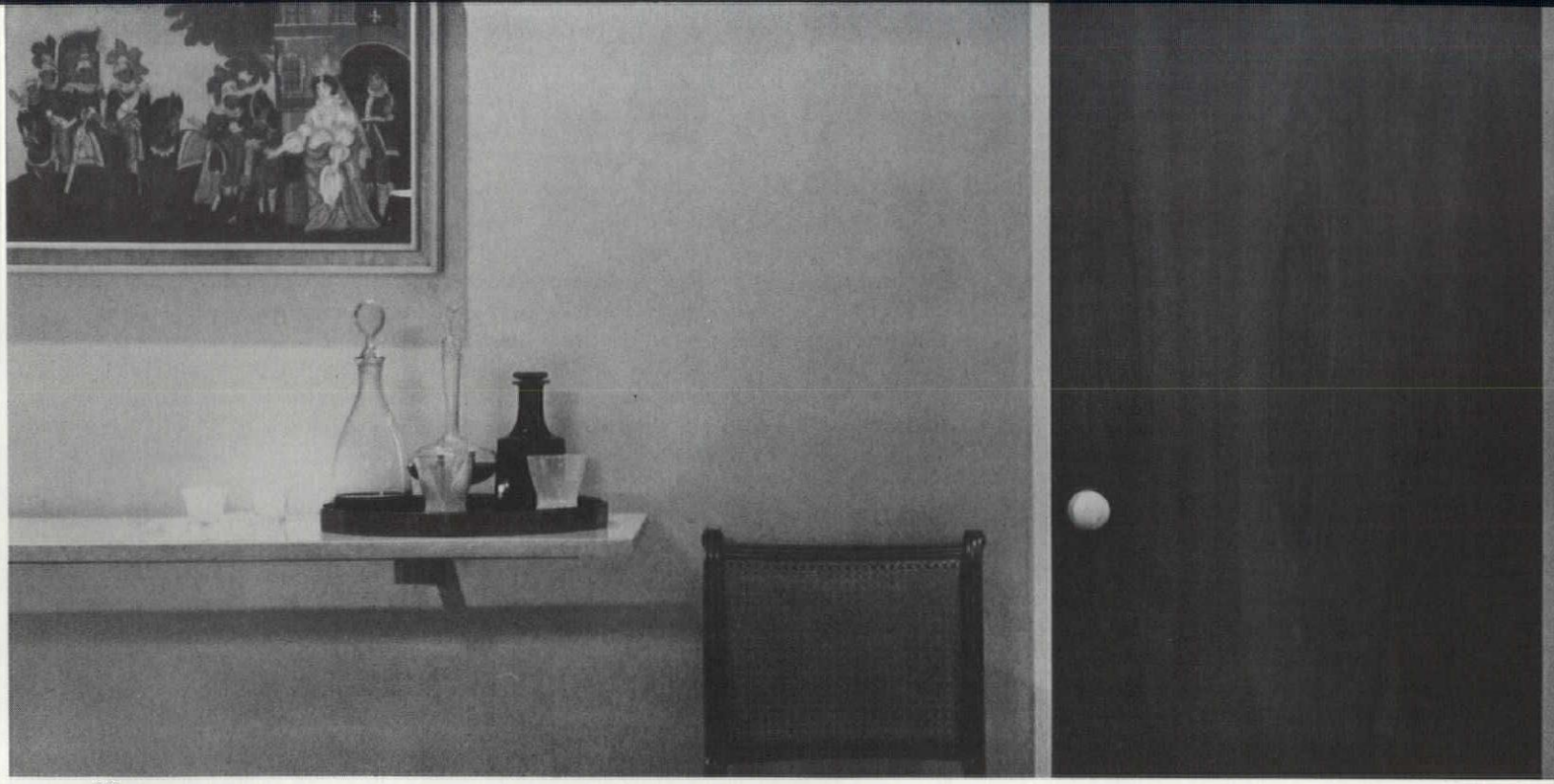

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ARCHITECTURAL COPPER METALS

BY HENRY E. VOEGELI

Utilization of architectural metals in building has shifted from elaborate castings and extrusions to simplified extrusions used in combination with formed sheet metal and tubes. Advances in metal-working machinery, improvements in applied economics, and a more venturesome attitude in design have all influenced this change.

To attain maximum efficiency and economy in the use of architectural metals, it is necessary to give careful attention to the kind and form of the metal, the details of construction, and the specifications that embrace all of the practical aspects of the work. The purpose of the following article is to point the way to the proper use of architectural copper *metals at the least possible cost, consistent with a high standard of quality.*

The author, now a consultant, was associated with Anaconda American Brass Company before retirement.

Of the copper-zinc alloys, those used in architecture are generally of a reddish cast; the only exception is yellow brass. To an architect, the word bronze has a richer connotation than brass; hence, some of the brasses that have a reddish color are called bronze. This may be justified in that these alloys do take on the color of real tin bronze upon aging. Copper-zinc alloys vary in hue depending on the proportions of the two metals. When the content of zinc is between 25 per cent and 38 per cent, the brass is yellow; however, when the percentage of zinc is above or below these amounts, the metal has a reddish cast. Some of these are the architectural metals called bronze. Charts containing essential information on architectural metals, in which copper is the main constituent, are shown on subsequent pages of this article.

Architectural Copper Metals

Copper. Copper is superior for exterior use where a blue patina is desired. No copper-zinc alloy will take on so uniform a color. Copper is quite economical in sheet form, but less so in any other. Extruding is difficult, except for sections having considerable thickness. Tubes, rods, and drawn shapes are readily available. Copper is not often used in combination with copper-zinc alloys because the bright copper is redder, weathers much darker, and has a tendency to develop a patina earlier than the other architectural copper metals. Copper has satisfactory engineering qualities: it solders easily and readily lends itself to welding. There is no danger of stress corrosion (season) cracking.

Everdur. Everdur is a copper alloy that contains no zinc or tin, but instead contains silicon and manganese. Many believe it to be the most attractive of metals, having a reddish, old-gold color with a faint brown tinge. Everdur should be used architecturally only when it is to be viewed at close range. This metal should be given a bright finish; otherwise its distinctive color is lost and the additional cost of several cents per pound is unwarranted. Everdur is not particularly appealing when used in combination with other copper-alloy metals, with the exception of nickel silver. Therefore, like copper, Everdur should be applied by itself. Moreover, there is no advantage in giving this metal an oxidized finish, since it would then produce an appearance approximately equaling that of expensive metals that are oxidized.

Outstanding physical characteristics of Everdur are high strength and ease of welding. It is a good engineering metal, especially for pressure vessels where tensile, shearing, and bearing values are of primary concern. Where bending moments or deflections are involved, Everdur has little advantage over less expensive alloys because of its relatively low modulus of elasticity.

Red Brass. This metal can easily qualify as a bronze. It has an attractive reddish cast and weathers to a rich, statuary bronze better than other metals. The colors of red brass strikes a good balance between that of copper and yellow brass. When the metal is given a bichromate dip, it has a color similar to Muntz metal and architectural bronze. Red brass is used in combination with these alloys, usually in the form of tubes. Because of the near color match, and the fact that red brass is somewhat less expensive, it has replaced commercial bronze, which had been used for store-front trim for many years.

Red brass is preferred for brake-formed, shape rolled, and drawn shapes from sheet material, and for drawn tubular shapes. Sheets up to 24 in. wide and tubes up to 4 in. in diameter are most economical.

Muntz Metal. This is the most popular copper-alloy sheet metal. Its color is identical with that of extruded architectural bronze; therefore, these two metals are used together almost universally. Muntz metal is attractive when finished bright or when oxidized, and it weathers to a yellowish bronze. It is the least expensive copper alloy.

Since Muntz metal is known as a high-zinc alloy, it should not be given sharp bends or subjected to severe working without relief annealing. There is a tendency toward stress corrosion cracking, as observed in the manufacture of deep-drawn articles. Experience in architectural metal work with brake-formed, right-angle bends, however, has been quite satisfactory.

Muntz metal can be joined by the usual techniques applied to metals. Its physical properties and workability are good. However, due to its being a high-zinc alloy, and in view of the critical deflection of sheet metal, the maximum working stress should not exceed 8000 psi.

Architectural Bronze. This is *the* extrusion alloy and the most commonly used architectural metal. Architectural bronze can be extruded into an infinite variety of shapes, and is readily available in a wide assortment of angles and channels, as well as in round, hexagonal, and rectangular rods. Since the metal is not available in the form of sheets and tubes, it depends on companion metals—such as Muntz metal sheets and red-brass tubes—for a complete architectural design. Its color and that of Muntz metal are identical. Red brass, although it has a reddish tinge, is usually acceptable for color match. A bichromate dip removes the reddish blush. It seems probable that improvement in future production methods will make it possible to produce extrusions, sheets, rods, and tubes of one alloy.

Physically, architectural bronze is known as a dead metal, or lacking in fiber, due to its being extruded in a semimolten state. Its strength and machinability, however, are satisfactory. Another high-zinc alloy, it should not be stressed over 8000 psi. This limitation is not a serious one, since the limit of allowable deflection due to bending moment is usually reached before the 8000 psi fiber stress can occur.

Yellow Brass. Like copper and Everdur, yellow brass does not look especially well with other alloys of copper, except for the white metal nickel silver. Yellow brass by itself is the best choice for interiors in which the lighting is principally artificial. Light reflected from yellow brass has a

color and radiance that enlivens its entire surroundings.

One should not mix yellow brass with architectural brasses having a reddish tone, because the colors of these metals tend to clash. An otherwise ideal effect can be spoiled by simply using yellow brass screws in an assembly of Muntz metal and architectural bronze. Like all copper alloys, yellow brass is ductile, tenacious, and has excellent machinability and workability.

Nickel Silver. Alloying copper, nickel, and auxiliary metals produces a warm, white metal. This metal can be extruded and is available in sheets, rods, and tubes. For each of these, the alloys are modified somewhat, yet the color match is good. The richest and most lasting effect is obtained with 13 per cent nickel-silver extrusions, in combination with 15 per cent nickel-silver sheets and tubes. A white metal effect having a yellow tinge is produced with 10 per cent nickel-silver extrusions combined with 10 per cent nickel-silver sheets and tubes. Rods of all sizes and shapes are usually extruded.

When first applied, the 13 per cent nickel silver is silvery white; it then ages to a silver gray with gleams of yellow and green. The 10 per cent alloy is faintly golden white and ages to a yellow white, or greenish-yellow white, on outdoor exposure.

Methods

Structure. Metals used in buildings are usually subject to bending, buckling, and deflection. These conditions require fairly thick sections, regardless of the material selected, and the most critical characteristic involved is the modulus of elasticity. Heavy sections as well as rods and tubes are possible in extruded aluminum and bronze; however, the respective E values of 10,000,000 and 15,000,000 generally make related engineering uneconomical. Stainless steel has a higher value, but this metal is more frequently employed in sheet form. It generally follows, therefore, that architectural metals should have a framework or backing of structural steel or sheet metal in large work, or wherever it proves economical.

Selection of Material. Good design can be achieved in many ways and with the utilization of the various metal arts. An architect has a broad choice: he can employ the product of the casting shop, the extrusion mill, the shape rolling and shape drawing machines, the bending brake, and the drop hammer. In addition, he can avail himself of the various metal arts of the sculptor.

Castings. Bronze casting is a noble art. Examples range in dignity and quality from the 15th-Century doors at the Baptistry in Florence, by Lorenzo Ghiberti, to semiengineering castings such as easements for stair rails or architectural junctions for thrust members. Bronze is capable of producing the finest detail with well-defined arrises and quirks that last indefinitely. Good work in cast bronze is among the highest of arts: its survival depends on appreciation by those who can afford it, and on the interest and design ability of the architect.

Extruded Shapes. Extrusions offer the designer a medium in which he can be confident of sharp features and straight surfaces. These essentially produce designs of straight lines and moldings that are suitable for windows, panels, entrances, elevator fronts, stairs, and grilles.

Shape Rolling. Shape rolling of sheet metal provides great economy through high-speed production if large quantities of one configuration are required. Conversely, the cost can be too high if only a small amount of material is needed. Rolled shapes are suited for windows, roofing, wall facing, skylights, door frames, and so on. Except for simple forms, the tools are expensive. The common metals for this process are Everdur, red brass, copper, and nickel silver.

Drawn Shapes. Many of these are made of strip metal, but the primary advantage is in the forming of architectural shapes and tubes. Red brass is the popular metal. There is a problem, however, in avoiding camber and twisting. Lengths up to 20 ft are common.

Brake Forming. Sheet metal can be brake-formed economically. Metals up to 1/32 in. in thickness can be formed with a hand brake; thicker metals, up to 1/8 in. or more, require a power brake. Available lengths are usually 8 ft and 10 ft respectively.

Metal Stamping. Embossed designs in sheet metal can be produced with the aid of the drop hammer, using positive and negative dies. This involves modeling, casting, and a knowledge of metal stamping. Dies are of lead and antimony, Kirksite, and steel, when the quantity permits.

Sculpture. There is sculpture in cast metals, welded metals, strip metal, embossed-sheet metal, forgings, and extrusions. Free-form architectural art is a product of unusual design ability and good craftsmanship. Unfortunately, it is hard to come by. Although the sculpture and metal worker are not highly paid, the cost of their art work is too often looked upon by architects as something that they can forgo. A great deal of attention is given to straight-line ornamentation with extrusions and molded shapes, while the sculptor is waiting. There is beauty in plain surfaces and regular geometrical forms, but when used exclusively they may produce an architecture that is sterile in appearance.

Selection of Materials and Methods

General. The main influences in the selection of materials and methods are: style of architecture, adaptability of design to prevailing techniques and trade practices, and the ratio of cost and quality.

An ideal architectural metal would be one which is the least expensive, yet has all of the essential qualities of durability, beauty, and workability; and which can be joined by welding or other means to make the joints invisible. This ideal metal is not yet known, but there are some that qualify in several respects.

Related Metals. Muntz metal is lower in cost than other copper alloys because of its high zinc content, zinc being less expensive than copper. This metal can be made into castings, extrusions, tubes, and sheets; however, at present it is offered only in sheet form.

Architectural bronze is next to the lowest in price, and is used exclusively for extrusions. Because extrusions must, of necessity, have considerable thickness, designs in this metal are not inexpensive. Welded joints in architectural bronze can be made practically unnoticeable.

Red brass, also a popular metal, is offered as tubes and sheets, but is not extruded.

Everdur is perfect for welding. Joints can be made absolutely invisible in heavy gages.

Nickel silver lends itself to architectural forms of all kinds. It is somewhat higher in cost because of the nickel content and its tougher working qualities.

Metals for scultpure consist chiefly of castings, forgings, sheet metal, or plates.

Bronze at a Price. The least expensive work in bronze is executed with Muntz metal sheets. They are appropriate for

brake-formed design elements and heavy-gage flat stock, or lighter Muntz metal bonded to rigid board for wall facing and panels. Sheets in gages .040", .050", and .064", up to 48 in. wide, are obtainable without costly extras. By far the lowest price in these architectural metals is that for flats and bars of extruded architectural bronze. These components are uniformly straight and corners are sharp. A design consisting of rods—of which there are hundreds of sizes—and Muntz metal sheet represents the ultimate in economy. These will provide good color and excellent color match.

Moderate Cost. Second in price, and equally attractive, is a design in red brass, utilizing sheet stock of .040", .050", or .064" gage, and about 24 in. wide, not exceeding 30 in. It is often used for mullions, muntins or battens of drawn, tubular red brass. This metal weathers to an exceptionally attractive bronze coloring and takes on an ideal statuary finish by the application of chemicals.

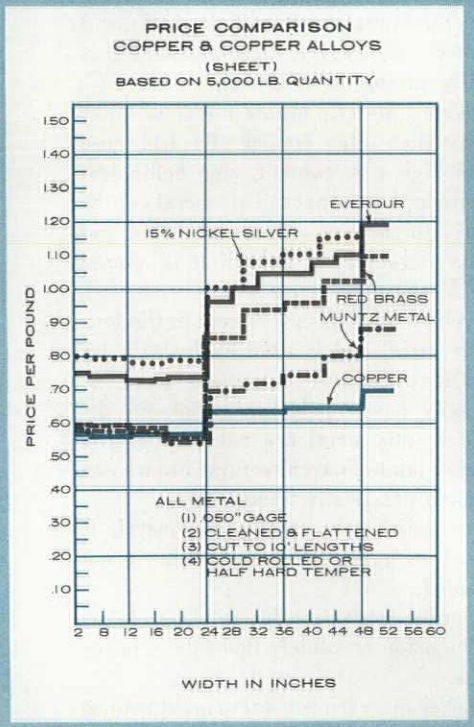
Standard Combination. When a design includes moldings, the standard combination of metals consists of extrusions of architectural bronze, flat portions or panels of Muntz metal, and tubular shapes of red brass. Many extrusion dies exist for various sized angles, channels, and rectangular rods, as well as hand rails, thresholds, and molded members.

Joining

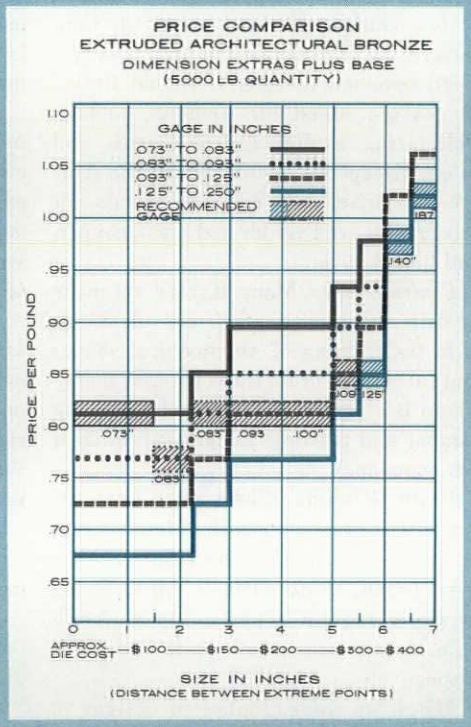
An essential consideration in the selection and use of architectural metals is the matter of joining. Quality of a finished work is judged largely by the workmanship at these locations. Completely satisfactory appearance will depend on the nature and character of the metal. Extruded architectural bronze affords an excellent opportunity to make a perfect joint. Its sharp corners permit a good butt joint, provided that the saw cut is accurate and fine and the parts are properly clamped together. A "dry" hairline joint is satisfactory for interior work such as show cases, show windows, and panel framing. In all such instances, perfection should be the aim; otherwise, the work will not be deserving of the high quality of the metal.

Welding. Top quality architectural bronze work is usually joined by welding. The oxyacetylene method is used with a reducing flame and bits of the parent stock as filler metal. The extruded metal is usually thick enough to prevent warping from the high welding temperature. A perfect joint will result if the operator carefully minimizes fuming, to avoid porosity in the joint.

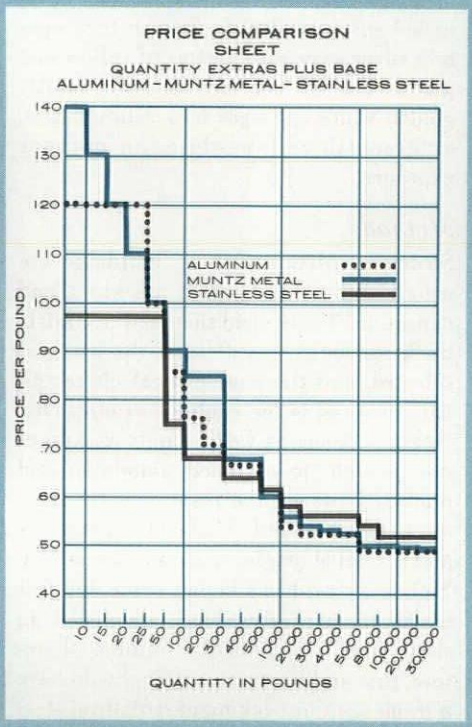
Brazing. Drawn shapes of tube, strip, or formed sheet metal are commonly reinforced and joined by mechanical means, or brazed with silver solder. These materials have the peculiarity of rounded corners in tubular sections and at bends. Since the metal is relatively thin, it is susceptible to buckling under the heat of welding. There are inherent tendencies to warping, twisting, and springing with



Prices shown are not absolute and do not represent a quotation. They are provided merely to demonstrate the relative cost of the alloys in .050" gage and in base quantities as of January 1, 1963.



Prices shown are not absolute and do not represent a quotation. They are provided merely to demonstrate the relative cost of extruded shapes of various sizes and gages in base quantities as of January 1, 1963. Recommended gages are only approximate and will vary with the simplicity or complexity of the shape.



Prices shown are based on the quantity extras plus the base as of May 1, 1961; aluminum — 3003, $.4640; Muntz metal — 66, $.5094; stainless steel — 302, $.5200.

these metals. However, hazardous as this may seem, it is not a problem with the skilled architectural metals fabricator. With his knowledge, hairline joints can be made that in many cases are indiscernible.

There is one important detail that should be remembered, particularly in the joining of door rails and stiles. Rounded corners will normally leave a crevice at butt joint. It is therefore necessary to burnish the metal at the joint, under a sanding belt or by other means, to make the joint flush and as thin as possible. A substantial thickness of metal and precision workmanship are essential.

Fabrication

Architectural design in metals makes use of square-cornered rods, extrusions, drawn tubular and open shapes, roll-formed shapes, and brake-formed sheets. Castings and other kinds of sculpture are made by the specialist and often finished and installed by the fabricator. This encompasses a broad variety of metals and forms, all of which require certain tools and special care.

Rods. Simple, straight-line designs, such as stair-rails, enclosure railings, and paneling, can economically be produced with rods. Parts can be assembled with screws and will look well if the joints are clean. Rods of architectural bronze, red brass, copper, and nickel silver have good physical properties and excellent formability. These metals can be bent, twisted, and forged; therefore, they are especially adaptable for wrought-metal designs.

Extrusions. These are the aristocrats of architectural metals. Accuracy of moldings and fineness of material permit perfect workmanship. A well-made miter, square cut, or coped joint is a pleasure to behold. A dry joint, or one that is brazed or welded, can be a work of art, whether the joint is noticeable or not. Extruded architectural-bronze rods, angles, channels, and molded extrusions permit good designs by themselves. Fabricating technique calls for perfect cutting and fitting at the end joints and miters, and expert grinding and finishing of welded joints. Extruded bronze can be soldered, brazed, or gas welded. The greater thickness of the metal in extrusions makes spot welding impracticable. Screw fastening is common, since the metal is thick enough to allow a good thread. Heavy-molded extrusions can be curved to a radius or formed into ramps and easements for stair-rails and other curvilinear components.

Drawn Shapes. Availability in tubular form, as well as in bent shapes from strip metal, are advantages of drawn shapes. These products are useful for mullions, muntins, girts, railings, and door stiles and rails. As a result of this process, external corners of tubes and outside surfaces at bends have a slight radius. This dimension is normally equal to the thickness of the metal; however, it can be reduced one-half by additional draws through a die. With drawn shapes, there is some uncertainty as to whether the material will be straight. Standard mill tolerances are greater than those that the architect will accept; hence, he must depend on the skill, resourcefulness, and reliability of the producer and fabricator.

Drawn shapes can be made of relatively light-gage metals, which accounts for their being the least expensive for work with average-size members. The cost of fabricating is also less, because the thinner gage of metal can be spot-welded economically; cutting and finishing are relatively simple. Drawn metals are as smooth as the die, which eliminates the need for surface treatment unless a special finish is desired.

Roll-Formed Shapes. (See earlier discussion.)

Brake-Formed Shapes. (See earlier discussion.)

Color and Finish

It is generally acknowledged that a fine satin finish with a statuary bronze coloring reaches a zenith in copper-metal finishes. To produce a first-class finish of that kind with other metals, colored with chemicals, may add 25 per cent to the cost of a contract. For practical reasons, all metal should be installed bright with a transparent protective coating such as lacquer. When exterior refinishing becomes necessary, the lacquer should be removed and the metal allowed to age. A well-rubbed coating of lemon oil will start the aging process and give luster to the metal. By cleaning dust and dirt from the metal

COMPARATIVE COST OF ARCHITECTURAL METALS

Quantities of 10,000 lb

Metal	Form	Base (approx.)	Extras Economical size	Price/lb (approx.)
Architectural bronze	Rod (extruded)	35.77¢	15¢ (2″ x 5/8″)	50.77¢*
Copper	Rod (drawn)	50.36	00 (2″ x 5/8″)	50.36
Everdur	Rod (drawn)	60.58	34 (2″ x 5/8″)	94.58
Red brass	Rod (drawn)	53.11	15 (2″ x 5/8″)	68.11
Nickel silver (10%)	Rod (extruded)	69.60	15 (2″ x 5/8″)	84.60
Architectural bronze	Shapes, angles, and channels (extruded)	46.48	49 (3″ x 1/8″)	95.48*
Copper	Angles, channels (drawn)	71.24	24.8 (2″ x 2″ x .050″)	96.04
Everdur	Angles, channels (drawn)	149.00	24.8 (2″ x 2″ x .050″)	173.80
Red brass	Angles, channels (drawn)	67.47	24.8 (2″ x 2″ x .050″)	92.27*
Nickel silver (15%)	Angles, channels (drawn)	90.57	24.8 (2″ x 2″ x .050″)	115.37
Copper	Tube (drawn)	57.32	27 (2½″ x 2½″ x .083″)	84.32
Everdur	Tube (drawn)	79.80	36 (2½″ x 2½″ x .083″)	115.80
Red brass	Tube (drawn)	57.23	28 (2½″ x 2½″ x .083″)	85.23*
Nickel silver (15%)	Tube (drawn)	84.27	36 (2½″ x 2½″ x .083″)	120.27
Copper	Sheet (cold roll)	56.13	15½ (30″ x .050″ x 120″)	71.65
Everdur	Sheet (cold roll)	61.39	75 (30″ x .050″ x 120″)	136.39
Red brass	Sheet (cold roll)	53.17	64 (30″ x .050″ x 120″)	117.17
Muntz metal	Sheet (cold roll)	51.94	38 (30″ x .050″ x 120″)	89.94*
Nickel silver (15%)	Sheet (cold roll)	68.57		

* These metals for color match.

every three months at the beginning, and rubbing with oil, a rich bronze coloring will gradually develop, usually within the course of one year. Rubbing alone will accomplish wonders; a metal must show care as well as color to be appreciated.

Economics

It is important for the architect to know the prices and limitations of the various architectural metals. These products are of a durable nature and should last the life of the building. It follows, therefore, that architectural metals are worth more and are consequently priced higher than materials that must be replaced. To architects who are not acquainted with the widespread differences in the prices of the different kinds of metals, and the contingent reasons, it may at first glance seem impossible to afford their preferred metal in a design. Actually, with a thorough knowledge of the economics involved, every building can have a reasonable amount of architectural metal.

Price of Metals. Architectural metals are priced on the basis of cost of the raw material and its manufacture. This is represented in a base price to which extras are added for size, gage, and quantity. Each type of material has an optimum size and gage that is easiest to make, while other sizes require more time and care. Quantity, an economic factor in all lines of business, is particularly significant in the application of architectural metals. For large contracts, quantity charges are of relatively little consequence; for small jobs, however, they require careful consideration. As a rule, each item must be of a particular alloy, shape, size gage, and temper in determining the "quantity extra"—only the length may vary. Round, hexagon, and square rods of any size can be combined for quantity. Information in the accompanying charts, relating to prices for various kinds and forms of architectural metals, will serve to acquaint the designer with some of the cost elements.

Price Analysis. In weighing the economic advantage of one material over another, all factors must be considered. For instance, architectural bronze rod is low in price per pound, but the shape is solid and heavy; an open shape, such as an angle, channel, or tubular form of a more expensive metal, may in certain sizes prove to be more economical. Likewise angles, channels, and irregular shapes of extruded architectural bronze are relatively low in price, but manufacturing limitations require that the thickness of extrusions be in the range of $\frac{3}{32}$ in. to $\frac{3}{16}$ in. Therefore, a drawn shape of a thinner gage may cost less, in certain sizes, even if the base price is higher.

Extras

Sheet material carries extras for width, thickness, and length; for cold rolling, patent leveling, for surface suitable for polishing; and for small quantities. In sheet material, all of the metals are economical up to 24 in. wide, in lengths of 72 in., and a gage upwards of .032 in. Heavy sheet stock from $\frac{1}{16}$ in. to $\frac{1}{8}$ in. thick, in widths up to 42 in. and in lengths of 72 in. or less, is used for panels. Muntz metal and copper are the most commonly used and least expensive, but red brass is also used because of its attractive color. Long strips of metal less than 24 in. wide, in gages of .050 in. to .101 in. and in lengths under 10 ft, are brake formed and used at entrances, vestibules, store-fronts, and for decorative facings. Muntz metal, red brass, and 15 per cent nickel silver are preferred (see chart for relative width and gage extras).

Rod stock of standard sizes has only few extras: for size, cutting to length, and small quantities.

The rods most suitable for architecture are those of extruded architectural bronze, red brass, copper, and nickel silver. Architectural bronze rods are preferred because of their square corners and straightness, and they are priced lower than the others, partly because of their lead content. The lead imparts a free cutting characteristic to the metal.

Rectangular rods of red brass and copper are not extruded, but, rather, are drawn. This method produces a smooth, hard, superior surface. The corners are slightly rounded, but relatively sharp corners can be made with additional draws; extras at the rate of about 15 cents per pound are added. The regular grade of rod with the small radius at the corners is usually acceptable for architecture.

Drawn seamless tubes have extras for diameter and thickness for shapes other than round, cutting to length, and for small quantities. Drawn open shapes have extras for size and gage, for the number of draws required, plus normal extras. Open shapes can be made up to 6 in. across or with about a 12-in. girth. Closed shapes can include up to about a 4-in. diameter. Lengths can be up to 18 ft, but 12-ft lengths are the more economical. The price of dies or setting up charges must be assumed.

Drawn shapes are usually made of red brass because of its appearance and excellent working qualities. Open shapes made by this process could be produced equally well and cheaper by shape rolling, but the cost of tools might be 10 times as high. Therefore, unless a large quantity can be assured, a die for making the shape on a draw bench is appropriate.

Mill Extras. The foregoing extras are all necessary to compensate for extra labor and expense at the mill. The conditions are similar in all mills and in the production of all architectural metals, whether they be of bronze, aluminum, or stainless steel. The selection of materials, therefore, resolves itself into three concepts: one presupposes that the architectural design is so significant that the best-suited available materials should be used regardless of the extras involved; another is bent on obtaining the lowest possible price, subordinating design to cost; the third is for a compromise, giving design first consideration but economizing wherever possible.

Fabricators Charges. There is not much opportunity to economize in the fabrication of architectural metals; only the best practice and workmanship can satisfy. The cost of fabricating is practically the same for all nonrust metals.

It is in the finishing of architectural metals, however, where money can be saved or wasted. In this matter, the good judgment of the architect is very important.

The most expensive finish is the high polish. It is not the buffing but the preparation that is expensive. This has a place in sculpture and cast finish-hardware.

The most suitable and most popular surface treatment for architectural metals is the "satin finish." The best quality satin finish with lacquer or other transparent protective coating may cost from 40 to 50 cents per sq ft, and may cost from 50 to 75 cents to refinish within a year or two. A top quality satin finish with a statuary bronze coloring, rubbed with oil, may cost from 45 to 55 cents per sq ft, and 25 to 50 cents per year for maintenance.

A commercial "uniform finish" is obtained by removing all tool and die marks with an abrasive; cleaning the metal with oxalic acid and rubbing with ground pumice or sea sand and cold water, using a bristle brush or burlap; and rinsing. This may cost 25 cents per sq ft, plus 10 cents for lacquer or rubbing with oil.

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[1] Specifications Clinic
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Prefab-Steel "Techbuilt"

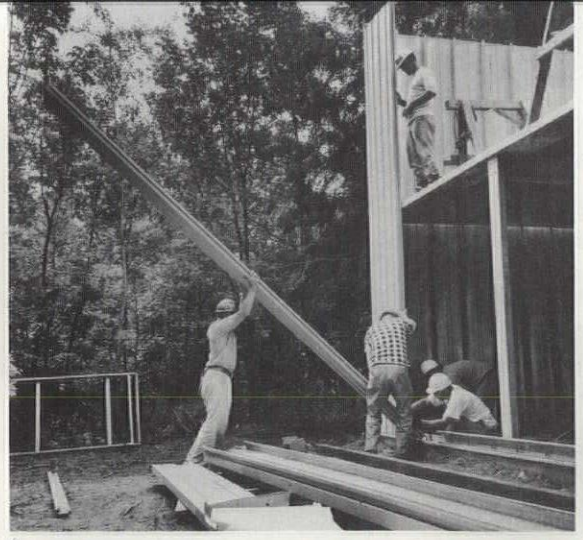
A research house, unique in that its new steel components are commercially available now, is the result of a three-year collaboration among an award-winning architect, a leading prefab-housing firm, and a major steel company.

When his newest Techbuilt house was opened recently in Yorktown Heights, N.Y., Architect Carl Koch called it "one of the greatest satisfactions of my career . . . the application of the best building tool in history—industrialization—to the segment of society that needs it most—our living environment."

The house is part of a project that was started in 1959, when Armco Steel Corporation commissioned Koch to develop new uses for light-gage steel in residential construction. Departing from an all-steel approach, Armco directed that steel only be used "where steel makes sense." The new Techbuilt house, similar in plan and general appearance to an earlier Techbuilt design, contains 9 tons of steel exclusive of carport (compared to 2½ tons in a conventional house). The complete building shell is of steel; the interior, with one exception (the intermediate floor-ceiling) is of traditional materials.

Main steel components are an exterior-wall system of prefinished panels, with a ribbed design that eliminates the visible joint between interlocking panels **(1)**; a window-wall system of C-sections that can frame fixed or sliding glass and a variety of wall panels **(2)**; a stressed-skin roof truss with roof sheet of heat-reflecting aluminized steel **(3, 4)**; and an intermediate floor-ceiling with integral air distribution **(4)**. Mass-production prefabrication of these components is expected to reduce construction costs by as much as 15 per cent. Price of this 2240-sq-ft house, for instance, is under $30,000 (exclusive of land). Speed of construction is a major factor—a crew of four can erect the steel structure in three days, and the house can be ready for occupancy within eight weeks after the foundation is in place. Reduced maintenance is built-in—the baked-on acrylic finish of the wall panels has an expected life of 10 years, and test samples of the roof sheet show no deterioration after 23 years.

Components are flexible enough to be used in all Techbuilt models, and are also applicable to dormitories, motels, and apartments. In fact, several of the systems were developed by Koch and Armco for a 28-unit apartment project in Middletown, Ohio, which was unveiled at the same time that the Techbuilt house at Yorktown Heights was completed.



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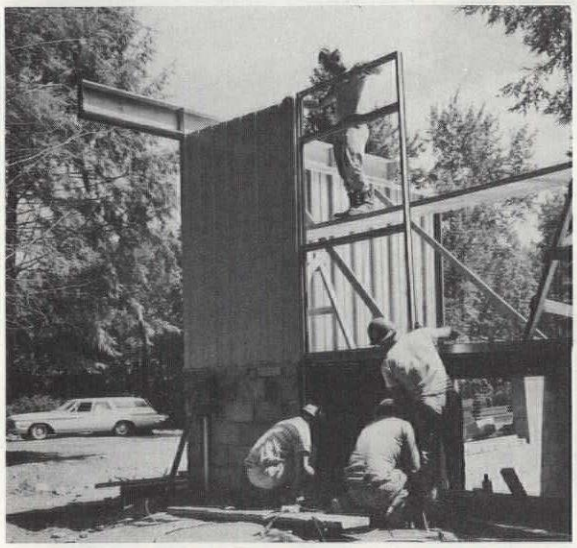

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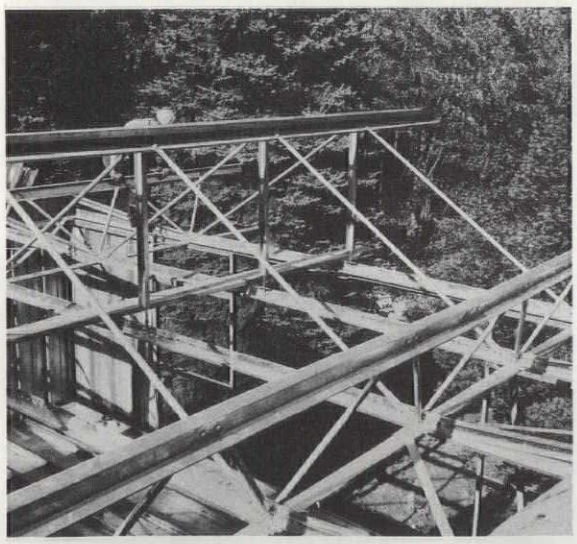

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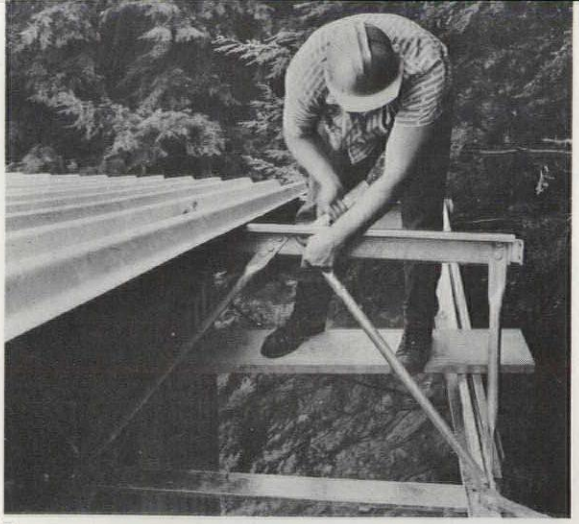

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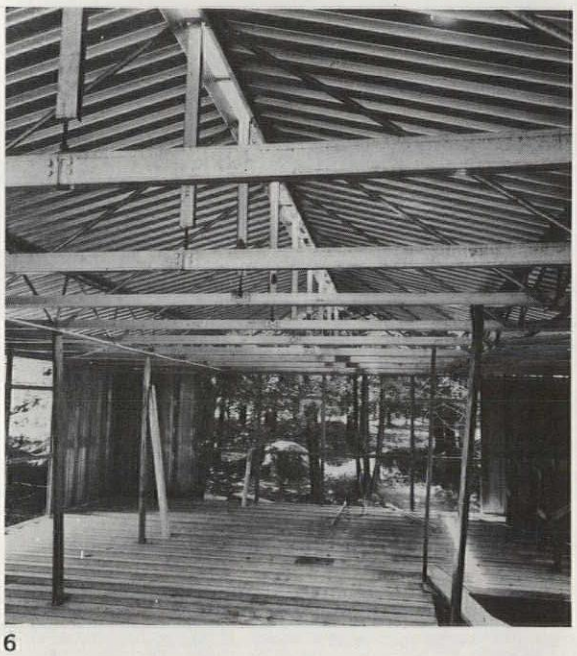

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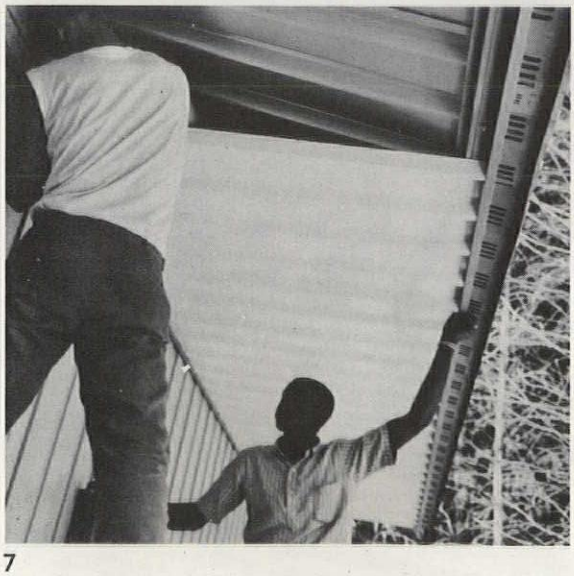

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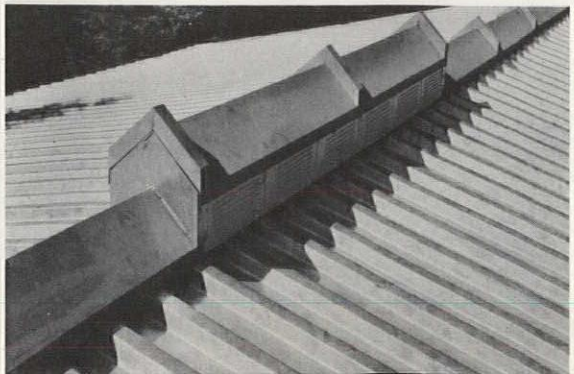
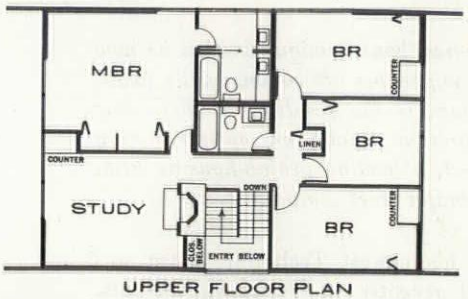
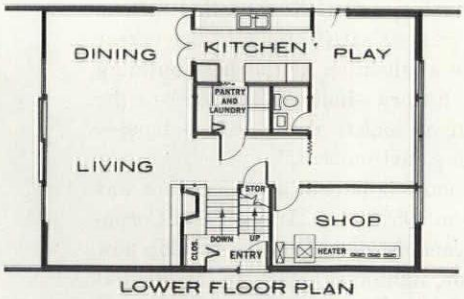


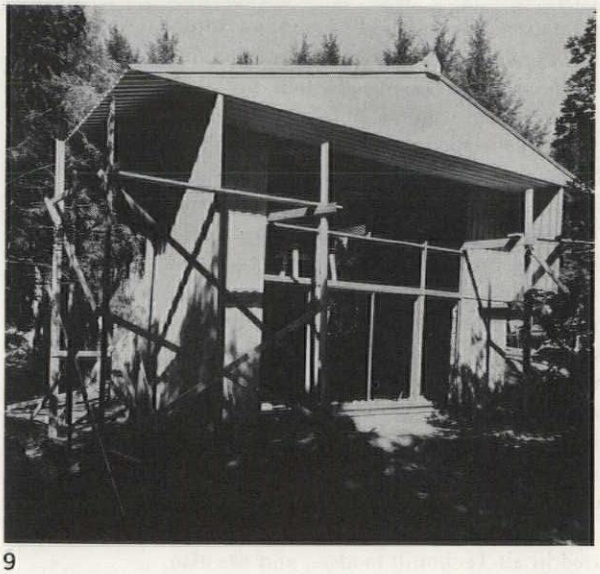


UPPER FLOOR PLAN



LOWER FLOOR PLAN

Aluminized-steel roof sheets ***(5)*** *act as top chord of the roof truss; tie straps form the chord section in tension. By providing a 28′ x 40′ clear span on the second floor, the roof truss permits complete flexibility in partitioning* ***(6)****. Second-floor ceiling is gypsum board, while intermediate floor-ceiling system consists of 28′-long interlocking steel panels with built-in heating ducts. Other steel items are soffit panels* ***(7)****, ridge cap* ***(8)****, and a versatile window-wall system* ***(9)*** *whose roll-formed sections bolt to each other and to adjoining walls.*



9

RAKE FASCIA
2" CORRUGATED ROOF PANELS
CONTINUOUS 'Z' MEMBER
GABLE PANEL
SOFFIT PANEL
5"
2" RIGID INSULATION
STEELOX WALL PANELING
1 3/8" DIA. STRUT
TRIM CLOSURE
1/2" X 1" BOLTS
WIND BRACING GUSSET CHANNEL
1 1/2" SCALE
SEC. THRU GABLE FASCIA

RIDGE BATTENS 4'-0" O.C.
RIDGE VENTILATOR
2"
2 3/4"
FELT INSERT
3 1/2"
12
3
2'
1 3/8" DIA. DIAGONAL STRUT
2" CHANNEL RIDGE TIE WITH ADJUSTING BOLT
1 3/8" DIA. STRUT
5'-4"
7'-0"
7'-0"
12"
GYPSUM BOARD NAILED TO STEEL FURRING CHANNELS (2' ON CENTER)
6" LAYER OF INSULATION
SECTION THROUGH ROOF
1 1/2" SCALE

18'-0"
'A'
GRADE
CROSS SECTION

2" BLANKET INSULATION
3/4" PLYWOOD FLOORING
TWO 2 1/2" X 8" CHANNELS BACK TO BACK
SPACE SERVING AS CONDUIT & AIR FLOW CHANNELS
COLUMN
2" RIGID INSULATION IN CORE OF EXTERIOR WALL
DETAIL AT 'A' 1 1/2" SCALE

STEELOX WALL PANELING
TYP. WALL DETAIL

PREFAB-STEEL TECHBUILT HOUSE: Yorktown Heights, N.Y.
CARL KOCH, Architect

SELECTED DETAIL
FRAMING COMPONENTS

FOOD SERVICE CONSULTATION

In the first of the following two articles, the President of Straus-Duparquet, Inc., a firm that designs, manufactures, and installs institutional food service facilities, discusses the need for food service consultants and argues that they perform best when associated with a manufacturer or dealer. In the second article, the President of Food Facilities Engineering Society counters this argument by explaining the necessity for professionalism in the food consultation field.

THE FOOD SERVICE CONSULTANT

BY HARRY GREITZER

The creation and completion of almost any structure, regardless of how simple it may be, calls today for a number of specialized skills and a variety of training and experience. The more intricate the building, the more vital is the assistance of qualified specialists.

Most architects now welcome the consultation of air-conditioning experts, electrical engineers, acoustical specialists, and many others, even while a complex project is still in the preliminary stage. Since nearly every new building —whether it is a hospital, office building, manufacturing plant, school, hotel, motel, or department store—makes some provision for serving food, there is a need for another specialist on the team of experts: a food service consultant.

The food service consultant's responsibility is to plan the entire food service operation: the space and facilities needed for efficient handling of the food from the time it is delivered to the building, through its preparation and service to customers, to the ultimate disposal of waste and the washing of dishes, silver, and pots.

What the food service consultant does, therefore, is to: (1) Plan and lay-out the kitchen, storage, and wash-up areas, arranging all in the most efficient pattern. (2) Consult with allied operations (plumbers, electricians, and others) on special connections that may be needed. (3) Specify the required food preparation, storage, service, disposal, and dishwashing equipment. (4) Arrange for installation of equipment. (5) Maintain a continuing interest in the operation of the facility, after it is in use.

The architect should draw on the food service consultant's ideas and experience as early as possible, preferably while the project is still on the drawing board.

Such early consultation is advisable for many reasons. For one thing, ordinances on sanitation, food handling, waste disposal, and fire hazards vary from locality to locality. Although it is next to impossible for the architect to be familiar with thousands of statutes, the food service consultant is responsible for knowing all such laws and for making his designs conform to them.

A second reason for bringing in a food service consultant in the early stages of a project is to achieve maximum economy in building. Much of the electrical and plumbing work required in a food service facility can be done at minimum expense in the early stages of building. However, if construction trades complete their primary installations and return for special projects, costs can mount quickly and considerably.

When called in early, the food service consultant can advise the architect and builder which passageways or spaces should be left unfinished until heavy, cumbersome kitchen equipment such as ovens, refrigerators, or dishwashers are brought in. Areas finished off before such equipment is installed may be unavoidably damaged during installation.

By conferring early with the steward, dietitian, caterer, or other operator of the food facility, the consultant will determine the type of service required and the needs relating to dining shifts, food preference, variety of the menu. This information is a necessary starting point for laying out an efficient and economical-to-operate kitchen. A well-designed facility that co-ordinates storage areas, work centers, and traffic patterns can increase the facility's efficiency, cut labor costs, reduce waste, and increase profits.

To work most effectively together, the consultant and the architect should have some advance knowledge of what type of food service facility is needed.

For instance, if the building is a hospital, what fixed ideas do the administration and the dietitian have about food service? From their past experience, do they prefer one central kitchen and mobile hot and cold trucks, a central kitchen supplemented by floor pantries, or a series of kitchens? What food service facilities are to be provided for the staff? How about a coffee and hospitality shop for visitors? How many patients and staff members must the kitchen serve?

If the building is a factory, how many employees can be expected to eat in the cafeteria? How many hours a day will it be open? Will it provide "coffee break" service? Will the cafeteria also serve executives or will an executives' dining room be necessary? If the latter, will an additional kitchen or serving pantry be required?

If the structure is an office building, is a public restaurant included in the plans? How about company-owned cafeterias for large renters in the building?

School cafeterias, restaurants, motels, hotels, and other buildings each have their unique problems of food preparation and service which must be considered before the proper layout and specifications can be made. In all layouts, the food service consultant's responsibility is to make compatible the maximum area available for food service and the minimum area required for the type of facility desired.

Granted, then, that a food service consultant is necessary, how should the architect or other person responsible for the project select the company or individual that is best qualified?

Basically, there are two kinds of consultants: those affiliated with a firm that also fabricates and/or purchases all the food service equipment; and "independents," i.e., those not affiliated with a fabricator or dealer in food equipment.

The "independent" consultant's job is finished when the layout has been planned, and the equipment specified, purchased, and installed. His fee, which he collects regardless of the ultimate workability or success of his design, is usually based on a fixed percentage of the total contract.

As the representative of a manufacturer or dealer, the "affiliated" consultant is interested in having his company chosen to fabricate or supply the equipment used on the project. He is also interested in making sure that the layout works well, and that the equipment gives proper service, because his firm must maintain continuing, long-term good relations with the customer. Aside from any other reason, the manufacturer must do this to insure being paid for the equipment on the customary installment method. Also, the manufacturer may want to sell the operator china, glass, silverware, and other supplies on a continuing basis. Consequently, the affiliated consultant has a responsibility not only to see a project through to completion, but extending also beyond that. He therefore tends to produce a most economical and efficient installation.

If the firm with which the affiliated consultant works receives the contract to supply and install equipment, the design fee is usually refunded. Then he or a member of his firm assumes responsi-

bility for fabricating or ordering all needed equipment; arranging and supervising the installation; and then seeing that servicing is promptly and properly handled, even after the installation is placed in operation.

His experience in all types of projects enables the affiliated consultant to know where he can cut corners for the client profitably without loss of quality or efficiency. His firm's vast buying power usually enables him to obtain food preparation equipment at better prices. As a member of a firm that fabricates equipment, he knows how to specify tables, sinks, shelves, and other items so that they can be manufactured most efficiently and economically.

One "don't" to observe in the selection of a consultant is: Don't pick your consultant from the classified column of the telephone book. Anyone can list himself as a consultant; but there's more to the job than a title. Many self-styled consultants have had experience only as draftsmen for dealers or manufacturers; some have been only manufacturers' salesmen. Too many have never had the invaluable experience of discussing design, layout, and menu with a steward, manager, or chef to obtain on-the-spot information required for good design.

If the International Society of Food Service Consultants has a chapter in the architect's city, he could call there for suggestions. This organization includes in its membership many of the most experienced and reputable food service consultants who are affiliated with dealer firms. Another source of information is the architects who have worked in the past with food service consultants.

Once an architect has names of some possible consultants, he should check their "references."

First, he should investigate jobs the consultant has done in the past. To check the durability of equipment a consultant has specified and the lasting soundness of his ideas, one should visit several kitchens the consultant designed five to ten years ago. New kitchens may not indicate durability because equipment only a year or two old looks almost new regardless of its quality. An inspection of new kitchens, though, will be of value, since it indicates the food service consultant's imagination, acquaintance with new labor saving equipment, and knowledge of food preparation.

Secondly, one should check the food service consultant's standing in the field. Does he belong to major professional organizations such as the ISFSC?

Finally, one should talk to past customers to find out if they were satisfied with his work. Did his plans work well and, when problems arose, was he willing to help solve them? In addition to talking with the owner and dining-room manager, one also should obtain the opinion of the chef—the man who, after all, is closest to knowing whether the designer is competent or not.

As a member of a manufacturing and dealer firm that boasts of a staff of about 15 food service designers, I obviously have a bias as to what type of consultant performs best. However, in the more than 30 years I have spent in this field, I have observed that some very odd specifications have been made by "independent" consultants.

For instance, not too long ago an "independent" specified that an installation must have 150 grease filters with welded and polished stainless-steel frames and stainless-steel filtering media. The architect accepted the specifications, but when the time came to get prices on the equipment, the manufacturer designated as the maker of these special filters said he had never made a filter of that type and had no idea as to how it would be priced, except that the cost would be exorbitant.

Another "independent" is known to have specified stainless steel tubular legs to a thickness of .140 in. and .125 in. for tables, sinks, and other equipment, even though such thicknesses are unnecessary and extremely costly.

Tubular horizontal stretchers of "same size and gage" have been specified by "independent" designers even though anyone familiar with equipment design knows that this construction is not only costly but leaves an unsightly joint. The correct method of construction calls for welding a smaller diameter to a larger diameter of tubing.

Tabletops, shelves, and other equipment is least expensive when made from standard-size stainless-steel sheets; but many "independents" insist on specifying lengths of 8 ft, 10 ft, or 12 ft, which means equipment must be fabricated from outsized, premium-priced steel sheeting.

Another practice indulged in by some "independents" is to specify standard, reasonably priced equipment from a manufacturer's catalog, and then add some special feature or adjustment that increases the cost of the equipment.

For instance, the designer may select a standard range but specify that it must have stainless steel oven linings. Or he might specify stainless-steel over-shelves made from a heavier gage than standard equipment. A standard model reach-in refrigerator may be "dressed up" and "priced up" with a different arrangement of doors or slides. All these changes add to the owner's costs with little or no improvement in performance.

Two dozen specially constructed tray and dish trucks specified by an "independent" consultant are sitting in a hospital warehouse unused. The hospital has never needed them, and the original manufacturer will not accept them since they are not standard in dimensions.

Frequently, the "independent" consultant will include within the Food Service Equipment section of a job's specification work properly belonging to different trades, such as electrical, plumbing, and steam fitting. As a result, the price is much higher than it would be if this work had been merely added to other work performed by the particular trade.

I find most "independent" consultants inclined to overspecify equipment and to design complicated equipment and special construction that serves only to increase costs without achieving the results that warrant the increased expense.

I also find that the "affiliated" consultant's position as a member of a skilled and experienced designing-fabricating-installation team reduces the chance of his succumbing to these faults. The pooled knowledge of engineers, production men, technical personnel, and buyers in the manufacturer or dealer organization that is available to him, plus his company's desire to retain the good will and future business of the client, make it more likely that his designs will be practicable, economical, and satisfactory.

When one of our company's consultants writes a specification for a project, it is mandatory that he constantly bear in mind the customer's budget and financial condition. From the very inception of planning and specifications writing to actual opening of the project to the public, he constantly keeps in mind the opening date and the necessity of meeting this date. In making plans or changes to the plans, the consultant affiliated with a manufacturer is in direct touch with the manufacturer's drafting room and there is no loss of time for transmittals to and from an outside consultant.

In summary, the food service aspect of any new building project should be assigned to a specialist, and, because of the initial economies effected, the time saved, and the all-important continuing relationship with the owner, I submit that the specialist should be associated with a manufacturer/dealer.

THE PROFESSIONAL FOOD SERVICE CONSULTANT

BY ARTHUR W. DANA

There are two important prefatory observations to be made when writing in support of the "independent" food service consultant, vis-à-vis an opposing view

or argument directed against the "independent" by a representative of the "affiliated" consultant.

First, what is the significance of each of the titles? The "affiliated" consultant is an equipment contractor's employee, engaged in the sale of equipment, for which he designs layouts and provides specifications. Frequently there is "no charge" for the design service, if the contractor-consultant's company receives the contract to supply and install the equipment.

The "independent" consultant is a professional, whose compensation is related to the technical and professional services rendered; he is in no way involved in the sale of equipment. These services embrace the food service program and space needs, preliminary plans, utility requirements, budget estimates, working drawings and specifications, analysis of bids, checking of shop drawings, supervision of installation (including checking of shop drawings), final inspection and punch list of completed installation, and assistance in the proper use of the layout.

The second point: the professional or "independent" consultant may be the object of attack by others, but for very good reasons the greater use of professional (and independent) talent in the planning and design of food facilities continues to grow.

These reasons are to be found in the background history of food service consulting. For many years, kitchen-equipment jobbers and dealers were the only ones to provide a planning service to owners and to architects. Terms such as Kitchen Engineers, Sales Engineers were commonly used to refer to their designers. In the late 1930's and early 1940's, owners and architects began to ask and to look for professional counsel that would be impartial, unprejudiced, not interested in the sale of equipment, and sound in judgment. The more alert owners and architects recognized the need for plans containing properly-sized equipment and for specifications allowing fair bidding; and, most important, for vigilant inspection to assure adherence to the specifications. Without the latter, the owner might not receive full value for his money.

These professional planners of food facilities, who constituted a mere handful in the "early days," called themselves food service consultants. The writer of this article was one of these consultants, as of 1937. Since that time, the number of truly professional (or independent) food service consultants has continued to grow in response to the needs and demands of owners and architects alike. This trend is reflected in many ways: the extent to which professionals are invited to speak at "workshops," seminars, schools of hotel and restaurant management, and conventions; their contribution of research and study in the many articles in trade magazines and in books published on layout planning; the increasing number of winners of awards in nationwide food service (facilities) contests; and finally, the growth in use of professional and independent talent. This, in itself, is an indication that, by and large, the professional food service consultant is satisfying the needs of both owners and architects.

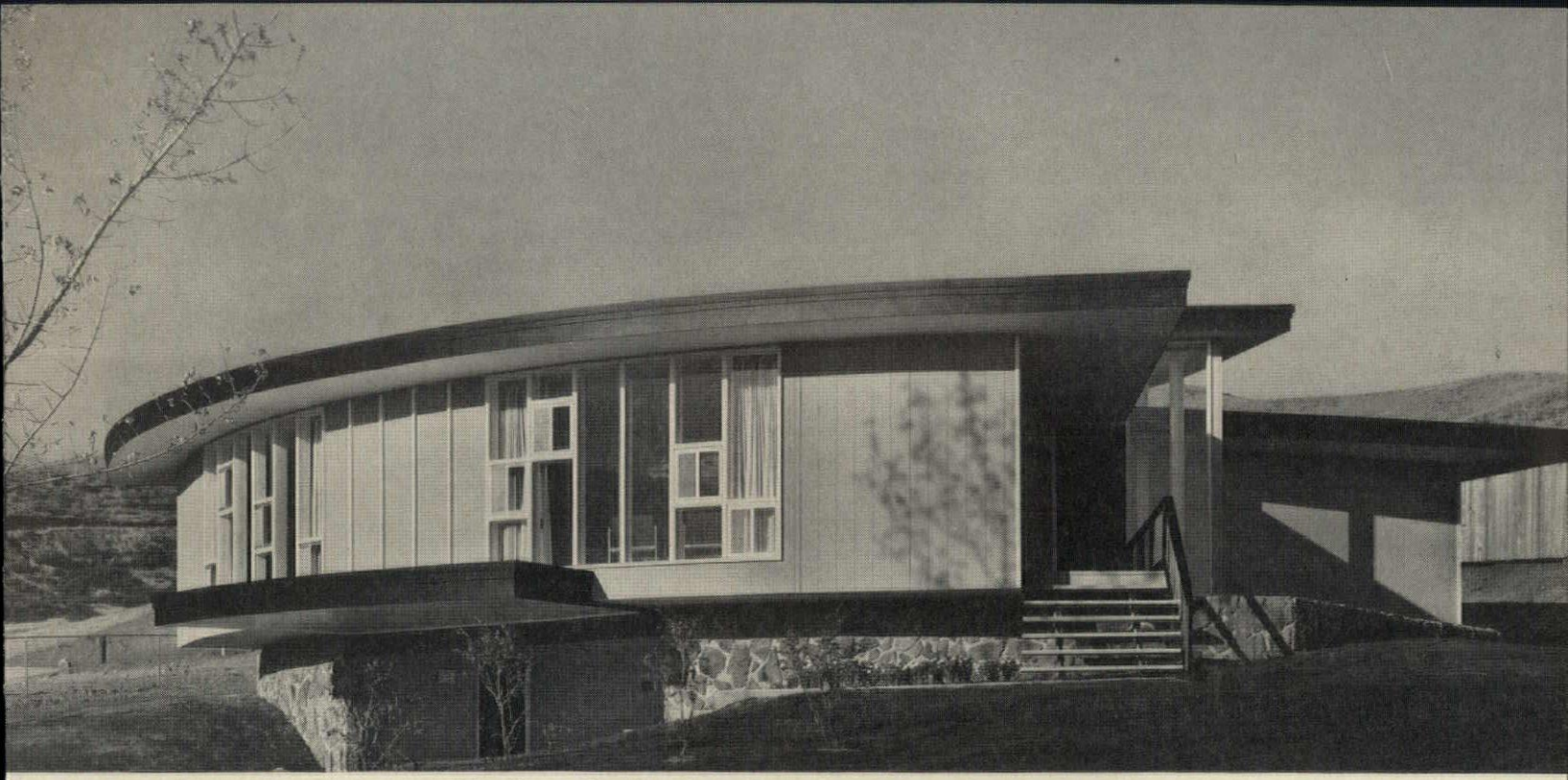
In 1954, a small nucleus of professional food service consultants, this writer among them, met to establish the Food Facilities Engineering Society, the first of its kind. The purposes of the society were to establish our work on a truly professional basis, to help raise and maintain the highest standards in our profession, and to promote research and development in the field of food facilities planning. We were fortunate in having as a charter member an architect whose interests and background enabled him to combine the practice of architecture with that of food facilities planning. As a member of AIA and active in various of its committees, he was most helpful in the drafting of our Code of Ethics. Membership, except for educational and honorary ones, is limited to qualified persons in professional practice and employees thereof. Included are several members who are employees of large architectural firms. Membership applications are carefully screened by a committee that examines plans and specifications submitted by the candidate for membership. No person can be a member if he is engaged in any way in the sale of food service equipment. Thus the Food Facilities Engineering Society and its membership are dedicated to capability, objectivity, and the protection of the owner's interest in the same manner that architects are.

There are undoubtedly many professional food service consultants who are not yet members of the Food Facilities Engineering Society, but who have the same professional standards as those of the Society. There may also be many designers employed by equipment dealers and jobbers who are conscientious in not overequipping and who are experienced in providing adequate equipment and an efficient layout.

It is for the owner and architect to decide whose services—apart from design ability—are most objective, and who, therefore, best protects the client. Is selection of equipment based upon the particular franchises or best discounts that a dealer works with? Or is the selection based upon the consultant's experience as to performance, reliability, and availability of service? Are the specifications "tightly" written to avoid ambiguity and to afford the basis for truly competitive bidding? Will the specifications be carefully adhered to or will there be unauthorized substitutions? Who is to verify the materials, workmanship, and all other elements of specifications so that the owner receives what he pays for? In this context, every architect expects to have a "punch list" on the completed architectural construction per se, made by the architect's representative. The technical nature of food service equipment and fabrication makes desirable the checking thereof and development of a "punch list" by a specialist truly representing the architect —a professional food service consultant.

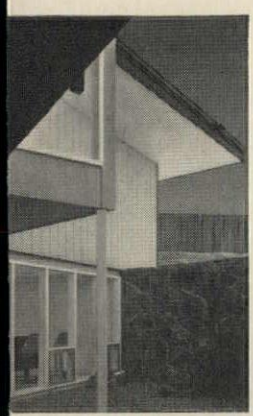
The capability of each professional consultant will continue to be judged on the basis of his services, and the results therefrom. In some parts of our country (as in some European ones), architects are familiar with the circumstances in which a building contractor offers a planning service to an owner. Architects certainly have many valid reasons for deploring this combination. Some of these reasons are applicable to the subject at hand.

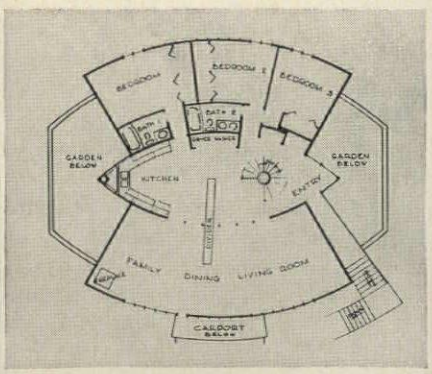
I believe that owners and architects will continue in increasing numbers to seek the counsel of capable professional, (independent and ethical) food service consultants, in the years to come. The challenge of new methods of food-handling, still undeveloped, will place greater demands upon such objective counsel. This may mean radical changes in equipment design, sizes, capacities, and even market distribution of such equipment; it may require a degree of flexibility in design for future possibilities. The professional consultant will not be bound, consciously or unconsciously, by any vested interest in any particular line or type of equipment. This challenge is akin to that presented to architects by the new materials and construction methods of today and tomorrow: the architect's professional approach evaluates these objectively. A person involved in the sale of other materials is less likely to view new, superseding and competing ones with a similar degree of objectivity.

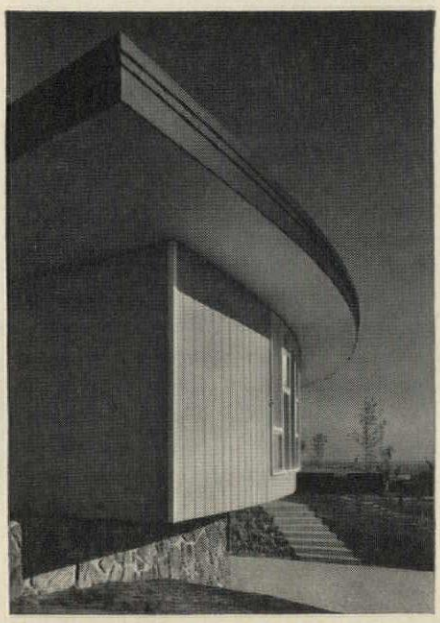


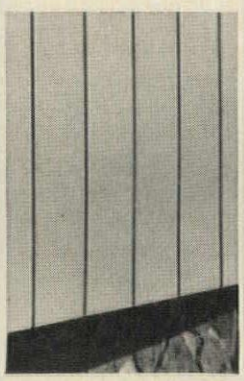
Butterfly House, Architect Lory Ice, Tri-L Const. Co., Green Mountain Development, west of Denver, Colorado

For significant new homes









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Curriculum For "Specs Writers"

BY HAROLD J. ROSEN

Essential qualifications for the proficient specifications writer and academic courses that would provide a rounded background for his work are discussed by the Chief Specifications Writer of Kelly & Gruzen, Architects-Engineers.

Perhaps it is the very term "specifications writer" that obscures and inadequately describes the technical skills that an individual who writes architectural specifications should possess. The appelation "specifications writer" is reserved for that individual in an architect's office whose function it is to write specifications. However, the physical process of writing specifications results in an end product that represents the sum total of the technical knowledge and experience that an individual who performs this task has accumulated, and which is embodied in the completed specifications.

The "specifications writer" of yesteryear prepared specifications around designs that utilized natural materials such as wood and quarried stone. In more modern times, the scope of materials available included such basic man-made materials as concrete and steel. However, for all of the foregoing traditional building materials, the "specifications writer" required little background in the physical and chemical sciences in order to understand and specify those materials properly.

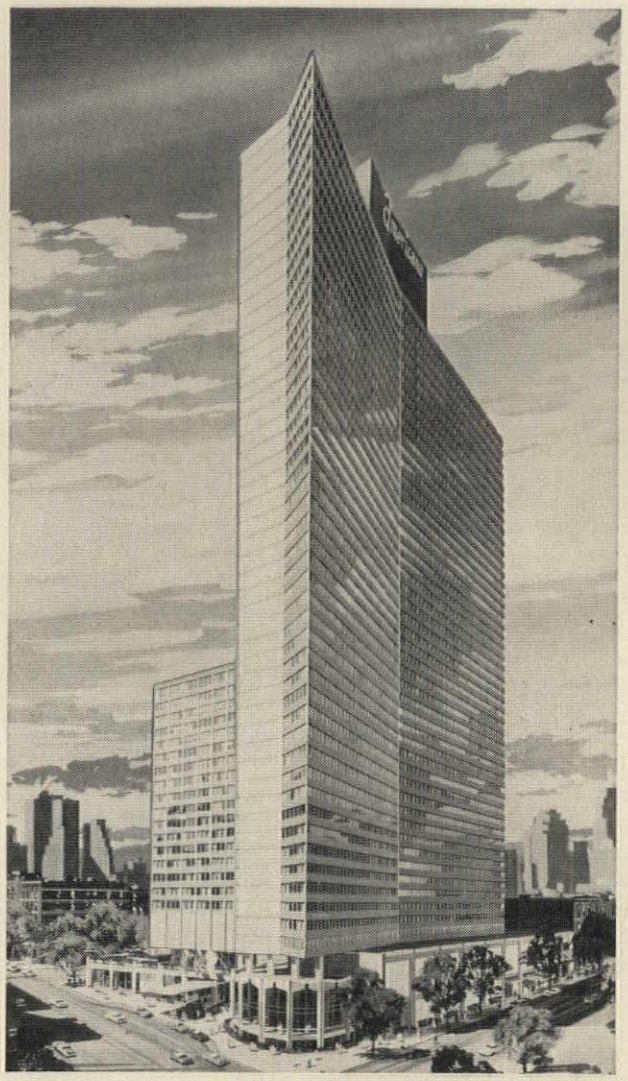
In the last 25 years or so, a radical change has taken place in the materials of construction. The chemical industry has taken its raw materials and fashioned end products from them that are utilized in a myriad of building components. In the field of metallurgy, we are witnessing tremendous changes in steel alloys for structural steel and electrolytic processes for finishes on aluminum. However, when we look at the curriculum being offered at schools of architecture to prepare students as "specifications writers," we find a complete void with respect to courses of study which might prepare an individual to select these materials properly, to compare competitive products, and to utilize materials compatibly.

Elementary courses in chemistry and metallurgy are practically nonexistent. Laboratory courses in strength of materials are likewise generally lacking. The mere teaching of the elements of specifications writing (if the course is given) is limited to a cursory one-semester, two-hour course that also includes office practice and working drawings.

What is the function of a "specifications writer" in a large architectural office? He is an individual who in today's building science must above all else have a comprehensive knowledge of the physical and chemical properties of materials. This would imply courses in chemistry, materials engineering, materials testing, and metallurgy. He must be thoroughly grounded in modern advanced construction methods and practices. This would include a course describing lift slabs, curtain walls, thin shells, and materials handling. He must be conversant with the legal requirements inherent in the general conditions, the contract forms, and the technical provisions of the specifications. To familiarize him with this field, there should be a course in business or contract law describing legal and ethical responsibilities, trade practices, and bidding procedures. He must be a grammarian with the ability to use clear, correct, and concise English. Today's specifications are no longer simply written or verbal instructions to carpenters and masons. The requirements are for precisely written, explicit specifications on materials and methods that are directed to architects and engineers and employed by building materials manufacturers and contractors. The ability to express oneself requires a knowledge of the English language that deserves more emphasis in the "specifications writer" curriculum. He must be an estimator so that he can evaluate the costs of materials and type of construction he proposes to specify, and make the correct selection. To fulfill this requirement, a course in estimating should be included.

The concept of the early-day specifications writer (without quotes) who occupied a space in a back room surrounded by glue pots and scissors, and who put together a set of instructions for master craftsmen to follow in a document called specifications, is outdated. Today's requirements are for explicit specifications embodying the most advanced knowledge of materials, engineering, construction methods, and laboratory testing procedures. Such specifications can only be produced by a highly qualified individual who has had specific instruction in his college curriculum in these areas. And before the specifications are actually written, this same individual with his specialized knowledge must be a member of the design team who is consulted with respect to design concepts, construction methods, and selection of materials.

In the light of over 20 years of specifications writing experience, I am of the opinion that the civil engineer's education and orientation, with the suggested courses just described, can best prepare an individual for the role of specifications engineer in an architect's office. (The author, incidentally, has a chemical engineering degree.) The title "specifications writer" should be discarded and be supplanted by the title "specifications engineer," so as to describe and give stature to the professional who plays this important function on the design team.



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Multipurpose Troffers

BY WILLIAM J. McGUINNESS

A recent ceiling installation in which the troffers furnish lighting as well as heating and cooling, the latter two being part of a ventilating system that both delivers and exhausts air, is discussed by practicing mechanical engineer.

For a decade or more, the placement and co-ordination of essential mechanical services in the ceilings of office buildings have been in a continual state of development, change, and improvement. The evolving causes are, of course, well known. They include the gradual elimination of interior and exterior walls through which vertical distribution was formerly possible, the need for easy rearrangement of interior offices with minimal changes in the mechanical network, and respect for the integrity of the floor surface, which is usually broken only for changes in telephone locations and sometimes for electrical convenience outlets. This situation assigns to the ceiling all other services which include ventilating, heating, cooling, lighting, sprinkling, public-address systems, and acoustical treatment.

For the past six years, a device has been in use that provides for the first four of these facilities and is compact enough to leave adequate space for the solution of the other three. This is a multipurpose troffer that furnishes light as well as heating and cooling, the latter two being part of a ventilation system that both delivers and exhausts air. The air that is supplied through some of the troffers is conditioned and includes tempered, outside-air for freshness.

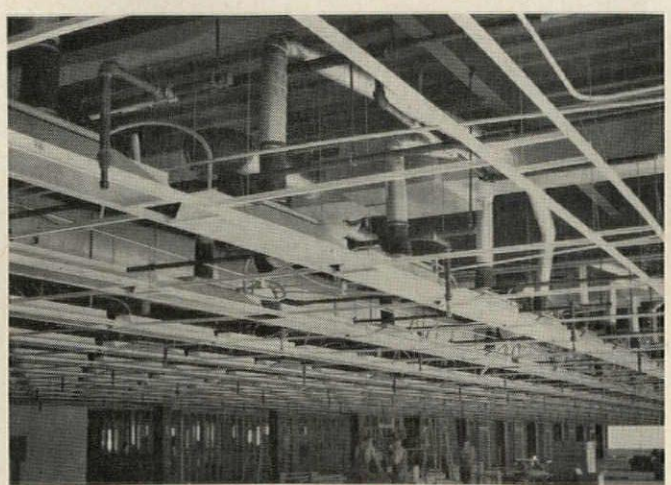
A notable recent installation of these luminaires has been at the Boeing Company's new Aero-Space Facilities in Seattle, Washington. These new office buildings were designed and built by Austin Associates.

Each troffer is 1-ft wide and 4-ft long; there is 1-ft space between the ends of each fixture and the rows are 5-ft on centers. Thus, each unit serves 25 sq ft of office area though occupying only about one-sixth of this amount of ceiling area. Four-foot-long slots along both edges of the glass diffuser form air ports that are connected to an air chamber above in the triple-shell troffer. A second air space insulates the air plenum from the metal surface adjacent to the fluorescent tubes that might otherwise flicker, if subjected to the cooling effect of the conditioned air.

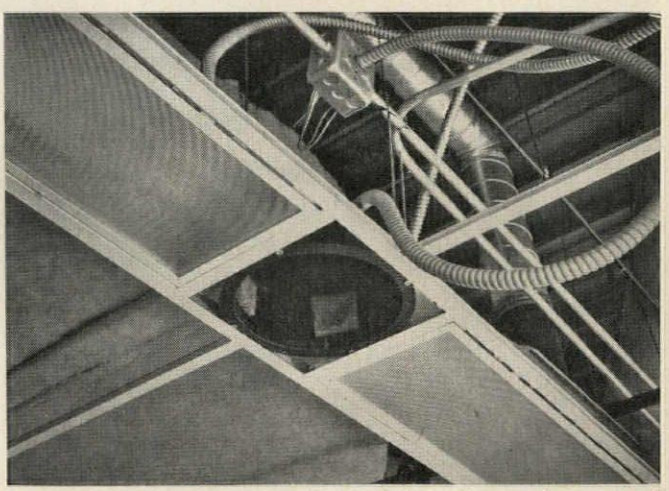
Three 40-w tubes in each unit satisfy the lighting requirement of 100 ft-c at working level with the use of 4.8 w per sq ft of office area.

All of the troffers are capable of providing air, though not all are used for this purpose. They are considered to be of "medium" capacity and can handle 160 cfm. Again, this limit has not been utilized. About 40 per cent deliver air, 40 per cent carry air back to the equipment (or exhaust it), and 20 per cent are static. The units near exterior glass deliver about 140 cfm each and those at interior areas about 90 to 100 cfm. Dampers regulate these rates. Changes in both air connections and rates are easy and are frequently made to accommodate newly created small offices or to serve interior conference rooms. The rate of air delivery is more than adequate to satisfy Seattle codes, which call for 1 cfm per sq ft of floor area. This would require only 25 cfm per fixture. One-third of that amount must be outside air and this requirement is also easily met.

Below the 9-ft high ceilings, air velocity is comfortably moderate, averaging about 70 fpm at 5'6" above the floor. Sprinklers are on 10-ft centers in each direction.



During installation view of two outside (perimeter) rows of troffers. On the outer row, each troffer has an air connection; on the inner row, every other troffer is connected.



Intercom sound system is installed in 12" x 12" space between ends of two troffers. (Photos: Courtesy of Benjamin Division, Thomas Industries, Inc.)

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Unlawful Practice of Architecture

BY JUDGE BERNARD TOMSON AND NORMAN COPLAN

Nassau County District Judge and a New York attorney discuss a lawsuit in which a corporation was barred from practicing architecture.

The unlawful practice of architecture is a matter of grave concern to the architectural profession. Under Connecticut law, as well as that of many other states, a corporation may not practice architecture. As a consequence, the Connecticut Society of Architects has been engaged in litigation with a Missouri corporation in which it was contended that the corporation was unlawfully practicing architecture in Connecticut. The relief sought by the society in its legal suit against the corporation was a declaratory judgment determining that the acts of this corporation constituted the unlawful practice of architecture and an injunction to restrain the corporation from practicing architecture in Connecticut. In this endeavor the society was successful (*Connecticut Society of Architects, Inc.*, v. *Bank Building and Equipment Corporation of America*).

The defendant in the above action was, according to the finding of the Court, a stock corporation, with more than 500,000 shares outstanding, which stock was publicly held. The board of directors was composed of 11 members, none of whom was an architect. There were four major departments in the company: an architectural department, a sales department, a construction department, and an operations department.

The Court stated: "Representatives of the defendant contact banks and endeavor to sell their services. Consulting services are offered whether the bank is interested in constructing a new building or remodelling an existing one. When the question of designing the building arises, the bank is informed that, as part of the defendant corporation's services, its architectural department would be able to handle the work. The company employs 50 to 60 architects, most of whom are located in St. Louis. Each of them is licensed in one or more states. At the time of trial, three were licensed in Connecticut."

The Court further pointed out that the corporation's chief architect is a vice-president of the company. As stated by the Court, "Officers of the defendant company testified that the bank is told that a separate architect must be hired and that names of architects are furnished to the bank. The bank is also informed that the company's chief architect . . . is licensed in Connecticut and could be engaged." Although the defendant's witnesses testified that the company does not insist upon its client retaining the company's chief architect, they could not, stated the Court, designate a single project performed in Connecticut in which the company's chief architect and vice-president did not act as the architect. In respect to 27 projects for which the company furnished services in Connecticut over a five-year period, the company's chief architect had been retained as the architect on "just about every one of them."

When contracts are made with the chief architect and vice-president of the corporation, they are performed by employees of the defendant corporation and the chief architect himself is a salaried employee of the corporation. The Court stated that "his employment agreement requires that all checks received by him for architectural services be endorsed by him to the defendant company and this is done in every instance. While [the vice-president] signs the agreement as the architect, the management committee of the company has power to overrule him in any matter in the architectural department."

The Court, in concluding that the corporation was practicing architecture and issuing an injunction restraining such practice, stated:

"The defendant Corporation is, in each instance, the building contractor and the architect. It is perfectly obvious that . . . [the vice-president] is not acting on his own authority, but as an agent, servant, and employee of the defendant company. The only responsible conclusion is that defendant is practicing architecture in violation of the statute. . . .

"This conduct is an infringement on the rights of those properly licensed and registered as architects in the State of Connecticut and in contravention of the statute adopted to safeguard life, health, and property. . . ."

The defendant corporation also contended that the Connecticut licensing law was unconstitutional in that it denied the defendant due process and equal protection of the law. Prior to 1953, anyone in Connecticut could practice architecture, provided that they did not hold themselves out to the public as registered architects. When the practice of architecture was barred by the statute of 1953 to all except those who were duly licensed, that statute contained no provision relating to corporations which had been practicing prior to that date. However, in 1959 the Connecticut statute was amended to provide that Connecticut corporations which existed prior to 1933, whose charters authorized the practice of architecture, were permitted to make plans and specifications and supervise construction, provided such plans and specifications have been signed and sealed by a registered architect. This was, in substance, a belated "grandfather" clause. The defendant contended that in permitting such corporations to practice and at the same time barring them from the practice of architecture, the statute created an unconstitutional classification.

The Court, however, pointed out that classification will not render a regulatory statute unconstitutional if it has a reasonable basis and that the state legislature is vested with a wide discretion in the matter. The Court concluded, moreover, that it could not be said that the Connecticut legislature's act in this respect was "palpably unreasonable or arbitrary."

Disagrees

Dear Editor: I disagree completely with your report on the Saarinen Colleges at Yale [NEWS REPORT, NOVEMBER 1962 P/A]. Judging only from the pictures, it is my opinion that these structures will have all the warmth and charm of living in Stonehenge.

To state that this effort is one of Saarinen's finest achievements is, in my opinion, slanderous to the late architect. These structures may, in 20 years, be as unloved locally as Wright's Marin County monstrosity is going to be.

DONALD P. HOLMES
Lafayette, Calif.

[*Evidently Mr. Holmes's opinion, which he shares with the impulsive English commentator Reyner Banham, is not held by the users of the colleges, for the rooms were reportedly "sold out" even before the colleges were opened.* —ED.]

Lamps to Read By

Dear Editor: I have read your issue on "The Architecture of Interiors" [OCTOBER 1962 P/A].

Doesn't anyone ever read any more? Only two lamps are shown in the illustrations for the issue. One of these, I know, is impossible to read by; and I could not readily distinguish the other.

Almost all of the designers avoided the problem by recessing downlights in the ceiling, which is a fine way to become blind. Why should this major aspect of living be designed out of our lives in the interest of uncluttered interiors?

STANTON LEGGETT
Engelhardt, Engelhardt, and Leggett
Educational Consultants
New York, N.Y.

The Charette Meeting

Dear Editor: The topic of this letter is "Disservice to the Professional (Architectural) Public." I refer to your lengthy article on the "Charette Meeting on the Community College" [NOVEMBER 1962 P/A].

As a method of architectural education, I believe the only accomplishment of any charette is to give a chance for the fast-flashy talent to get a good workout. There is never time to develop a more profound architectural concept. The examples of community colleges in the November issue are the proof of the pudding: none of the projects seek to explore the realization of architectural form. Where is Kahn's concept of a man under a tree? Aside from the inevitable emphasis on presentation, the aerial model photographs in the articles indicate schematic relationships of an educational-administrative program. None of the projects, with the possible exception of Mr. Bartheleme's, has time to develop a concept of interior spaces and lighting that will encourage the learning process —or do these elements become secondary to the various artistic massings of the model?

How much more worthwhile it would have been to present a critical evaluation of an existing college or a comparative critique of American and European differences in architectural form resulting from divergent philosophies of learning. Which leads to the basic question of why P/A, like most architectural magazines, seldom extends its editorial neck to make serious architectural criticism—something which the AIA frowns upon, of course.

DR. THEODORE MATOFF
Sausalito, Calif.

[*The objective of the Charette Meeting was to generate potential forms for a new kind of institution, not to investigate the more general problem of educational environment. Each designer brought with him certain concepts about teaching space, based on his own substantial experience. The basic principles were not concocted in 10 days.*

There are very few existing examples of the community college that might have been analyzed. One outstanding example, Ernest Kump's Foothill College, has been presented in detail twice, as a project and as a completed complex in P/A, and was the subject of a critique in another magazine. But even this impressive effort is not representative, since it has the advantage of an unusually large and beautiful site.—ED.]

Less Defense, More Architecture

Dear Editor: For less money than it takes to test one H-bomb, a National Cultural Center is to be constructed in Washington, D.C.; no public funds, however, were appropriated for this project, and its sponsors must beg for private contributions. The feeling persists that this isolated example is symptomatic of our nation today, and that perhaps it is time to ask whether we can do with less armaments and more architecture and urban renewal. What do we *really* know about the chain of domestic and international pressures that have led to our present defense effort, which is now so enormous that we are forced to deny many other very pressing needs? What are the alternatives to defense spending, which has been one of the major props of the American economy since 1940? And if we *are* in some sort of vicious circle, can the architect and planner help us to get out of it?

We are told by our leaders that our present military strength is five times that of the Soviet Union, yet present plans call *doubling* this capacity by 1965. In fiscal year 1963, we will spend more than $60 billion on defense of one sort or another; meanwhile, Federal expenditures for urban renewal, housing, schools, and hospitals will total only $4 billion in the same fiscal year. Can this fantastic imbalance be justified by any realistic appraisal of the international situation, or does it merely reflect the power of the defense contractors' lobbies in Washington? If so, what can the construction industry do to effect a more reasonable utilization of American productivity?

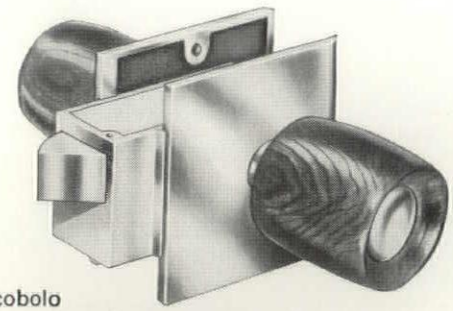
What *does* America need? What can she afford? What are our priorities? What is the best way to get the job done? No one can answer these questions to everyone else's satisfaction, but the questions are valid and should be raised again and again. And it seems obvious that architects and planners have deep personal and professional interests in the answers arrived at. We must exert our influence to bring about a domestic and international climate in which we can be most effective and useful. The alternative may well be that we resign ourselves to practices consisting of bomb shelters, military installations, and underground cities.

R.M. TITUS
Dept. of Architecture, M.I.T.
Cambridge, Mass.

Native Architecture

Dear Editor: How dull, sterile, and cliché-ridden the work of European architects working in Africa appears when compared with the beautiful, imaginative, and human native architecture shown in your excellent article [DECEMBER 1962 P/A]. It seems especially appropriate that you have Bruce Goff in the same issue. His work, which seems bizarre when imagined among typical American housing, would seem very appropriate in another, less self-conscious culture.

HENRIK BULL
San Francisco, Calif.



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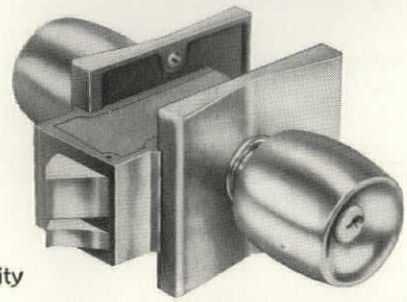

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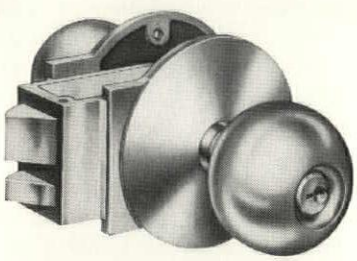

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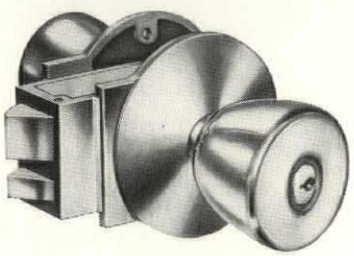

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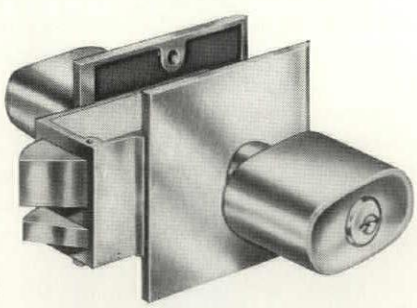

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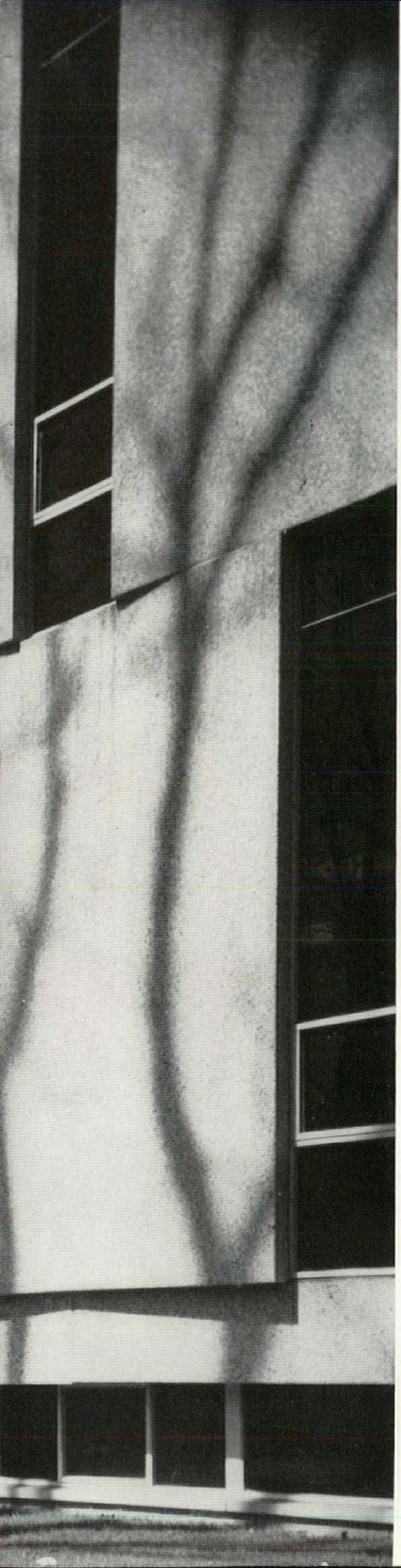

A Double-Barreled Text

BY WILLIAM DEMAREST

MODULAR PRACTICE: THE SCHOOLHOUSE AND THE BUILDING INDUSTRY *by the Modular Building Standards Association. Robert P. Darlington, Chief Editor; Melvin W. Isenberg and David A. Pierce, Associate Editors. Published by John Wiley & Sons, Inc., 440 Park Ave. South, New York 16, N.Y. (1962, 198 pp., illus. $8.95). Reviewer is Plastics in Building consultant to the basic plastics producers of the Manufacturing Chemists' Association. Previously, when AIA Modular Co-ordinator, he was instrumental in generating the idea for an MBSA.*

Modular Practice is a double-barreled text. It sets itself up to be a drafting-room manual on the preparation of modular drawings, so as to make possible better school buildings at lower costs. But the architect who reads well into it will suddenly realize that here, at last, is the right kind of textbook for showing students of architecture how design drawings are carried forward into working drawings—an essential step, after all, in the architectural process. From preliminaries to large-scale details, this treatment places due emphasis upon design. It consistently reminds the student that structural considerations represent an important aspect of design. And it shows that the designer can be aided throughout by the order and control he gains with modular practices.

Even if the last consideration were discounted, this would seem to be a book that has long been needed by our architectural schools. What it has to tell is set down in 144 pages, a round 100 of which reproduce exemplary preliminary and working drawings from a wide variety of architectural offices using modular measure. But our professional students do not constitute the only group that one may want to educate. The authors, indeed, appear to address their text equally to the architect (and drafting-room force) wishing to change to "modular." For whomever it instructs, the straightforwardness, breadth of comprehension, and clarity of *Modular Practice* will be stimulating.

"Modular co-ordination" was the ponderous label used by the American Standards Association in launching the basic 4-in. dimensional system years ago. In the 50's, the AIA campaigned to convert architects to "modular measure." Now we have a definitive textbook calling itself *Modular Practice*. We need to know at the outset if this title is another synonym or whether it embraces something more. It is more, we learn from the preface, which hastens to explain that modular practice, as used by the architect, consists of *modular design* (planning), *modular co-ordination* (integration of modular-size components into the design), and *modular dimensioning* (of working drawings). Of these, only the last two are encompassed by the colloquial term "modular measure."

Modular measure, simple though it may be in principle, often is difficult to explain verbally, whether or not exemplified by two-dimensional drawings. In the opening pages of this book, however, the whole system is brought swiftly into focus. The authors postulate as a prime necessity "a design philosophy which requires that the architect think in terms of complete dimensional co-ordination at all stages of the design process." It is because this is never lost sight of that basic modular dimensioning plays a proper and consistent role throughout. Calling for "a method of portraying the co-ordination graphically in the working drawings," the book moves directly to the 4-in. dimensioning unit for building. Without being subjected to too much verbalizing, the beginner will have grasped the concept and moved on to the next matter—the several kinds of larger-scale modular grids that can be used to aid design and construction.

These are broken down into the *planning grid*, the *structural grid*, and the *reference grid*. On top of the basic 4-in. *modular grid*, this makes a total of four interrelated grids; things begin to sound pretty academic. However, the authors quickly show themselves to have distinguished these types of grids quite rationally, and the architect-reader will probably see that he has been using them himself by whatever name (except perhaps their common denominator, the modular grid).

Continued on page 174

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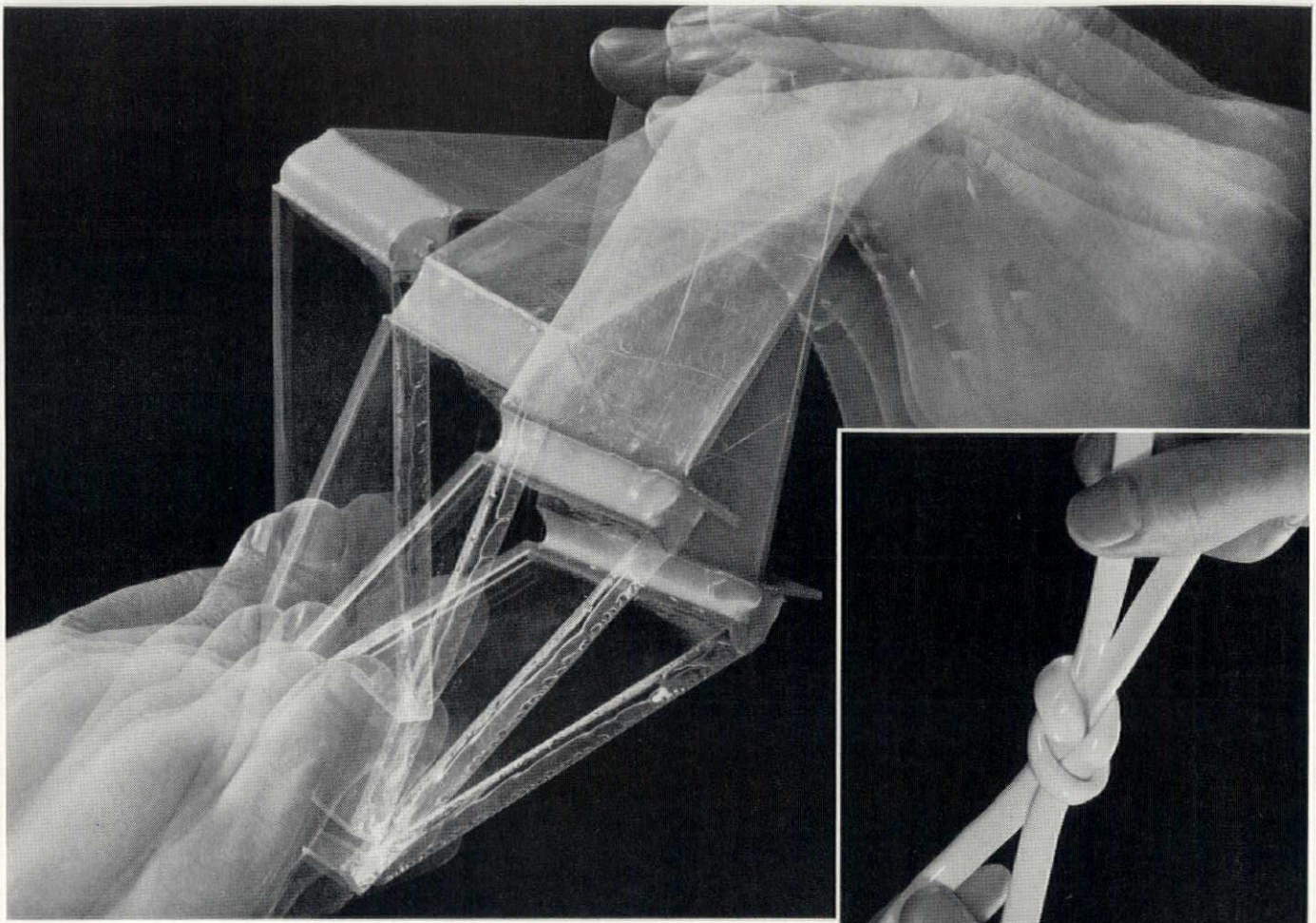

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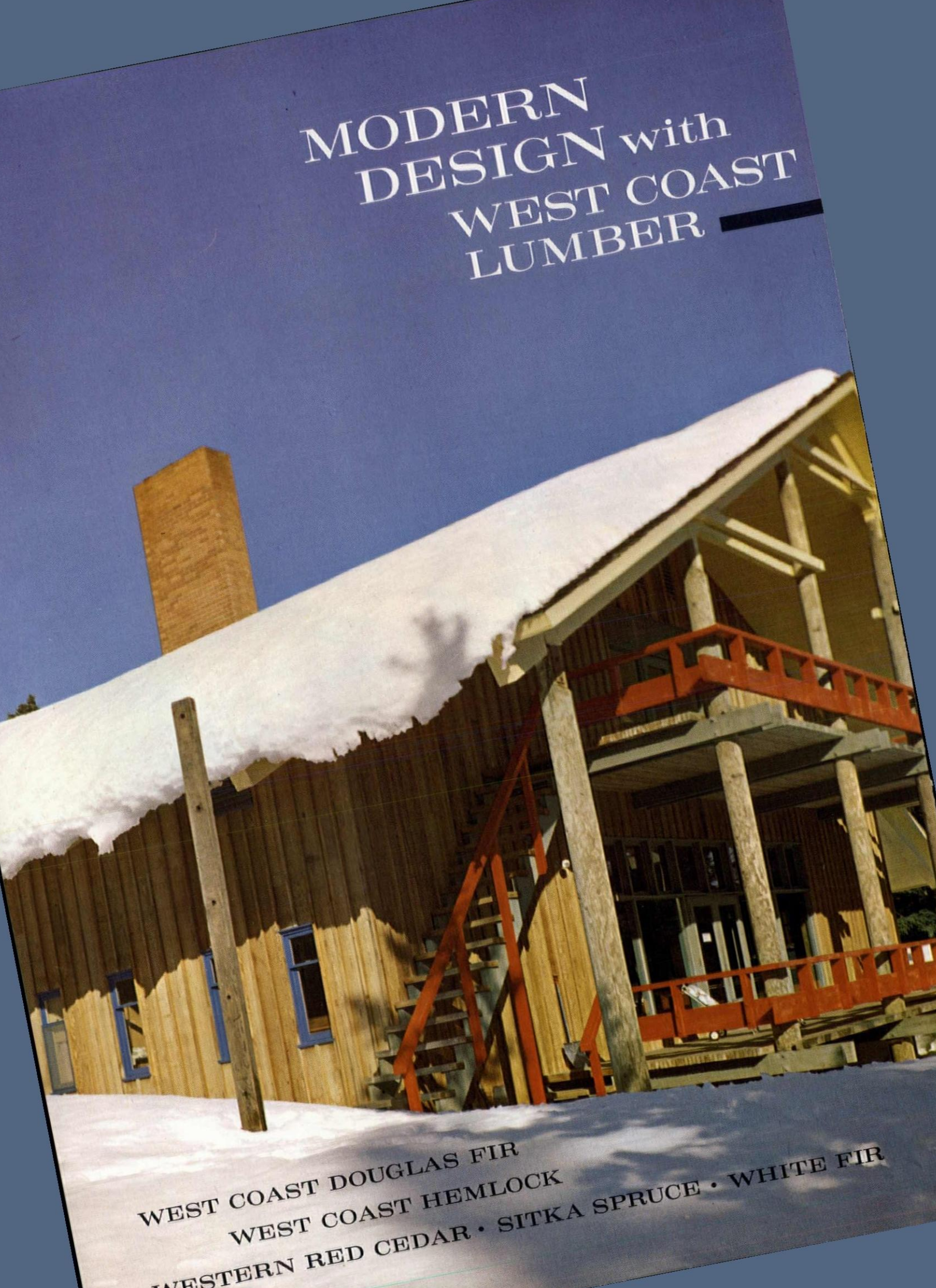

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Prefabrication allowed the builder to expedite construction and to keep costs at a minimum. A series of six glued laminated frames extending from the basement to the roof and spaced 10′ o.c. is the framework. The floors of 4″x6″ tongue and groove span the distance between the frames. Roof deck, interior and exterior walls are 3″ tongue and groove West Coast Hemlock. This heavy construction was desirable for its fire resistant qualities, necessary in such a remote area.

The exterior of the lodge is Western Red Cedar board and batten, allowed to weather to a silver gray color for its rustic appearance. Brightly colored balcony railings and stairways offer a cheerful welcome to guests and members.

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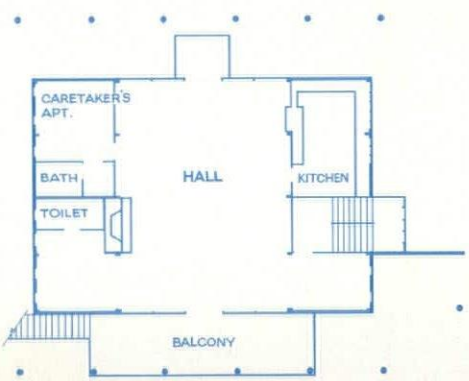

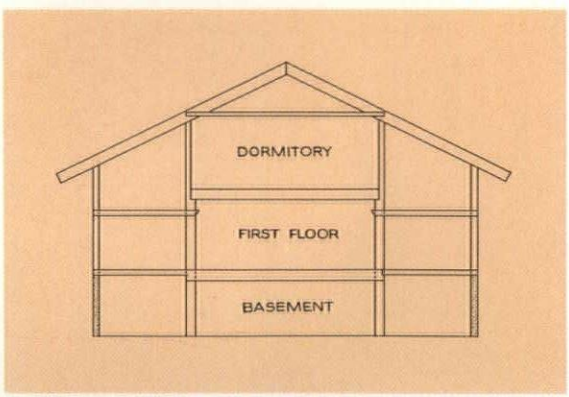

MILL 10 WC LB 1500-c DOUG FIR — **West Coast Douglas Fir** posts, 8″x8″x18′, are used vertically as supports for the glued laminated frames on the exterior walls.

MILL 10 WC LB SEL DEX PAT. 405 W. C. H. — **West Coast Hemlock decking,** 4″x6″ tongue and groove spans 10′ between glued laminated frames to form floor on first and second stories. Exterior and interior walls are 3″x6″ tongue and groove.

MILL 10 WC LB CONST W. C. H. — **West Coast Hemlock** roof deck of 3″x6″ tongue and groove applied 6-in-12 pitch for load capacity of 200 lbs. per sq. ft.

MILL 10 WC LB STAND — **Western Red Cedar** siding of 1″x8″ boards with 1″x3″ battens.

MILL 10 WC LB SEL DEX PAT. 405 W. C. H. — **West Coast Hemlock** porch decks of preservatively treated 2″x4″ spaced ¼″. Stair treads are 7 pcs. of 2x3s nail laminated. Support columns are preservatively treated utility poles.

MILL 725 WC LB C&BTR — **West Coast Douglas Fir** for all millwork.

MILL 10 WC LB 1900-f DOUG FIR | MILL 10 WC LB 1200-f DOUG FIR — **West Coast Douglas Fir** used in glued laminated beams: Vertical members are 7″x18″x29′x11″. Horizontal members: first floor, 5¼″x 8⅛″x14′, and 5¼″x17⅞″x28′; second floor, 3¼″x9¾″x14′ and 7″x17⅞″x28′; ceiling: 3¼″x6½″x28′. Roof rafters 9″x16¼″x37′.

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Continued from page 170

This takes only the first two pages of text, accompanied, it is important to note, by four pages of illustrations. The pace and lucidity of the opening paragraphs are maintained fairly well throughout, as the book progresses through nominal vs. actual surfaces, modular drafting conventions, and homilies on "thinking modular" to well-integrated chapters such as "Design," "Development of Working Drawings," "Details," "Modular Practice and the Contractor." Words take a back seat to the many drawings, notably working drawings and details of actual modular jobs. Exposition of the particulars of modular measure and its concomitant drafting conventions covers, of course, the same ground as previous treatments —but generally more crisply and intelligibly. A new departure is that the book urges repeatedly (and convincingly) that details should not be criss-crossed with an entire 4-in. grid unless there is some specific reason why this will clarify a drawing. "The most desirable detail is one in which dimensions and gridlines are at a minimum," states the book. "For dimensioning purposes, key modular gridlines are shown in the details to correspond with gridlines which occur also in . . . other drawings. This . . . eliminates confusion on the exact location of a detail. Here again, the modular grid is used as a strong organizing force."

The final half of the main text of *Modular Practice*, having gotten past the rudiments of the subject, goes further in exploring practical applications than has been done before. Illustrations, with brief sections of text discussing them, cover the following: plot plans (presumably just to give the complete story—no modular implications here); key plans; structural plans; details both with and without an over-all 4-in. grid; wood-frame construction showing different grid-placements of stud walls and partitions; treatment of windows as placed in steel-frame or masonry or wood-frame or concrete-frame construction; and so on. (All the while, the student is learning the reasons that certain scales are ordinarily favored for drawing certain kinds of sections, details, etc.) Sample modular mechanical and electrical plans are included for—if the reader will pardon the expression—good measure.

This is no tract touting the potentials of "modular co-ordination." The editors, while clearly advocating the 4-in. construction module now recognized in the U.S. and Canada, will not permit it to get out of hand. Planning and other large modules are indicated by them to be of greater import. As already mentioned, they urge that the gridlines representing the omnipresent 4-in. module spacing be used sparingly on detail drawings. In truth, with regard to modules in architecture, we find them to be open-minded to a fault.

Taken in its entirety, *Modular Practice* has something for everyone. The 40 pages of appendices include more than one numbers system, giving sizes and dimensions that will yield (each proponent earnestly hopes) harmonious and economical design. But the reader can leave all this for some rainy afternoon next year and stick to the main text itself. For any architect who just wants to see what the modular approach is all about and how to put it into effect, this reviewer also suggests avoiding the compilations of terminology—called "definitions" here and "nomenclature" there —wherever they may be in the book. Modular lingo need not be that complex for the ordinary practitioner, and is not

Continued on page 182

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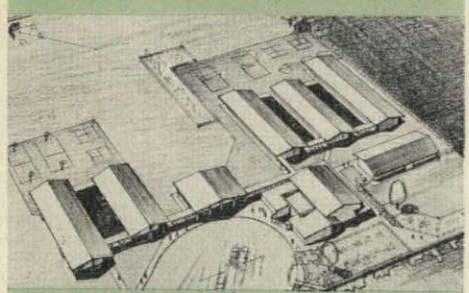

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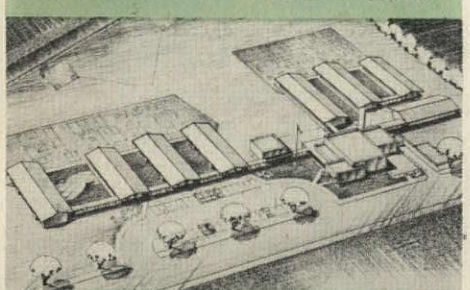

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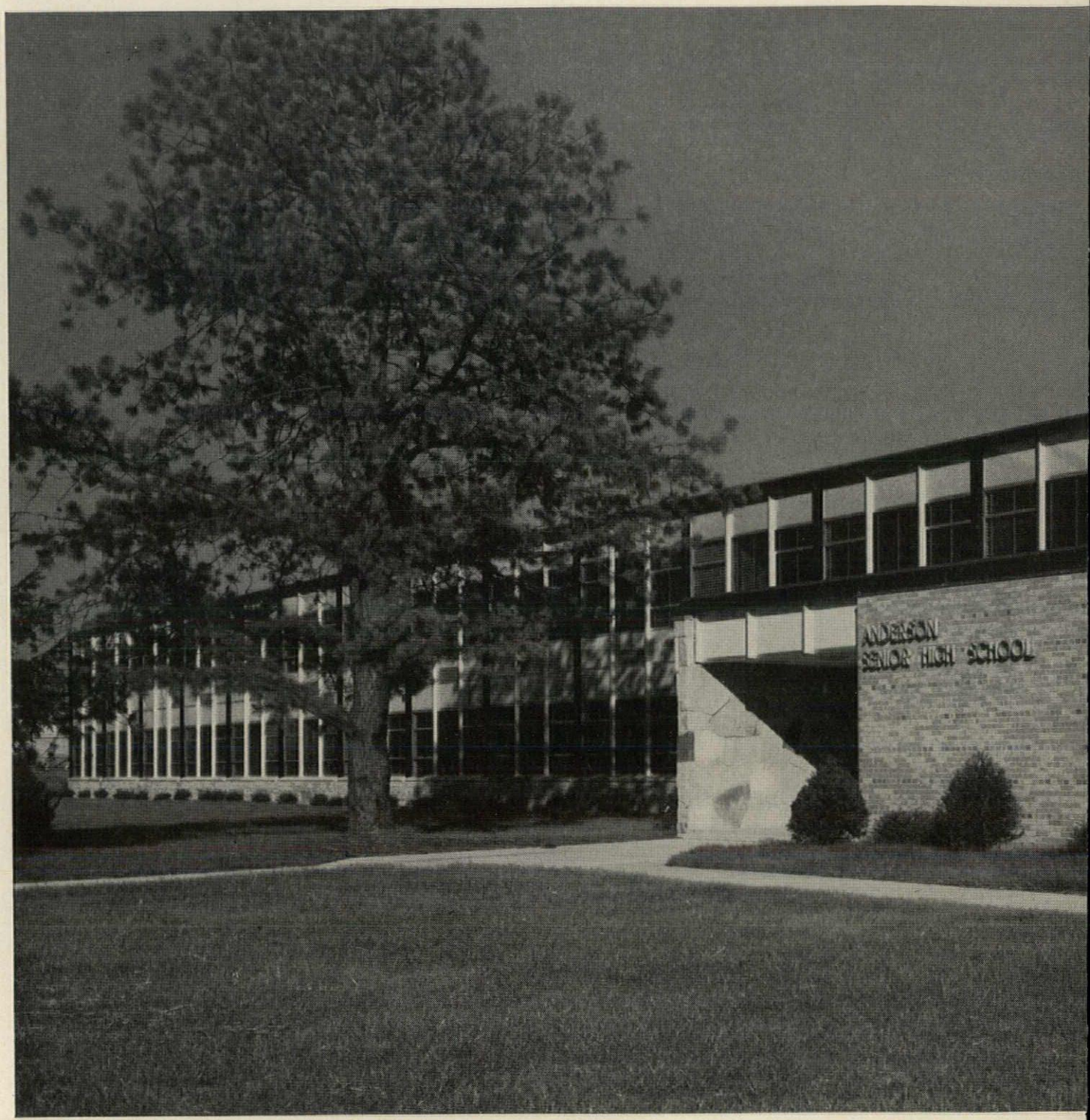

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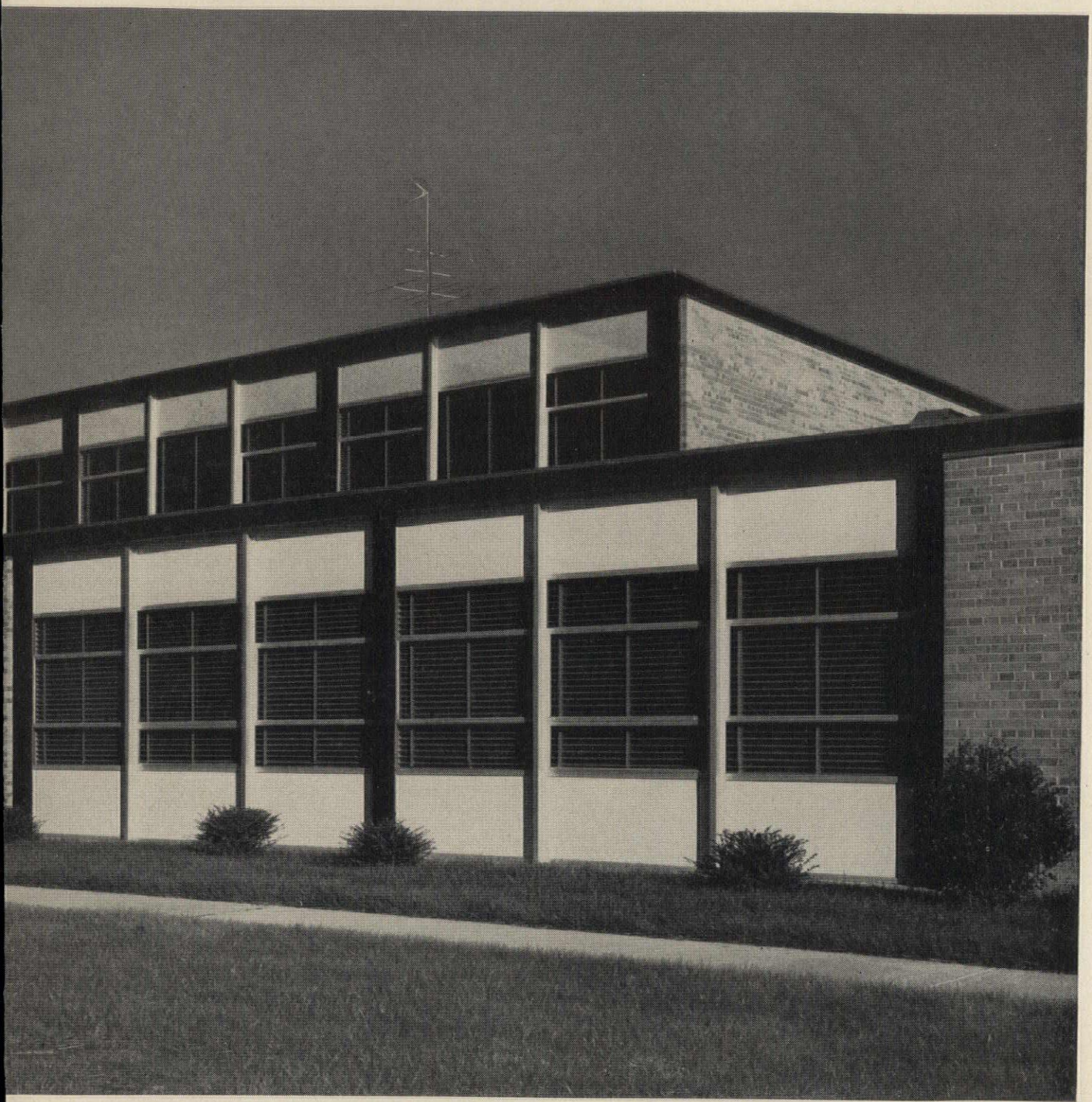

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that important anyway. The text itself will provide such terminology as is needed.

One more suggestion. Should the reader still be inclined to doubt the efficacy of modular measure, he might start by glancing over the prefatory "Acknowledgements" and the brief appendix on "Modular Practice in the Minneapolis-St. Paul Area." The former, on pp. xi and xii, provides an unintended testimonial by listing several dozen architectural firms, all presumably "modular," which have assisted in the preparation of this book. (They are identified, too, since their drawings appear on later pages.) This list includes firms, large and small, of some national repute; it can no longer be argued that the system is practiced by only a handful of devotees. The second reference, on pp. 184 and 185, gives some notion of the ramifications of modular measure that become possible as it moves toward universal acceptance. Reporting that 35 to 45 per cent of the architectural offices in the Twin-Cities area use modular design and, for the most part, modular dimensioning, it goes on to tell how this affects structural drawings, shop drawings, apprentice training, and even journeymen's tools—a convincing reminder of the potential, now just beginning to be realized, in this trend toward modular measure.

The authors observe in their concluding chapter that "a strong program of instruction in modular practice is necessary in colleges and universities to guarantee further development of modular design and construction . . . [a necessary complement to this being] technical reference material illustrating the practical application of principles." Not only are they most emphatically correct, in this reviewer's estimate, but they may also have written the first of the needed texts to be adopted by architectural schools. If this proves to be the case, it will not be because *Modular Practice* preaches the joys of modular measure, but because it earns its way into the professional-level classroom. While coaching the practitioner on the conversion to "modular," this book also tells the student how an architect can best develop his drawings for the practice of contemporary architecture.

Form and Function in Churches

LITURGY AND ARCHITECTURE *by Peter Hammond. Published by Columbia University Press, 2960 Broadway, New York 27, N. Y. (1962, 191 pp., illus. $6)*
THIRD PORTFOLIO OF CATHOLIC INSTITUTIONAL DESIGNS, *edited by Edward L. Spencer. Published by Catholic Property Administration, 1 E. First St., Duluth 2, Minn. (1962, 150 pp., illus. $18.50)*

Liturgy and Architecture is a good book, though repetitious. It is recommended for every church building committee and as required reading for every architect who designs churches.

The view stressed is that church building is first and foremost functional; the Christian liturgy demands that the service be a communal one in which *all* are active participants and the barest essential is a building that houses a congregation gathered around the altar.

Hammond propounds the architectural tenet of the Liturgical movement—the church is not a building with an altar in it; it is an altar with building around it. It is Lao-tze's statement, "The contained is more important than the container." The idea of the building must spring from its liturgical function; and

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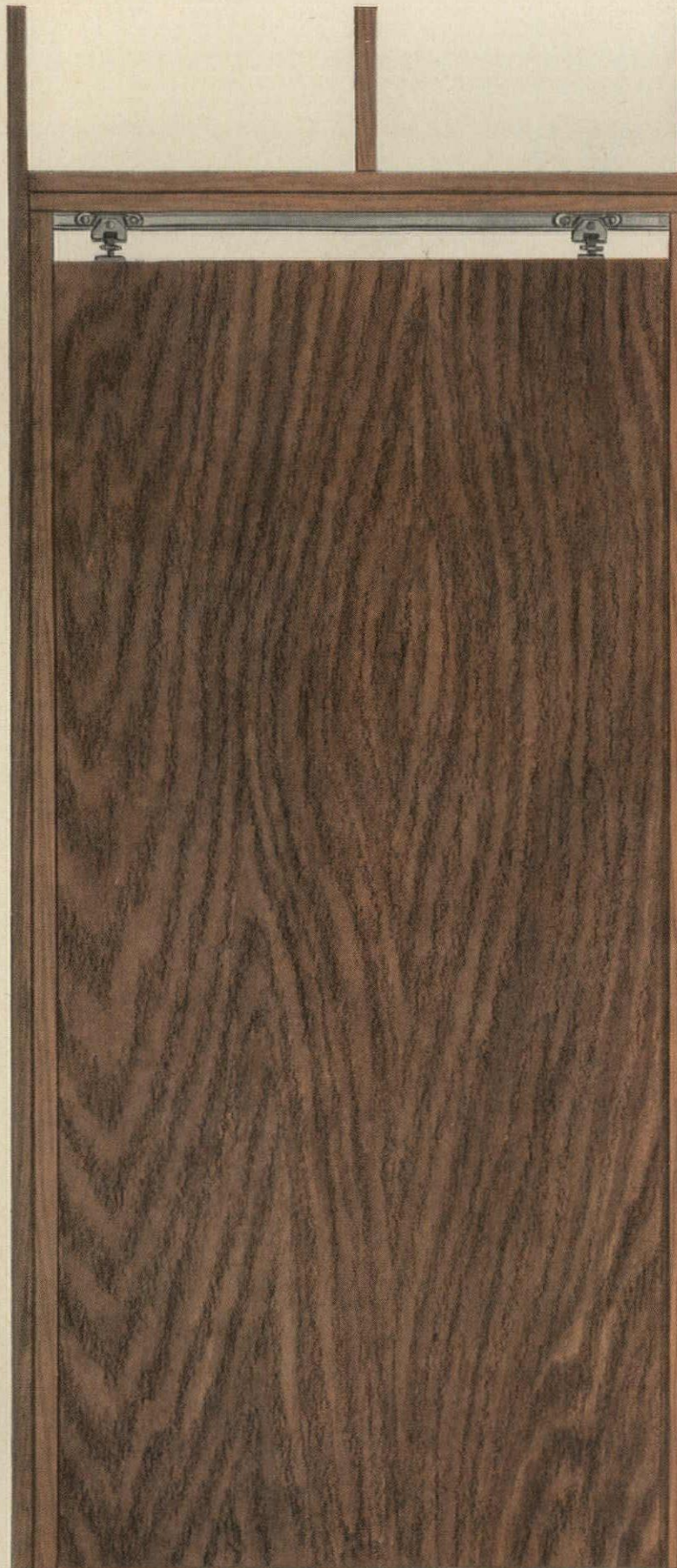

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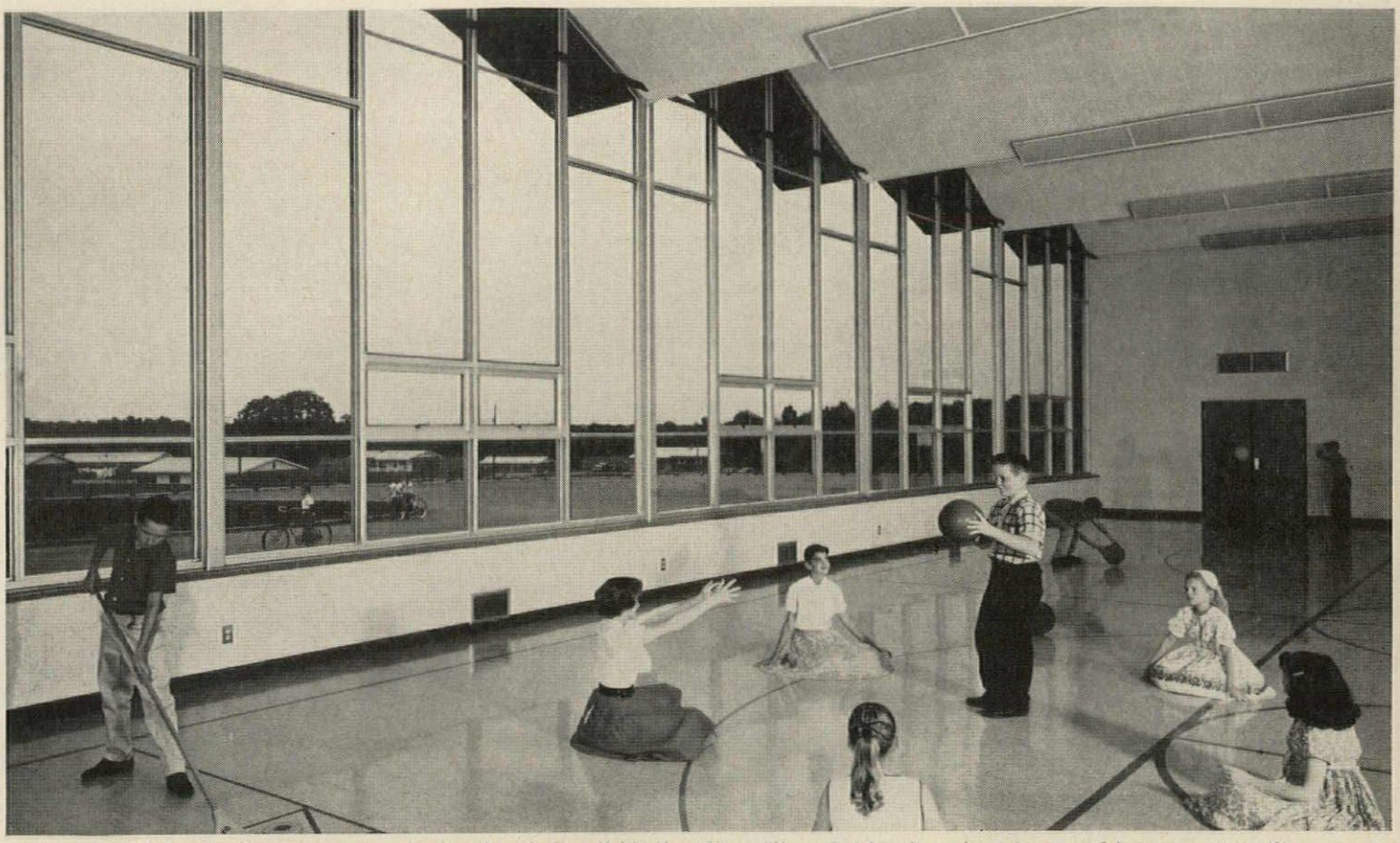

Window wall in gymnasium is glazed with *Parallel-O-Grey* Plate Glass that has been heat tempered for extra strength. Orchard Hills Elementary School, Novi, Mich. Architects: Charles W. Lane & Assoc., Ann Arbor.

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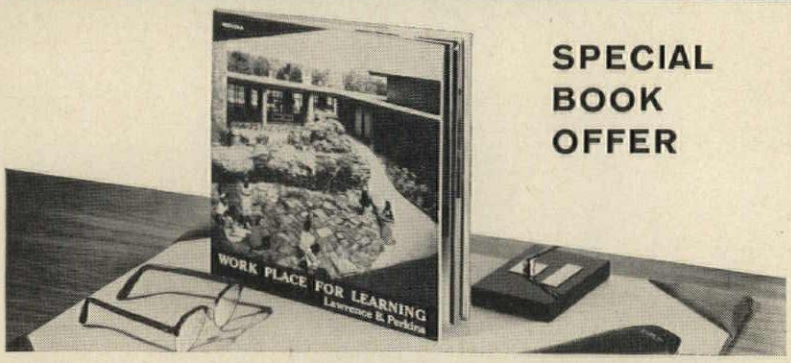

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Students are comfortable next to *Thermopane* windows in library at Michigan State University.
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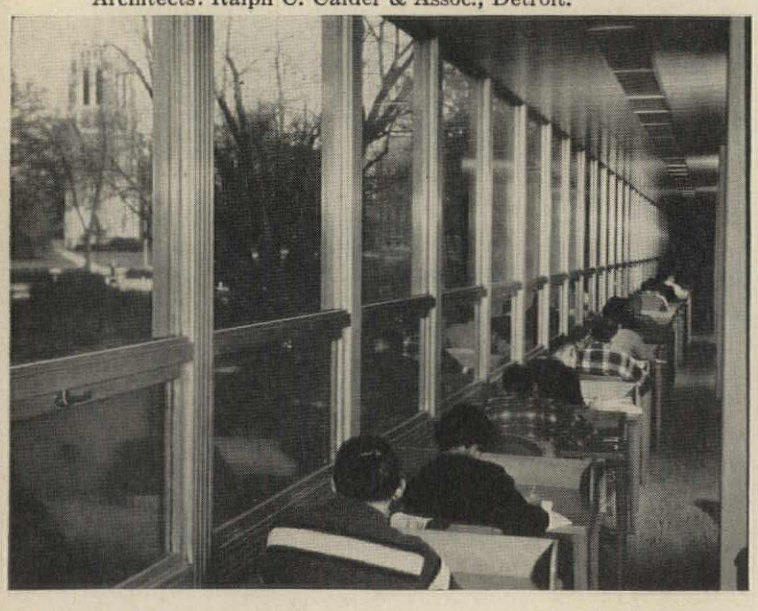
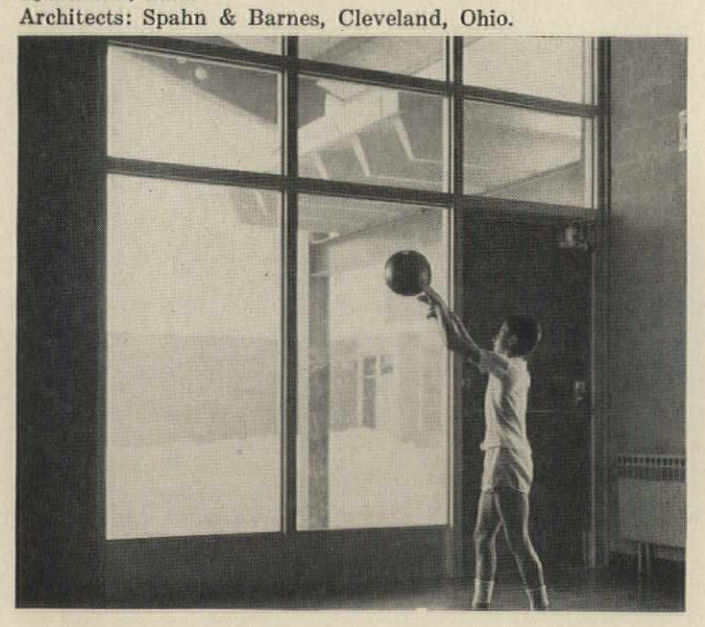


Tuf-flex tempered plate glass in Ridgebury School, Lyndhurst, Ohio.
Architects: Spahn & Barnes, Cleveland, Ohio.



Continued from page 182

for this to happen, the architect must be informed about its meaning. But the meaning includes not only an area where the ecclesia meets to offer the holy Eucharist—there is a shape to the area as a house of God, a *domus ecclesiam significat.* This qualification is important, for otherwise why should an architect, as architect, be called on? "One cannot," Hammond explains, "turn a hall into a church by sticking a monumental cross on the east wall . . . or commissioning an artist to paint a mural in the Lady Chapel."

This is, of course, true of all architecture; a real understanding of the need is a prerequisite but does not itself make a good building. It is not enough to have faith. There is a necessity for artistic integrity. Sacredness in architecture, argues Hammond, is not a matter of religious or literary content or association—it is a matter of honesty, of truth conveyed in terms of art. Thus a Braque still-life, a Bartok quartet, is sacred, whereas most church art is not. This explains the wise policy of the French Dominicans' employment of the *Maîtres au dehors*—a Lipchitz sculpts a Madonna, a Le Corbusier designs a church and monastery, a Léger executes mosaics and stained glass windows.

The essence lies in the idea of the Levitical sacrifice, that what is offered be the best of its kind. In this, Hammond's premises are those of John Ruskin, who wrote 100 years ago:

> "I do not want marble churches for their own sake, but for the sake of the spirit that would build them. The church has no need of visible splendors. . . . The simplicity of a pastoral sanctuary [Hammond uses the same image, calling it 'a white-washed barn'] is lovelier than the urban temple. . . . It is not the church we want but the sacrifice . . . not the gift but the giving."

From this, Ruskin concludes that only the art and craft of the Middle Ages is suitable for church design. Hammond's conclusion is just the opposite: only by the use of the materials, techniques, and forms of our own time can we find a viable expression.

The book is directed to an English audience and the Anglican Church. However, it is surely directly applicable to most Christian sects, and although the symbolism and functions are not appropriate to others, the basic thinking and standards set apply not only to every house dedicated to God but every house built by man.

Liturgy and Architecture has illustrations taken from Roman Catholic and Protestant churches on the continent and in Great Britain. There are mediocre works shown, as well as the great creations of Perret, Le Corbusier, Dominicus Böhm, Karl Moser, and Rudolf Schwarz.

By contrast, *The Third Portfolio of Catholic Institutional Designs* gives a mighty poor impression of work done in the United States for the Roman Catholic denomination.

The portfolio consists of 150 buildings, of which 50 are churches. All are shown in plan and photograph, a large page to each. All were built in the last three years.

One would expect that the beneficent influence of Father Couturier would have at least touched the American branch of the church; one would have hoped that Breuer's Benedictine Monastery at Collegeville would be one of many examples. To the contrary—this work is not shown. And what is shown, when not positively bad, is banal in architectural form and sickening in its liturgical and artistic furnishings. The one exception to this low level is the Priory Church of

Continued on page 190

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Not with a whipping wind! Sunbrella's tough. Not in the guaranteed non-fade, non-mildew, non-rot, non-shrink features either. Oh sure, you could drop a concrete block off the roof and rip it maybe—or pour pure bleach on it and disturb the color. But those are mighty unusual accidents. So when today's Sunbrella, woven of 100% Acrilan* acrylic fiber, still looks great years from now, do you think the owners will recommend it to friends? You bet! Write for more product information.

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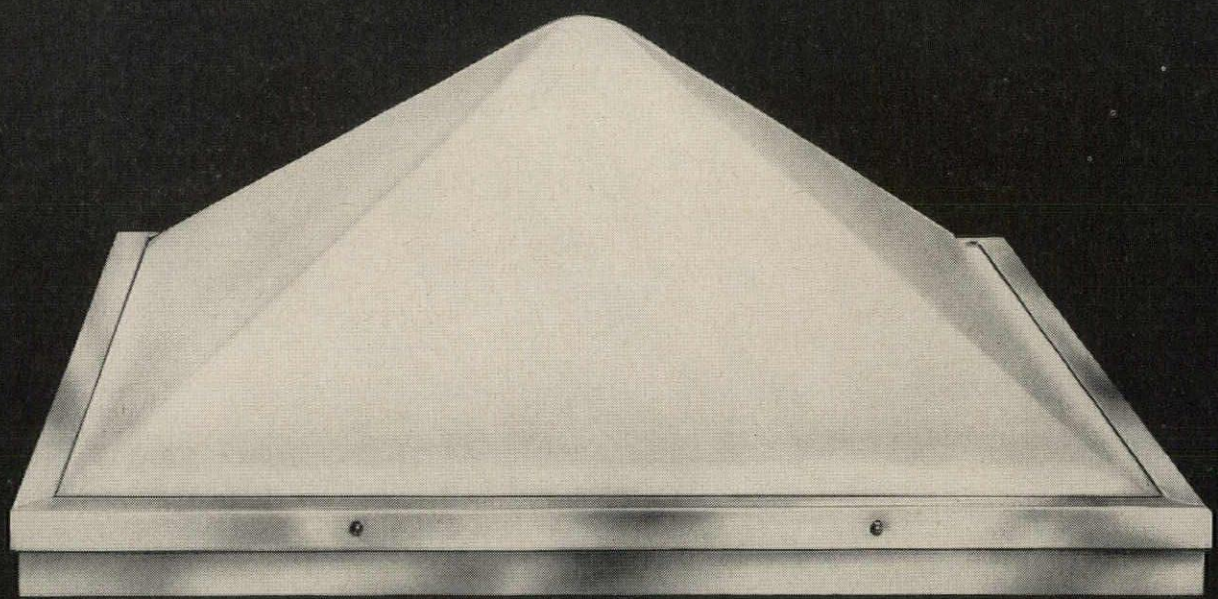

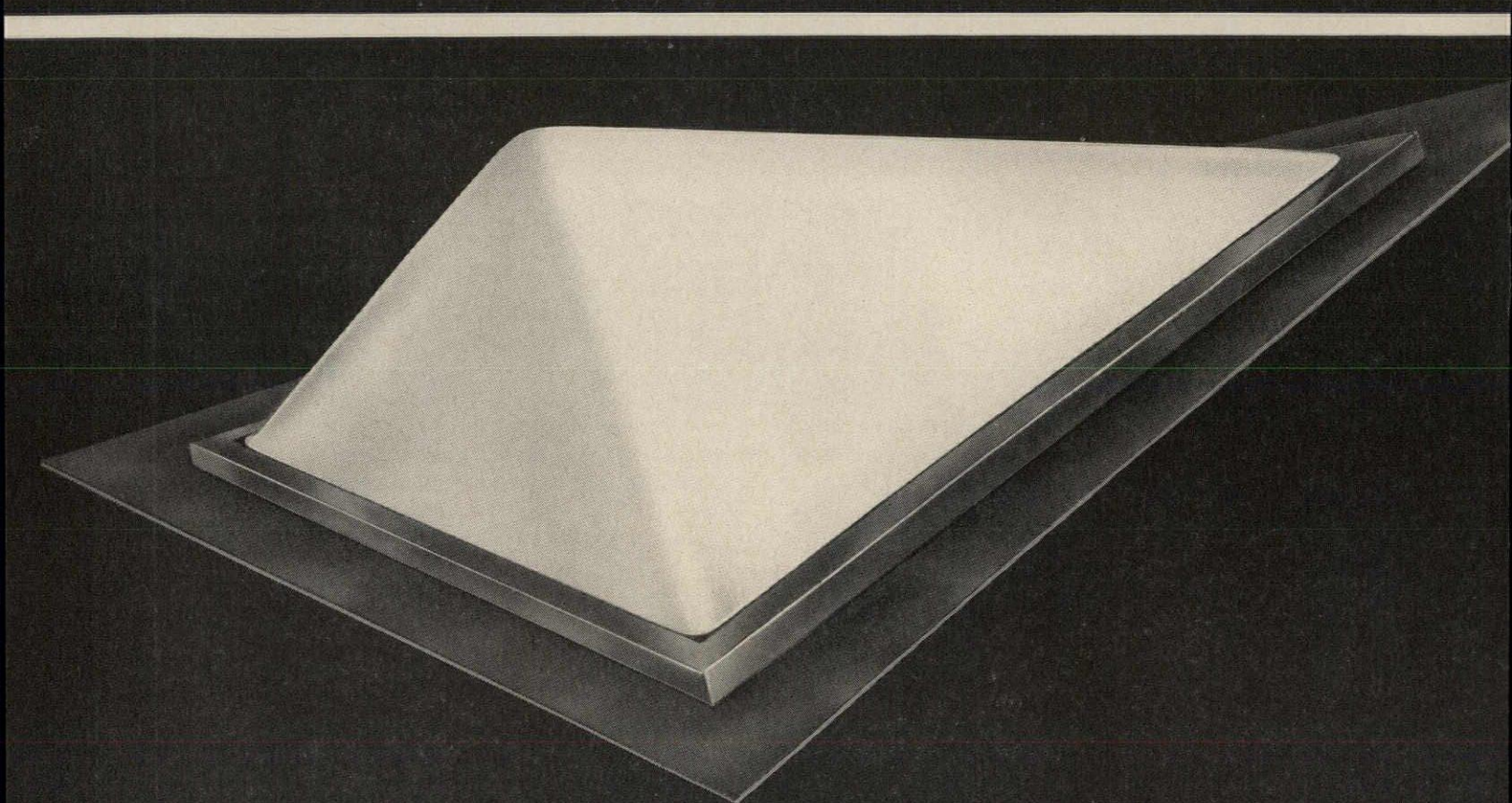

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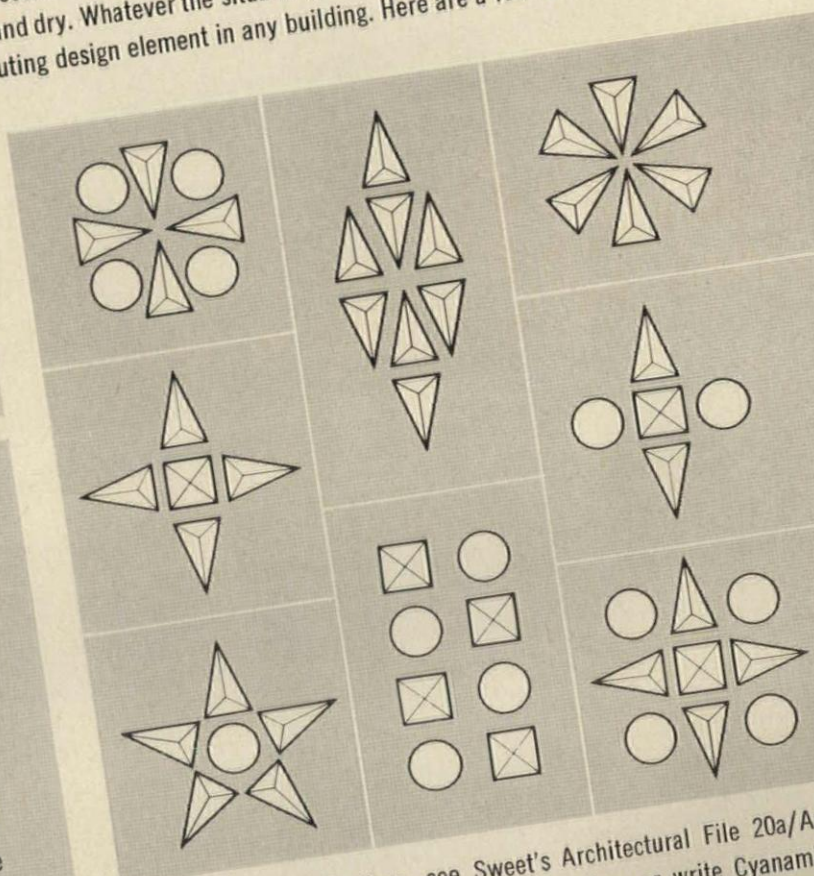
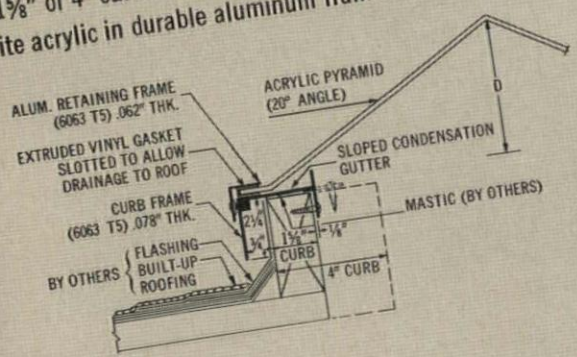
You can custom design distinctive new motifs in daylighting by combining these new units with standard square, rectangular or circular Skydome skylights. And you can achieve dramatic, yet efficient interior lighting effects at a cost much less than that of specially designed skylights. Like all Skydome units, these new models provide brighter work areas, permit fuller use of floor and wall space and trim electric lighting costs.

Design combinations of standard Skydome units are limitless. Ceilings become more exciting, roofs can do more than just keep rooms warm and dry. Whatever the situation, daylighting can be an integral, contributing design element in any building. Here are a few ideas:



NEW PYRAMID DOME

Add a bright new design element with this Skydome pyramid unit. This skylight was originally produced as a custom unit. However, as a result of a survey among architects, it has been modified to include additional advanced design features and is now available as a standard item in the Skydome line. Installs on 1⅝" or 4" curb. 9 sizes. Available in clear, white, or dense white acrylic in durable aluminum frame.



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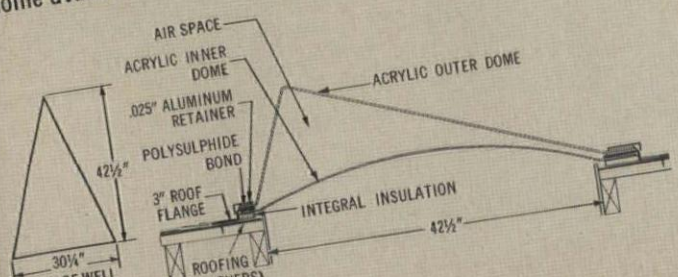

For complete specifications, see Sweet's Architectural File 20a/A or Sweet's Industrial Construction File 15c/Am, or write Cyanam

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Continued from page 186

St. Louis & St. Mary by Hellmuth, Obata & Kassabaum. Is it an exception because it is for the Benedictine Fathers?

Edward L. Spencer, editor of this work, writes:

"Our editors have scrutinized hundreds of plans and layouts from all over the nation and have decided that in their estimation these selections were most representative of the present trend in design. . . . Here are the accomplishments of some of the leading architects of the U.S.—men of talent who have proved their ability . . ."

If this were true—it is not—it would be too bad for the future of our ecclesiastical art.

It appears evident that the architectural program of the Roman Catholic Church in the United States needs a complete re-examination. As a first step I would suggest reading Peter Hammon's book, as well as *Life and Liturgy* by Louis Bouyer (Sheed & Ward, 1956) and the *Histoire du Mouvement Liturgique* by Olivier Rousseau (Paris, Les Editions du Cerf, 1945).

PERCIVAL GOODMAN
New York, N.Y.

Little Help for Professionals

HEATING AND HUMIDIFYING LOAD ANALYSIS *by F. W. Hutchinson. Published by The Ronald Press Co., 15 E. 26 St., New York 10, N.Y. (1962, 494 pp., tables, diagrams, $12.50)*

Practicing engineers will find very little here that has not already been presented in satisfactory detail elsewhere, particularly in the *ASHRAE Guide*. This reviewer went through the work twice, looking for something—surely something must be there—that would help solve the everyday problems of a working design office with speed and accuracy. And the conclusion after the second time around was not unlike the first reaction: a feeling that this book was put together by the author to reach some audience other than the practicing professionals of architecture and engineering. Most of us have been planting and harvesting in these identical fields for years. We know where we've been; what we want is to be shown better vistas ahead.

The work is arranged in four sections, all aiming more or less directly at heating load analysis and its ultimate sizing. For those of us who enjoy scientifically equating the ifs, ands, and buts of load analysis, here is what to expect from each section:

I. The definition of comfort, thermal

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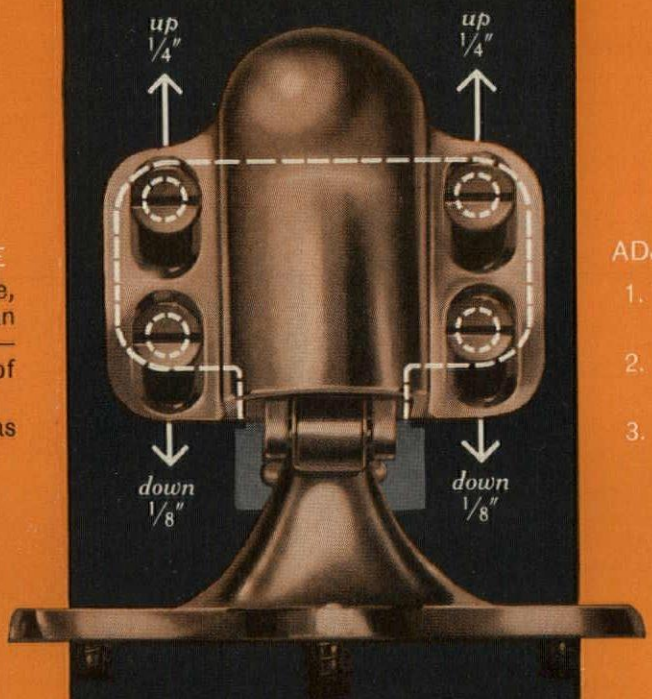

*A AS IN ADJUSTABLE

When installed to template, door portion of holder can be raised as much as 1/4"—to adjust in the event of door sag.

Can be lowered as much as 1/8".

ADJUSTMENT IS SIMPLE

1. Loosen four screws on door portion.
2. Raise or lower in 1/16" increments.
3. Tighten screws.

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basis and quality basis, and the selection of the outside design temperature. Included in the discussions are such subjects as body-surface temperature, influence of humidity on comfort, odor removal, statistical analysis of outside air temperatures, and some recommendations for temperature selection.

II. The fundamentals of heat transmission, the materials transmission load as separate from the ventilating heating load. Also, equilibrium temperatures, recommended procedures, etc.

III. Load determinations for special design conditions, panel analysis, solar heating, and the relationships of humidity control to the sensible heating load.

IV. Load evaluations for the unsteady state, including the Schmidt procedure for finite differences. Also a graphical treatment for air spaces, and the effect of intermittent operation on the heating load. This last study does pose an interesting possibility: that the off-and-on operation of a heating system through a range of two or three degrees actually might be more stimulating to the human metabolism, and accelerate the oxidation of odors, beyond the capabilities of a dead-level temperature control.

In all of this, there is no nourishment for the average architectural office, and, as noted previously, little for the practicing engineer. Perhaps it will be valuable in the classroom; that is up to the teaching profession to decide. We certainly hope its place is there, for otherwise we are vexed by a recurring question: for whom was it written?

ROBERT H. EMERICK
Consulting Mechanical Engineer
North Charleston, S.C.

OTHER BOOKS TO BE NOTED

Airport Buildings and Aprons (Third Edition). Technical Committee, International Air Transport Assn., 1060 University St., Montreal 3, Canada, 1962. 205 pp., charts, tables, $2

Comprehensive study of the facilities required for efficient and convenient handling of passengers, baggage, cargo, and aircraft. Information is divided into four sections: basic planning considerations, building requirements, apron requirements, and heliports at airports.

An Album of New Netherland. Maud Esther Dilliard. Twayne Publishers, Inc., 31 Union Square West, New York 3, N.Y., 1963. 160 pp., illus. $10

A richly illustrated survey of the history and influence of 17th-Century Dutch settlements in North America. Existing examples of Dutch architecture are shown, as well as prints and engravings of buildings long since destroyed.

Building Failures: Case Studies in Construction and Design. Thomas H. McKaig. McGraw-Hill Book Co., Inc., 330 W. 42 St., New York 36, N.Y., 1962. 256 pp., illus. $10.75

A systematic review of more than 200 recent building failures, typical and unusual, analyzed according to their causes—construction procedures, alteration hazards, foundation failure, carelessness or ignorance, new design, deterioration through age or overload, wind, fire, and explosion.

Building or Buying the High-Quality House at the Lowest Cost. A. M. Watkins. A Dolphin Book. Doubleday & Co., Inc., 575 Madison Ave., New York 22, N.Y., 1962. 270 pp. $.95 (paperbound)

Reprint of the hard-cover book issued earlier in the year by Doubleday.

Homes of the American Presidents. Cranston Jones. Photographs by William H. Schleisner. McGraw-Hill Book Co., Inc., 330 W. 42 St., New York 36, N.Y., 1962. 232 pp., illus. $13.95

To be reviewed.

IES Lighting Handbook (Third Edition). Publications Office, Illuminating Engineering Society, 345 E. 47 St., New York 17, N.Y., 1962. 1130 pp., illus. $10

A revised second printing of the 1959 edition, with two sections brought up to date —"Light Sources" and "Manufacturers' Reference Data." Extensive basic information is

Continued on page 198

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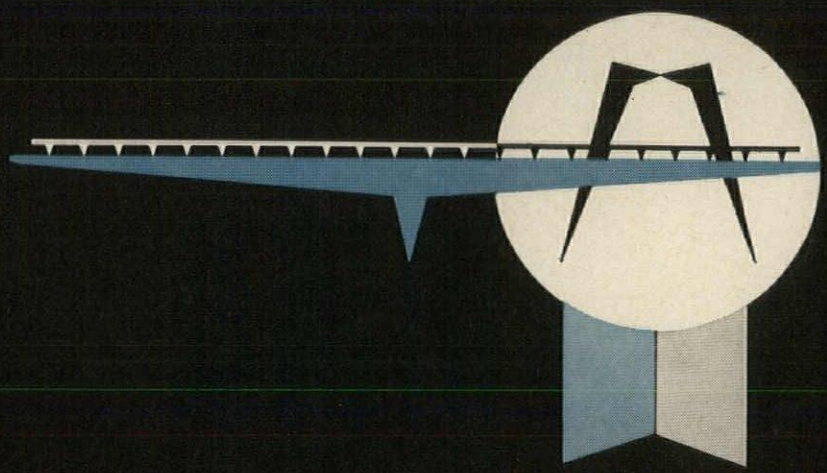

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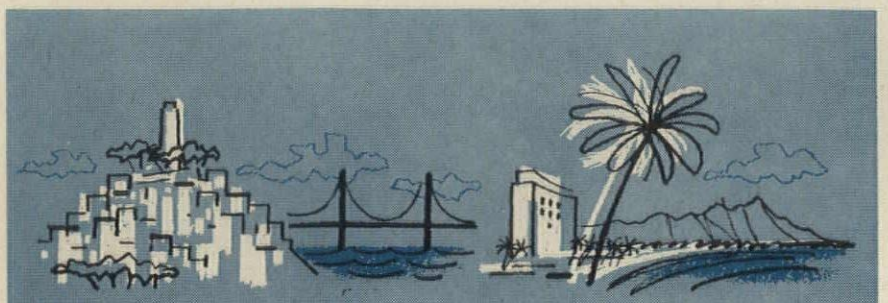

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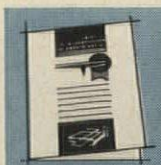

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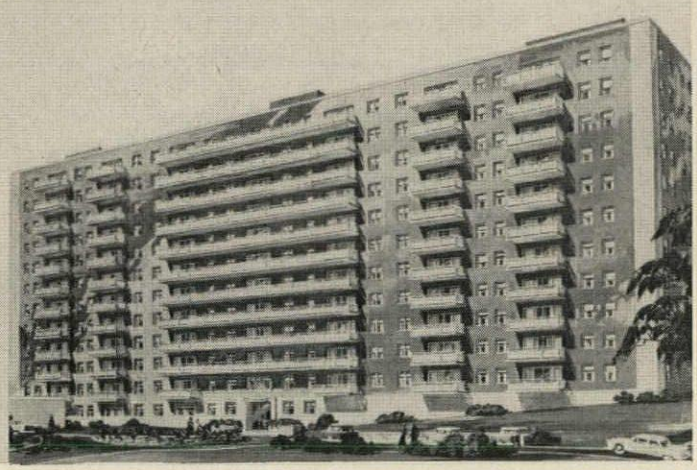

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Continued from page 192

given on fundamentals of light and vision, current lighting techniques, and specific applications.

Life and Shape. Richard Neutra. Appleton-Century-Crofts, 60 E. 42 St., New York 17, N.Y., 1962. 374 pp., illus. $7.95
To be reviewed.

Modern California Houses: Case Study Houses 1945-1962. Esther McCoy. Reinhold Publishing Corp., 430 Park Ave., New York 22, N.Y., 1962. 215 pp., illus. $12.50
To be reviewed.

Phoenix at Coventry: The Building of a Cathedral. Sir Basil Spence. Harper & Row, 49 E. 33 St., New York 16, N.Y., 1962. 141 pp., illus. $6.95
To be reviewed.

Pictorial Dictionary of Ancient Rome (Volume II). Ernest Nash. Frederick A. Praeger, 64 University Place, New York 3, N.Y., 1962. 532 pp., illus. $37.50
Second of a two-volume pictorial survey of all ancient monuments and buildings in Rome, with pictures of every extant relic. Extensive bibliography lists all available references on every relic, including first excavation reports.

Practical Quality Control for Concrete. Joseph J. Waddell. McGraw-Hill Book Co., Inc., 330 W. 42 St., New York 36, N.Y., 1962. 380 pp., illus. $11.75
Practical manual on concrete as a building material, with special attention to the prevention and cure of defects and the achievement of desired effects. Author is Chief Materials Engineer for Soil Testing Services, Inc.

Purely for My Pleasure. W. Somerset Maugham. Doubleday & Co., Inc., 575 Madison Ave., New York 22, N.Y., 1962. 92 pp., illus. $20
Color reproductions of 30 paintings from the author's collection, with anecdotes on their acquisition. Among the paintings are works by Matisse, Gauguin, Renoir, Monet, Picasso.

Specifications (2nd Edition). H. Griffith Edwards. D. Van Nostrand Co., Inc., 120 Alexander St., Princeton, N.J., 1961. 372 pp., illus. $8
To be reviewed.

NOTICES

New Addresses

FRED BASSETTI & COMPANY, Architects, 510 Logan Building, Seattle 1, Wash.

WALTER BUCHER & ASSOCIATES. Architects, 7676 Woodbury Drive, Silver Springs, Md.

LEVIN, PIERCE & WOLF, Consulting Engineers, 19480 Livernois, Detroit 21, Mich.

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HARRY VAN DEXTER, Architect, Chapel Heights Rd., Washington Township, Gloucester County, N.J.

RICHARD S. HERTZBERG, Architect, 101 Park Ave., New York 17, N.Y.

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GEORGE D. SAVAGE, Architect, 450 N. Narberth Ave., Narberth, Pa.

BODRELL JOER'DAN SMITH, Architect and Planner, 8426 Sunset Blvd., Los Angeles, Calif.

EDWARD X. TUTTLE, Architect, 125 Parkway Rd., Bronxville, N.Y.

PAUL WITTE & HENRY LEONG ASSOCIATES, Industrial Designers, 33 Witherspoon St., Princeton, N.J.

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JOSEPH M. BRANDSTETTER, JOSEPH A. VEDRA, S. ERNEST PEPE, MILTON HERMAN, named Associates in firm of A. EPSTEIN AND SONS, INC., Engineers and Architects, Chicago, Ill.

FRANKLIN J. DUANE, made Partner in firm of DUANE AND LAWRENCE ARCHITECTS, Washington, D.C.

ANDREW G. ELLIOTT, STANLEY GLEIT, named Associates in firm of GARFINKEL & MARENBERG, Consulting Engineers, New York, N. Y.

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MOISE H. GOLDSTEIN, CHARLES D. FORD, made Associates in firm of LOUIS A. GOLDSTEIN, Architect, New Orleans, La.

PHILIP M. GRENNAN, made Partner; GEORGE E. VIA, JR., made Associate in

Continued on page 204

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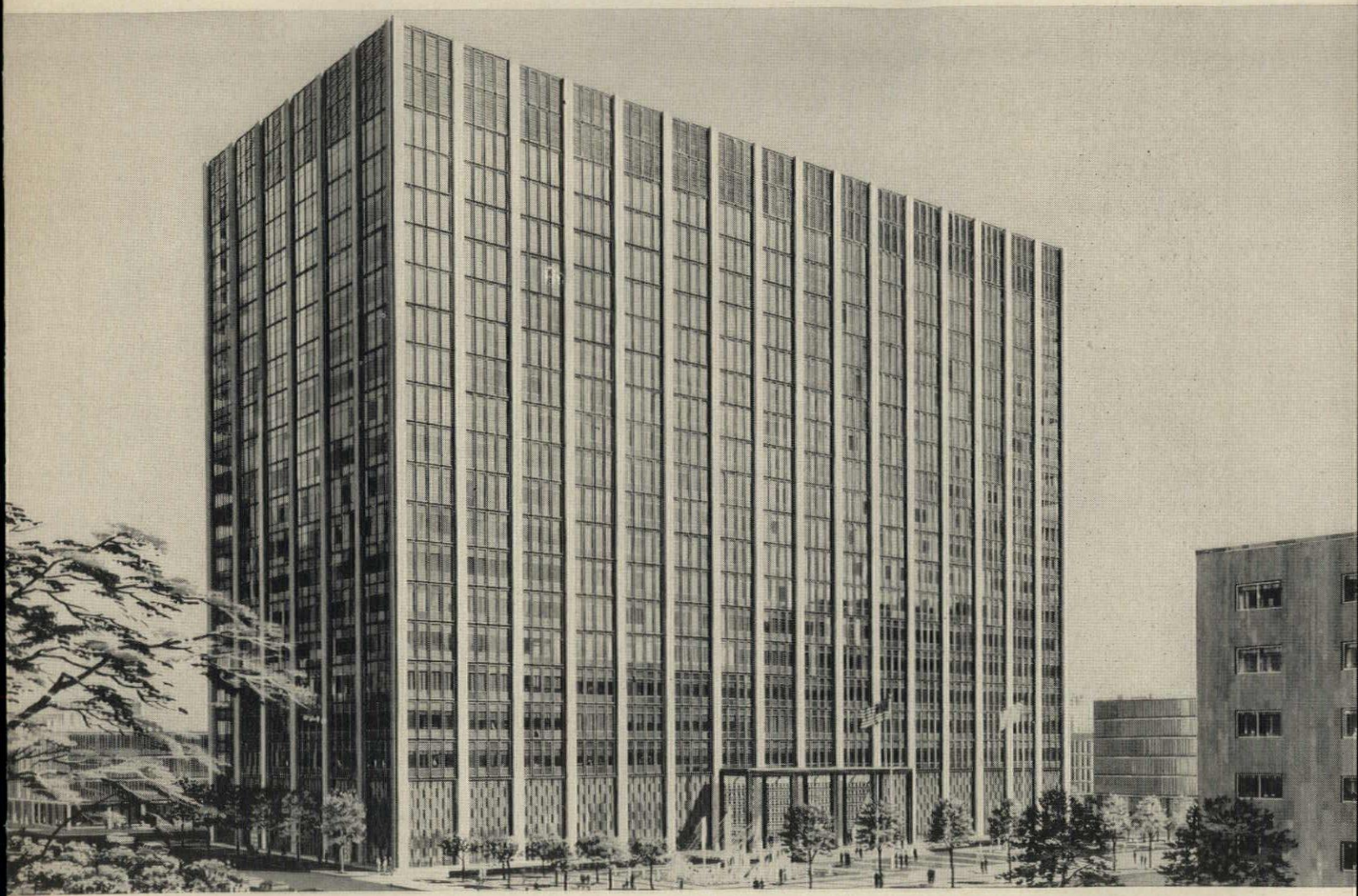

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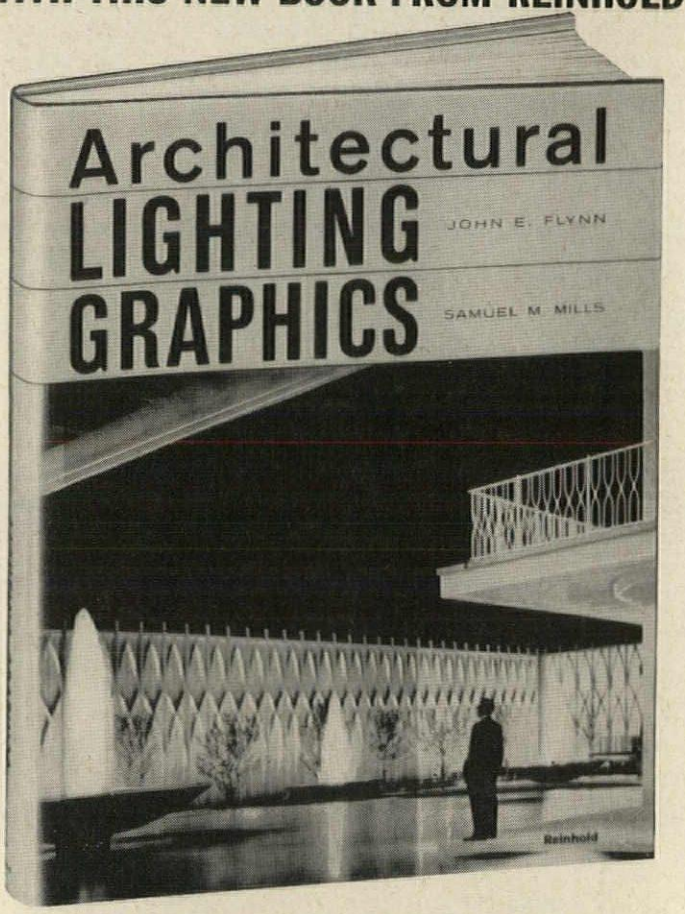

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PART IV: QUALITY AND COMFORT
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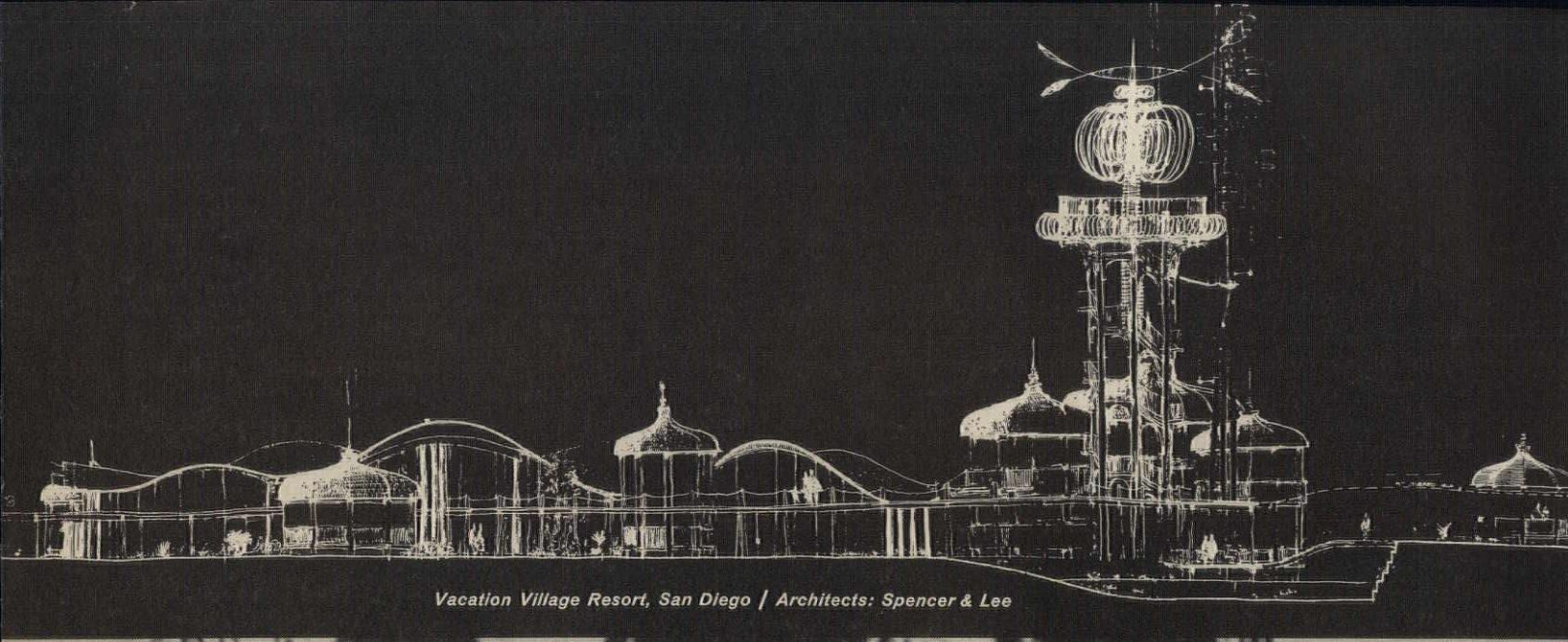

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PHILIP C. PATTERSON, ROBERT P. MEYERHOF, named Full Partners in firm of SMITH AND WILLIAMS, Architects and Engineers, South Pasadena, Calif.

JOHN C. STEVENSON, JR., made Associate in firm of DEEMS-MARTIN ASSOCIATES, Architects, San Diego, Calif.

ROBERT T. VOGEL, named Associate in firm of WHEEL-GARON, INC., New York, N. Y.

Name Changes

BALLOU, DALY, LEVY, Architects, Ridgefield Park, N.J. Formerly FELLGRAFF, BALLOU, DALY, Architects.

CLARK & ENERSON-OLSSON, BURROUGHS & THOMSEN, Architecture, Landscape Architecture and Site Planning and Municipal, Structural, Mechanical and Electrical Engineering, Sharp Building, Lincoln, Nebr. Formerly CLARK & ENERSON, Architects and OLSSON & BURROUGHS, Consulting Engineers.

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HOLLIS W. KINCAID & ASSOCIATES, Architects, 526 Farmington Ave., Hartford 5, Conn. Formerly HOLLIS WHIPPLE KINCAID, Architect.

RISLEY, GOULD & VAN HEUKLYN, Architects, 2502 W. Third St., Los Angeles 57, Calif. Formerly RISLEY & GOULD, Architects.

FRANK C. ALLEN, GEORGE A. MCMATH, made Partners in firm of STEWART-RICHARDSON-ALLEN-MCMATH, Architects, 219 S. W. Stark, Portland 4, Oregon. Formerly STEWART AND RICHARDSON, Architects.

SWAIN & MYERS ASSOCIATES, INC., Industrial Designers, Decatur, Ill. Formerly SWAIN & MYERS SALES CO.

TANNENBAUM AND KOEHNEN—ARCHITECTS AND ENGINEERS, 5822 W. Fond du Lac Ave., Milwaukee 18, Wis. Formerly TANNENBAUM AND KOEHNEN, Architects.

THE OFFICE OF MAX O. URBAHN, Architects, 635 Madison Ave., New York 22, N.Y. Formerly URBAHN & BRAYTON, Architects. R. M. BRAYTON has retired.

Elections, Appointments

DR. S. BARON, promoted to Director of Nuclear, Process, and Aerospace Engineering; T. Y. MULLEN, made Director of Power Engineering; M. A. FORREST, made Vice-President in charge of Project Operations and a Director of BURNS AND ROE, INC., Consulting Engineering and Construction firm, New York, N.Y.

JAMES J. MCLAUGHLIN, named to the newly created position of Director of Advertising and Promotion at UNITED STATES GYPSUM COMPANY. DAVID C. WRIGHT, appointed Director of Marketing Research.

ALAN F. RICHTER, appointed Engineer in Charge of Highways; NORMAN MITNIK, appointed Supervising Structural Bridge Designer; HENRY A. MAIER, appointed Supervising Civil Engineer in firm of SANDERS & THOMAS, INC., Consulting Engineers, Pottstown, Pa.

MICHAEL S. SANCHEZ, named Director of Interior Design and Planning in firm of HAGMAN & MEYER, AIA, Architects.

MRS. LOUISE SLOANE, retained as Publicity Director of RICHARDS-MORGENTHAU COMPANY.

JAMES R. TURNBULL appointed Executive Vice-President of the DOUGLAS FIR PLYWOOD ASSOCIATION.

MARTIN G. WINTER, appointed Manager of Architectural Services for the BOWMAN STEEL CORPORATION.

RICHARD F. WITTENMYER, appointed Manager of Engineering and Research of THE AUSTIN COMPANY, Engineering and Construction firm, Cleveland, Ohio.

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The firm of CLARK, DAILY AND DIETZ, Engineers-Architects, 211 N. Race St., Urbana, Ill., reorganized into two firms: CLARK, DAILY, DIETZ AND ASSOCIATES, Engineers, and CLARK, DAILY, SMITH AND ASSOCIATES, Architects-Structural Engineers. DELBERT R. SMITH is the Supervising Architect of the newly formed partnership located at 205 N. Race St., Urbana, Ill. The engineering firm will remain at their present address.

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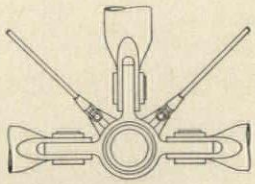

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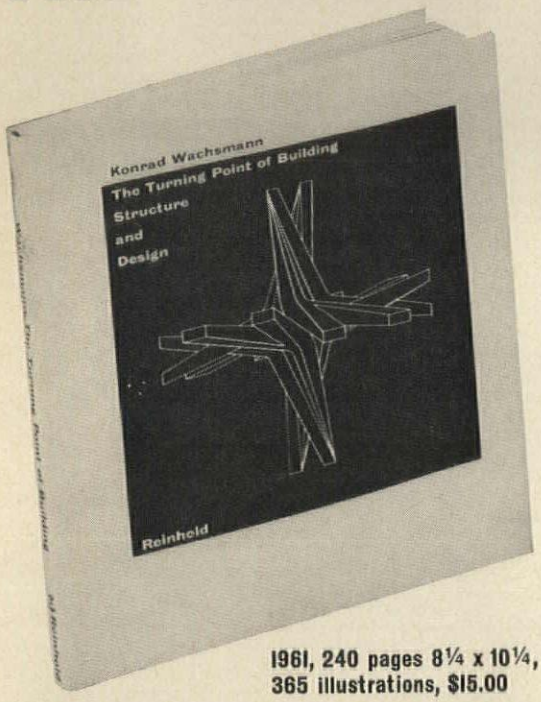

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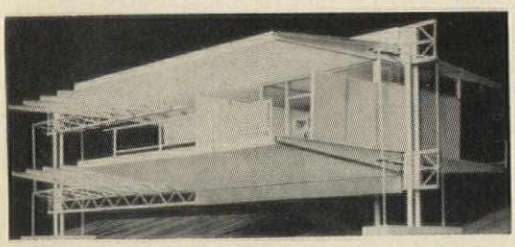

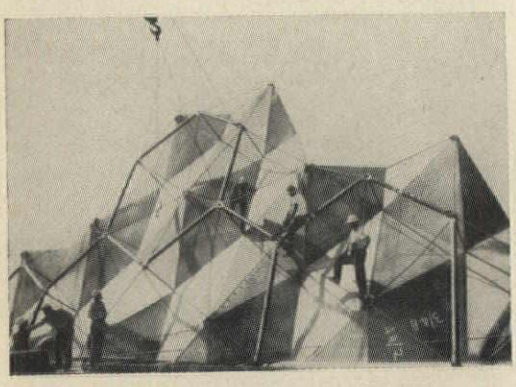

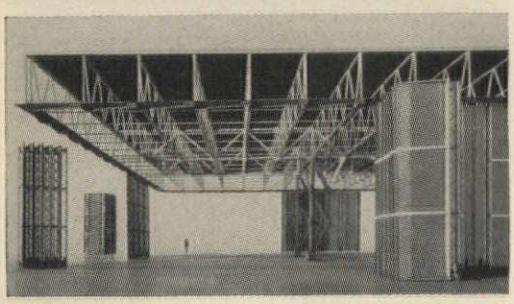

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HARMON L. PROCTOR
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Higbee Westgate Store, Cleveland, Designers and Planners: Raymond Loewy/ William Snaith, Inc., N. Y. C., Engineers of Record: Strobel and Rongved, N. Y. C.

A FLOOR OF TESSERA VINYL CORLON—

an elegant, monolithic background for displays in this new store

The picture on the opposite page shows how a floor of Tessera Vinyl Corlon enhances and unifies the interior of the Higbee Westgate Store, Cleveland, Ohio. A gray-white styling in Tessera (#86542) was chosen to form a neutral background for the colorful store displays. Because it comes in long rolls 6 ft. wide, Tessera forms a virtually seam-free floor. With its relative seamlessness, fine-scale design, textured surface and vinyl formulation, Tessera maintains good appearance, minimizes heel indentations, and simplifies upkeep. It will give years of service in any busy store or other interiors subjected to heavy foot traffic.

Technical Data on Tessera:

uses: heavy-duty commercial and de luxe residential interiors, above, on, or below grade; **grease and alkali resistance:** excellent; **dimensions:** .090" gauge in rolls 6 ft. wide and lengths up to 90 ft.; **dimensional stability:** exclusive Hydrocord Back gives Tessera exceptional stability; **stylings:** colored vinyl chips set in translucent vinyl in monochromatic and multicolor designs, 18 colorings.

The Armstrong Architect-Builder Consultant in your area can help you solve any flooring problems you encounter. He will provide you with samples and specifications and, if you desire, will get you the assistance of technical, design, and installation experts at Armstrong. Call him at your Armstrong District Office. Or write Armstrong, 302 Watson St., Lancaster, Pa.

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