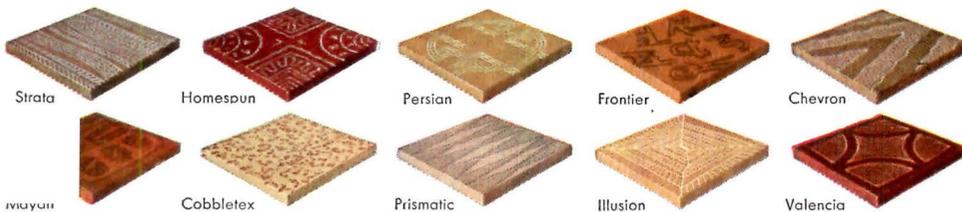




Textured Quarry Tile by Summitville is unique in the ceramic field. *No* other product offers such a combination of sparkling color, pattern and texture, long wear and versatility. Easy-to-clean textured quarry tiles are available in 10 designs . . . a choice to complement any architectural style. Twelve color combinations provide a selection to harmonize with any color scheme.

For the full story on how to specify beautiful, "unequaled" floors and walls, contact your local ceramic tile contractor or write direct.



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# THIS MONTH IN P/A

*The World's Largest Architectural Circulation*

## 49 NEWS REPORT

N.Y. World Trade Center advances . . . AIA award winners shown . . . Guggenheimesque aquarium for Caracas . . . Inverted flower drive-in . . . Restrained synagogue in Connecticut . . . Famous sculpture for architects . . . PERSONALITIES: Benjamin Gingold, Norman Hoberman . . . BULLETINS . . . WASHINGTON/FINANCIAL NEWS . . . PRODUCTS: Plastic on plywood; concrete aggregate system . . . MANUFACTURERS' DATA.

## 129 CONTENTS

## 130 EDITORIAL FEATURES

A new design movement influenced by Louis Kahn and labeled here The Philadelphia School is the subject of an article by Jan Rowan that examines in detail Kahn's complex and expressive design philosophy, and shows three of his recent and important projects, as well as the work of other members of the group . . . Part II of P/A Symposium on the State of Architecture discusses methods of practice . . . Three Howard Johnson's Motor Lodges are evaluated in INTERIOR DESIGN DATA.

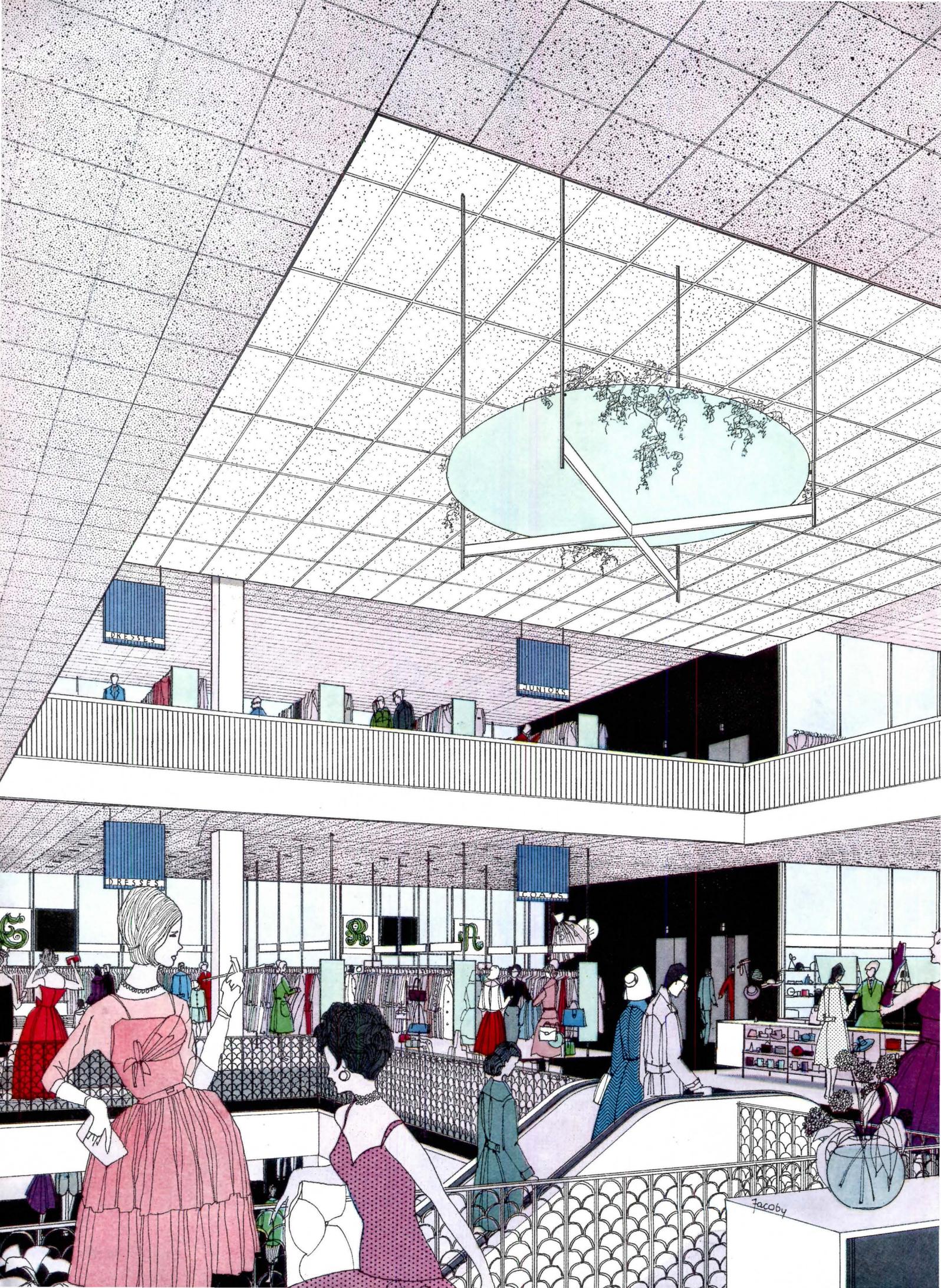
TECHNICAL ARTICLES: Report on the St. Louis Climatron, an unusual botanical display that was awarded the 1961 Reynolds Memorial Award, stresses the ability of the structure to duplicate tropical climates by means of its Supervisory DataCenter . . . Improved techniques of heating shops and warehouses are discussed by Robert Emerick . . . Plus an article on inclined corner-plate girders . . . MECHANICAL ENGINEERING CRITIQUE . . . SPECIFICATIONS CLINIC . . . IT'S THE LAW.

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PROGRESSIVE ARCHITECTURE published monthly by REINHOLD PUBLISHING CORPORATION, 430 Park Avenue, New York 22, N. Y. Ralph W. Reinhold, Chairman of the Board; Philip H. Hubbard, President and Treasurer; Fred P. Peters, Vice-President and Secretary; H. Burton Lowe, Merald F. Lue, D. Bradford Wilkin, William P. Winsor, Vice-Presidents; Kathleen Starke, Assistant Treasurer; Executive and Editorial offices: 430 Park Avenue, New York 22, N. Y. Subscriptions payable in advance. Subscription prices to those who, by title, are *architects, engineers, specifications writers, designers or draftsmen*, and to government departments, trade associations, members of the armed forces, architectural schools and students, advertisers and prospective advertisers and their employees—\$5.00 for one year, \$8.00 for two years, \$10.00 for three years. Above prices are applicable in U. S., U. S. Possessions, and Canada. All *practicing architects and engineers* outside U. S., U. S. Possessions and Canada—\$10.00 for one year, \$16.00 for two years, \$20.00 for three years—ALL OTHERS: \$20.00 a year. Single copy—\$1.00; special issues—\$2.00 per copy. Printed by Publishers Printing Company, New York, N. Y. Copyright 1961, Reinhold Publishing Corporation. Trade Mark Reg. All rights reserved. Indexed in Art Index, Architectural Index. Second class postage paid at New York, N. Y. Volume XLII, No. 4





LUXESSES

MUNDOVA

LUXESSES

MUNDOVA

Jacoby

*From Armstrong: a giant step in fire-retardant ceilings*

**Now, for department stores: two types  
of Acoustical Fire Guard—12" x 12" tiles  
and new lay-in units**

**T**he larger ceiling area of the department store on the left has the new Acoustical Fire Guard *lay-in* ceiling. The smaller first floor ceiling, which you see just below the mezzanine, is of Acoustical Fire Guard *tile*.

Introduced by Armstrong two years ago, this was the first time-design-rated acoustical tile. Since then, millions of square feet of these tiles have been installed.

The new *lay-in* system marks another great advance in fire-retardant ceilings, with these advantages to architects, builders, and clients.

**Safety with Speed and Economy**

The Armstrong Acoustical Fire Guard *lay-in* ceiling features a unique type of suspension. With this suspension system, the advantages of an exposed grid system—economy and fast installation—are combined with the advantages of a time-design-rated acoustical ceiling. Here's how the *lay-in* units work with the specially designed Fire Guard Grid Suspension System\* to protect the structural components of a building.

**Revolutionary Expandable Grid**

The *lay-in* unit—because of its composition—can withstand exposure to flames and 2,000-degree heat. The new grid system designed exclusively to support these units will resist this same intense heat by accommodating the expansion of its members when exposed to fire, thus holding the *lay-in* units firmly in place. This suspension system is the first to be combined with a *lay-in* ceiling unit to offer rated fire

protection. Both the *lay-in* unit and the grid system carry the U.L. label.

The Fire Guard *lay-in* ceiling system has been given a beam protection rating of three hours by the Underwriters' Laboratories, Inc. Floor-ceiling assemblies combining it with bar joist and slab, as well as with beam and steel floor construction, earned two-hour ratings. In areas which require more protection, Acoustical Fire Guard *tile* can be used. It has U.L. ratings of up to *four* hours.

**Costs Less than Ordinary  
Fire-Protective Ceilings**

In many cases, the new *lay-in* ceiling will cost even less than ordinary plaster ceilings on metal lath. And like Acoustical Fire Guard *tile*, the new *lay-in* ceiling can save builders up to *two months'* construction time. There's no waiting for wet work to dry. This makes it ideal for remodeling jobs. Installation can be done during or after store hours.

**In Popular Designs and Sizes**

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

For more information about either Acoustical Fire Guard *tile* or *lay-in* units, call your Armstrong Acoustical Contractor (he's in the Yellow Pages under "Acoustical Ceilings") or your nearest Armstrong District Office. Or write to Armstrong Cork Company, 4204 Watson Street, Lancaster, Pennsylvania.

\* Patent pending.

**Armstrong ACOUSTICAL CEILINGS**

*First in fire-retardant acoustical ceilings*

Architectural design and rendering by Helmut Jacoby

# Creativity unlimited with LUPTON aluminum curtain walls!

Countless are the ways you can achieve the modern, airy look in high-rise apartments with LUPTON aluminum curtain walls . . . a look that spells much easier rentability.

The combinations of materials and colors tax the imagination—glass or metal panels . . . a wide range of window styles . . . any color you want. In addition, LUPTON aluminum curtain walls team up beautifully with brick, stone, or concrete. On the other hand, they're eye-catching when used alone.

There's a down-to-business side, too. LUPTON aluminum curtain walls are low in initial cost. Require virtually no maintenance. Provide better thermal insulation than masonry. Two metal skins of each panel create a built-in vapor barrier.

In many cases, you can set rental dates earlier, because cold weather doesn't interfere with the quick, easy

installation of LUPTON aluminum curtain walls.

The single responsibility for fit and installation rests with LUPTON alone. Our years of experience with curtain walls and windows assure you of complete dependability.

Little wonder that the trend nationwide is to LUPTON aluminum curtain walls. For example, in Kansas City alone, 4 out of 5 new high-rise apartment buildings have turned to LUPTON. Another example is New York's Manhattan Island, where you can scarcely take a walk without passing a LUPTON aluminum curtain-walled building. Other examples can be found throughout the country.

You'll find the LUPTON Curtain Wall and Window catalog in Sweet's (Sections 3 and 17). Then, talk with your local LUPTON man, or write to us for details.

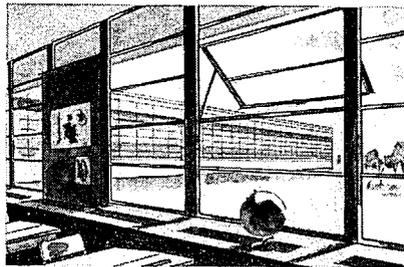
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### THAT MAY SOLVE PROBLEMS FOR YOU ARE:



**Comfort Conditioning.\*** LUPTON air-to-air heat pump, electrically operated, puts a personalized cooling, heating, and ventilating system in the curtain wall . . . year 'round comfort with individual temperature control.

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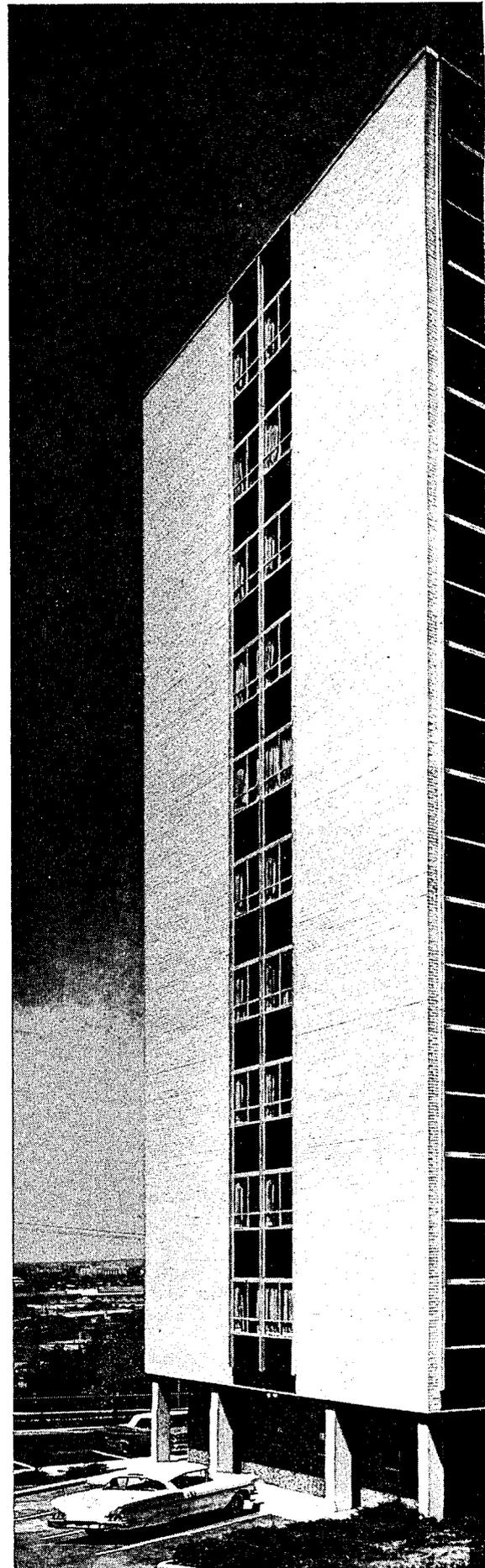


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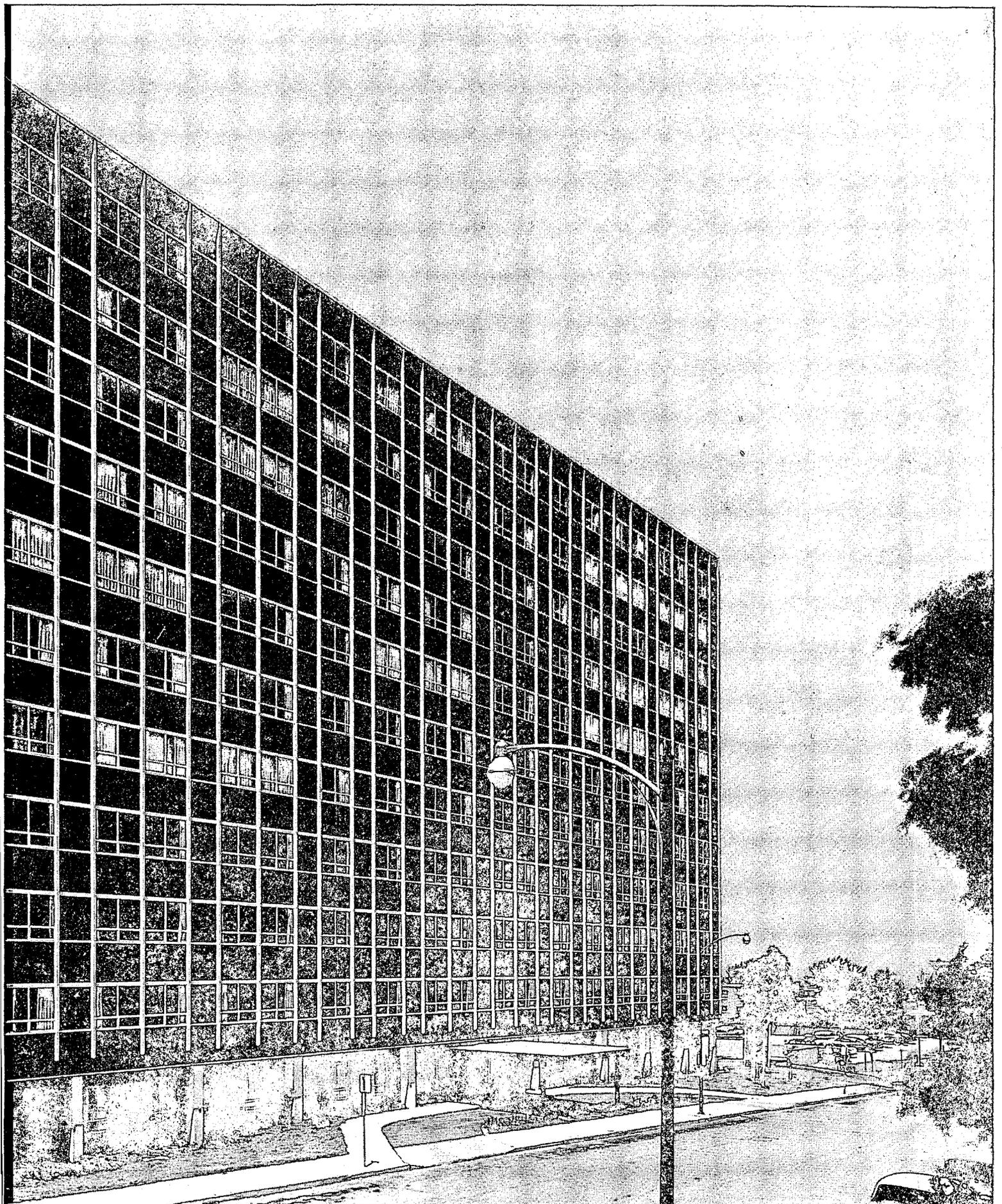
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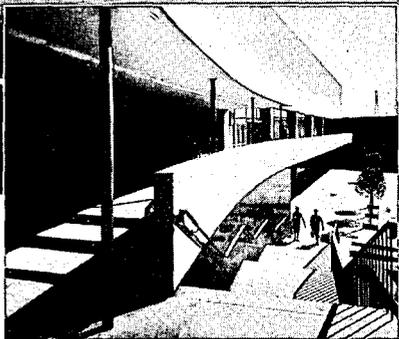
Quality Hill Apartment Building, Kansas City, Mo.



Architect: Kivett & Myers & McCallum, Kansas City, Mo. Contractor: Winn-Senter Construction Co., Kansas City, Mo.

# The O'Keefe Centre for the Performing Arts

TORONTO, ONTARIO



Architects: Earle C. Morgan and Page & Steele, Toronto  
 Mechanical Engineers: Forst, Granek & Associates, Toronto  
 General Contractor: Anglin-Norcross, Ontario, Ltd.  
 Mechanical Contractor: Universal Plumbing & Heating Co.

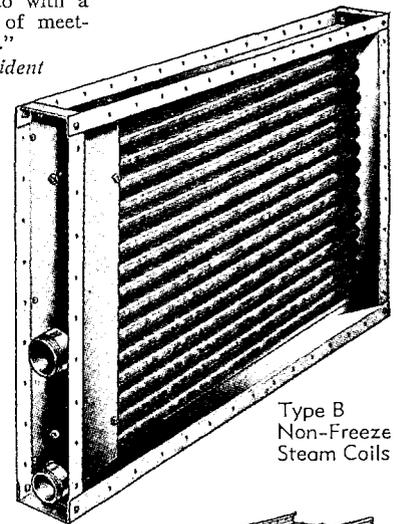
New 3200-seat theatre will "provide Toronto with a multi-purpose entertainment centre capable of meeting all tastes with the best facilities available."

*T. E. Arkell, President*

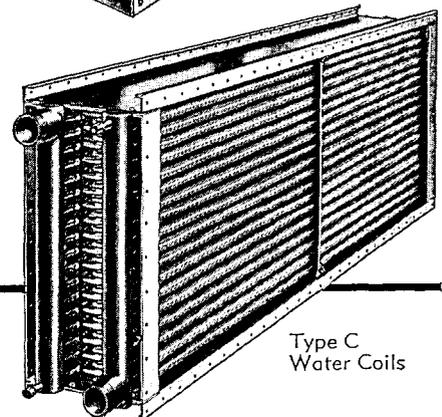
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## *Indoors and Out, Terrazzo Paves the Way to Contemporary, Ageless Beauty*

Trim, simple and clean, the L-O-F office building in Toledo offers the look of brisk efficiency associated with modern design. Yet its Terrazzo floor is ageless. Covering radiant coils (used for snow melting) outdoors, and basement area, as well as the entire lobby, 60,000 square feet of decorative Terrazzo offer a marble-hard, jointless surface that is virtually impossible to wear out. The pattern is a basic 6 x 3' rectangle, outlined with black dividing strips. Slip-proof-treated, requiring only wet cleaning (*no refinishing, no*

buffing needed), Terrazzo meets practical as well as aesthetic needs.

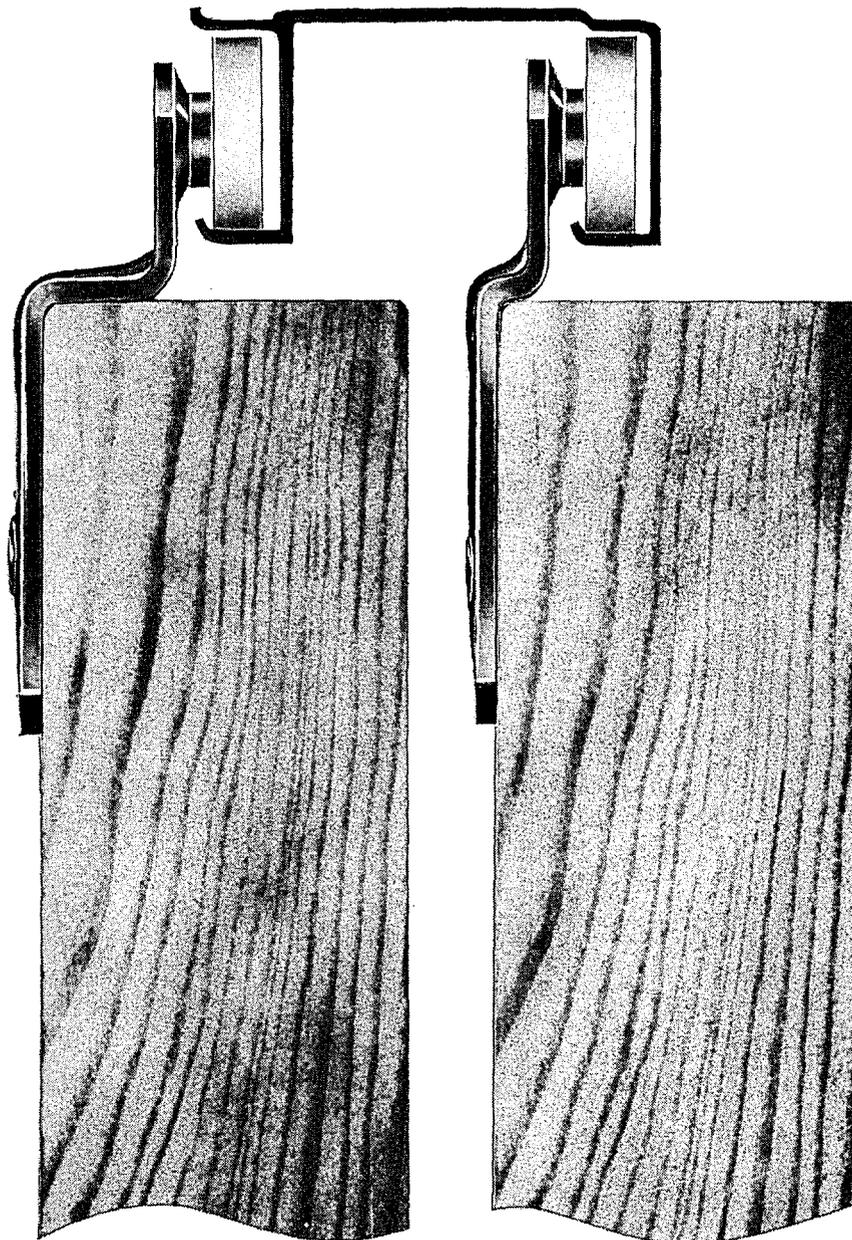
Co-starred is the lobby's mosaic wall—four million pieces of specially made blue tesserae individually placed in two 25 x 62 x 20' sections. Not only visually delightful, the mosaics are *permanently* easy to clean.

No pattern or situation is too difficult for Terrazzo. Specify any design you wish, in virtually any combination of colors. Free AIA kit upon request. Catalogued in Sweet's.

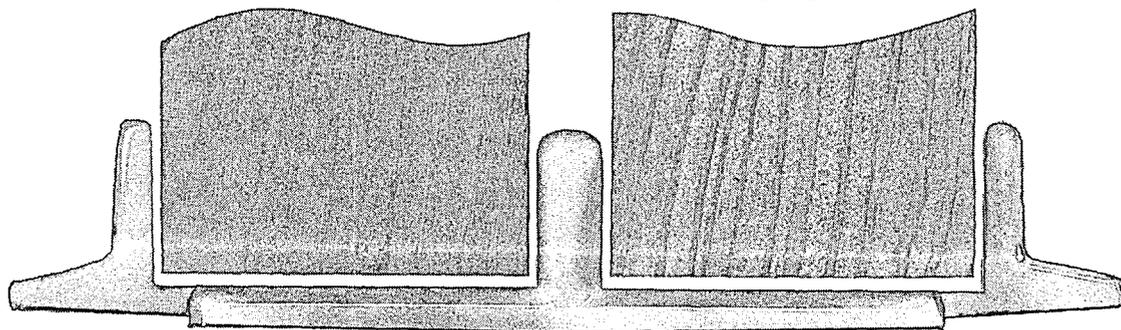


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**Lafayette Park Pavilion  
Apartments, Detroit, Mich.**

**Architect:**

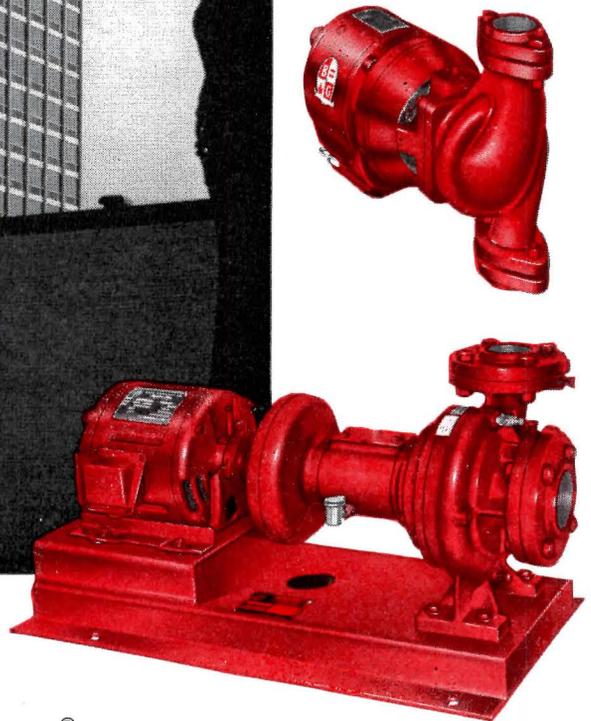
Mies van der Rohe

**Mechanical Engineer:**

William Goodman

**Mechanical Contractor:**

General Piping, Inc.



## "THE ENTIRE HEATING, COOLING AND PLUMBING SYSTEM IS DEPENDENT UPON **B&G** PUMPS"

The dual-temperature heating and cooling system of this history-making high-rise is designed around the circulation of hot or chilled water to various room air handling units. This water is circulated by two B&G U-13T Universal Pumps.

Says Albert Weiss, president of General Piping, the mechanical contractors: "The entire heating, cooling and plumbing system is dependent upon B&G Pumps—a total of 12, including two High-Velocity Boosters and two Universal Pumps.

"After the system was put into initial operation and all minor adjustments and servicing performed, we have had no service call-backs to date.

"This freedom from maintenance problems on all water circulation, as well as quietness of operation,

are the main reasons why B&G Pumps were specified and why the contractor enjoys installing them."

B&G Pumps are designed and built specifically for heating and cooling systems. That explains why, in mass housing projects or single dwellings, over 3,000,000 are in service in such systems today.



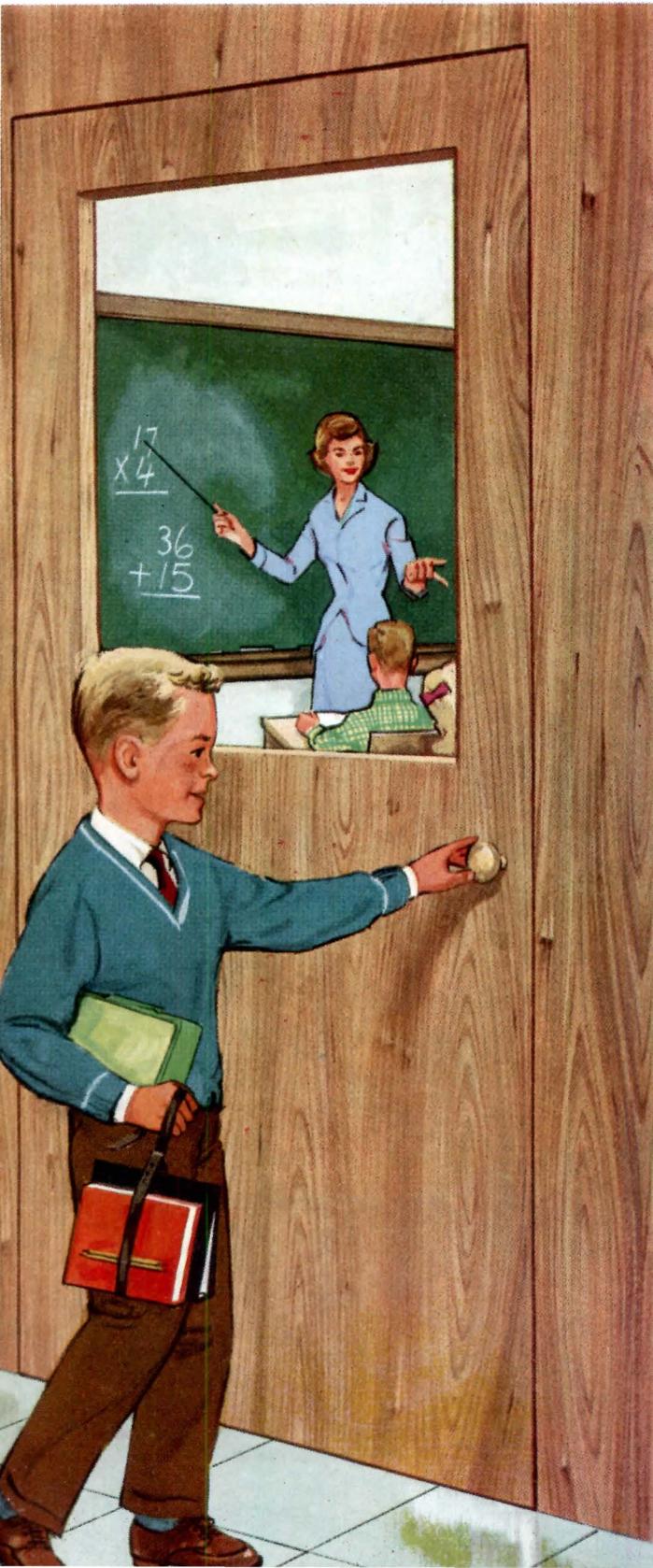
**BELL & GOSSETT**  
C O M P A N Y

Dept. GP-37, Morton Grove, Illinois

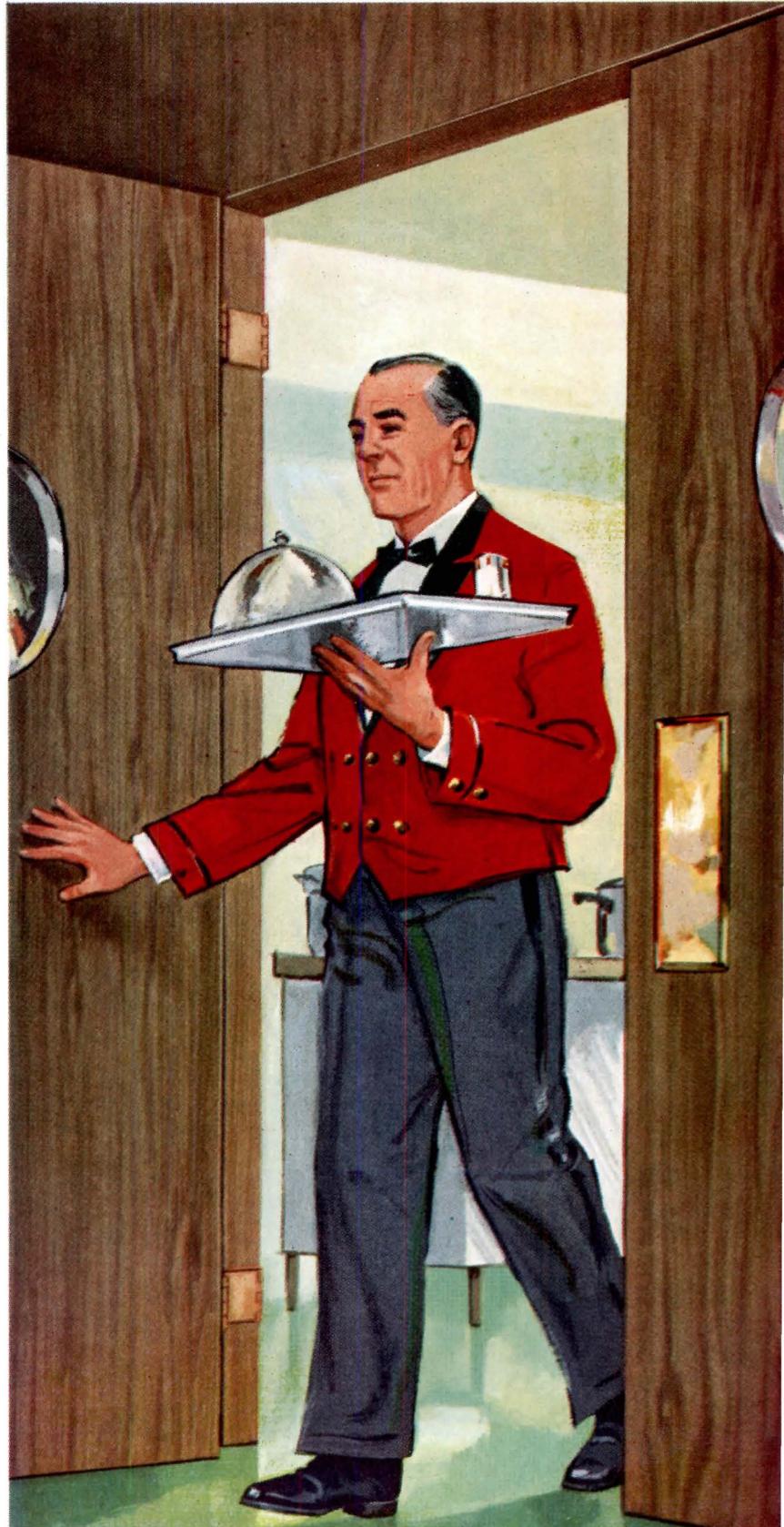
Canadian Licensee: S. A. Armstrong, Ltd.,  
1400 O'Connor Drive, Toronto 16, Ontario

# Major breakthrough in chemistry and wood

**WITHSTANDS SMUDGING AND WEAR.** Even in the heaviest traffic areas of schools, hospitals, and other public buildings, dirt and abrasion that would permanently mar paint and other wood finishes leave no impression on Permagard-surfaced Doors and Paneling. The Permagard surface is far more abrasion-resistant than even the best high-pressure laminate's—*at least four times more*, by standard laboratory tests. Permagard-surfaced wood works cleanly, and can be sawed, drilled, and nailed with ordinary woodworking tools.



**RESISTS SCUFFING AND STAINING.** In commercial interiors . . . such as restaurants, theaters, stores, and hotels . . . cooking fumes, tobacco smoke, food stains—even shoe polish—won't discolor Permagard Paneling and Doors. The satin-smooth Permagard surface provides a protective, nonporous barrier between the wood and dirt, spills, and smudges. A gentle wiping with a damp sponge is usually all that is needed to wipe them away. Stubborn dirt can be removed with standard chemical or abrasive cleaners without harming the surface.



# technology announced by United States Plywood

**GIVES FREEDOM FROM REDECORATING.** From the busiest corridors, lobbies, and lounges to private offices and conference rooms, office building interiors that have Permagard Paneling and Doors by Weldwood *stay* beautiful under all normal conditions, in all climates. Hot, cold, humid, dry, and even rapidly changing weather do not affect the native beauty and color of this luxurious real wood. In the event of severe abuse, the Permagard surface can be repaired in the field.



## WELDWOOD PERMAGARD PANELING AND DOORS add unprecedented beauty and wear resistance to the surface of fine wood

What does "Permagard" mean? It is the trademark for a totally new type of Weldwood factory-surfaced hardwood paneling and doors that have been sheathed at the factory with a thin, tough, invisible armor of new plastic resin film. This film is virtually fused to the wood's fibers to preserve its native beauty and protect it from scratches, stains, moisture, and extreme climatic changes.

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PA 4-61

Please send me free samples of Permagard Paneling, along with descriptive technical data and suggested specifications for Permagard Paneling and Doors by Weldwood.

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City.....Zone.....State.....

For more information, turn to Reader Service card, circle No. 370

DEADLINE  
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*Listings:*

# 1961 Edition of A. I. A. Building Products Register Now in Preparation

The American Institute of Architects will shortly publish the second edition of the *Building Products Register*. Designed to aid architects, engineers and other building industry specifiers in selecting building products, the Register's usefulness in 1961 will be enhanced by

- More individual product listings (approximately 2,500—up 92% over first edition)
- More abstracts of technical standards and specifications (approximately 1,000—up 66% over first edition)
- More major categories of building products covered (technical data and performance criteria for 24 categories will be provided—33% more than first edition)
- Revised format, based upon suggestions from architects and manufacturers after experience with first edition, making it easier to use
- Addition of trade names index for easy identification

The Register's great value to users—assembling in one reference work data formerly spread over several—makes it a valuable medium. It places accurate information, expressed in terms an architect and engineer need, before a designer *at the time products are selected*. Manufacturers renewing listings for 1961—99% of respondents to a preliminary survey—are increasing the number of their product listings an average of 30%. Product listings are \$50 each, with reduced costs for extra listings. For complete information about listing your products, write

**AIA Building Products Register,**

*The American Institute of Architects*

1735 New York Avenue, N. W., Washington 6, D. C.



Built with translucent Kalwall: First Missionary Church, Berne, Indiana. Architect: Orus O. Eash, A.I.A.; Contractor: Habegger Construction Co.

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And with translucent Kalwall you can translate this "many-splendored thing" into design, most imaginatively and dramatically.

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You also get great structural strength. For lightweight as Kalwall is (1.5 lbs/sq ft), it is so strong that no intermediate support is required. Shatterproof. Weather-tight. Available in panels up to 4' x 20', white or colored — with a choice of modern, functional patterns produced by aluminum grid cores. Write for details on this new way to "build with light."

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Kalwall lights church interior evenly — no "hot spots."

# Concrete folded plates in new Florida school



Folded concrete plates were tied to precast columns by welded connections. Cast-in-place concrete between plates made a continuous rigid roof. Columns were anchored to foundations by bolted connections.

There are 90 folded plates. Each is 72' long 9' wide and 3" thick. Depth of plate is 34". There are 116 precast columns. Each is 9½" x 9½" x 11'-0". The total roof area is approximately 60,000 sq. ft. covering 40 classrooms and additional special rooms.

## ... FUNCTIONAL, ECONOMICAL, APPEALING

Precast concrete folded plates gave the State of Florida something new in school construction. The simplicity of this pleasing geometric concrete design made it possible to complete the project in the 10 months allowed and to stay within the school district budget. The result is a sturdy fireproof structure for some 600 pupils, that will require little or no maintenance.

In the manufacture of the precast folded plates and supporting columns, Concrete Structures, Inc. used Lehigh Early Strength Cement for maximum production efficiency. Units were removed and forms were ready for reuse in less than half the time required with normal cement.

For modern concrete construction, either precast or cast-in-place, chances are Lehigh Early Strength Cement can save time and money.

Lehigh Portland Cement Company, Allentown, Pa.

*Owner:* Dade County Board of Public Instruction

*Architects:* Robert B. Browne  
George F. Reed, Associate

*Design Engineer:* Walter C. Harry

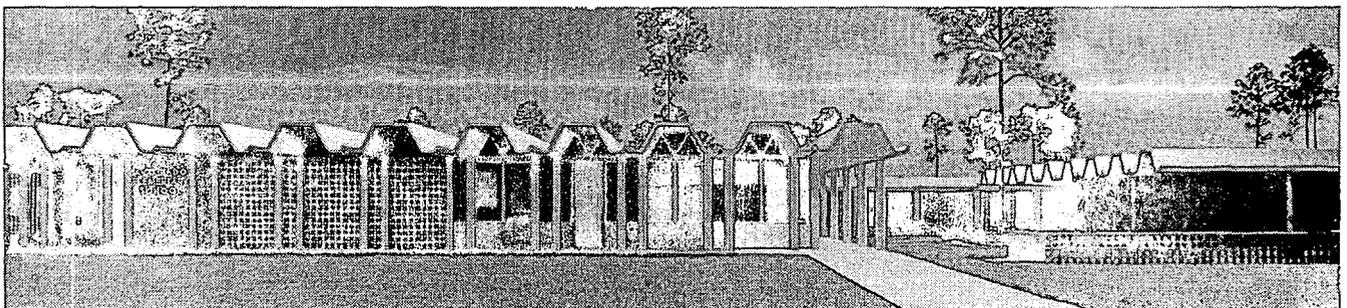
*Consulting Engineer:* H. J. Ross Associates

*Contractor:* Stobs Brothers Construction Co.

*All of Miami, Florida*

*Precast Concrete:* Concrete Structures, Inc., North Miami, Florida

# LEHIGH CEMENTS



# CON'SOWELD

## Woodgrains

go to college...



At a large Midwestern state university, wall panels of Consoweld laminated plastic were used to add warm, appealing beauty to this new women's residence hall.



RIBBON WALNUT



TUSCAN MAPLE



Design patent pending

### Richly grained patterns of enduring beauty.

Consoweld's new laminated plastic woodgrain patterns were the perfect answer for the women's residence hall at a large Midwestern state university. All the design-appeal, color, and luxury of authentic wood paneling add to the appeal of the building's inner beauty and charm.

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Consoweld woodgrains are ideal for horizontal and vertical installations in offices, stores, churches, motels, cocktail lounges, restaurants, lobbies and other installations where permanent beauty and low maintenance cost are desirable. Shown here are three of the newest members of Consoweld's family of authentic woodgrain patterns.

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It's sprinkled with stars

# Fantasy

New laminated plastic pattern by

# CONSOWELD

Myriads of tiny starbursts make Fantasy glitter and gleam with color excitement. It's a gay, new pattern. Rich! Warm! Inviting!

Working with it you can achieve striking new design effects. Four high-preference colors enable you to get an open, fresh, clean look to complement any color decor. Specify Fantasy for countertops, showers, walls, wainscoting or for decorative effects with accent items or accessories.

Fantasy gives you a pattern with *proven* consumer acceptance. Market-testing reports consistently give it the highest acceptance ratings.

Ask your dealer for samples of Consoweld Fantasy.

96-A



Look under Plastics in the Yellow Pages of your telephone directory.

Sold through retail lumber yards, floor-covering dealers, and cabinet shops

CONSOWELD CORPORATION  
Wisconsin Rapids, Wisconsin



Gulf Stream

Gold

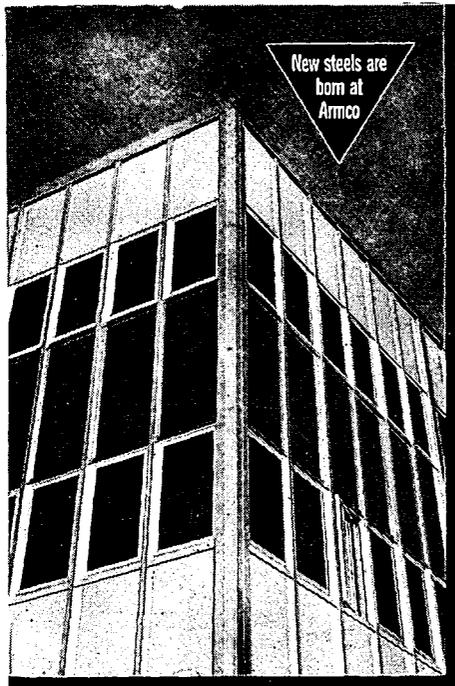
Pink



Primrose

Consoweld Fantasy has the delightful look of luxury. Yet, the beautiful laminated plastic surface cannot be harmed by boiling water, alcohol or fruit juices. Easy to clean. Easy to keep clean.

Cabinets by Youngstown Kitchens

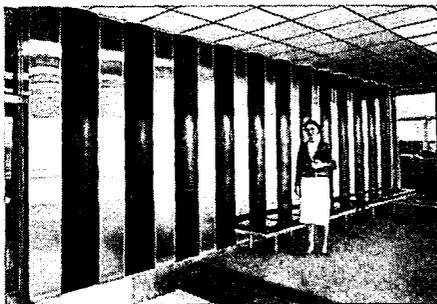


For Permanent Beauty,  
Economy and  
Strength



**Where beauty  
must be timeless  
and economical...  
use Stainless Steel**

National Cash Register Co., Dayton, Ohio  
Architects and Engineers: Lorenz &  
Williams  
Contractor: Chas. H. Shook, Inc.  
Porcelain Enamel-Stainless Steel Curtain  
Wall: H. H. Robertson Co.



National Cash Register Company's newest building, housing its Dayton Data Processing Center and Sales Office, reflects effective use of stainless steel in contemporary design. This modern metal was used extensively—for muntins, mullions, canopy, entrances and lobby—because both architects and client agree that "stainless steel requires much less maintenance and will help retain the original beauty of the building."

This new structure typifies stainless steel's expanding uses in architecture. Long recognized for its outstanding durability, it is especially suited to modern design concepts and can now be specified at costs comparable to that of less durable metals.

Give *your* architecture timeless beauty combined with economy by specifying Armco Stainless Steel for both custom-designed and standard building products. Let us send you a copy of "Armco Stainless Steels for Architecture," a design and specification manual that shows how stainless steel can be used most effectively at least cost. Armco Division, Armco Steel Corporation, 1611 Curtis Street, Middletown, Ohio.



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JOHNS

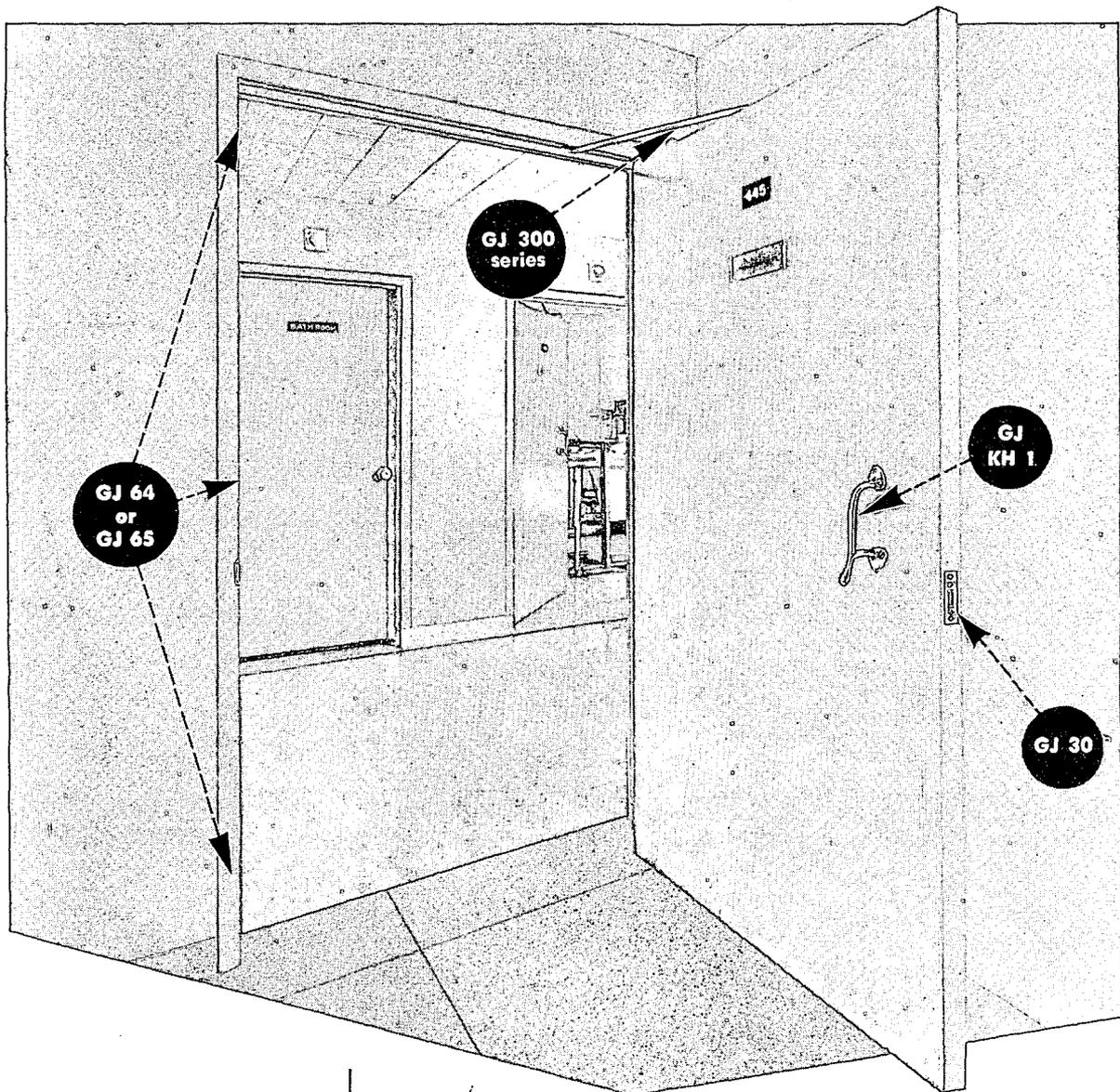
No building is better than its weakest joint—or the material used to make it watertight ■ Sealant based on THIOKOL liquid polysulfide polymer does more than fill joints and shed water...it adds structural strength, unique among caulking compounds ■ Custom-applied to the job on the job, polysulfide-type sealant conforms automatically to all joints regardless of size or shape. No cutting, no splicing, no vulcanizing, no compression is ever required to produce and maintain a watertight seal. Worrisome departures from original joint design which inevitably occur between drafting board and construction site can be compensated for instantly ■ Sealant containing THIOKOL polysulfide polymer welds itself chemically to all building materials in any combination. Expansion up to 100% cannot break its steel-grip bond, while its outstanding resistance to sun, freezing, moisture, ozone, chemicals and aging assures trouble-free weatherproofing for extended periods of time ■ ASA Specification A 116.1 sets quality and performance standards for polysulfide-type sealant. Make it your guide on your next assignment. There is only one polysulfide polymer. And it's produced by Thiokol.

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Rhode Island Hospital, Providence, R. I.  
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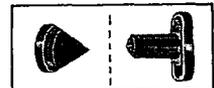
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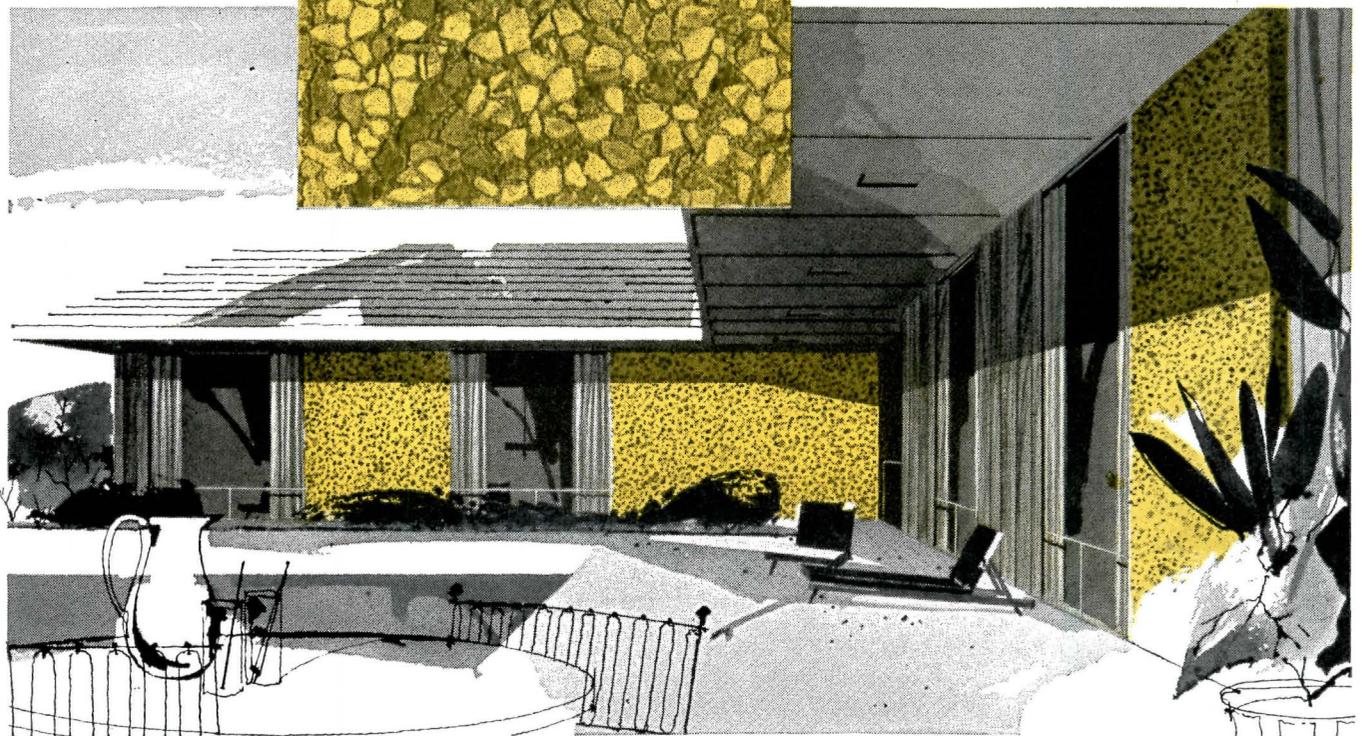


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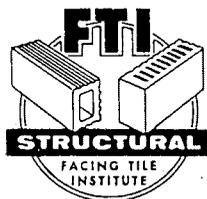
By means of continual testing, rigid quality control is maintained. By means of research,

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For further information, contact the Facing Tile Institute or the sales offices of the member companies listed above. In the interest of better facing tile construction, these companies have contributed to this advertisement.



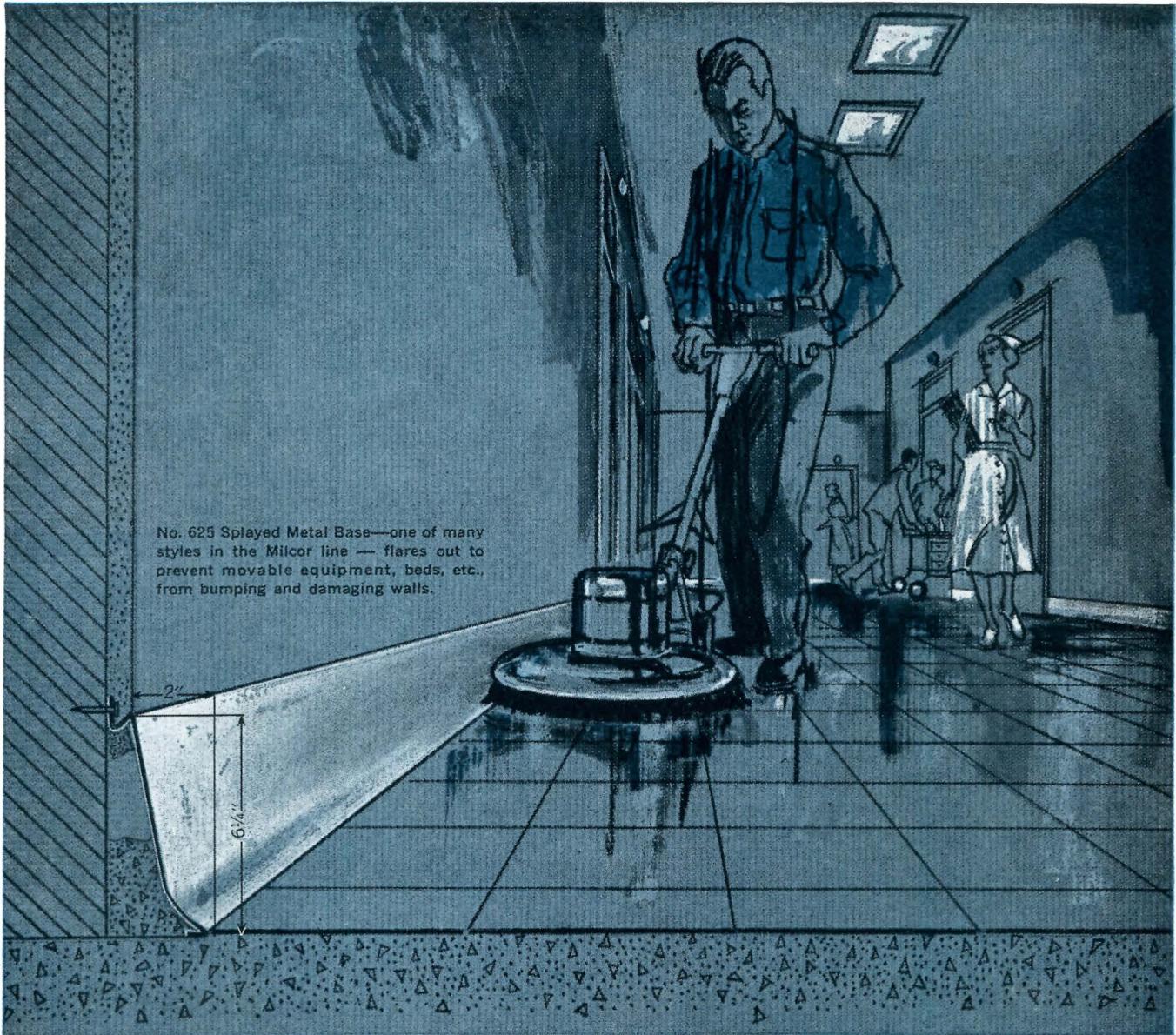
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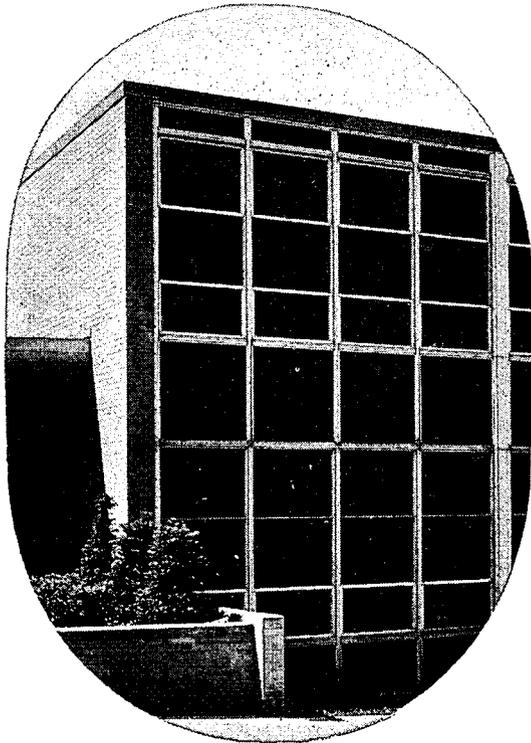
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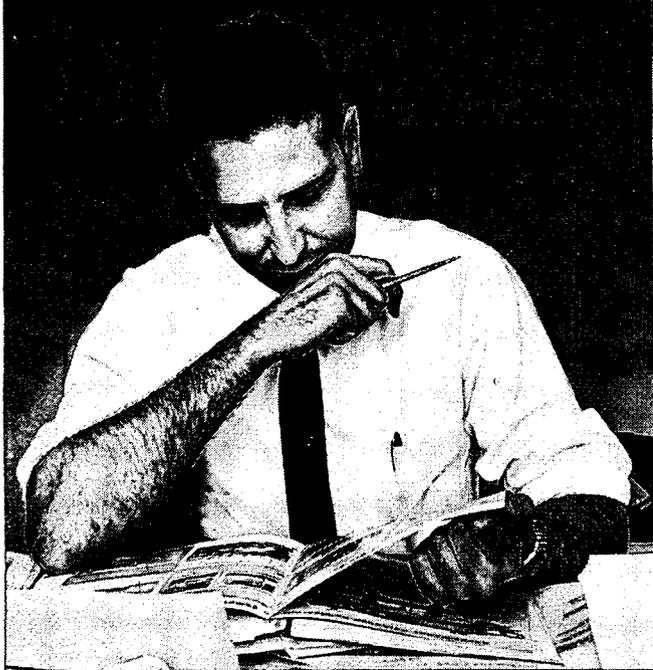
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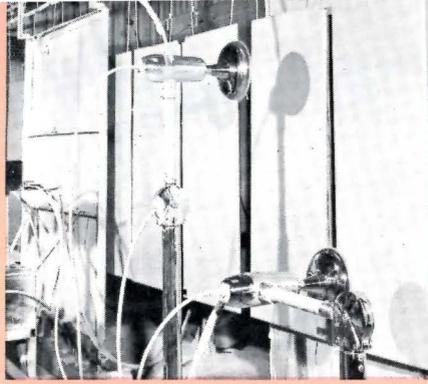
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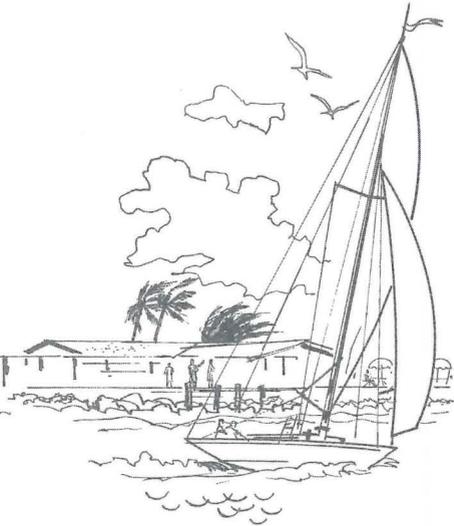
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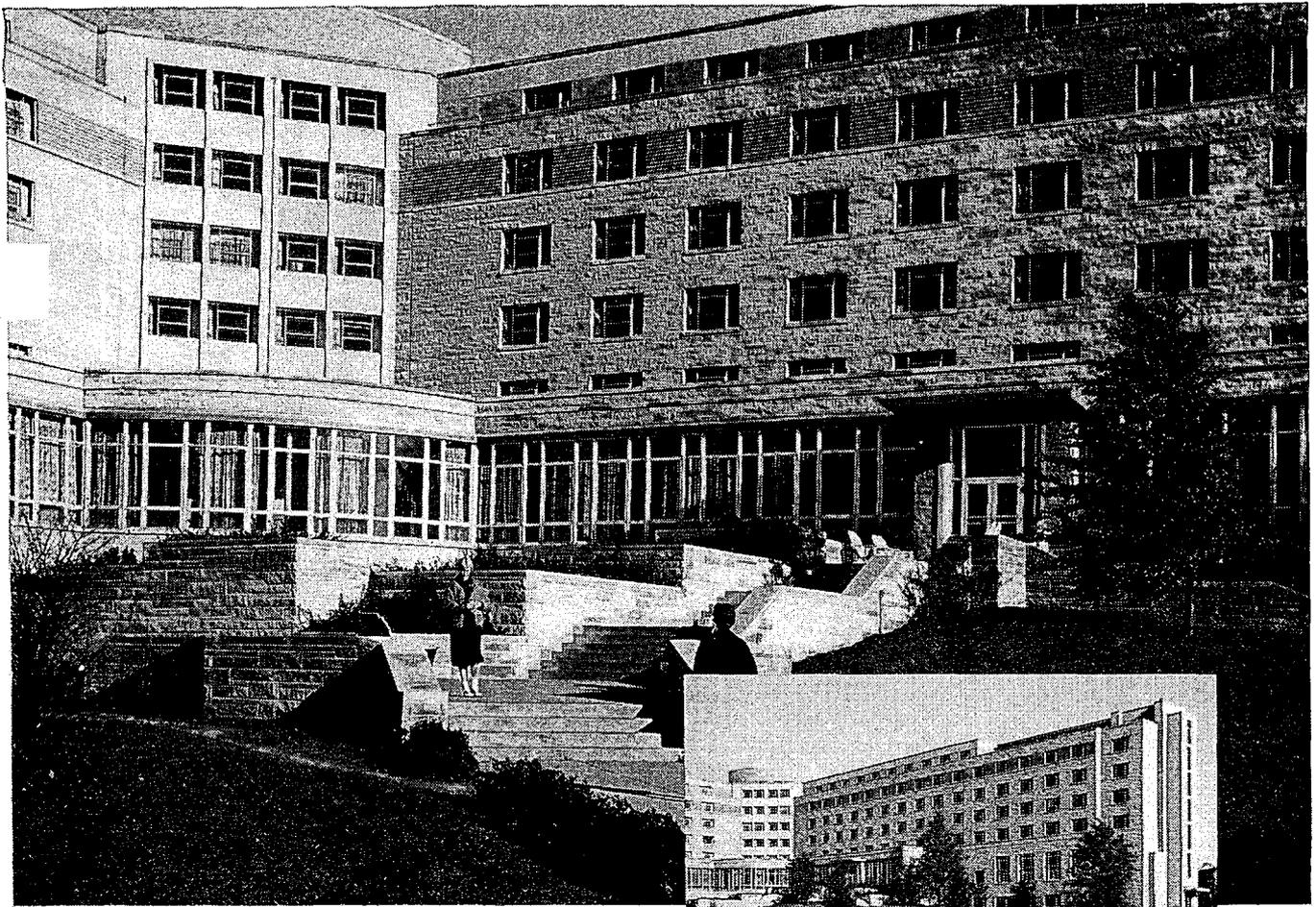
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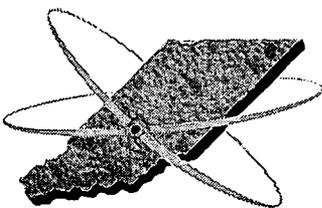
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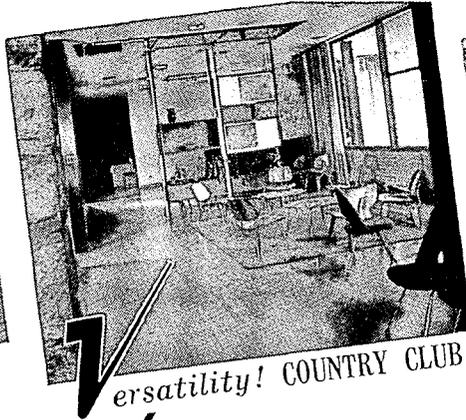
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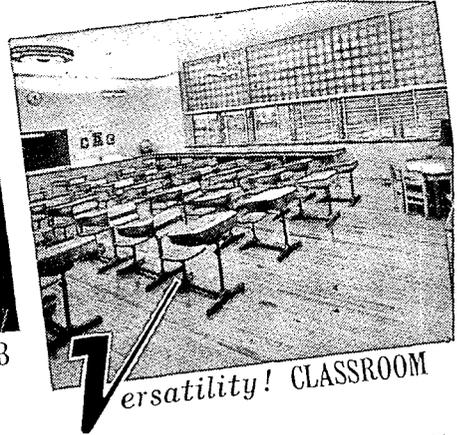
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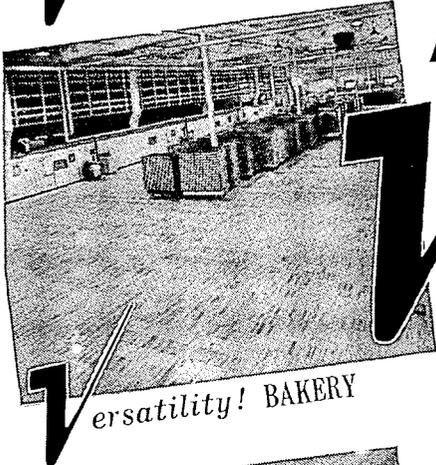
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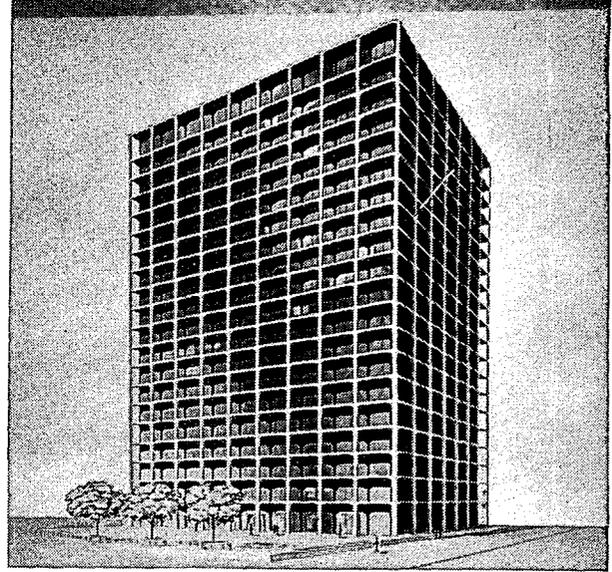
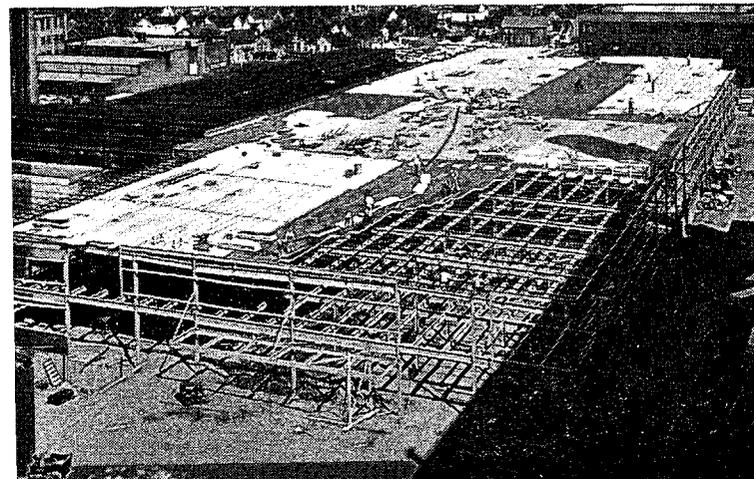
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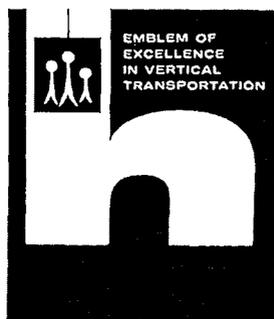
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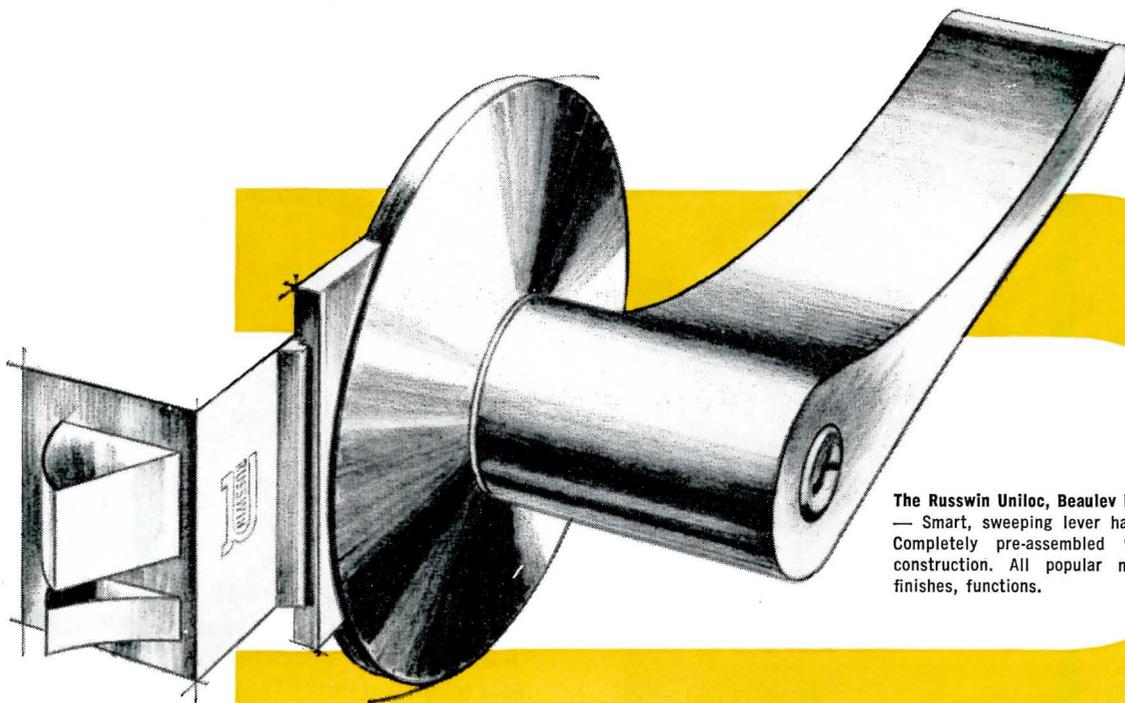


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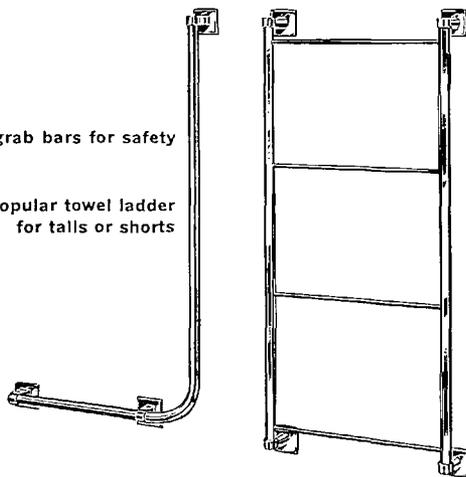
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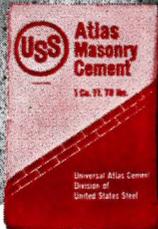
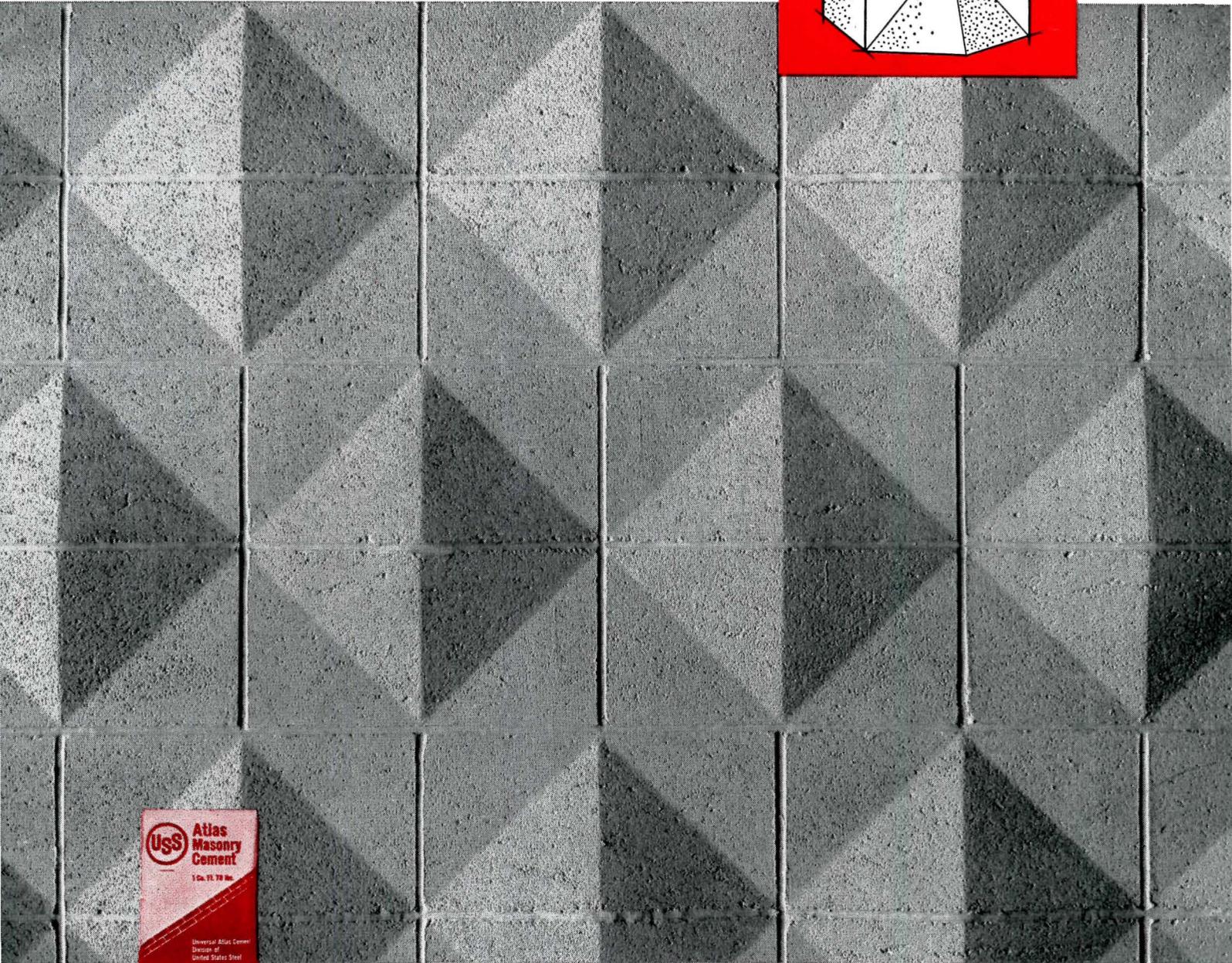
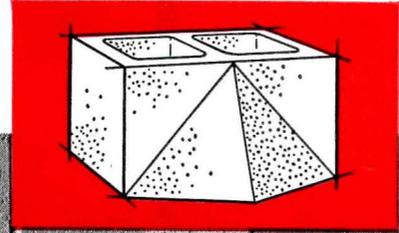
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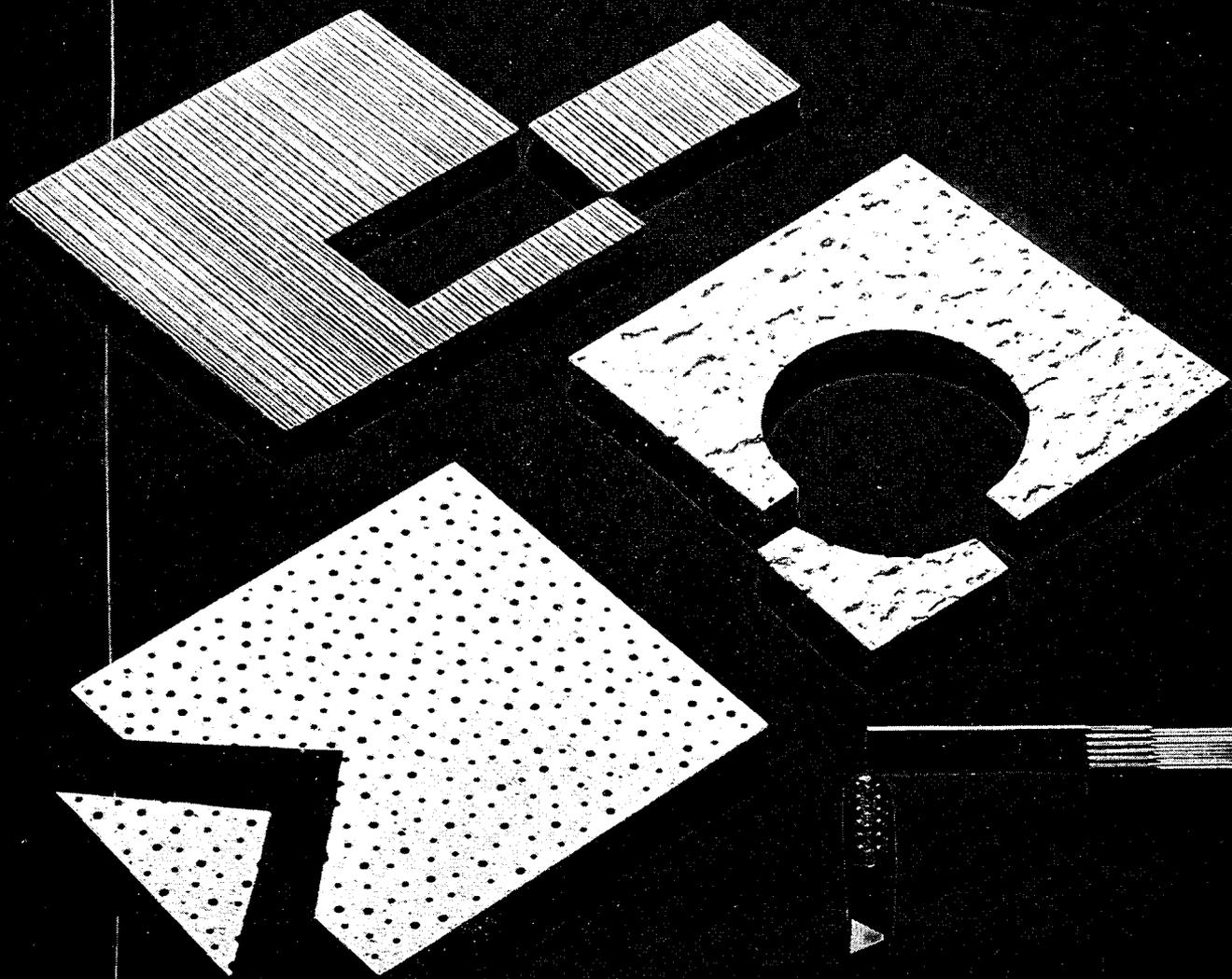


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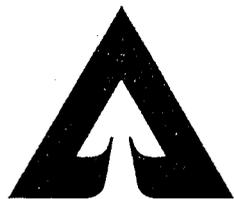


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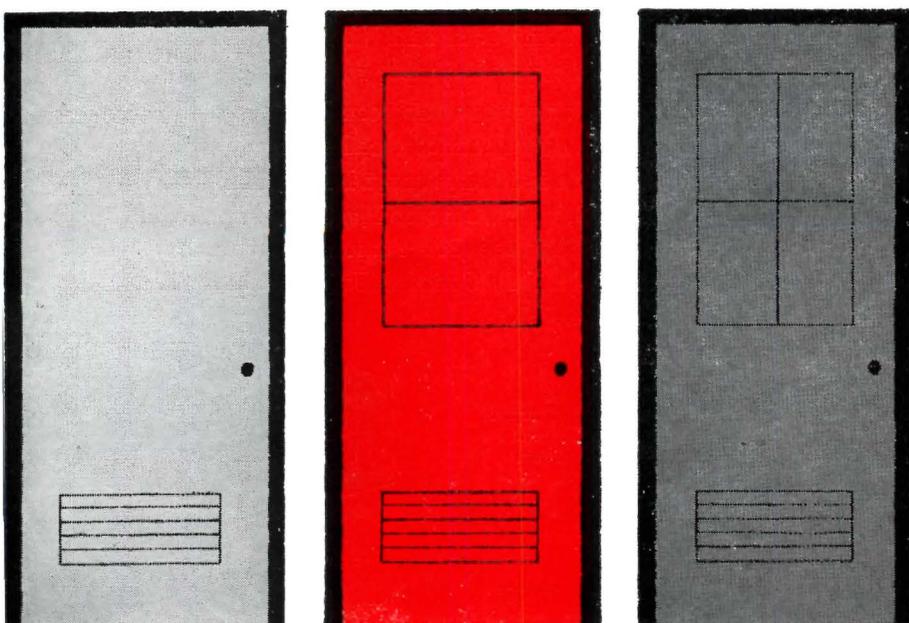
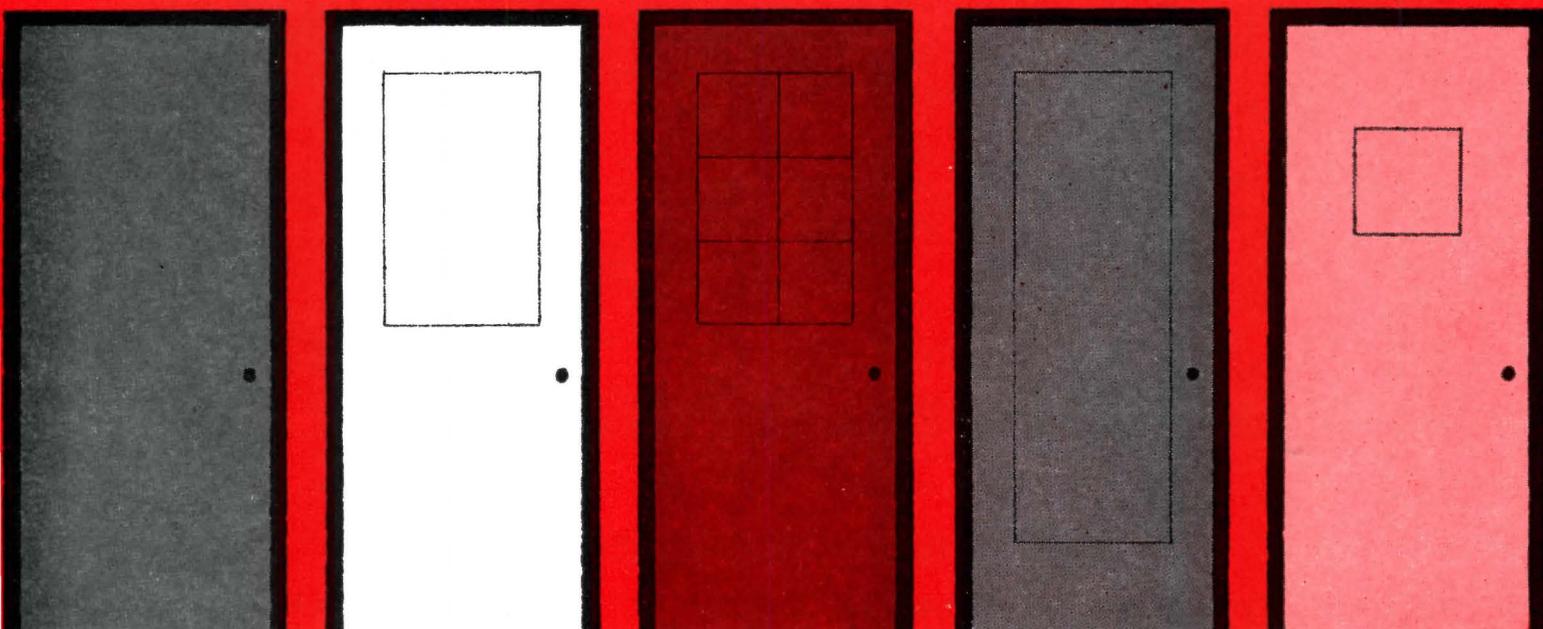


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Ceiling for the new California Bank main branch in Los Angeles. Interior designer, Henry Dreyfuss. Installed by Harold E. Shugart Co., Los Angeles. Ceiling made from BAKELITE Brand rigid vinyl sheet panels by Cepco, Inc., San Francisco, California.

## **A Bank Draws High Interest On Its LONG-TERM INVESTMENT IN LIGHTING**

There's a friendly, refreshing note in this Los Angeles bank's brilliant lighting. Glare-free and shadowless, the luminous ceiling is a snowy expanse of translucent BAKELITE rigid vinyl sheets suspended beneath fluorescent fixtures. The huge panels, four feet square, consist of a top and bottom sheet with an air space between and are placed in a metal frame under tension to facilitate handling. For years to come, the ceiling will stay as beautiful as it is. Accelerated aging tests show high resistance to ultra-violet light.

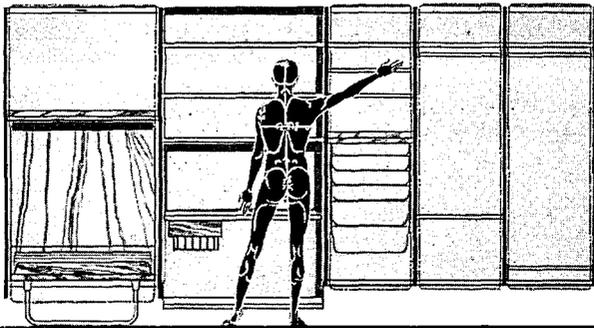
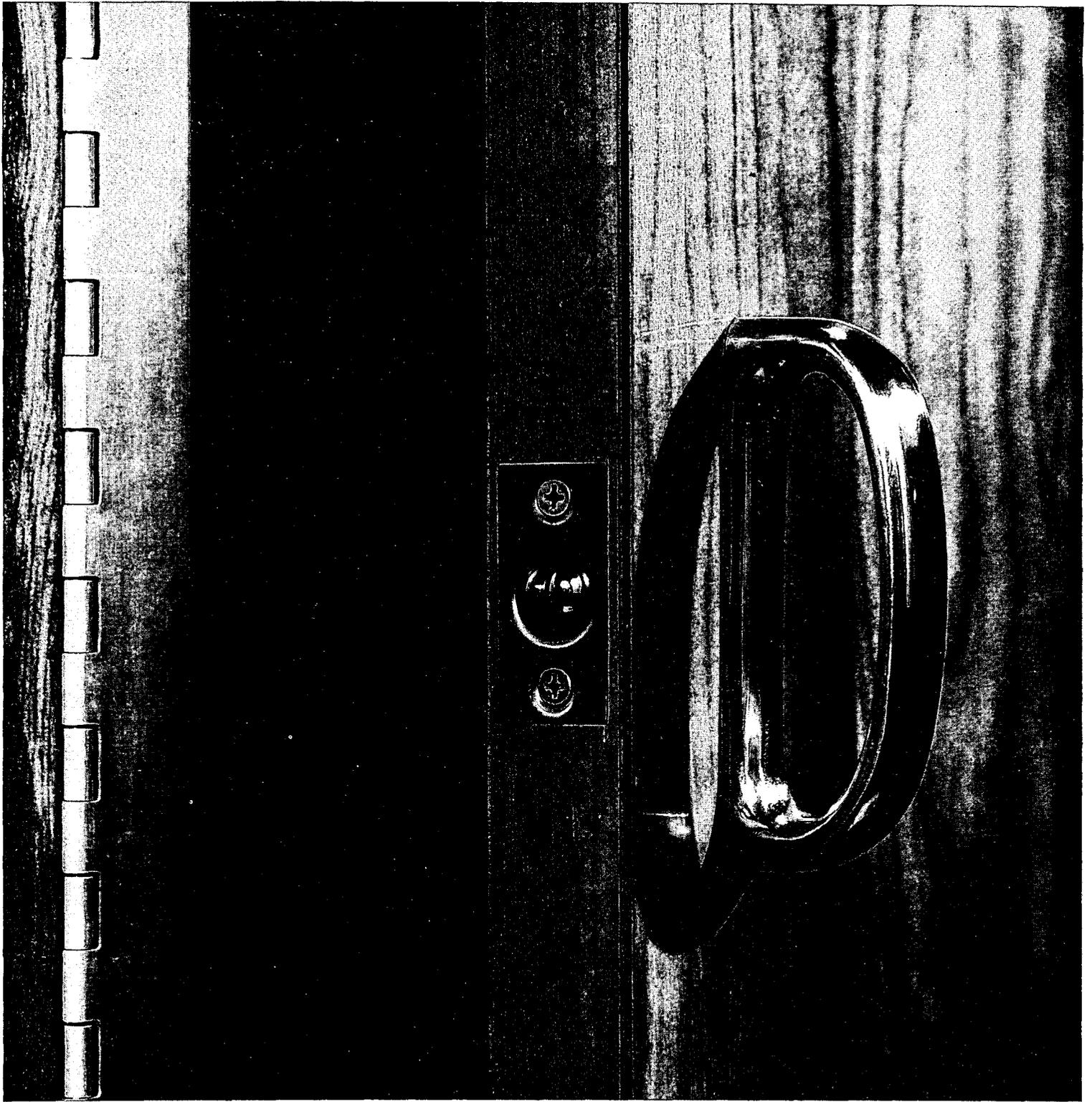
**Now . . . high impact resistance!** BAKELITE rigid vinyl sheets are now available with *new high impact qualities* that provide extra resistance to hard knocks . . . the wear and tear of installation and maintenance . . . cracking

and warping. These sheets are normally unaffected by moisture and detergents, and, because of their light weight, they are easy to install, remove, and maintain.

**New designs or renovations** can be given a lift with better lighting. Install luminous ceilings made with *high-impact* BAKELITE rigid vinyl sheet. For information, write Dept. IX-110D, Union Carbide Plastics Company, Division of Union Carbide Corporation, 270 Park Avenue, New York 17, N. Y. *In Canada:* Union Carbide Canada Limited, Toronto 12.

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Architects: Office of Ernest J. Kump



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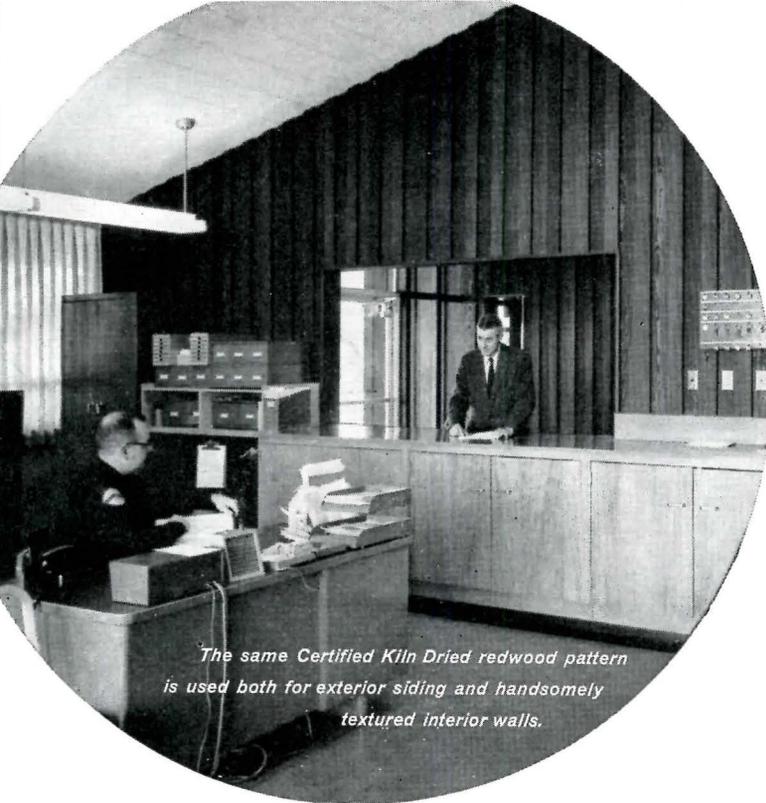


For practical as well as esthetic reasons, more and more architects are turning to redwood for public buildings. Redwood's warm, inviting appearance gives no hint of its other exceptional qualities — its high insulating value and its indifference to the elements, for example. In this suburban civic center popular saw-textured redwood is judiciously used both outside and in.

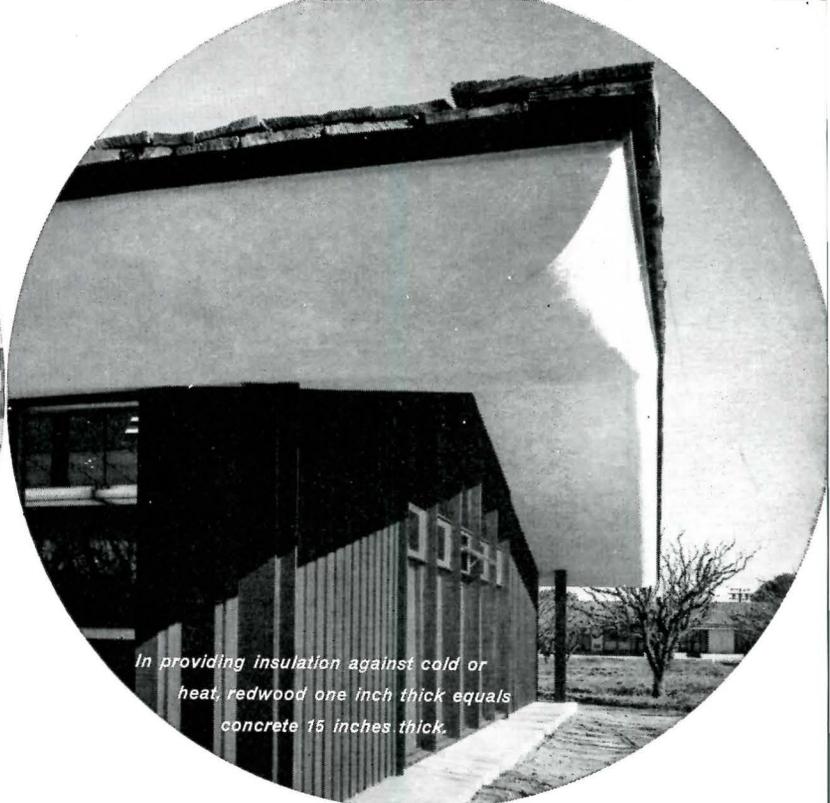
Write to Dept. A-2 for your copy of "REDWOOD HOMES—Ideas from Architects' Own Homes."

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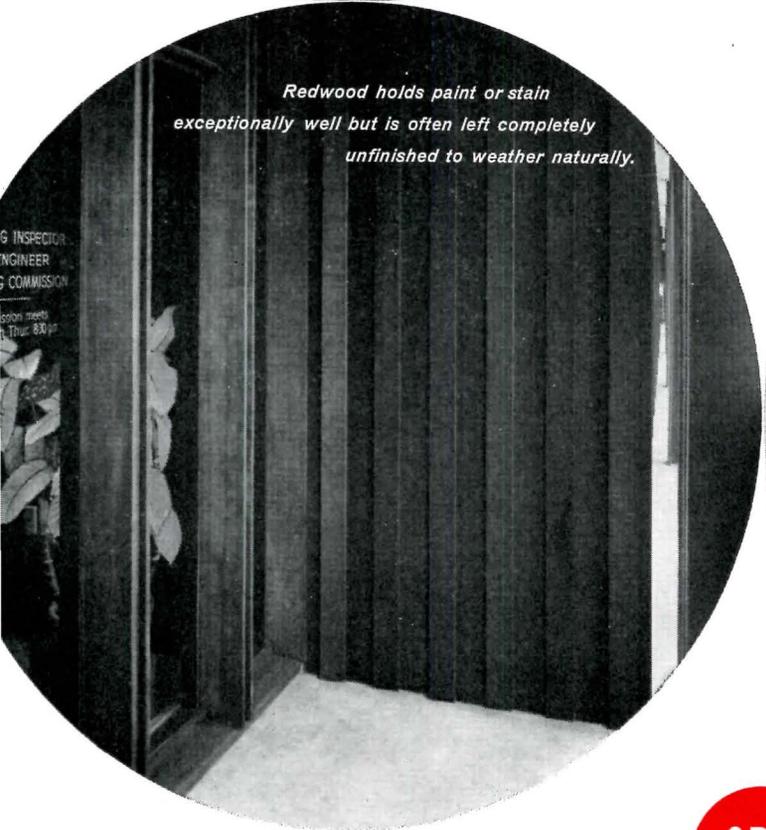
*The California Redwood Association coordinates the research, forest management, grading and consumer service activities of these member mills: UNION LUMBER COMPANY*



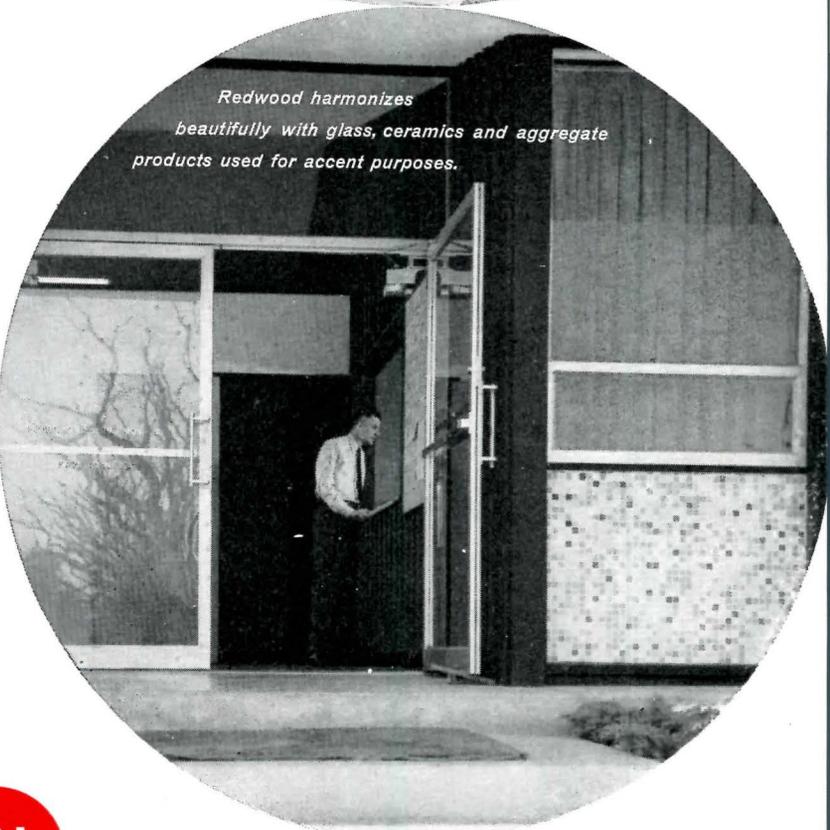
*The same Certified Kiln Dried redwood pattern is used both for exterior siding and handsomely textured interior walls.*



*In providing insulation against cold or heat, redwood one inch thick equals concrete 15 inches thick.*



*Redwood holds paint or stain exceptionally well but is often left completely unfinished to weather naturally.*



*Redwood harmonizes beautifully with glass, ceramics and aggregate products used for accent purposes.*



All the wonderful warmth of wood is best expressed in redwood

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The Architects Collaborative, Cambridge, Mass.

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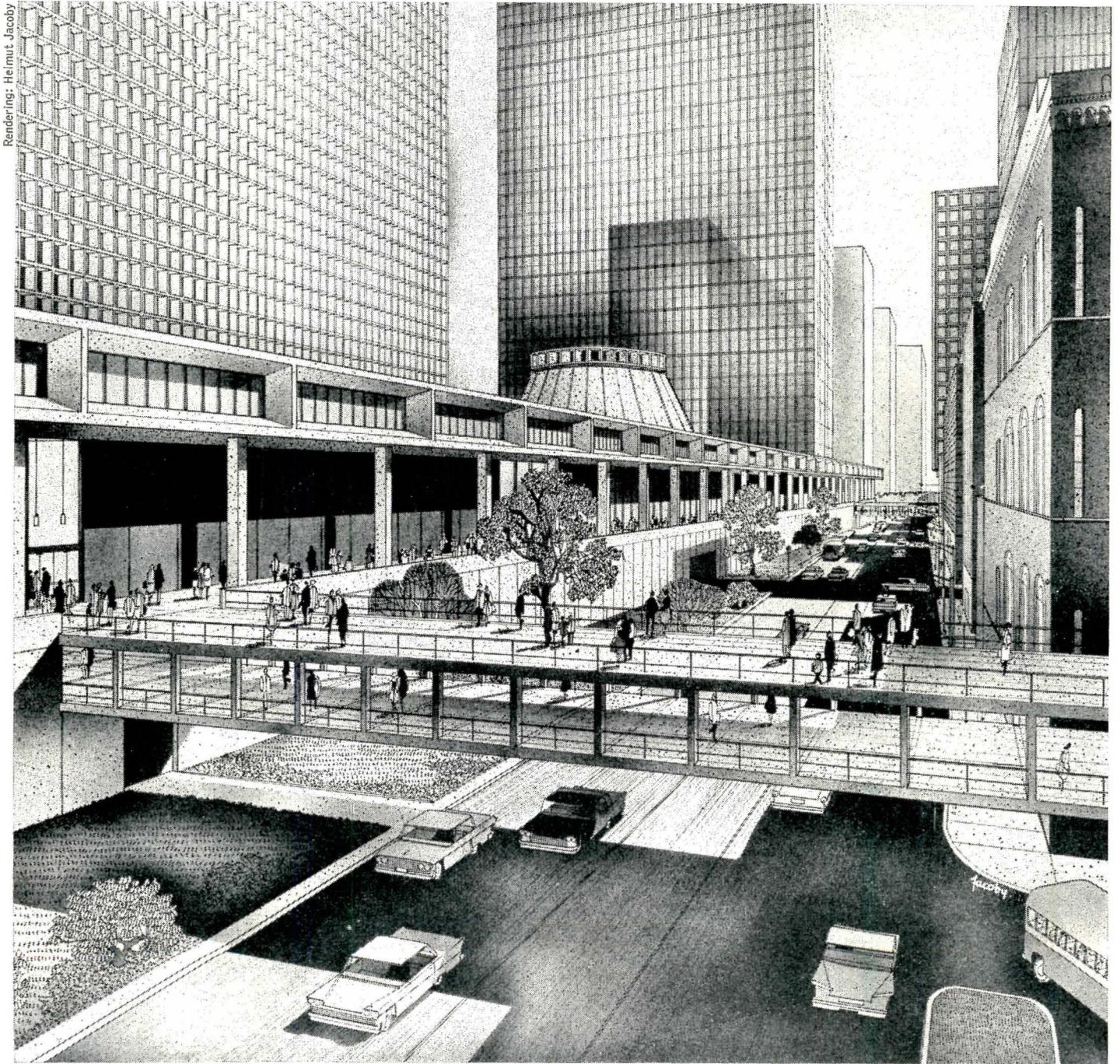


WASCO PRODUCTS, INC., 5 BAY STATE ROAD, CAMBRIDGE 38, MASS.

# PROGRESSIVE ARCHITECTURE APRIL 1961

# NEWS REPORT

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

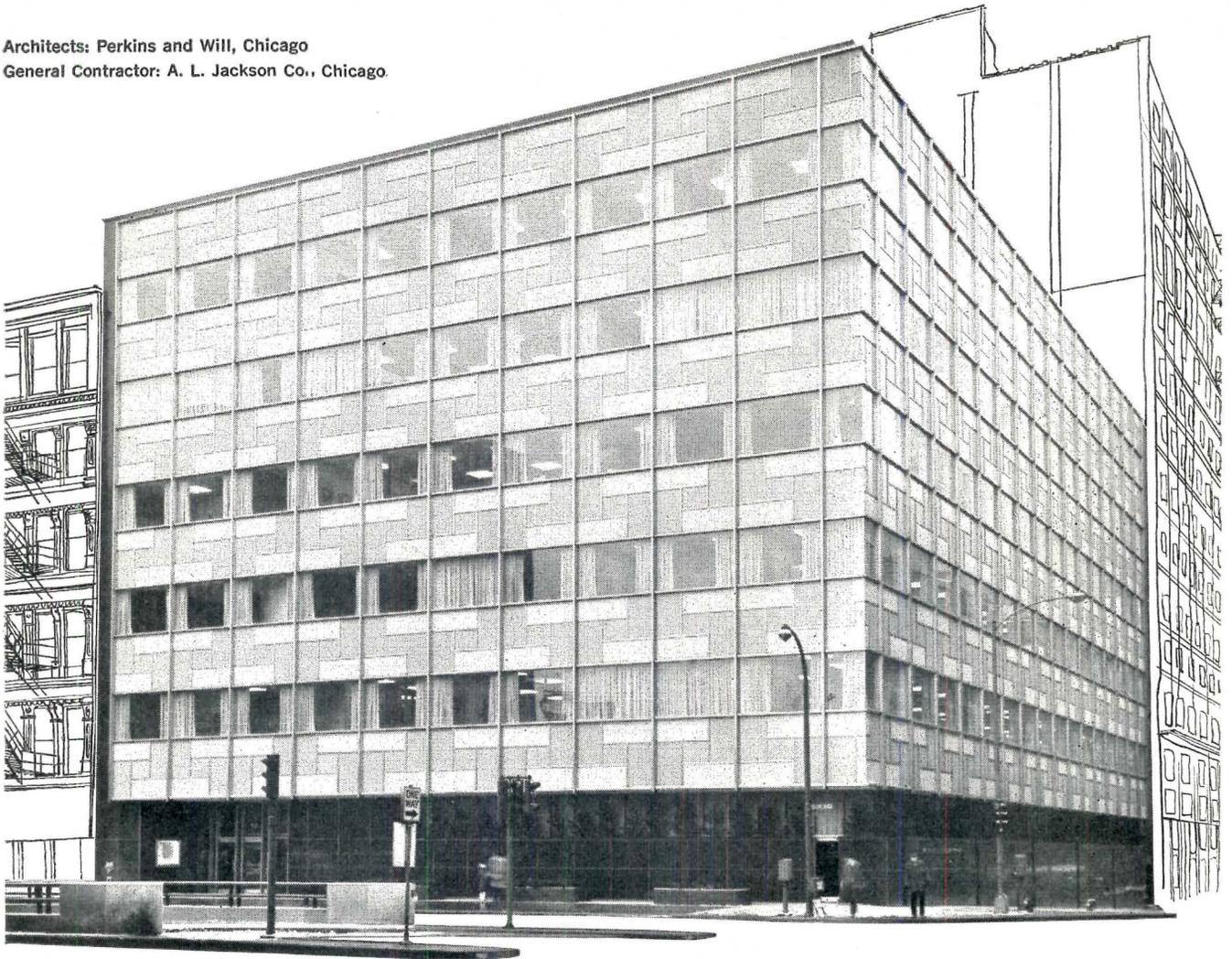


Rendering: Helmut Jacoby

*Proposed World Trade Center, on New York's East River, would be approached over three two-level pedestrian bridges.*

- |    |                                 |    |                                  |
|----|---------------------------------|----|----------------------------------|
| 51 | N.Y. WORLD TRADE CENTER EVOLVES | 57 | PERSONALITIES: GINGOLD, HOBERMAN |
| 52 | AIA AWARD WINNERS SHOWN         | 69 | WASHINGTON/FINANCIAL NEWS        |
| 53 | RAMPS FOR CARACAS FISH TANK     | 87 | PRODUCTS: CONCRETE AGGREGATE     |

Architects: Perkins and Will, Chicago  
 General Contractor: A. L. Jackson Co., Chicago.



*Mutual Trust's new home office . . . sound planned with . . .*

Bright facade in the Windy City is this new home office of the Mutual Trust Life Insurance Company. First to introduce colored porcelain-enameled steel curtain walls to downtown Chicago, it marked another first with Autotronic elevators — supervised with an electronic brain. An advanced, draft-free air conditioning system was also installed in this remarkable new building.

No wonder Webster Telecom was specified when modern intercommunications entered the planning! Linking the many departments, divisions and offices is a 135 phone system that provides fast, two-way voice contact — saving steps, time and increasing efficiency.

Telecom is a private dial telephone intercom. Its versatility can be extended with paging, code call, speaker phones, dictation adaptor, conference circuits. It's complete with its own self-contained, automatic switchboard which hides in a corner or closet. Operation is the same as your city phone, wiring is simple, maintenance is low.

Telecom can be purchased, or leased on a low-cost plan. See your Telecom dealer\* for details and a demonstration in your office.

\* Listed in the Yellow Pages under "Intercommunication Systems"

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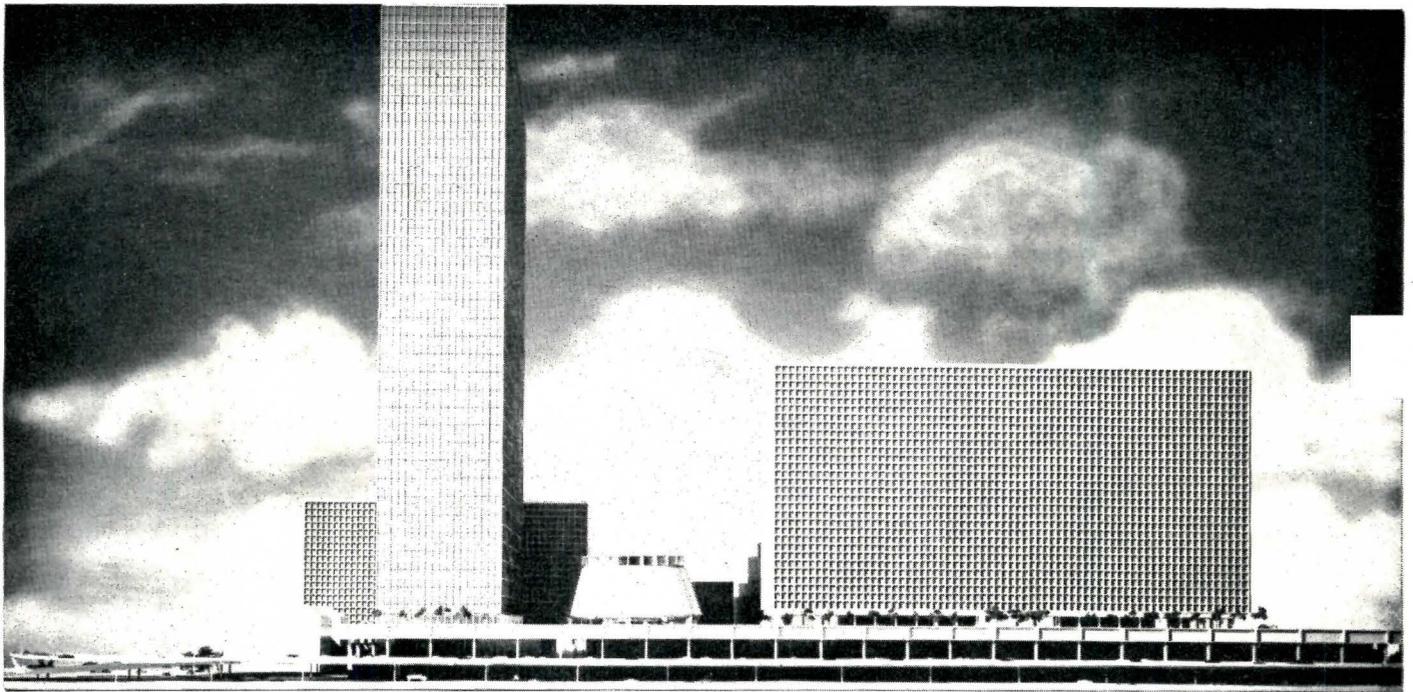


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Telecom — practical for small or large business, industrial use. Fine electronic craftsmanship, 12 beautiful decorator colors, 2 to 400 phone systems.

Photos: Ezra Stoller Associates



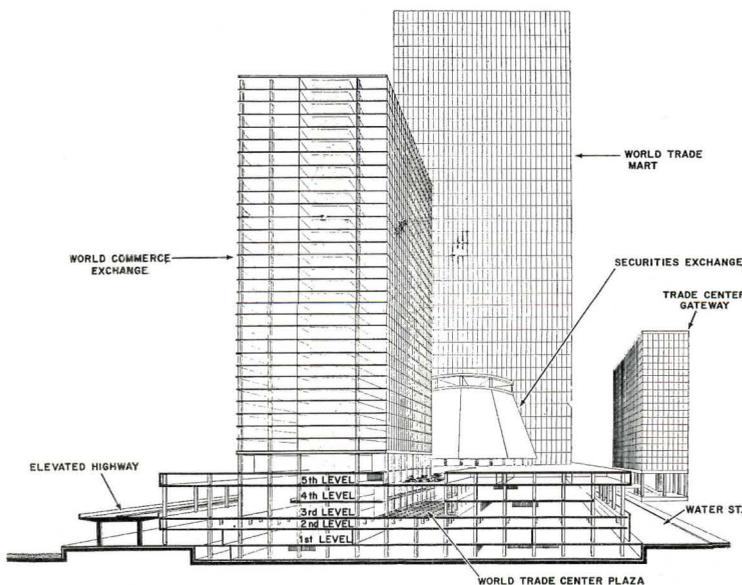
## New York's World Trade Center Forges Ahead

NEW YORK, N.Y. New York's World Trade Center moved closer to realization last month when the Port of New York Authority submitted a report to the governors of New York and New Jersey and the mayor of New York City recommending the center. Based on an earlier study (p. 60, MARCH 1960 P/A), the present report goes much more thoroughly into design and planning of the \$355 million proposal. Architect is Richard M. Adler of Brodsky, Hopf & Adler, with

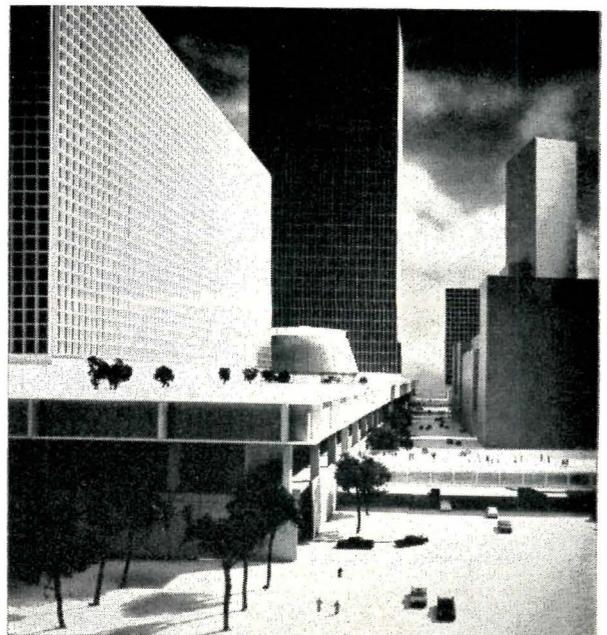
the "guidance of a Board of Architects comprised of Gordon Bunshaft of Skidmore, Owings & Merrill; Wallace K. Harrison of Harrison & Abramovitz; and Edward Durell Stone."

The proposed design has five major elements: a broad, five-story concourse from which would rise the 72-story World Trade Mart, the 30-story World Commerce Exchange, and the circular Securities Exchange; a separate building would be the 20-story Trade Center Gateway. Motor traffic

would reach the center from a new, three-lane roadway off East River Drive. The Center Gateway building would be raised 50 ft to provide an entrance colonnade to the complex from the Wall Street area. There would be a 350-room hotel in the Trade Mart building, the rest of which would be for exhibit areas and offices of governments and businesses active in world trade. The New York Stock Exchange would tenant the Securities Exchange.



CROSS SECTION PERSPECTIVE - PROPOSED WORLD TRADE CENTER  
 Sketch shows disposition of buildings over concourse.

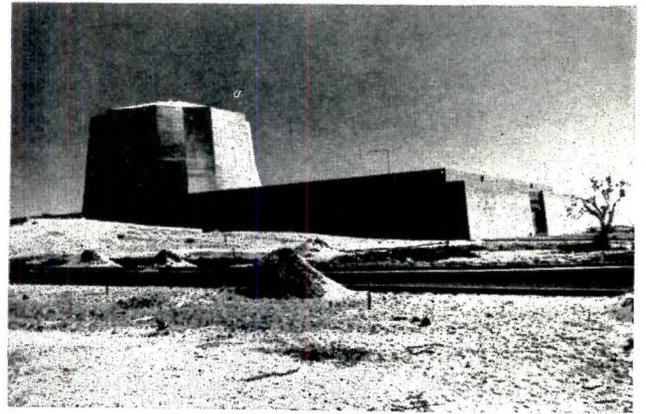


Center is approached up escalators from street.

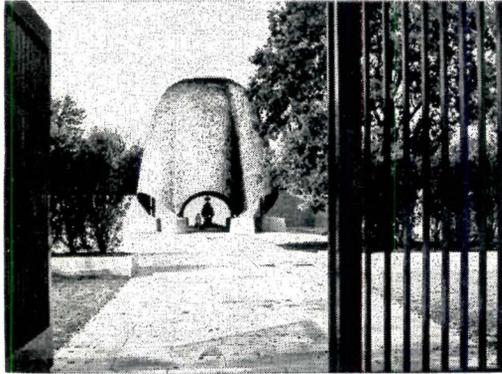


Baltazar Korab

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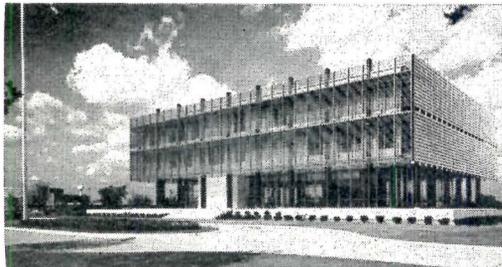
George Holton

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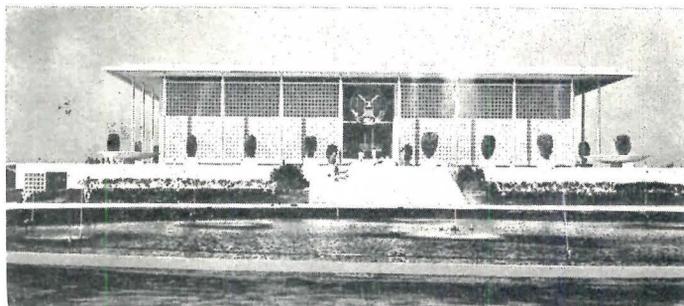
Erna Stoller

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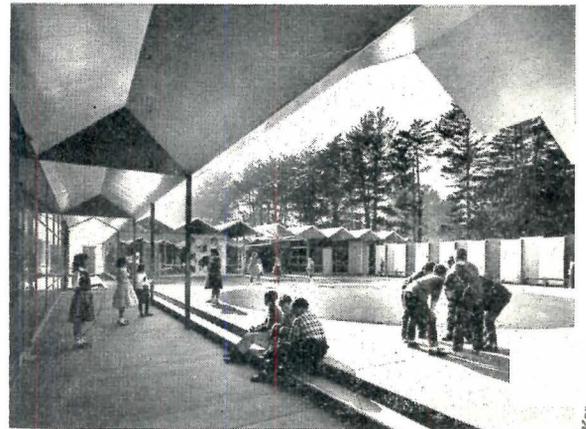


Baltazar Korab

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### AIA Presents Awards of Honor and Merit in Philadelphia

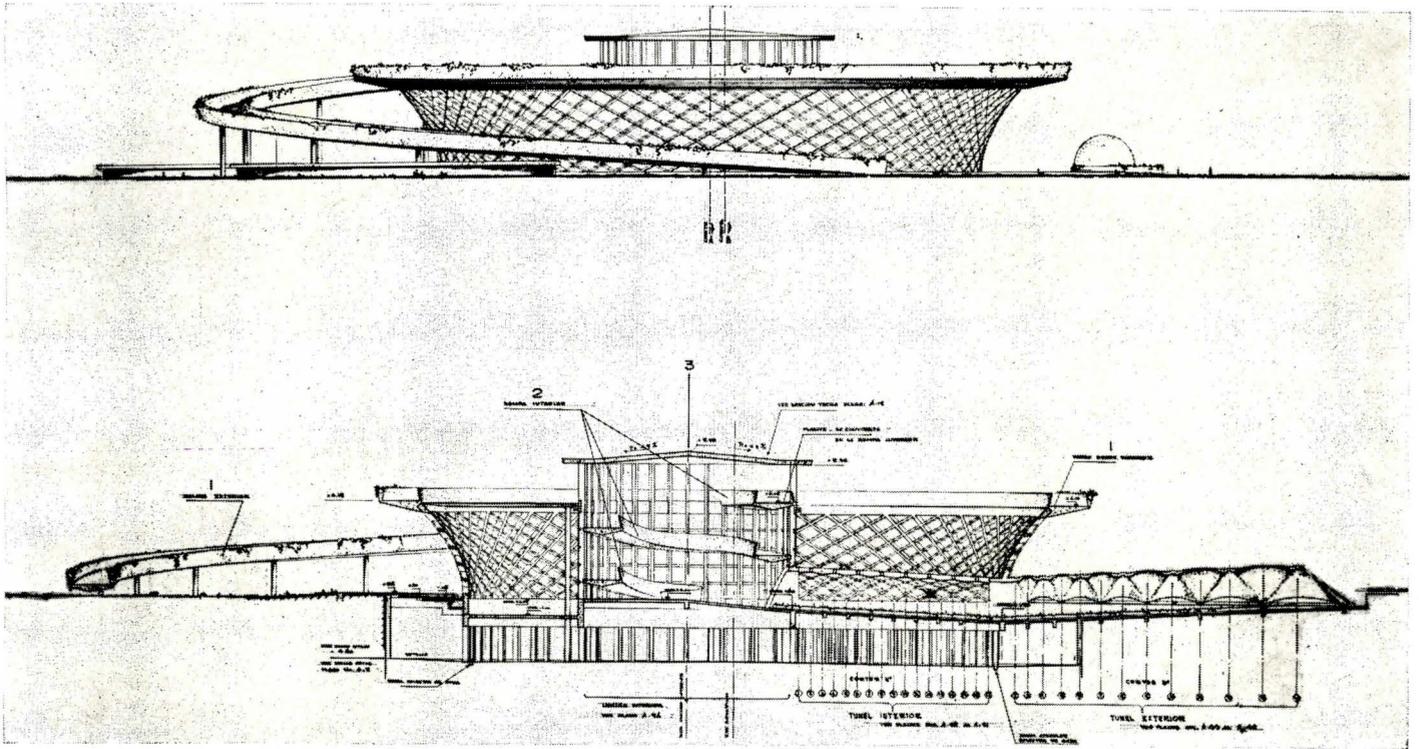
#### Awards Jury Selects Polyglot Group

PHILADELPHIA, PA. Winners in AIA's awards program for completed buildings will receive their awards at the 1961 Convention this month. Selected by a jury consisting of Morris Ketchum, Jr., Fred Bassetti, Richard D. Butterfield, Arthur Q. Davis, and William L. Pereira, the winners showed a catholicity of approaches.

Honor Award winners (shown) were 1 house in Northville, Mich., by Birkerts & Straub; 2 nuclear reactor, Rehovot, Israel, by Philip Johnson Associates; 3 shrine, New Harmony, Ind., also by Philip Johnson; 4 Pepsi-Cola World Headquarters, New York, by Skidmore, Owings & Merrill; 5 Reynolds Metals Regional Sales Office Building, Detroit, by Minoru Yamasaki & Associates; 6 Fernando Rivera Elementary School, Daly City, Calif., by Mario Ciampi and Paul Reiter;

and 7 Edward D. Stone's U.S. Embassy in New Delhi, India.

Awards of Merit were won by Richard Dorman & Associates; I.M. Pei & Associates; Bay Group Associates; Weed-Johnson Associates; Charles R. Colbert; Henry Hill; Killingsworth, Brady, Smith & Associates; Hugh Stubbins & Associates; Hertzka & Knowles and Skidmore, Owings & Merrill; Victor Christ-Janer & Associates; and John Carl Warnecke & Associates.



Sketch (above) shows aquarium elevation; section (below) shows 1 exterior ramps, 2 interior ramps, 3 viewing well.

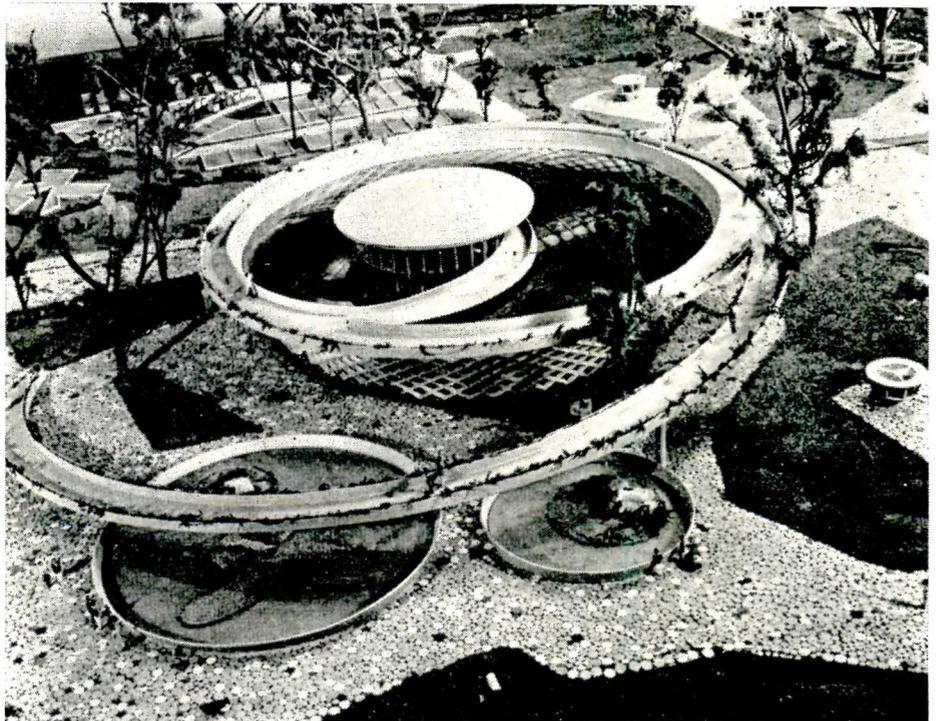
## Caracas To Have Guggenheimesque Aquarium

### Fishes and Marine Life To Be Seen in Own Element

CARACAS, VENEZUELA A fresh-water aquarium that will bring the viewer eye-to-eye with the fish has been proposed for Caracas. The project will stand as a gigantic, multi-hued sculpture in a major park area.

Designed by Architect Alejandro Pietri Pietri, the project is in the form of a huge tank, 20 ft high, with glass walls constructed of prestressed concrete beams forming a parabola that will grow from a base of 115 ft to a top circumference of 132 ft. The tension ring that will support the tank at the top will also act as a passageway.

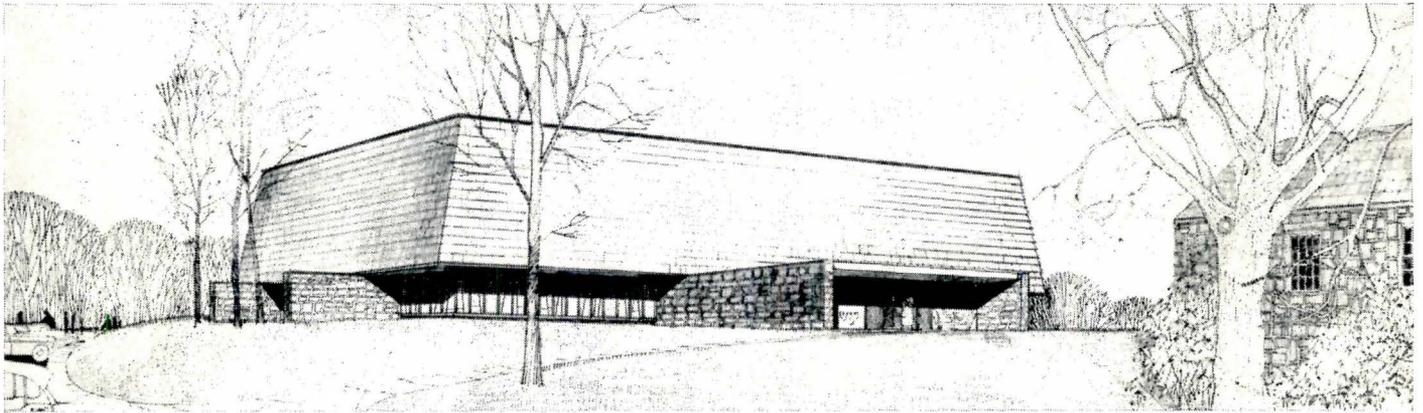
The visitor will enter the tank via a gently curved ramp which takes him over circular pools and up to the top of the tank. From here, he will cross a bridge to a central glass tower, inside which he will walk down a spiral ramp beneath the level of the water in the tank outside. The architect says this will afford "more or less the same sensation as a skin diver peering through his mask." From the bottom of the observation tower, 20 ft below the surface, the visitor will enter a sloped glass tunnel under the water that will take him back to the air-



Aquarium seen as it will sit in park, surrounded by pools and landscaping.

breathing world. A number of smaller aquariums on concrete pillars will be dotted around the parklike area "as sculptures and night lamps." Various colored glass will be inset into the diamond shapes described by the pre-

stressed concrete beams on the exterior of the tank, and the tank will be illuminated at night for a spectacular effect. By day, the tinted glass will color the water in the tank, adding to the dramatic effect.

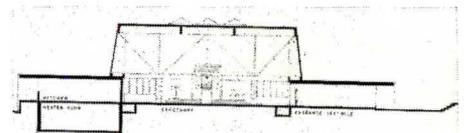


## APPROPRIATE FORM IN CONNECTICUT TEMPLE

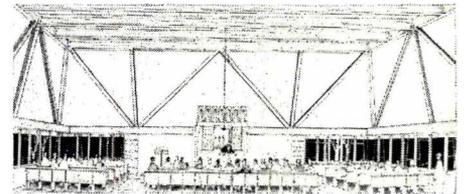
STAMFORD, CONN. A contemporary evocation of the shingle-and-stone architecture indigenous to this New England area will soon be found in the new Temple Sinai sanctuary and social hall building.

The structure, designed by local architects Sherwood, Mills & Smith, will feature a massive inclined roof covered with wood shingles. It has been compared to local barn roofs. Four parallel pairs of native stone walls will project from beneath this roof on each side of the building to define: the entrance, the kitchen area, the rear of the sanctuary, and the back

of the stage in the social hall. The sanctuary, lounge, and social hall will be three identically sized (32' x 56') units under the great roof. They will open into each other flexibly to form spaces for various uses. The sanctuary will have a 150-person capacity when used alone for worship; the lounge and social hall together will accommodate 320 for a banquet and 400 as an auditorium; on high holy days, the three areas will combine to shelter 625 persons. The entrance will include a coat room and a bride's room. Skylights over the lounge will form a Star of David.



Section shows kitchen, sanctuary, hall.



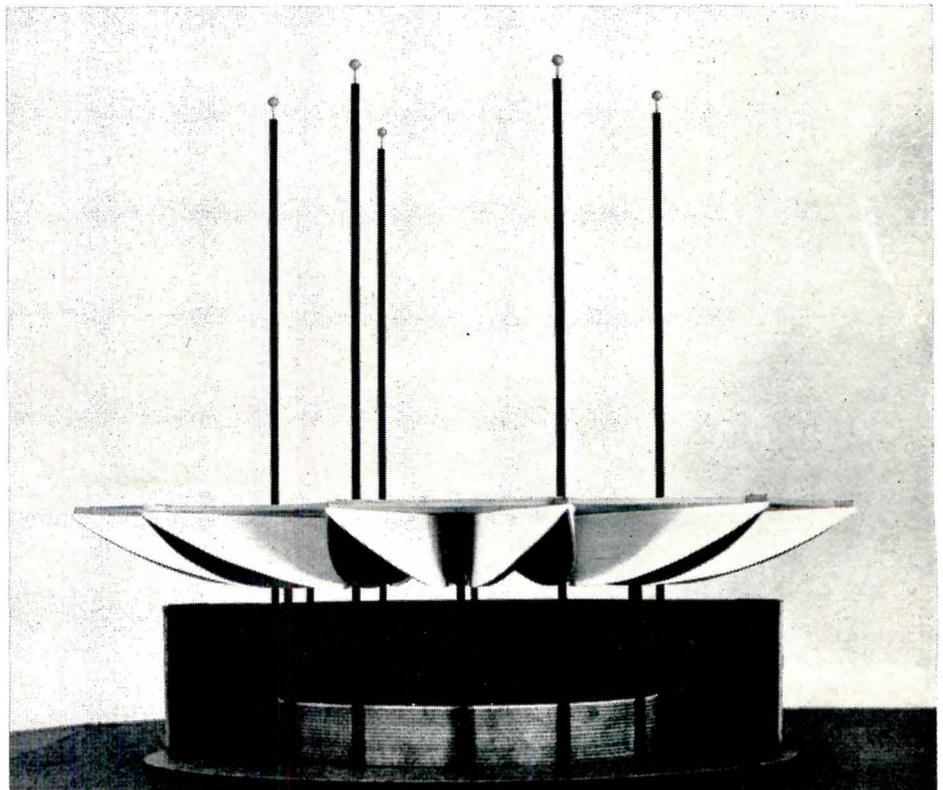
Plank-and-beam system for roof.

## Flower-like Hamburger Stand for Denver

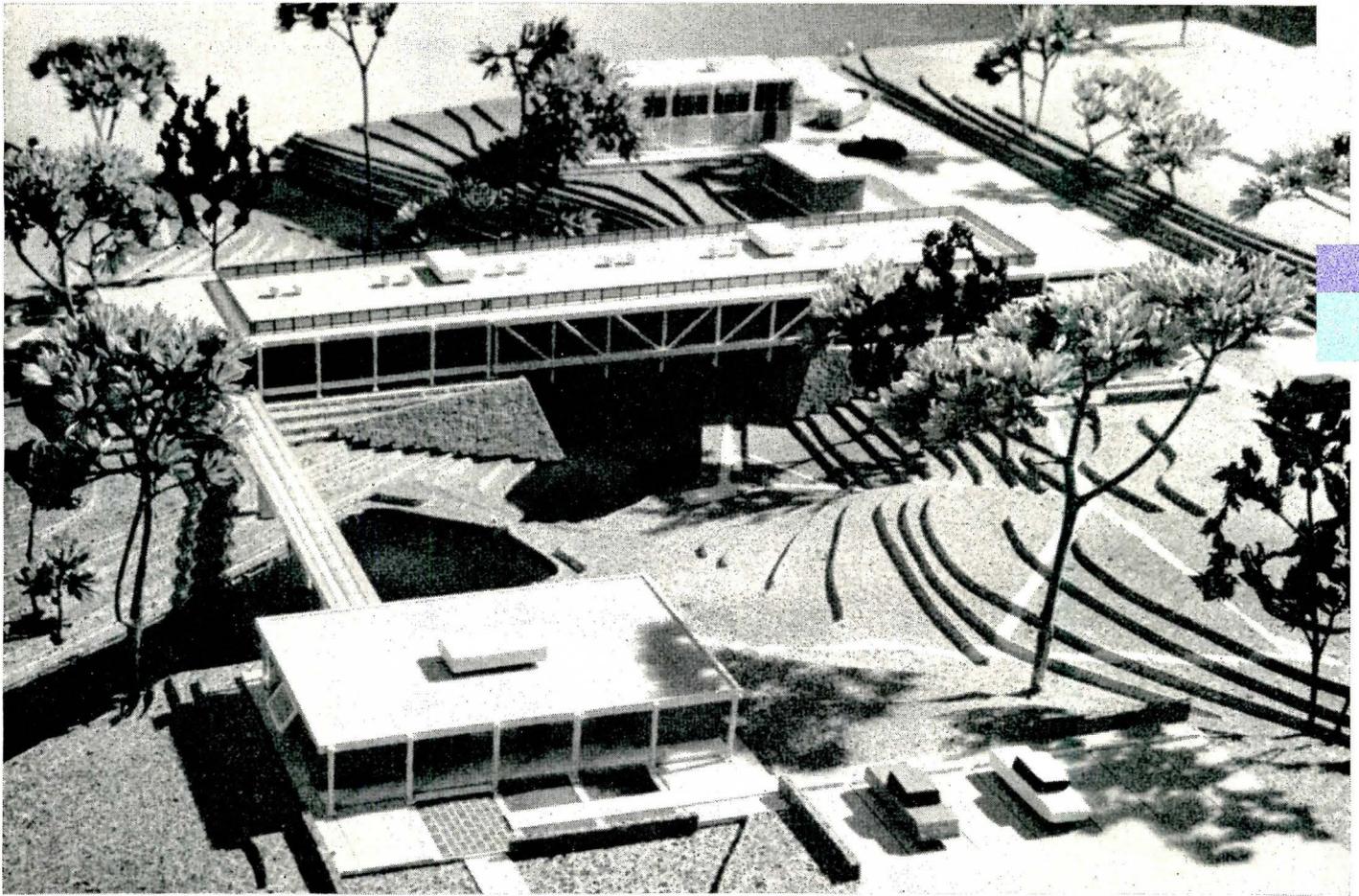
DENVER, COLO. W.C. Muchow Associates, architects of this drive-in restaurant say that, when complete, "it will be like walking under a flower."

This effect will be achieved by a roof system of red-and-white painted plywood "boat" forms supported on 12 pipe columns. The two-way, radiating cantilevered beams will be formed of laminated plywood sheets 4 ft deep that are cut to a curved bottom profile, and curved in plan to form 25-ft-long boat shapes. These forms will be prefabricated, truck-delivered, and hoisted into place on the columns. Several tall column extensions will have lights at the tips to announce the drive-in to motorists. Lower walls will be of brick, with space between walls and the roof glass-filled.

In plan, the drive-in will have a circular service nucleus behind which will be situated the walk-in refrigerator, pot sinks, ice machine, and rest rooms. In the nucleus, which will be surrounded for two-thirds of its circumference by the counter, will be a griddle, hamburger tray, shake machines, warmers, and ice cream cabinets. Vending machines will be located on the periphery.



"Flower" form of restaurant can be seen in model photograph.



## Research Building to Bridge Texas Stream

### Expandable Units in a Woodland Setting

RICHARDSON, TEXAS. The need for more and more advanced research on petroleum exploration and production is growing with Texas-size strides in this oil-rich area northeast of Dallas, and so is the consequent need for adequate research facilities.

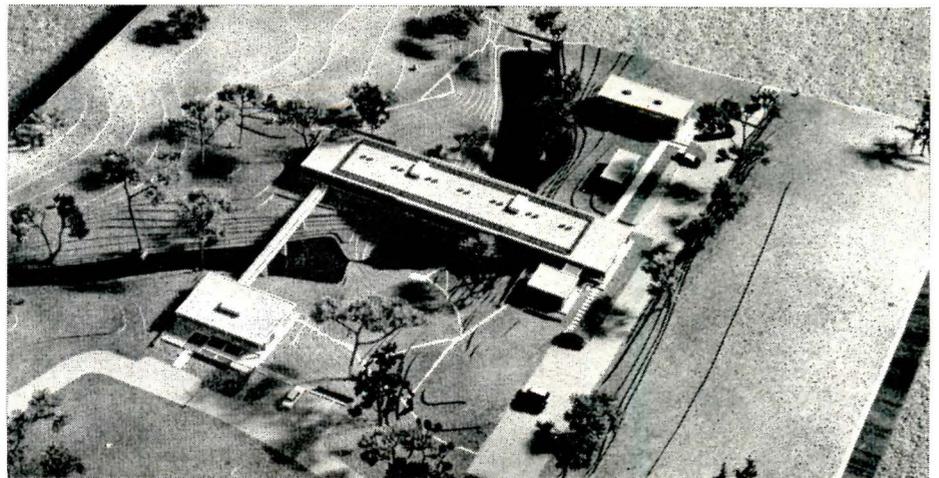
One of the newest oil research projects is one for The Western Company here by Coston, Frankfurt & Short of Oklahoma City. Program for the company includes requirements for administrative facilities, research facilities—both basic and pilot-production—and assembly areas for outfitting service trucks employed by the organization. Site is a pleasantly wooded strip bordering a small stream. The company had previously developed the rear of the site as a pilot pumping and chemical mix test area.

After several attempts at grouping the three major units (administration, research, assembly) on one side of the stream, the architects decided to place the research building, the largest element, across it.

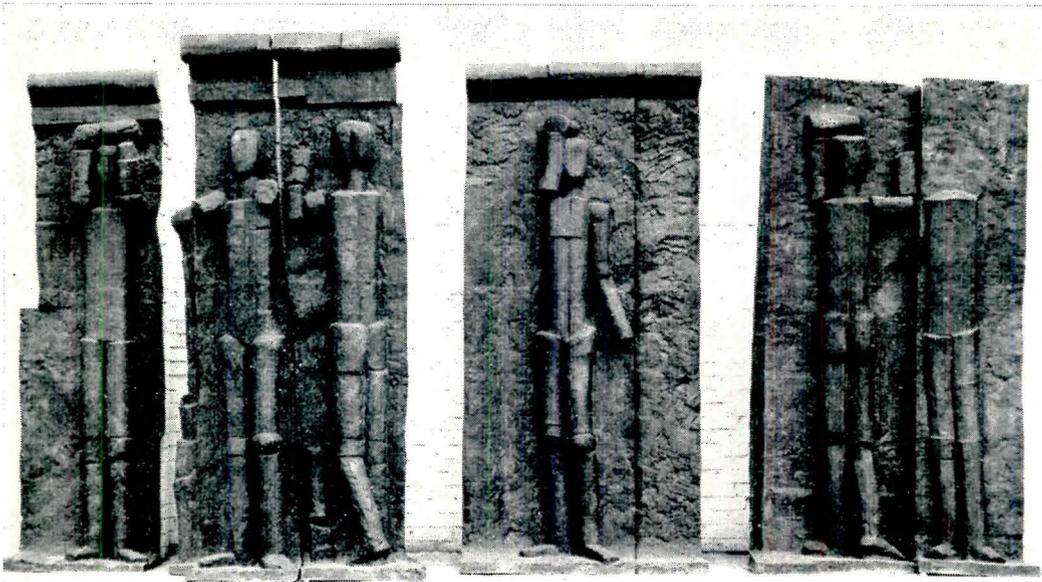
In this manner, all three initial units are now expandable to twice their first-phase sizes.

Structurally, all buildings will be based on a common 12 ft bay in one direction with the bays in the other direction being determined by function (though in multiples of a 5 ft module). The stream-spanning, center third of the research unit will be supported by 9-ft-high trusses placed at the railing line of the deck. These

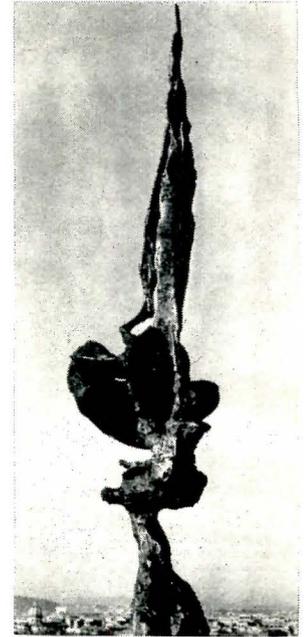
trusses, in turn, will support cross-trusses spanning the width of the building. Buildings will be exposed, painted steel frame with brick masonry walls and aluminum-framed window walls in administration and research units and industrial sash above insulated corrugated metal panels in the truck assembly unit. Placing of buildings will allow most large trees to remain, and the site will be naturally landscaped.



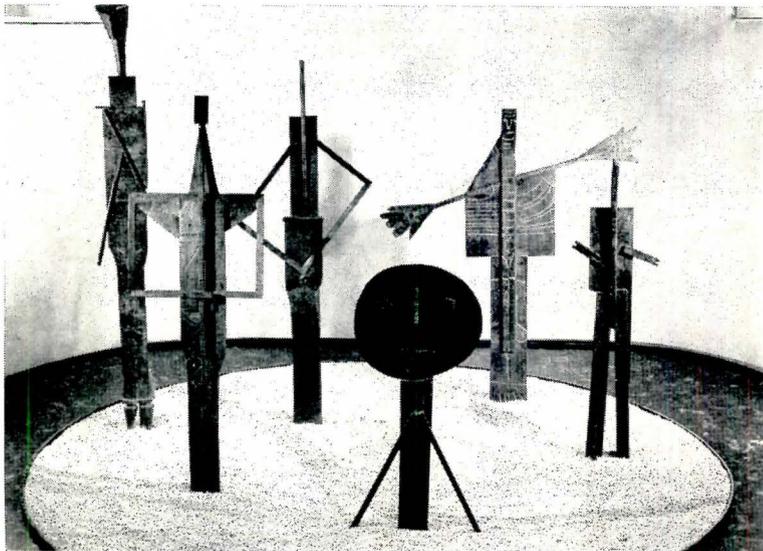
Front to rear: administration, research, assembly units.



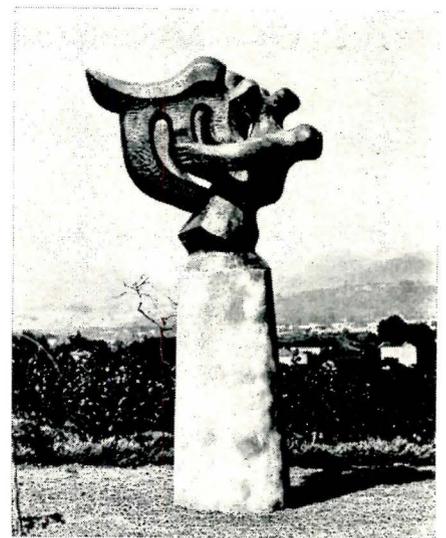
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### Monumental Sculpture for Buildings and Landscapes

#### Casts Make Famous Works Available

NEW YORK, N.Y. What to do with an extensive collection of casts for monumental sculpture by some of the world's most famous artists? This problem confronts Otto Gerson, gallery owner of 41 E. 57 Street, New York, N.Y. Since the tendency of private owners is now toward smaller pieces, Gerson saw the architectural field as an ideal market for his large-scale sculptures by such masters as Maillol, Rodin, Picasso, and Lipchitz,

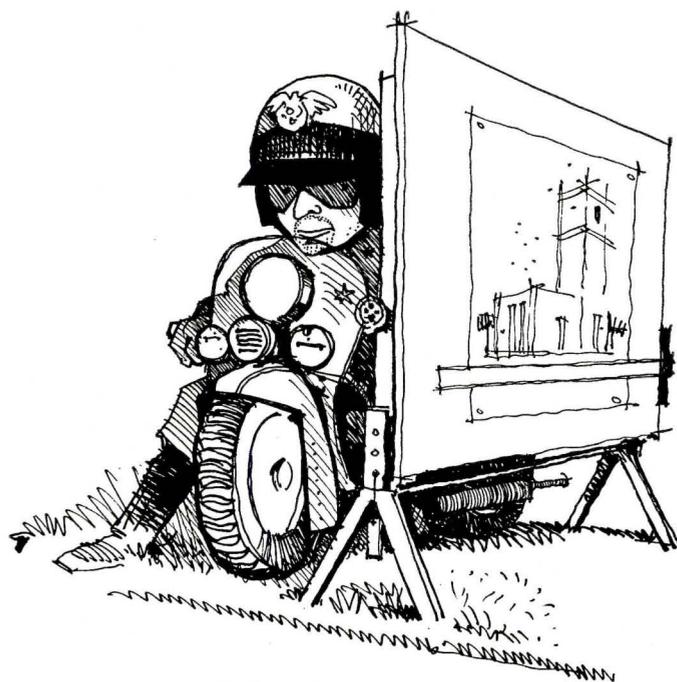
and such talented contemporaries as Wines, Rosati, and Schmidt. He has, consequently, issued a brochure titled "Monumental Sculpture for Architecture and Outdoor Settings," giving artists, titles, sizes, materials and photographs of many of his pieces. Included in the collection are the following: 1 Relief, by F. Wortruba, 18½ ft long; 2 Ritual Tower I, by James Wines, 6½ ft high; 3 Bathers, by Picasso, tallest piece 8½ ft high; 4 Song of the Vowels, by Lipchitz, 10 ft high; 5 Woman Putting Up Her Hair, by Maillol, 5 ft 1½ in. high. Brochures may be had from gallery.

## PERSONALITIES

A good way to escape from a sticky client conference has been discovered by **Benjamin Gingold** of Minneapolis. In addition to being an architect of some currency there, he is—"for kicks"—a motorcycle policeman and has all the receiving and sending equipment for calls in his office. Gingold, who took his B.Arch. at Yale in 1951 and worked with Holabird & Root & Burgee and Ellerbe & Company, makes his life a tripartite thing by also teaching a part-time schedule as design critic at the School of Architecture of the University of Minnesota across the river.

Apropos his life as the demon gendarme of Minneapolis's highways and byways, Gingold says that he has "been an avid motorcyclist for more than ten years and [has] found a place for this hobby in my productive life as a police officer." He also owns his own private motorcycle to which, presumably, professional courtesy is extended by policemen colleagues when it is zipping around town.

Ben and Sally Gingold live in a self-designed, romantic stucco house with the sexiest bathroom in the Midwest. At present, in addition to some houses, commercial, and church work, the Gingold office is preparing a large luxury apartment building to rise on the bluffs beside the Mississippi River.



the Fine Arts go to Architects **KENNETH CARDWELL**, **DAVID JACOB** (with his sculptor wife), **LOUIS I. KAHN**, **REGINALD L. MALCOLMSON**, and **PAOLO SOLERI**.

This month's "Personalities" seem to have a healthily schizoid approach to architecture. Whereas Ben Gingold can take his mind off office problems by guarding the welfare of fellow Minneapolitans, **Norman Hoberman** divides his time between architecture and sculpture. This may be seen as quite a switch for one who graduated



*cum laude* from Harvard Law School in 1951 and put in almost three years as judge advocate in the U.S. Air Force. Upon return to civilian life, Hoberman decided that his long undernourished, lay interest in architecture must be cultivated, and there ensued a session at the Harvard Graduate School of Design, with a consequent M.Arch. being awarded in 1957. After a short spell with Harrison & Abramovitz, Hoberman went to Europe on an Appleton Travelling Fellowship, and became actively interested in sculpting, even developing "a variation of Nervi's ferro-cemento process of constructing sculpture of several layers of reinforcing first and then forcing cement mortar through the reinforcing." He has since been represented as a sculptor at Gallery 10-4 in New York's Greenwich Village. Hoberman's zenith as an architect-sculptor came this January when his concept (with employing firm Pederson & Tilney) for the F.D.R. Memorial won first place in that competition. Since the argufying, back-biting, and other forms of critical and aesthetic brush fires always contingent on such a competition have already started on this one, perhaps Hoberman's legal training will soon come to stand him in good stead!

Architects advancing to Fellowship in the American Institute of Architects this month are:

RICHARD L. AECK, ARTHUR T. BROWN, FRANKLIN S. BUNCH, RICHARD D. BUTTERFIELD, ARCANGELO CASCIERI, BARTLETT COCKE, CORNELIUS M. DEASY, THOMAS F. ELLERBE, DONN EMMONS, CARNEY GOLDBERG, BERNARD J. GRAD, OLINDO GROSSI, VICTOR GRUEN, ALONZO J. HARRIMAN, ROBERT F. HASTINGS, RICHARD J. HEIDELBERGER, FREDERICK C. HUMMEL, EDWARD D. JAMES, SIDNEY L. KATZ, JOHN LORD KING, CARL KOCH, ROLAND L. LINDER, JOHN P. MACELWANE, WILLIAM MOOSER, SR., SAMUEL Z. MOSKOWITZ, ELIOT F. NOYES, RICHARD W.E. PERRIN, CHARLES E. PETERSON, GEORGE F. PIERCE, JR., FREDERIC H. PORTER, SR., RUSSELL S. POTTER, BERYL

PRICE, LADISLAV L. RADO, ELEANOR RAYMOND, EDWIN T. REEDER, EBERLE M. SMITH, MORELAND G. SMITH, HERBERT H. SWINBURNE, WILLIAM B. TABLER, THOMAS C. VINT, JOSEPH WATTERSON, HARRY M. WEESE, WILLIAM B. WIENER, LEONARD WOLF, WORLEY K. WONG, and PHILIP N. YOUTZ.

I.M. PEI will receive the Brunner Award of the National Institute of Arts and Letters next month. . . The F. Stuart Fitzpatrick Memorial Award for contribution to the building industry will be awarded to EDMUND PURVES, former Executive Director of AIA, at next month's Spring Conference of the Building Research Institute. . . Grants from the Graham Foundation for Advanced Studies in

Sketches by *Romero Corbelli*

## ANOTHER BAY CITY COMPETITION

The Diamond Heights-Red Rock Hill area of San Francisco is due for redevelopment when a five-man jury of Bay Area architects and builders has selected ten proposals and the Redevelopment Agency has pared this down to five for the use of developers. Jurors are: Architects Ernest J. Kump, John Carl Warnecke, and Don Burkholder (the latter of the San Francisco Redevelopment Agency) and Builders Joseph Eichler and Gerson Baker. William J. Watson is professional advisor. Judging for the 22-acre project will take place in mid-June. The ten premiated designs will receive \$1000 each. Developers will submit bids based on one or more of the five final designs on October 24, and the successful bidder will develop the site on

the basis of one of the five proposals. For information, contact San Francisco Redevelopment Agency, 525 Golden Gate Avenue, San Francisco 2, Calif.

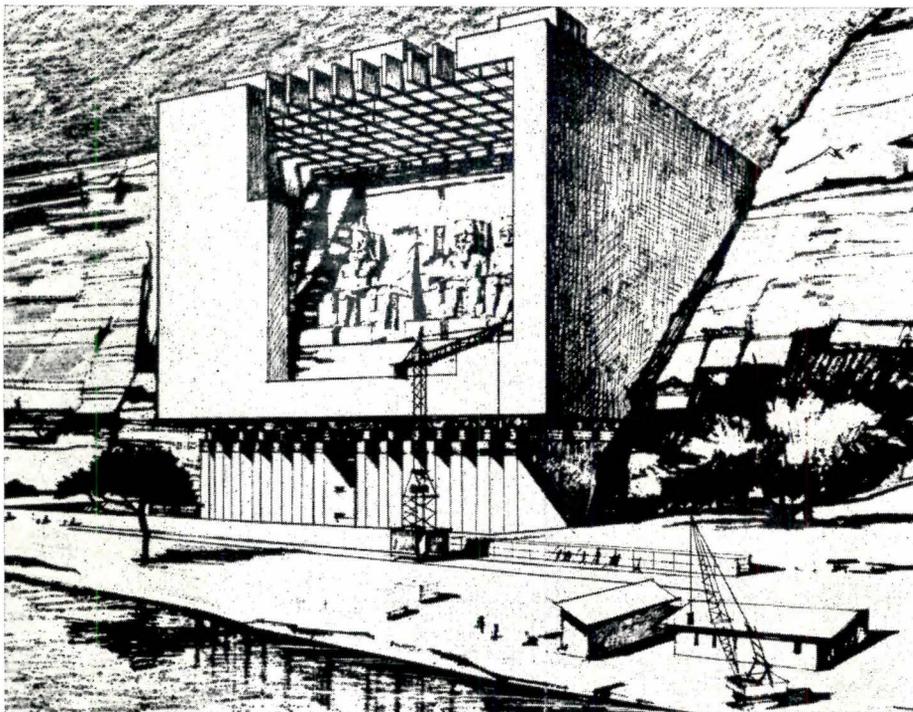
## Reynolds Awards Given at AIA Convention

A highlight of the annual AIA Convention is the presentation of the 1961 R. S. Reynolds Memorial Award, particularly so this year, since it is the first in the award's five-year history that it has been won by American architects. Winner this year, discussed and illustrated in full on pages 174-178 of this month's PROGRESSIVE ARCHITECTURE, is the "Climatron," the aluminum- and -plastic-domed greenhouse for the Missouri Botanical Gar-



den in St. Louis by Murphy & Mackey. Prizes are \$25,000 and an original aluminum sculpture by Robert Cronbach. Jury for the Reynolds award consisted of Minoru Yamasaki, Hugh Stubbins, Jr., Samuel T. Hurst, Paul Thiry, and Henrique E. Mindlin.

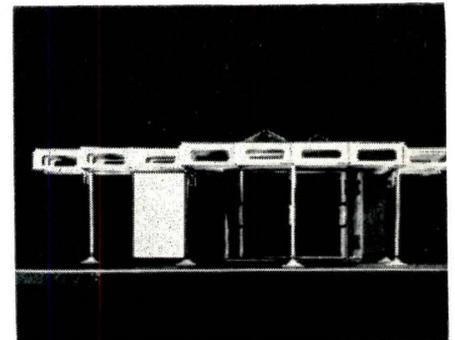
John L. Dewey of the University of Cincinnati wins the first annual Reynolds Aluminum Prize for Architec-



## NEW PLAN TO SAVE ABU SIMBEL

The government of the United Arab Republic in Cairo is considering still another scheme to save the monuments of Rameses II at Abu Simbel (p. 53, DECEMBER 1960 P/A) from inundation by waters from the projected Aswan High Dam. The plan, by Piero Gazzola of Milan, is to cut the gigantic temples from the sandstone in which they are carved and lift them on hydraulic jacks to the edge of the lake that will be created by the dam. This operation has been compared to lifting eight Washington Monuments the height of a 16-story building. During

the lifting process, as shown in the rendering, the monuments would be enclosed in a steel and concrete casing. The committee of experts (which includes New York Architect Edward White) has reported to UNESCO and the UAR that Gazzola's plan is more feasible and cheaper—despite the fact that it will cost around \$55 million—than a proposal advanced by French architects to sink cofferdams around Abu Simbel. The UAR Minister of Culture and National Guidance has given his okay, and if UNESCO goes along, the money is the next step.



tural Students with his design of a component structure of aluminum for use in plazas, parks, and rest areas. Amount of the student prize is \$5000.

## Academy in the Sunshine

Construction was begun in January on Miami Beach's Hebrew Academy, a bilingual school for 500 students from nursery through junior high school level. It will be located on 2½ acres of what was once part of the Miami Beach Municipal Golf Course on Dade Boulevard. The building consists of three, two-story structures grouped around courts, and includes a chapel with a slightly raised roof (rear left). Structure will be of prestressed con-

*Continued on page 62*

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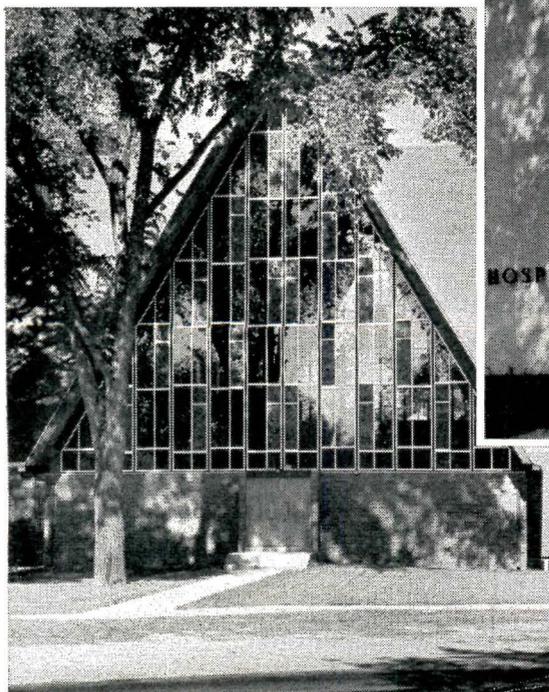
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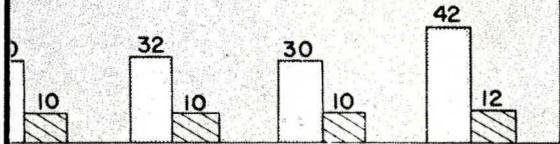
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OF 7 LEADING BRANDS  
OF THIOKOL LP BASE SEALANTS**

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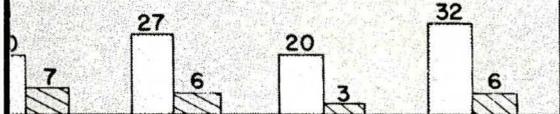


**ELASTIC RECOVERY VS TEMPERATURE  
OF ORIGINAL AND AGED SEALANTS**

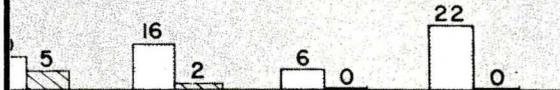
TEST TEMPERATURE (32°F)



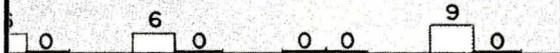
TEST TEMPERATURE (0°F)



TEST TEMPERATURE (-25°F)



TEST TEMPERATURE (-50°F)



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Continued from page 58



crete. Aside from the usual school-rooms, assembly room, cafeteria, etc., there will be a music room, arts and crafts room, and a large library with a special section containing 2000 Hebrew books. Completion is expected in the fall of 1961. Architect: Morris Lapidus, Harle & Liebman; Planner: James Garland of Connell, Pierce, Garland & Friedman, Miami.

### SCHOOL NEWS

Approval of a new professional curriculum in architecture has been announced by Dr. Earl C. Seigfred, Dean of the College of Fine Arts, Ohio University; Walter A. Taylor is Director of the new School of Architecture . . . Ohio University also has a new scholarship, the John Noble Richards Scholarship, made possible by a grant from Bellman, Gillett & Richards; it will be awarded to a student selected by the director and faculty. . . University of Cincinnati announces an

illustrated catalog that includes news of the establishment of an undergraduate program in city planning; write to Ernest Pickering, Dean, College of Applied Arts, University of Cincinnati, Cincinnati 21, Ohio.

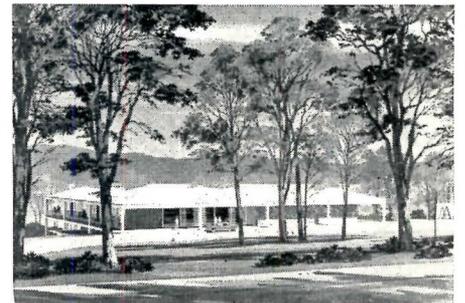
### Shot in Arm for Downtown L.A.

That bleak area known as downtown Los Angeles is scheduled to receive a



major transfusion in the form of a three-part building designed for Occidental Life Insurance Company of California by William L. Pereira & Associates. Scheduled for construction in the initial phase are a nine-story

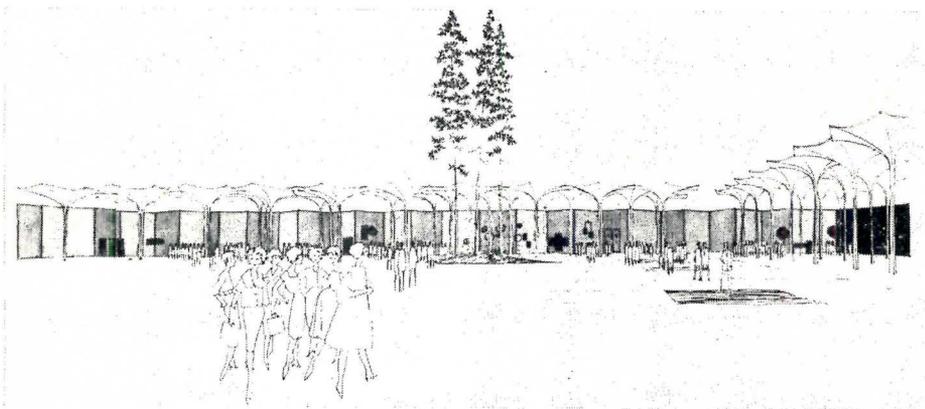
service building to accommodate departments of the firm engaged in electronic processing and similar operations, and a nearby, five-level parking garage. Second phase will see the erection of a 25-story tower connected to the service building. Tower will contain 500,000 sq ft of floor space, service building will have 240,000 sq ft, and the garage will be expanded horizontally for an ultimate capacity of 700 cars. Vertical fins and horizontal sunshades for sun control will create an interesting façade pattern on the buildings. Also included in the program is the remodeling of Occidental's present offices, next door to the project site. Brandow & Johnson, Structural Engineer; Ralph E. Phillips, Mechanical and Electrical Engineer.



### Reservation Center to Link Airline Offices

The IBM computers that will be housed in this 18,000-sq-ft building in Briarcliff Manor, N.Y., will be connected to American Airlines' 1100 desks in over 60 cities throughout the country. When completed in 1963, they will enable the airline to handle more than 7500 reservations an hour. "Sabre," as the data processing system is called, is the largest such system ever designed for business use. When a passenger in Denver, for example, requests a seat on a certain flight, a console in that office will transfer the message to the center in Briarcliff Manor, and the reservation can be confirmed and recorded in less than a minute. The building will be called American Airlines' Sabre Reservation Center, and will be located on a ten-acre, wooded site overlooking the Hudson River. The center's umbrella-frame construction will enclose a stone-encased computer room (right) and a glass-enclosed office space (left).

Architect: Perkins & Will; Structural Engineer: Garfinkel & Marenberg; Mechanical Consultant: Air Research Associates; Acoustical Consultant: Bolt, Beranek & Newman; Landscape Architect: Damon Finelli.



### World of Commerce and Industry for Seattle

Do-it-yourself exhibitors will have a ball at Seattle's Century 21 Exposition in the pavilions designed for them by Spokane Architects Walker & McGough. Foreign exhibits of commerce and industry are to be held in three shelter buildings—two of them roofed with hyperbolic-paraboloid concrete umbrella forms and the third a wood-frame structure with a diamond-boxed truss-roof system. Exhibitors may organize their spaces within

these shelters to their own tastes, the third wall of most spaces having been left out to be designed to the tenant's taste. World of Commerce and Industry, International, is another well-designed and well-thought-out building in the Century 21 tradition. P/A wants to extend the best of luck to this intelligently planned exposition, and only wishes that a certain other upcoming international fair were so forward looking.



## No drawers

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your designs, which is reason enough to make them sell like hotcakes.

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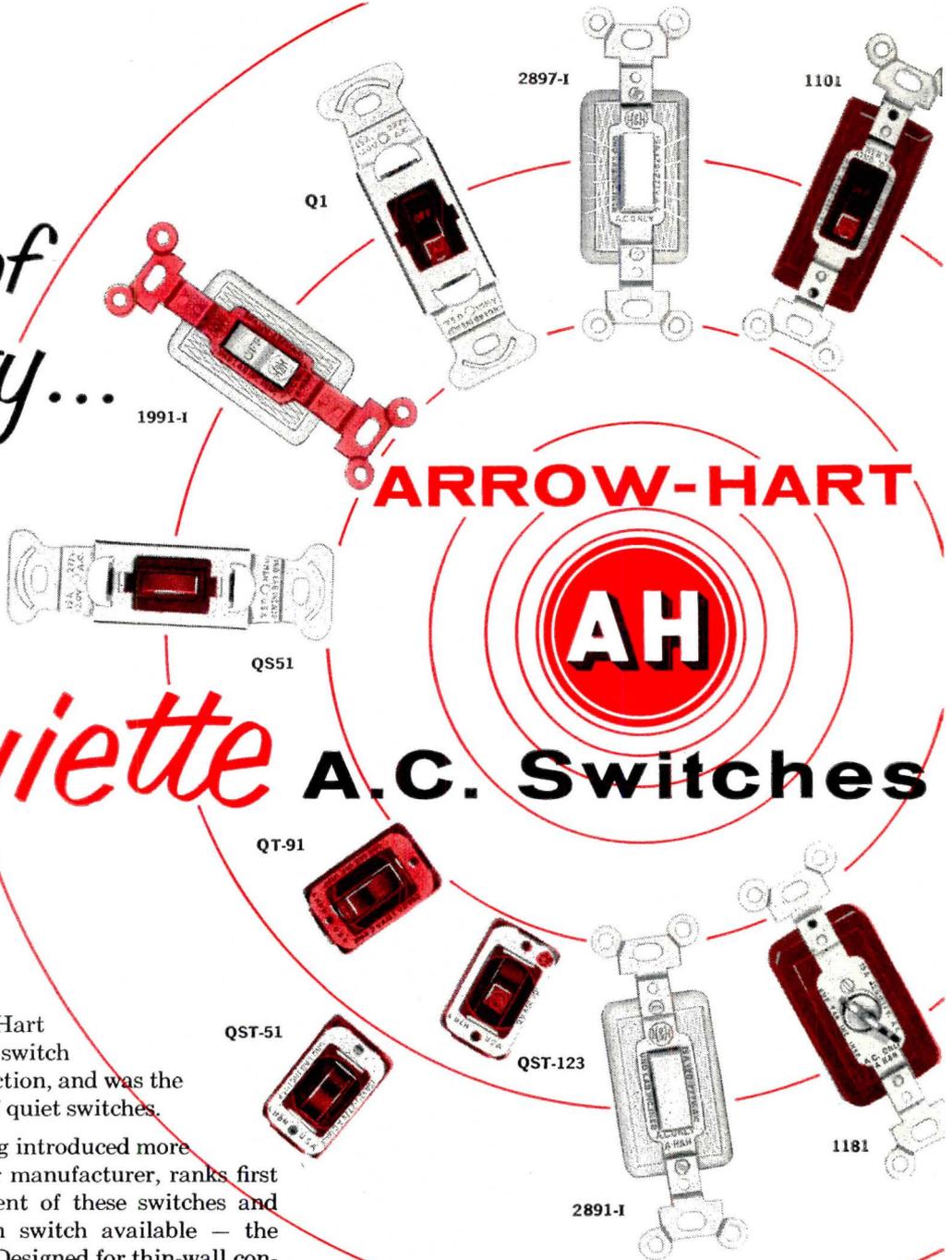
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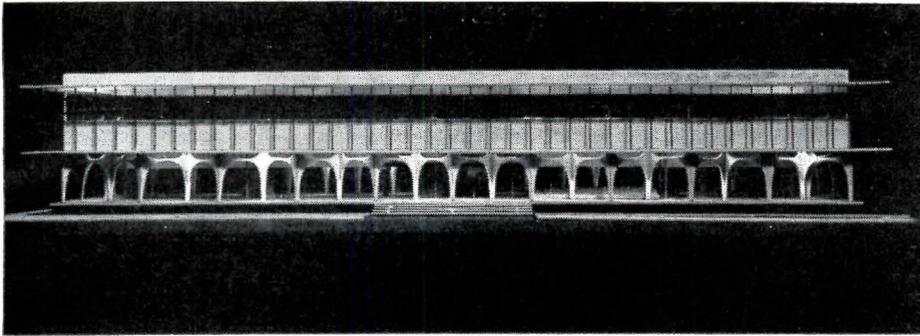


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### Pan-Pacific Citation, Hawaiian AIA Honor Awards

The Pan-Pacific Architectural Citation for "consistent excellence in design" was awarded this year to Leandro V. Locsin of Manila at the annual awards dinner of the AIA Hawaiian Chapter. Roy Grounds of Melbourne, Australia, and Kenzo Tange of Tokyo were previous winners of the annual citation. Locsin says that his design for the Commercial Credit Corporation office in Manila (shown) is "romantic," and elements in its design create a sense of movement. The arches that support the upper floor of the building are staggered in plan and

seem to vary in spacing as one passes the building. A friezelike band of aluminum slats cuts off the glare from the hot Philippine sun and looks somewhat like a bamboo screen; it also produces a ripple of movement as one passes.

Four Hawaiian architectural firms shared the 1961 honors for the AIA Hawaiian Chapter: Wimberly & Cook Architects, Ltd.; Johnson & Perkins; Design Associates (Frank Slavsky and Harold L. Whitaker); and Lemmon, Freeth, Haines & Jones. A special award was given to artist Ben Norris.

### Municipal Center for Tenafly, N.J.

Construction has begun on Vincent G. Kling's design for the three-building Municipal Center in Tenafly, which will be built on a 14-acre site adjoining the town's business section. The project will be red brick and masonry and will be completed in spring of 1962. It consists of a public library (left), borough administration building, and the fire-police headquarters.



Ira Davey of Hackensack was an associate on the library, which will contain a community room for lectures and meetings. The administration hall will contain city offices, and a council chamber will be located forward of the covered walkway. The chamber will seat 130 and will also serve as Magistrates Court. A hose-drying tower will stand by the fire-police headquarters, which will hold offices, equipment, and service facilities. The complex will be grouped around a "village green" type plaza.



### Philadelphians Place in International Contest

Two young Philadelphians, Otto E. Reichert-Facilides and Conrad Hawk, designed the only American entry that placed among the top finalists in an international competition for a resort town in southern Spain. The competition, initiated by Salvador Guerrero, a Spanish developer, has the blessing of the Government, which has become concerned over the U.S.-like thoughtless "development" of its Mediterranean seacoast. Winner of the first

prize was Yves Vitard of Paris.

The American Honorable Mention winner proposes development of the town in three areas: town center, including tourist attractions; hotel area, including bull ring and sports facilities; and three residential zones (tourist village, permanent town, and tower apartments in the hills). The Spanish Government owns the land between highway and ocean; it must, by law, remain in its natural state.

### EX POST CREDIT

Architect of the Phoenix Mutual Life Insurance Company headquarters published in last month's issue (p. 59) is Harrison & Abramovitz.

### CALENDAR

Building Research Institute holds its Spring Conference at the Shoreham, Washington, D.C., May 16-18; there will be a program on adhesives and sealants and sessions on public entrance doors and plastics in buildings . . . Construction Specifications Institute holds its fifth annual convention at the Commodore Hotel in New York, May 22-24 . . . MIT will hold a conference on "City and Regional Planning," July 17-28; details from the Registrar of Admissions . . . Western Building Industries Exposition will be held in Los Angeles, October 7-10. . . NAMM'S Curtain Wall Seminar is in New York on April 13.

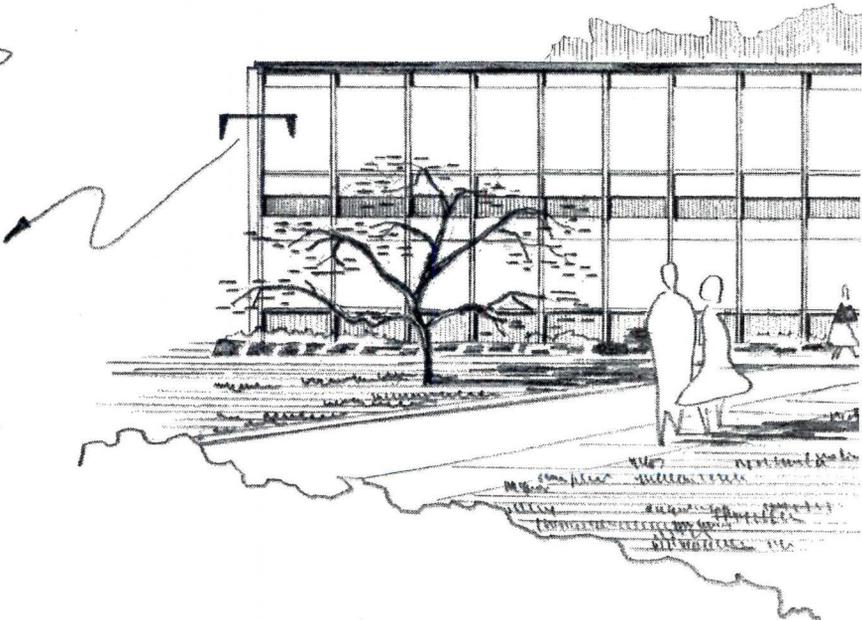
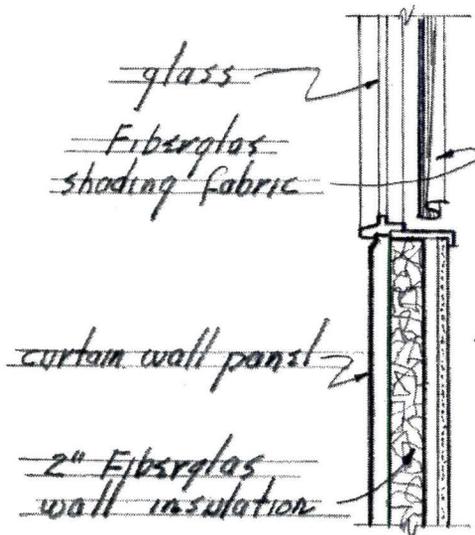
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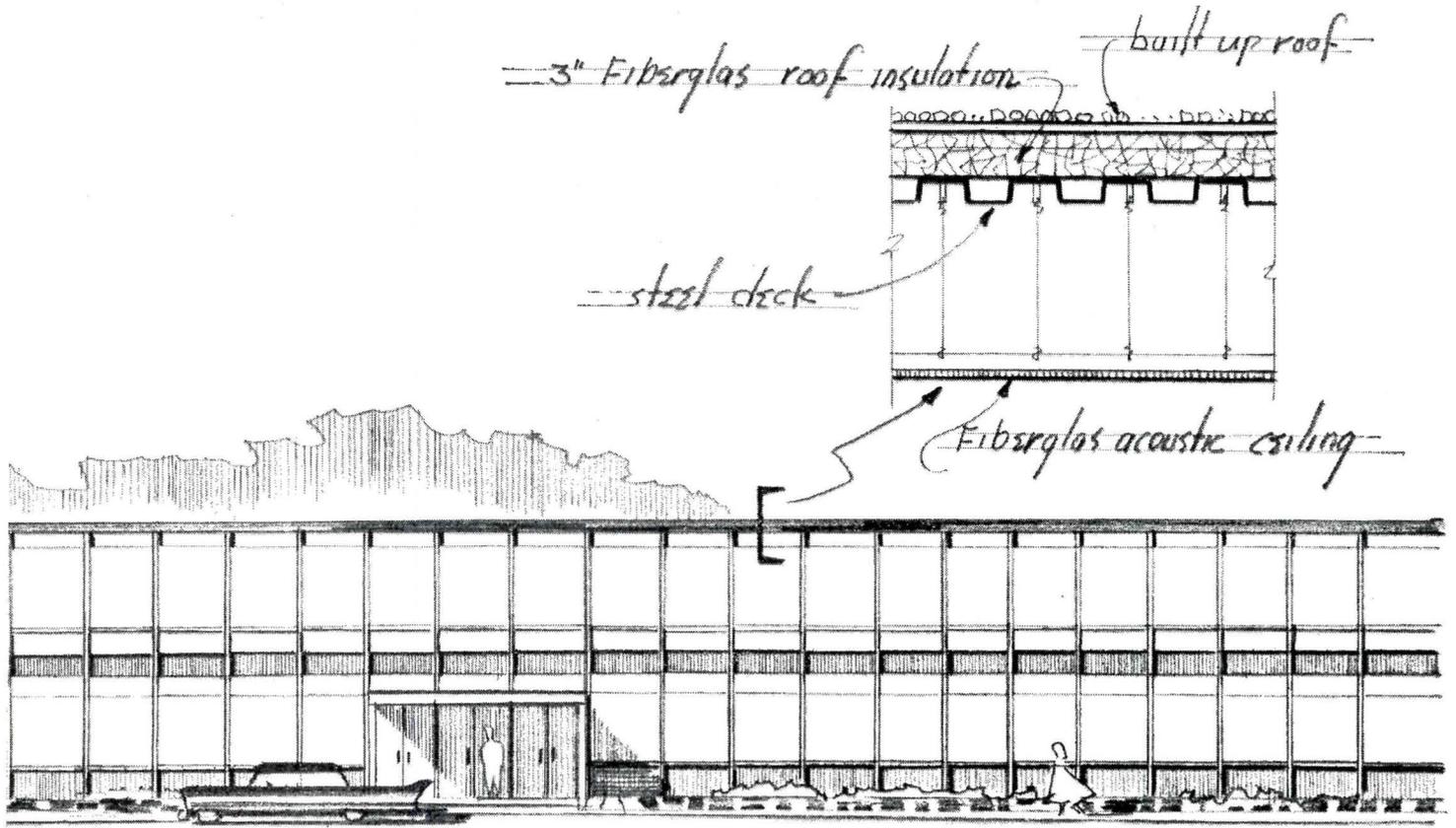
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Cost of Heating & Cooling Equipment.....	\$189,450	\$130,580
Savings.....		\$ 58,870
Additional Construction Cost.....		\$ 42,000
Net Savings on Initial Costs.....		\$ 16,870
Projected Annual Operating Costs.....	\$ 64,222	\$ 59,469
Savings on Operating Costs, per year.....		\$ 4,753



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# The Congress Examines the Bills



By E. E. Halmos, Jr.

With Congress refusing—somewhat obstinately, in the view of some members of the new Administration—to give up its courtly, deliberate pace, there was a little time in early March to assess some of the double-handful of legislation that had moved from the White House to the Capitol.

The round of committee hearings that are a prelude to any action on new laws had finally started. From them it was possible to spot two points that ran as a very strong trend, and had already forced changes in wording of some key Administration measures:

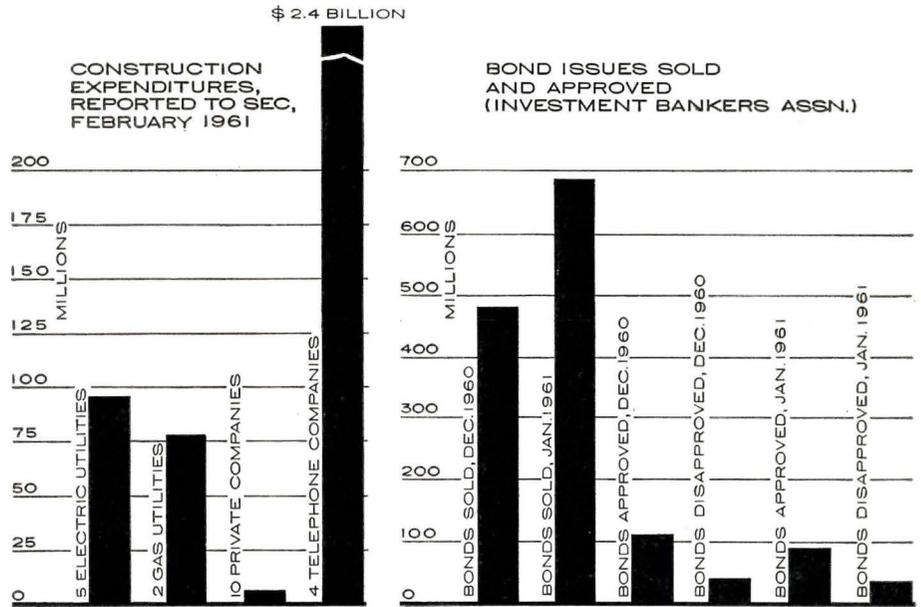
The gentlemen of the legislative branch are determined to keep control of Federal spending in their own hands; and they are much concerned lest they lose any powers to regulate Federal departments.

That would indicate a jaundiced look at any proposals for new agencies short of Cabinet-level, and for any carte-blanche spending authorizations under whatever guise.

With this in mind, architects might find it profitable to look in some detail at provisions of some of the major construction bills now before Congress.

A good place to start is the group of proposals for aid to school construction. As you know, there are now more than a dozen such measures in the hoppers—some of them identical. Five of these—S.8, S.723, S.433, S.991 and S.1021—may be considered major ones, since they represent the positions of the Democratic majority (S.8) and the Kennedy Administration (S.1021); and the counterproposals of the Republican and conservative minority.

All but one of them (Senator Goldwater's S.991) call for direct Federal appropriation of money for construction, in amounts ranging up to the President's call for about \$5.7 billion over five years (S.1021 and others to come). They vary from each other—other than in amount—in several particulars: formulas for apportioning money to the states; and provisions that some of the money could be used to supplement salaries of teachers.



BOND ELECTION RESULTS - JAN 1961 BY USE OF PROCEEDS

USE OF PROCEEDS	APPROVED		DISAPPROVED	
	AMOUNT	NO	AMOUNT	NO
EDUCATION :				
ELEM. & SEC.	34,297,000	41	16,599,000	14
OTHER	2,275,000	5	1,250,000	1
ROADS & BRIDGES	17,615,000	7	50,000	1
WATER & SEWER	25,730,000	7	6,380,000	6
OTHER UTILITIES	775,000	3	—	0
HEALTH & WELFARE	225,000	1	—	0
RECREATION	590,000	2	1,200,000	1
PORTS & AIRPORTS	800,000	1	—	0
INDUSTRIAL	650,000	2	—	0
REFUNDING	—	0	—	0
FLOOD CONTROL	—	0	—	0
PUBLIC HOUSING	—	0	—	0
VETERANS AID	—	0	—	0
ADMIN. & OFFICE BLDG.	200,000	1	300,000	1
UNCLASSIFIED	2,503,000	9	5,815,000	2
<b>TOTALS</b>	<b>\$ 85,760,000</b>	<b>79</b>	<b>\$ 31,594,000</b>	<b>26</b>

BOND ELECTIONS SCHEDULED AS OF FEB 1961

MONTH	AMOUNT
JANUARY	—
FEBRUARY	217,758,000
MARCH	98,472,000
APRIL	116,789,000
MAY	192,498,000
JUNE	7,007,000
JULY	7,750,000
AUGUST	—
SEPTEMBER	5,995,000
OCTOBER	2,500,000
NOVEMBER	1,184,224,000
DECEMBER	—
NO DATE SET	104,467,000
<b>TOTAL</b>	<b>\$ 1,937,460,000</b>

USE OF PROCEEDS	AMOUNT
EDUCATION :	
ELEM. & SEC.	167,972,000
OTHER	2,925,000
ROADS & BRIDGES	88,766,000
WATER & SEWER	312,513,000
OTHER UTILITIES	917,161,000
HEALTH & WELFARE	55,715,000
RECREATION	8,678,000
PORTS & AIRPORTS	140,248,000
INDUSTRIAL	527,000
REFUNDING	—
FLOOD CONTROL	—
PUBLIC HOUSING	—
VETERANS AID	—
ADMIN. & OFFICE BLDG.	7,207,000
UNCLASSIFIED	235,748,000
<b>TOTAL</b>	<b>\$ 1,937,460,000</b>

Both S.8 and its Republican counterpart, S.723, would permit use of funds for teacher pay as well as construction; S.8 would provide \$1.8 billion in U.S. money for two years, while S.723 calls for \$3.4 billion over four years; both bills would require that states match Federal funds to some degree. Difference—and it could be important

to "poorer" states—lies in the distribution formula: S.8 would grant states a flat \$30 per child; S.723 would put a premium on need, thus make for higher payments to Southern states—as much as \$98 per child.

S.433—generally considered the official Republican counterpart to the

*Continued on page 72*

**NEWS from Dow Corning**

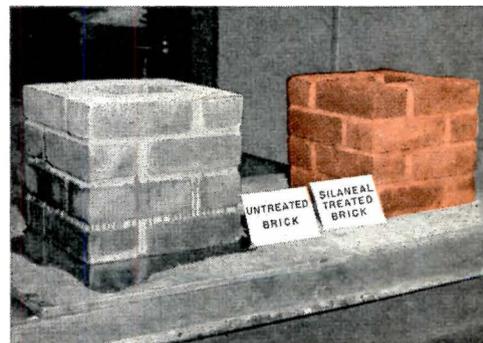
# SILANEAL Reduces Water



## Tests Prove: SILANEAL Helps Prevent Leaks and Improve Bond Of High Suction Brick

Both brick test tanks above were built by the same mason, using full head and bed joints from the same batch of mortar and the same type of *high suction rate* brick. The only difference: tank at right was built of brick which were *treated at the brick plant with Silaneal®*. Just before the photo was snapped, this tank was filled with 8 inches of water. No leakage occurred. The other tank developed leaks even as it was being filled.

Now, look at the photo at right. It shows the same two tanks five minutes later. Note how the one built of brick treated with *Silaneal* still shows no sign of water penetration. The one built of *untreated* brick shows severe leakage at the mortar-brick interface.



**Dow Corning**

# Penetration Of Brick Walls

## Why Silaneal makes the difference

A chief cause of leaky brick walls is mortar shrinkage which results in minute cracks at the interface of the mortar and brick. Reason for shrinkage: when a high suction rate brick is placed on fresh mortar, the brick immediately sucks considerable water out of the mortar. Thus, the mortar dries too quickly and shrinks, leaving a hair-line crack.

Of course, in order for the Silaneal treatment to be effective, high quality workmanship in the laying of the brick is a must.

Silaneal treatment reduces *initial* water absorption of high suction rate brick. By applying Silaneal to the bedding surfaces of such brick, the brick manufacturer can control the suction rate, and thereby eliminate this cause of mortar shrinkage.

Until Silaneal, the recommended method for controlling this problem on high suction brick was to soak the brick. The difficulty: How long to soak? Too much absorbed water causes "floating". Too little absorption is ineffective. The common practice of spraying the brick pile also results in varying suction rates throughout the pile. Only Silaneal assures proper mortar hydration with high suction rate brick.

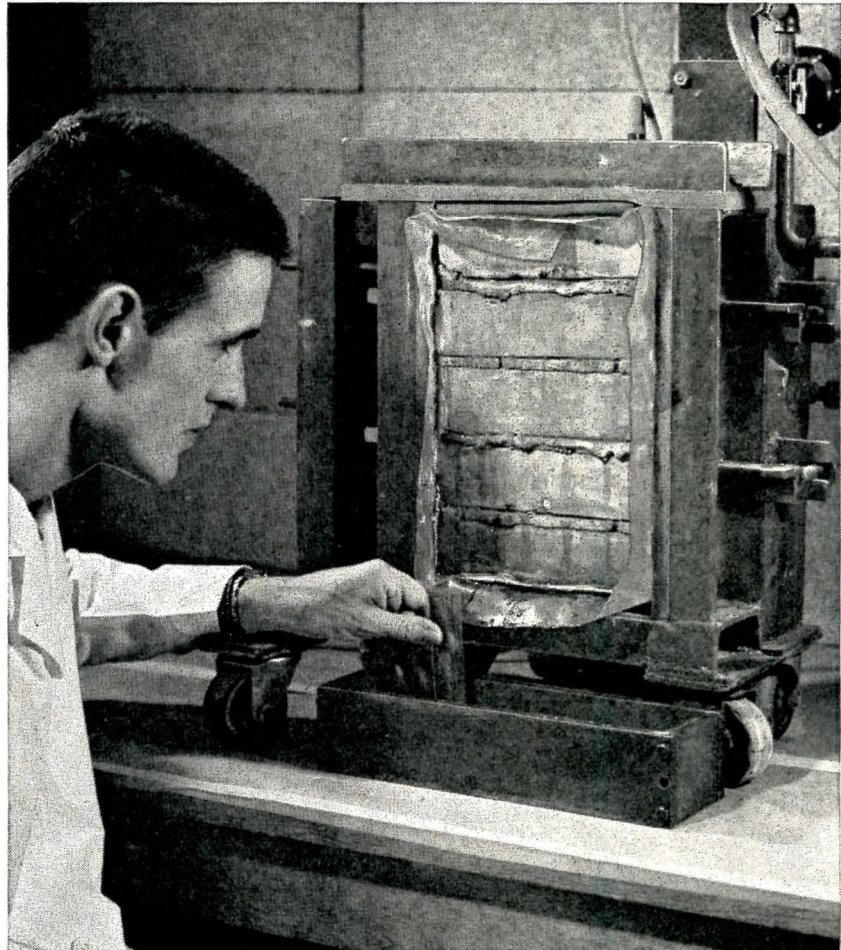
## A better bond, a stronger wall!

Obviously, without hairline cracks at the interface of the mortar and brick, you have a better bond . . . a stronger wall. That's another good reason for specifying Silaneal treatment!

## Other important Silaneal features

- Keeps brick clean
- Minimizes efflorescence
- Speeds construction

Get full information about Silaneal today. Write Department 7316.



Exhaustive tests, simulating wind-driven rain, have shown repeatedly: No leakage through wall panels built of high suction rate brick *treated with Silaneal*; Serious leakage through hair-line mortar cracks in panels built of high suction brick *without Silaneal treatment*.

TYPE BRICK	UNTREATED SUCTION RATE	SUCTION RATE AFTER SILANEAL TREATMENT	MILLILITERS WATER LEAKAGE AFTER 400 MINUTES	
			Untreated	Silaneal Treated
SOFT MUD	77	9	28,145	0
EXTRUDED	43	10	80	0
DRY PRESSED	148	5	1500	0

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*Continued from page 69*

Administration bill (S.1021)—is much more conservative than any so far presented. It calls for a total of \$1 billion in Federal grants over four years, no teacher pay, and requires that the states match the Federal money; and it prohibits use of Federal grants for "frills" such as outdoor or indoor athletic facilities or any special-purpose rooms unless the school district can demonstrate that the subject taught in such rooms is required for graduation. The distribution formula is based on the proportion of children under the age of 14 within the state to the total number of such children in the U.S.

But the big gun of the group is S.1021. It is a double-barreled measure that provides a total of about \$2.4 billion in Federal grants over three years, both for construction and pay, and at the same time cuts back (by one half) the amount of money now paid by the Government to school districts in so-called "Federally impacted" areas, where an extra load has been placed on school districts because of the presence of some Government installation. The allotment formula apparently would work out to about \$15 per child in each state; states would be required to match funds, and could be penalized for failing to meet ratios of "effort" to be set up under the complicated formulas offered.

(This Administration bill was only a part of the total aid to education program that the President said he'd ask for. Other elements, which would raise total cost to about \$5.7 billion over five years, would continue a 10-year program of long-term, low-interest loans for college dormitory construction and include a five-year program for construction of college classrooms.)

S.991 is interesting chiefly for its novelty—as is its Democratic counterpart, S.1119. It calls for *no* Federal appropriations, no grants, and no matching funds or formulas at all. It simply provides that taxpayers could deduct the entire amount of their local school taxes from the final total that they would normally owe on personal Federal income taxes. Republicans figured this would put between \$3 and \$4 billion a year more money into circulation, thus making it easier for school districts to sell bonds, and imposing no Federal controls at all.

S.1119 is somewhat similar: It proposes that, instead of Federal grants, the U.S. return to the states 5 per cent of Federal income taxes collected in the state for use in school construction projects.

Chances of passage of some amal-

gam of these proposals still have to be rated as good. But some clouds are beginning to appear: insistence by educational lobbies on teacher-pay provisions; or insistence on antisegregation provisions; or growing opposition from parochial and private schools—any of these could kill the whole thing, just as happened last year.

A second group of bills that will be of prime interest for architects are those concerned with area redevelopment, urban redevelopment, and mass transportation in urban areas. All call for considerable construction expenditures (ranging upward from \$100 million a year in revolving funds for rural redevelopment to a total of \$394 million); all are concerned with areas of planning and construction that are the peculiar field of the architect.

First hearings on this group (S.1, S.268, S.345, S.858 and others both in the Senate and House) brought out immediately Congressional concern with maintaining control of Government agencies and their spending. And they have already forced changes in wording to maintain that control: only by a 5-4 committee vote could Administration supporters keep from knocking out provision of a new Federal agency to administer the rural program (in favor of keeping it within the Commerce Department).

Most of these bills have at their center the desire—on both sides of the political aisles—to do something permanent about areas of chronic economic distress: by trying to promote construction of community facilities to attract business; by even providing facilities for rent to business enterprises; by eliminating business and residential area slums; by providing better transportation to business areas and the like.

There's little doubt that some measure in this line will be passed this session. But you can be sure that control will be kept on Capitol Hill—not at 1600 Pennsylvania Avenue.

One of these bills, by the way—S.858—has special interest. It would provide authority (and money) to the Housing and Home Finance Agency to assist states and their subdivisions to buy or otherwise reserve open land areas in and around urban areas for use as parks and recreational spaces; and encourage the local governments to enact zoning and other regulations to protect such open spaces.

And before leaving the big-money legislation, you should also keep an eye on Senator Javits' S.719, which would provide \$600 million over three years for construction of health facilities of various kinds.

To be specific, \$150 million each year would go (in grants) for con-

struction and modernization of hospitals and health centers; \$40 million for long-term care facilities; and \$10 million for rehabilitation centers.

## ICBM Troubles

There'll be rough times ahead for architects, contractors—and the armed services—concerned with construction of intercontinental missile bases.

That's an easy forecast based on comments contained in hearings just concluded by the Military Construction Subcommittee of the House Appropriations Committee.

The subcommittee had invited ICBM base contractors to appear and tell them why the bases are so expensive, and why it takes so long to build them. The contractors responded with a will—and their comments constitute a barbed indictment of: (1) the Air Force, for interfering to such an unprecedented degree with construction activities; (2) engineers and architects, for "sloppy, haphazard" preparation of plans and specifications; (3) the Government in general, for its slowness in making payments; (4) the military doctrine of "concurrency" (building while plans are still being made); (5) fixed-fee or lump-sum contracts, which are unrealistic and cause delays and paperwork when inevitable changes occur.

One contractor said that on one \$24-million job, 273 of 502 contract drawings were revised because of errors, and a total of 516 revisions were made.

Committee members, too, took a couple of roundhouse swings at the Air Force. Said Chairman Harry R. Sheppard (D., Calif.):

"This program has been characterized by . . . a growing rivalry between the Corps of Engineers and the Air Force, particularly in engineering or quasi-engineering . . . activities. Some people think they can once more see a desire to establish a large engineering-type activity within the Air Force."

## Important Appointments

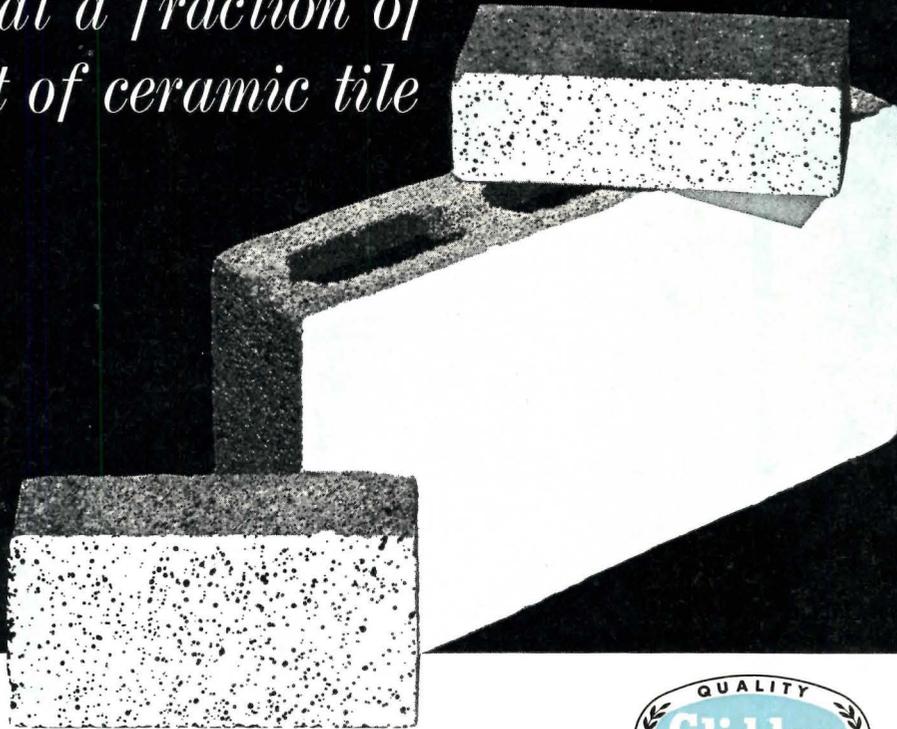
Approval of Najeeb E. Halaby as head of the Federal Aviation Agency appears to guarantee more spending on airport construction and reconstruction—as opposed to the cut in funds for this work in the final Eisenhower budget (from \$63 to \$40 million).

Halaby's testimony before Senate committees concerned with his appointment, plus his past record as an advisor to President Eisenhower on aviation matters, indicates that he'll support an increase of Federal sup-

*Continued on page 76*

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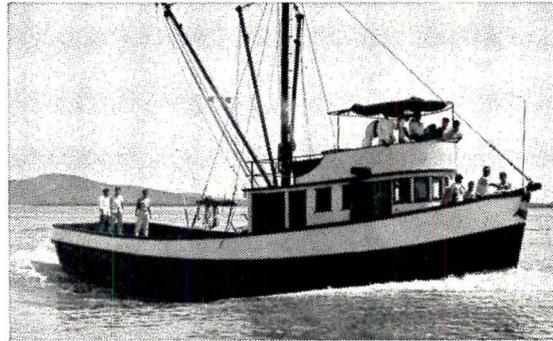
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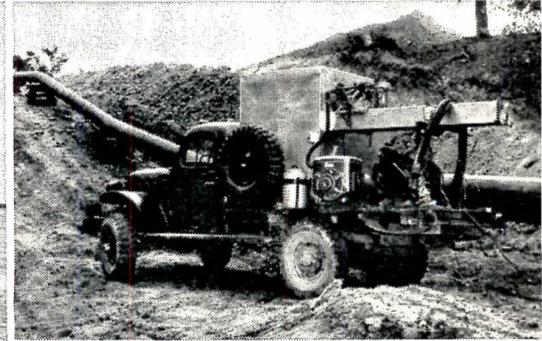
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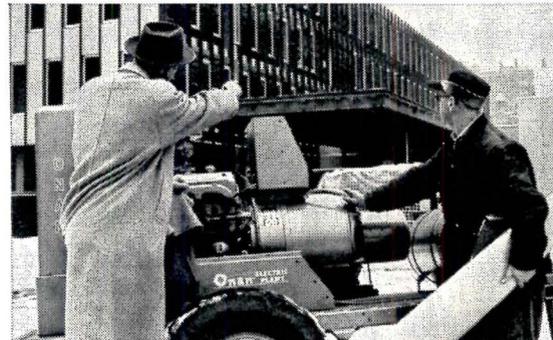
Pleasure Boats  
Work Boats



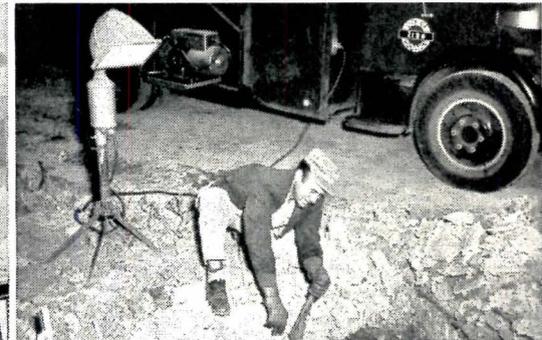
Auxiliary power for lights, communications, appliances on Work and Pleasure Boats.



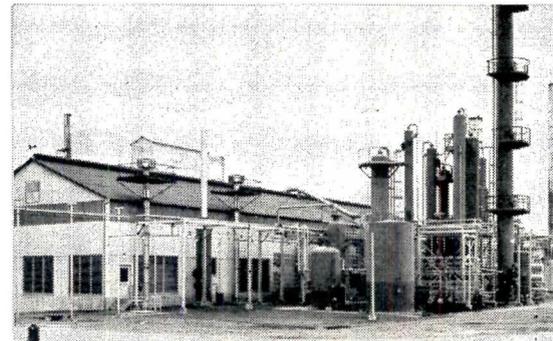
Portable power for pipeline X-Ray equipment, lights, tools and communications.



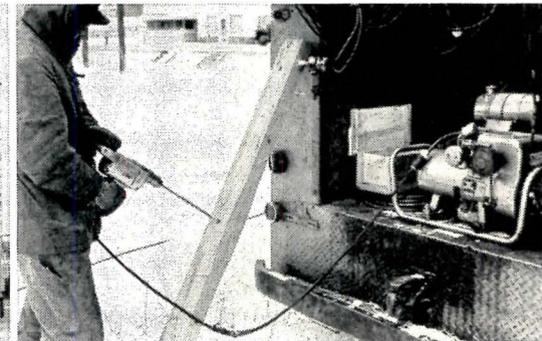
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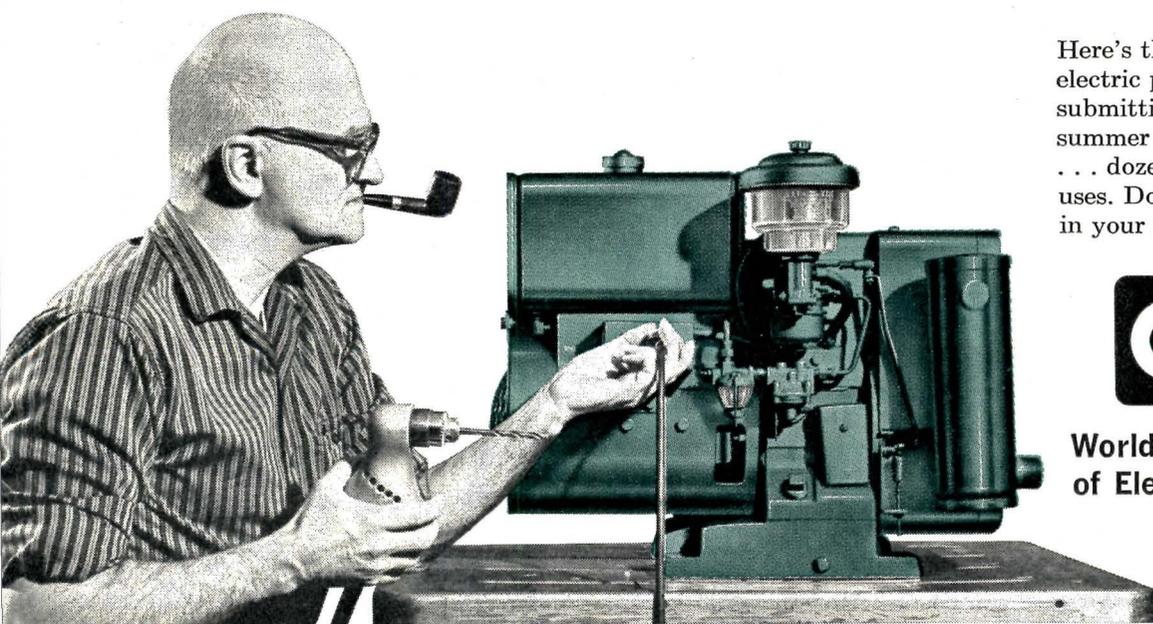
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Quite often, we never know who had the original idea for a new application. And, we're sure, Onan plants are used today in ways

we've never heard about. If you have an idea for a new use, it may be helpful to you to see Onan plants at your local distributor. He's listed in the Yellow Pages in every major city. Or, write Onan for free literature.

\*You may submit as many ideas as you wish, but no more than one Onan plant will be awarded to an individual. There are no restrictions on form of entry . . . you may submit photographs, sketches or a written statement of any length you desire. Onan will judge all entries on the basis of originality, practicality and commercial utility, and decisions of the judges will be final. If the same suggestion or similar suggestions are made by more than one entrant, the first one submitted, according to the postmark, will be eligible for the prize. Winners will be notified on or before July 15, 1961. Entries must be mailed to "New Uses Contest," address below, and must be received not later than June 15, 1961. All ideas submitted become the property of Onan and, whether or not the entries receive an award, may be used commercially by Onan in any way it sees fit with or without acknowledgment of the originator. No entries can be returned.



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*Continued from page 72*

port for airport work. However, he's not expected to go along fully with such proposals as that of Wyoming's Senator Monroney, who has introduced a bill calling for \$100 million in annual Federal airport aid.

For your notebook, by the way, you might want to note these other Kennedy appointments to posts that will have effect on architects (in addition to such previously noted appointments as John Moore as GSA Administrator and Robert C. Weaver as Administrator of Housing and Home Finance Agency):

Post Office—Robert J. Burkhardt Jr., Assistant Postmaster General for Facilities, and James M. Lowe, Assistant Director for Construction Engineering (Office of Research and Engineering).

Atomic Energy Commission—Glenn T. Seaborg, Chairman; John A. Derry, Director, Division of Construction and Supply.

Export-Import Bank—A. Carl Cass, Chief, Engineering Division.

General Services Administration—Karl E. Wallace, Public Buildings Commissioner.

FAA—George R. Borsari, Chief of Airports Division.

HHFA—Neal J. Hardy, FHA Administrator; James B. Cash, Deputy FHA Administrator; Sidney H. Woolner, Community Facilities Administrator; W. E. Murray, head of HHFA direct loan program for housing for the elderly.

Veterans Administration—Whitney Ashbridge, Assistant Administrator for Construction.

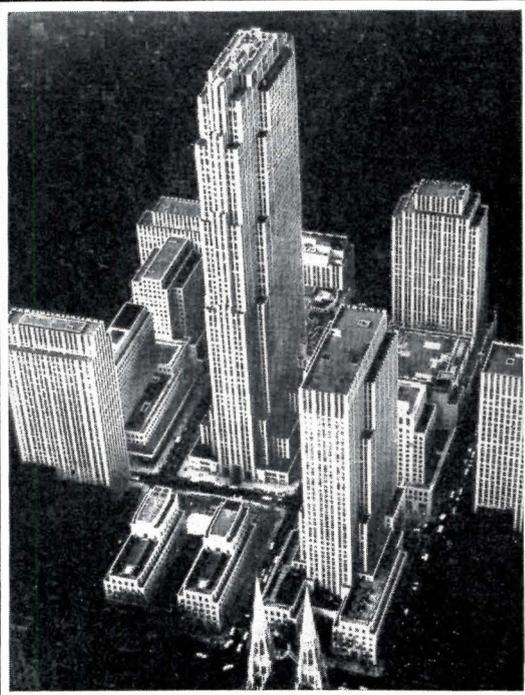
(As you know, the construction agency heads for Army, Navy and Air Force, and their staffs, are holdovers.)

### D.C. a Marble Disneyland?

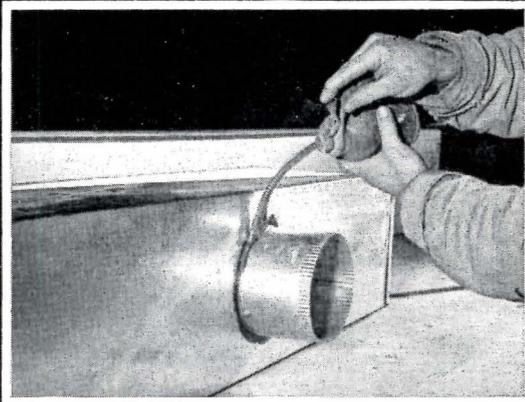
On a local level, Washington's constantly bubbling architectural pot simmered in relative quiet recently.

The ever-present question of new and old monuments and memorials brought editorial comment in local newspapers suggesting that a new standard be set up, lest the capital become a "marble Disneyland." What prompted the comment was a survey that indicated that some 44 new memorials were now in some stage of planning—to be added to the 94 or so already standing in the city. "It seems a strange paradox," said the *Washington Post*, "that a community so badly in need of new schools, libraries, and cultural facilities should be inundated with proposals for still more totems and tablets to the dead."

Along this line, Congress received a new bill (HR 3940) "to improve



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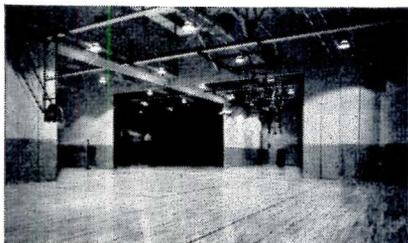
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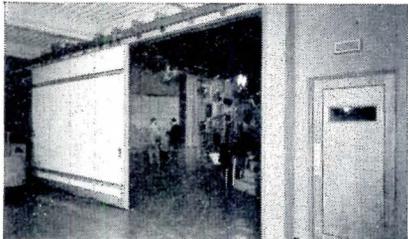
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artistic standards in Federal architecture" by relieving the "plainness and severity" of postwar architecture by erecting "supporting features" such as "works of art" within and upon these buildings. (Several members of Congress have already suggested that paintings, sculpture, or murals be used to decorate the blank but well-lighted walls of the Senate subways.

## FINANCIAL

With the additional spur of prospects of more Government spending—and the accelerated rate of disbursing Government funds already in hand—construction industry business prospects continued to look brighter for 1961, at least for designers and builders (manufacturers professed to see little prospect of much improvement).

Help for construction apparently will stem, in part, from such matters as massive Government aid to schools, stream pollution, the prospect of a continuing steady pace of highway construction, and the hopes of homebuilders that cuts in mortgage rates and other encouragement would boost that market substantially.

And in addition (see p. 69), there was continuing evidence that private business would continue its strong construction pace.

Items in the hope-for-aid-from-Government-sources column include the fact that voters approved a record total of \$5.9 billion worth of local bonds during 1960, most of which will go for construction purposes (\$1.6 billion of the total, for example, was to finance elementary and secondary school construction). And there was no indication of any slackening in voter willingness to OK such expenditures: preliminary reports for January indicated approval of 76 per cent of total value of bonds submitted.

Savings and loan associations also reported a continuation of sizable additions to their funds, and of an above-average level of making loans.

On the general business level, it is worth noting that, despite continuing downward progress of the various Government indexes, signs of a bottom and a possible upturn were beginning to appear:

Items: Although manufacturers cut back inventories by \$100 million in January, that was well under the \$350 million a month cutback during the last quarter of January; factory sales, new orders, and backlogs of unfilled orders dropped too—but again well under the drops of previous months; one public utility group—telephone companies—announced 1961 construction plans topping \$2.4 billion.

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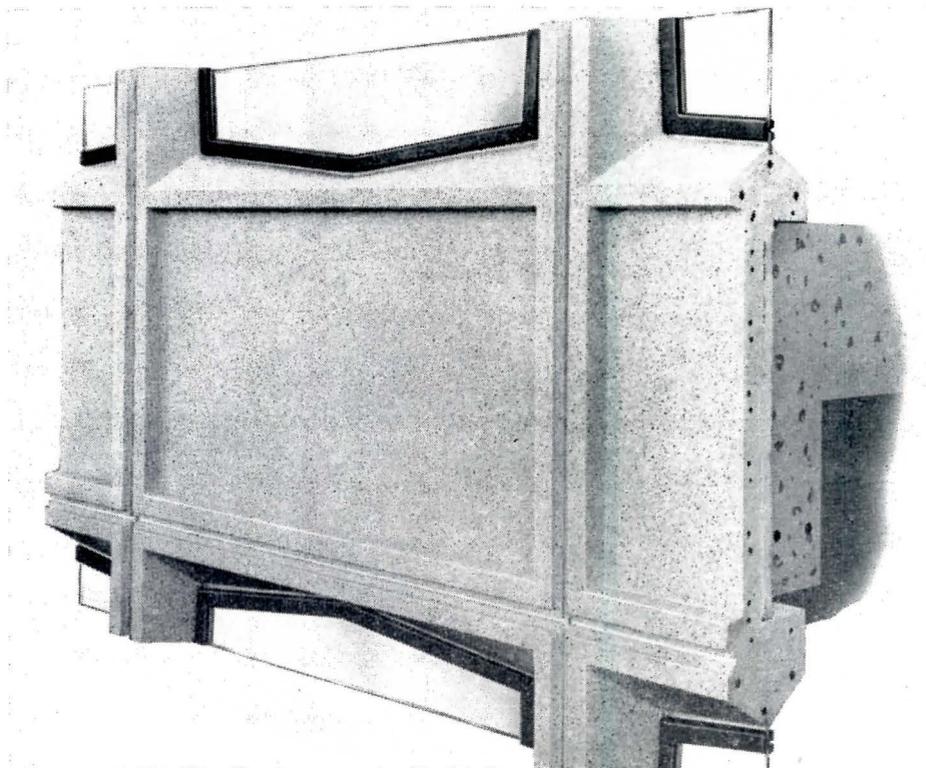
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BEDFORD, IND. Rigidly controlled manufacturing processes, including use of high-tolerance, nonwarping, machined limestone forms, manual agitation of facing mix, and vacuum drying, permit "Gemset," a high-quality, exposed, special aggregate concrete, to have precise regulation of aggregate size, color, and texture; exact conformation to specified shape and dimension; absolute trueness of surface; and accurate, uniform curing.

Material is available in various thicknesses and sizes and can be cast as column covers or mullions, window surrounds, copings, special shapes, and custom wall or spandrel panels. Aggregates are imbedded a full  $\frac{3}{4}$ ", and units are reinforced with galvanized steel wire or bars.

An architects' sample room and quality control laboratory has been set up at Bedford, where visiting architects can experiment with various combinations of aggregates and matrix materials, and have the results cast, cured, and presented to them for review in a matter of minutes. Indiana Limestone Co., Inc., Bedford, Ind.

On Free Data Card, Circle 101



Mock-up of precast spandrel unit shows design and structural features.

## "Major Breakthrough" in Wood Paneling

For the first time, a clear plastic film has been successfully bonded to wood by the roll-laminating process. In new "Weldwood Permagard" for paneling and doors, the natural hardwood veneers are permanently protected by a virtually indestructible and invisible surface. Resistance to stains is superior; dried paint, ink, acids, even nail

polish are easily removed. Wear resistance, too, is extraordinary—up to four times better than high-pressure plastic laminates, according to standard abrasion test.

The plastic film (Goodyear Tire & Rubber's "Videne") does not shrink, craze, or crack. Permagard can be cut, sawed, and drilled with regular wood-

working tools (or smashed by Japanese Karate expert, below) without fraying between wood and plastic.

Price to user is "considerably less" than plastic laminate, and "much less" than job-finished wood paneling. United States Plywood Corp., 55 W. 44 St., New York 36, N.Y.

On Free Data Card, Circle 100



Proof-positive of Permagard's qualities

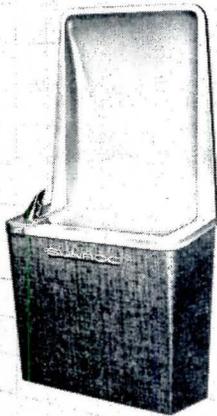


Karate expert's own major breakthrough

## New Steel Sections Are Lighter in Weight

Immediately available are 11 new lighter-weight, wide-flange sections. Seven of the new items range from 18" to 36" in depth, and have up to 11% less weight per ft than the present lightest weights. The remaining four new items are light beams of 14" to 16" depth, additions to the current line of light-weight sections which range from 6" to 12" in depth; these are up to 27% lighter than the minimum weights of wide-flange beams previously available in equivalent depths. The new sections are expected to have special application in composite construction, and in structures using new plastic design techniques. They will be available in all grades of steel, including the new ASTM specifications for three high-strength steels—A36, A440, and A441. Bethlehem Steel Company, Bethlehem, Pa.

On Free Data Card, Circle 102



## Stainless Water Fountain Has Optional Cooler

The unusual feature about this new water fountain is its compact, separate cooling unit, which can be inserted into the fountain itself (behind the apron) and connected to plumbing already required for unrefrigerated drinking water. It can cool 5 gallons per hour, enough for 60 persons. The removable apron can be stainless steel or vinyl in a choice of colors. It is an economical unit even when all stainless steel; it is 17¼" wide, 33½" high, and projects 14". Model SRC (with cooler), \$324.50; model SR-WF (without cooler), \$115; \$13 extra for stainless steel; all list prices. Sunroc, Division SR, Glen Riddle, Pa.

On Free Data Card, Circle 103



## Mineral Wool Tile Found Stronger When Felted

The structural difference between felted and nonfelted mineral wool acoustical tile is shown in this blowup of edge-on sections of both materials. Nonfelted (*top*) mineral wool tile has nodular internal structure, short fibers held by cementitious binder. Cavities and uncombined short fibers limit tile rigidity, dimensional stability, and sag resistance. The longer felted mineral wool fibers (*bottom*) interlock uniformly throughout the tile. The result, according to the Research Division of National Gypsum Company, manufacturers of both types of products, is 500% greater sag resistance, 100% better dimensional stability, and 50% more strength. The cost is the same for the felted tile as for the nonfelted.

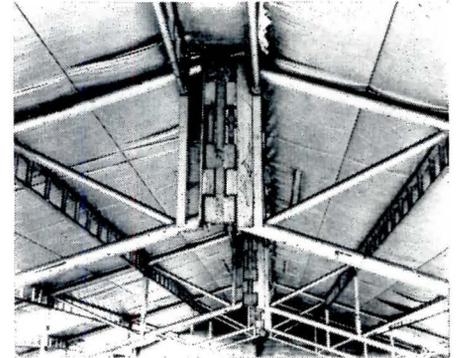
Other features include noncombustibility, high noise reduction coefficient and sound transmission loss ratings and a choice of fissured, striated, textured, or random drilled patterns in the 12" x 12" tiles. The felted tiles (called "Acoustiroc") will also be made in a 24" x 24" size. National Gypsum Co., 1261 Niagara Street, Buffalo 13, N. Y.

On Free Data Card, Circle 104

## Keystone Locks Tubular Trusses

A patented steel "keystone," used to lock tubular framing members together, has resulted in the development of a lightweight, rigid-frame building that is shop-fabricated from standard steel pipe. Utilizing the keystone to connect tubular truss members at the ridge, buildings can be custom-designed for clear spans as great as 160'. Trusses are lifted into place with a crane. Although tubular framing members are not new to the building industry, the new method of connecting these members completely eliminates all cutting, welding, bolt-

ing, and riveting at the construction site. This advantage can provide as much as 35% saving in construction costs through rapid erection. Another cost-saving advantage stems from the fact that "Swiss-Lok" building frames weigh one-third less than buildings framed with standard structural members. Despite reduced weight, there is no loss of strength in the tubular trusses and purlins. Swiss Fabricating, Inc., of Emsworth, Pa., is the developer of the system, which uses



Jones & Laughlin "Jal-Con-Weld" pipe. Jones & Laughlin Steel Corp., 3 Gateway Center, Pittsburgh 30, Pa.

On Free Data Card, Circle 105



## Glass-Fiber Curtain Wall Has Numerous Advantages

Glass-fiber curtain-wall panels have been handsomely used in new Palo Alto Bank designed by Paul James Huston of Palo Alto, Calif. All offices are around the perimeter of the 95' square building; center of the building is a landscaped court. The 2½"-thick panels that enclose the building are a sandwich of a decorative Moorish pattern between two flat "Structoglas" plastic panels. During the day, panels glow with a warm, bronze tone; at night, floodlights turn

the bronze to a rich golden color. The panels have numerous advantages aside from this decorative one. They transmit 90% of all available daylight and fill the bank offices with diffused, glare-free illumination. According to the architect, this feature has eliminated the need for a highly developed artificial lighting system, and vast expanse of draperies. Heating and cooling costs have also been lowered by use of the glass-fiber curtain wall. Millions of tiny glass fibers in the panels break up direct sunlight and absorb most of the sun's infrared and ultraviolet heat rays. The panels are a natural insulating material, keeping the interior cool in summer, warm in winter. Maintenance expenses, similarly, will be low. The acrylic-polyester finish virtually eliminates breakage, weathering, and washing problems. The only care that the panels require is a new resin coating about every six years. Structoglas, Inc., 11701 Shaker Blvd., Cleveland 20, Ohio.

*On Free Data Card, Circle 106*

## Remarkable New Mortar

Unique new "Threadline" mortar is an organic-inorganic bonding agent that, according to its manufacturer, makes ordinary masonry mortar obsolete. The product makes possible many new possibilities in building forms (as shown) not now available in masonry. The bond produced by the substance is so strong that a panel constructed of concrete block was actually lifted by crane, jostled, and replaced on the ground without breakage of any wall joints. In its quantities, too, the new mortar is revolutionary. A small kit replaces the much larger amount of material necessary for conventional mortar. Time to mix

the batch is also reduced, with about a 50% saving. With special extruding gun, application is clean, and waste virtually nonexistent. Construction of



two block walls of similar dimension was timed using premixed batches of Threadline and conventional mortar; the Threadline method, including laying all courses and cleaning up, took one-third the time. Adhesives Department, Raybestos-Manhattan, Inc., Bridgeport 2, Conn.

*On Free Data Card, Circle 107*



## Remote Cooling Unit Uses One-Third Normal Space

"Tiny Titan" is a new type of remote cooling unit, with a capacity of 5 gph and compact dimensions of 14" x 10 1/2" x 6 7/8"—a convenient, small size that requires only about one-third the space of other water coolers with comparable capacity. Unlike any other unit, the Tiny Titan fits directly under the Sunroc stainless-steel drinking fountains, and is easily connected to existing plumbing without alterations. This is impossible with conventional remote coolers that are normally installed inside a wall or in other out-of-the-way locations. Despite its small

size, the Tiny Titan efficiently meets the drinking-water requirements of up to 60 persons in normal commercial and institutional locations. Sunroc, Division TT, Glen Riddle, Pa.

*On Free Data Card, Circle 108*

## Vinyl-Aluminum Siding Is Maintenance-Free

A new vinyl coating for aluminum house siding is now available nationally, following a rigorous test program and limited distribution over the past years. Although only modest claims are being made for the life of the coating before touch-up is needed, test panels exposed to sun and salt air in Florida, and actual test homes in Milwaukee, look as good as new after more than 10 years. The siding is produced in white, pastel tints, and natural wood-grain finishes; a redwood vinyl-aluminum siding "looks more like redwood than the tree-grown product itself," it is claimed. Costs are about the same as painted-wood siding and about one-third that of brick veneer. Union Carbide Plastics Company, 270 Park Ave., New York, N. Y.

*On Free Data Card, Circle 109*

## Vinyl Simulating Linen Tweed

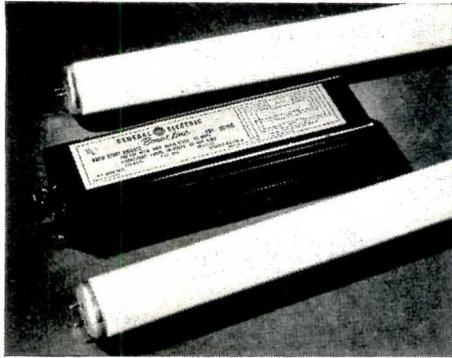
New "Breathable" fully coated vinyl upholstery material is printed and embossed to simulate the weave, texture, and colors of Knoll's Scotch Linen Tweed. Designed by Suzanne Huguenin of Knoll, the vinyl was developed by DuPont Fabric Division. The material allows air circulation through invisible pores that dissipate heat and effect a cooler upholstery; an elastic cotton knit backing permits smoother application and greater durability. Named "Brigadoon," the material is washable and 54" wide. Knoll Associates, Inc., 575 Madison Avenue, New York 22, N. Y.

*On Free Data Card, Circle 110*

## Innovations in Ballasts

The problems of smoking or leaking ballasts have been solved in a new line of fluorescent lamp ballasts. Called the "Bonus Line," the new designs provide, for the first time, full protection against the hazards sometimes associated with ballast end-of-life failure. The need for individual ballast fusing is also eliminated. Special features are a "Thermal Protector" that de-energizes the ballast before it reaches the





critical temperatures at end of life that may cause the ballast filling compound to soften, and an improved capacitor to overcome capacitor rupture and leakage that may occur at end of life. Units are available in all popular ratings for indoor commercial and industrial applications. General Electric Company, Ballast Department, Danville, Ill.

*On Free Data Card, Circle 111*

### Improved Thresholds

An important improvement in construction of door thresholds is made with new "Wood Core Vinyl and Aluminum Thresholds." The new design consists of an inner core of California redwood to insulate against cold or frost creeping through to the inside of the room and creating condensation on rugs or floors. Cover plates are of scored aluminum to prevent slipping and to protect the wooden core. A curved vinyl sealing section arcs beneath the bottom of the door to thoroughly seal out drafts and infiltration of dust and dirt. Seal-Draft Division, Sun Screen Products, Inc., North 2220 Division St., Spokane 21, Wash.

*On Free Data Card, Circle 112*

### Heat and Hot Water with Smaller Boiler

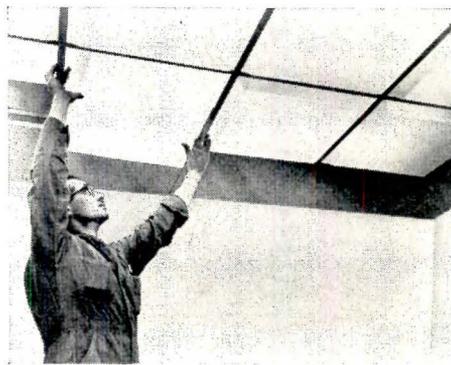
New "Duo-Service" gas-fired hydronic system for supplying heat and domestic hot water uses much smaller boiler sizes than previously possible. Largest of six models requires an installation space 16" wide, 45" long, 60" high. By placing a heat-exchanger coil in the expansion tank rather than in the boiler itself, large heat storage and improved heat transfer are effected. This makes it possible to specify boiler capacity on the basis of heating loads only, providing better heating performance and reduced fuel costs. Domestic hot water is assured with boiler-input ratings as low as 50,000

Btu/hr, as opposed to 125,000 Btu/hr ratings required by boilers with conventional built-in coils. Hydrotherm, Inc., Department Ar-15, Northvale, N.J.

*On Free Data Card, Circle 113*

### New Light Diffuser with T-Bar Grid System

New "Honeyglo" light diffuser, vacuum-formed from rigid vinyl sheeting, combines both functional and decorative requirements into a single product. Standard 2' x 2' panels are easily



installed into optional T-bar grid-suspension system. Double-pan construction minimizes "show-through" of objects that may fall on the luminous ceiling from above. Dust and dirt attraction is eliminated by neutralizing the static on each unit before shipment. Manufacturer reports that honeycomb surface pattern provides uniform light transmission with a higher coefficient of utilization than other standard plastic light diffusers. Another advantage is a low (2:1) spacing-to-mounting ratio, making it ideally suited to installations where ceiling depth is limited. An even, shadow-free ceiling results, with minimum spacing between light source and panel. Hexcel Products, Inc., 2332 Fourth St., Berkeley, Calif.

*On Free Data Card, Circle 114*

### New Cooler Operates on Economical Principle

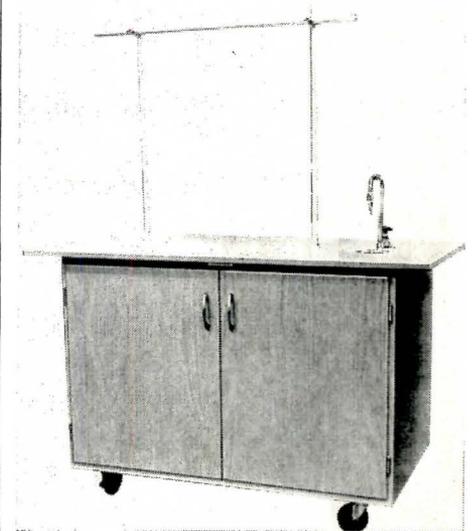
A new gas-absorption cooler claims to have made a "major scientific breakthrough" in gas air conditioning and cooling for commercial and industrial applications, with an operating cost saving of from 35 to 50% over existing conventional cooling units. Efficiency of the product comes from application of the two-effect generator principle to a lithium-bromide/water-

absorption cycle. The second coil is heated by condensed vapor from the first distillation step, saving the additional fuel that would otherwise be required, and resulting in the high efficiency of the cycle. In this process, there is 1 Btu removed from the chiller for each Btu of heat supplied to the unit, making cooling as cheap as heating. Unit can be used economically for residential air conditioning also. Statham Instruments, Inc., 12401 W. Olympic Blvd., Los Angeles 64, Calif.

*On Free Data Card, Circle 115*

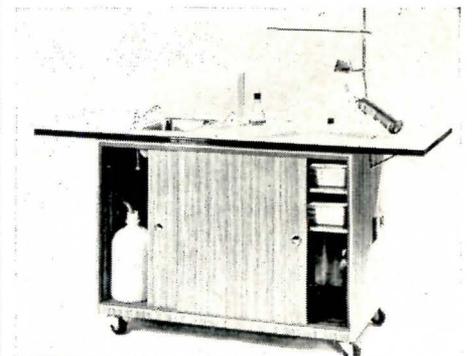
### Lab Tables on the Move

Addition of a new "Mobile Science Laboratory Unit" to its line of plastic-surfaced classroom cabinets has been announced by National School Furniture Company. The Nevamar plastic-laminate surface will not craze,



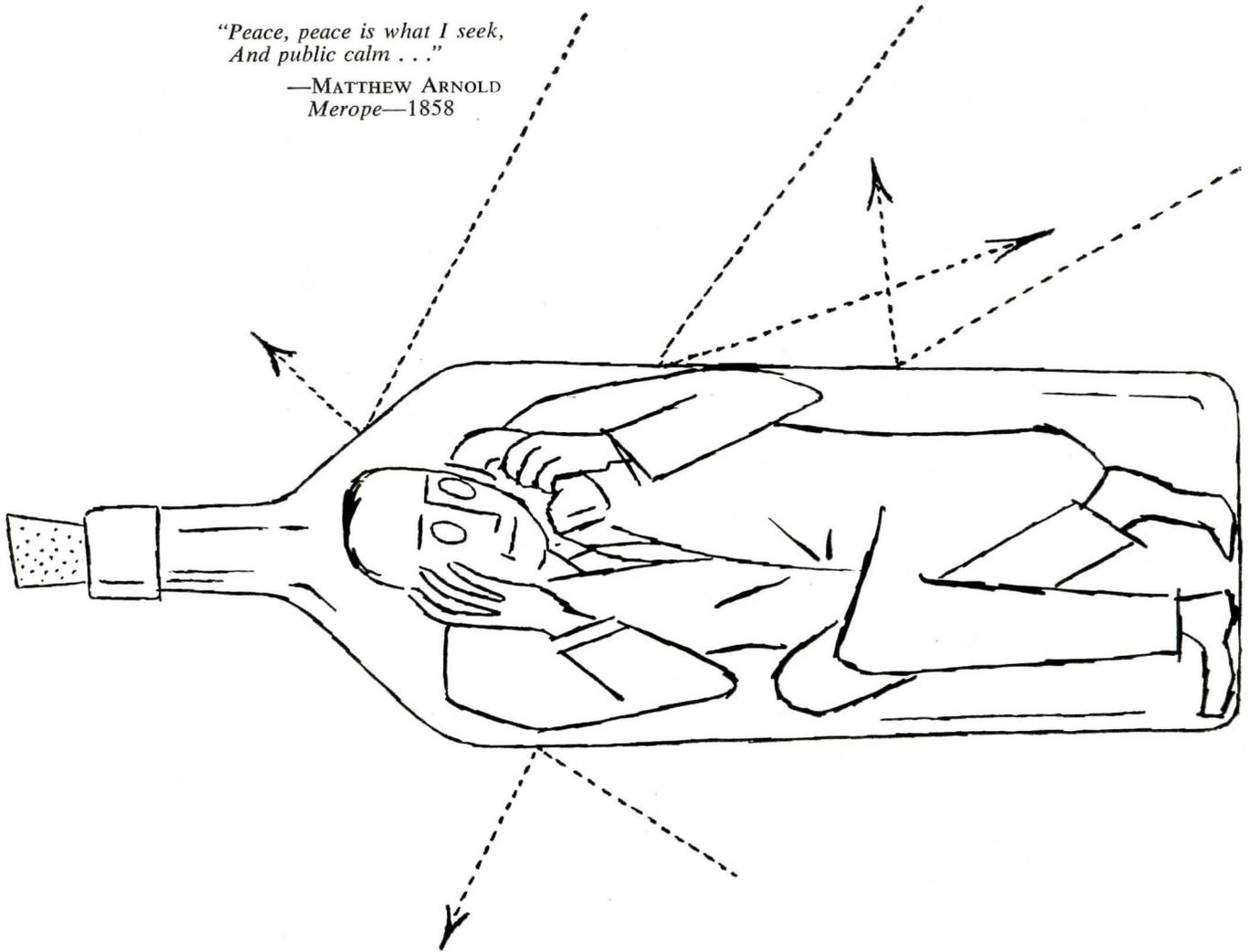
crack, or peel in normal use. The mobile lab is fully equipped for classroom demonstrations, and rolls on locking casters for easy mobility.

Another manufacturer of mobile equipment is Kewaunee Technical Furniture Company, which now offers

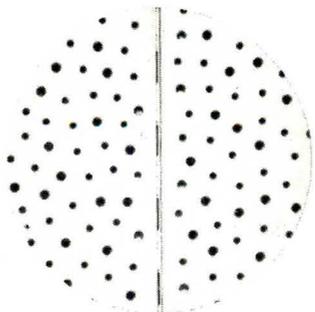


*Continued on page 95*

*"Peace, peace is what I seek,  
And public calm . . ."*  
—MATTHEW ARNOLD  
*Merope—1858*



A life of sealed seclusion need never be contemplated by people who know the superior quality and performance of Elof Hansson sound control products. Our research laboratories take pride in achieving continuous advances which make this busy world quieter. Our engineering staff solves the most challenging individual acoustical problems through practical knowledge and nationwide experience.



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For use with all standard acoustical tiles, including fissured or perforated mineral tiles or even inexpensive wood fiber acoustical tiles.

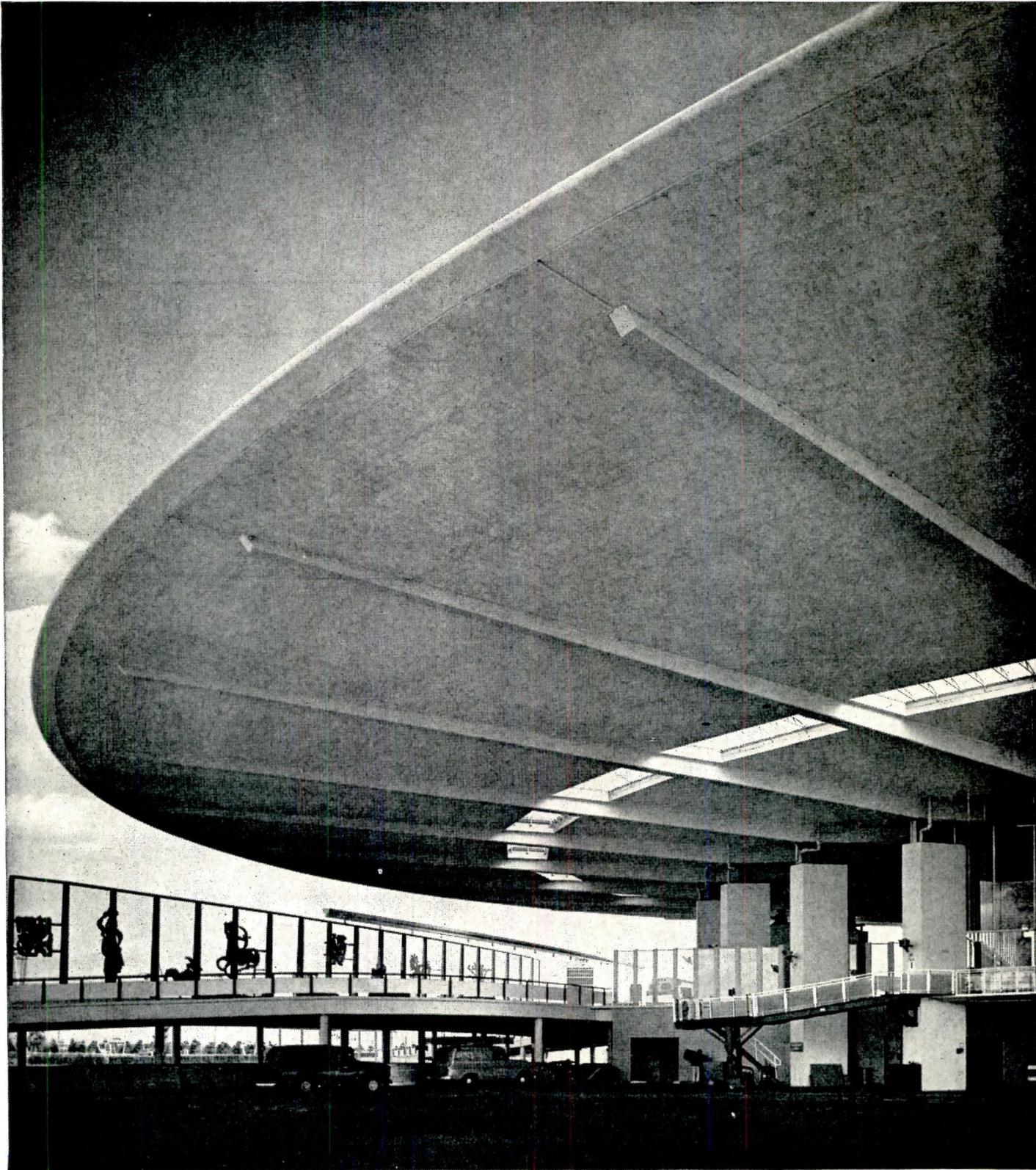
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**Associated Architects:** Ives, Turano and Gardner.  
**General Contractor:** Turner Construction Company.

# SARALOY® 400

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

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

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

Saraloy 400 is Dow's brand of flexible roof flashing. It can be bonded to almost any construction material, such as concrete, wood, metal, ceramic, and it can be painted. It provides a permanent watertight seal which won't check, peel or crack . . . and which moves with building contraction and expansion. For more information write to THE DOW CHEMICAL COMPANY, Midland, Michigan, Plastics Sales Dept. 1501EB4.



Saraloy accomplishes difficult flashing  
 of bolted girder-purlin intersection

## OTHER DOW BUILDING PRODUCTS

**STYROFOAM\***— Long-lasting insulation for cavity walls; effective insulating base for plaster and wallboard. Rigid, low "K" factor, highly resistant to water and water vapor.

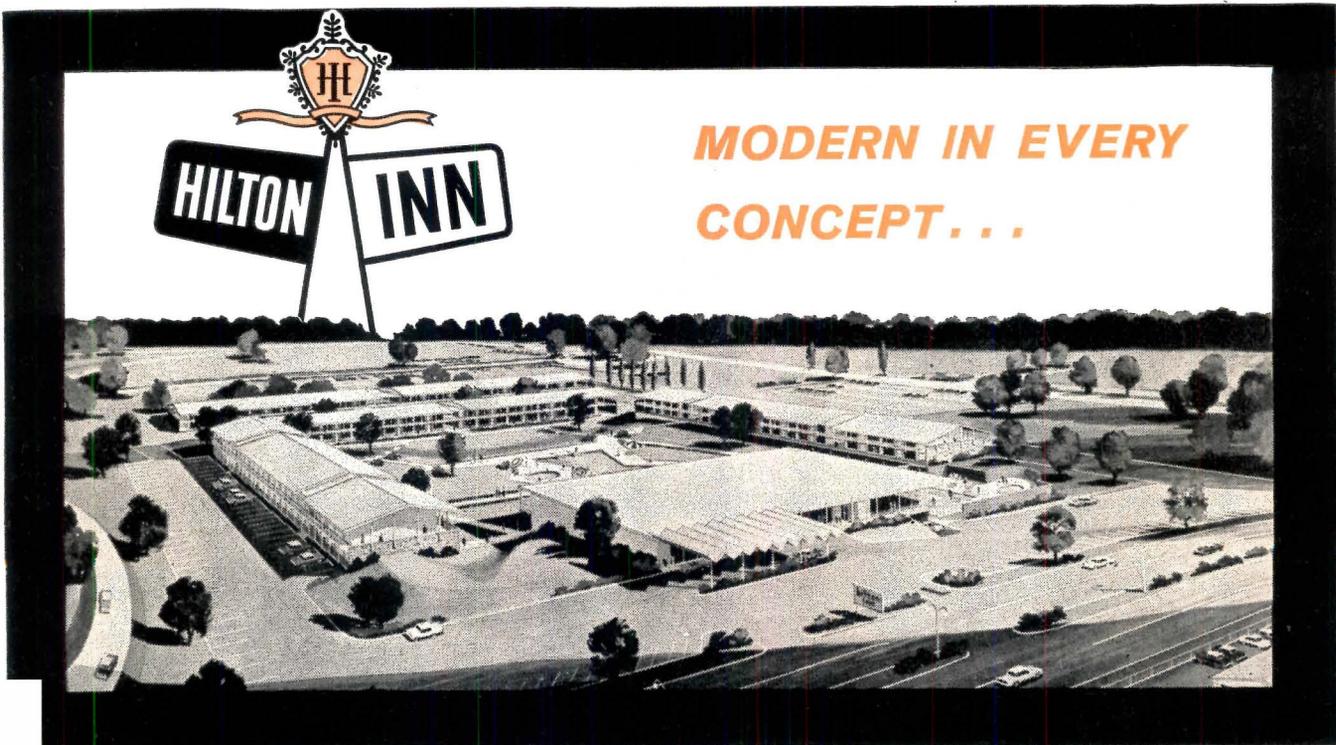
**SCORBORD\*** (pat. applied for)—Superior rigid insulation for foundation perimeters, slab floors. Exclusive pre-scoring speeds installation.

**ROOFMATE\***— Lightweight, rigid insulation for built-up roofs serves as its own moisture barrier. Reduces blistering, resultant leaks. 2' x 4' boards speed installation. \*TRADEMARK

THE DOW CHEMICAL COMPANY

**DOW**

Midland, Michigan



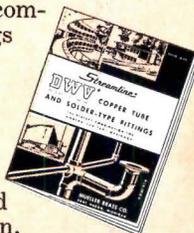
**MODERN IN EVERY  
CONCEPT...**

*The three and a half million dollar Atlanta Hilton Inn was developed and constructed by Hogan Bros., Inc. of Metairie, La. The architect was George Saunders, Walter E. Blessey handled the structural engineering, and Edward Sanford was in charge of mechanical engineering. The installation of the plumbing system was made by Hoffman-Wolfe Southern Corporation of Atlanta.*

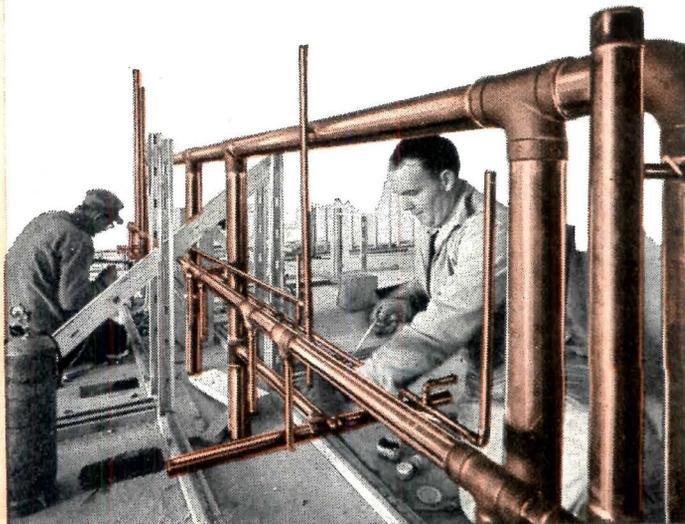
When it comes to modern, rust-proof, clog-proof, life-time supply and drainage plumbing systems, more and more architects, builders and plumbers are saying: "All copper". The jet-age Hilton Inn, just opened in Atlanta, Georgia, is an excellent example because Streamline copper tube and solder-type fittings are used for supply and drainage plumbing in this ultra-modern 310 room structure.

Because of solder joint strength and lighter weight of copper, even complex plumbing assemblies can be quickly shop prefabricated or assembled on the site with a minimum number of solder joints. With copper there's more actual useable area in the building because furring-out is eliminated. The standard 20 foot lengths, uniform dimensions, complete range of sizes, weight-savings and lower labor costs make Streamline copper tube and fittings more economical, too.

Send for catalog D-459, for all the latest facts on Streamline DWV copper tube and solder-type fittings, the modern, sanitary drainage piping material.



**INCLUDING THE  
*Streamline*<sup>®</sup>  
COPPER TUBE AND  
FITTINGS USED IN  
THE PLUMBING SYSTEM**



318-R

**MUPELLER BRASS CO. PORT HURON 27, MICHIGAN**

Continued from page 90

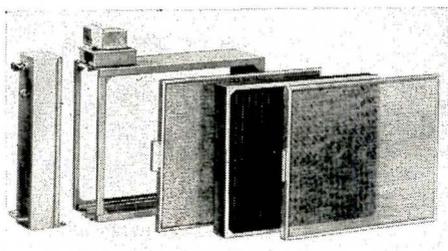
a more practical, functional, and economical "Portable Science Demonstration Table." It is sturdily constructed of oak in a chemical-resistant natural finish. Top is  $\frac{3}{4}$ "-thick plastic, and is fitted with a stainless-steel sink, water pump, and two flush plates for rod setup. Recessed pegboard back provides facilities for hanging rods, glassware, and tools. National School Furniture Company, Division of National Store Fixture Company, Inc., Odenton, Md.; Kewaunee Technical Furniture Company, 3009 W. Front St., Statesville, N.C.

On Free Data Card, Circle 116

## New Supporting Clip for Plywood Decking

New type of supporting clip for plywood decking is now available. Called "Teco H-Clip," the product is available for  $\frac{3}{8}$ ",  $\frac{1}{2}$ ",  $\frac{5}{8}$ ", and  $\frac{3}{4}$ " thicknesses. A special feature insures easy installation of the clip regardless of any variations that may exist in plywood thicknesses. Implementing installation further, edges of the H-Clip are smooth and rounded so that there is no possibility of their snagging on the plywood. Clips meet FHA Minimum Property Requirements as substitutes for solid backing. Timber Engineering Company, 1319 18th St. N.W., Washington 6, D.C.

On Free Data Card, Circle 117

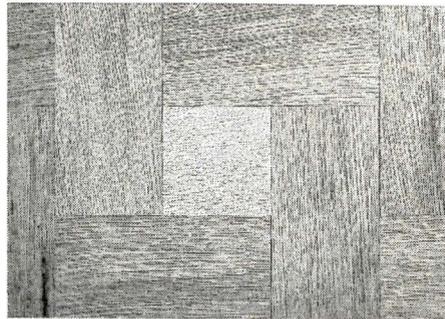


## Residential Air Cleaner Solves Many Drawbacks

New electronic air cleaner has solved, according to manufacturer, the five basic shortcomings that have hindered the use of residential air cleaners in the past. (1) The unit is the most compact of the permanent types on the market, measuring 8" wide, 22" high, and 31" long. It can easily fit the ductwork of the average home, and is quickly installed, since it is prewired and preassembled at the factory. (2) Because of flexible design, the cleaner can be mounted in any position—horizontal, vertical, or at an

angle—in any central-furnace or air-conditioning system. Air flow can be changed from left to right simply by reversing the cells inside the housing. (3) Simple assembly from component parts results in economical installation and maintenance. (4) Unit is first on the market with a living-area control center, a 5" x 7" panel that assures the homeowner that the unit is working properly. Panel indicates when unit is not functioning, also when it needs cleaning. (Washing tub and accessories are included in complete package.) (5) Low installation price is approximately \$350 in new construction, \$400 in existing homes. Minneapolis-Honeywell Regulator Company, 2747 Fourth Ave. South, Minneapolis 8, Minn.

On Free Data Card, Circle 118



## Wood Vinyl Has New Design Possibilities

Amtico announces new "Wood Vinyl," ridged and striated like dressed lumber and with just enough gloss to suggest hand-rubber wood. Planks are 36" long, in 2", 4", or 6" widths; also available are squares in 9", 12", and 36" sizes (and matching pegs  $\frac{3}{4}$ " round plus a small punch for cutting holes exactly the right size). A variety of parquet designs can be achieved for walls, floors, and furniture. Teak, oak, cherry, and two flavors of walnut are offered, at a suggested retail price of \$1.50 to \$2.00 per sq ft. Amtico Vinyl and Rubber Flooring Division, American Biltrite Rubber Company, Trenton, N.J.

On Free Data Card, Circle 119

## Acoustical Tiles Will Take Custom Designs

Kaiser "Fir-Tex" acoustical or insulating wood-fibered ceiling tiles may be specified with custom designs or trademarks created by the architect. The tiles have all advantages of standard acoustical and insulating tiles.

Both tongue-and-groove and butt joints are available with painted bevels. Custom Ceilings, Kaiser Gypsum Co., 300 Lakeside Dr., Oakland 12, Calif.

On Free Data Card, Circle 120

## Dark Isn't Light Enough

Photoelectric light controls automatically turn on outdoor lighting installations at predetermined levels of darkness and turn them off again when daylight returns. Encased in weather-proof, shock-resistant housing, controls operate through a temperature range from -40 F to 165 F. Available with either standard 3-prong locking-type plug to carry 15 amp load, or with color-coded 14" pigtail leads that will carry full 30 amp current capacity of mercury switch. Light level setting is adjustable from  $\frac{1}{2}$  to 4 ft.-c. Series 4005 is the basic control; series 4006 controls are equipped with an electric timer to preset any desired "off" period and temporarily override the photoelectric cell. Revere Electric Mfg. Co., 7420 Lehigh Ave., Chicago 48, Ill.

On Free Data Card, Circle 121



## Low-Velocity Air Distribution System

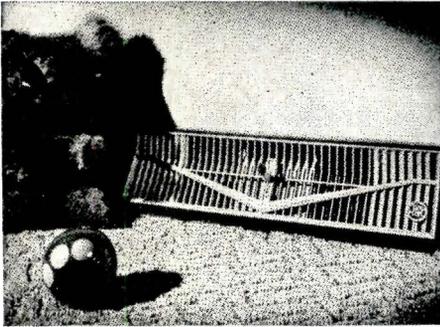
A new low-velocity method of introducing conditioned air into rooms combines a Fiberglas air supply tube with a perforated metal bar diffuser that distributes air evenly throughout the area. The system is ideal for integration with hung luminous and acoustical ceilings, as shown in the installation photograph. Basic parts of system are supporting bar, air supply tube, protective jacket that also acts as vapor barrier, damper that controls air flow from duct to bar, and the bar cap (the perforated aluminum section through which the air is diffused). Owens-Corning Fiberglass Corp., 717 Fifth Ave., New York, N. Y.

On Free Data Card, Circle 122

## AIR/TEMPERATURE

### Detailed Catalog on Air Control Items

New 72-page catalog, 60-AC, is announced as "the most detailed catalog on registers, grilles, diffusers, and



sheet-metal screws for the heating and air-conditioning fields." By means of a unique color-coding arrangement, the reader can systematically obtain complete data on any individual product in the entire "Air Control" line. Any required item can be easily located, and all pertinent information—including unit illustrations, specifications, capacities, selection charts, dimensions, installation, and list prices—can be readily obtained. Leigh Industries Inc., Subsidiary of Air Control Products, Inc., Coopersville, Mich.  
On Free Data Card, Circle 200

### Exhaust Fans of "Pleasing Contour"

New "Pleasing Contour Roof Exhaust Fans" are presented in 4-page brochure. With a silhouette lower than conventional models, the new fans are particularly designed for today's flat and pitched roofs. Brochure describes the several types, gives dimensions and capacities, shows several recent installations. Dept. 26, Davidson Fan Co., 213 California St., Newton 58, Mass.

On Free Data Card, Circle 201

### Installation Report on Forced-Draft Burners

Latest in the Ray Burner *Installation Series* is a documentation of the heating system of new Sedgwick County Courthouse, Wichita, Kansas. Folder, 4 pages, describes boilers and fuel-burning equipment, controls, miscellaneous features, combustion test, and

service responsibility. A supplementary drawing gives additional data on the forced-draft burners that are mounted on specified boilers. Ray Burner Co., 1301 San Jose Ave., San Francisco 12, Calif.

On Free Data Card, Circle 202

## CONSTRUCTION

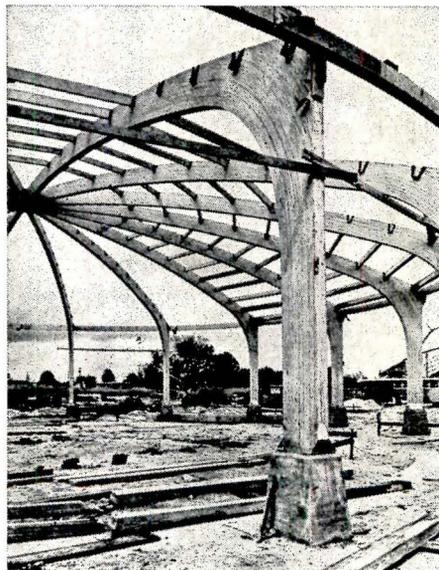
### Uses and Properties of Corrugated Steel Sheets

*Sectional Properties of Corrugated Steel Sheets*, 17 pages, includes comments and useful information on the development and production of corrugated steel sheets and their use in building construction. Information relating to the determination of the sectional properties of the product is included, plus tabulations of sectional properties for several standard patterns of corrugation of both coated and uncoated steel sheets. American Iron and Steel Institute, 150 E. 42 St., New York 17, N. Y.

On Free Data Card, Circle 203

### Two Additions to Wood Construction Series

Two additional booklets in the excellent "Wood Construction Data" series are now available. WCD 5: *Heavy*



*Timber Construction Details* provides important framing and fastening details for this old, yet modern and increasingly popular, type of construction. The definition of heavy timber construction is in a form suitable for adoption in building codes. Most of

the 30-page booklet is devoted to isometric sketches and photographs of construction details that have proven satisfactory in multistory and one-story buildings.

WCD 6: *Design of Wood Structures of Permanence*, 16 pages, presents a running text and detail drawings on the latest means of protecting against termites and decay. The importance of proper design and construction, to achieve permanent wood structures, is emphasized. As were the earlier booklets in the WCD series, these two are well-designed references. Technical Services Division, National Lumber Manufacturers Association, 1319 18 St. N.W., Washington 6, D. C.

On Free Data Card, Circle 204

## FIREPLACE DESIGN

Latest edition of *Book of Successful Fireplaces*, 100 pages, is a valuable guide to the design, construction, and use of fireplaces in the home. The information (accompanied by more than 300 illustrations) is directed to "home owners, architects, interior decorators, builders, and do-it-yourself enthusiasts." Described in the book are traditional and contemporary fireplaces; an interesting section traces the development of fireplaces through history. The book reviews a wide variety of fireplace fronts, masonry designs, fireplace furnishings, Dutch ovens, barbecue fixtures, and heat-circulating units. Write (enclosing \$1.00) to: The Donley Brothers Co., 13968 Miles Ave., Cleveland 5, Ohio.

### Stainless Steel Stars in New Film

A 22-minute film, *Stainless Steel in Architecture*, has been produced by Crawley Films, with the assistance and advice of the Royal Architectural Institute of Canada. The documentary shows the use of stainless steel in the prime architectural showpieces of eastern Canada and the U. S., and is narrated by Alan Jarvis, former director of Canada's National Gallery and a leading architectural critic. Write to: Public Relations Dept., Union Carbide Canada Ltd., 123 Eglinton Ave. East, Toronto 12, Ontario.

### Laminated-Wood Members

Latest technical information on various uses of laminated-wood members is offered in new 20-page catalog.

# MAHON CURTAIN WALL

*in natural or colored metals*

... A POWERFUL COMBINATION—  
LONG-LASTING GOOD LOOKS,  
SHORT-TIME INSTALLATION

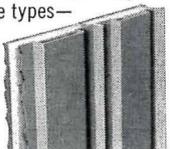


The Moses-Saunders Power Dam near Massena, N. Y.—a vital facility of the St. Lawrence Power Project. The 28-ft. high Curtain Wall is almost a mile long—Mahon's fluted, field-constructed aluminum 3-6-3 section.  
**Engineers: Uhl, Hall & Rich, Boston and Hydro-Electric Power Comm. of Ont.**

This joint Canadian-American project (for the Power Authority of the State of New York and the Hydro-Electric Power Commission of Ontario) points up how Mahon Metal Curtain Walls offer a practical answer to many architectural, structural . . . and budget problems. Whether your current or future projects are large or small, ground-hugging or cloud-reaching, industrial or commercial—investigate all the advantages of Fiberglas-insulated Mahon Curtain Walls. There's a type to suit your every requirement. Details in new Catalog CW-61. Write for it or ask your local Mahon architectural representative to drop one by.

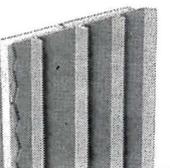
Mahon Curtain Walls are supplied in galvanized, porcelainized, enameled or stainless steel, and aluminum in many finishes, each in three types—

**FLUTED**  
field  
constructed



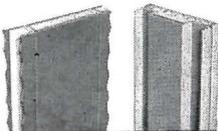
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**RIBBED**  
field  
constructed



---

**FLUSH or  
FLUTED**  
prefab  
panels



SPEEDING AMERICAN  
CONSTRUCTION WITH  
METAL BUILDING  
PRODUCTS, FABRICATED  
EQUIPMENT AND  
ERECTION SERVICES

## MAHON BUILDING PRODUCTS

- Aluminum or Steel Curtain Walls (in natural or colored metals)
- Rolling Steel Doors (Standard or Underwriters' labeled)
- Metalclad Fire Walls (Underwriters' rated)
- M-Floors (Steel Cellular Sub-Floors)
- Long Span M-Deck (Cellular or Open Beam)
- Steel Roof Deck
- Acoustical and Troffer Forms
- Acoustical Metal Walls, Partitions and Roof Decks
- Permanent Concrete Floor Forms

## CONSTRUCTION SERVICES

- Structural Steel-Fabrication and Erection
- Steel Fabrication-Weldments
- Geodesic Domes—Fabrication and Erection

## THE R. C. MAHON COMPANY

**DETROIT 34, MICHIGAN**  
Manufacturing Plants—Detroit, Michigan and Torrance, California  
Sales-Engineering Offices in Detroit, New York, Chicago,  
Torrance and San Francisco  
Representatives in all principal cities.





Described and illustrated are applications of tangent arches, radial arches, beams, purlins, tied arches, bowstring trusses, "Rilco Deck," formwork, and special products. Also shown are installation photographs of these products in churches, schools, commercial and residential buildings, plants, and bridges. The technical data, tables of dimensions, and typical connection details make the catalog a valuable reference manual on laminated-wood structural members. Rilco Engineered Wood Products Division, Weyerhaeuser Co., W-817 First National Bank Building, St. Paul 1, Minn.

On Free Data Card, Circle 205

## Weight Tables for Welded-Steel Tubing

Weight computations for welded-steel tubing are easily obtained from tables in new brochure. Tables in the handy 16-page brochure give dimensions and weight per foot for round mechanical tubing up to 10", square and rectangular tubing up to 5", and pressure tubing up to 5". A full-page table gives decimal equivalents for fractional parts of a pipe foot. Tables are presented in several muted colors, for maximum legibility. Electricweld Tube Division, Jones & Laughlin Steel Corp., 3 Gateway Center, Pittsburgh 30, Pa.

On Free Data Card, Circle 206



## Aluminum Handbook

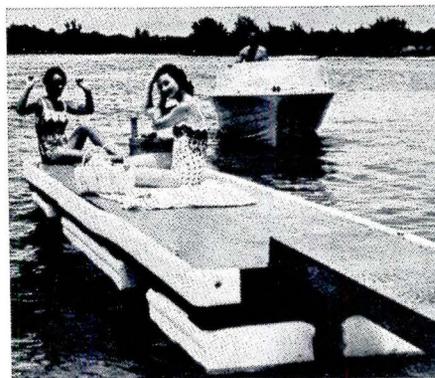
New hard-cover edition of *Structural Aluminum Design*, a 232-page book covering calculations for load-carrying members of aluminum, has just been published. In handy 6" x 8" format, it compiles extensive useful data. Contents include tables of properties,

applications, specifications, maximum allowable stress values, high and low temperature properties, alloy data, weights, and other pertinent information. Write to: Dept. PR-42, Reynolds Metals Co., Richmond 18, Va.

## Varied Effects with Porcelain Enamel

A new 12-page catalog, entitled *Architectural Porcelain Enamel—The Modern Building Material*, has been issued. With full-color illustrations, the catalog shows examples of decorative use of the material, with special effects obtained by color, surface texture, and embossed designs. A variety of products is shown in the catalog; properties, dimensions, and specifications are included. Davidson Enamel Products, Inc., 1104 E. Kibby St., Lima, Ohio.

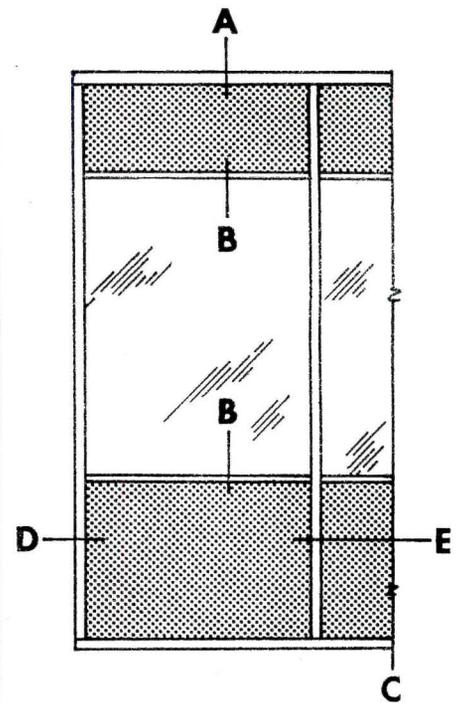
On Free Data Card, Circle 207



## Nobody Eats This Floating Island

A 24-page technical bulletin, *Design of Floating Structures with Styrofoam*, has been published, bringing 15 years of field experience to architects and marine designers. Separate sections of the illustrated bulletin are devoted to a summary of flotation applications using the foamed polystyrene, installation details and recommendations, and field-performance reports on various properties. The material does not constitute an attraction or a food for water animals (and sea gulls can be dissuaded from pecking by painting the exposed surface orange, or by covering it with a close-mesh galvanized wire). Numerous photographs in the bulletin show a variety of floating structures—boatwells, docks, islands, wharfs—under construction and completed. Plastics Sales, The Dow Chemical Company, Midland, Mich.

On Free Data Card, Circle 208



## Tracing Sheets for New Curtain-Wall System

Large detail sheets suitable for tracing give all pertinent information on new "Fenmark III" load-bearing steel curtain-wall systems. Only sheer end walls are used for lateral bracing; while steel curtain-wall units are being positioned, roof panels are welded into place to become an integral part of the roof-wall unit. Roof insulation, roofing, and glazing are installed as the cellular roof panels and side walls go up. Thus buildings can be under cover in hours instead of days. Other advantages: structural steel is usually eliminated, on-the-job labor reduced, and delays minimized. The four detail sheets are accompanied by two pages of specifications. Fenestra Inc., 2250 E. Grand Blvd., Detroit 11, Mich.

On Free Data Card, Circle 209

## DOORS/WINDOWS

### Hollow Metal Doors

Hollow metal doors with matching frames and hardware are described in 32-page *Catalog 2040-I*, which gives complete data on doors, frames, and hardware, and shows how all units are engineered to complement each other. Featured in the booklet is the new "Medallion" hollow metal door, a welded door with no seams on either face or edges, and no place for dirt or germs to collect. It is specially designed with exclusive interior stiffeners for high strength and rigidity.



*The Finish  
is part of the Floor*

Here's a beautiful and versatile floor. Properly maintained, it takes punishment in stride. But—far more hazardous than scuffing feet or tracked-in grime, are improper and inferior floor treatments. Instead of protecting the floor, such treatments may actually damage it!

Avoid costly mis-matching of floor and treatment. Follow the recommendations of the Asphalt and Vinyl Asbestos Tile Institute\*; choose the specialized treatments that fit the flooring. Then specify maintenance, to hold "new floor" beauty.

Cafeteria, Notre Dame High School, Bridgeport, Conn.  
Architects: Lyons & Mather, Bridgeport

- \* **SCRUB** "with a good, mild neutral cleaner . . . no oils, organic solvents or other injurious materials." Hillyard **Super Shine-All®** is the famous neutral chemical cleaner with 6-fold cleansing action, formulated safe for all flooring. UL listed "as to slip resistance".
- \* **FINISH** "with an approved water emulsion wax . . . containing no gasoline, naphtha, turpentine or mineral solvents." Hillyard **Super Hil-Brite®** is the finest of water emulsion, self-polishing waxes, made from 100% No. 1 imported Carnauba. Long-wearing—eliminates 2 re-waxings out of 3. UL listed "as to slip resistance".
- \* **SWEEP** "using recommended compound where necessary to keep down the dust . . . no oil or solvent base compounds." Hillyard **Super Hil-Sweep®** dressing is formulated safe for resilient flooring, contains no oils, effectively controls dust. Non-slip, safe on the floor.



ON ASPHALT TILE • VINYL • RUBBER • TERRAZZO  
WOOD • CONCRETE OR GYMNASIUM—

\*"Maintenance of Vinyl Asbestos Tile and Asphalt Tile Floors," published by the Institute, N. Y. 17, N. Y.

You'll *Finish* Ahead with  
**HILLYARD**

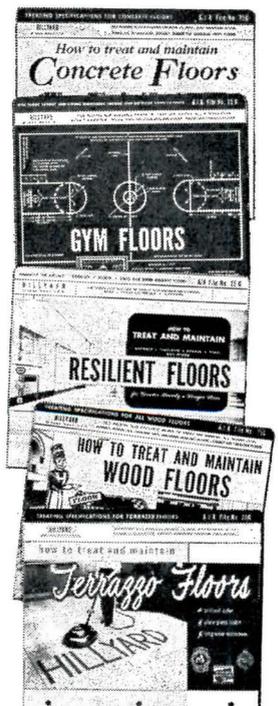
BRANCHES AND WAREHOUSES IN PRINCIPAL CITIES  
Dept. A-4  
San Jose, Calif. ST. JOSEPH, MISSOURI Passaic, N. J.



Let the Hillyard "Maintaineer®" recommend treatments that meet flooring manufacturer or association specifications, and give you professional "Job Captain" service. He's

*"On Your Staff,  
Not Your Payroll"*

SINCE 1907



Write for Free Hillyard A.I.A. Files. Practical treating guides, one for each type of flooring.

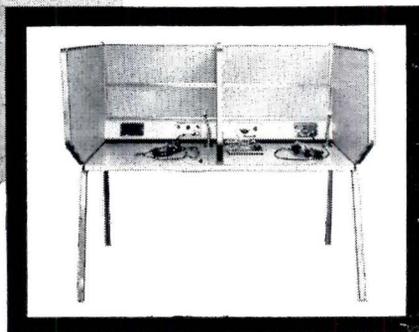


# Medallion LANGUAGE LABORATORY SYSTEMS



*...the  
ultimate  
for  
simplified  
teaching*

*...the ultimate  
for learning!*



The DUKANE Medallion Language Laboratory System provides an exclusive combination of features affording the ultimate in foreign language teaching efficiency.

**PERFORMANCE**—Advanced transistorized circuitry provides excellent response and true high fidelity quality at 3¾ i.p.s. tape speed. Matched components: amplifiers, microphones, headphones and tape recorders assure outstanding quality voice fidelity.

**EXPANDABILITY**—Schools for the first time may begin with a simple audio-passive system serving a limited number of students positions and as experience is developed expand to audio-active or audio-active-compare units and increase the number of student positions as required. Modular construction features simplifies classroom expansion.

**SAFETY**—All electronic equipment at student positions use low voltages and offer plug-in convenience. Power supplies are centrally located. Indicator type fuses provide full circuit protection . . . minimize service . . . instantly spot trouble.

**THE DUKANE "MEDALLION" BUILDING-BLOCK SYSTEM CUTS ADD-ON COSTS TO A MINIMUM**

*FROM THIS . . . . . TO THIS!*



DUKANE engineering has cut the add-on cost barrier. The instructors console is easily expandable from 25 to 50 positions. Student audio-passive, audio-active and audio-active-compare positions are easily changed utilizing existing wiring. Contact your local DUKANE Engineering Distributor for full details or write for literature listed below.

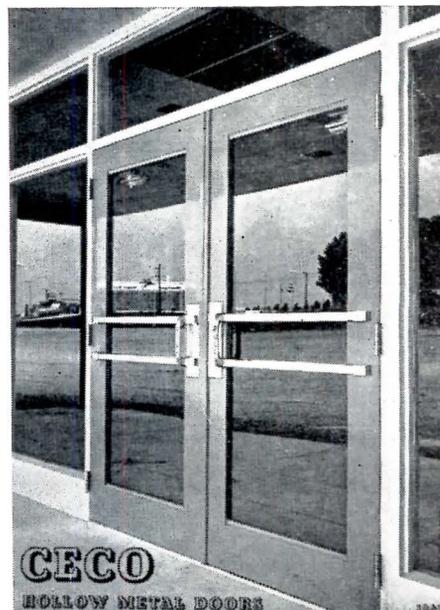


DUKANE  
"Medallion"  
Language Laboratory  
System Literature  
available  
upon request

**DUKANE  
CORPORATION**

DEPT. PA-41 • ST. CHARLES, ILL.

For more information, turn to Reader Service card, circle No. 319



Other styles shown are flush and panel designs, as well as louvered doors. In addition, transom frames, side lights, and borrowed lights are described, all with construction details. Dept. A, Ceco Steel Products Corp., 5601 W. 26 St., Chicago 50, Ill.

*On Free Data Card, Circle 210*

## Up-to-Date Information on Insulating Glass

Newly revised manual on "Thermopane" insulating glass has been published, presenting some new topics, plus up-to-date revisions of sections covered in previous booklets. Of special interest are a detailed comparison of "Bondermetic" and "GlasSeal Thermopane," revised data on sound-insulation values, and diagrammatic presentation of the various combinations of glass and air spaces. Also included in 15-page booklet are LOF's new line of pattern glass, strength calculations, and two pages of installation photos. Advertising Dept., Libbey-Owens-Ford Glass Company, 811 Madison Ave., Toledo 1, Ohio.

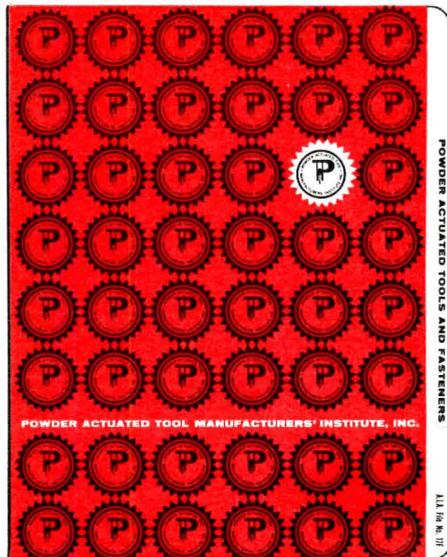
*On Free Data Card, Circle 211*

## New Additions to 1961 Door Line

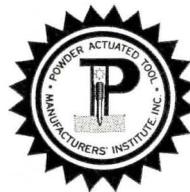
1961 *Weldwood Door Catalog*, 16 pages, is now available. The new line gives a wide choice of face, core, and performance combinations. New to the line are additional wear-resistant faces, a low-cost acoustical door, and a full line of reliable hardwood-faced doors for mid-range budgets where top

*Continued on page 104*

The bond between  
 a powder  driven  
 fastener and the  
 concrete around it  
 is generally  
 so great that the  
 fastening becomes  
 stronger than the  
 surrounding material.

*Send coupon for free portfolio  
 of powder actuated tools  
 and fastening methods.*




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To: Powder Actuated Tool Manufacturers' Institute, Inc. PA 4  
 200 College Street, New Haven 10, Connecticut  
 Please send me information on powder actuated tool fastening.

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For the best in powder actuated tool fastening, rely on these brand names of member companies: **NELSON / OMARK / RAMSET / REMINGTON**

college of **tomorrow**  
with **today's** best  
masonry reinforcement  
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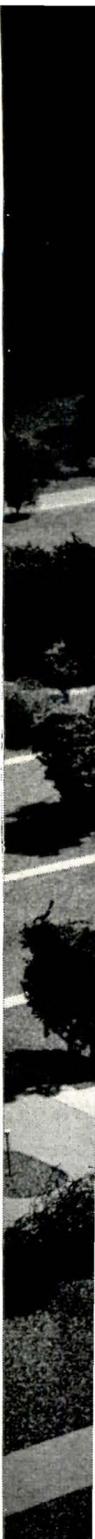
**KEYWALL**®

The plans for Delta College, now under construction in the "Golden Triangle" area of central Michigan, call for the most modern educational facilities and best construction methods. That's why masonry joints on the Delta College buildings are being reinforced with Keywall for added strength, greater crack resistance. The contractor on the job, states: "Delta College is being constructed of the finest materials available and we feel that one of the better crack-resisting reinforcement products on the market is Keywall."

**KEYSTONE STEEL & WIRE COMPANY**

PEORIA, ILLINOIS

KEYWALL • KEYMESH® • KEYCORNER • KEYDECK • WELDED WIRE FABRIC • NAILS

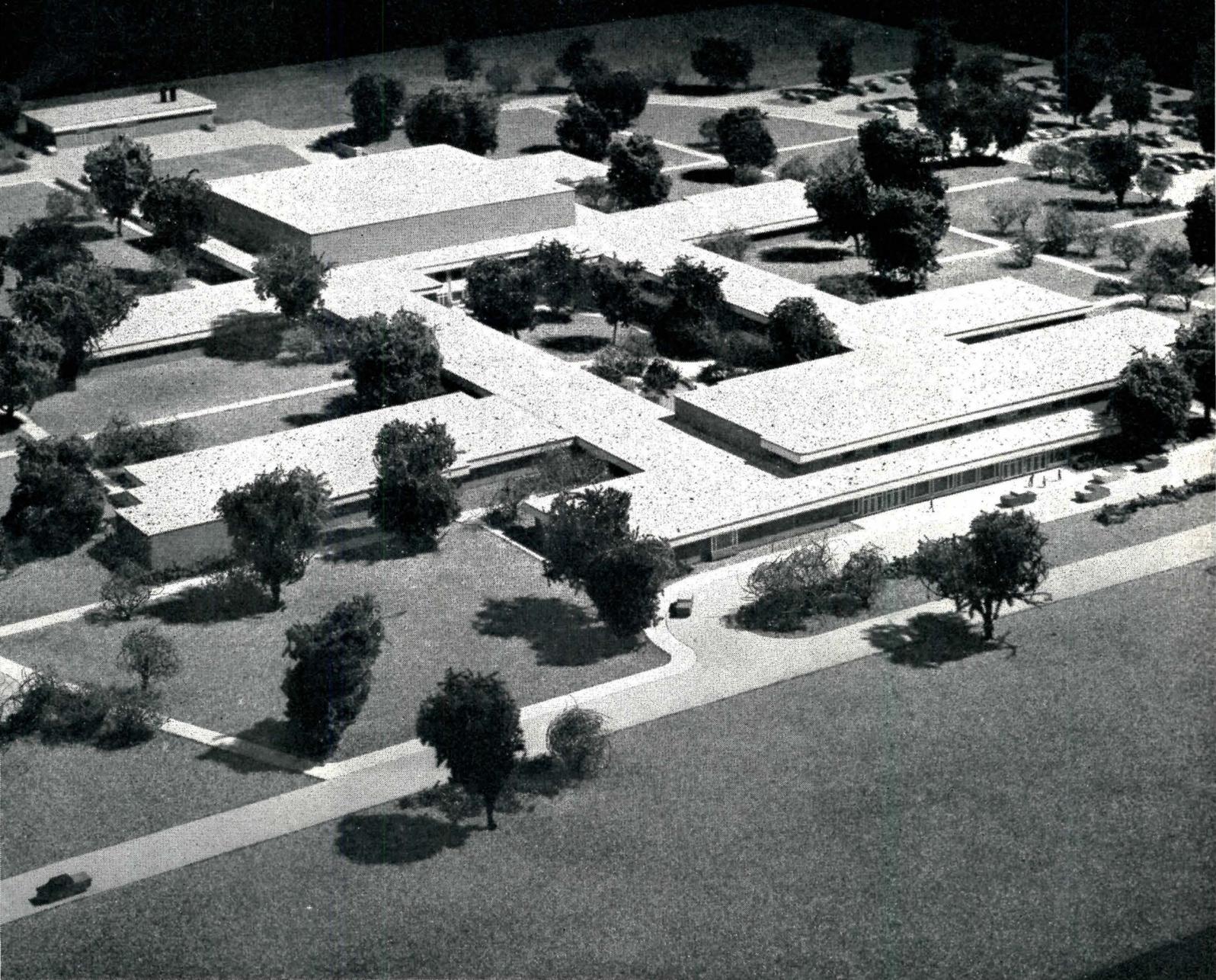


**Architect's model of Delta College**

*Architect:* Brysselbout-Dow-Wigen, Saginaw, Michigan

*General Contractor:* Bryant & Detwiler Co., Detroit, Michigan

*Masonry Contractor:* Consolidated Construction Co., Bay City, Michigan



Located in a fast-growing, industrialized section bordered by Bay City, Saginaw, and Midland, the Delta College is one of the first in the U. S. to be financed by a multiple county tax program. One of its many unique features is a closed-circuit TV studio which will originate educational programs throughout the school and neighboring communities.



For buildings that stay young throughout the years, rely on Keywall galvanized masonry reinforcement. Masons find Keywall easy to handle, easy to adapt to a wide range of applications. It can be lapped at corners without adding thickness to joints. Full embedment and complete bond assure effective reinforcement. Comes in 4", 6", 8", 10", and 12" sizes.

For more information, turn to Reader Service card, circle No 336

Continued from page 100

performance is required. Construction details and suggested specifications are provided. Weldwood Door Department, United States Plywood, 55 W. 44 St., New York 36, N.Y.

On Free Data Card, Circle 212

### Shielded Visibility

New Catalog, Section 200, contains general information on radiation-shielding windows for various medical and industrial conditions, as well as detailed specifications on the several types of units offered. Solid glass, liquid filled, combination, marine, neutron, and special design windows are described in the 12-page catalog. Ray Proof Corporation, 843 Canal St., Stamford, Conn.

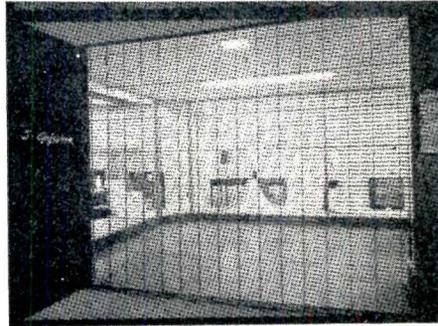
On Free Data Card, Circle 213

### Varied Glass Patterns

New 20-page catalog for 1961 covers the complete line of glass patterns—rolled, figured, and wired—for installation in industrial, commercial, school, church, and institutional build-

ings. Profusely illustrated with typical installations, the catalog also contains individual photos of the various patterns, each accompanied by light-distribution charts and transmission data. Dept. 8, Mississippi Glass Company, 88 Angelica St., St. Louis 7, Mo.

On Free Data Card, Circle 214



### Rolling Doors for Many Applications

The 1961 line of rolling doors and partitions is described and illustrated in new 20-page Catalog 6101. The line includes steel and aluminum rolling grilles and side-coiling grilles, "Serv-

ire" fire doors, steel and aluminum rolling service doors, extruded-aluminum counter doors, and wood side-coiling partitions. Complete information, architectural specifications, and detail drawings cover all types of standard and special situations. Of special note are comprehensive charts and design details that greatly simplify selection of proper gage and type of slats, power units, and other components. The Cookson Co., 1525 Cortland Ave., San Francisco 10, Calif.

On Free Data Card, Circle 215

### ELECTRICAL EQUIPMENT

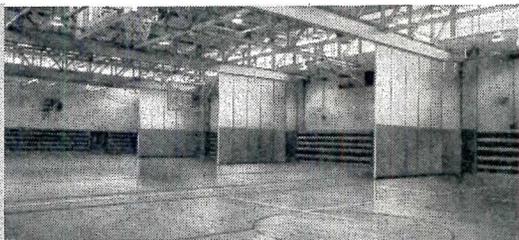
#### New Lighting Fixtures

Series of pendant domes blends a variety of deep and shallow dome designs in various sizes for a multitude of lighting requirements. Line of recessed domes is designed for a full range of applications from soft to high-intensity lighting. Brochure, 4 pages, covers dimensions, finishes, and purposes of the fixtures. Kurt Versen Co., 4 Slocum Ave., Englewood, N. J.

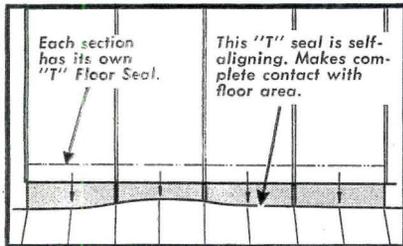
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Continued on page 108

a revolutionary new feature in  
**TORJESEN FOLDING PARTITIONS**



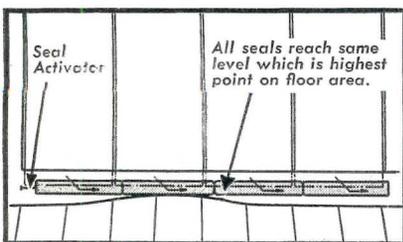
**THE INGENUOUS "T" FLOOR SEAL**  
Activated by Compressed Air!



**NEW "T" FLOOR SEAL ON TORJESEN FOLDING PARTITIONS**  
Effects 100% Closure Regardless of Floor Contour!

Each section of a Torjesen Partition has its own "T" floor seal. An electro-pneumatic activated unit in the bottom does the job! Regardless of high or low floor points, each panel is held rigidly in 100% contact with the floor making the entire partition immovable.

\*The new "T" Floor Seal is now standard equipment on all Torjesen Folding Partitions at no extra cost!



**OLD TYPE FLOOR SEAL NOW IN GENERAL USE Cannot Effect 100% Closure Unless Entire Floor is Dead Level!**

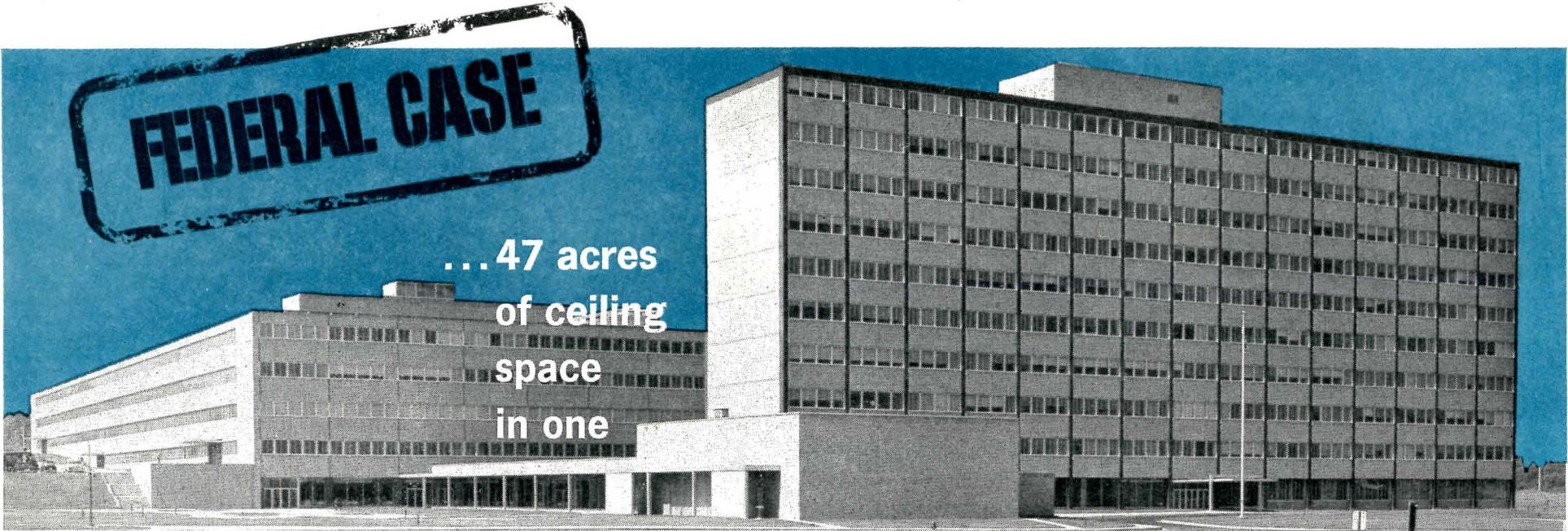
The drawing at left shows this. When the partition is closed the seal in the first door section is triggered and in turn activates each following door section seal. They all reach the same level which is the highest point on the floor area. Any irregularity in floor contour will cause the rest of the panels to hang loosely thus affecting the rigidity of the entire partition.

Visit our plant and tour its facilities • Write for fully detailed catalog

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**FEDERAL CASE**

...47 acres  
of ceiling  
space  
in one

The new Social Security Administration Headquarters  
Architect: Meyer & Ayers; Fisher, Nes, Campbell  
Contractor: McCloskey & Company  
Acoustical Contractor: Lloyd E. Mitchell, Inc.

of the nation's  
largest  
government  
office  
buildings!



# EASTERN ACOUSTICAL MATERIALS GOT THE VERDICT!

Here's new evidence that Eastern continues to get the decision on the country's most demanding installations and most exacting specifications. Eastern's all-metal, acoustical "Silent Ceiling" and Eastern's acoustical fastening systems offer maximum savings in erection time and maintenance cost . . . assure shift-free, level-perfect placement!

Get the full story and judge for yourself why, when it comes to versatility, economy, eye appeal, serviceability and structural strength, Eastern acoustical materials keep winning on all counts! Write today for full particulars—or see Sweets 11a  
Ea



Acoustical Division, 1601 Wicomico St., Baltimore 30, Md.

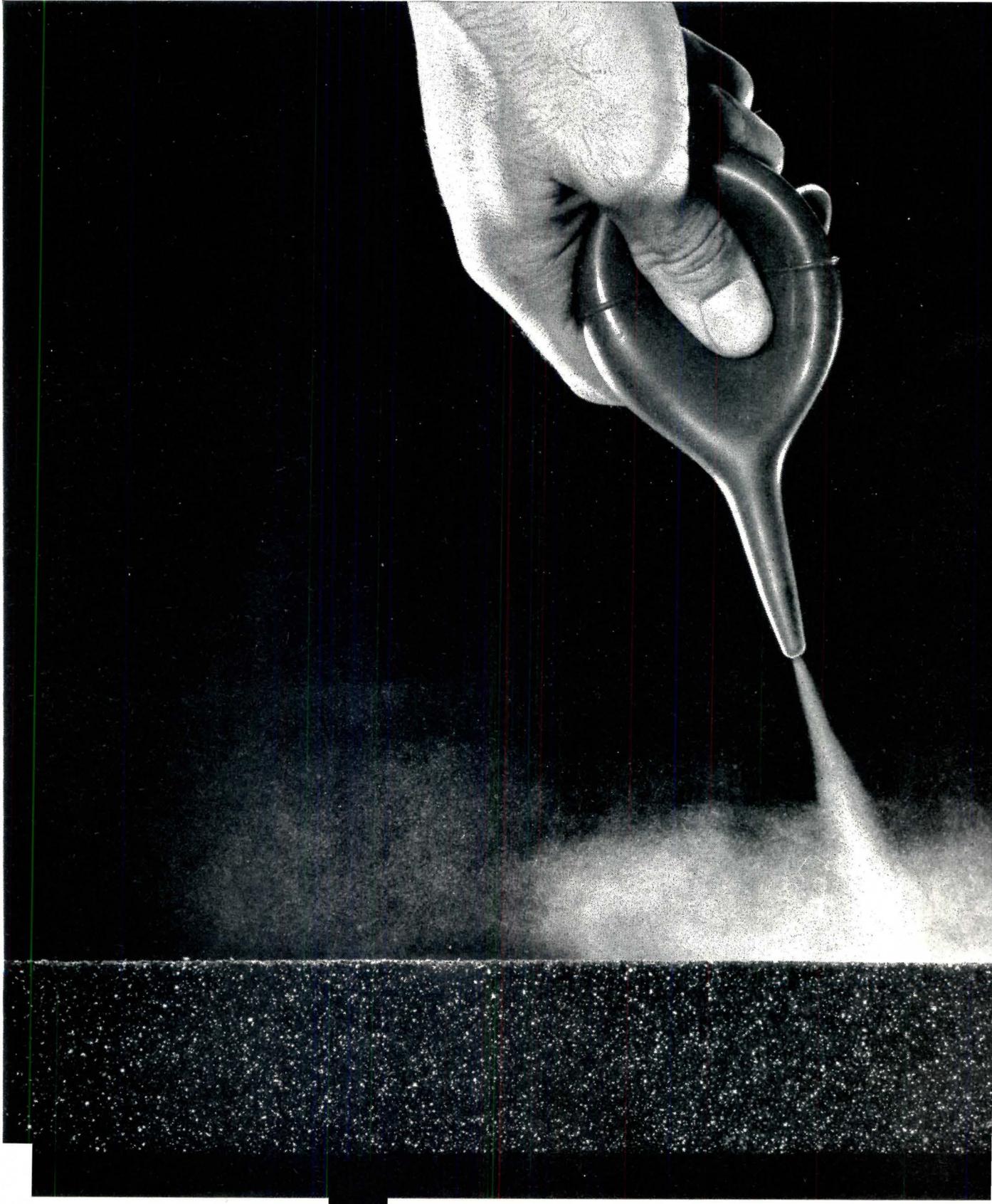
Acoustical Division, Eastern Products Corp.,  
1601 Wicomico St., Baltimore 30, Md.  
Please send full details on Eastern Acoustical Materials.

Name \_\_\_\_\_

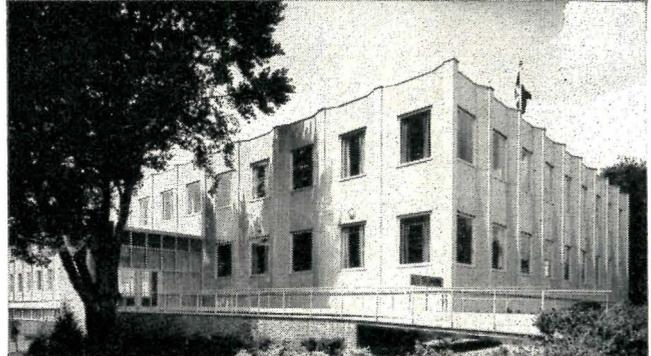
Street \_\_\_\_\_

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

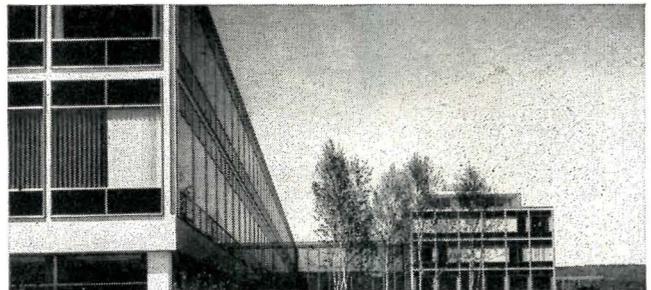
# FOAMGLAS<sup>®</sup> Insulation ... a better ... a better insulation because



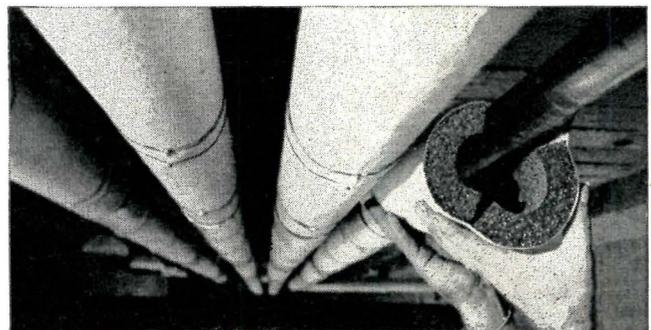
# building material because it's vaporproof it's cellular glass



An unusual curtain wall panel makes unusual demands on its insulation. FOAMGLAS complements this Bell Telephone design, Conshohocken, Pa., where panels are projected to create vertical accents in depth. The cellular glass insulation stays impervious to vapor and water, maintaining its high compressive strength, firmness, rigidity and dimensional stability.



Over 82,000 sq. ft. of FOAMGLAS insulates these glass spandrel panels at the Connecticut General Life Insurance Building, Bloomington, Conn. Fabricated right on the job, FOAMGLAS protects the steel from air and moisture damage while it serves as the backing for the metal flashing that rings the building.



FOAMGLAS Stay-Dry Pipe Insulation provides the important benefits of FOAMGLAS for all building service lines; iced water, chilled water, low-pressure steam or dual temperature runs. In addition to the vapor and moisture protection, the insulation is fireproof, will not slump or sag, and will not compress around saddle supports.

◀ No extra vapor seals are necessary with FOAMGLAS. It forms its own vapor barrier. That means a dependable seal against both moisture migration through the insulation and condensation within it.

Write for information on the complete line of FOAMGLAS products, and how they can work in your toughest applications. Address: Pittsburgh Corning Corporation, Dept. AB-41, One Gateway Center, Pittsburgh 22, Pa. In Canada: 3333 Cavendish Blvd., Montreal, Quebec.





...make your concrete floors

**LOOK BETTER,  
LAST LONGER!**

Specify and Install

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REG. U. S. PATENT OFFICE

**CONCRETE DENSIFIER and HARDENER**

**CHOICE OF 9  
RICH COLORS**

- TILE RED
- TAN
- TERRA COTTA
- FRENCH GRAY
- GREEN
- GRASS GREEN
- BROWN
- BLACK
- WHITE  
and NATURAL

Hydroment improves hardness, density, wearability, corrosion resistance and appearance of concrete floors — institutional, commercial, industrial. Easily applied by the dust-coat method when concrete slabs are poured; requires no additives or mixing at the job site. Non-toxic, odorless, waterproof; ideal indoors and outdoors — new construction or remodeling. Non-dusting; non-rusting. Proved superior in over 20 years' use by architects and contractors everywhere. Write for catalog and color card.



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**THE UPCO COMPANY**

4805 Lexington Ave. Cleveland 3, Ohio

In the West... HYDROMENT, INC., 829 N. Coffman Drive, Montebello, Calif.

For more information, turn to Reader Service card, circle No. 382

Continued from page 104

## Catalog Gives Rules for Good Floodlighting

New catalog, 28 pages, covers the selection, specification, and installation of floodlights, including their poles and brackets. General rules of good floodlighting practice are presented, as are seven steps for figuring the type and amount of floodlights needed. The Spero Electric Corp., 20500 St. Clair Ave., Cleveland 17, Ohio.

On Free Data Card, Circle 217

## Single Page Shows Entire Line

Manufacturer's entire line of electric generating plants, both gasoline and Diesel driven, are listed on a single new catalog sheet. The 8½" x 11" page describes the Onan line from the smallest portable electric plant (500 w) to the largest emergency set (230,000 w). Typical units in each size range are pictured, and a brief description of the outstanding features of each series is given. Condensed specifications show capacity, model number, electrical details, engine characteristics, and over-all dimensions. Onan Division, Studebaker-Packard Corp., 2500 University Ave., S. E., Minneapolis 5, Minn.

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## Large Collection of Fluorescent Fixtures

*Fluorescent Lighting Catalog 12 A*, 96 pages, shows a comprehensive line of commercial fluorescent-lighting equipment that features various modular sizes and types of plastic and metal diffusers. Available for all modular fixtures is "Nini-Cell," a ½" x ½" x ½" cell aluminum louver finished in white baked enamel. Large photographs depict each fixture; complete engineering information, cross sections, and dimensional data are included. Neo-Ray Products, 315 E. 22 St., New York 10, N. Y.

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## Recessed Lighting

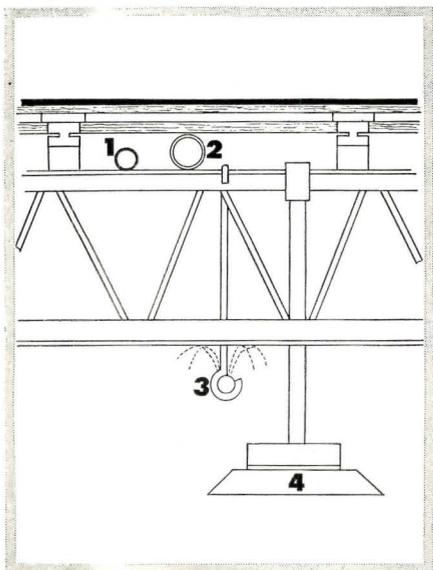
Comprehensive technical data and general information on "Skyway" series of recessed fluorescent-lighting fixtures, and each of the 10 diffusing elements available in the series, is pre-



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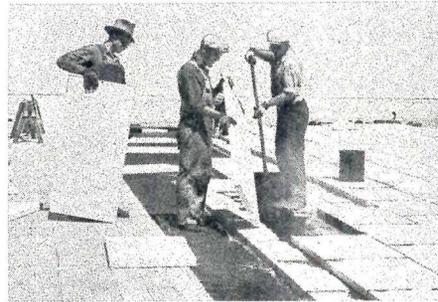
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### Roof Insulation Manual

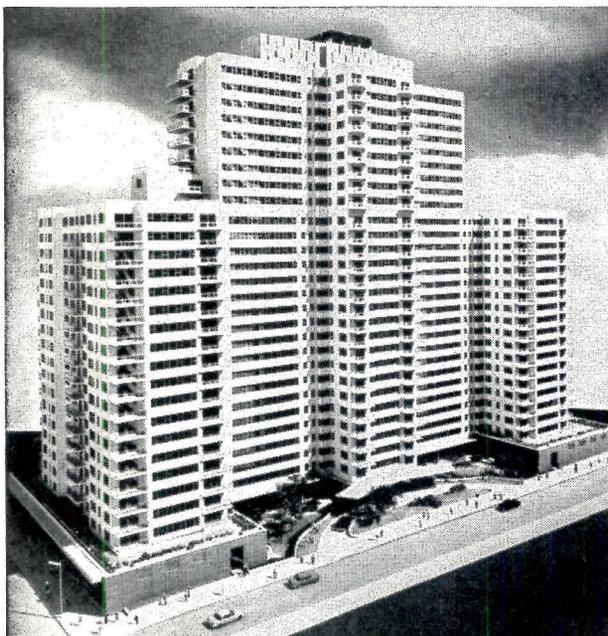
New 24-page manual is available on "Insulite Roof Insulation," a quality roofing product manufactured from natural wood fibers. The manual includes a product description, speci-

fications, and other technical data; also illustrates typical installations throughout the country. A special section gives details on tapered edge strips and cant strips, and tells how these two products help solve roofing problems. Insulite, 500 Investors Building, Minneapolis 2, Minn.

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## Film-and-Book Program on Acoustics

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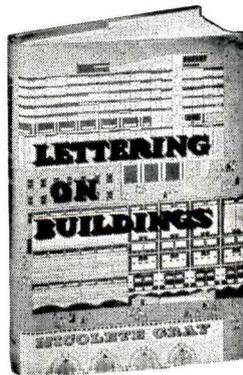
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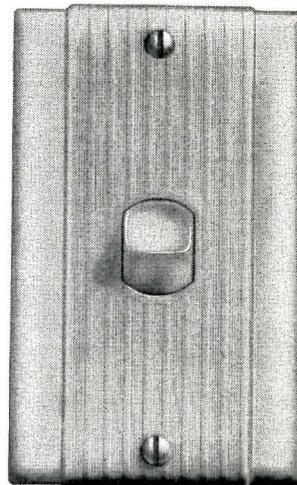
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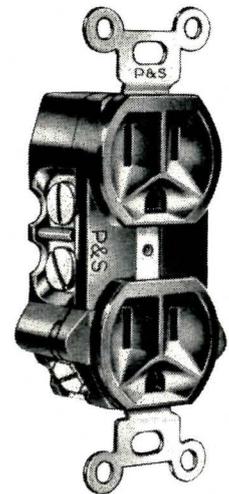
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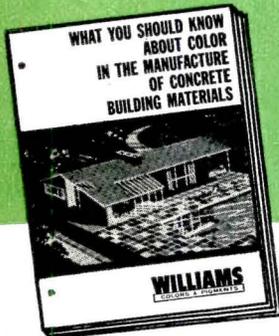
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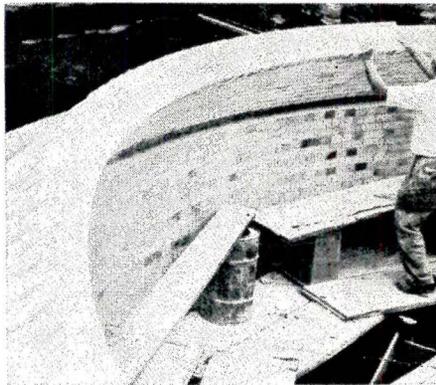
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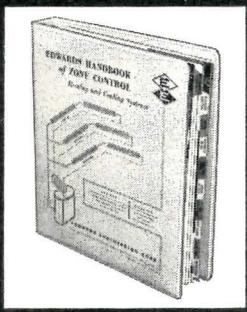
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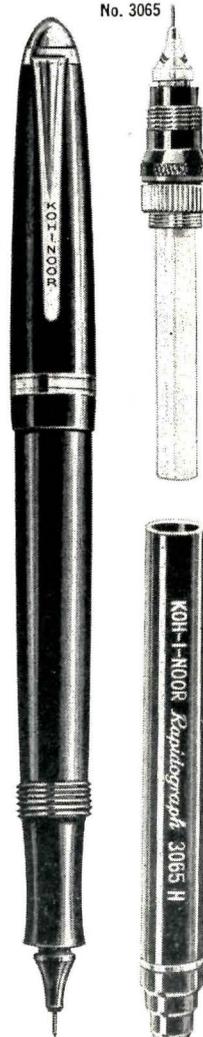
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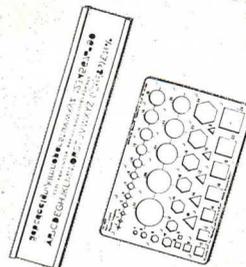
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## PROGRESSIVE ARCHITECTURE NEWS REPORT

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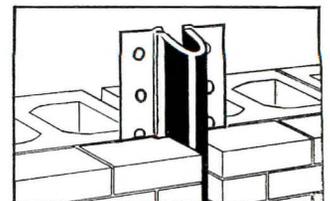
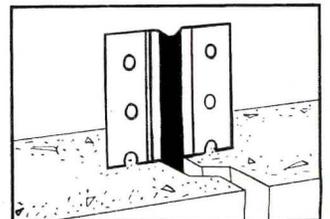
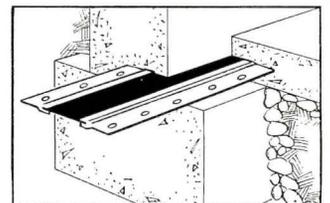
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Photo: George Pohl

*Louis I. Kahn: "... to know what to do is the secret of it all ..."*

# WANTING TO BE

BY JAN C. ROWAN

*Last month's first part of the P/A Symposium on the State of Architecture brought out quite clearly the prevalent confusion and aimlessness in today's architectural design philosophy. The sixties, it appears, began without any coherent ideologies and systematic disciplines; instead, a strange free-for-all is the admitted, accepted, and defended design approach. There are indications, however, that among this confusion there is already in existence a new design movement with a powerful ideology and a clearly defined design approach. This movement, stemming from Philadelphia, heralds a new renaissance that might prove to be at least as important to the course of architectural history as the emergence of the Chicago School in the late 19th Century. In this article, P/A's Managing Editor traces, describes, and explains this significant new development in contemporary architecture and refers to it as:*

## THE PHILADELPHIA SCHOOL

"... negation of everything is in itself a form of servitude..."

"Chaos is also a form of servitude. Freedom exists only in a world where what is possible is defined at the same time as what is not possible."

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VASARI, *Lives of the Artists*

We need buildings because we need usable spaces. We need architecture because we need spaces that will evoke an emotional response in those who enter them. It has always been so. This does not mean that "architecture" cannot exist without architects, but it does indicate what should be the primary aim of an architect in his work. And yet, during the last forty years or so, much of architectural thinking, and most architectural writing, criticism, and teaching was on a strange track of glorifying alien gods. Architectural theories and design criteria emerged from within the domains of painting, sculpture, economics, sociology, psychology, naturalism, engineering, and technology. And it is from these that architects drew their inspiration.

Today, when many old issues are no longer valid or have lost their appeal, when the atom has exploded the benevolence of the machine god, and the nihilistic brave new world of "less is more" is dying a natural death on the curtained stretches of New York's Park Avenue, a spiritual vacuum has developed in the profession. This was sharply brought out in last month's first part of the P/A Symposium on the State of Architecture. Experimentation with a multitude of approaches is a valuable mental exercise, but, continued too long, it can only lead to shallow design and to stylism. It cannot produce a meaningful expression with universal validity.

There is an indication, however, that among this "I-am-smarter-than-thou" world of design acrobatics, there exists in Philadelphia a powerful new movement with a powerful gospel.

It is historically true that a profound and lasting idea is usually born, rooted, and then develops because of a set of conditions existing in a particular locality. As one Philadelphia architect puts it: "A profound thought stems from a deep, troubled experience, which in order to be universal is always local, relative to the local instances and problems. That is to say that art is basically local; it grows from a limited milieu where all the components of a general experience are questioned, lived upon, and an answer deeply matured. The local experience bears constant witness to all the things that one does not know. We think because we don't know. Only in this environment do communication and universal understanding occur. That was the way of the architecture of Florence, of Venice, of Carcassonne, of

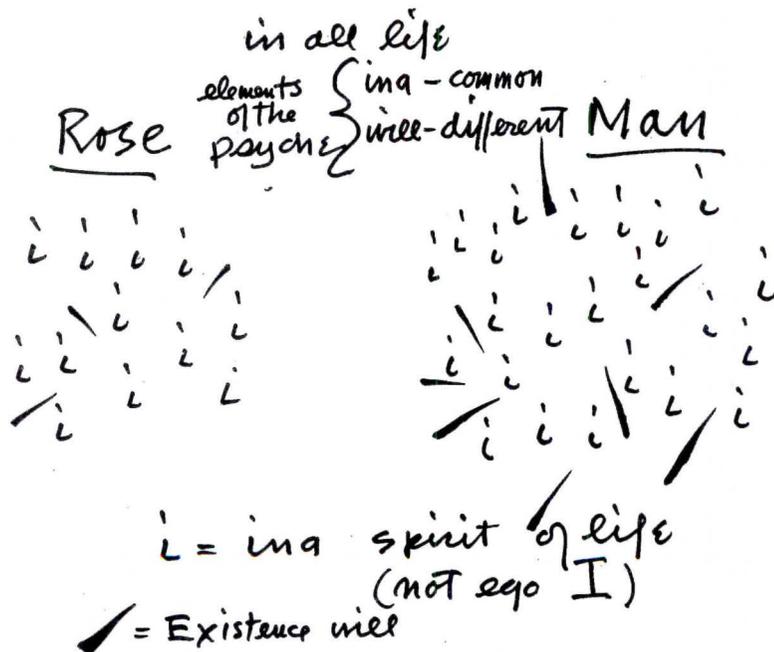
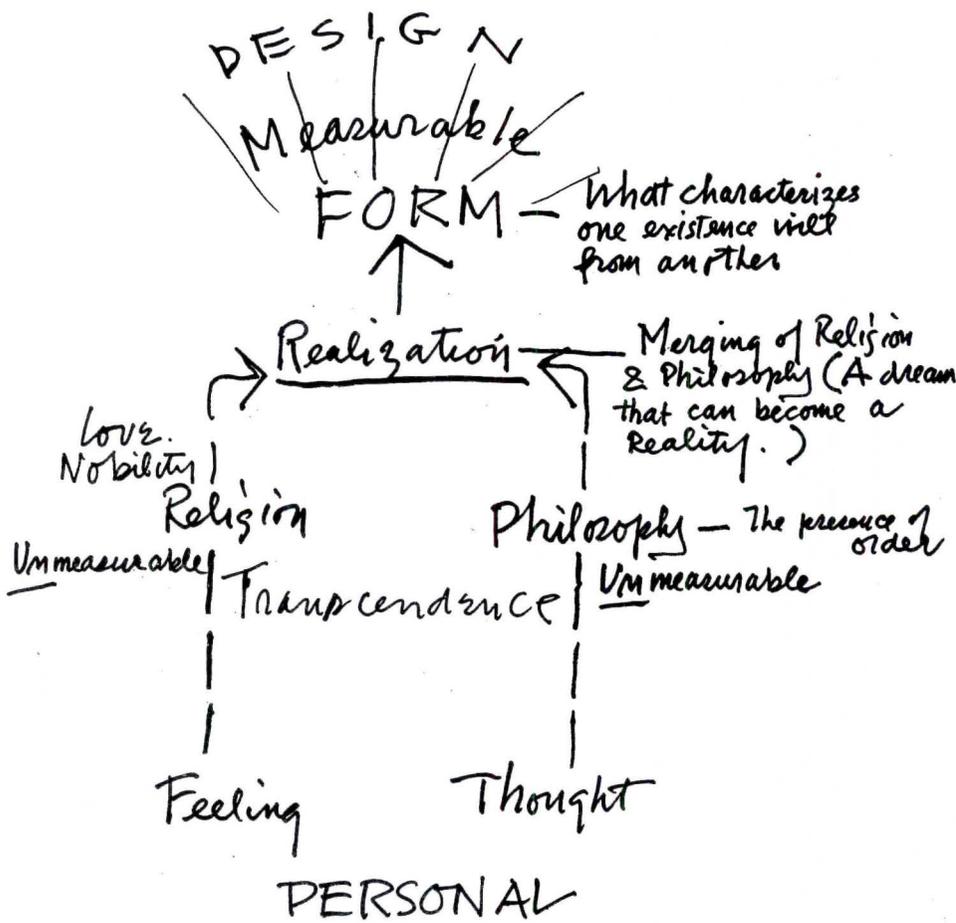
Rome. No architecture was born as a universal apriority. The houses of Greece are similar to those of Naples but quite different from those of the Roman countryside. Yet there are many more miles between Greece and Naples than between Naples and Rome. The story of the Renaissance is one example of local re-elaboration of the classical language."

Within the contemporary American scene, Philadelphia does seem to be a place with such troubled experiences and profound thoughts. The glory of Philadelphia's historical past and later industrial expansion faded gradually until the city became a vast conglomerate of run-down traditions, depressed economics, and corrupt governments. This situation started changing about ten years ago when several important influences, acting jointly upon each other, began to raise Philadelphia from its stupor. What resulted finally is a growing vigor of the city and a fertile architectural climate. It is difficult to pinpoint all the influences and all the people responsible for this change, and only some will be mentioned here.

Two able mayors, Clark and Dilworth, raised the political life of the city to a high level. Within this purified political atmosphere, city planning became the rallying point of the reform movement. Consequently, the planners and architects were strong supporters of the mayors, and, in turn, the mayors and the city administration have been supporting all planning efforts through many of their agencies and through the Comprehensive Plan for the city—one of the more important and ambitious projects of recent years. The emphasis of the plan was on the center city as the core of the Philadelphia region. Therefore, the approach was in terms of an urban, strongly architectural, environment. During the same period, Dean Holmes Perkins, who is also Chairman of the Planning Commission, rebuilt and redefined the University of Pennsylvania's Division of Architecture, made the city the laboratory and an important subject matter of the School, and brought together a varied and gifted faculty. Then there are two engineers, Le Ricolais and August Komendant; the former has inspired many with his research into the nature and behavior of materials; the latter has spurred the development of precast concrete construction with the result that there are adventurous fabricators in the area. There are understanding clients and sympathetic contractors. Even construction workmen seem again interested in their work and in their contribution to the new environment. There are many others who care, such as Edmund Bacon, for example, who is Executive Director of the Planning Commission, and who is attempting to establish new directives for architects and planners. As one architect put it: "He is really asking for a new kind of architecture."

Within this congenial atmosphere there is a group of architects that is attempting just that: a new architecture; new in the sense that it attempts once more to be primarily architecture. The spiritual leader of the group is Louis I. Kahn.

It is interesting that all those who



understood and now subscribe to Kahn's philosophy of design feel that they are at a "point of departure, not one of arrival." As one of them stated:

"It has been said that the presence of a strong personality in a professional community is bound to overshadow and limit the chances of development of others. Overshadow it may: limit the development of others, no. When Cennino Cennini gave advice on how to make a choice of a master, he said that being always accustomed to gather flowers one will know how to pluck thorns, and one will eventually acquire a language individual to oneself. That is why the work of a master should represent a point of departure, not one of arrival. This is perhaps the real measure of his validity, of his greatness. The architecture of Kahn must be seen as the formulation of facts; that is why he was recognized by his students long before his critics."

Kahn definitely views architecture as an art whose main aim is the creating of spaces. He says:

"If I were to try to define architecture in a word, I would say that architecture is a thoughtful making of spaces. It is not filling prescriptions as clients want them filled. It is not fitting uses into dimensioned areas. It is nothing like that. It is a creating of spaces that evoke a feeling of use. Spaces which form themselves into a harmony good for the use to which the building is to be put.

"I believe the architect's first act is to take the program that comes to him and change it. Not to satisfy it, but to put it into the realm of architecture, which is to put it into the realm of spaces.

"An architectural space must reveal the evidence of its making by the space itself. It cannot be a space when carved out of a greater structure meant for a greater space, because the choice of a structure is synonymous with the light which gives image to that space. Artificial light is only a single, tiny, static moment in light and is the light of night and never can equal the nuances of mood created by the time of day and the wonder of the seasons.

"A plan of a building should read like a harmony of spaces in light. Even a space intended to be dark should have just enough light from some mysterious opening to tell us how dark it really is. Each space must be defined by its structure and the character of its natural light. Of course, I am not speaking about minor spaces which serve the major spaces."

Kahn's basic aim, therefore, is to achieve in his buildings spaces that are expressive of the use to which they will be put, and that will evoke an emotional response in those who enter them. Everything else, although eventually given serious consideration, is subordinated to this purpose. In other words, Kahn simply insists on being an architect. Kahn's aim, then, is easily understood. What is more difficult to understand is Kahn's own vocabulary, a sort of personal philosophy that he developed for himself and that helps him in constantly being aware of what the aim is.

He says that everything that lives has

an *ina*. This *ina* (a word invented by Kahn) is the common ingredient in all living things—in a cell, in a rose, in a man—and is the spirit of life, the spirit of existence. As a symbol for *ina* he uses the small *i*, in order not to confuse the *ina* with the *ego*, which is usually indicated by the big *I* and which is a totally different concept. All living things also have an **existence will**. This existence will accounts for the peculiarity and singularity of the *ina*. It is a directional force within the *ina*, and it distinguishes things from each other. It makes them want to be different. Thus a cell wants to be a cell, a rose wants to be a rose, and a man wants to be a man. What they all want to be is different, because their existence wills are different, and they cannot exist unless they are true to their existence wills. Thus nothing can begin unless it has a wish to exist and a tendency to be something.

Kahn considers the recognition of the existence will of utmost importance, because only then can one understand what makes a thing begin—he calls it the “understanding of the beginnings”—and thus one can find the truth.

Kahn considers the psyche as being a combination of the *ina* and of the existence will. He then says that existence is also impossible without order, which is the maker of things, and that a combination of the psyche and of order makes for conscious existence—existence will of a living thing calls on order to make it. Kahn ascribes the psyche only to everything that is animate, but says that although nonliving things do not have a conscious existence, one can give them consciousness through oneself—a sort of imbuing with a psychic quality. Thus eventually Kahn ascribes psychic qualities to everything inanimate as well as animate, which eventually leads him to consider Form as a search for truth.

Therefore, he says that **Form** belongs to the psyche and is unmeasurable. One cannot find Form without transcending one's personal feeling and personal thought. Transcendence of personal feelings leads to the “common ingredient” of feeling, which is religion (i.e., love and nobility), and transcendence of personal thought leads to the “common ingredient” of thought, which is philosophy. Transcendence of both thought and feeling leads to **realization** (“a dream that can become reality”) of what a particular Form should be. Therefore, one can only find Form by transcending one's personal thoughts and feelings, by reaching for the “common ingredient.” Thus Form is impersonal: it does not belong to anybody. It is there to be discovered by those who can achieve realization through transcendence, by those who can understand the “power of the beginning” and can recognize what characterizes one existence will from another. Form results from a search for “what,” which is the creative act. But Form has no dimensions (is unmeasurable) and is impersonal (belongs to everybody).

**Design**, on the other hand, has a measurable quality. It is a “circumstantial” act. It is an act of performing. It is merely an answer to the question “how,” and, there-

fore, is not a creative process. That is why Kahn says “a good question is always greater than the most brilliant answer” and that “the right thing badly done is always greater than the wrong thing well done.”

Keeping in mind Kahn's concept of Form as an unmeasurable, nonphysical quality, present only because of the existence will (the tendency of something to be something) and discovered by realization through transcendence, and his concept of Design as the physical process of shaping and detailing, one can better understand his theoretical statements on architecture, his explanations of the buildings he designed, and the buildings themselves.

His theoretical approach to architecture is well summarized in the following compilation of statements:

“When personal feeling transcends into Religion (not a religion but the essence religion) and Thought into Philosophy, the mind opens to realizations. Realization of what may be the **existence will** of, let us say, particular architectural spaces. Realization is the merging of Thought and Feeling in the closest rapport of the mind with the Psyche, the source of **what a thing wants to be**. It is the beginning of Form. Form encompasses a harmony of systems, a sense of Order and that which characterizes one existence from another. Form is what. Design is how. Form is impersonal and belongs to nobody. Design is personal and belongs to the designer. Design is a circumstantial act: how much money there is available, the site, the client, the extent of knowledge. Form has nothing to do with circumstantial conditions. In architecture, it characterizes a harmony of spaces good for a certain activity of man.

“But architecture has limits—and when we touch the invisible walls of the limits, then we know more about what is contained in them. A painter can paint square wheels on a cannon to express the futility of war. A sculptor can carve the same square wheels. But an architect must use round wheels. He has to consider the measurable.

“A great building, in my opinion, must begin with the unmeasurable, go through measurable means when it is being designed, and in the end must be unmeasurable. The design, the making of things, is a measurable act. At that point, you are like physical nature itself, because in physical nature everything is measurable—even that which is yet unmeasured; like the most distant stars which we can assume will eventually be measured.

“But what is unmeasurable is the psychic spirit. The psyche is expressed by feeling and also thought and I believe will always be unmeasurable. I sense that the psychic existence will calls on nature to make what it wants to be. I think a rose wants to be a rose. Existence will, **man**, becomes existence, through nature's laws and evolution. The results are always less than the spirit of existence.

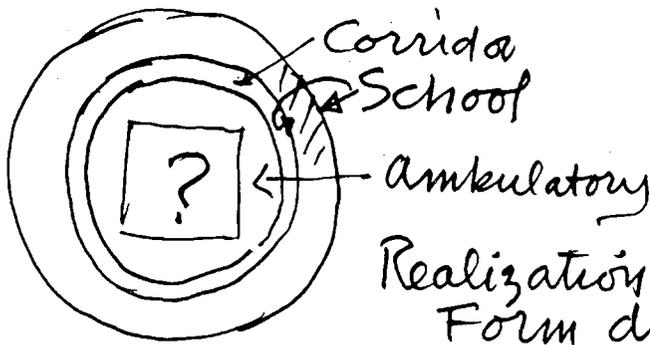
“In the same way, a building has to start in the unmeasurable aura and go through the measurable to be accomplished. It is the only way you can build. The only way you can get it into being is through the measurable. You must follow the laws, but

in the end, when the building becomes part of living, it evokes unmeasurable qualities. The design involving quantities of brick, method of construction, engineering is ended and the spirit of its existence takes over.

“Thus Form has no shape or dimension. If I were to take a spoon to represent form, I would say **the spoon** is a container and an arm, both of which are inseparable to spoon. If I were to design a **spoon**, I would make it out of silver or wood, shallow or deep. That's where design comes in. It's measuring it. It's putting it into being. But that which **characterizes** spoon from some other instrument is Form.”

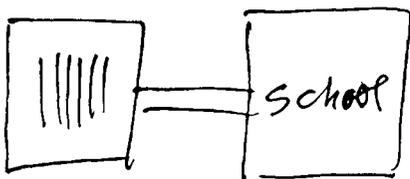
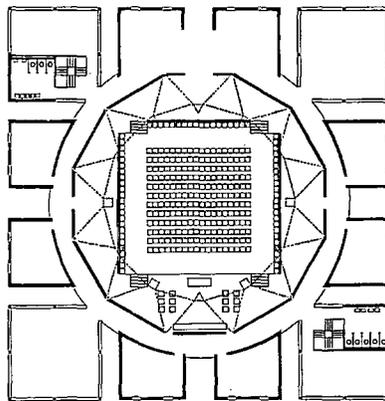
“Reflect then on what characterizes **House**, what characterizes a **house**, and what characterizes **Home**. **House** is the form in the mind of wonder. It should be there without shape or dimension. **A house** is a conditional interpretation of these spaces. This is design. In my opinion the greatness of the architect depends on his powers of realization of that which is **House**, rather than his design of a house. **Home** is the house and the occupants. Home becomes different with each occupant. The client for whom a house is designed states the areas he needs. The architect creates spaces out of those required areas. It may also be said that this house created for the particular family must have the character of being good for another. The design in this way reflects its trueness to Form.

“I think of school as an environment of spaces where it is good to learn. Schools began with a man under a tree who did not know he was a teacher discussing his realization with a few who did not know they were students. The students reflected on what was exchanged and how good it was to be in the presence of this man. They aspired that their sons also listen to such a man. Our vast systems of education, now vested in institutions, stem from these little schools, but the spirit of their beginning is now forgotten. The rooms required by our institutions of learning are stereotyped and uninspiring. Uniform classrooms, the locker-lined corridors and other so-called functional areas and devices, are certainly arranged in neat packages by the architect who follows closely the requirements of the school authorities. The schools are good to look at, but are shallow in architecture because they do not reflect the spirit of the man under the tree. The entire system of schools that followed from the beginning would not have been possible if the beginning were not in harmony with the nature of man. It can also be said that the existence will of school was there even before the circumstances of the man under a tree. That is why it is good for the mind to go back to the beginning, because the beginning of any established activity of man is its most wonderful moment. For in it lies all the spirit and resourcefulness from which we must constantly draw our inspirations of present needs. We can make our institutions great by giving them our sense of this inspiration in the architecture we offer them. Reflect then on the meaning of **School**, meaning of a **school**, and mean-



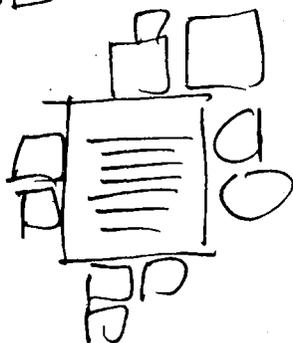
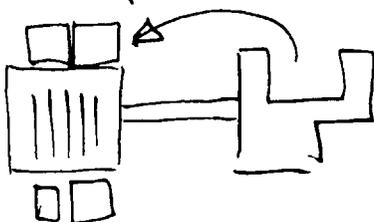
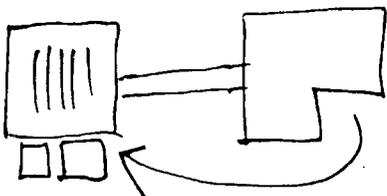
Realization or Form drawing

FIRST DESIGN  
close translation  
of realization in  
Form



No!

Test of the  
Validity of  
Form



Design resulting  
from circumstantial  
demands

ing of institution. The institution is the authority from which we get their requirements of areas. A school is specific design which the institution expects of us. But School, the spirit school, the essence of the existence will, is what the architect should convey in his design. He should be aware of what School wants to be, which is the same as saying what is the form School. Thus the architect is distinguished from the mere designer."

Kahn's search for form and the differences in his concepts of form and design are clearly visible in his description of how he arrived at the recently completed designs of the First Unitarian Church in Rochester, N. Y.: "I was asked: how would you build a Unitarian church. I know about Unitarianism only that Unitarians are interested in things very generally. I would say they are interested in the Question rather than in an answer. And I realized that the Form aspect, the Form realization of Unitarian activity, was bound around that which is Question. Question eternal of why anything. I had to come to the realization of what existence will and what order of spaces were expressive of the Question.

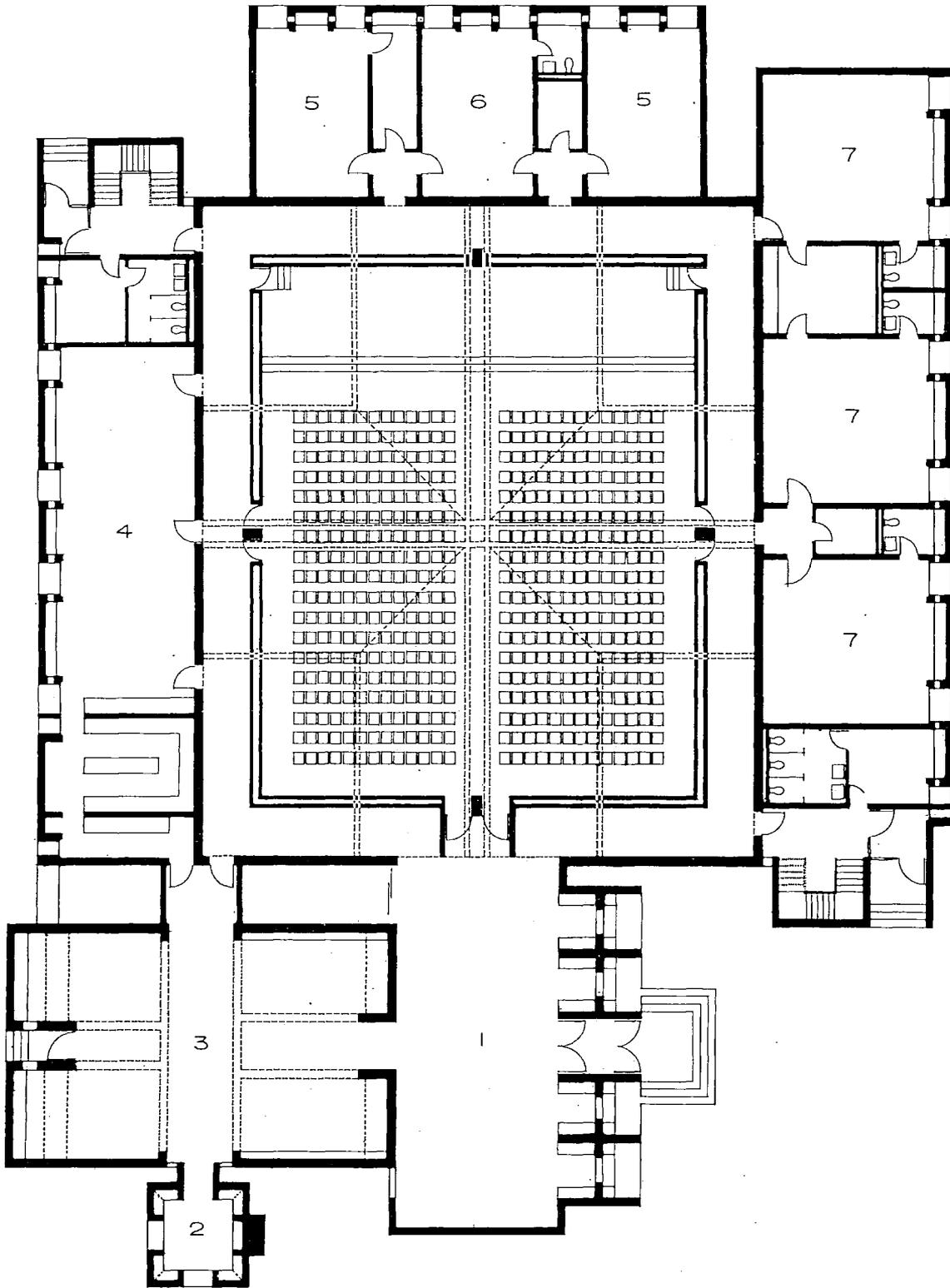
"I drew a diagram, which I believe served as the Form drawing of the church, and, of course, was not meant to be a suggested design. I made a square center in which I placed a question mark. Let us say I meant it to be the sanctuary. This I encircled with an ambulatory for those who did not want to go into the sanctuary. Around the ambulatory I drew a corridor which belonged to an outer circle enclosing a space, the school. It was clear that School, which gives rise to Question, became the wall which surrounds Question. This was the form expression of the church, not the design.

"My first design solution was very rigid. It was a completely symmetrical square. The building provided for the schoolrooms around the periphery; the corners were emphasized by larger masses. The space in the center of the square harbored the sanctuary and the ambulatory. This design closely resembled the diagram, and everyone liked it until the particular interests of every committee member began to eat away at the rigid geometry.

"At one stage of discussion some even insisted that the sanctuary be separated entirely from the school. I said fine, let's put it that way, and I then put the sanctuary in one place and connected it up with a very neat little connector to the school. Soon everyone realized that the coffee hour after the ceremony brought several related rooms next to the sanctuary, which, when alone, were too awkwardly self-satisfying and caused the duplication of these rooms in the separated school block. Also, the schoolrooms, when separated, lost their use for religious and intellectual purposes, and, like a stream, they all came back around the sanctuary.

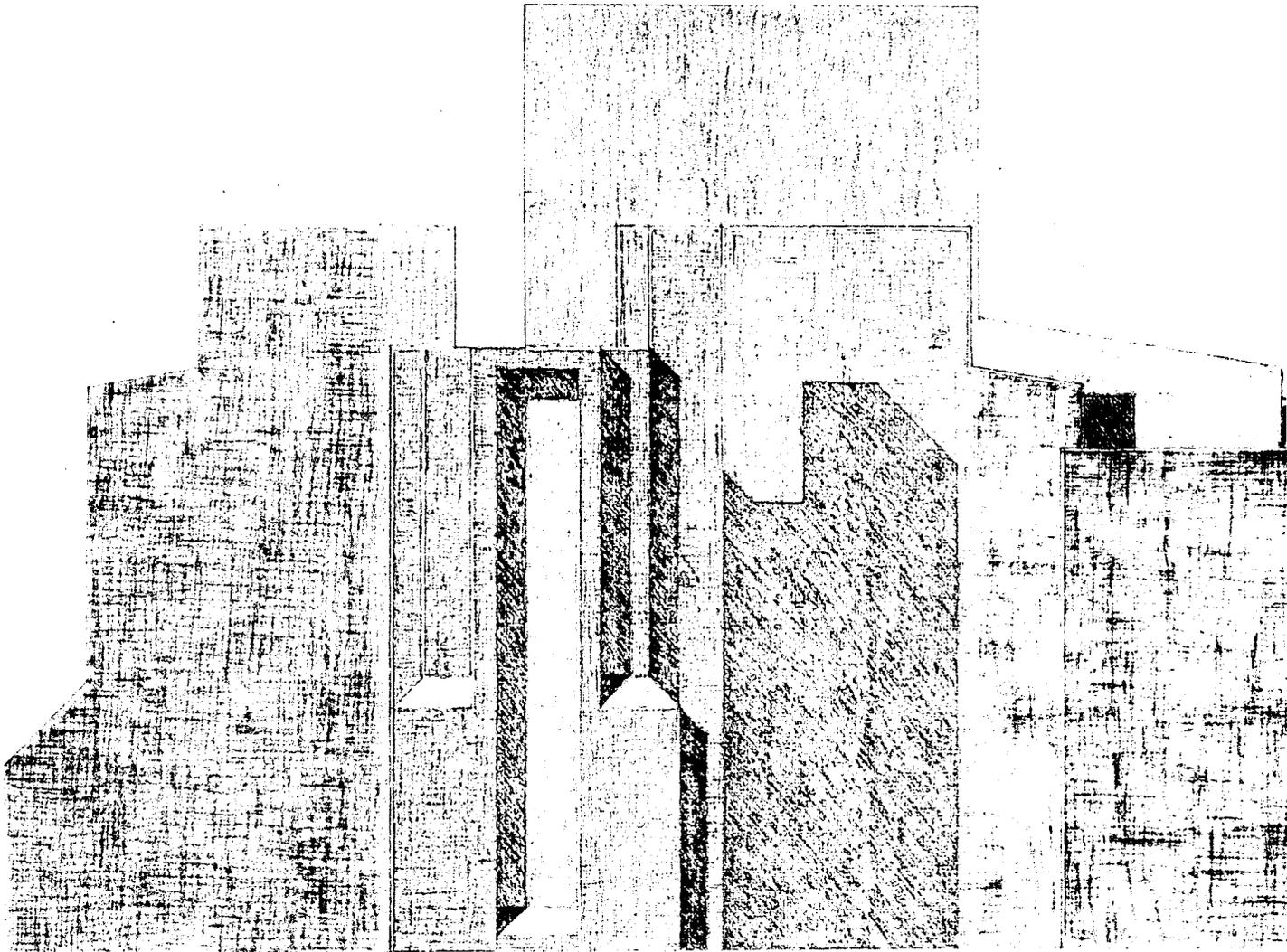
"It is the role of design to adjust to the circumstantial. So the final design does not correspond to the first design, but the form held."

Another building for which Kahn re-

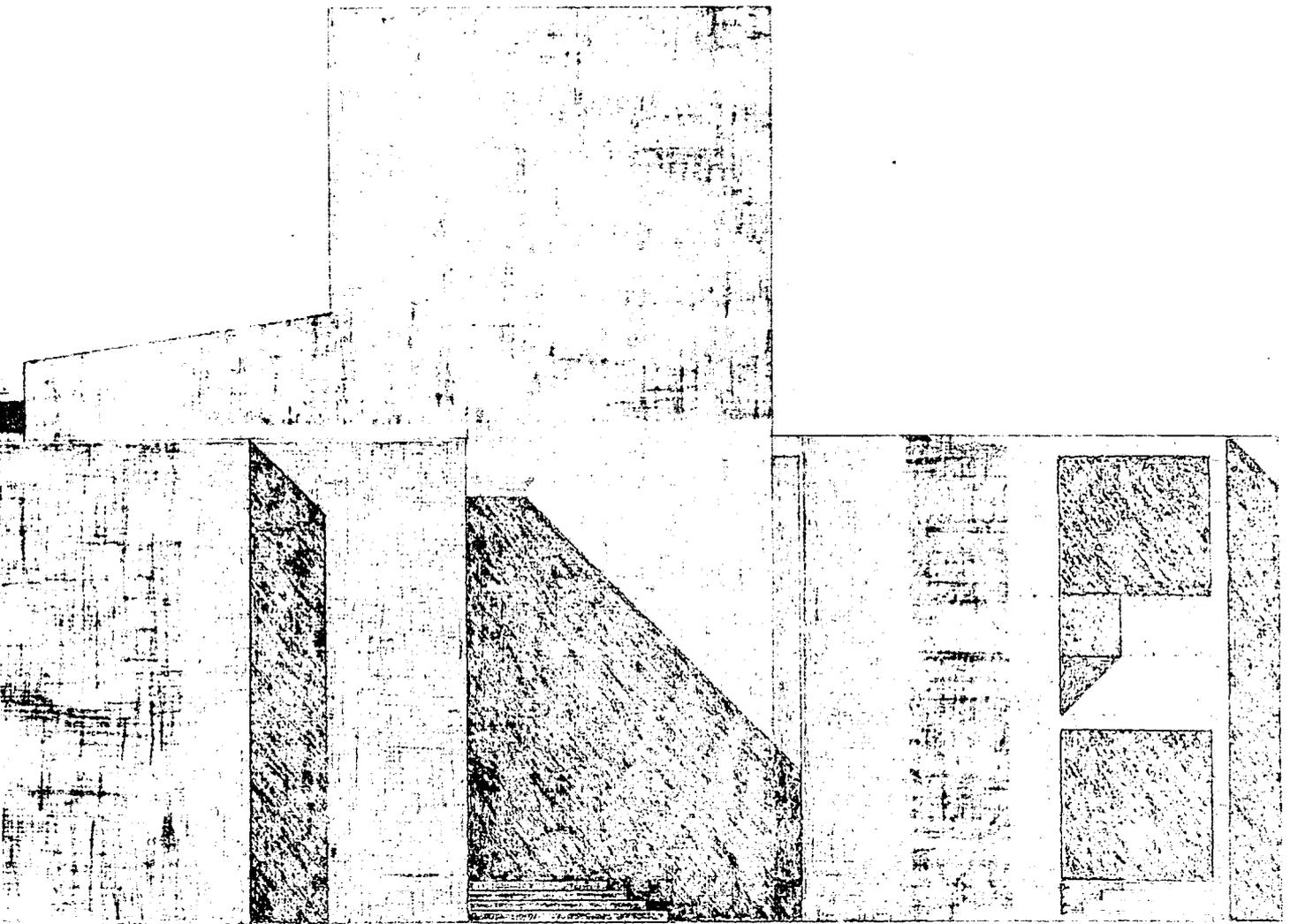


CHURCH BY LOUIS I. KAHN  
 First Unitarian Church,  
 Rochester, New York.  
 Final preliminary plan.  
 1 lobby  
 2 angle nook  
 3 library

4 women's workroom  
 5 committee room  
 6 minister's office  
 7 classroom  
 Second floor has assembly  
 room over library; remaining  
 space consists of classrooms.



*Elevation of First Unitarian Church*

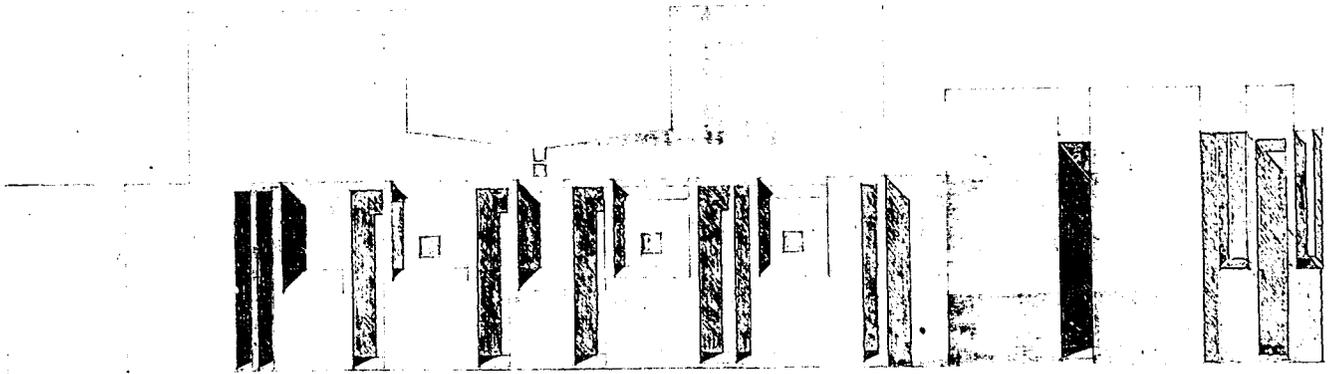
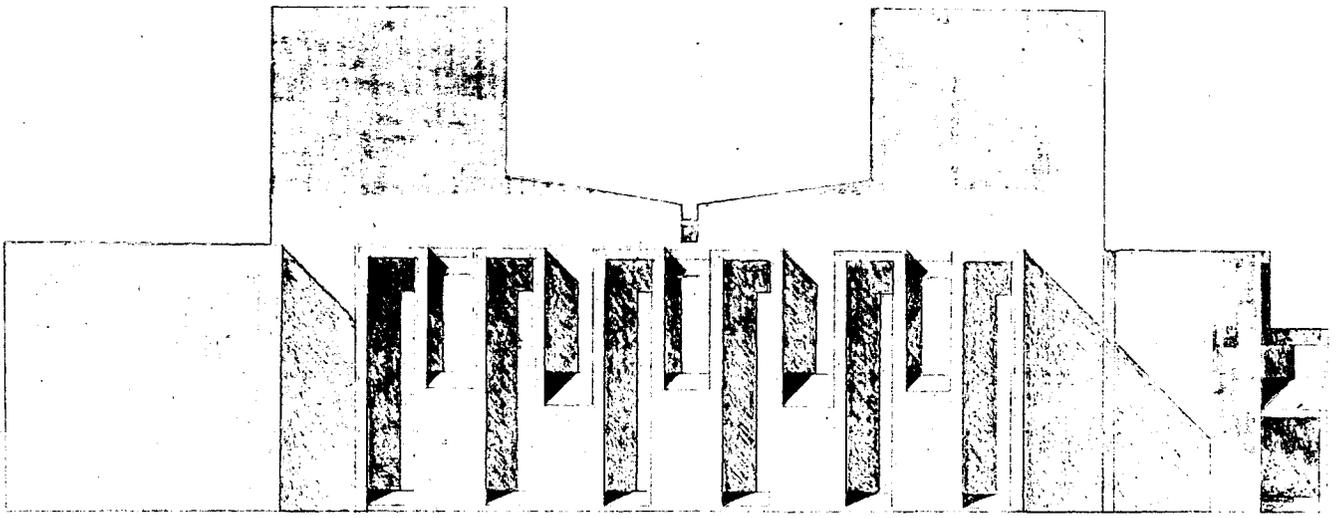


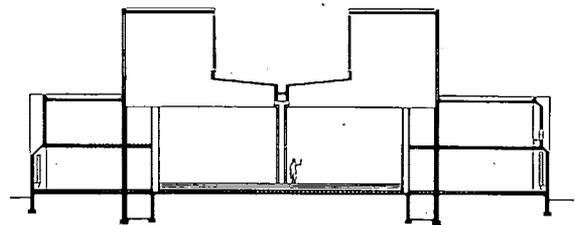
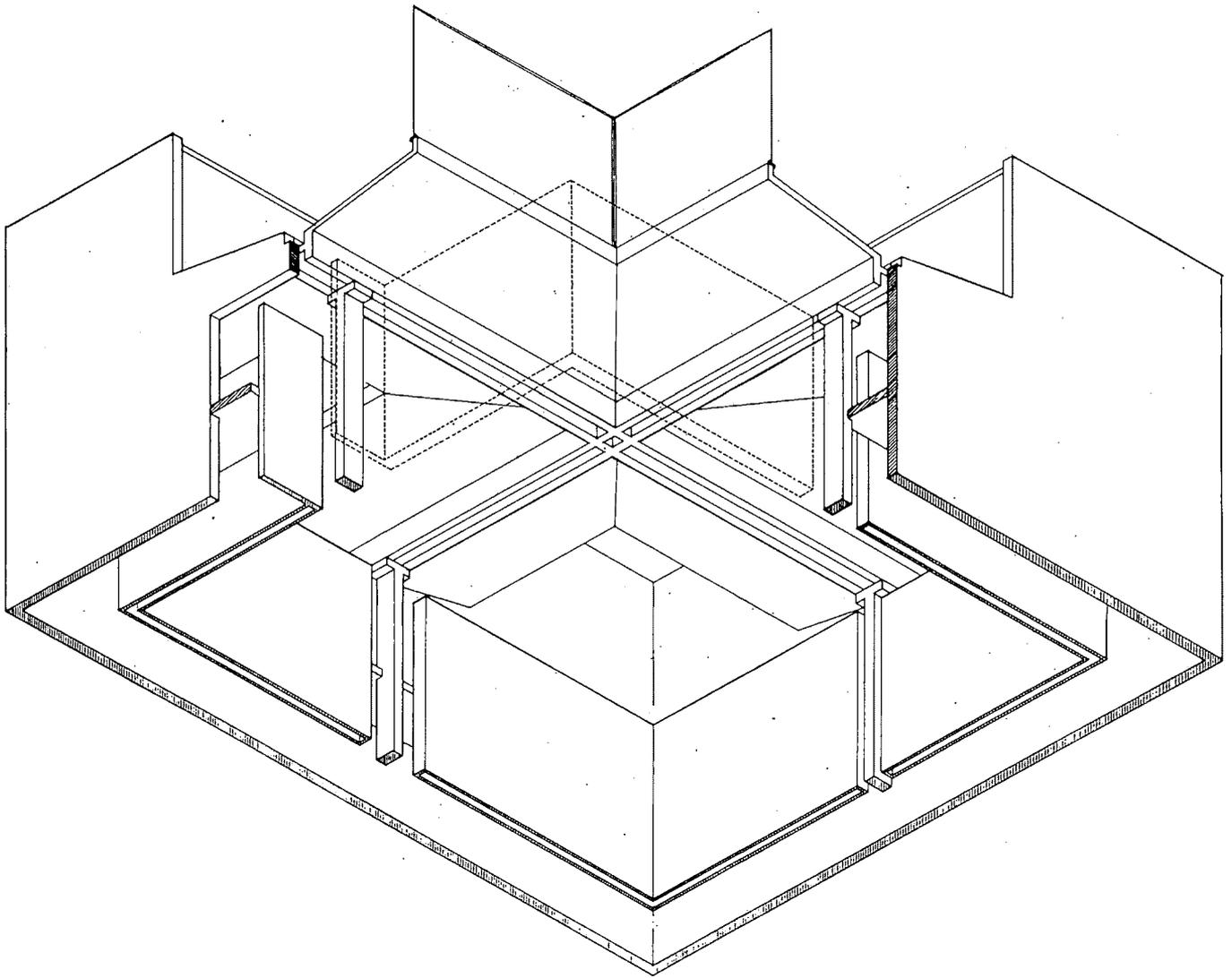
cently completed designs is the U. S. Consulate in Luanda, Angola. In this case, he was confronted with the heat and glare of a tropical climate, a design problem he had not encountered before. He used this as an inspiration in the search for form and arrived at a solution that includes not only a double roof, but also a novel system of glare control with an exciting design potential: "The building will be very close to the equator and the glare is killing. Everybody looks black against the sunlight. Light is a needed thing, but still an enemy. The relentless sun above. The siesta comes over you like thunder. At

twelve o'clock something hits you. I never knew what really hit me. The siesta is a necessary thing there.

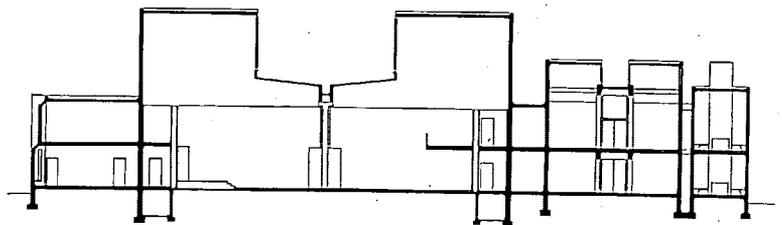
"I came back with multiple impressions of how men solved problems like this, how clever they were. I saw many huts that the natives made. They were all alike and they all worked. There were no architects there. I came back with impressions of how clever was the man who solved the problems of sun, rain, and wind.

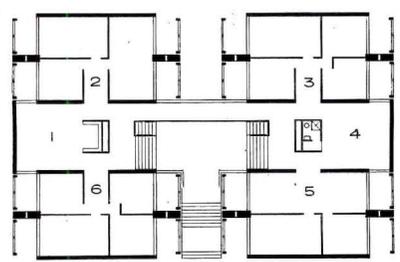
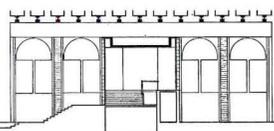
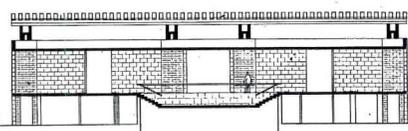
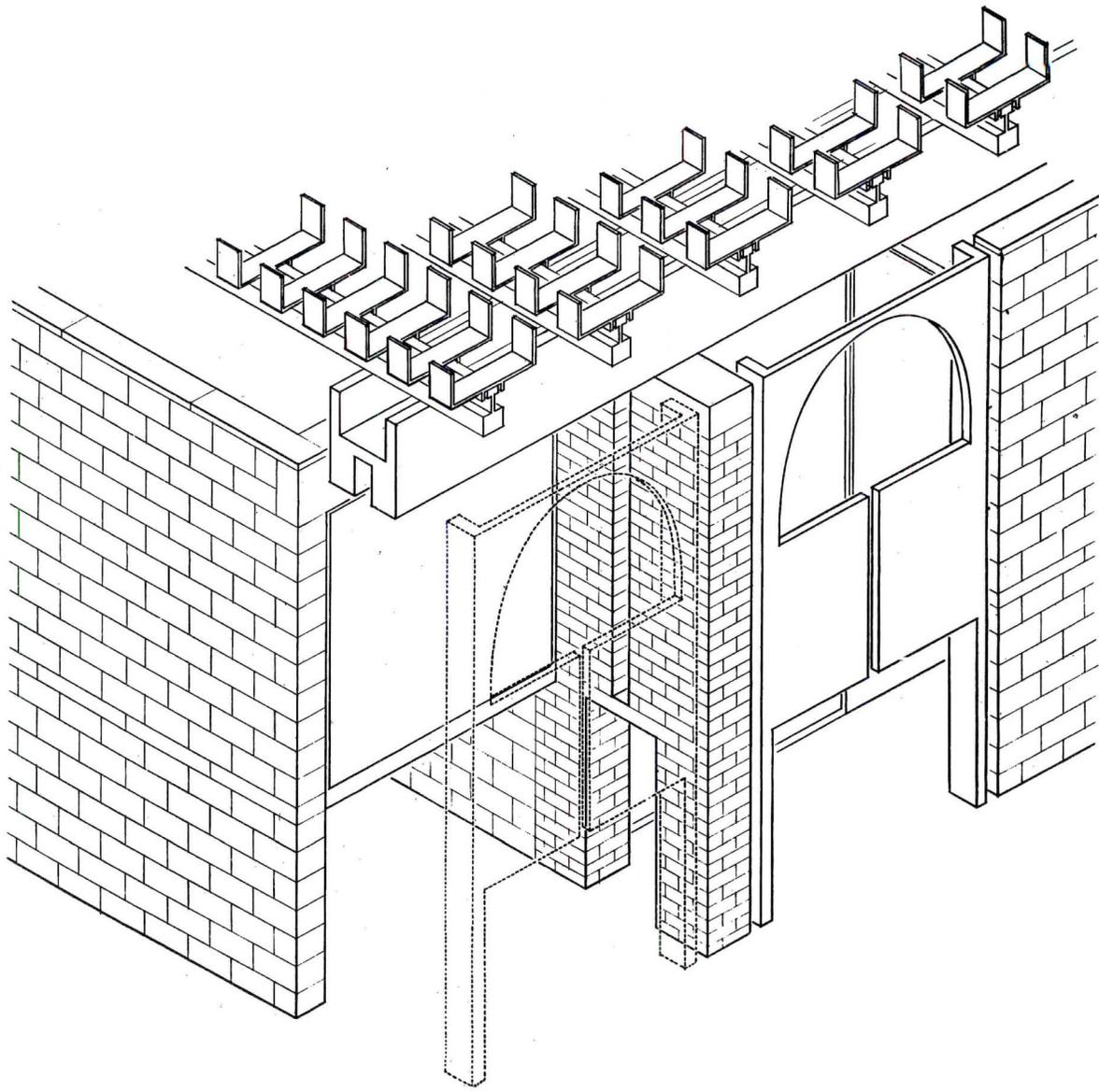
"Once I saw a building which had grilles outside. It was an art school, and the men were making patterns on their paper. The grilles were also making pat-





*Elevations, sections, and isometric drawing of roof structure for Kahn's First Unitarian Church.*





CONSULATE BY LOUIS I. KAHN  
*U.S. Consulate, Luanda, Angola.*  
*Main floor plan, longitudinal*  
*and cross sections, and isometric*  
*drawing. Commercial library 1;*  
*ICA offices 2; political offices 3;*  
*principal officer 4; economic*  
*offices 5; administration offices 6.*

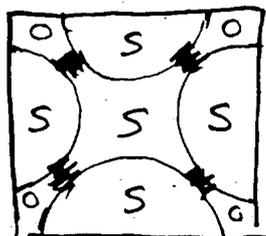
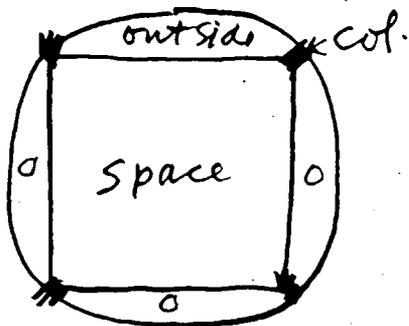
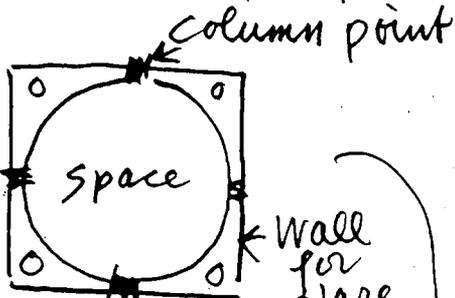
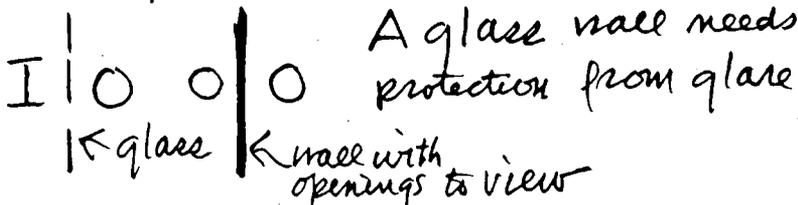
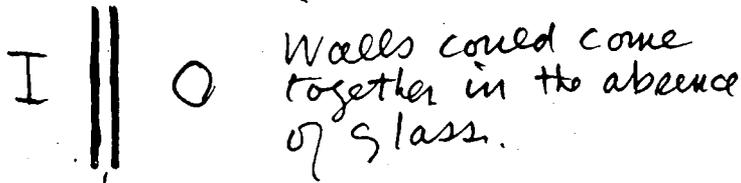
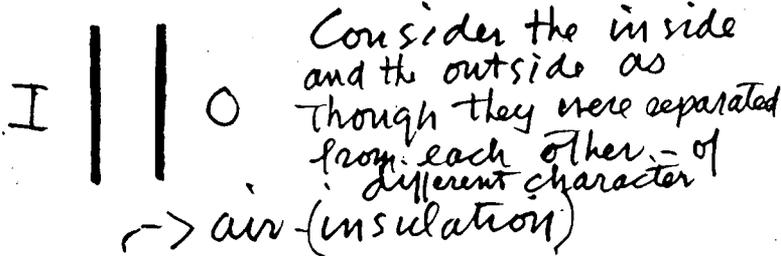
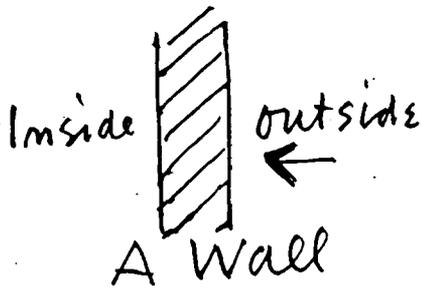
terns on their paper. So this was not the solution. I came to the realization that the solution was in a partial solution—to suggest psychologically a solution. I realized there should be a wall in front of every window. I came to the realization that every window should face a wall. This wall should have a bold opening to the sky and an opening for the view. Thus the glare would be modified by the lighted wall and the view not shut off. In this way, the contrasts made by separated patterns, which grilles close to the window make, is avoided.

“This wall, receiving the light of day, with its sort of ruin of openings, should be at sufficient distance from the inner wall so that it could never impose its shadows on the interior, because it does not belong to the interior. Another realization came from the effectiveness of the

use of breeze for insulation, from realization that there should be two roofs: a loose sun roof independently supported and separated from the rain roof. The designs of the window and its wall, of the rain roof and its sun roof, would tell the man on the street the way of life in Angola.”

Kahn’s biggest, most important, and most exciting project now on his boards is the Institute for Biology in Torrey Pines, California. He describes the beginning of the project in this way:

“Dr. Jonas Salk, the Director of the Institute, told me what areas he required. That was the beginning of the program of areas. But there was something else he said which became the key to the entire space environment. He said that medical research does not belong entirely to medicine or the physical sciences. It belongs to Population. He meant that anyone with a



Architectural Solutions of spaces facing the problems of glare

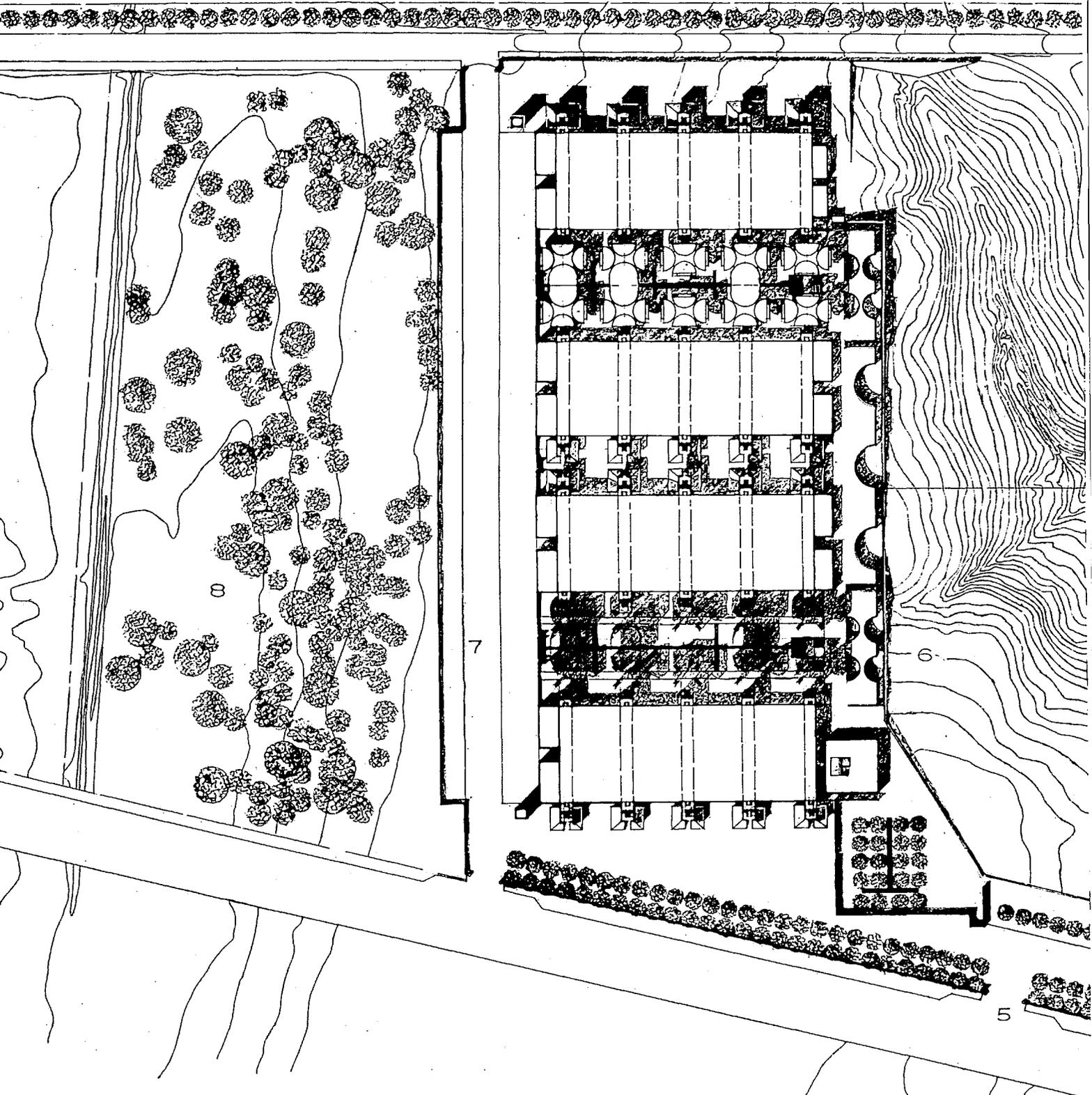
This geometry offers column positions.

mind—in humanities, in science, or in art—could contribute to the mental environment of research leading to discoveries in science.

“Without the restriction of a dictatorial program it became a rewarding experience to participate in the projection of an evolving program of spaces without precedence. This is only possible because the director is a man of unique understanding of environment as an inspiring thing, and he could sense the existence will and its realization in form which the spaces I finally provided had.

“So I did not follow the dictates of the scientists, who said that they are so dedicated to what they are doing that when lunchtime comes all they do is clear away the test tubes from the benches and eat their lunch on these benches. I asked them: was it not a strain with all these noises? And they answered: the noises of refrigerators are terrible; the noises of centrifuges are terrible; the trickling of the water is terrible. Everything was terrible including the noise of the air-conditioning system. So I would not listen to them as to what should be done. And I realized that there should be a clean air and stainless steel area, and a rug and oak table area. From this realization Form became. I separated the studies from the laboratory and placed them over gardens. The garden became outdoor spaces where one can talk. Now one need not spend all the time in laboratories. When one knows what to do, there is only little time one needs for doing it. It is only when one does not know what to do that it takes so much time. And to know what to do is the secret of it all.”

The institute will have three major elements: the research and study group mentioned above; the “Village,” which will house married resident scientists; and the “Meeting House,” which will consist of bachelors’ quarters, accommodations for visiting scientists and other thinkers who could contribute to medical research, and a palatial complex of rooms and areas where everybody can meet, talk, and exchange ideas. In the study part of the research complex and in the Meeting House, Kahn developed further the “theory of walls” that began with the consulate building. The institute is in southern California, near San Diego, where glare is also a problem. He felt that some protection, similar to the one he used for the consulate, should be employed. Thinking further about this problem, he decided that a “wall” can be considered as two layers: the outside protective layer that faces the exterior and the inside layer that faces the interior. So Kahn decided to consider the wall as two separate skins, and to “take the interior out.” Thus he achieved “a space between walls.” This space could be of various widths; it could be wide enough to be used as a semi-outdoor space, or narrowed down to a thin



strip of air used for insulation. The play of these spaces is used extensively in the design of the institute.

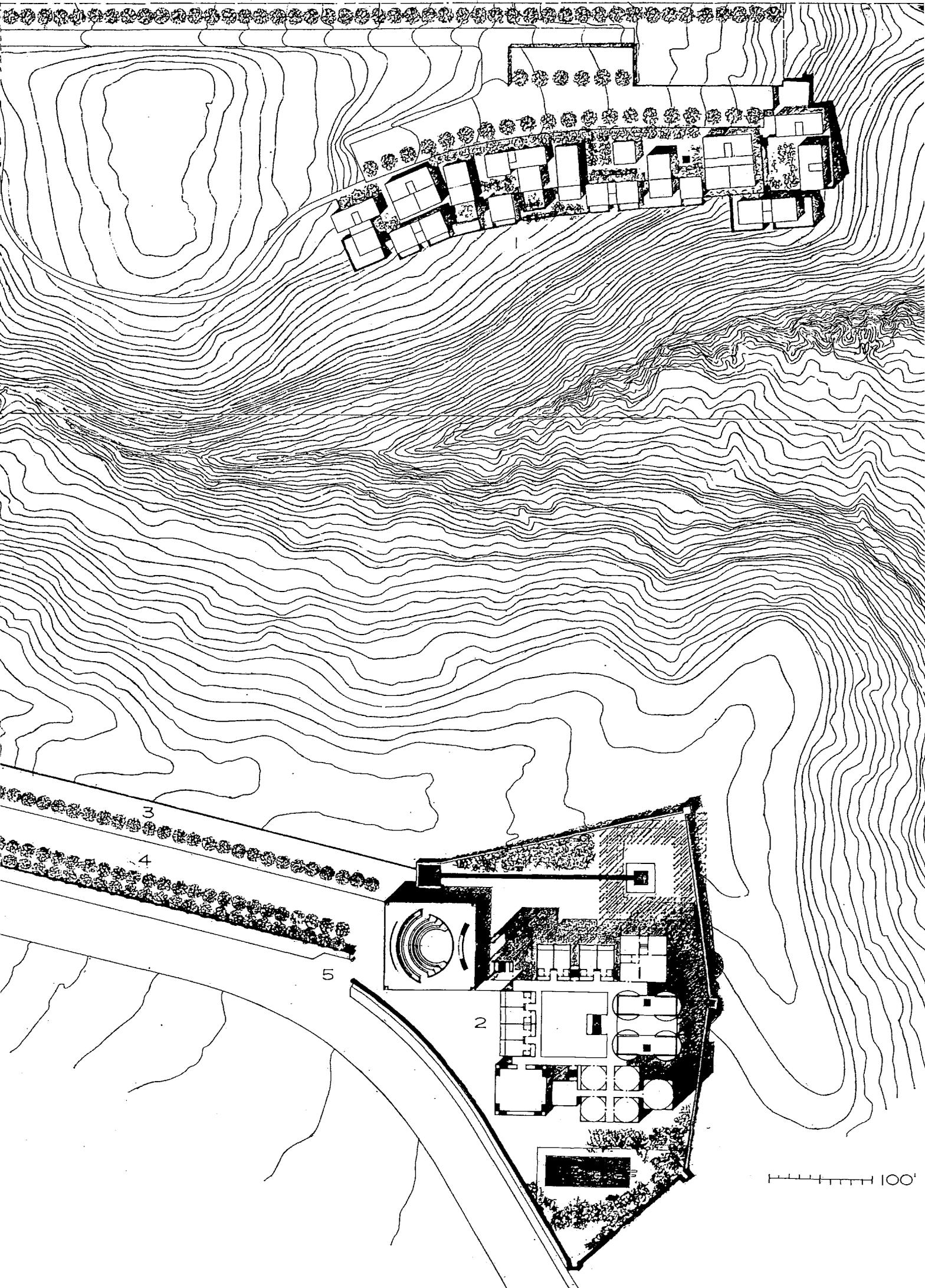
A further development of this idea led to the use of "contact points" as natural "column points" that form the backbone of the construction system.

The powerful form expression of the institute and the excitement of all its spaces can already be seen from the preliminary studies shown here. It promises to be a new acropolis of science and of architecture.

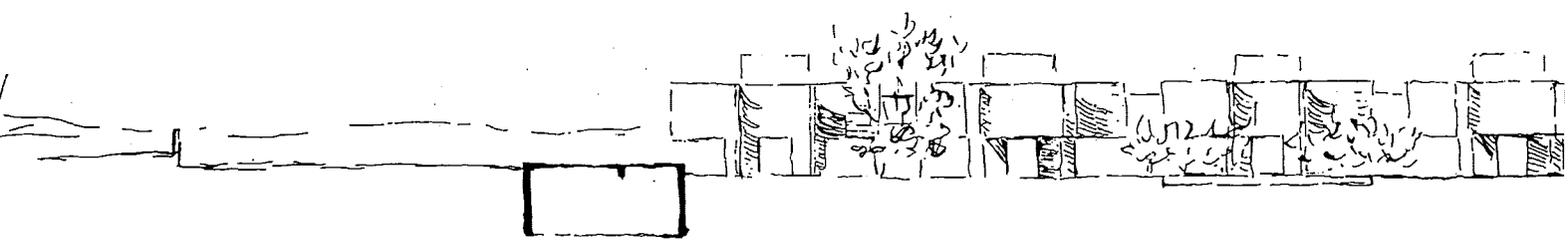
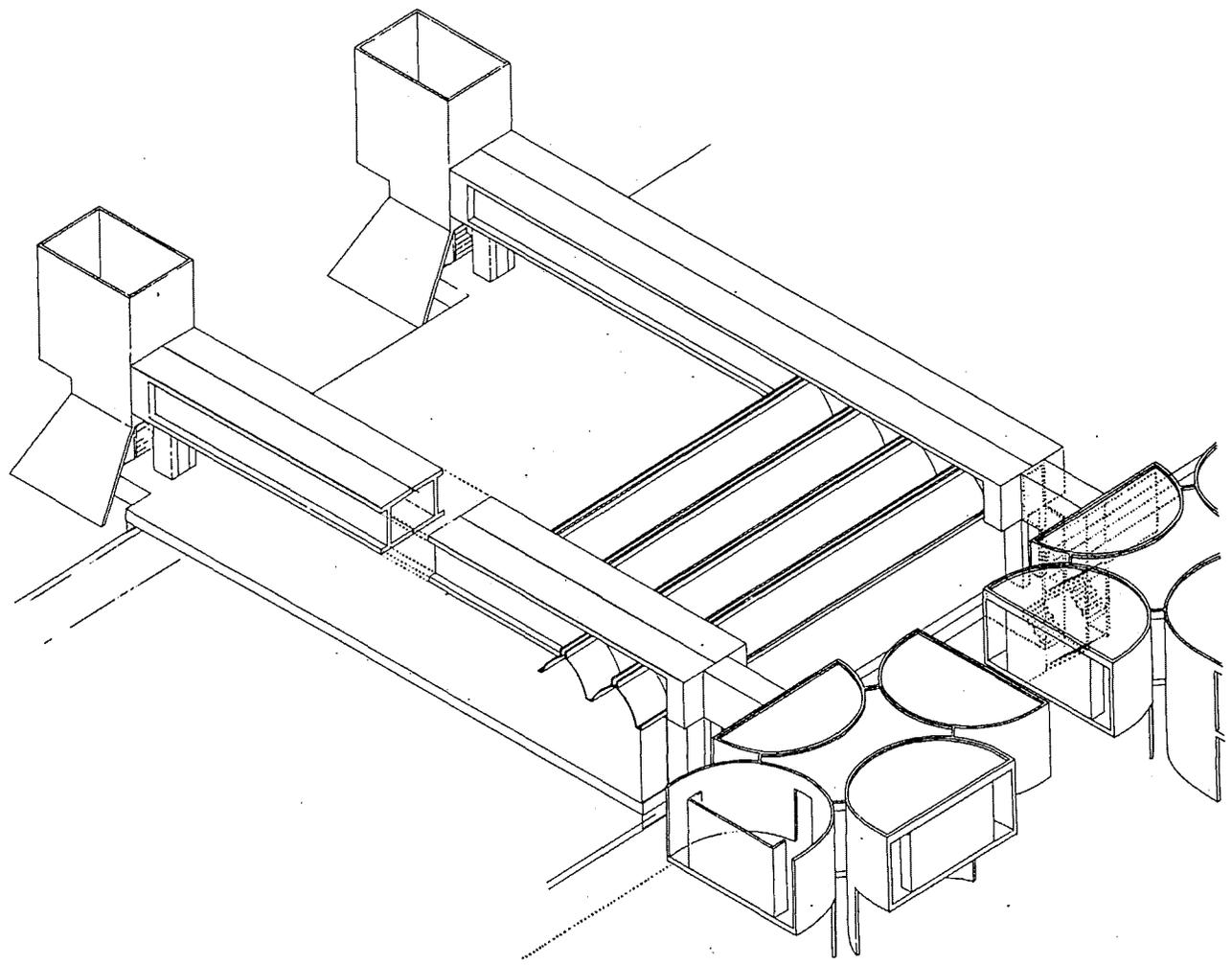
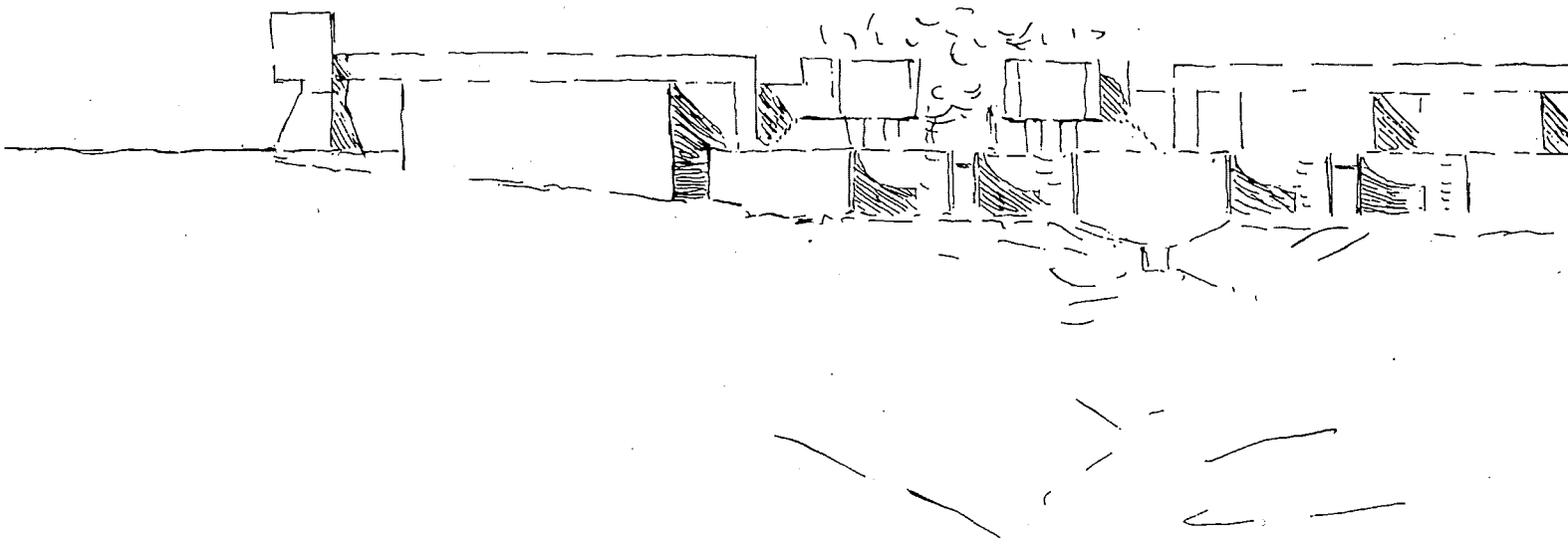
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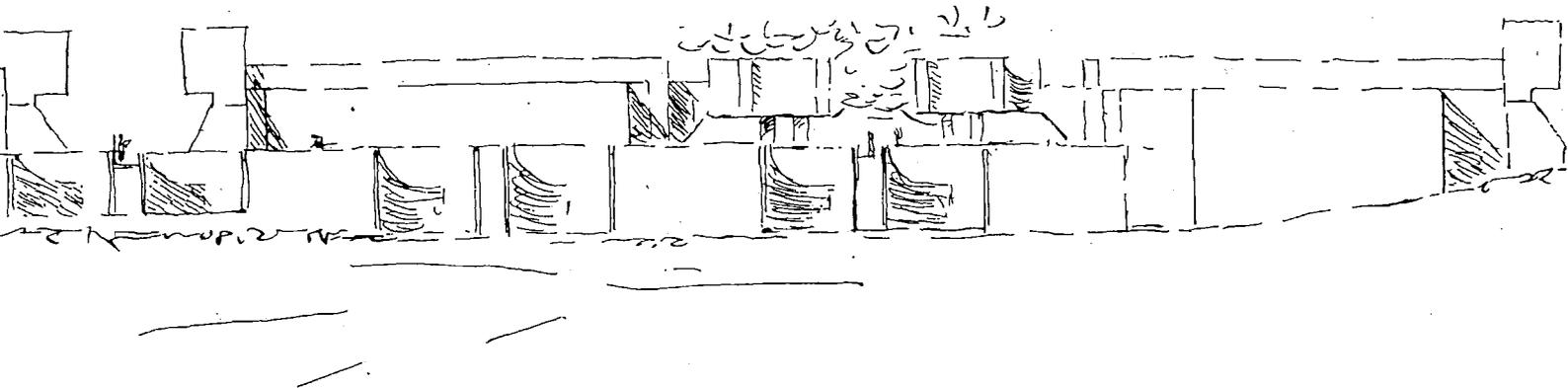
RESEARCH CENTER BY LOUIS I. KAHN  
*The Institute for Biology,  
 Torrey Pines, California.*

*Plot plan: the site is between La Jolla Scenic Drive (to the left) and the Pacific Ocean (to the right). The "Village" 1; the "Meeting House" 2; walk 3; parking 4; entrance 5; research and study 6; personnel parking 7; future expansion 8.*



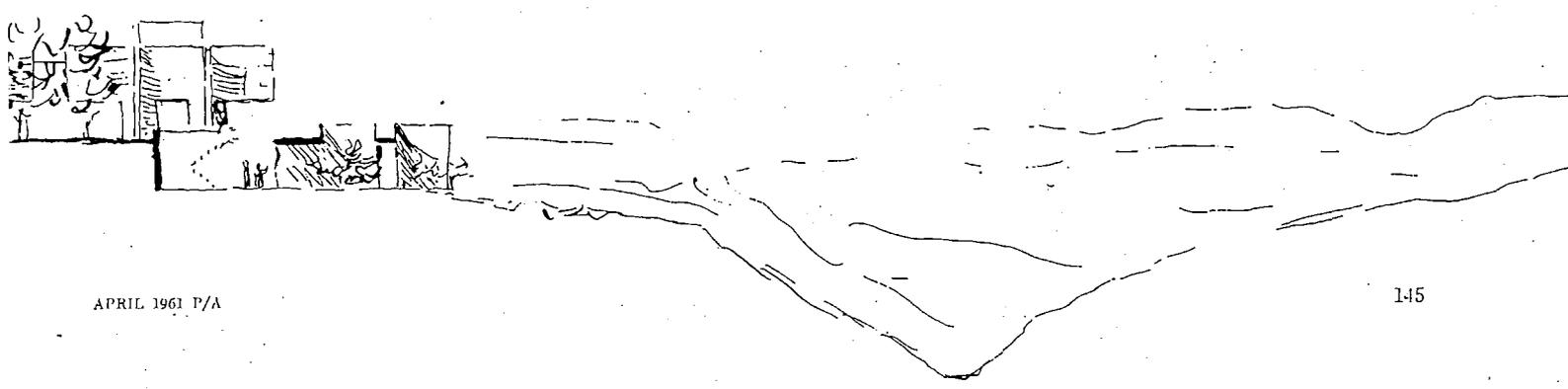
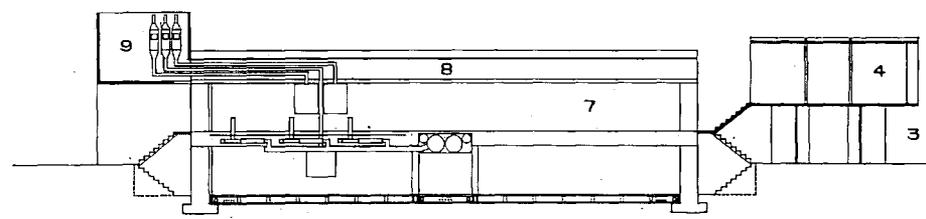
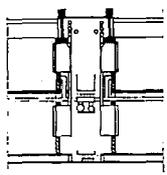
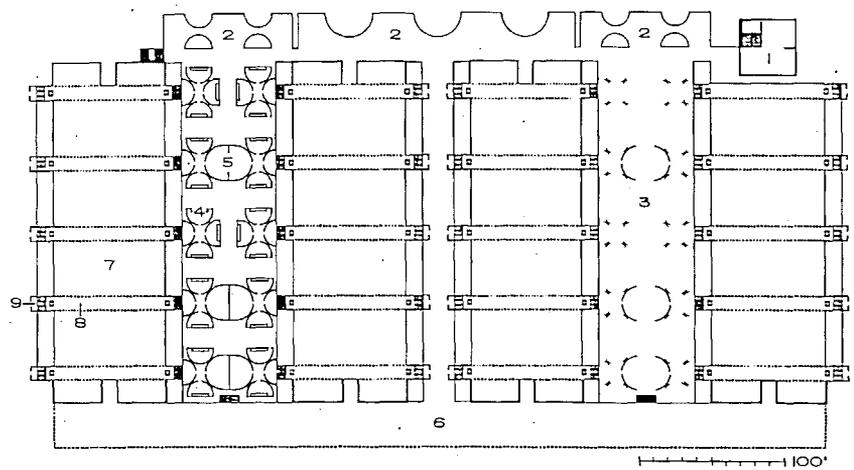
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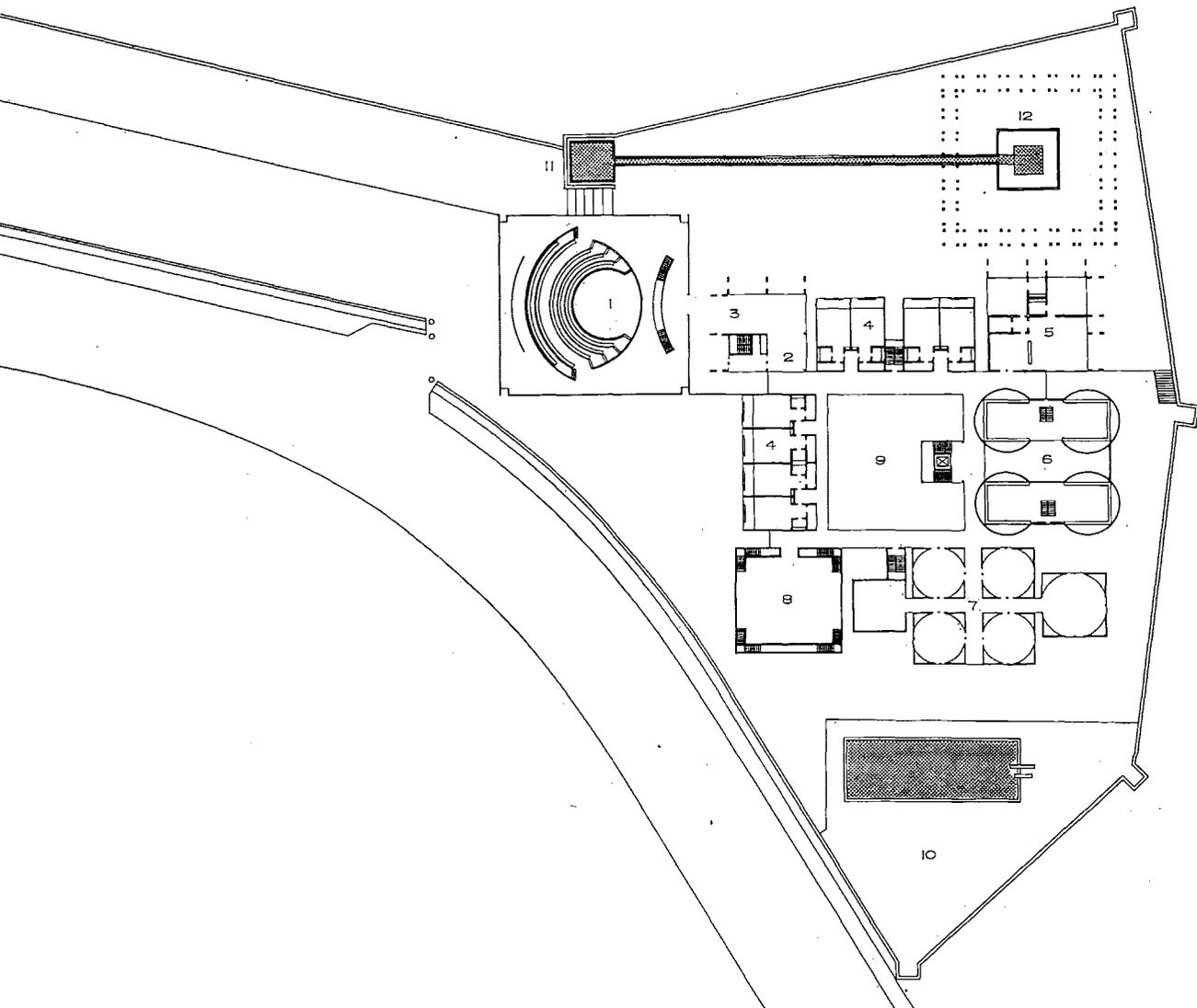
*The Institute for Biology: plan, section, isometric drawing, and sketches of the research and study area.*

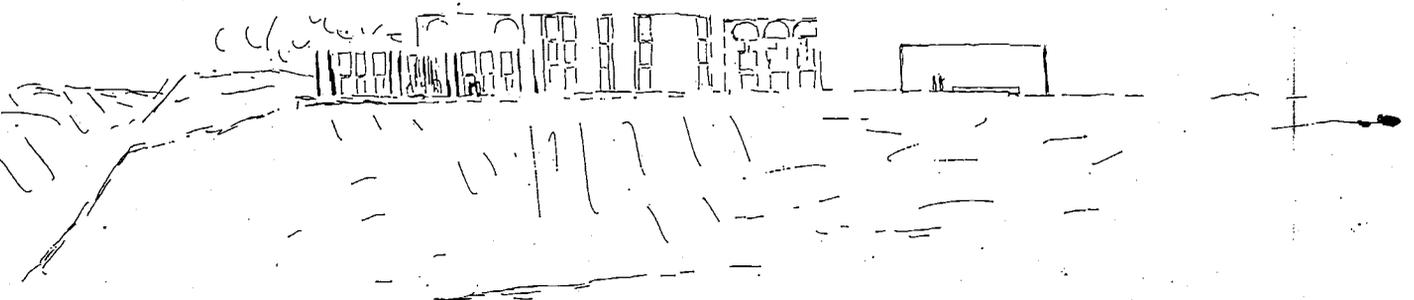
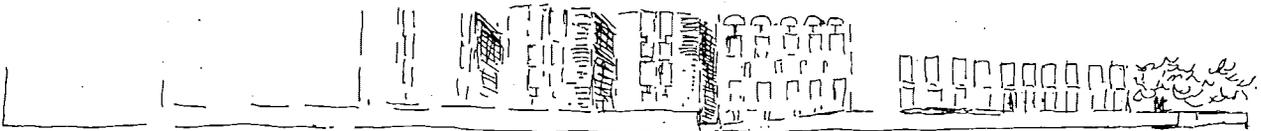
*Reception building 1; director's office, conference and administration areas, and technical library 2; garden at lower level 3; studies 4 and conference rooms 5 above the garden; animal quarters, and mechanical and service areas at lower level 6; laboratory space 7; box-girder "corridors" for air and gases 8; exhaust towers 9.*

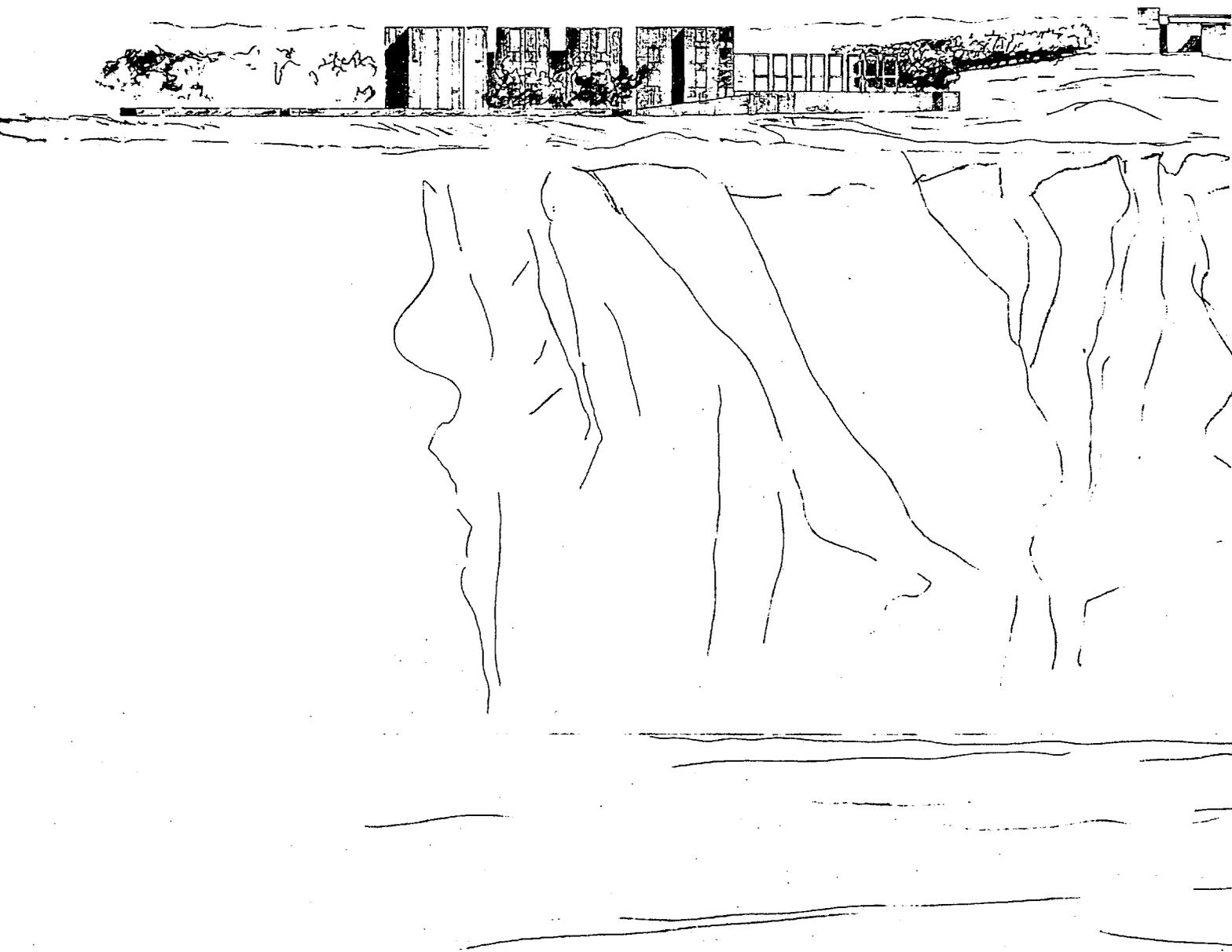


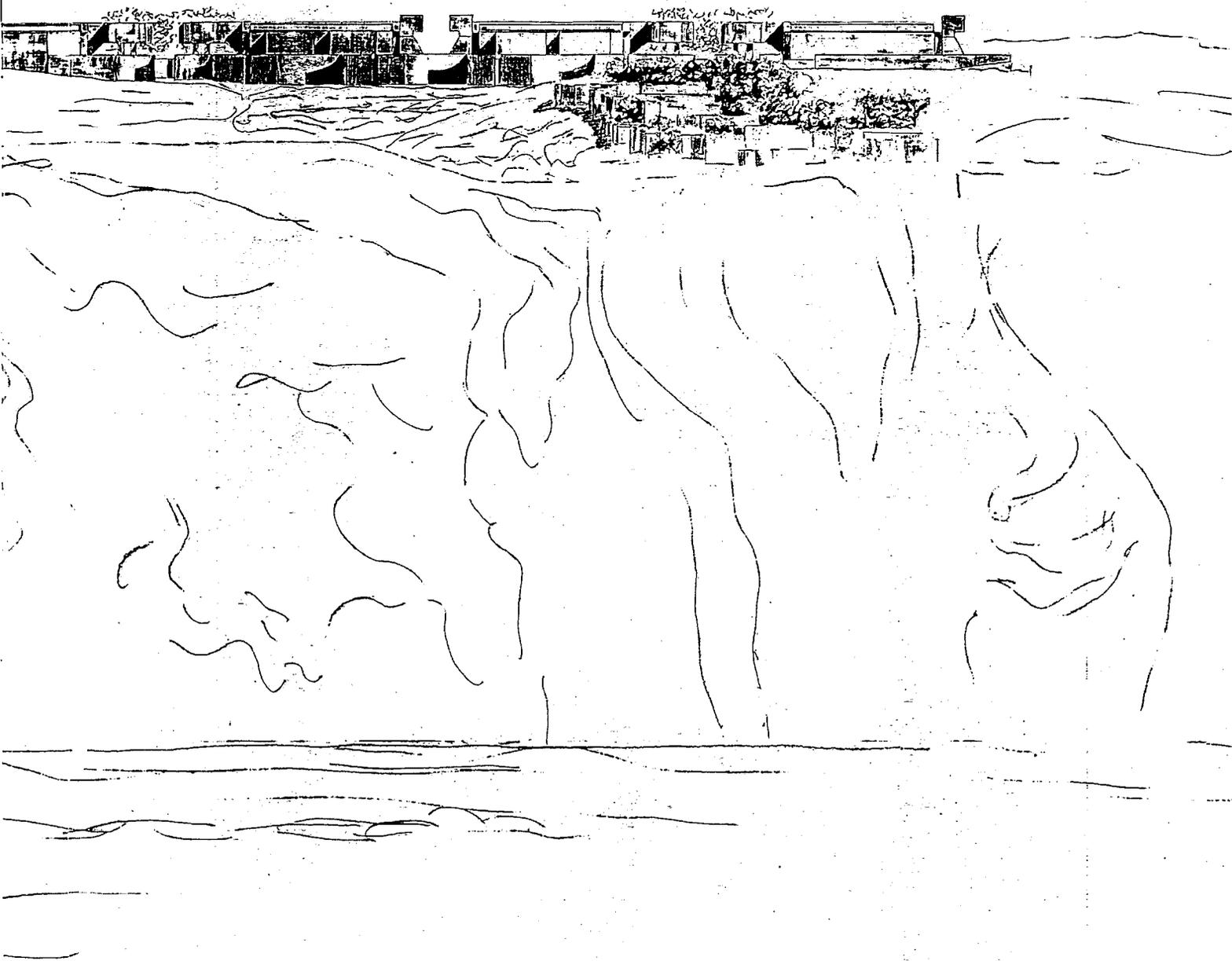
*The Institute for Biology: plan and sketches of the "Meeting House."*

- 1 auditorium
- 2 main entrance to "Meeting House"
- 3 duplex suite above
- 4 bachelors' quarters
- 5 one level suites
- 6 library
- 7 dining (seminar rooms above)
- 8 gymnasium
- 9 covered hall
- 10 garden
- 11 noisy fountain
- 12 quiet fountain (a wall, within a wall, within a wall)

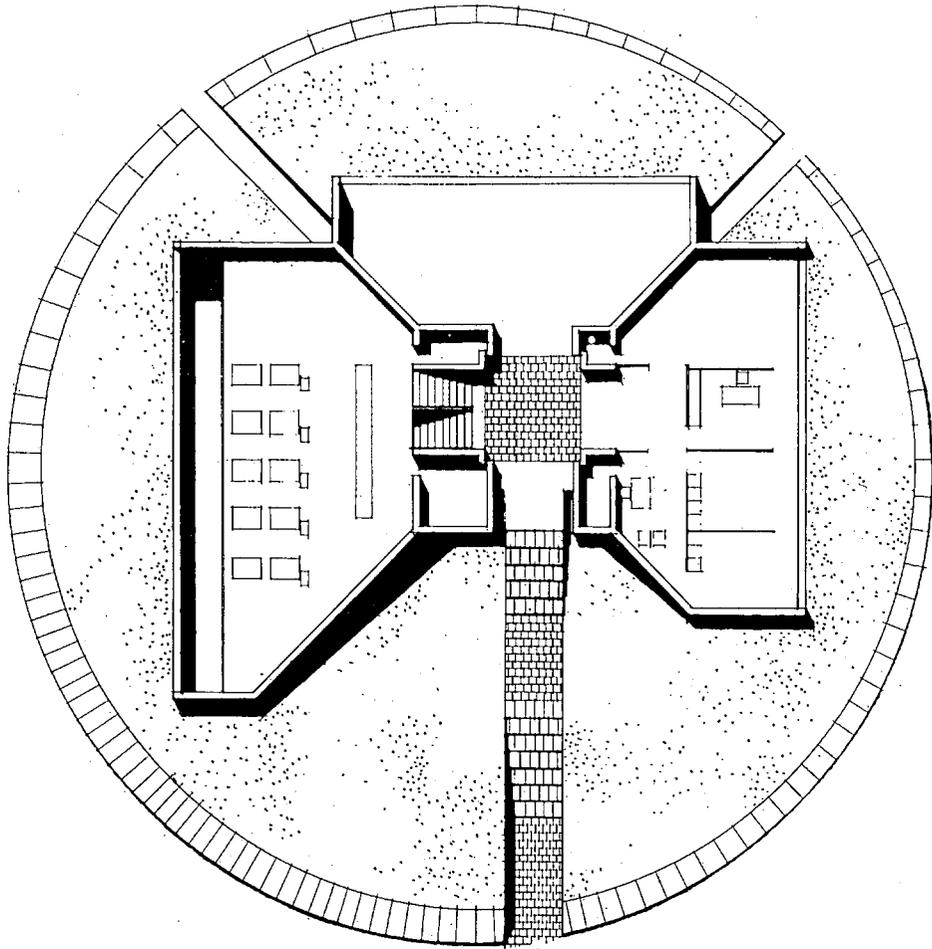








*Over-all view of Kahn's Institute for Biology*



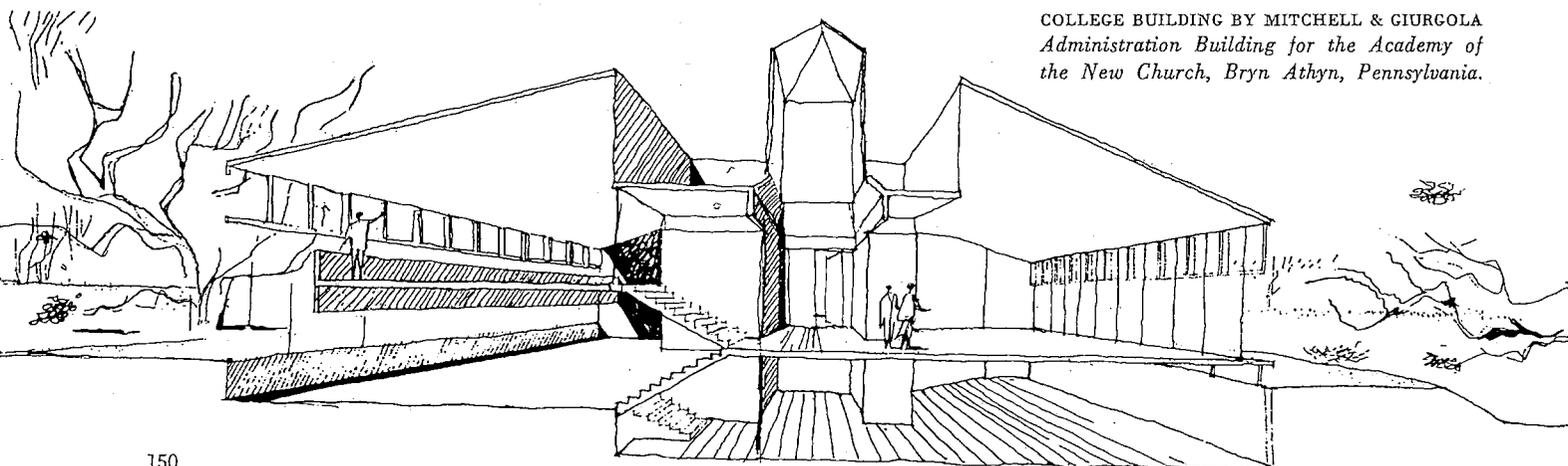
It is significant that those who understand Kahn best have a similar approach to life and to their work, but neither their thinking nor their work could be called purely imitative of Kahn.

Romaldo Giurgola, an Italian architect now living and practicing in Philadelphia, explained that his Administration Building for the New Church started as a completely symmetrical solution, but that later

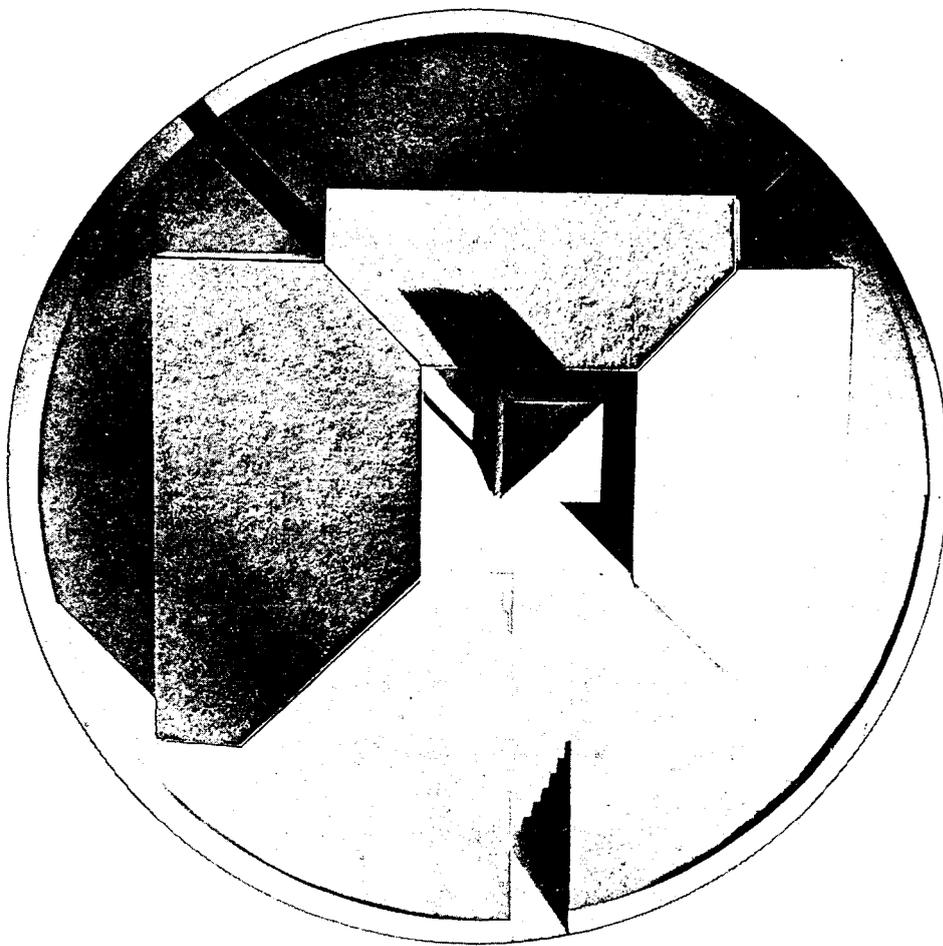
the differing needs of the various parts of the building forced a departure from symmetry. This accounts for the larger size of the left wing, different sizes and shapes of the four central elements, and other variations. The basic concept, though, was retained, and the original idea was preserved. As Kahn would say: "The form held." The other two projects shown briefly here (they will be presented in greater

detail in a future issue of P/A) were developed along the same principle. Giurgola's thoughts about his work are well summarized in this statement:

"Five years ago, at one of the faculty meetings, Kahn showed us his design for a community center and said that a school could start from his experience. It was a subjective experience, immediately projected in the dimension of a universal



COLLEGE BUILDING BY MITCHELL & GIURGOLA  
*Administration Building for the Academy of  
the New Church, Bryn Athyn, Pennsylvania.*



system in the most natural way, with no separation between the theoretic comment, the creative one, and the pedagogic. To me it was one such as I had never seen before—bound by the reality of a place, its work, its technologies.

"Somebody said that all a man ever thought would go into a half sheet of paper: the rest is application and elaboration. The application and the elaboration

for centuries of the same few thoughtful ideas—church, palace, street, square.

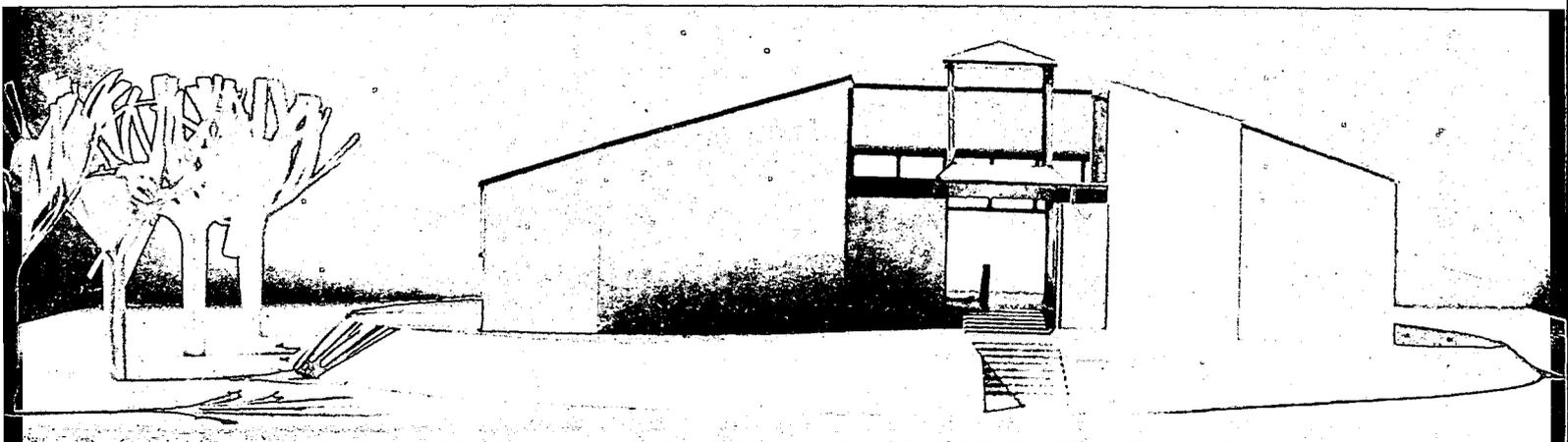
"In our case, the application of an idea is necessary and possible because of the revealing and comprehensive nature of it. Not because of sympathy, but because of its definition of a tangible reality. Not a sketch, but all the things we have to work with. Real culture, as Henry James said a long time ago, lives with sympathies and

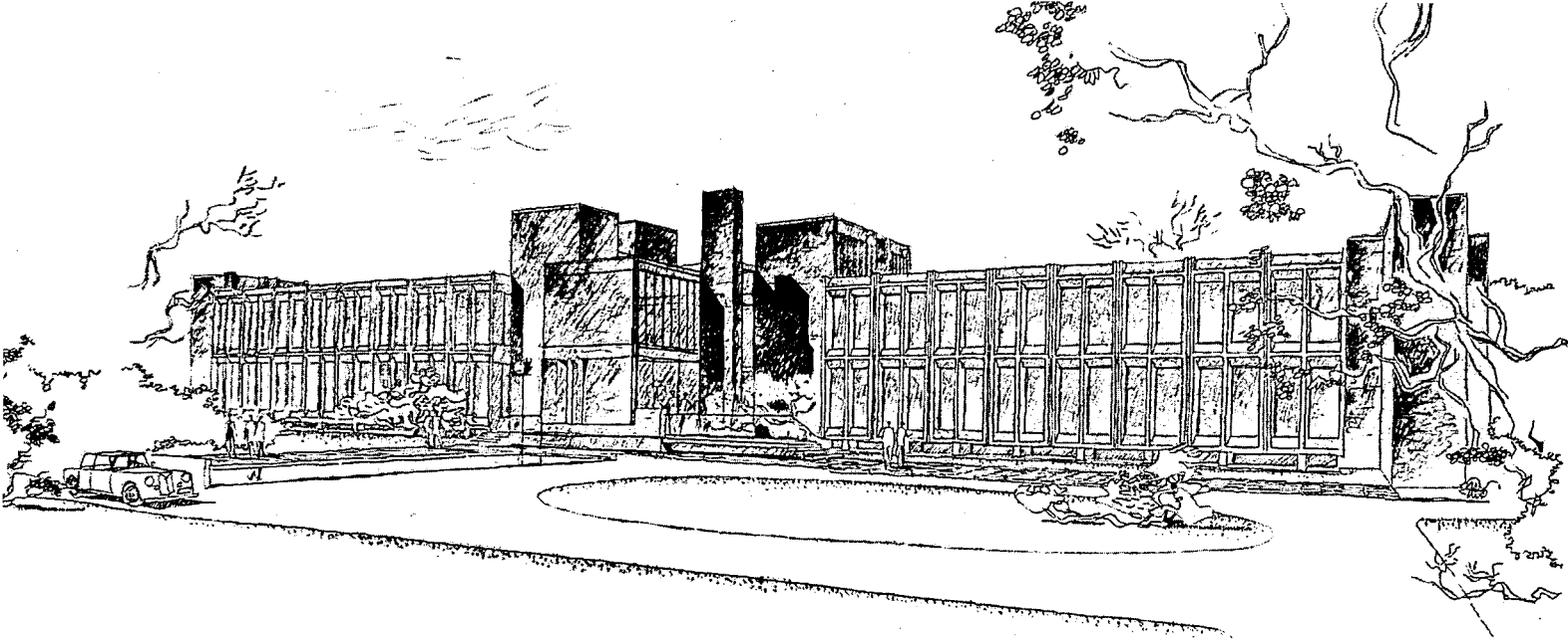
admiration, not by dislikes and disdains.

"In our work, we need facts that illuminate like a flash of lightning; not only intuitive but truncated ideas; our work also should not be the mere negative result of a laborious intellectual process of elimination.

"In architecture, universality is a conscious attitude of the mind and a method of realization. It is not the adoption of a

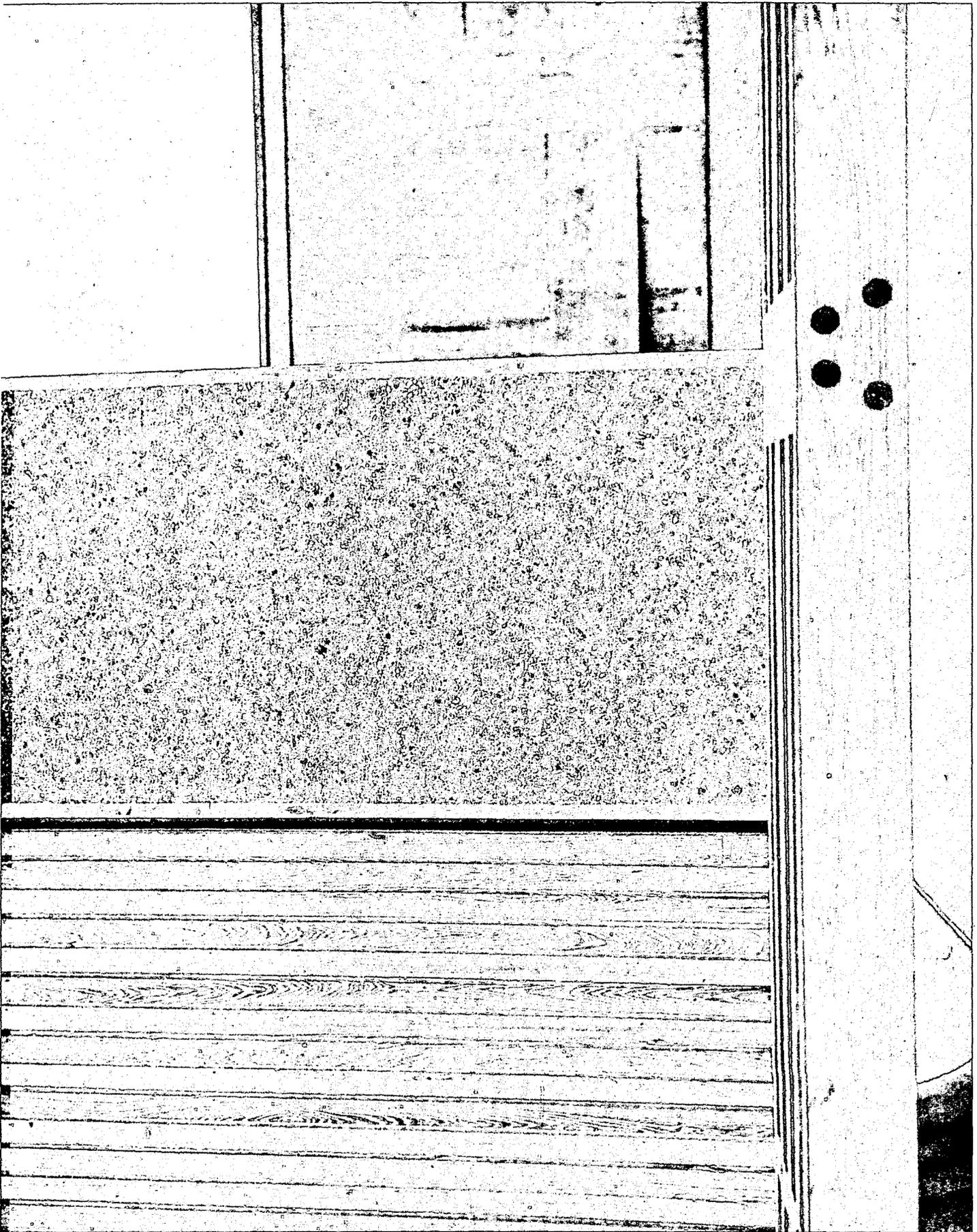
Photos: Romaldo Giurgola





OFFICE BUILDING BY MITCHELL & GIURGOLA  
*American Center for Insurance Education,  
Bryn Mawr, Pennsylvania.*

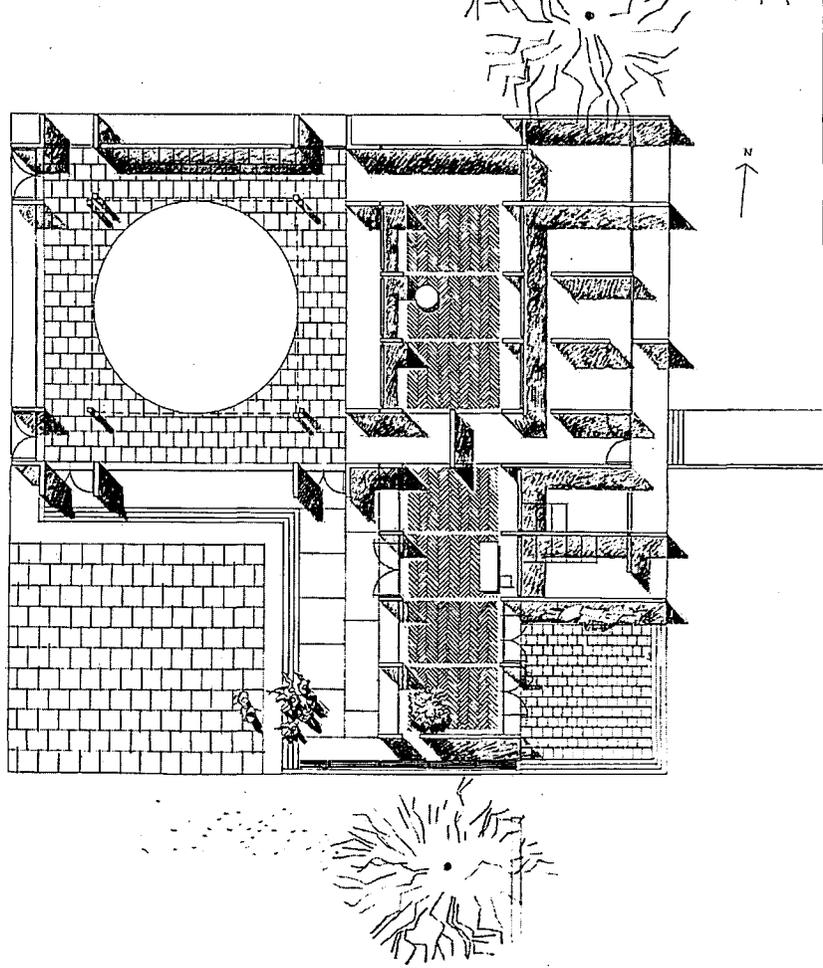




*Detail of the Wright Brothers Memorial*

Photos: Romaldo Giurgola

MUSEUM BY MITCHELL & GIURCOLA  
*Wright Brothers National Memorial,*  
*Kill Devil Hills, North Carolina.*



formal vocabulary suggested by the mechanics of visual considerations. Thus it brings not the illusion of order but infinite variety suggesting the unsuppressed desire of the individual to express the real nature of architectural discipline.

"A thought process supposes an experience in comparison: hence judgment and the participation of time in the form of

the present and the past. Thomas Jefferson said: 'The earth belongs to the living' Kahn says: 'The future is today.'"

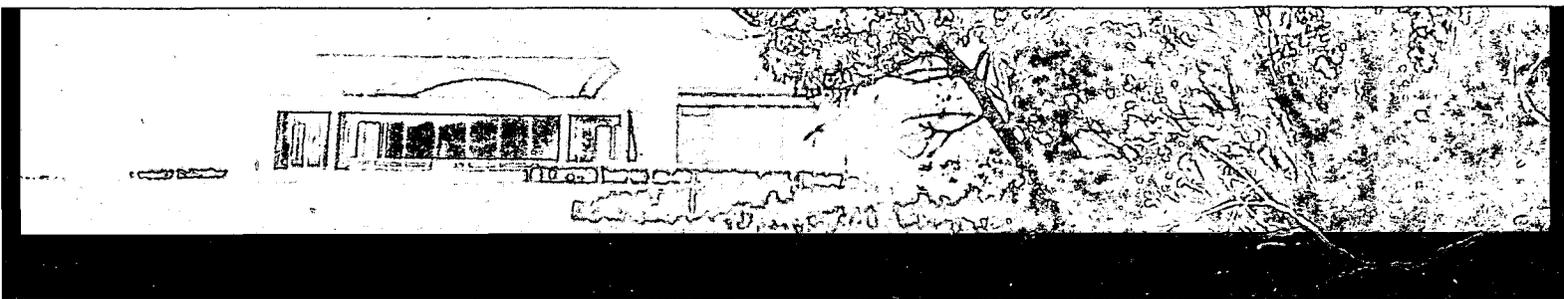
Another young Philadelphia architect, Robert Venturi, thinks in terms of the conflicting "wants," and he attempts to utilize these conflicts for a richer architectural interest and expression:

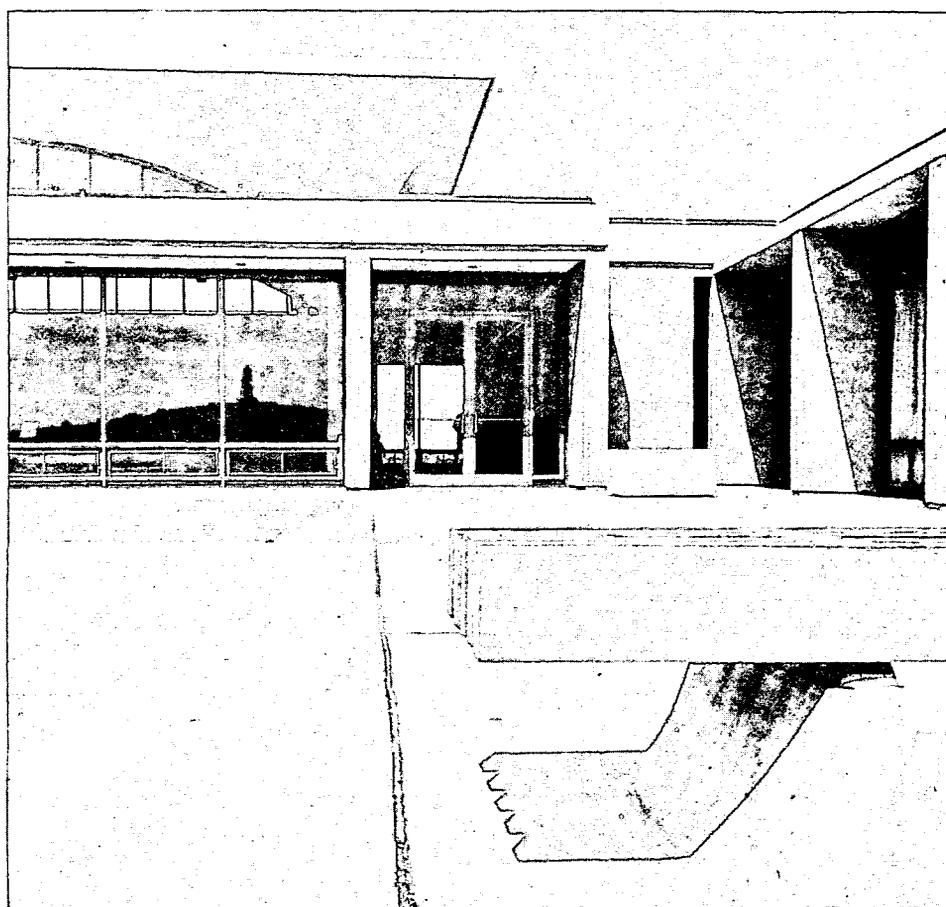
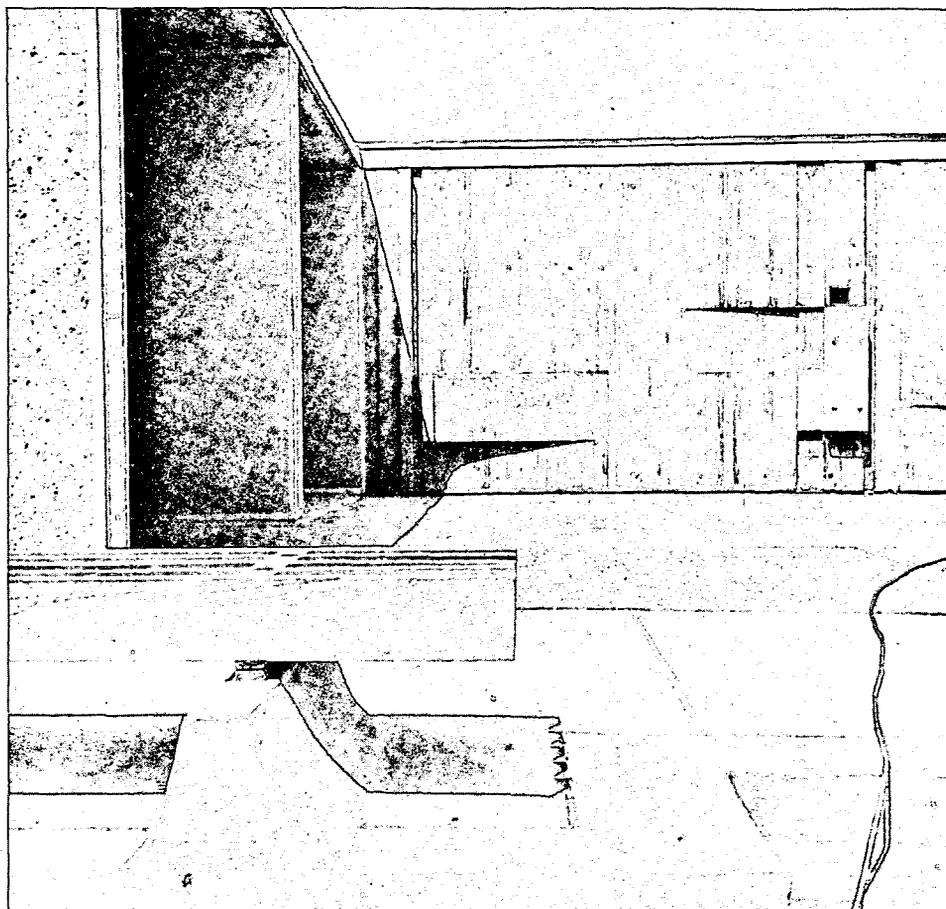
"I tend to design from the outside in

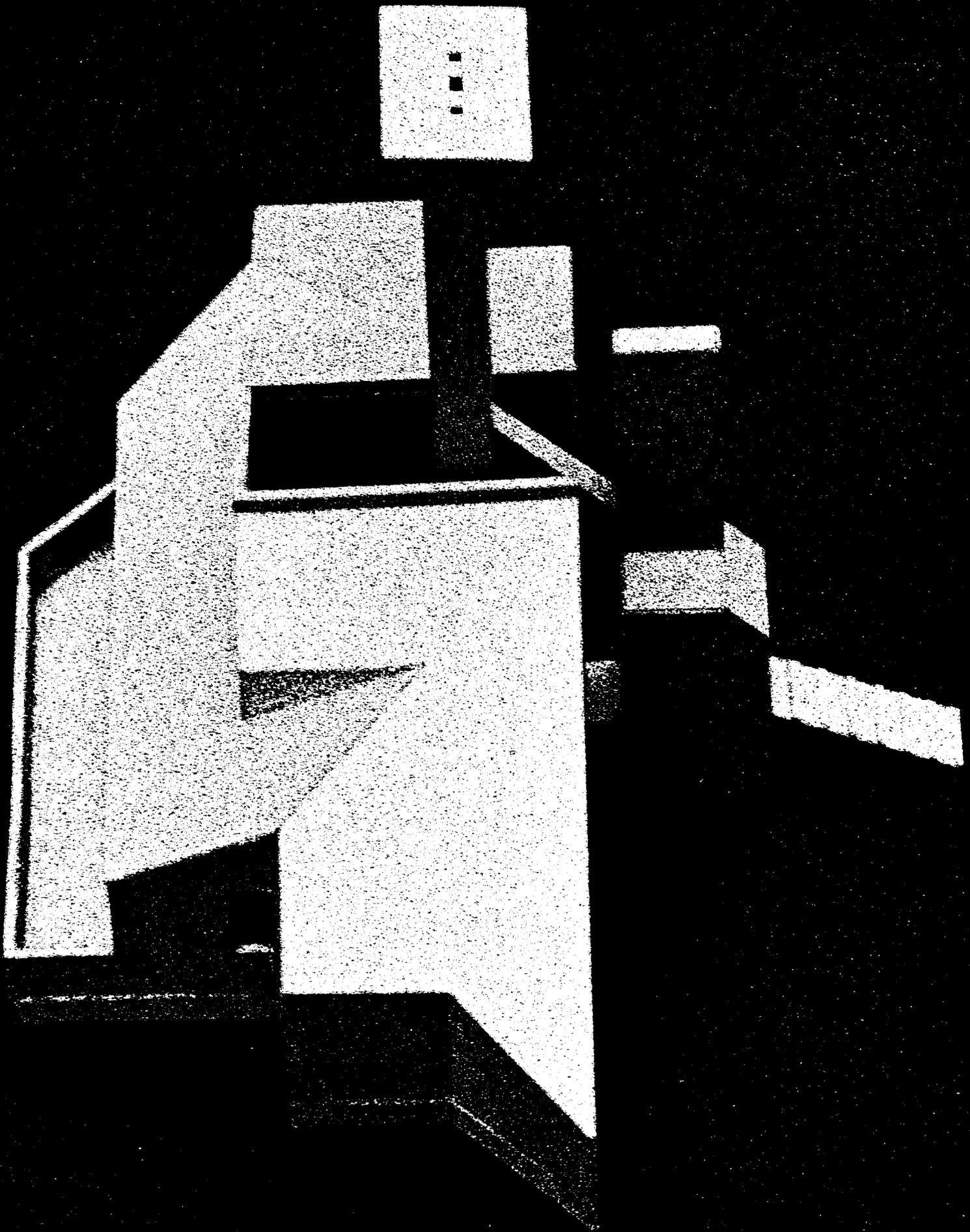
as well as the inside out; the necessary tensions help make architecture. Since the inside is different from the outside, the point of change is an architectural event.

"I do not resist the wants of the inside to enclose.

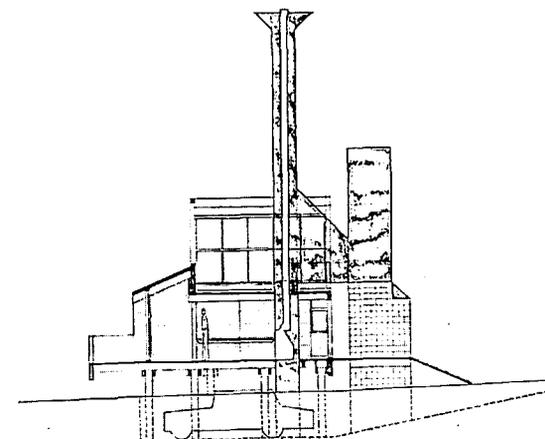
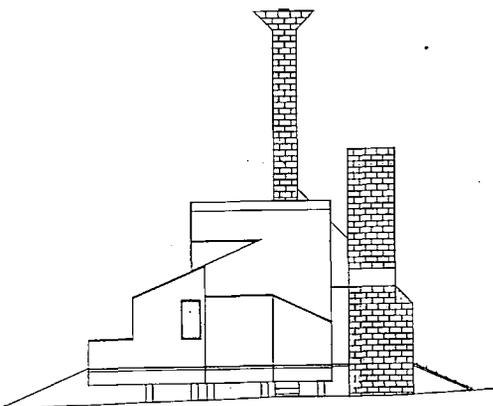
"I recognize that the surfaces of building, structural and protective, consist of







WEEKEND HOUSE BY ROBERT VENTURI  
*Elevation, section, and photo of model.*



layers. Juxtaposed layers, always contrasting, contribute to the sense of enclosure; buildings often are things in things.

"These enclosing surfaces, structural and protective at the same time, tend to need openings rather than interruptions; the nature and position of holes, determined by the very particular and diverse wants of space and light, material and structure, help make architecture.

"The wants of a program, even with small buildings with simple materials, are diverse and conflicting. I welcome this. The building must do and be many things at once; tensions, ambiguities, and contrasts are results which make architecture; a work of architecture has subplots as well as a plot."

And he explains the form of the Weekend House shown here:

"The form of this house results from the juxtaposition of two different ideas. The house has only two directions: the front oriented toward the sea, and the back for entering; it has no sides, so to speak, and its front is very different from its back. Secondly; the fireplace and chimney are a focus in the center from which generate at first symmetrically, later evolving differently, the outer parts of the house."

One of the people in Philadelphia whose mind is closely attuned to that of Kahn's is Robert Le Ricolais, a French engineer whose discoveries in the field of material behavior deserve better recognition in this country. Some of Le Ricolais' inventions, dating back to the 'twenties, have found world-wide application in building construction. For the last several years he has been conducting an experimental workshop at the University of Pennsylvania's Division of Architecture. Most of his recent

experiments are with pretensioned steel, a material whose possibilities, he thinks, have not yet been exploited. It is interesting to note that his statement on the nature of research is amazingly close to Kahn's statement on the nature of architecture:

"Architectural students with materials, medical students with their first patients—it is the same experience. From this confrontation many marvelous things can happen. But the initial attitude should be of ignorance and humility.

"Experience starts from there; the first certitude to emerge is the discovery of our ignorance and inefficiency to predict the probable behavior of materials and structures. Indeed, things never behave as we assumed they would from the reading of books: what we presumed negligible is not negligible, and the whole theory collapses. Everything is shattered, and we have to start again. Analogies, appearances have deceived us, and half blind we proceed along stumbling steps.

"This inglorious, painful, and slow process is nothing else than the true process of learning—creating our own knowledge and experience instead of annexing somebody else's work. Research is not concerned with gadgets but with theory, much less with invention than with discovery. And research is immense fun, because what we discover at the end is the great unknown: ourselves."

Robert Geddes, another young Philadelphia architect, insists that he and his partners should not be classified as belonging to a "group." And yet there are indications that they are beginning to be strongly influenced by Kahn's approach. This can already be seen in some of the elements of their design; and in the design



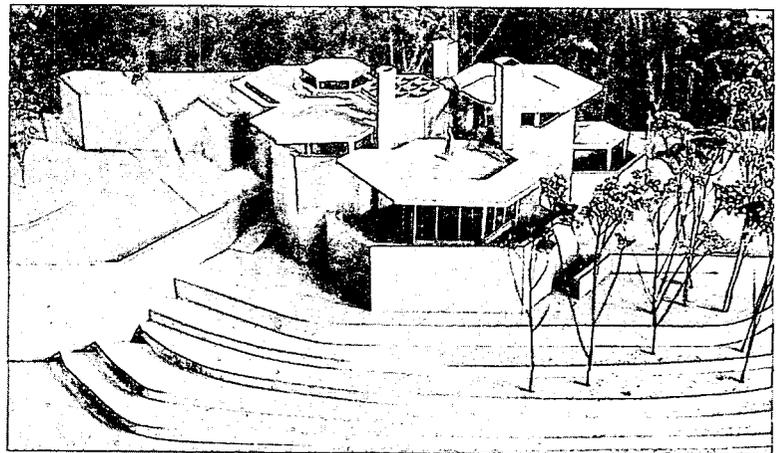
for a large house, one of their latest projects (shown here), it seems evident that were it not for Kahn, they would not have dared to depart so drastically from the Harvardian strait jacket in which they were reared. As Geddes says himself:

"Kahn exists on many levels of architecture: his work on the form of the center city; his work on the technology of architecture; his ideas about the nature of spaces; his poetic statements on the meaning of architecture; these are all part of us now."

And in his explanation of the existing "sense of morality in architecture" in Philadelphia, the closeness of his interpretation of the "meaning" and Kahn's concept of the "existence will" is quite obvious:

"The 'sense of morality' is a search for 'meaning.' It is an acceptance of 'making' as an essential aspect of 'meaning,' and it is a search for order that comes from 'meaning.' There is such a search on many levels: the meaning of the city; the mean-

Photos of house: George Pohl



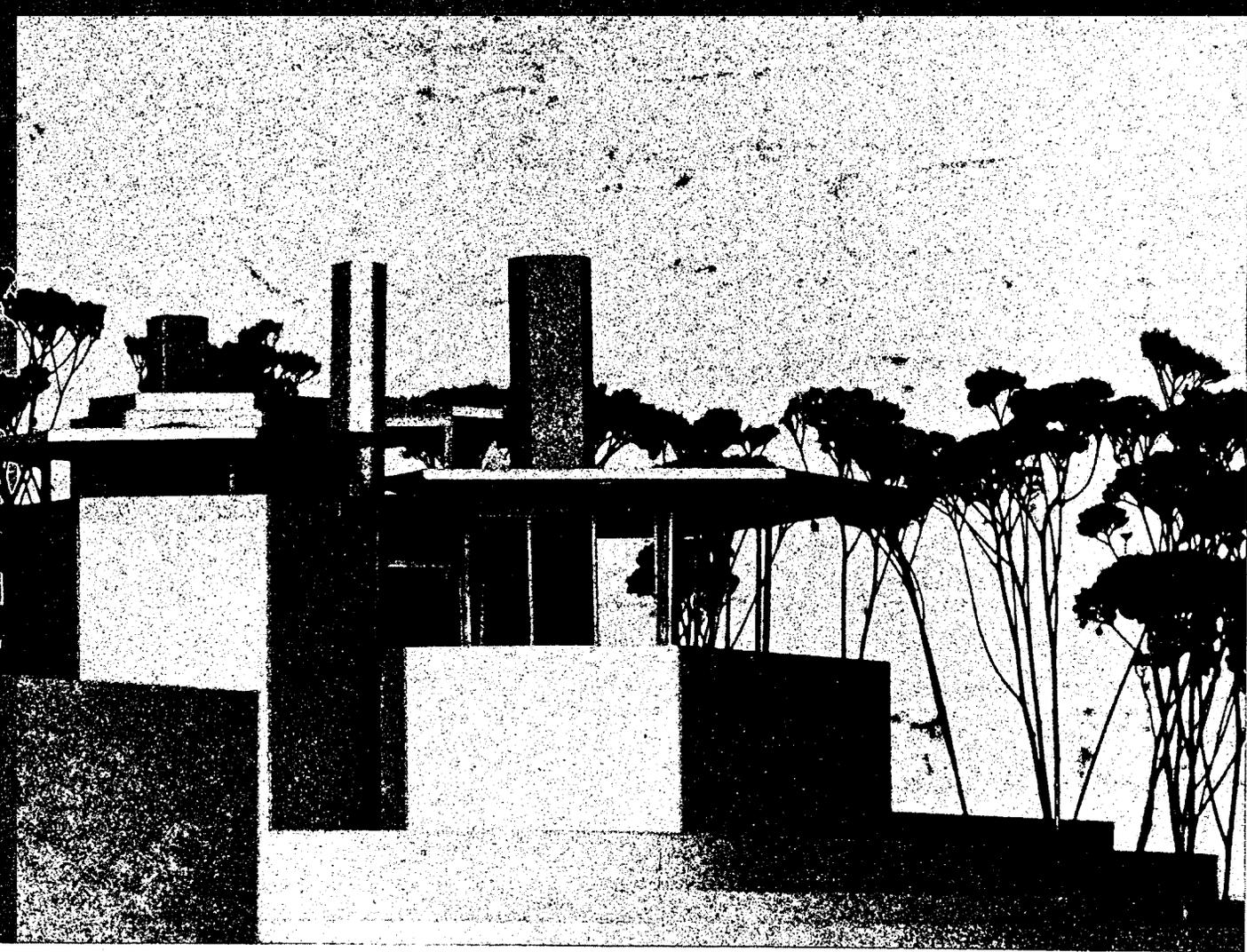
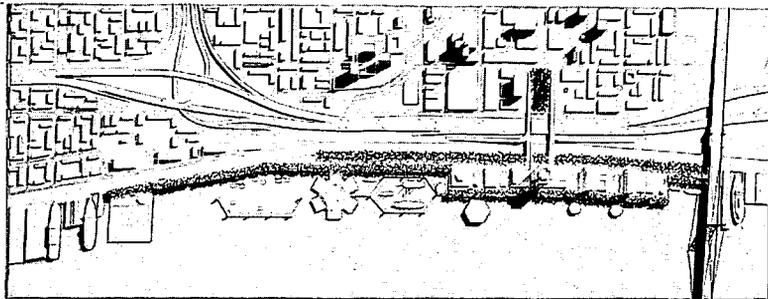


Photo: Lawrence S. Williams, Inc.

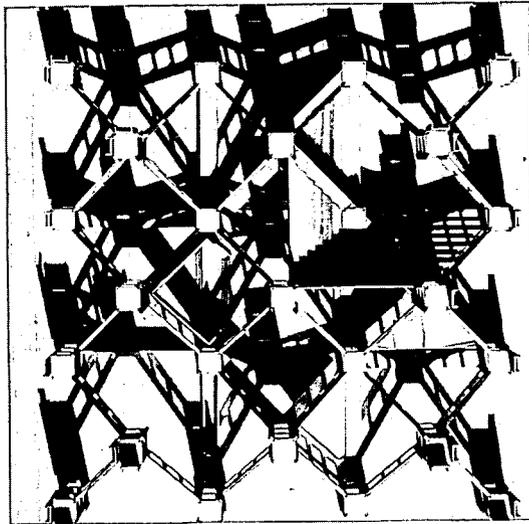
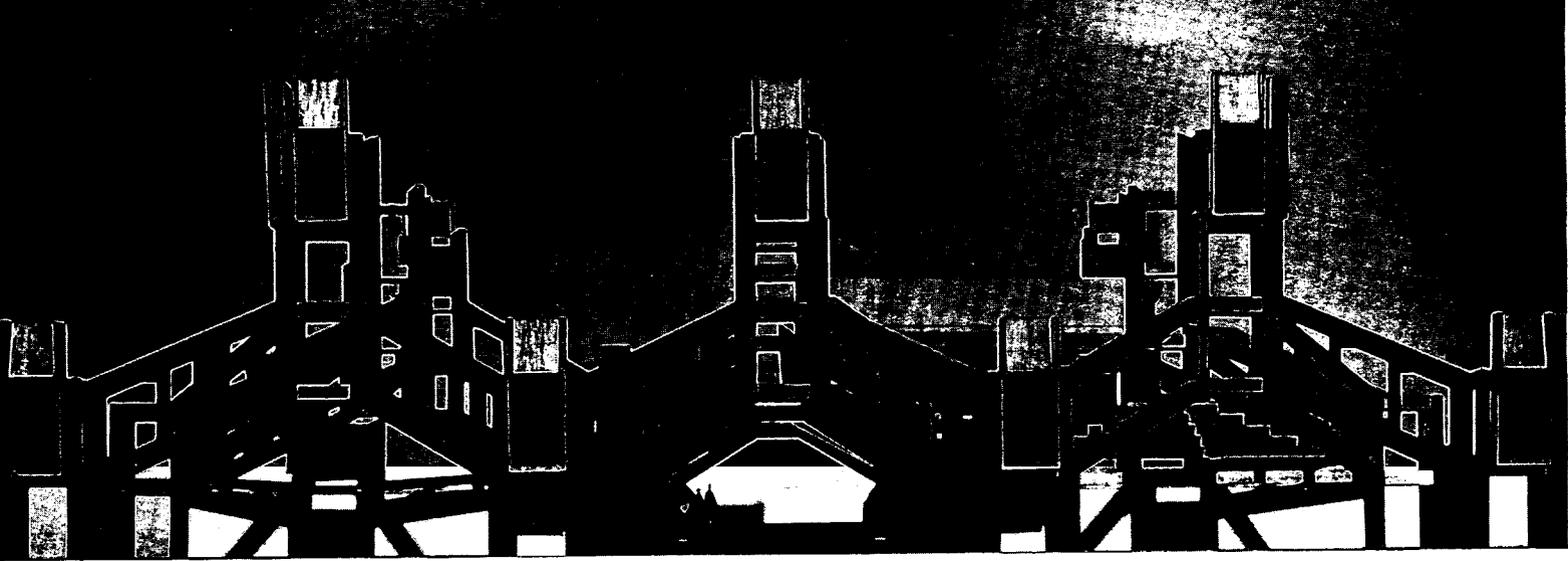


HOUSE AND URBAN SCHEME BY GEDDES-BRECHER-QUALLS-CUNNINGHAM  
*Models of two recent projects: proposed administration and recreation buildings for a section of Philadelphia's waterfront, and a large house.*

ing of building as an element of the city; the meaning of spaces within the building, within the city; the meaning of structures, materials, and mechanical services within the building, within the city. If there seems to be a common concern for concrete technology, for joints, for the integration of mechanical services, for the composition of buildings by the precise linking of components or elements, it is really a vocabulary based upon a still smaller search for the meaning of architecture."

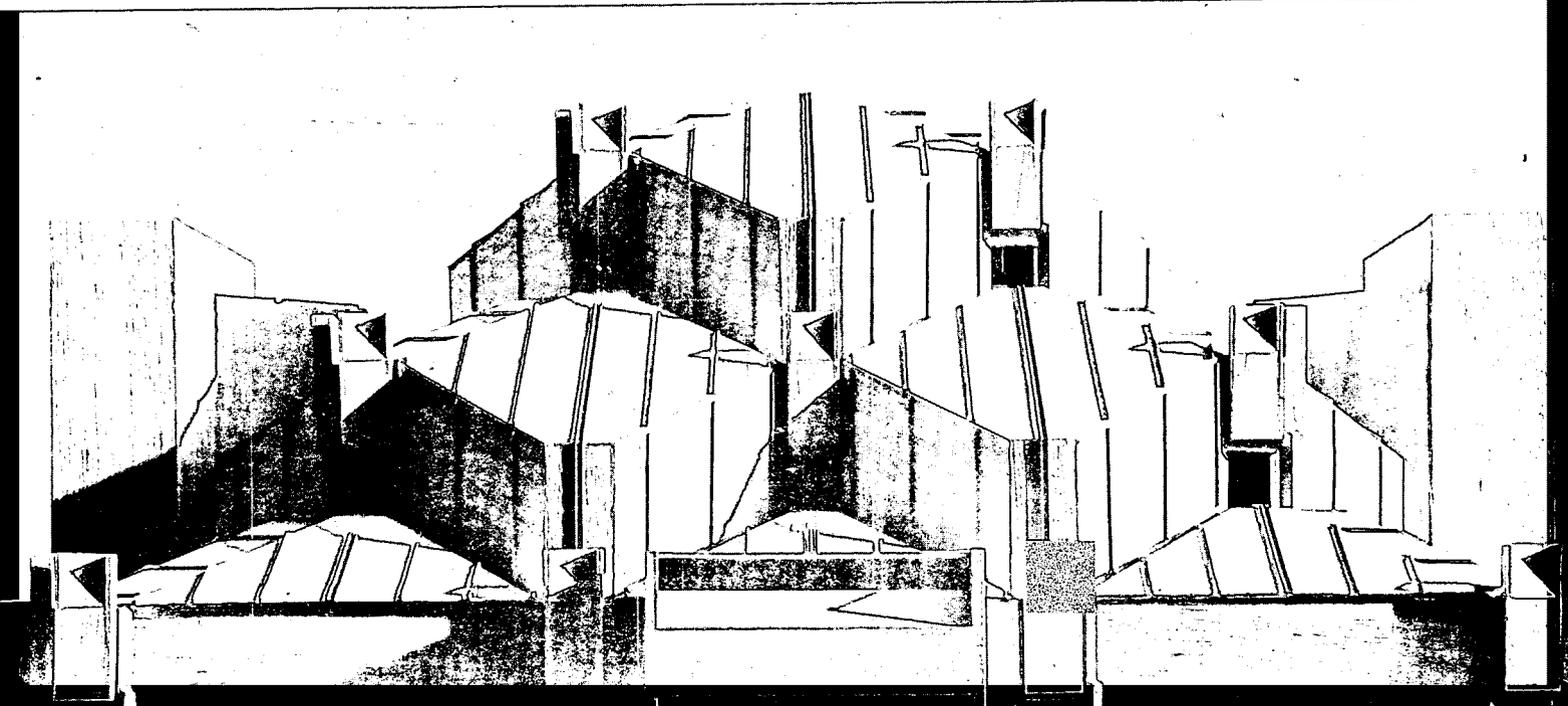
Geddes and his firm are deeply involved in the urban redevelopment of Philadelphia. There again their thinking reflects many of Kahn's ideas: the importance of the city center ("The Cathedral"), emphasis on the differences between the diverse urban functions, and an attempt at giving expression to those functions.

Some of the students in Philadelphia are also strongly influenced by Kahn's approach to design. This can be seen in the student projects shown next. How this approach is used is clearly indicated



STUDENT PROJECTS  
*Concert Halls for City of Philadelphia by D. Rothstein (this page) and a Motor Hotel by R. Weinstein (acrosspage).*

Photos of student projects: George Pohl



by one of the students in the description of his scheme for a hotel, shown on this page:

"I tried to express the activity of the building. I felt that a hotel should be like a little city—an abstraction and a concentration of the experiences we associate with urban life.

"I began by developing a 'street' terminated at either end by public spaces—restaurants, bars, banquet halls—which would act as generating poles of circulation and create an ordered flow of pedestrian traffic. Three levels of galleries and shopping promenades look down onto the main walk.

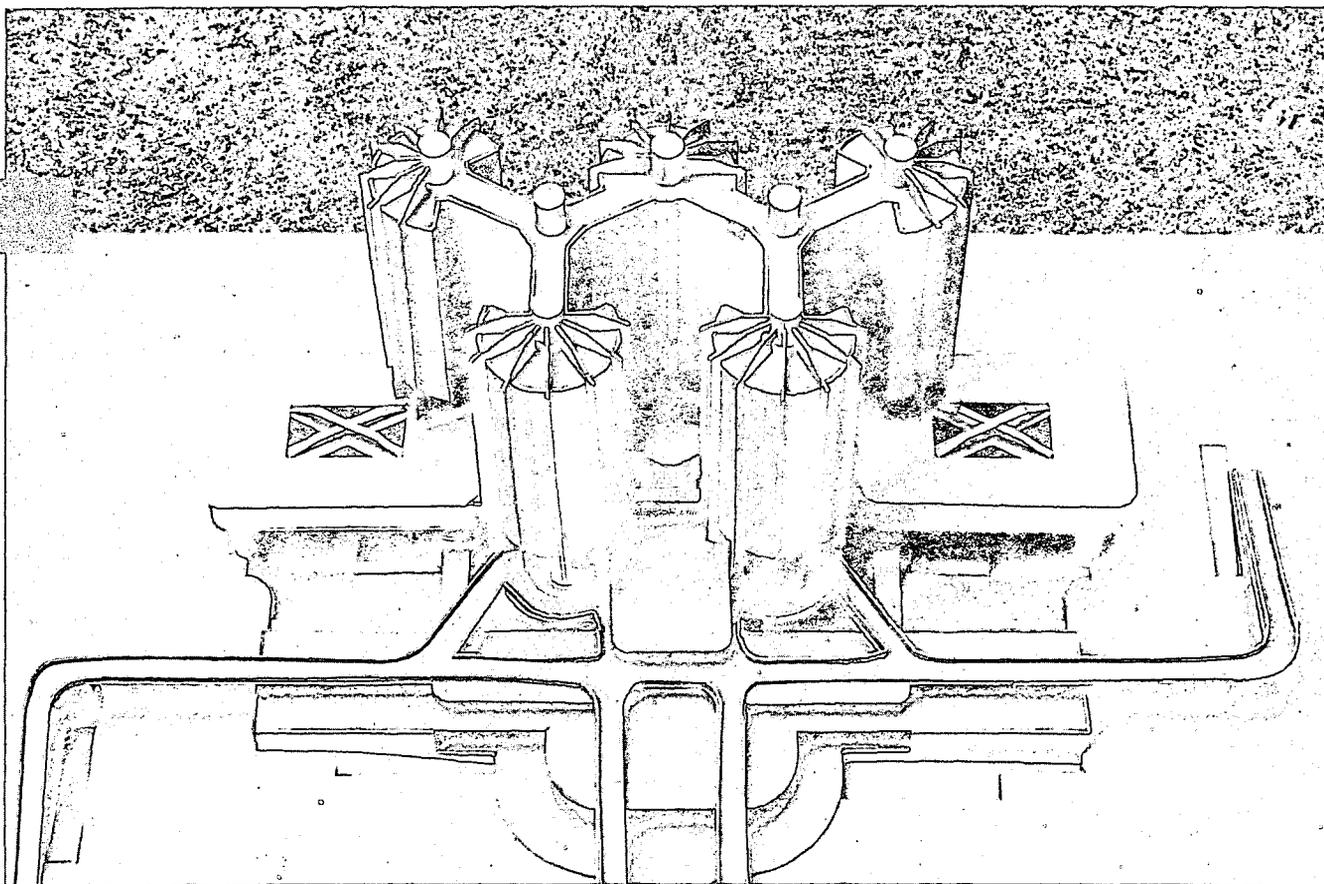
"The residential units were decentral-

vention hall is visible from the street as are the servicing facilities. Thus, even late at night, the returning guest would sense the endless life of the city in the bustle of midnight deliveries and the reassuring arrival of the milkman and the newspapermen at dawn.

"By searching for a generative concept rooted in the activity of a hotel, I tried to project an atmosphere of appropriate feeling which could act as an organizing principle of design. This imagined environment of feeling gave me a sense of basic circulation, and the feel and relationship of major spaces, although I had postponed purely visual commitments to very late in the design process. Up to the last hours,

important and what is unimportant, one does not become too preoccupied with such a problem. Kahn clearly stated this in his comment about the relationship between the studies and the laboratories of The Institute for Biology. To quote Kahn again:

"They will be next to each other but not unified. If I make them completely unified, then it will be something pretty ugly, and that is exactly my intention. For to make a thing deliberately beautiful is a dastardly act; it's an act of mesmerism which beclouds the entire issue. I do not believe that beauty can be created overnight. It must start with the archaic first. The archaic begins like Paestum. Paestum



lized into five towers ranged along either side of the 'street' and emptying into the main stream of pedestrian traffic, like individual apartment houses.

"The space between the towers and over the 'street' would be glazed, allowing a view of the sky. As the sun moved around the building, daylight filtering through into the lobby between towers would hopefully give a dramatic analogy to the familiar canyon lighting of city streets.

"The basement level of the hotel is a large convention hall which runs under the entire length of the lobby 'street.' It is lit by clerestories and ringed entirely by servant spaces. A service road surrounds the whole complex, which sits in an open well, so the interior of the con-

I had little idea of the actual appearance and proportion of the building (as the model, perhaps, indicates), for I tried to let activity itself encourage the appearance of visual shape and thus save the image of a humanized environment from sacrifice to a predetermined, cosmetic notion of intellectual rigor or formal excitement."

In this scheme, details have not been worked out at all, but the strength of the basic idea and the resulting volumes are powerful enough so that there is little danger that subsequent elaborations and marginal adjustments will destroy the original concept of the building. At this stage the building shows a certain crudity and grossness. But when one strongly believes in Kahn's evaluation of what is

is beautiful to me because it is less beautiful than the Parthenon. It is because from it the Parthenon came. Paestum is dumpy, it has unsure, scared proportions. But it is infinitely more beautiful to me because to me it represents the beginning of architecture. It is a time when the walls parted and the columns became and when music entered architecture. It was a beautiful time and we are still living on it."

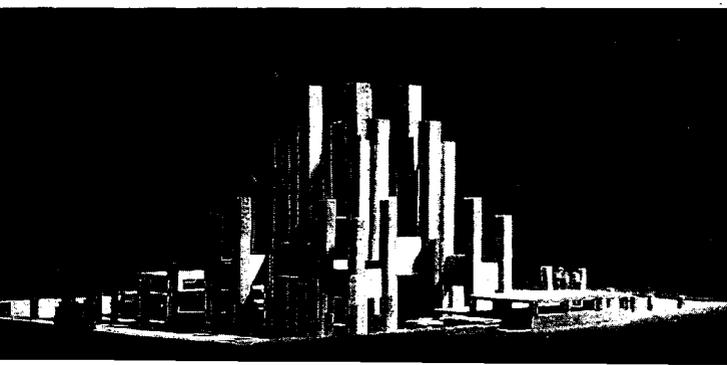
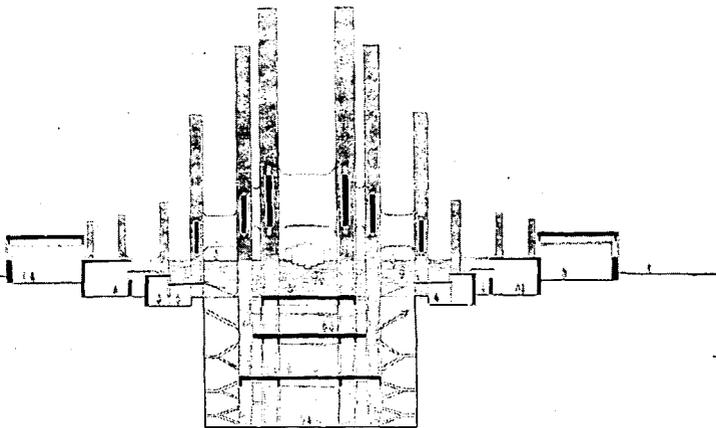
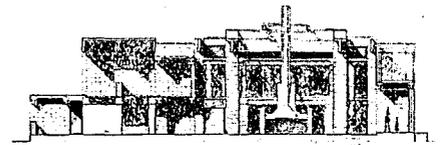
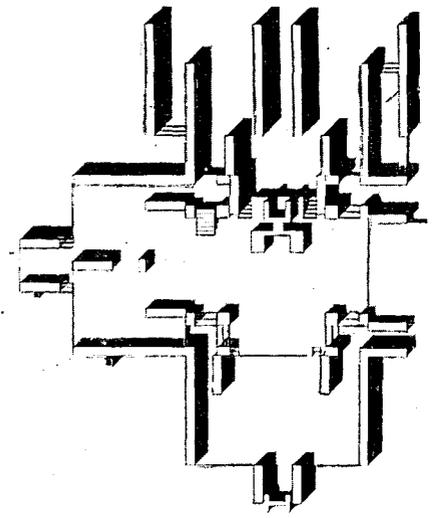
And that is why Kahn makes this comment about a well-known building:

"Take a beautiful tower made of bronze, which was erected in New York. It is a bronze lady, incomparable in beauty. But one knows she has corsets for fifteen stories because the wind bracing is not seen. That which makes it an object against the wind and which can be beauti-

STUDENT PROJECTS

*Corregidor Bataan Memorial*  
(below) by R. Golder.

*Addition to school of fine  
arts* (bottom of page), *house*  
(right), and *chapel* (across-  
page) by R. S. Wurman.



fully expressed. Just as nature expresses the difference between moss and a leaf. How beautiful it would be to express that wind forces are playing. The base of this building should be wider than the top. And the columns which are on top should be dancing like fairies. And the columns below should be growing like mad and not have the same dimensions because they are not the same thing. This story, if told truthfully, would make a beautiful tower, even if it is ugly at first."

When analyzing the underlying stream in all the statements quoted in this article, it becomes clear that there is a common denominator. This common denominator can be expressed in terms of a more simple terminology and summarized as a strong differentiation between **concept** and **execution**, and the placing of search for concept in a predominant position and treating execution as having less importance, as something which will come naturally and easily, without any strain or difficulty, because "to know what to do is the secret of it all, and how to do it is a matter of experience and gray hairs."

But living, as we are, in an era of superficiality in all phases of life, in an age of few ideals, in an age of artificial obsolescence and natural plentifulness, and being constantly confronted by the pressure of speculators, promoters, public relations men, and other status-makers and money seekers, and having at one's disposal unlimited choices of materials and structural systems, it is easy, within this glittering and exciting confusion, to fall into the trap of seeking and being satisfied merely with the clever and the exciting, with the shallow and the meaningless.

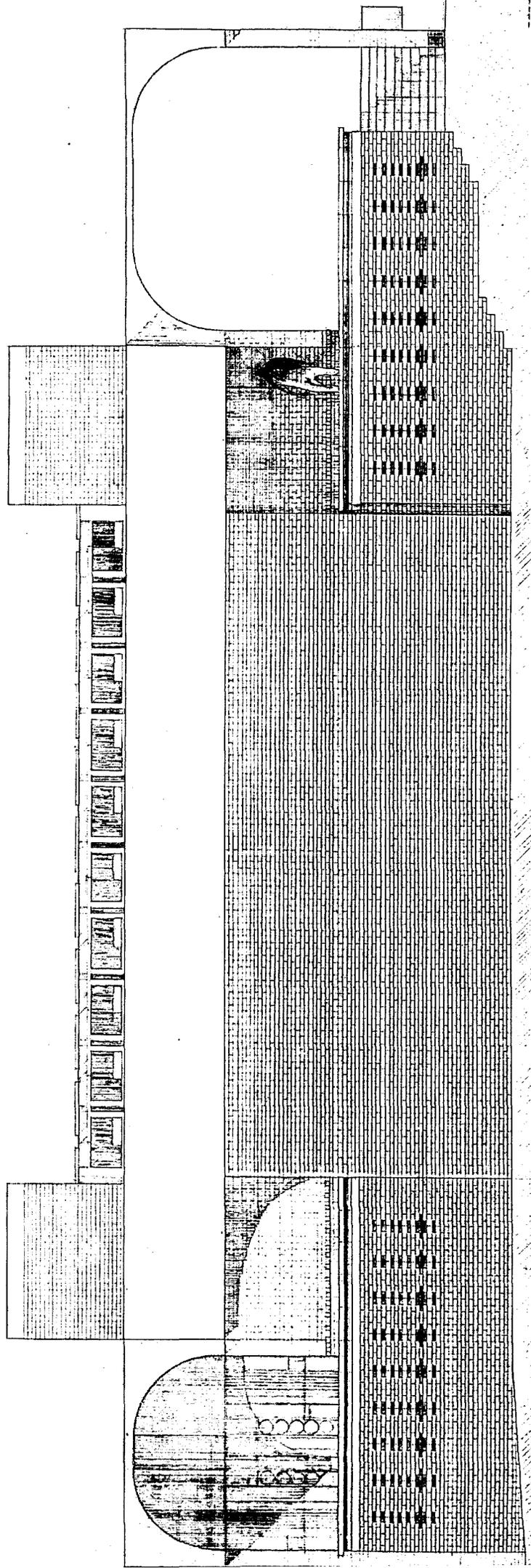
Kahn, through his theory, creates for himself a **mental attitude** that helps him to sense his position as a designer and enables him to say: "At times I am a poor designer. Another man would consider this the greatest insult, but I don't mind saying it. I know that I always want to do

more than I am able to do. Man is always greater than his works, because man can never fully express his aspirations." Kahn's theory creates an attitude where not only man's limitations, but also the deeper meaning and the purpose of man's activities is constantly in mind and constantly kept in the forefront. His beliefs serve him as a sort of inspirational elixir on which he can draw constantly, at all stages of design. He uses the "wanting to be" concept not only when he is designing the building, but also when he is designing the rooms, the corridors, the stairs, the treads, even the smallest element.

This approach results in buildings that have not only a powerful space and mass concept, but also a bold and personal expression of all the elements and all the details; it frees the designer from the curse of preconceived ideas, fashion following, and nervous copyism; it frees the designer from superficiality, however commonplace, or however brilliant; it clears the way for an architecture where there is no fear of "spoiling" the design when there arises the ever-present problem of changes requested after the original idea has been established. Medieval cathedrals do not suffer from the looseness and irregularity of some of their secondary elements, their stuck-on chapels and towers of different heights. The main mass of the nave has enough power to hold the composition together and to give coherence and expression to the whole. It retains the spirit of the original idea in spite of all the irregularities. And not only that. The nonformalism of minor elements introduces a softer, more romantic environment, better attuned to human scale and human emotional responses. It is the combination of the power of the central idea with the romanticism of secondary ideas that makes us not only admire but also love medieval cathedrals. And it is the same with the architecture of Kahn.

The similarity of architectural expression that is clearly visible in the work of those who think like Kahn, indicates that this approach need not be limited and should not be considered as one man's personal expression, but should be regarded as having a universal validity. From examination of the various projects, it is evident that there are infinite possibilities of individual solutions and expressions inherent in this approach. This heralds an exciting new period in architecture, a new renaissance, which could prove to be as important in the history of architectural development as the emergence of the Chicago School in the late 19th Century. Since this new movement stems from Philadelphia, it can be said that we are witnessing the birth of a new school in architectural thinking, the Philadelphia School.

[Note: All Kahn statements used in this article are from edited transcripts of his speeches and of discussions between Kahn and the author. Quotations about importance of the locality and the nature of a true master are from a statement by Romaldo Giurgola. Freehand sketches illustrating Kahn's design theory and concepts were drawn by Kahn for this article.]



# THE SIXTIES A P/A SYMPOSIUM ON THE

*New Influences on Practice* Last month, the participants in this Symposium discussed theories of architecture in its present period. The Period of Chaoticism, as we described it, was defended as a time in which extreme diversity of design is justified and to be expected. Although a few contrary voices were raised, the general consensus was that the nature of the times, the exploding technology, the lessons gained from the early periods of the modern movement and the early modern masters all tended to produce an architectural phase in which no "style" should be expected and in which disciplines and standards were broad and general rather than specific and productive of a single style.

However, the practice of architecture in this period seems to be of a pattern—a somewhat traditional pattern well defined by accepted codes of ethics and standard documentary forms generally used. Within the diversity of design approach, are there also diverse attitudes toward methods of practice; is the traditional relationship of the architect to his client, to the builder, to the newer factors in the production of buildings such as the entrepreneur, still correct? This is the subject of this month's section of the Symposium.

THOMAS H. CREIGHTON

**T.H.C.:** *To begin the discussion, is the traditional concept of the architect's practice—let us say, as described by AIA documents—correct for today's situation?*

**PIETRO BELLUSCHI:** No.

**CHARLES COLBERT:** An *emphatic no*.

**SIDNEY KATZ:** *Today* is confusion, and any concept can exist in confusion. The question is: is it correct for the foreseeable future? The answer is a definite *no*.

**ROBERT GEDDES:** The traditional concept of the architect's practice is totally obsolete . . . but the role of the architect in society is not at all obsolete; in many ways, society needs the architect more than ever.

**GEORGE NELSON:** . . . The traditional concept of the architect's practice is not correct, in a great many ways, for today's situation. But the traditional concept of the teaching of the physical sciences does not seem to be correct for today's situation either. So what?

**T.H.C.:** *But aren't some changes in methods of practice indicated, if present ones are incorrect?*

**WILLIAM CAUDILL:** Architects must first become hard-nosed businessmen, smiling promoters, highly competitive specialists, and artists last.

**JOHN M. JOHANSEN:** Thought should be given to types of architects: i.e., the business or corporation architect; the architect-builder; the esthetic innovator who practices architecture as a pure art; the creative architect who, along with the pure scientist, deserves a greatly increased income. In the United States money is made in applied science, not in pure science, and in architecture money is made in applying established commercialized esthetic effects rather than in original and valuable artistic contribution. This is a glaring injustice, with no solution in sight. The AIA should adjust fees, and the profession should subsidize the pure architect, since the profession now both profits from him and laughs at him. Brunner, Ford, and Guggenheim scholarships are not

enough, and it is a disgrace that the help comes from outside. **VICTOR GRUEN:** Up to the last century, the architect worked for a restricted clientele consisting of the rich, the mighty, the powerful, the aristocracy, the church, and royalty. This restriction has disappeared on both sides of the Iron Curtain. Architects now have to serve the needs and requirements of the broadest segments of the population; the scope of their work has switched from palaces, mansions, and churches to mass housing, schools, hospitals, shopping facilities, mass transportation, etc. The forces determining the character of architecture today are speedy fulfillment of demands, economic considerations, the meeting of sociological needs. Within this framework, tight as it might sometimes appear, there is still room for the expression of creativity, imagination, and individual taste.

**JAMES LAMANTIA:** The adjustments implied by a more thorough marriage between architecture and technology would automatically bear forcibly on the traditional envelope of architectural practice.

**BUCKMINSTER FULLER:** Engineering and architecture, though objective and integrative, have no economic initiative. When men design professionally only when employed by a patron, the patron becomes the prime designer. The patron initiates that which is to be detailed within the patron-conceived limits of undertaking and responsibility. . . . Only the free-wheeling artist-explorer, non-academic, scientist philosopher, mechanic economist poet who has never waited for patron-starting and accrediting of his co-ordinate capabilities holds the prime initiative today. If man is to continue as a successful pattern-complex function in universal evolution, it will be because the next decades will have witnessed the artist-scientist's spontaneous seizure of the prime design responsibility and his successful conversion of the total capability of tool-augmented man from killingry to livingry.

**HENRY STEINHARDT:** The sickness of our urbanism, the messiness of our buildings, the collapse of our profession certainly ought to stimulate today's architects to revise *in toto* our traditional relationships with society and production. The past few decades have produced an architectural traffic jam and have poured talent down the drain. Let's reorganize the building industry and reintegrate our architects within it in order that we may leave to posterity a decent environment as well as the obligation to pay our bills. There is no more future for on-site fabrication of buildings than there is for the old Beaux Arts methods of design. Future buildings will be fabricated in factories and future architects will have to adapt themselves accordingly to an entirely new function in the production of structures. We might as well start right now.

**T.H.C.:** *Various influences have been mentioned—new needs, new clients, new artist-scientist types, new technologies. Do they affect size of practice?*

**WILLIAM W. WURSTER:** I have decided that the future still holds openings for *all* kinds of offices.

**FRED BASSETTI:** It seems to be generally true that the most meaningful work is done by the smaller firms, although certain medium-to-large offices, such as those of Saarinen and S.O.M., are obvious exceptions. But take the list of the 10 largest firms and make a separate list of the 10 architects whose work you think is most successful. How many appear on both lists? My trial shows none, thus providing considerable food for thought.

**RICHARD STEIN:** In the postwar years, there was the hope that a joint practice would produce the sort of architecture that

# STATE OF ARCHITECTURE: PART II

was necessary for the postwar construction. Added to the destruction caused by the war was an unfilled building need that accumulated in the preceding 15 years and the new needs of the increased world population.

The large, departmentalized office attempts to step into this situation and produce a major amount of relatively competent work that, of necessity, tends to be anonymous. The consideration of methods to achieve richness within the fabric of mechanical repetition is avoided as expensive, hard to control, hard to achieve in reality, and generally undesirable. In fact, a rationalization leading to an esthetic of austerity has been developed by some of our large-volume architects. Elements of individuality are considered unacceptable in their design vocabulary.

More than ever, there is a need for the thoughtful solution of the limited project. This makes necessary a change in thinking about the size, the make-up, the number of commissions, and the fee structure of the practitioner. The architect must decide which direction interests him: the servicing of large building jobs or the fundamental study of building problems. There is a growing cleavage, reflecting on the one hand the tendency toward impersonal bigness in our economy and, on the other, the search for human values in a world where they are of diminishing importance. I feel our major building problems can be met, and a great new wave of creativity can be instituted, if many of us as architects can learn to practice more modestly and more fundamentally.

**HARRY WEESE:** The corporate client tends to like architects in his own image—large. This is a prestige-matching based on size. The trend to giantism in American architecture should be disturbing.

**HARRIS ARMSTRONG:** It is apparent that the small office, doing high-class work, is an increasingly difficult field of practice. The forces which make this true are evident on every hand. The corporate client, by his very corporate nature, is reluctant to entrust a project to an individual architect when there are available large groups of architects made up of specialists (the corporation is so composed). The Government, another potential client, is also a sort of corporate body and favors large groups for the same reasons. The operative builder in the residence field must scale his product to the average taste, or at least he does so scale his product, and the builder who builds above the average taste level of his market is not as successful as the former. It is asking quite a lot of a man, who is essentially a businessman, that he be less successful in order possibly to elevate the public taste.

Other groups, such as churches, schools, and institutions, tend to follow the example of the corporations and the Government. Since their decisions are made by groups or building committees who are not spending their own personal funds, they tend to be conservative in order to avoid any possible criticism. In other words, a group is more timid than the average of the individuals that make up the group.

**T.H.C.:** *How do others of you feel about the influence of the corporate client, or the group client?*

**JOHN LYON REID:** The new type of corporate or group client is not always an encouragement to the most creative thinking in architecture. Good architecture does not always stem from the necessary group vote of approval of the group client.

**RALPH RAPSON:** In many ways, the new corporate and group type client expands and complicates today's practice, while at the same time probably making considerably more remote the achieve-

ment of architecture as great art. All too often committee client means committee design, with its resultant mediocrity. The architect finds himself in constant competition with the "package" dealer, bureau architecture, engineers, promoters, and commercial firms; he finds himself being called upon to perform in a far broader way than formerly. For better or worse he is becoming more and more a "generalist," less and less a specialist. Obviously, there are great pitfalls within this scheme of things, perhaps the worst being that architecture may not be thought of as art.

**ARTHUR GOULD ODELL, JR.:** Operations by corporate, group, board, promoter, and speculative clients result in the architect having to spend more time in conferences, having to answer more questions in detail, having to justify his every recommendation on the basis of detailed economic considerations, having to exert greater efforts at salesmanship, and usually having to be satisfied with a smaller profit. It can frequently take a lot of doing and patience and skill to handle the primary by-products of group decision, such as referrals to committees, opinions of the wives of the officers, minority dissents, etc. If an architect is not blessed by having a strong chairman of his "group" client, the building always runs the risk (in inverse proportions to the architect's sales ability) of having the design suffer from "committee" decisions.

**JOHANSEN:** The corporation client establishes a vernacular; however, it standardizes design, limits individualized design, tends to limit the amount of feeling, love, and concern an architect might devote to it. It takes a very strong architect to sell these qualities to a corporate client, in spite of himself.

**KATZ:** Naturally, to work in this setup we must become corporation-oriented, with staff setup and organization to match.

**BASSETTI:** The past is past and we cannot revive it, but surely there was something good on the architectural scene then that we have no more. It does seem to me that the strong personal character of an individual client which used to shine through in his building project is rarely seen today. The corporate client has no strong feeling with which to set its architect on fire, and indeed, generally prefers a corporate architect who will cause no trouble. What clear and personal expression is possible when a committee gives orders for execution by another committee? Even 30 years ago one could find any number of restaurants with the distinctive personality, both in food and architectural character, of the owner. Today, the new restaurant is *styled* by a designer to some theme usually totally unrelated to the owner—or is itself owned by a corporation. When we have to eat corporate food, we are fast approaching 1984! About the only positive thing a corporate client can provide is an ample budget, but even that is questionable. We may paraphrase the comment Tacitus made regarding the absence of gold in Germany by asking about the often lavish corporate building budget: "Did the Lord provide it in mercy or in wrath?"

**T.H.C.:** *The new client type is not always a corporation or a group. How does the large entrepreneur affect today's practice?*

**COLBERT:** In my personal opinion, there are three major and dominant forces holding direct responsibility over the design of our urban spaces. They are the architect, the urban planner, and the entrepreneur. In the past, our architectural schools have completely disregarded the latter and consequently have not given adequate time to economic considerations in building and land planning. In my opinion, most conceptual thinking originates with the entrepreneur rather than with the architect. Most graduate

architects are incapable of adequately serving the entrepreneur or understanding the effects on design of the entrepreneurial process. This, in my mind, is one of the great problems facing our profession in the second half of the 20th Century.

**EDGARDO CONTINI:** The entrepreneur is perhaps the most difficult and destructive of all influences on architectural accomplishment, and often the fault is not at all his own. Because of tax laws that encourage obsolescence and capital gains rather than stability and return from continuing income, the entrepreneur must continuously pressure for minimum investment rather than optimum return, and he is much more concerned with "gimmicks" and clever new gadgetry than with quality and substance. This is particularly unfortunate in those instances in which the potential for truly significant new environment (especially those being offered by urban renewal projects) becomes frittered away in mediocrity which, even when not reflected in the early planning stages (when architectural quality is now considered as an asset in bidding competitions), manages to creep through in the subsequent implementation stages of the projects.

**T.H.C:** *You seem to believe almost unanimously that the corporate, group, and entrepreneur client is difficult to serve. Yet, as Bassetti says, "the past is past and we cannot revive it." The AIA, through a Committee on the Profession, has suggested revisions in methods of practice to meet the new situation—basically, to keep the traditional position of the architect as "agent," but permit him to "negotiate with the banker and the realtor," and to "again assume the role of the master builder." Do you feel that standards of practice should be restudied to fit new client needs?*

**PAUL THURY:** From the professional viewpoint, I see no reason to compromise with expediency in the practice of architecture. In my experience, I see no reason to change the aspect of the architect. I do not concur in the view that we need become absorbed in mob philosophy or committee structure, nor do I believe we must subordinate design to the financial processes of office management. Volumes and dollar increments should not be the yardstick for accomplishment. I see no reason to change the mandatory rules of the Institute.

**WALTER A. NETSCH, JR.:** A good client, that ideal client, who is looking for a fine, existing solution within a reasonable budget, gets good projects from good architects—sometimes a fine project. This client can be from corporate, group, individual, or entrepreneur categories. The client, like the architect, mirrors his society and the goals of that society. The architect should reflect the highest goals of the society, and his clients should be those who desire them. To this aim should the practice of architecture be geared; the remainder is just a building, and how would you document that practice?

**ERNEST J. KUMP:** Practice in the field of architecture is the area which is most deficient in achieving a great architecture today. The traditional concept of the architect's practice cannot be wholly correct for today's situation. We must realize that society demands today competent practitioners in architecture. Architects should first be educated and trained to be competent practitioners in their field. And by this I do not mean that the architect should not be competent in creative expression and design. He should, however, be competent in his ability to communicate to society those elements that give meaning to his statement. Roots and regionalism that people understand should be respected and manifested in the architect's work. The architect should be equipped to give a competent technical service to his clients. He should be able to command the respect and confidence of the public through his ability to carry out well his responsibilities, not only in the area of design, but in service, construction technology, economics, and the management of the building project from beginning to end. Architecture is not only skill in design, but is a wholeness, and until this is recognized the architect cannot assume his proper role of leadership. The traditional concept of emphasis on the creative designer or the individual who may turn out to be a Michelangelo or a Leonardo

da Vinci is important, but this will not suffice for the needs of society today. The gifted architect is not creative because of an educational process; he will emerge in spite of any shortcomings of his educational background. Therefore, the emphasis should be placed on the importance of the wholeness of architectural practice and the fact that failure in any one of its many facets can contribute as greatly to the failure of architecture for society as failure in design alone.

**CONTINI:** There is no doubt that today's traditional position of the architect, as an intermediary between the owner and the contractor, limits considerably his creative potential. The development of architect-engineer-contractor groups, operating somewhat in the manner which is not uncommon in Europe, could develop new forms, more genuinely responsive to potentials and techniques, and more protected from the eclectic exuberance of the architect-designer, who often today preconceives a form concept, and then begs until he finds an engineer ingenious enough to develop a technique to make it stand up (often at the price of loss of the fine relationship between form and detail that the architect had dreamed of), and a contractor either capable (or inexperienced!) enough to commit himself to build it.

**REID:** I believe that the practice of the architect as described by the AIA documents is generally valid for today's situation. But I believe that under certain circumstances, and subject to carefully detailed conditions, architects *should* be allowed to operate jointly with building contractors in architect-builder teams under the sponsorship of the AIA.

**ROBERT ALEXANDER:** I think of the architect as concerned with the total environment of man. In my view he can and must become the ecologist of man's surroundings, and since this task is so complex, requiring so many diverse talents, it requires a creative co-ordinator to fit the pieces together. The architect, as I see it, is trained for this particular task.

**T.H.C:** *Architecture today does seem to be more concerned with the total environment, and the design problem more often involves groups of buildings rather than one isolated structure. How does this affect practice?*

**COLBERT:** Not directly, in my opinion.

**MINORU YAMASAKI:** From time immemorial buildings have had to respect the community of buildings in which they were built and, particularly, the buildings adjoining, so I see no great difference in that aspect.

**WILLIAM PEREIRA:** It does give us more and more training in the responsibility of relating buildings to other buildings.

**JOHANSEN:** It requires of the architect the ability to think and design in a larger scale, an architecture in which its solids are the buildings and its voids, ambient space.

**CAUDILL:** To us it means the use of the team concept in architectural practice.

**A. QUINCY JONES, JR.:** The city planner functioning independently of the architect can only produce chaos. There must be a co-ordinated effort from the starting point, and this "team" must include the philosopher, economist, psychologist, educator, politician, and theologian. The complexity of the problem which exists in the place where we are to work, learn, worship, play, and shop can only be simplified in its statement by including all factors required to provide a livable community. The approach to integrated knowledge through teamwork is the only means to a successful result.

**LOUIS I. KAHN:** I think one man can conduct a symphony better than a team can.

**ODELL:** The "need" for design of groups of buildings will not affect architectural practice until this need is recognized and sponsored to a more appreciable extent by commercial and Governmental clients. It is the architect's responsibility, and to his personal advantage, to educate and stimulate all concerned in this regard.

**RAPSON:** Generally speaking, the need for design of buildings in groups should be only for the good. All too often in the past the architect has been concerned only with the individual building on

its individual site. Consideration of the whole environment has too often been neglected. In practice, this increasing need for design of groups of buildings means that more and more work goes to larger and larger firms, and it means the expansion of the small office—a dilemma for the small operator, and a dilemma, far too often, for quality design and the love and care to detail design. **BASSETTI**: This question of the practical effect of building-group design at least deserves a hopeful answer. The design of buildings in groups has forced the architect to give thought to city planning problems, thus resulting in more comprehensive architectural solutions. In its earlier days, city planning was somewhat hampered by an emphasis on the esthetic—the axial and monumental, or the garden city—as a reaction to the unplanned medieval town and to the industrial factory town. But now, having concentrated on solving the countless functional problems first, the esthetic factors result by themselves much more surely and successfully than if they had been sought directly.

**EDWARD DURELL STONE**: Leadership in community and city planning has been lost to others; we are called in after the important decisions are made, and our role is to work out details. Compared to the medical profession, we must again be the diagnosticians, rather than the ambulance-chasers.

**CONTINI**: This is of course the brightest perspective in the architectural field. Urban renewal projects, development of entire new industrial complexes, development of new cities—all are creating potentials for the creation of environments that were unknown, or exceptionally rare, a few years ago. Undoubtedly, the design of large groups of buildings, shifting as it does the emphasis of design from the architecture of individual buildings to the form and quality of the entire complex, creates a field in which the ability of the architects and engineers to work together within the framework of a commonly understood architectural grammar will be put to new tests.

**T.H.C.**: *In these changing scopes of practice, are the limitations imposed by our society—such things as codes and miscellaneous regulations, as well as marketing methods, union practices, etc.—likely to stand in the way of a fully developed practice of architecture?*

**BELLUSCHI**: Limitations are good for architects.

**YAMASAKI**: If you did not have one problem, you would have another; so I doubt whether we can make such limitations an excuse for not being able to do good buildings.

**KUMP**: Society cannot impose any limitations upon architectural skills; this can only come about through a lack of understanding on the part of the architectural profession itself.

**KAHN**: I think you invariably start with the idea of trying to make way for your realizations, and then you may give in because you are not strong enough, not because you have limitations set up for you.

**NELSON**: The limitations imposed by society have, except at a very few rare moments in history, always prevented ideal utilization of architectural skills. Societies have never been designed to foster ideal utilization of anything; the purpose of a society is to make things work, and since things are always changing, something is always out of kilter. But wouldn't things be rather dull if this were not the case?

**REID**: Yet the increasing detail and complexity of building laws do not encourage innovation or creative thinking by the architect.

**CAUDILL**: Codes and state regulations are particular barriers to good design.

**CONTINI**: Arbitrary and special-interest restrictions affect development of new ideas; especially in the field of individual residential construction (from Buckminster Fuller's dymaxion house on to more modest efforts of prefabrication of mechanical cores), most efforts in the direction of truly new methods of construction and design approach have been frustrated by codes and union restrictions.

**PETER MILLARD**: The art of architecture is not a basic cause of culture but rather an expression of it; the role of the architect

is not to affirm and establish his personal whims, but rather to seek out and explore various ways to express the values of his culture. It is ridiculous to suppose that works of architecture can be exempt from the "practical" demands of unreasonable clients, inadequate funds, unskilled craftsmen, arbitrary laws, human weakness, and the rest. The architect must not only work within those circumstances, but he must involve himself with them in his art, and his skill must be organized toward that end.

**T.H.C.**: *And yet, don't those circumstances sometimes create a favorable climate and at other times an unfavorable one, for the practice of architecture? Does today's moral and cultural background restrict practice (as we found last month it affects the diversity of design)?*

**REID**: I believe that it is an understatement to say that today's moral and cultural climate does not represent an environment in which the best practice of architecture can develop.

**GEDDES**: An architecture is always part of the technical and philosophic climate of the time. There are certain aspects of contemporary life which work against architecture: the absurd wastefulness of society, the overproduction of public services, the unlimited number of unrelated choices, and the uncritical acceptance of technological change in the name of progress. Architecture is relevant to each of these problems, and an architect deals directly with them, not by theory or logic, but by his work and example. Implicit in architecture is an optimistic view, that the "indefinite perfectibility of mankind" is closely related to the quality of the environment.

**CRAIG ELLWOOD**: This is the era of Madison Avenue—the era of the doctrine to foster mass value as the criterion of our culture. My concern is primarily architecture, but all of us in design—whatever field—are constantly faced with the stupefying forces of mediocrity. Why is degenerative design sponsored, praised, and propagated? There has been too much glorification of the commonplace. A seemingly relentless propulsion to make small accomplishments into essential and eternal verities. An urgency to render everything an act of genius. A compelling insistence to evert truth for the sake of merchandising. This is the challenge for designers. It is time for reassessment and recapitulation. Time to re-evaluate the principles that guide creative thinking. Time to restore honest, objective criticism.

**CAUDILL**: The automobile culture unquestionably influences the design climate for building. We have too many design materials, too few honest values. There are as many fins on buildings as on cars.

**JOHANSEN**: There is a leveling of tastes and values. The best is seldom rewarded. Our greatest men are seldom recognized. Some of this we must expect in our democratic system, where the choice of the common man is foremost. Things of highest quality in some countries and in some periods, if not understood, were at least respected by the ordinary person. This should be better established in the American society and also in the profession.

**KATZ**: But can we really declare open war on this climate?

**STEIN**: We must re-establish a sense of appropriateness in our work, a relation between means and result, which may have an implication of a total national morality.

**T.H.C.**: *Is it possible to change the cultural picture? Or does one work within it, and adopt practice to it?*

**MIES VAN DER ROHE**: I stated my position as clearly as I could when I accepted the Gold Medal of the AIA: "In all these years I have learned more and more that architecture is not a play with forms. I have come to understand the close relationship between architecture and civilization. I have learned that architecture must stem from the sustaining and driving forces of civilization, and that it can be, at its best, an expression of the innermost structure of its time."

"The structure of civilization is not simple, being in part the past, in part the present, and in part the future. It is difficult to define and to understand. Nothing of the past can be changed by its very nature. The present has to be accepted and should be mastered.

But the future is open—open for creative thought and action.”  
**YAMASAKI:** Throughout history, the architecture of a particular society has reflected the beliefs and life of that society. The historically and artistically significant architectures were images of the life which went on within their walls, and reflected the particular beliefs of the society. . . . The architecture of our society must be totally consistent with our way of life and ideals. Though its obvious purpose is to house the complex activities of man, its more positive attribute is to elevate the spirit of humanity and be sympathetic and integrated with its ideals.

**RAPSON:** Our times have seen significant scientific and technological advance, but one might well question the cultural and moral contributions of the times. Invariably, culture lags behind technological advance, and, while not necessarily peculiar only to our times, one might well question whether a society which has placed emphasis on quantity rather than quality is capable of producing quality environment. As Albert Einstein once said, “Perfection of means and confusion of aims seems to be characteristic of our age.” We have the technical know-how and yet we seem not to care for beauty. Still, this is the architects’ potential, and we should constantly recall Wright’s statement at the turn of the century, “The architect should help people to feel that [great] architecture is a destroyer of vulgarity, sham, and pretense; a benefactor of tired nerves and jaded souls, an educator in the higher ideals and better purposes of yesterday, today, and tomorrow.”  
**PAUL THIRY:** I believe it is up to the profession to exercise leadership in molding our democratic society (where the individual has honor), rather than to be molded by a society which instills in our mental processes a sincere desire for retirement and escape.

**T.H.C:** *One wonders if the philosophy of Chaoticism, developed by many of you in last month’s discussion of theory, is one that will help “mold a society.” Doesn’t the present confusion, which was so unanimously admitted, seem incomprehensible to the public?*

**RAPHAEL SORIANO:** If architecture appears incomprehensible, the fault must be on the architect’s side. He has often sacrificed validated truths to the self-gratifying temptation of making pictorial answers. The architect has failed to develop a precise instrument by which he can evaluate his tradition, in order to keep that which still serves society, or render obsolete that which is erroneous and no longer serviceable.

**SERGE CHERMAYEFF:** We will have to switch our minds rather rapidly from the kind of exclusive, personal, private view of the range of activity for architects and see an infinitely widened spectrum. We could look at the problem then another way and say: if industrialization does indeed begin to operate as a tool which architects may use intelligently, and if, on the other hand, the monument builders continue to produce monuments wherever these are wanted by whatever means, we will then get an astonishingly widened range of architecture . . . from symbol and monument, to housing, urban renewal, and the industrialization of the building industry and a reduction in the cost of housing. . . . If this is so, which has the first priority? I suggest that those people who wish to come in at the pure art end are privileged to do so without condemning the others or sneering at those who elect to come in at the other end. In fact, I believe that good architecture is indivisible. It is like art; it does not have to be of any single handwriting or type to be excellent. I think all of it is completely honorable. If we extend this notion, we will get at one end of this tremendously widened spectrum those things whose very nature is permanence and exclusiveness, and at the other end—the industrialized product end—those articles whose very nature is their short life and obsolescence and appropriate anonymity.

**T.H.C:** *What is the feeling about making such a distinction between individual design of some buildings and an industrialized design of others—what has been called background and foreground architecture?*

**COLBERT:** This problem of background and foreground build-

ings is, in my opinion, too large to treat in this manner. I do believe a much deeper order must come to our urban areas. Certainly, one method of introducing this order is a more standardized and less garish background structure. However, I believe the acceptance of some essential disciplines will still allow its achievement within our existing legal definitions.

**JONES:** No architecture is unimportant. The barn, the tract house, the warehouse, the factory, the service station are all equally as important an influence on people and a livable community as are the museum, church, school, civic center, or shopping center.

**JOHANSEN:** The nature of the various types of architects is such that we must allow them to be themselves. Let them specialize. If the architect designs both types of buildings (foreground and background) have him determine carefully what is appropriate.

**VICTOR LUNDY:** Providing the great bulk of background buildings that are admittedly needed is a problem I am not concerned with. My concern is the design problem that requires creative effort.

**CAUDILL:** Isn’t there a place for both?

**ALDEN DOW:** Never.

**YAMASAKI:** Every building should be loved and cared for, and no standard formula should be applied.

**T.H.C:** *Since many of you feel this, and since the need truly exists for many more buildings than a few creative architects can possibly design, might there be two types of practice: one producing “pure art,” and the other geared to producing an industrialized architecture?*

**PEREIRA:** No. The practice of architecture is the practice of a profession, not a choice of systems.

**BASSETTI:** It would seem unwise to formalize this, but in effect such a situation is already with us.

**KAHN:** Then a building becomes a catalogue affair and any intelligent man can design that building. The architect might be called in at the last minute to choose the marble in the lobby. I believe if you want to call this architecture also, if you want to talk about a profession in that light, then I believe the argument is simply not worth talking about.

**STONE:** Standardization in creative work spells stagnation and mediocrity. . . . Architecture is not millinery, nor are we in the novelty trade.

**KATZ:** No living, breathing, thinking architect wants standard design of anything. We are not robots. We are an ever-improving society, or at least we believe in the philosophy that man in our world can improve his environment and seeks to raise it constantly to a higher and higher level of social achievement.

**ODELL:** Setting up a standard design for a type of building, or practice, would give too many excuses to the inept or indifferent designer, and discourage his obligation to contribute to or make a statement on each and every project.

**T.H.C:** *But isn’t one reason for the present chaos in design the feeling, in every man’s practice, that each of his buildings must “make a statement”?*

**CONTINI:** It is unavoidable to distinguish between individual design of special-type buildings and design of standard-type buildings. Their methods of fabrication are already different, and they will tend to become more so with standardization and mass-production techniques. There appears, however, to be no necessity or desirability to differentiate types of practice, in that the ability to design sensitively and maturely is certainly not enhanced by limitation of the field of opportunities. Professional specialization in the design field might lead to higher efficiency, and, perhaps, lower fees; but is not likely to result in a higher quality of design.

**LAMANTIA:** I believe that it is a current observation that a new type of architectural practice which will exist in almost an advisory capacity to the more successful practices as we know them today—an architect’s architect, as it were—is the answer to a preserved design equilibrium.

**LAWRENCE B. ANDERSON:** We have been disillusioned by

the realization that the massive shaping of our environment, made possible and necessary by our enormous productivity, has not given us a stable and permanent place to live, but only a blighted one. We see our natural resources and spaces being eaten up at an accelerating pace, with no good way of applying foresight to the eventual dispositions they must take. Under these circumstances, a few good buildings are not enough to make much difference. We still do not foresee the shape of optimal high density human environment.

**CARL KOCH:** A wallpaper-like curtain wall, which in 20th-Century terms does the same job that the early New England clapboard did in 18th-Century terms, can be just as satisfying and economical a skin for today as the clapboard was then. None of us complains about the standardization of parts, colors, shapes, and surfaces of the old New England Village.

We mustn't make the curtain wall take all the blame today for a growing addiction to an empty façadism that threatens to outdo the Beaux Arts approach at its worst. We must give new form not to curtain walls but to our neighborhoods made of curtain walls, by building standardized buildings—but with imagination.

**RAPSON:** There is no hierarchy of building types, but a hierarchy of building location and relationships, and basically there is no difference between the design approach of one building or space and another. There are individual buildings or groups of buildings that, either by their location or function, should be focal points or highly sculptural. But, by and large, there is a crying need for greater order and unity in the over-all picture: architecture of high distinction and quality based on sound detail and refinement that comes from love and understanding of form, materials, and techniques. This is an architecture that involves the kind of good, correct proportion and relationships, quiet refinement and detail one finds in some of the older parts of Boston, Philadelphia, and Georgetown; the kind of architecture that might be described as "anonymous" architecture (in the best meaning of the word)—architecture with over-all order, proportion, refinement, and restraint, which at the same time demonstrates subtle individual characteristics.

#### CONCLUSION:

The interesting—and the peculiar—aspect of this discussion on practice is that there is quite general agreement that "the traditional concept of the architect's practice" is no longer correct, but there is no clear statement as to ways in which it should be changed. A few voices, such as Thiry's, are raised in opposition to change, which he considers a "compromise with expediency," but most of the others strongly refuse to defend the status quo. What is wrong with the present method of practice? It forbids operations with builders; it prevents the architect leading a "team"; it interferes with full use of technology; it restricts the "pure" architect and favors the "business-minded" practitioner; it does not allow "the wholeness of architectural practice."

The discussion moves on quickly to the impact of the "new client" (the corporation, the group, the entrepreneur) on architectural practice, and one finds an almost unanimous agreement that the replacement of the former "private" client with these types "is not always," as Reid puts it more mildly than some, "an encouragement to the most creative thinking in architecture." Group decisions, aims which are not motivated by a "strong feeling that sets the architect on fire," "standardization," "mediocrity," and—the plaint of the smaller practitioner—the fact that "the corporate client tends to like architects in his own image: large..." are all given as results of the new client's influence and reasons for unhappiness at the change in client type. Again, there is not complete agreement. The entrepreneur-client is described by Colbert as one with whom "conceptual thinking originates" today; but Contini believes he is "the most difficult and destructive of all influences on architectural accomplishment."

Yet there are few specific suggestions as to how methods of practice should change; rather, there is a feeling that the architect must find ways to work within the present framework, and shape

it to his own ends. The aim, as Netsch puts it, is to produce a good building from a good architect working with a good client—and how, he asks, can you "document" that sort of practice? One gets the impression that no *formal* revision of practice is desired by this group, but rather the right to work as part of a "team" where this seems called for; or to work with a builder where this would seem to produce a better result; to associate more closely with the entrepreneur, if that is the desire; or to maintain a "pure" situation of creative artist-scientist.

The more creative approach to architecture has become more difficult, as a number of comments point out. There is little opportunity for research within the client-fee-commission method of doing business; the small firm suffers, and the architect becomes a "generalist" rather than one following through a single creative idea. One senses a certain amount of mutual envy: a frustration resulting from corporate commissions which give little opportunity for creative design; a frustration resulting from a small practice which gives little opportunity for large-scale commissions. Several possible solutions are suggested and rejected: group practice, an "architect's architect," some sort of subsidy for creative experiment. There is a feeling that the true architect will find his way to produce true architecture despite difficulties of practice.

The same attitude appears when questions of restrictions are raised: either cultural restrictions arising from the state of society, or legal restrictions dictated by codes and ordinances. They make "ideal utilization of architectural skills" difficult, but they must be faced. They have always existed in some form; they constitute the present climate, which, as Mies says, "has to be accepted and should be mastered."

The trend toward larger scale design and the problems of handling groups of buildings rather than a single structure are recognized as "resulting in more comprehensive architectural solutions," but not as reasons for changes in practice methods. More leadership in this direction is urged, and the "team" concept (with the architect still "conducting the symphony") is suggested, but again "no great difference" in practice is called for by this group.

An interesting discussion results from the suggestion that different sorts of architects, with different methods of practice, might do individual "foreground" buildings and more standardized and anonymous "background" structures to meet the great developing needs. The idea is in general disapproved of, although there seems to be a recognition of the need for some solution. Lundy is typical of the architects who, in their own practices, are "not concerned" with the larger social problem; Koch thinks the solution is "building standardized buildings—but with imagination," Anderson reminds us that "optimal high-density human environment" is a problem not yet faced, and Rapson calls for "greater order and unity in the over-all picture." Yet the defense of chaos that appeared in the discussion of theory, in the first part of this Symposium, persists in an abhorrence of "standardization" and a desire to make a "statement" with each commission.

At the end of two installments of this series of conversations about the state of architecture, summarizing rather than conclusion-drawing seems the best one can do. Neither a *theory of design* (rejected in the first discussion in favor of *many theories* with a rather nebulous and ill-defined common denominator) nor a *method of practice* (not described in any specific terms, even though the present traditional one is deplored as not correct for today's situation) is accepted as a deterrent for the great present diversity in architecture that is so universally admitted.

There remains one group of questions which was put to these participants; it concerns technology. Changes in technical processes; advances in the use of materials; the place of the architect in development of building products; the role of concrete, the role of steel, and the places of wood, masonry, and the plastic materials in basic design and construction; modular design, and techno-sensu-*alist* form—these are the subjects of the discussion next month in the continuation of P/A's Symposium on the State of Architecture.

T.H.C.

# Hotel Rooms

One of the benefits of a long association between client and designer is a continuous progress in refinement of designs. For several years Contract Interiors, Inc., has served as interior design consultant to the Howard Johnson Motor Lodges in collaboration with various architects. At the motels across the highways of the nation, as well as at the more luxurious Nassau Beach Lodge, Contract Interiors has continued a process of refining its work for this client within a single program of three fundamental objectives.

The first was to satisfy incipient needs of the traveling public with designs that would outmaneuver obsolescence. The second was to appeal both to the franchised owners of the motels and to travelers, not with conformable mediocrity, but with good materials and careful detailing. The third, and perhaps most familiar to designers, was to walk the tightrope between the visual appeal of quality elements and the practicality of low operating costs.

The prototype room for the most recent motel, at Secaucus, has an air of substance and warmth achieved by wood textures and wood colors with splashes of Howard Johnson's traditional colors of orange and blue-green. Although the rooms have a cinderblock wall, they avoid the drabness of many hotel rooms. Contract Interiors uses wood paneling for all the lodges, varying woods with locales—oak at Secaucus, cypress in Nassau, mahogany and cedar at Huntington. Plastic seating that has a jarring texture is avoided. Natural materials are preferred for

HOWARD JOHNSON'S MOTOR LODGES, INC.  
 • SECAUCUS, NEW JERSEY • CONTRACT  
 INTERIORS, INC., INTERIOR DESIGNERS

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

**DOORS**

Folding Door: oak/Pella Products, Pella, Iowa.

**FURNITURE, FABRICS**

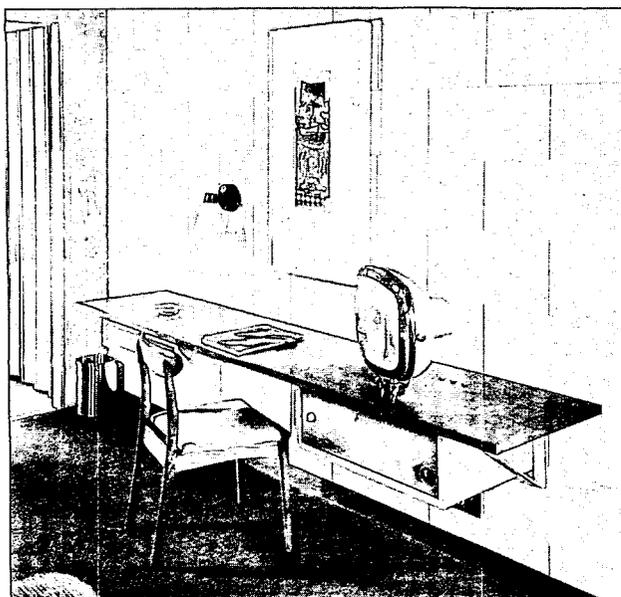
Desk/TV Unit: dark teak plastic-laminate top/blue green drawer face and TV control panel/integral swivel TV/specially-designed/custom-made/Tele-Sound, Inc., 3608 Powelton Ave., Philadelphia 4, Pa. Desk, Lounge Chairs: teak-finished wood/Heywood-Wakefield Co., Gardner, Mass. Coffee Table: dark teak plastic-laminate top/32" diameter/Heywood-Wakefield Co. Beds, Frames, Spreads: frame/The Harvard Manufacturing Co., 7619 Grand Ave., Cleveland, Ohio; mattress/The Englander Co., Inc., 206 Lexington Ave., New York, N. Y.; spreads/H. W. Baker Linen Co., 315-317 Church St., New York, N. Y. Headboard/Night Table: continuous box shelf of dark teak plastic-laminate/white plastic-laminate shelf-tables/vinyl-upholstered headboards/Beautycraft Furniture Manufacturing Co., 1301 N. W. Seventh Ave., Miami, Fla.

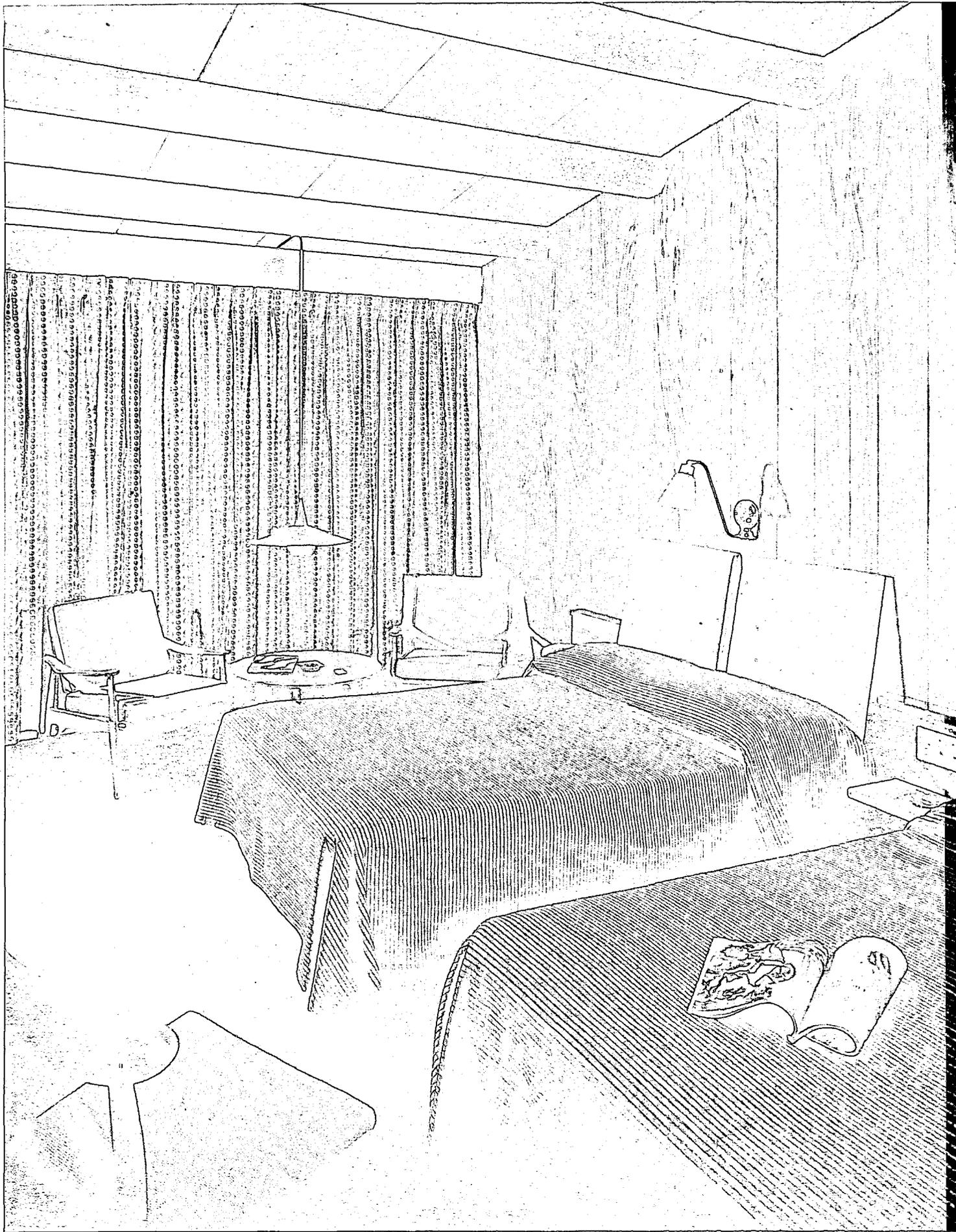
**LIGHTING**

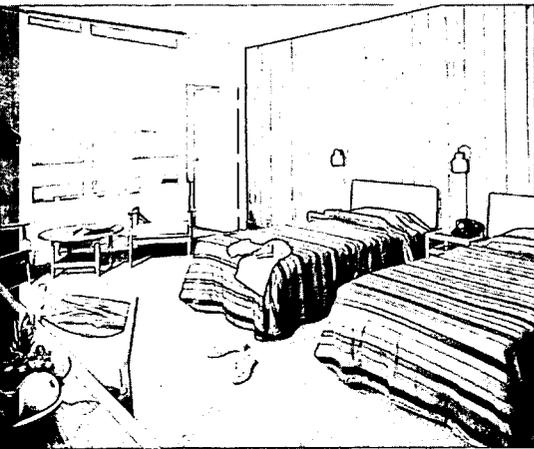
Suspended, Wall-hung Fixtures: George Tanier, Inc., 521 Madison Ave., New York, N. Y.; Kurt Versen Co., 4 Slocum Ave., Englewood, N. J.

**WALLS, FLOORING**

Walls: cinderblock, painted, plastered, vinyl-covered; oak paneling. Flooring: quarry tile; wool carpet/dark brown tweed/Roxbury Carpet Co., 295 Fifth Ave., New York 16, N. Y.







draperies, carpeting, and upholstery.

The Nassau Beach Lodge represents an advance in luxuriousness and in facilities for longer term resorters. According to the designers, Scandinavian furniture was used because it has a warm and tropical feeling appropriate to Nassau. This is an interesting intellectual manipulation of "tropical" that seems to ignore the furniture's indigenous climate.

The design for Secaucus exemplifies refinement of planning for travelers' needs in the further development of the desk-TV unit from the earlier Huntington model. Chests of drawers were eliminated as unnecessary for short-term visitors, and continuous flat space for writing and for spreading out is provided. The Huntington unit has rows of steel strips imbedded in the plastic top to serve as a luggage rack; at Secaucus the rack has been moved into the dressing area. In all motels, the bath-dressing area has been separated from the living-sleeping area for privacy; at Huntington, a horizontal slat partition

accomplishes this, while a sense of the space beyond is retained.

Careful consideration of the intrusion of TV in a room design resulted ultimately

NASSAU BEACH LODGE • NASSAU, BRITISH WEST INDIES • CHARLES F. MCKIRAHAN, ARCHITECT • CONTRACT INTERIORS, INC., INTERIOR DESIGNERS

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

**DOORS, WINDOWS**

Doors: flush/painted blue green. Drapery: linen over diffusion curtains/Bridgeway Industries, Inc., P. O. Box 175, Brockton, Mass.

**FURNITURE, FABRICS**

Convertible Sofas: Hans Wegner design/George Tanier, Inc. Spreads: cotton/gold, red, blue, brown stripe/Moss-Rose Mfg. Co., Allegheny Ave. and Hancock St., Philadelphia, Pa. Chairs, Desk, Coffee Tables: teak plastic-laminate and oak/specially designed/custom-made/Heywood-Wakefield Co.

**LIGHTING**

Suspended, Wall-hung Fixtures: George Tanier, Inc.

**WALLS, CEILING, FLOORING**

Walls: white plaster; cypress paneling. Ceiling: white tile. Flooring: sand beige carpet/James Lees & Sons, Co., East Fourth St., Bridgeport, Pa.



in the tidy placement of sound equipment below the desk with only the swivel-hung picture tube and control panel visible above.

Contract Interiors' designers are architecturally trained but do not engage in architecture except as it relates to interiors. They offer the specialized knowledge and experience of new materials for interiors and continuously investigate wear, methods of maintenance, and the camouflaging of soils and stains.

Maintenance requirements have governed the practice of using plastic table-tops, plastic wallcoverings (where wood paneling or brick is not used), and of using lounge chairs with wood rather than upholstered arms. The latest desk-TV unit is wall hung to facilitate room cleaning. For the same reason, a continuous teak-grained, plastic-laminate shelf, supporting tufted plastic headboards and white plastic shelf/nighttables, is also wall hung. Durable carpeting is used in hallways. In guest rooms, carpeting is

dark and relatively inexpensive: dark so as to hide stains and cigarette burns; inexpensive so as to make possible periodic replacement.

HOWARD JOHNSON'S MOTOR LODGES, INC.  
• HUNTINGTON, NEW YORK • CARL KOCH &  
ASSOCIATES, INC., ARCHITECTS • CONTRACT  
INTERIORS, INC., INTERIOR DESIGNERS

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

**CABINETWORK, SCREENS, PARTITIONS**

Partition: cedar slats separating sleeping and dressing areas.

**DOORS, WINDOWS**

Doors: mahogany. Draperies: natural linen/Bridge-way Industries, Inc.

**FURNITURE, FABRICS**

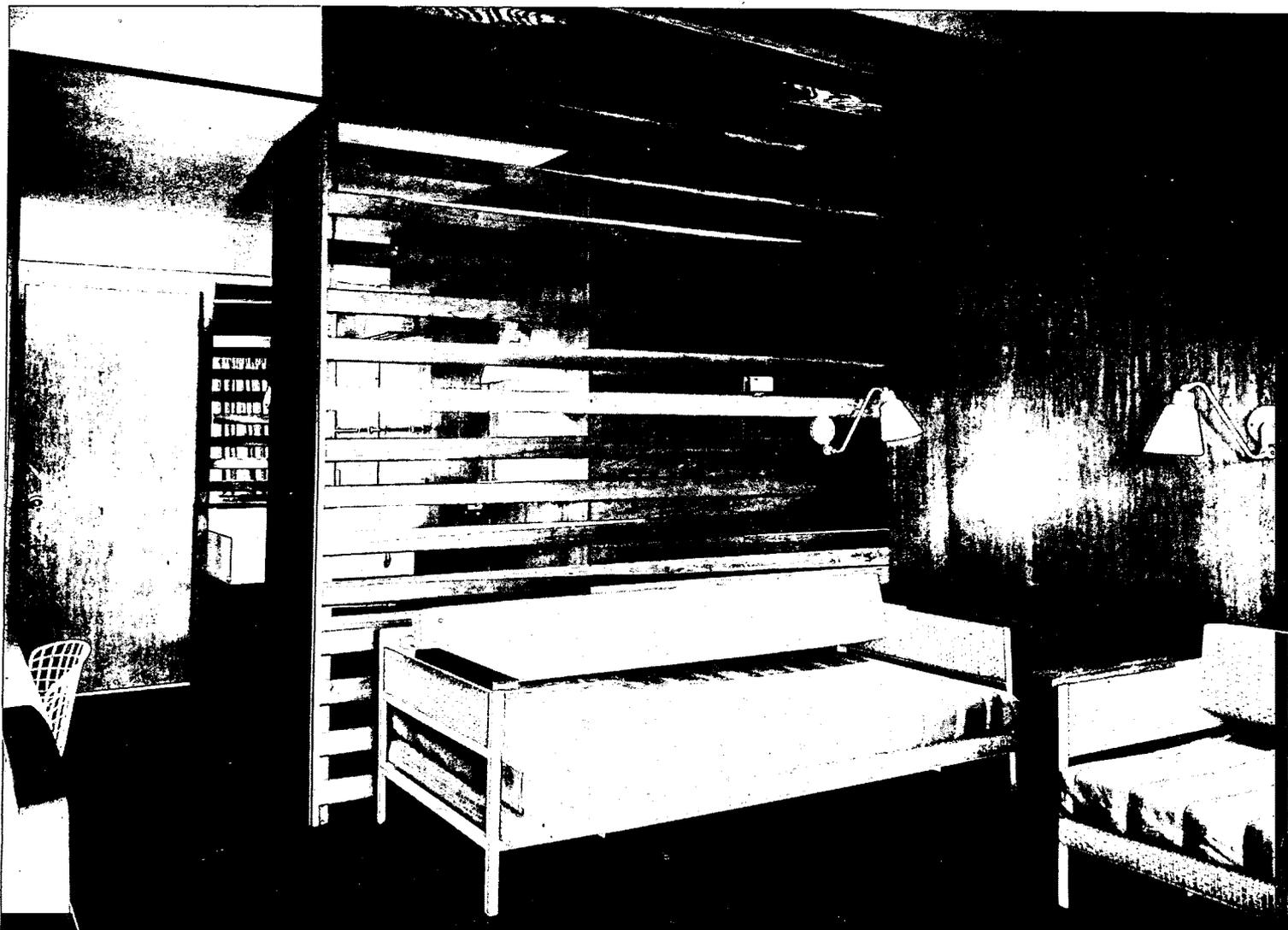
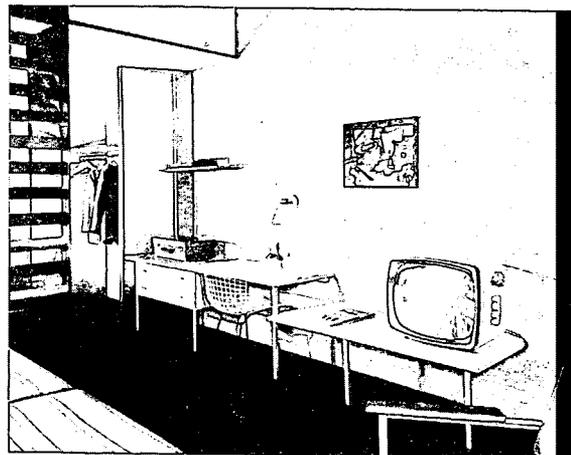
Beds: The Englander Co. Spreads: H. W. Baker Linen Co. Desk Chair: Knoll Associates, Inc., 575 Madison Ave., New York, N. Y. Desk, Luggage Rack, Coffee Table: white plastic-laminate tops/specially designed/custom-made.

**LIGHTING**

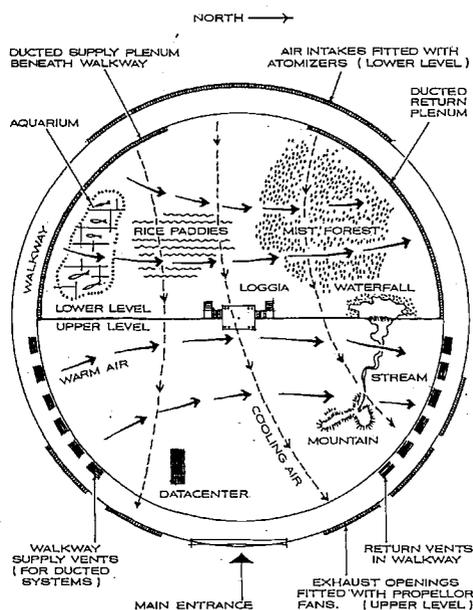
Fixtures: Kurt Versen Co.

**WALLS, FLOORING**

Walls: white plaster; mahogany paneling. Flooring: brown wool carpet/James Lees & Sons Co.



# AND SUDDENLY LAST SUMMER



The world's most advanced botanical display, completed last summer, features a dozen different tropical climates, coexisting in a single great room and enclosed by a striking geodesic dome. Presented here are some of the new environmental methods of control that make this unique duplication of climates possible.

The world's first air-conditioned greenhouse—the St. Louis “Climatron”—is a giant hemisphere designed by Murphy & Mackey, St. Louis Architects. Winner of this year's Reynolds Memorial Award (see P/A NEWS REPORT), the aluminum/acrylic-plastic dome signals a new approach, in botanical displays: that of growing a large variety of tropical plants in a totally controlled climate. Dr. Frits Went, Director of the Missouri Botanical Gardens, originated the concept, then coined the dome's name to denote its special climate-control features.

In addition to displaying some 15,000 varieties of tropical plants in its one great space, the glistening transparent dome

encloses a multitude of other eye-catching features: a miniature mountain (with a stream powered by a 150-gpm pump), a Himalayan mist forest (with a waterfall plunging down its midst), an aquarium, rice paddies, lily ponds, and a swamp.

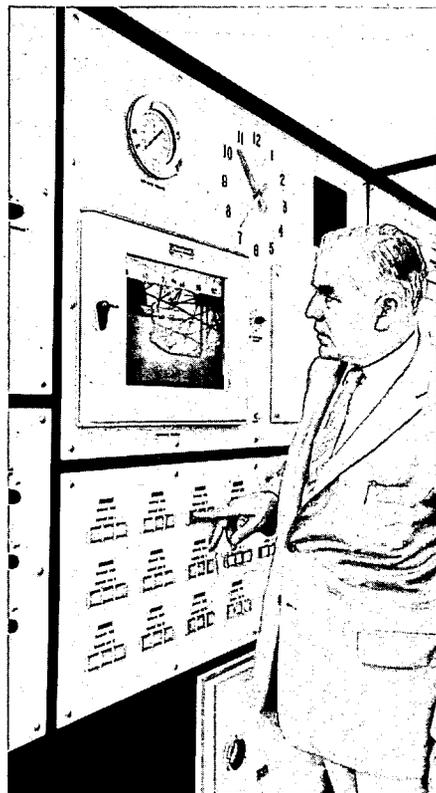
These conditions duplicate tropical climates from all over the world, ranging from steaming jungles to cool mountains. Some regions have warm days and cool nights, others have hot days and hot nights. One section of the Climatron is damp and muggy; a few feet away it is comparatively arid. Temperatures inside the Climatron range from 60 to 90 F, humidities from 50 to 100 percent. Because many of the rare and costly plants are extremely sensitive, both temperature and humidity must be kept within narrow limits.

### Setting and Structure

The Climatron is the first phase of a master redevelopment plan for Shaw's Gardens, a park near downtown St. Louis left to the city by millionaire Henry Shaw. The century-old gardens have long fea-







Photos: Jack Dennison

Columned arch and classical stair from former building divide upper and lower levels of one-room Climatron (acrosspage). Exhaust fans along eastern rim are interlocked with dampers and individually controlled from the DataCenter (top left). DataCenter, glass-enclosed, controls two air-conditioning systems, also activates lights, bird calls, and rainstorms (top right). Dr. Frits Went, Director of the Missouri Botanical Gardens, shown with the DataCenter (lower left). One of ten thermostats, placed among the rare tropical plants, sends information to the DataCenter for proper maintenance of the correct temperatures and humidities in the dozen different Climatron climates (lower right).

tured rare tropical plants, but the simultaneous display of many varieties, each in its native climate, is a major expansion of its program.

To make space for the new structure, a conventional greenhouse standing on the site was razed. From this Palm House, however, two features were salvaged, to be incorporated into the Climatron and to link the new with the old. A columned arch has become a reference point for the interior layout; a former stair now connects the two levels of the Climatron gardens.

The gardens are bisected along the north-south axis, with the western half about 15 feet below the eastern half. A raised walkway follows the inner perimeter at the upper level, from which visitors look down onto lower-level displays.

Covering the gardens is a geodesic framework of tubular aluminum, based on principles developed by Buckminster Fuller. Structural engineers were Synergetics, Inc., of Raleigh, N.C. The framework sits on five concrete-bearing piers spaced equidistantly along the Climatron's circular concrete base. The piers merely hold the structure off the ground; the geodesic framework is completely self-supporting. There are no interior supports. Lunes of each spherical triangle curve down to meet the piers; at their midpoint they are about 9 ft above the walkway.

Original plans called for suspending a tent-like skin of clear plastic from the aluminum frame, but the architects could not find a product guaranteed for more than a couple of years at best. A major decision, therefore, was whether to put up the plastic, knowing it to be only a temporary and costly solution. Waiting until a suitable substitute could be found, however, meant sacrificing the many valuable palms. Deciding that the garden could not afford to replace a plastic skin every other year, the architects installed 4000 transparent triangles of  $\frac{1}{4}$ " acrylic plastic set in neoprene-gasketed aluminum channels. This secondary framework of the channels only holds the acrylic glazing; it carries none of the load.

From the exterior, the triangle pattern of the channels blends with the hexagonal pattern of the aluminum tubing. Inside, the triangular pattern dominates. The clear plastic gives an illusion of limitless space; the large Climatron seems to extend far beyond its 175' diameter and 70' height.

### *Air-Conditioning Systems*

The problem of closely controlling so many climate areas is compounded by the

effects of the sun blazing through the transparent dome; blistering St. Louis summers; sub-zero winter temperatures; and the complete lack of any partitions inside the Climatron.

Paul Londe & Associates, Mechanical Engineers, St. Louis, designed two independent air-moving systems: a ducted system for heating and humidification to simulate solar heat gain in winter, and a blower-spray system for evaporative cooling and humidification to create required gradients in the 1.3 million cu ft structure.

Ducted-system air movement (warming) is from the south side of the Climatron to the north; the blower-spray system (cooling) moves air from the west to the east. (But by regulating the damper positions, warm air can be moved from, say, southwest to southeast, or to any other area. The same is true of the cool air.) By careful control, the two systems maintain the exact temperature and humidity required in every part of the Climatron, and can change the interior air every minute.

"Brain" behind the systems is a Honeywell "Supervisory DataCenter" at the main (east) entrance. Feeding information to the DataCenter brain is a nerve system of 10 thermostats and 4 humidistats constantly checking each climate area and making continual corrections in the Climatron's two air-conditioning systems. Except for the DataCenter and the thermostats placed among the plants, the rest of the mechanical equipment is hidden.

A large fan in the mechanical room beneath the upper-level walkway moves air through a plenum chamber and out through diffusers along the southern rim of the Climatron. This air sweeps across the Climatron interior to the return ducts along the northern rim. The ducted system circulates outside air or interior air, adding heat and humidity if required.

Air for the blower-spray system enters openings along the western rim of the Climatron at the lower level and passes out through exhaust openings on the eastern rim at the upper level. All openings are fitted with pneumatic dampers, each individually controlled automatically or manually from the DataCenter.

Climatron cooling is evaporative, with water sprayers and atomizers at each air intake. Besides cooling, the sprays are used to help water plants and keep humidity high in the mist forest. The sprays can use hot or cold water, at temperatures ranging from 50 to 180 F.

The exhaust openings are fitted with propeller fans, electrically linked with the dampers so that when the fan is turned on the damper opens. Like the dampers, each

fan can be turned on or off automatically.

Sizes of the intake and exhaust openings vary, since the lunes of the structure's spherical triangles curve down to meet the five bearing piers. Exhaust fans, for example, are of either 5' or 6' diameter, depending on their location.

Additional ventilation is supplied by a circular roof vent equipped with pneumatically operated vanes. This can be opened to vent air to the outside; in addition, the vanes automatically open when interior building pressure falls below 1" water-glass column, preventing undue pressure on the acrylic-plastic triangles.

### *Functions of the Control Center*

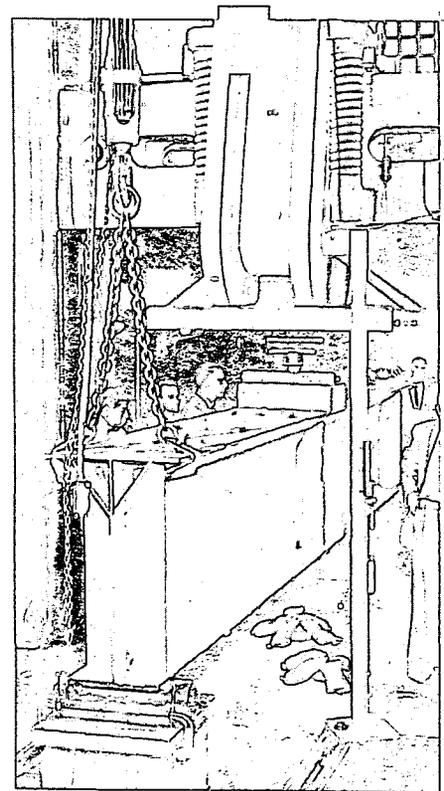
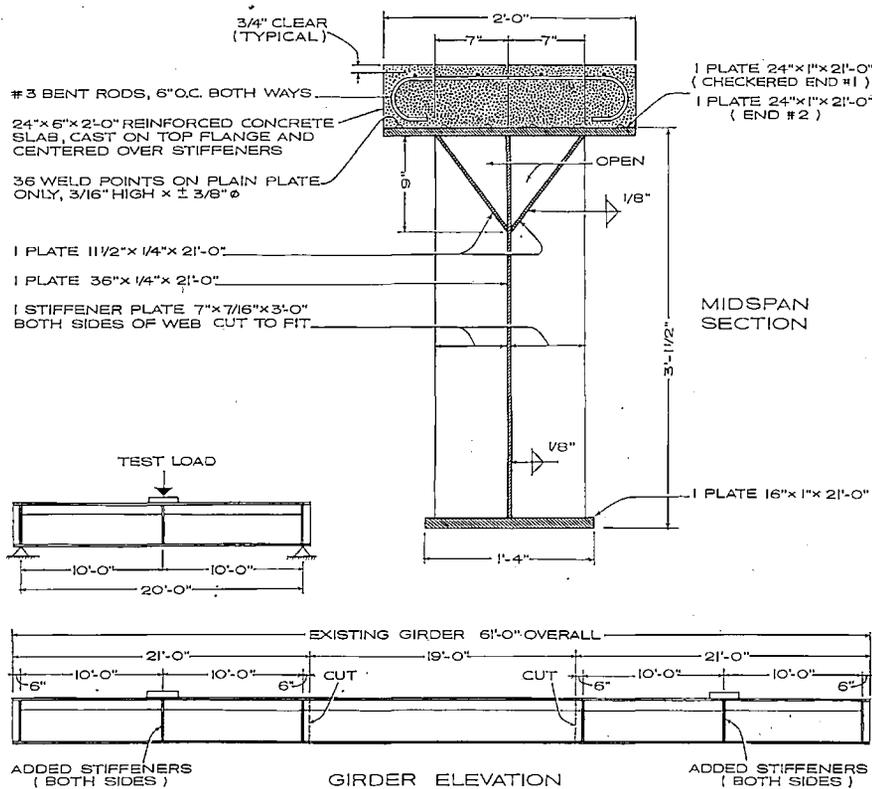
Pressing a button on the DataCenter changes the systems over to nighttime operation. Some areas of the Climatron maintain the same temperature and humidity day and night, other areas have a lower nighttime temperature, or a lower humidity. An override switch can provide up to 11 hours of daytime climates during the night setting.

Besides controlling the air-conditioning system in the Climatron, the glass-encased DataCenter supervises several other operations. Pushing a button turns on a man-made rainstorm from an overhead sprinkler ring about 40' up, to water the plants and add humidity.

Another button turns on 100,000-watt banks of floodlights inside the Climatron. A substantial portion of the light from the building's 1600 floodlights reflects back from the plastic ceiling, giving the interior a satiny glow.

The DataCenter also turns on bird calls. Since it was decided not to have tropical birds in the Climatron, visitors are given an audible impression of the jungle through a tape of jungle noises that is played through a recorder mounted in the DataCenter. Made in an African jungle, the tape is filled with eerie hoots and howls, rustlings and growls. Speakers are mounted along the base of the geodesic framework and face upward, so that sound is deflected off the plastic enclosure. Because of the parabolic shape of the Climatron, sound seems to come from everywhere.

The air-conditioned Climatron, unique and advanced as it is, is not the final word at Shaw's Gardens. The architects are already planning a series of additional climate houses. These will simulate other climates to study the effect of environmental changes on plants, and will supplement the gleaming Climatron, which made its appearance last summer as the world's first air-conditioned greenhouse.



## Inclined Corner-Plate Girder

*Report of a new girder design, with inclined corner plates for added strength, which has given highly promising results on tests.*

Fabricated steel girders have been characterized by vertical web stiffeners and relatively narrow flanges for so many years that these features are considered almost inherent.

But recent experiments at the University of Washington Engineering Experiment Station show that an alternate system of bracing provides a generous flange width at the compressive area of the girder, and permits the complete elimination of vertical stiffeners except at heavy load concentrations.

This alternate bracing consists of a pair of steel plates welded diagonally across the corners between web plate and top flange, to form a pair of closed triangular boxes that extend the full length of the girder. The corner plates thus provide three supports for the top flange instead of the usual one. They also rigidly brace and stiffen the web in its critical upper-compressive zone, sharing and dividing the shearing forces with it, and, at the junction point, leaving the web with unit compressive stresses about half those prevailing at the top of the web. Furthermore,

the closed triangular shaft can only be rotated at any point by twisting a long length of web plate on both sides of the point in question.

Homer M. Hadley, Seattle consulting engineer who designed the girder, points to many benefits of the design: less unbraced depth for the vertical web, lighter weight, extremely high torsional resistance, outstanding resistance against lateral deflection, and economies in fabrication costs.

The new girder eliminates failures of the compression flange and reduces deformation of the web. In addition, the corner plates make possible a much wider flange than could otherwise be used, greatly increasing lateral stability. As a result, both shipment and erection conditions are improved. The elimination of stiffeners produces a girder of unbroken surfaces, making for a better appearance and easier painting. Finally, machine welding achieves both quick and economic fabrication.

A test girder, 3' deep and 61' long, was tested on a 60' span, with equal loads applied at the third points in 20,000-lb increments. At the bearings and load points, pairs of vertical stiffeners were welded to the web; in the 20' intermediate spaces, only corner plates stiffened the

1/4" web. Tension failure in the bottom flange occurred at slightly over 160,000 lb, without any measurable deformation in the web or observable deformation in the compression flange (except its slight lateral drift of about 1/2" at midspan). The unit shear in the web, however, was low—about 9400 psi—and additional shear testing was desired.

Consequently, 21' ends were burned off the girder and these were tested on 20' spans, with the existing vertical stiffeners constituting end stiffeners and a new pair being added beneath the midspan loads. Also at the load points, 2' x 2' x 6" reinforced-concrete pads were poured in place on the top flange.

These 21' ends carried maximum loads of 320,000 and 335,000 lb, again without flange or corner-plate deformations, and at unit shears of 17,800 and 18,700 psi respectively. The webs in the last 10 percent of applied loads deformed markedly, however.

Co-operating in the development of the new girder were the Pacific Northwest Steel Fabricators Association and the American Institute of Steel Construction. The prototype was fabricated by Seattle's Pacific Car & Foundry Co.; testing was under the direction of Professors F. B. Farquharson and Desi Vasarhelyi.

# Shop and Warehouse Heating

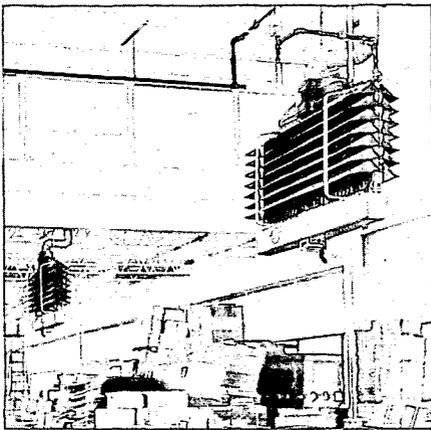
BY ROBERT H. EMERICK

*Shops and warehouses heated by conventional methods are not infrequently drafty, hot in spots, and cold in others. A consulting mechanical engineer of North Charleston, S.C., examines the many causes of unsatisfactory heating in structures of this type, establishes principles that will help to insure a comfortable working environment, and makes suggestions for future methods of control.*

The general manager of a warehousing company, standing warm and comfortable in his office, pointed through a window into one of the great caverns that functioned as an inside loading area.

"This section is heated," he explained to the engineer standing at his side, "by a group of gas-fired, suspended unit heaters. But look at that man stamping his feet. When their work takes these people out of range of a heater, they complain of cold drafts and of their hands becoming sensitive to injury. And when they work under a heater, they complain of hot blasts on their heads. What's wrong with this installation anyway? Or is it the men?"

The engineer said: "It's not the men. What's wrong here is simply a case of inappropriate heating—meaning the layout, the equipment, or possibly both, don't satisfy the structural and operational peculiarities of the job. It's a common trouble in warehouses and industrial shops. Heating designers sometimes regard these buildings as unfit for close comfort control except perhaps at inordinate cost, and the results of this attitude may be



1

found in grumbles and absenteeism. In this case, let's see how we clash with the structural peculiarities."

## *Effects of Structure on Heating*

For the information of the warehouse

manager, the engineer listed the following characteristics of such buildings, together with the problems these impose on the heating system:

Item 1: High bays, overhead skylights, monitors, etc., as illustrated 1.

The effect of these high atmospheres of relatively low temperature is to create an overturning movement of the air which is felt by workmen at floor level—sometimes as a cold downdraft or sometimes as a cold horizontal draft, depending on the structural configuration of the area.

Since the treatments for downdrafts and horizontals are quite different, directional determination of the air movement in each area becomes essential. It is possible to have both movements simultaneously in the same building in different areas.

Item 2: The effects of large windows and those employing factory sash.

The effect of these windows is the same as the windows for any heating job. Not only is the heat loss through the glass representative of the maximum rate, but such windows are seldom tight and the leakage of cold air is sure to produce drafts and discomfort if not promptly neutralized. Allowance for this leakage load in sizing the heating plant is routine, but measures directed at offsetting its draft effect are not. Yet this compensation must be regarded as essential, if satisfactory heating is to be achieved.

Item 3: The interior surface temperatures of the roof and walls, as these surfaces are exposed to the men on the floor.

Insulation of roofs and walls is quite rare in the shed-like designs of shops and warehouses. Interior surfaces, therefore, will show temperatures far below the average skin temperature of the individual workman, and a loss of heat from his body to the cold surfaces by radiation may be sufficient to produce a sensation of cold that is completely independent of both drafts and air temperature. If the cold surfaces are permitted to continue, compensation for the radiant heat loss takes the form of higher ambient temperatures—a factor generally ignored when computing the heating requirements. The result, of course, is insufficient heat where it is needed.

Another feature of cold interior surfaces is the possibility of condensation occurring there to the detriment of the surface. This danger is particularly real if heaters of the gas-fired, unvented type are in operation.

Item 4: Evaluation of the relationship

of width to length.

If the width exceeds 25 percent of the length, there is a possible need for intermediate heating provisions. The situation is controlled by the roof loss over the central areas, the placement of machinery which may produce small areas isolated from the nearest heat source, or both. The point is that concentrating on perimeter areas to the neglect of the center can breed trouble.

"Every one of these structural items is common to warehouse heating," the engineer pointed out to the general manager, "and in your case, to correct the cold feet, hot heads, and sensitive hands of your employees, we'll be obliged to evaluate the effect of each, and figure out a method of compensation. However, this compensation is complicated by the effects of operational practices, which we'll examine next."

## *Effects of Operations on Heating*

Warehousing operations are generally simpler than those of industrial production, but to be sure that nothing would be overlooked, the engineer in this warehouse case listed all the outstanding factors in the entire field.

Item 1: The need for ventilation.

Ventilation problems take numerous forms, which include the provision of replacement air for that which is exhausted from such special-process areas as paint booths, from collection hoods over vats and kettles, wood-working machinery and grinding machines; and the handling of toxic or flammable fumes and dusts.

If the make-up air is taken from the shop or warehouse as a whole, drafts in some degree and in some areas are sure to develop. In consequence, satisfactory heating will not result unless the designer does something about this air movement, either stopping it or neutralizing its effect.

In calculating the heating load, the ultimate disposal of this exhausted air can be an important factor. If all of the contaminated but heated air thus expelled is lost to the great outdoors, the burden on the heating plant and system can be tremendous. However, if the contaminants are not toxic, the law in some states permits the recovery of this air after cleansing, and it may be reintroduced into the building. Local laws and ordinances should be consulted accordingly.

Item 2: The need for providing controlled humidity, either moist or dry.

In an optical shop, for example, a very low level of humidity is essential, since instrument hairs may react to the presence

of water vapor and make accurate calibration either difficult or impossible. Temperature control can be critical when humidity is involved, since a variation either up or down changes the humidity ratio. In these circumstances, it is just possible that a heating installation must incorporate either a humidifier or a dehumidifier.

Item 3: Any form of heating can be subject to a critical eye if flammable or explosive gases are present, and certain forms, such as direct-fired units, may be firmly barred as being keys to disaster.

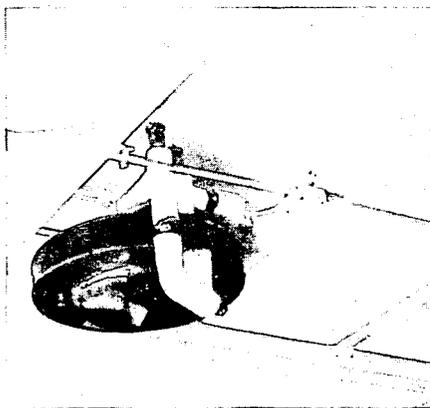
Guarding against such dangers requires that the heating designer know *all* about the projected operations within the structure he is called upon to heat. Although dangerous methods are almost always caught in time, delayed changes increase the cost of the job. The rule here is: discover what is dangerous *first*.

Item 4: What about the placement of machinery as a cause for air channels? And suppose some of this machinery makes heat intermittently, such as drying or heat-treatment ovens?

Machinery effects must be considered primarily as local effects, meaning the immediate area surrounding a given machine. Compensation for these conditions may involve the erection of barricades to break air channeling, an unusual placement of heating equipment together with special control for the area involved, or possibly the employment of special units.

Machinery effects can be very important in a shop or factory. This will be demonstrated later by the evaluation of selected cases.

"In a warehouse," said the engineer, "machinery problems are likely to be replaced by those of bins and racks. Since operations may not be continuous every-



2

where in the building, keeping stored materials warm is seldom necessary. What we do need is adequate, draftless warmth that can be turned on or off, for each area, in accordance with its activity requirements. We do not call this spot heating,

but selective-area heating."

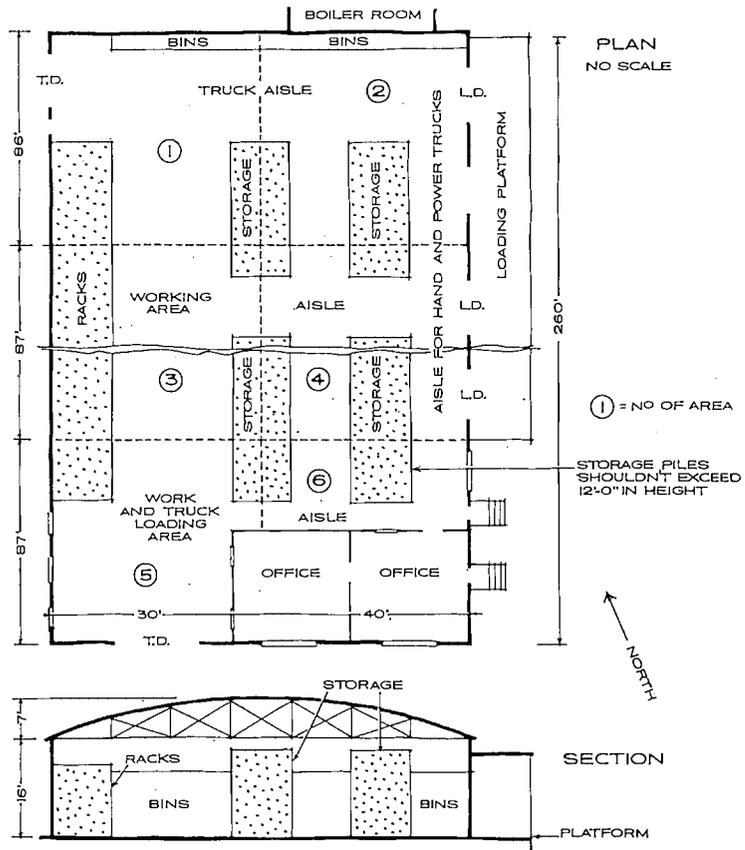
Item 5: This is a great upsetter of heating control, since it concerns the frequent opening of large doors.

Unavoidable in most warehousing and in many shop operations, truck and freight-car entry doors cause hard, cold drafts and impose sharp demands on the heating plant.

Conventional techniques seek to counter the cold inflow with a warm-air blanket, either down-blown across the opening 2,

of the entire heating problem. First, let's see how we can compensate for structural and use peculiarities in this warehouse, and come up with an improved heating layout."

The road to comfort in a warehouse can be followed in six steps, as follows: *Step 1: Break It into Areas.* A plan and sectional elevation of a simple warehouse with truck doors, a loading platform, and an office is shown 3. Since activities are never the same in all sections of the floor



3

or directed to create a head-on collision. Neither scheme produces complete neutralization, the results being in terms of amelioration. Actually, complete stoppage of cold inflow appears impossible, since the incoming trucks or cars inevitably carry a wind with them.

"I have heard of radiant heaters being used with some success on loading platforms," commented the general manager. "Would such heaters help the door situation?"

The engineer shook his head. "Infrared rays, which do the work in a radiant installation, must hit a sympathetic surface in order to be converted into heat. The human body—even the loading platform itself—is sympathetic and can be so warmed, but not the air. These rays pass right through air without affecting it in the least. However, there are several ways of combating door openings, not exactly conventional, that we'll consider as part

at once, heating needs show considerable variation, making obvious the economy and desirability of arranging the heating for area control. Six individual areas are indicated in the sketch. This number can be increased or decreased to suit conditions as they are found in any given job.

Against each area we test the factors of structure and operation. To illustrate, in Area 1 there are no skylights and only one fixed window in the personnel door. For cold inside surfaces to contend with, we have the ceiling and a small part of the west wall, mostly truck door. Although the width is nearly half of the length for this area, the storage racks occupy much of the total width, making placement of heating equipment difficult and impractical in these locations.

This covers the structural factors. Operational factors include the large truck door and the need for bulky storage. There is no ventilation problem, no worry about

humidity or flammable vapors in this case. Handling of the truck doors will draw some special treatment to be discussed later; meanwhile, a form for tabulating area data is suggested (Table I). It will be noted that the form aims at pinpointing the conditions that need correction or control.

*Step 2: Compute Tentative Area Loads.* Follow established procedures to develop the number of Btu per hour required by each area. Coefficients for the construction shown are: concrete-block walls, 0.36; 2" thick, preformed roof slabs, 0.21; concrete floor, 0.10; and glass, 1.13.

rule, the last expedient is best and easiest, but it does require a slightly larger heating plant. Now let's see whether radiant loss is important on this job."

To calculate radiant body losses, we first need the temperatures of the colder surfaces. These are discovered by use of the simple formula:

$$DL = \frac{T_d \times K}{1.65}, \text{ where}$$

$T_d$  = Temperature difference between inside and outside, in this case 65 F - 0 F = 65 degrees.

$K$  = Coefficient of heat transfer: 0.36 for the walls, 0.21 for the roof, etc.

the Stefan-Boltzmann equation. It looks like this:

$$q = 0.174 e \left[ \left( \frac{T_1}{100} \right)^4 - \left( \frac{T_2}{100} \right)^4 \right],$$

where

$q$  = The heat loss by radiation in Btu per sq ft per hr.

$e$  = A constant to represent the emissivity of the surface. For the skin we will assume  $e$  at .90.

$T_1$  = The absolute temperature of the warmer surface, in this case the human skin at 85 F plus 460 = 545 F absolute.

$T_2$  = The absolute temperature of the cold surface. For the walls at 51 F, this becomes 511 F absolute.

By solving this formula, we discover a heat loss rate by radiation of approximately 30 Btu per sq ft per hr. Since the total skin surface of an average man is 19.5 sq ft, this individual can expect to lose a maximum of 585 Btu per hr.

With 700 available, the subtraction of the radiation loss leaves 115 Btu per hr to be released convectively, probably about half of the actual, thus indicating our warehouseman might be a bit chilly. However, if he wears heavy clothing, which is also probable, the combined losses by radiation and convection should be balanced out pretty well with his 700 Btu production.

"But to be on the safe side," the engineer decided, "I'll provide heating plant capacity enough to hoist the ambient from 65 F to 66 F. That extra degree can do wonders in counteracting radiation heat loss."

Reference to a psychrometric chart shows that condensation on the 51 F wall will not occur until the humidity in the warehouse reaches 60 percent, and the 56 F ceiling will stay dry beyond 70 percent. Since these humidities are unlikely to develop in the wintertime in an active warehouse, no allowance is needed for this factor.

*Step 4: Handling Drafts.* "Draft control," said the engineer, "is one of the toughest problems we have in a shop or warehouse. Not only does a comfortable man get chilly as soon as the air around him moves a little, but he complains, as in this warehouse, when he works in the line of a warm blow. As a rule of thumb, the temperature of the warm-air discharge should be held to 60 degrees or less above the ambient. Thus for 65 F in the warehouse, 125 F unit heater discharge should be the maximum. Maybe that's the trouble with these men; we'll check temperatures to make sure the blow is not too hot."

The techniques for downdraft handling follow these plans: (a) stop the drafts at

TABLE I: TABULATION OF AREA FACTORS

Area	Down drafts	Direction horizontal drafts	Radiant heat loss from individuals*	Number large doors	Number of windows	Fumes or dust exhaust
1	Yes	W-E	No	1	1	No
2	Yes	W-E E-W	Yes	1	1	No
3	Yes	N-S S-N	Yes	None	None	No
4	Yes	N-S S-N	Yes	1	1	No
5	Yes	S-N E-W	Yes	1	3	No
6	Yes	N-S E-W W-E	Yes	1	1	No

\* Not considered a factor if workers are subjected to the condition for a short time only. A worker must spend most of his time in the radiant-loss environment in order to justify an increase of the ambient temperature or the taking of other corrective steps.

Assuming it is 65 F inside on a 0 F day, the calculated loads are approximately as follows:

Area	Btu per hr
1	126,330
2	115,570
3	93,950
4	103,370
5	139,900
6	109,780

The question now arises: must we increase these loads to compensate for special conditions such as drafts, loss of body heat from workers by radiation to cold surfaces, or to counteract condensation anywhere? Answers to this question are developed in the next step.

*Step 3: Determine Special Allowances.* "Some years ago," explained the engineer to the general manager, "the trade was baffled by a condition frequently called 'Cold 70.' What it meant was that people in a room were cold, even shivered, despite a 70 F thermometer. Now we know this condition comes from heat loss by radiation from the skin's average 85 F temperature, to the much colder windows and walls. To counteract this loss, we're obliged to increase the metabolism of the body, warm up the walls, or raise the ambient air temperature in order to reduce the body's loss by convection. As a general

1.65 = A surface film factor that represents the surface's capacity for fast exchange of heat.

DL = Degrees lower than the inside temperature.

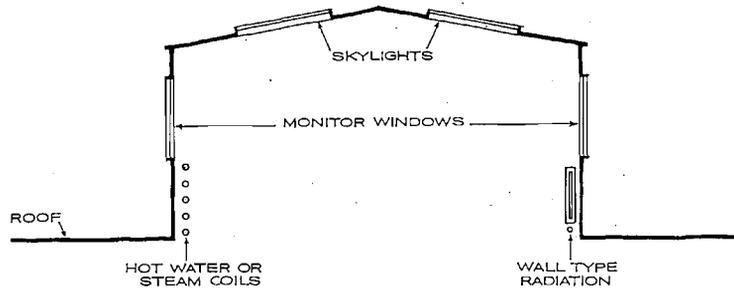
For the walls, the formula indicates that we can expect a drop of about 14 degrees; from the inside 65 F, down to 51 F.

The ceiling heat loss is relatively smaller, so we find an underside temperature of 65 - 9 = 56 F.

Glass surface temperatures will be below freezing, around 21 F in fact, but there is so little glass in this warehouse, and high in the walls, that its effect is negligible. The walls and roof are the serious factors. But we should note in passing that glass has tremendous capacity for creating discomfort where the areas are large.

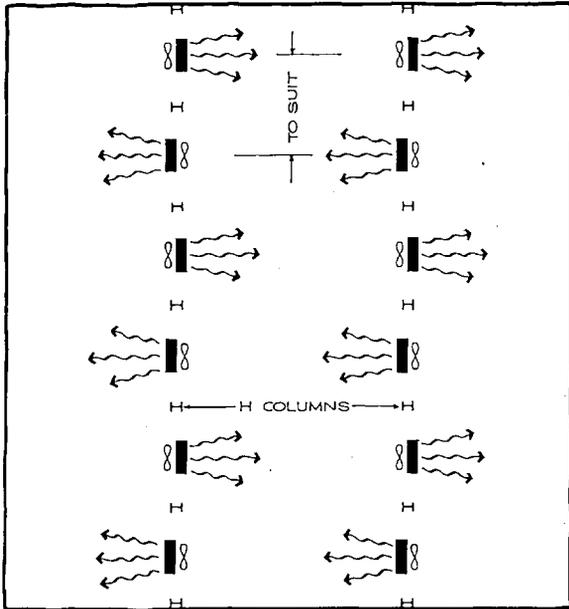
"Whether 51 F and 56 F will cause shivers in the warehousemen, we'll have to find out with some more arithmetic," the engineer told the general manager. "These people probably have a heat production of about 800 Btu per hr each on the average, of which maybe 100 Btu go out as water vapor with their breathing. That leaves us with 700 to be lost in convection and radiation before any discomfort is felt."

The formula in this calculation is called



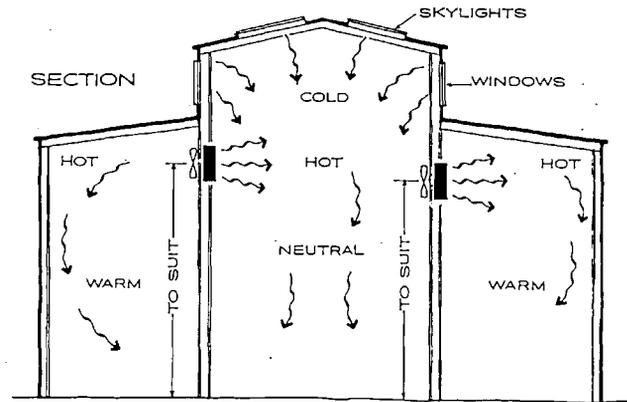
4

- NOTES
- 1 OPTIMUM SPACING OF HEATERS IN PLAN, 20'-0"
  - 2 OPTIMUM ELEVATION ABOVE FLOOR, 10'-0" TO 12'-0"
  - 3 UNDER CENTRAL MONITORS PROMOTE MIXING
  - 4 UNDER SIDE BAYS PROMOTE RING CIRCULATION



PLAN  
NO SCALE

5



SECTION

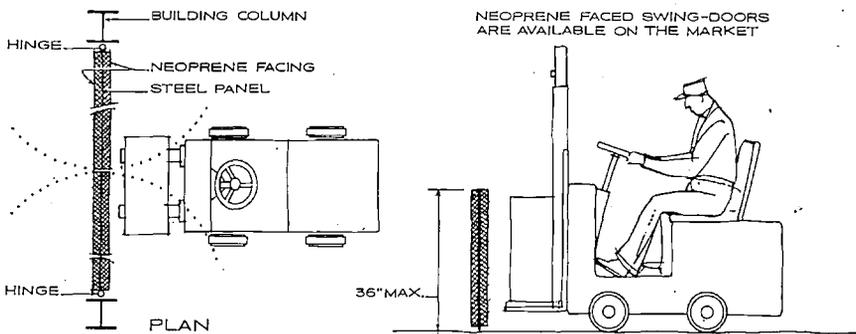
the source by raising the temperature with coils, unit heaters, or high-mounted radiation 4; (b) diffuse the cold airfall with injections of warm air from unit heaters 5.

For warehouses of the construction and loading shown 3, it is doubtful whether either scheme is worth its cost, since the racks and bins perform a function in breaking the cold downdraft pattern, and the compromised result appears in a more or less horizontal movement of air in the aisles.

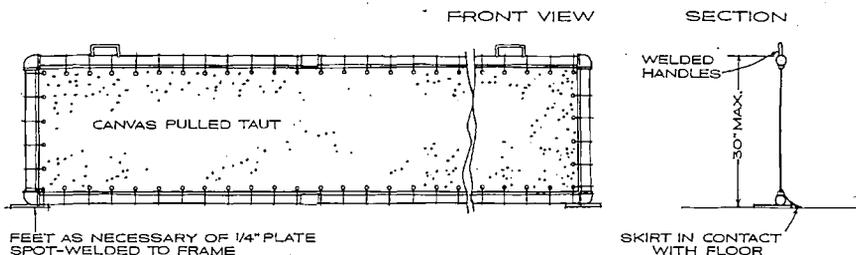
This makes horizontal drafts the major problem. Check barricades offer the most effective way of stopping them, but the barricades themselves, even portable ones, impose some inconveniences, particularly if hand or power trucks must frequent the aisles.

A form of permanent barricade, faced with neoprene or some other material suitable for withstanding the repeated impacts of trucks pushing through, is suggested 6, while a baffle that is readily moved from aisle to aisle, is shown 7.

Two important characteristics of barrier construction should be emphasized. First, easy removal for summer storage is desirable; second, the bottom of the barricade must extend close to the floor, otherwise the draft will travel underneath.



6



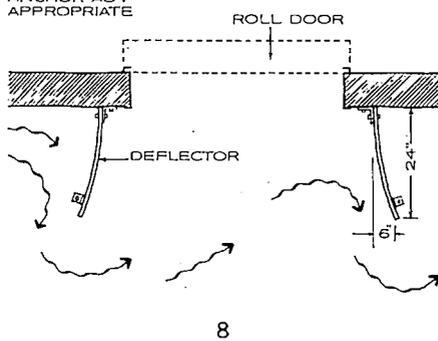
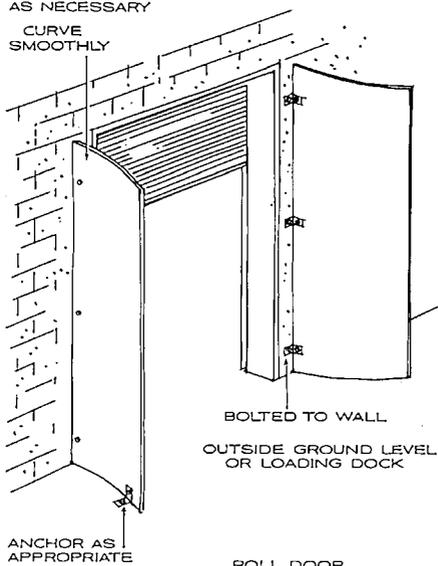
FEET AS NECESSARY OF 1/4" PLATE  
SPOT-WELDED TO FRAME

- NOTES:
- 1 FABRICATE FRAME WITH PIPE OR ANGLE IRON AS CONVENIENT
  - 2 SUBSTITUTE PLYWOOD, PLASTIC OR ANY SUITABLE MATERIAL FOR CANVAS IF DESIRED
  - 3 LENGTH TO SUIT REQUIREMENTS

7

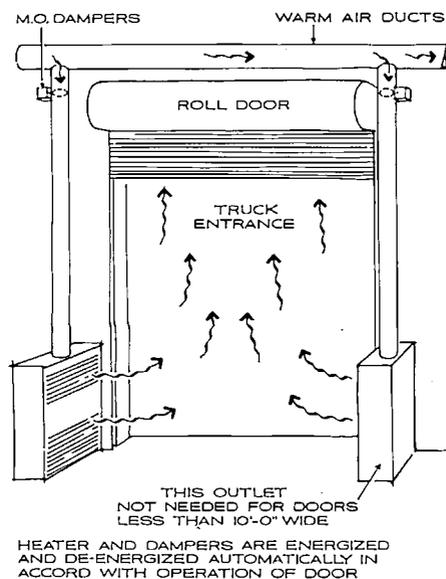
DEFLECTORS STIFFENED WITH STRAPS OR ANGLES AS NECESSARY

CURVE SMOOTHLY



8

9



Height usually is not critical, 2½' to 3' being ample for most situations.

*Step 5: What to Do with the Big Doors.*

"For combating the inflow of cold air when the big doors open," said the engineer, "I'm going to recommend a couple of arrangements you've probably never seen before. One of these is a pair of vertical wind deflectors on each door 8. These deflectors are of no help when the wind blows against the door from a 90-degree approach, but we should get a lot of good from them with winds that come in parallel, or at an angle. The Navy used this idea during the war, putting horizontal deflectors on ships' smokestacks to keep the smoke out of the after-control stations. The wind not only is flipped off its original course, but is slowed down by the impact.

"Having provided means for checking the inflow with these deflectors, our next aim," he went on, "is to warm rapidly the air that does enter. To do this, an arrangement for injecting warm air into the cold inspill from both sides of the door, and at a low level where the mixing can do the most good, is suggested 9. For doors 10' wide or under, registers on one side only probably will be enough; but the large openings should have the full treatment."

The general manager objected: "We have three platform loading doors, each 10' wide. We can stand the cost of the deflectors, since these are of inexpensive sheet metal, but will we need a separate heating system for each opening? That could run into real money."

The engineer shook his head. "It's not that bad. A single duct heat with automatic damper control will care for all the platform doors. As for the truck entries, a small duct heater for each, either direct fired or possibly an electric blast unit, depending on relative costs, offers a choice. Unfortunately, we can't heat a warehouse properly unless we spend some money. But the payoff comes in less sickness, less absenteeism, and less time off during the working hours to get warm. Operating charges for these door neutralizers will be negligible, since they are energized only during such times as the doors stand open."

We should note here that in some warehouses the relative locations of the big doors, the central heating plant, or local heating centers, may be such that the door demands can be handled as branch services from these basic units. However, the doors present a very special condition, and their independent treatment is recommended wherever possible.

*Step 6: Choosing the Right Heating Units.* Making the best choice, in view of the

structural and operational aspects of the warehouse or shop, obviously requires that we tabulate what kinds of units are available. The suitabilities of various units relative to area limitations, such as too little wall space for radiators, convectors, and baseboards, are tabulated (Table II).

### *If We Do Not Mind the Cost*

*For Area 1:* Overhead radiant heaters. Reason: truck bulk, while being unloaded, tends to block air movement so that men working on and around it might experience hard drafts, or no heat at all if warm blows were adopted.

*For Area 2:* A unit heater in the northeast corner, blowing toward Area 1. Also a large cast-iron radiator at floor level in the same corner to emit some low-level radiant heat and to energize upward air movement to the inlet side of the unit heater. Another cast-iron radiator under the window, and a couple of radiant panels over the aisle, complete the plan for this area.

*For Area 3:* Nothing but overhead radiant panels for this area. It is a work area without wall space and strong air movement is not desired.

*For Area 4:* We would place a unit heater over the aisle, complete the plan for this of Area 3, and blowing toward the loading platform. Under the window, cast-iron radiation, and spaced overhead and on the longitudinal center line of the aisle, a series of radiant panels.

*For Area 5:* This is a combined working-loading area; consequently we would prefer radiant panels overhead, supplemented by cast-iron radiation on the outside wall, under the windows. For final balance, a small unit heater over the transverse aisle, and close to the line of Area 6, blowing toward the loading area is useful in maintaining heat in any stray drafts from the platform side of the warehouse.

*For Area 6:* Cast-iron radiation under the window and along the outside wall, plus a line of radiant overhead panels, would be recommended.

Each area is subject to separate control, making possible the elimination of heating expense for areas in which no work is being done.

"The cost of this layout," the engineer explained to the general manager, "is built up by the need for providing radiation at floor level. If these radiators are handling hot water, which we prefer to steam for reasons of piping, bulk, and drainage, a central boiler, circulator, chimney, and related equipment must be bought and installed."

"What's wrong with the self-contained radiators?" asked the general manager.

TABLE II: HEATING UNITS AND THEIR AREA APPLICATION

Area	(a) Radiators, convectors (b) Baseboards	Overhead radiant panels	Unit heaters		Industrial, fired, ductless*	Overhead duct heaters
			Direct-fired	Steam or water		
1	No. Not enough wall space.	Yes	*	Yes	Yes	Yes
2	(a) Yes (b) No. Insufficient space.	Yes	*	Yes	if	Yes
3	No. No wall space.	Yes	*	Yes	overhead;	Yes
4	(a) Yes (b) No. Insufficient wall.	Yes	*	Yes	no if	Yes
5	(a) Yes (b) No. Insufficient wall.	Yes	*	Yes	requires	Yes
6	(a) Yes (b) No. Insufficient wall.	Yes	*	Yes	floor space	Yes

NOTES:

- 1 The asterisk (\*) indicates equipment that is suitable provided the fire and insurance regulations permit the use of direct-fired heaters within the structure, in view of its type and use.
- 2 Overhead placement of any type of heater is subject to approval in respect to the possibilities of interference with the performance of sprinklers.
- 3 The height of racks or stored materials may force the placement of unit heaters at inefficient heights. Fire regulations generally restrict piled materials to 12' or less, but the optimum heater height is about 9' above the floor.

"There's nothing wrong, except that gas-fired units are hard to find these days, the push being on electric radiators. However, we'd still have the problem of getting overhead to the unit heaters, and if we're obliged to use hot water in them for insurance reasons instead of direct-fired designs, a central boiler would be sensible for the whole thing. If they will let us use direct-fired designs for overhead, we will consider the electric radiators for the floor positions, but it's costly, as we have said before."

The general manager asked: "Have you any cheaper arrangements in your bag of tricks?"

The engineer nodded. "Here's how," he said, pointing to a sketch 10.

*When Dollars Are Scarce*

The arrangement shown assumes that direct-fired, vented gas heaters will be permissible. To supplement them, gas-fired radiant panels are used over the working areas. Door openings are neutralized as previously indicated 8, 9.

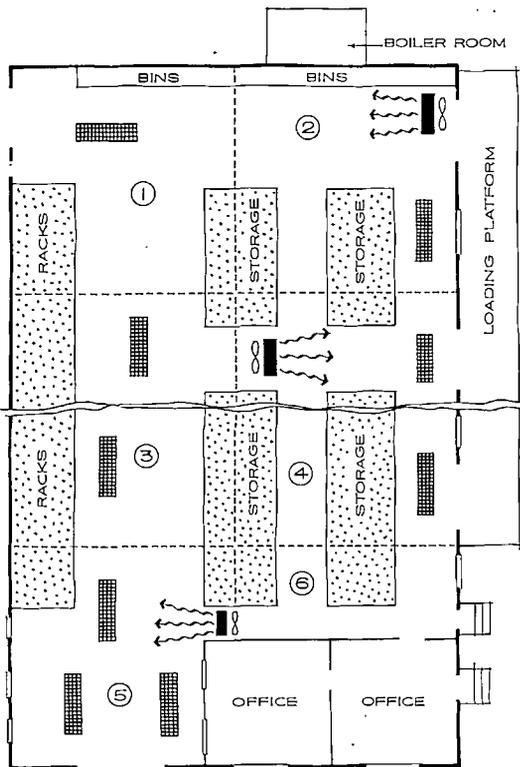
The notable elimination is in the floor-level radiation.

"Without the radiators," said the engineer, "floors and floor levels will tend to be cool, but it won't be too bad because of the draft barricades. Also, the impact

of direct rays from the overhead panels will warm up the concrete a little, except where the rays are blocked off by trucks, tables, men, or equipment of some kind. This is about as cheap as we can go, and still claim to have a reasonably uniform temperature at the working level of the warehouse."

In the event that gas-fired heaters are not allowed under the fire regulations, electric radiant panels might possibly find themselves approved. Panels in a stock room and over a truck loading door are illustrated 11, 12. It should be remembered that the panel over the door is a boon to men working there, but doesn't help to neutralize the cold inblow through the opening.

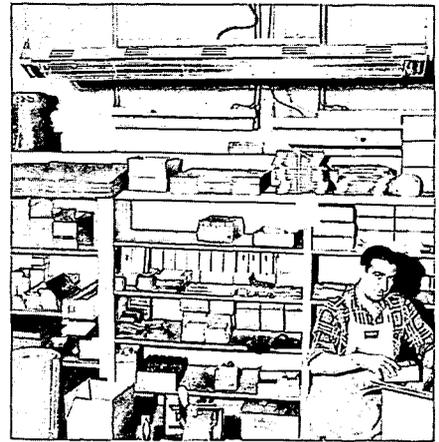
Area control is recommended in all cases.



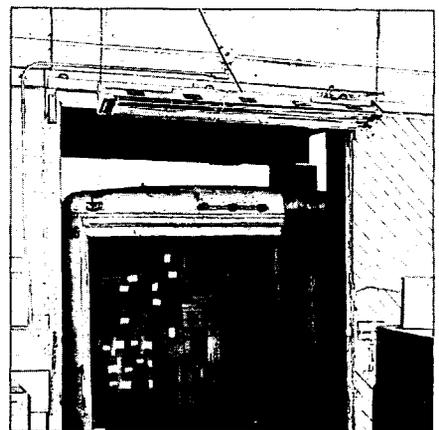
10

NOTES

- 1 UNIT HEATER
- 2 RADIANT PANEL
- 3 SUSPEND RADIANT PANELS AS DIRECTED BY MANUFACTURER



11



12

*Shop Treatment*

The over-all combination of wide open spaces, high roofs, walls that are mostly windows, and thin, uninsulated metal siding pose a difficult problem in shop heating.

Almost every master mechanic directing operations in such a shop can be expected

to comment on the heating situation in the following way:

"Comfort heat a shop like this? It can't be done. The place is too big, too open. It's like trying to heat the outdoors."

The common treatment is to spot-locate portable heaters or smudge pots similar to those in the California and Florida fruit groves. The radius of effect for one of these is about 8', and only one side of a man can be warmed at a time. Work is interrupted more or less regularly while the chilled workers, outside the radius, return to the fire to shake off their shivers.

Since this lost time is productive waste, let us see what an experienced heating designer can do to eliminate it.

1 Provide draft-breakers that are fabricated of light materials and portable (as shown) 7. A few of these go far in baffling low, parallel drafts that chill the feet and legs.

2 A row of fin-tube radiation under the glass, monitor windows helps substantially in combating downdrafts 13.

3 Another row of fin-tube wall radiation, which may or may not be covered for protection, and running along each outside wall just under the windows, will be notably effective in canceling the glass effect. If work benches are set against these outside walls, they should be moved away about 3" to permit free convective air movement over the fin tubing.

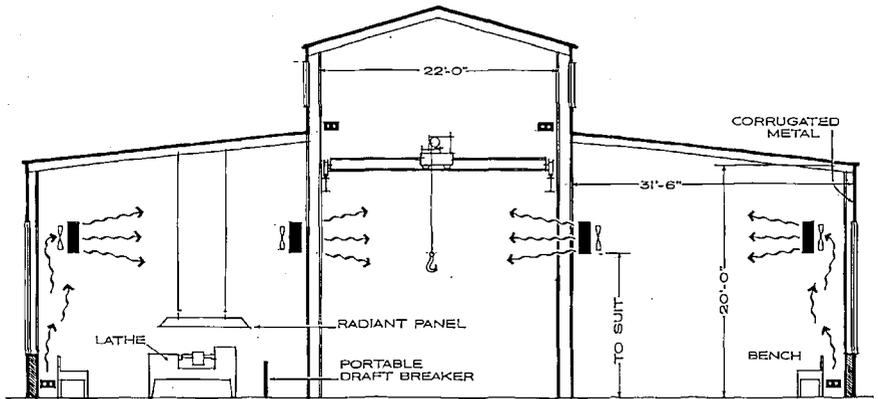
4 Warm each machine operator directly by radiant panels that are either gas-fired or electric and are suspended over his machine.

5 Recommended positions for unit heaters are shown 13. Contrary to the usual practice of blowing toward the outside walls, these are intended to pick up the convective air movements from the wall radiation, and redirect the flow toward the center of the shop, thereby creating a ring-circuit type of diffusion.

6 Shops not likely to have as many large doors as warehouses, but whatever they have can be neutralized substantially by the methods previously described and illustrated 8, 9.

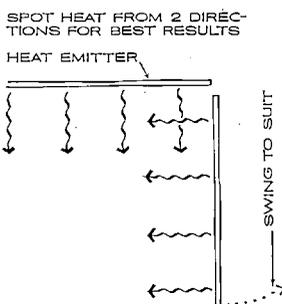
*Maybe It's Good,  
But Who Can Afford It?*

That is what the master mechanic is likely to ask, after the heating designer shows him what can be done to eliminate the daily meetings of the Salamander Society.



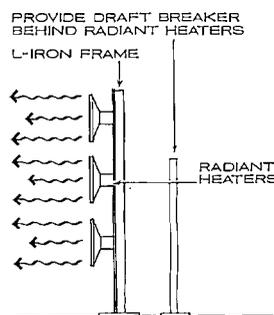
STAGGER BOOSTER UNIT HEATERS SO THEY DO NOT CONFLICT WHEN BLOWING INTO CENTER BAY

13

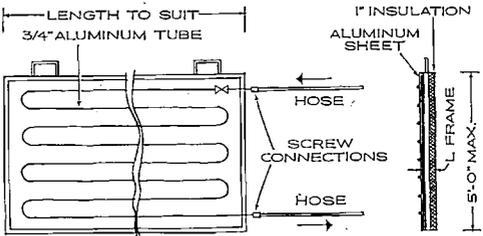


KEY POSITIONS

a b



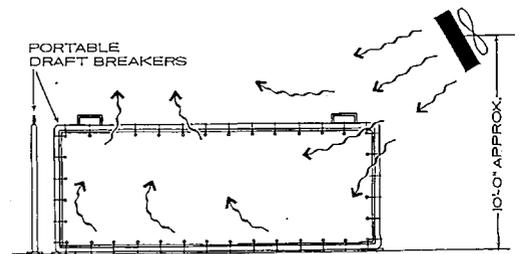
RADIANT HEATERS  
GAS OR ELECTRIC



TACK WELD TUBING TO ALUMINUM OR COPPER SHEET TO FUNCTION AS HEAT REFLECTOR

PORTABLE COIL ARRANGEMENT

REBOUND FROM FLOOR BY HEATER DISCHARGE HELPS NEUTRALIZE HOT BLOW EFFECT



UNIT HEATER  
SLANT DISCHARGE

As one man pointed out:

"Our shop is 200' long, 85' wide and 30' from floor to underside of the monitor roof. Roof and walls, except for 3' of brick and 44 windows of 48 sq ft each, are of corrugated sheet metal. We have no insulation, no weatherstripping. With a total volume of more than 417,000 cu ft, a heating installation as described would cost a fortune in capital, and eat up another fortune in fuel bills. Isn't that true?"

There is no doubt that the original installation would cost much more than a brigade of salamanders, but the results might be saving enough in productive work to pay off the cost in a reasonable time. Let us put some figures together and see how it looks.

Assuming 65 F inside with 0 F outdoors, a ground temperature of 40 F, and two complete air changes in an hour, the heat losses look like this:

Part	Area sq ft	K	Total loss Btu/hr
Roof . . . . .	17,200	0.90	1,006,200
Brick walls	1,614	0.31	32,522
Corrugated walls . . . .	5,552	0.90	324,792
Glass . . . . .	2,862	1.13	210,214
Floor . . . . .	17,000	0.10	42,500
Infiltration			1,122,266
		Total	2,738,494

To provide this amount of heat with oil fuel, rated at 140,000 Btu per gal and burned at 70 percent efficiency, we will consume about 28 gal per hr. At 15¢ a gallon, that amounts to \$4.20 per hr, or \$33.60 per day.

Compared with salamander operation, and assuming 16 salamanders burning 8 gal of oil each per day, the cost comes to \$19.20, an apparent saving of \$14.40 daily, in favor of the salamanders. But let us see if this saving is real or a delusion.

Allow five minutes per man per hour for warming. That represents a production loss of 40 minutes daily for each man. If the rate of pay is \$3.00 an hour, the man-day loss for warming comes to \$2.00, and if as few as eight individuals in the whole shop create this loss, it amounts to more than the extra cost of fuel for the complete heating system.

We also can expect more and better production from an evenly heated, non-drafty working area, less absenteeism from colds and influenza, and even fewer acci-

dents, since warm bodies are more alert than cold ones. So it is quite possible that a careful analysis of a shop's layout and operations will underscore complete heating as the only grade of heating actually economically justifiable.

### Spot Heating Should Be Temporary

Workmen as a rule do not expect too much from spot heating. They know it to be more or less a makeshift, to function strictly while they accomplish limited work in a limited time in an area normally without heat. And they expect the heat to move with them.

Men working under spot-heating facilities seldom are comfortable. One reason is that heat impact from a single direction is almost certain to make the man hot on one side while leaving him cold on the other. It is suggested, therefore, as a basic principle, that any form of spot-heating arrangement should direct warmth to its target from at least two directions.

There are several possibilities for spot-heating 14. The grids of copper tubing through which hot water or steam is circulated, depending on which is available, perform additional service as draft barriers. The radiant panels should be backed up by draft breakers, either portable or permanent, since the stoppage of horizontal cold air movement is an essential requirement for any kind of comfort heating.

### Ventilation?

#### Localize It If Possible

A common problem in many shops is that of discharging obnoxious fumes to the great outdoors, without discharging at the same time an equal volume of warmed air 15.

To avoid this important loss of heat, the provision of a cold supply from the roof to the space above the fuming vat effectively stops the movement of warm air from the surrounding atmosphere into the vat exhaust system. No cold air fan is needed, since the greater relative density of the cold air enables it to flow down the supply pipe naturally.

Vent and intake openings must be located to avoid any re-entry of the exhausted fumes.

For an excellent study of industrial ventilation of all kinds, the *Manual of Recommended Practice* issued by the

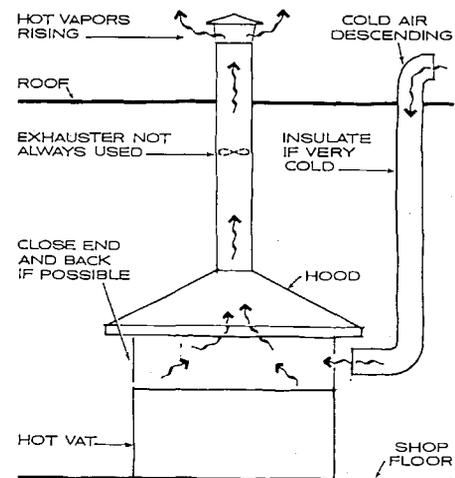
American Conference of Governmental Industrial Hygienists can be referred to with profit.

### Can We Originate?

If we can, we should. Shop and warehouse conditions need improvement. Most of the expedients given in this article represent conventional practice, or the use of familiar equipment in perhaps unfamiliar ways.

Some possibilities worth thinking about are these:

- 1 Have the structural members of a building double as both heat conveyances and heat emitters.
- 2 Fill the thickness of doors with hot water, hot air, or radiant panels, thereby changing a heat-consuming area into a heat-emitting one.
- 3 Do not stop with double glazing. Fill the space between the glass panes with warm air.
- 4 Build window frames so they, too, emit heat.
- 5 As a general aim, provide convective

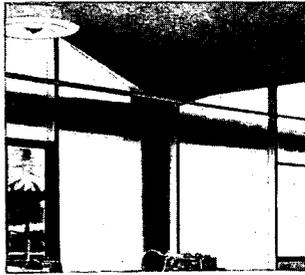
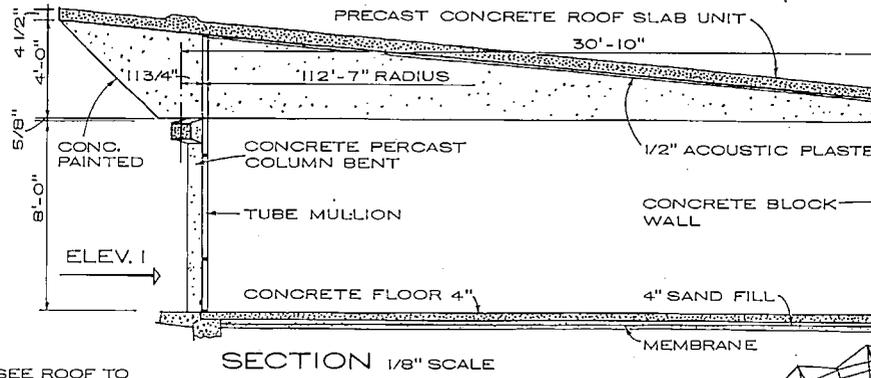
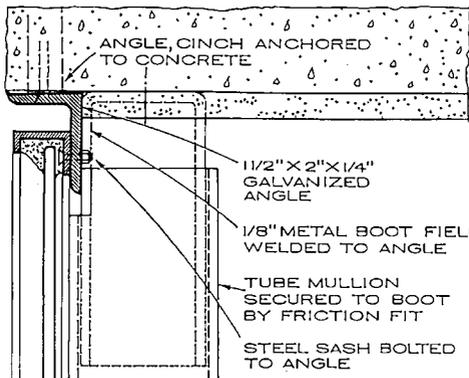


15

and radiant surfaces for the best results.

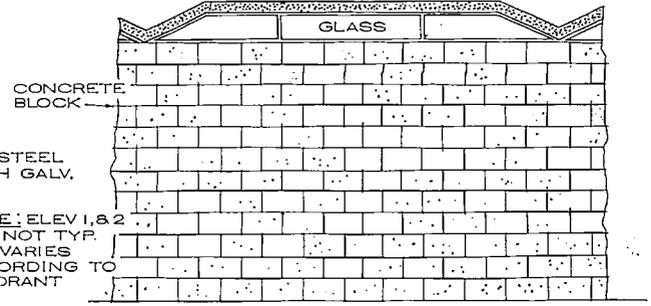
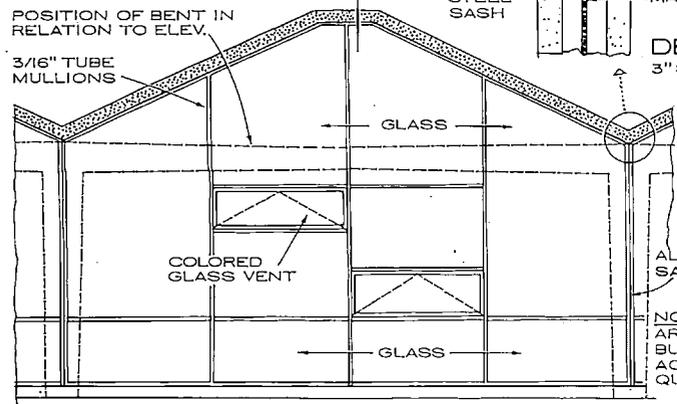
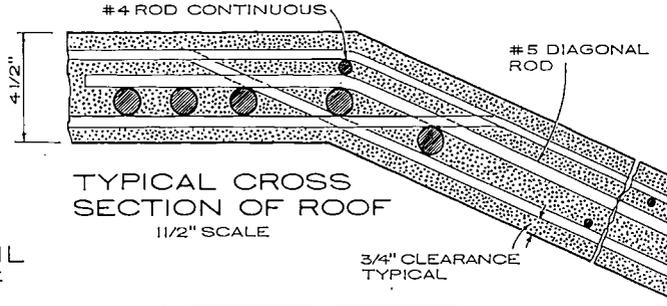
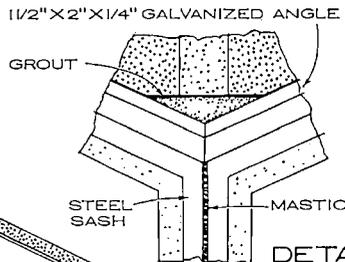
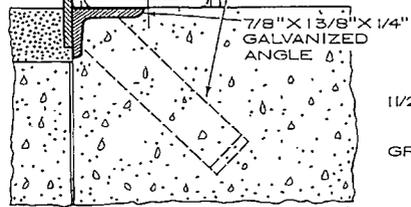
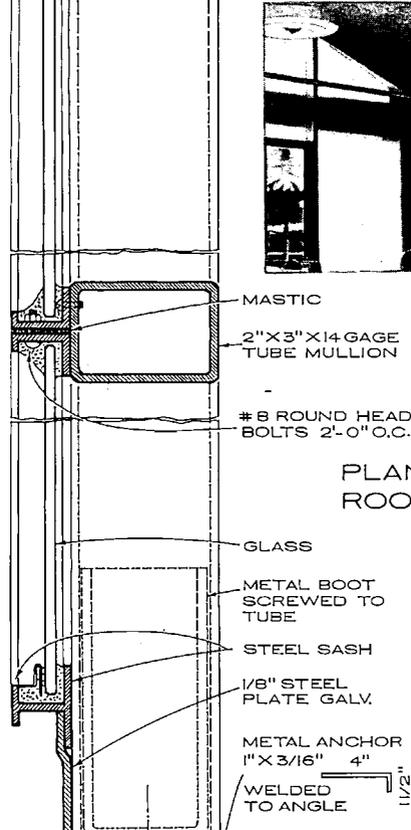
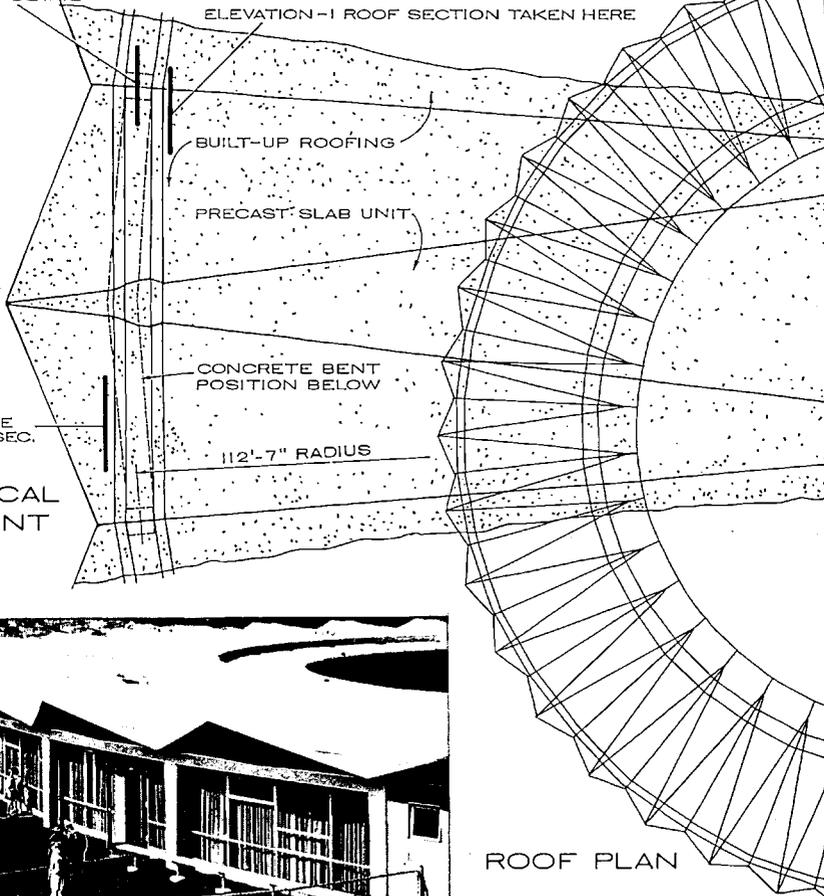
- 6 Consider the possibilities of electrically heated furniture, such as desk tops and bench tops, as aids to efficient workmanship in an otherwise chilly environment.
- 7 If arrangements and application of the bridge cranes allow it, try mounting radiant panels underneath the crane to give heating comfort to men working on the hook.

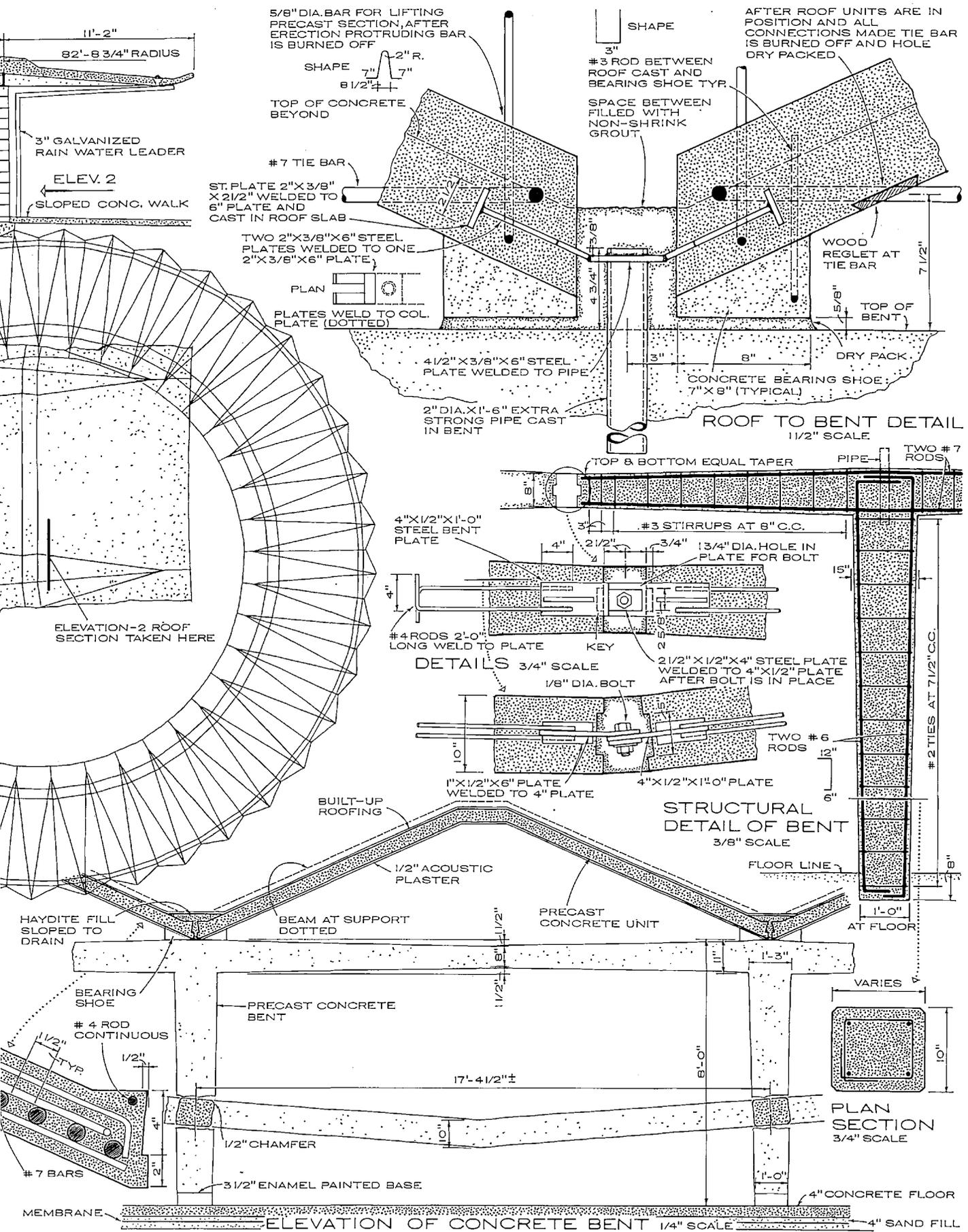
And finally, what appears to be a wild idea today, could well become the best way of doing a particular job tomorrow.



SEE ROOF TO BENT DETAIL

SECTION 1/8" SCALE





\*VISTA MAR ELEMENTARY SCHOOL: Daly City, California  
MARIO J. CIAMPI, Architect

SELECTED DETAIL  
ROOFING DETAIL

\*See MARCH 1961 P/A

APRIL 1961 P/A



# Financing Credit for Better Insulation

BY WILLIAM J. MCGUINNESS

*With better insulated houses, fuel costs are less; therefore, the FHA will allow a buyer of lower income to purchase a given house, or he may convert these savings to the purchase of a somewhat larger house. NAHB and NMWIA have jointly developed a method to win financing for better insulation. These economic studies are interpreted here by the Chairman, Department of Structural Design, School of Architecture, Pratt Institute, Brooklyn, New York.*

The economic depression of the 1930's put mortgage practices on a more humane level. Prior to that time the value of the property was often the only consideration. If a purchaser bought a house, the upkeep of which he could not afford, this was not always considered to be a problem of the mortgagee. If high maintenance costs

defeated the owner's economic program, the bank could usually sell the house at foreclosure in order to receive repayment of their loan.

The new constructive attitude prompted the lender to take an interest in the borrower, help him to decide whether his income would take care of the mortgage payments, and aid him in planning a house in which maintenance costs would be modest, leaving an income balance for these payments. The Federal Housing Administration did much to foster this new movement. As guarantor of mortgages, it encouraged its underwriting officers to become expert in the rating of prospective buyers and to aid in construction decisions that would reduce maintenance costs.

Consider the case of thermal insulation. In more than 90 percent of the areas of the United States, the FHA regional field

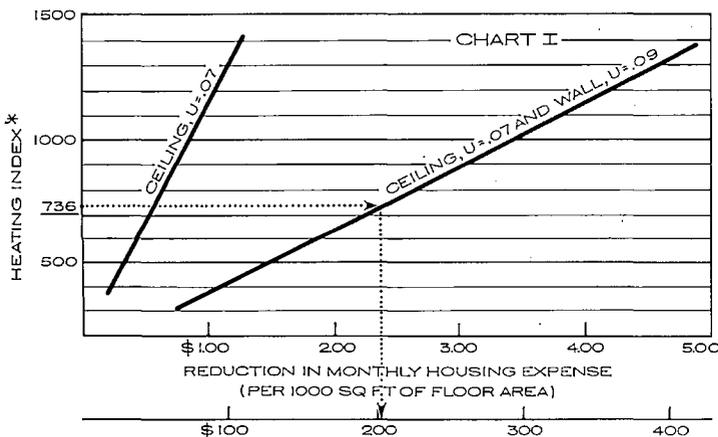
offices will permit 1½" of mineral-wool insulation in ceilings and none in walls. Better practice, of course, would be 3" for ceilings and 2" for walls. This assures U-factors of .07 and .09 respectively. In order to encourage acceptance of these better standards and their fuel savings, FHA in January 1960 strengthened its provision for reflecting this improvement in the buyer's economic picture. If good thermal insulation is provided, fuel costs are less and FHA will permit a buyer of lower income to purchase the house (*Case I*). If the buyer chooses, he may convert these future savings to the immediate use of purchasing a somewhat larger house, or, as shown here, additional features (*Case II*). These economic studies and charts were developed as a joint project of the National Mineral Wool Insulation Association and the National Association of Home Builders.

### CASE I

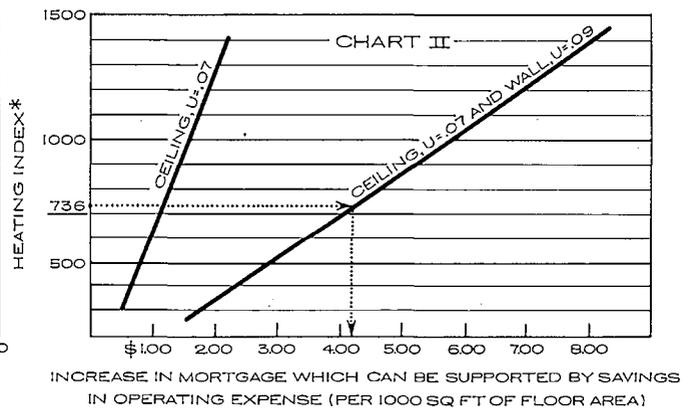
Original selling price .....	\$14,300.00
Selling price with additional insulation .....	\$14,380.00
Increase in down payment .....	\$ 8.00
Increase in mortgage .....	\$ 72.00
(a) Monthly reduction in fuel cost .....	\$ 2.83
(b) Increase in monthly mortgage payment ..	\$ 0.47
Reduction in monthly house expense	
(a minus b) .....	\$ 2.36
Possible reduction in annual income without lowering rating of buyer's ability to pay ....	\$ 200.00

### CASE II

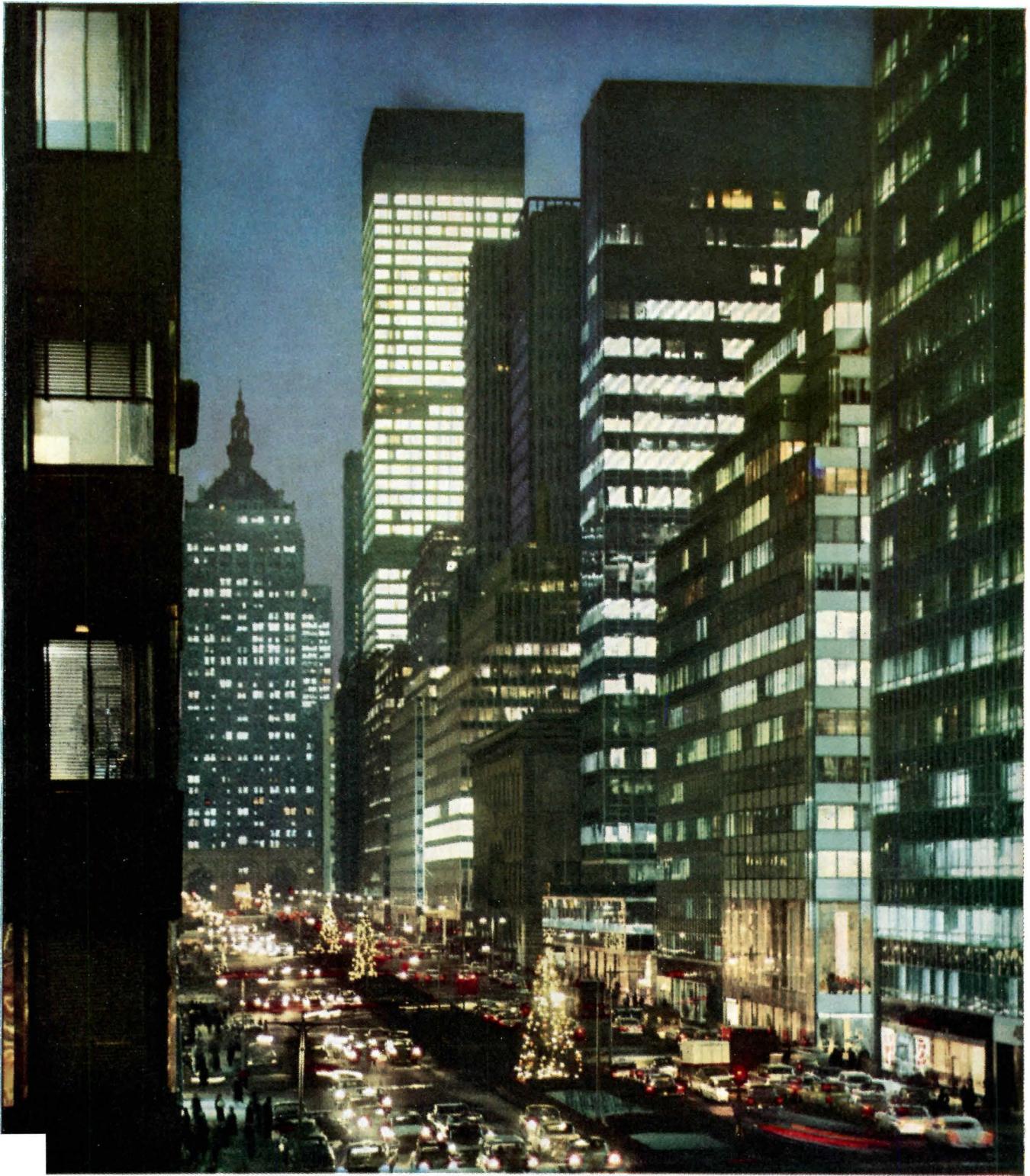
Original selling price .....	\$14,300.00
Increase in mortgage (from Chart II) .....	\$ 421.00
Selling price with additional features including increased insulation .....	\$14,800.00
Change in selling price .....	\$ 500.00
Increase in down payment .....	\$ 50.00
(a) Monthly reduction in fuel cost .....	\$ 2.83
(b) Increase in monthly mortgage payment ..	\$ 3.02
Increase in monthly housing expense (a minus b) ..	\$ 0.19
Change in income of typical buyers .....	Negligible



POSSIBLE REDUCTION IN ANNUAL INCOME WITHOUT LOWERING FHA RATING OF BUYER'S ABILITY TO PAY (PER 1000 SQ FT OF FLOOR AREA)



\* HEATING INDEX RELATES TO DEGREE DAYS, FUEL COST, AND EFFICIENCY OF HEATING PLANT. 736 REPRESENTS AN AVERAGE CONDITION.



Park Avenue looking south from 57th Street

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## Recommendations on Plastering

BY HAROLD J. ROSEN

*Highlights of recent research on lathing, furring, and plastering are reviewed by the Chief Specifications Writer of Kelly & Gruzen, Architects-Engineers.*

In recent months, three publications have been issued that concern themselves with lathing and plastering: *Manual of Lathing and Plastering*, by J. R. Diehl, AIA, for the Lathing and Plastering Industry Committee; *Recommended Specifications for Lathing, Furring, and Plastering*, by the Contracting Plasterers' and Lathers' International Association; and *Performance of Lath and Plaster*, by the Gypsum Association.

The Gypsum Association publication is the result of seven years of extensive research on the performance of lath and plaster ceiling systems, and makes available significant data and recommendations to architects and specifications writers. The research and study was confined to suspended ceilings in rooms up to 20 sq yd and was conducted at three hospitals, separated geographically to provide some evaluation of the effect of climate. The purpose of this research was to develop plaster constructions that would provide a high degree of crack resistance.

The relative performance with respect to cracking is expressed on a scale of 10, with 10 representing the best performance with virtually no cracking, and 0 representing the most extensive cracking. The studies disclosed that the principal variables that affected resistance to cracking were: (1) types of finish coats; (2) basecoat aggregates; (3) plaster to aggregate ratio; (4) type of lath; and (5) presence of or absence of perimeter restraint.

Several significant observations were

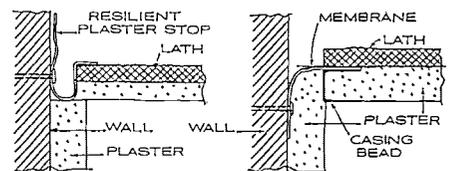
made from which certain conclusions may be drawn and recommendations proposed for reducing cracking in suspended, plastered ceiling construction. It was observed that ceilings finished with Keene's cement-lime putty sand-float finish have uniformly excellent resistance to cracking regardless of type of laths used, whether the perimeter of the ceilings were restrained or unrestrained, and whether the base coats were sand, vermiculite, or perlite of various proportions. The ceilings so finished were given a rating of 10.

A most remarkable observation was the relative performance characteristics of metal lath and gypsum lath when smooth troweled finishes were used. It was found on the basis of the study that gypsum lath usually provides a higher degree of resistance to cracking than does metal lath, particularly when strengths of base-coat plasters were in the lower range.

The resistance of plaster to cracking is closely related to the strength of the base-coat plasters, the ratings in order of performance being as follows: (1) neat wood fiber; (2) 1:2 sand; (3) 1:2 perlite; and (4) 1:2 vermiculite. The ceiling obtaining a 10 rating, indicating most resistance to crack formation insofar as base-coat plasters is concerned, is a scratch coat of neat wood fiber and a brown coat of 1:2 or 1:3 sand.

The perimeter angles where suspended ceilings meet walls becomes very significant under conditions of differential movement and climatic changes. Crack resistance is increased where the perimeter construction is unrestrained. This freedom of movement minimizes the transfer of stresses between ceilings and walls. The following details may be used

in forming unrestrained perimeter construction.



The *Recommended Specifications for Lathing, Furring, and Plastering*, dated October 1960 and issued by the Contracting Plasterers' and Lathers' International Association, likewise cautions against the use of large areas of portland-cement plastered ceilings. This publication states that cracks resulting from shrinkage of portland-cement plaster can be minimized, and in many cases entirely eliminated, by providing for a break between the wall and ceiling lath. This can be accomplished by stopping the wall lath just short of the ceiling line, and providing a "slip" joint of paper between the plaster at the top of the wall that will permit the ceiling plaster to move without putting stresses in the wall plaster. Another method recommended here is to use a 4" x 4" cornerite placed continually along the edge of the ceiling at the junction of the ceiling and wall, and wire tying the cornerite to the ceiling lath but not to the wall. In any case, the ceiling lath should not be carried down on to the wall, or the wall lath carried up on the ceiling. Cornerites should be used as noted above, or should be omitted. This permits expansion and contraction, and diminishes the possibility of plaster cracks along the edge of the cornerite.

*A report on the Manual of Lathing and Plastering, produced for the Lathing and Plastering Industry Committee, will appear in BOOK REVIEWS, MAY 1961 P/A.*

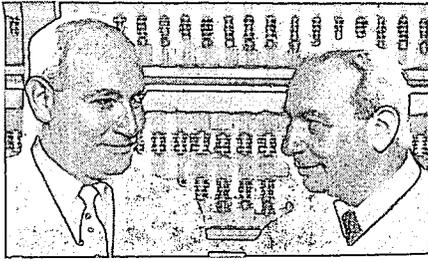
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BY JUDGE BERNARD TOMSON &  
NORMAN COPLAN

*This month's column, the first of two articles, discusses a decision by a Connecticut court in which a person not licensed as an architect was denied compensation for architectural services rendered.*

A few months ago, the authors of this column were privileged to participate in a seminar conducted by the Connecticut Chapter of the American Institute of Architects held at Yale University. At the seminar, the attorney for the Connecticut Chapter called to our attention two decisions of the Connecticut courts that he thought might be of interest to the readers of this column. In each of these cases, a person not licensed as an architect was denied compensation by the Court for architectural services rendered. They were of particular interest, however, because the plaintiff in the first case was a professional engineer (*Douglas v. Smulski*), and in the second case an associate professor in the School of Architecture at Yale University (*Nader v. King Lui Wu*.)

In the Douglas case, the defendant had retained the plaintiff to furnish plans and specifications for a commercial building that he wished to construct in West Hartford, Connecticut. The agreement made between the parties was signed by the defendant as the "owner" and by the plaintiff as the "architect." The agreement was prepared by the plaintiff on a printed form entitled "Owner and Architect Form of Agreement," and the plaintiff's services were described by incorporating by reference into the contract another document utilized by architects entitled "Statement of Services To Be Rendered by Architect and Schedule of Minimum Fees Complying with Fair Practice." The contract further provided for a fee based on a basic rate of 5 per cent of the cost of construction.

The defendant, in retaining the plaintiff, was under the mistaken impression

that the latter was an architect, although, in actual fact, he was only licensed in Connecticut as a professional engineer. The Connecticut Licensing Statute, with certain exceptions, prohibits both the practice of architecture and the use of the title "Architect" to any person unless he shall have secured a certificate of registration authorizing such practice in Connecticut.

The defendant resisted payment for the services furnished by the plaintiff on the ground that the contract between them was void as against public policy because it provided for the furnishing of architectural services by a person not licensed to practice architecture in Connecticut. The plaintiff, on the other hand, contended that, since he was a licensed professional engineer, he was entitled to recover the contract price for the services rendered, and that his compensation should not be denied by terming his services "architectural" rather than "engineering." The Court, in concluding that the plaintiff could not recover compensation for furnishing architectural services, stated:

"In the present case, the plaintiff has based his claim upon architectural services rendered. He is not a licensed or registered architect in the State of Connecticut, although it would appear that he is a registered professional engineer. He seeks to recover on a contract for architectural services rendered in clear violation of the statutes. Such a contract is illegal and void as against public policy. A similar situation was discussed in the case of *Gionti v. Crown Motor Freight Company*, 128 N.J.L. 407, 411, where it was said, 'It is argued that as a result of the progress made in the professions of architecture and engineering, many overlapping functions and activities have arisen between them; that the result has been that all distinctions between them have passed away and that they differ in name only, and therefore we should construe the respective statutes relating to these professions accordingly. However inter-related the professions and the statutes relating to them may be, the legislature has made and maintained a marked cleavage between them. It is beyond the power of the court to thwart that clear legislative cleavage.' The court will not lend its aid in support of a contract rendered in violation of a governing statute.

It was the intention of the plaintiff to contract with the defendant to perform architectural services, and it was the intention of the defendant to hire an architect to perform those services. 'All true contracts grow out of the intentions of the parties to the transactions, and are dictated by their mutual and concordant wills.'

The defendant, in support of his position, also pointed out that the Connecticut Licensing Statute provides that the performance of architectural work incidental to engineering work is permitted by a registered professional engineer. The Court, however, ruled that this provision did not justify the furnishing of architectural services by an engineer and could not "be construed as permitting said engineer to do the entire architectural job simply because a portion of the architectural work is incidental to the engineering."

The defendant engineer did not in this case claim any recovery based upon the reasonable value of his services, or unjust enrichment, as distinguished from his suit for recovery of the contract price. The Court, however, pointed out that even if such claim had been made, or could have been read into the pleadings, "there could be no recovery on the evidence in this case, since the illegality either in whole or in part was the thing which the party seeking to recover was to do."

Although the Court, in the Douglas case, did not define or otherwise describe the distinction between architectural and engineering services, the decision is clear that in Connecticut the rendering of those services found to fall within the classification of architectural services may not be performed by a licensed engineer. Whether the distinction between the professions should be more clearly enunciated by statute, or otherwise, for the guidance of the public and the courts, is a question deserving of serious consideration by the architectural profession.

*In next month's column, we will discuss the second Connecticut case arising under its licensing laws.*

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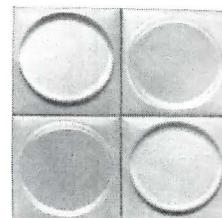
# ROBERTSON

## *Ceramic Tiles*

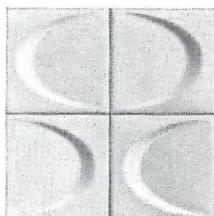
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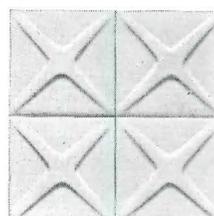
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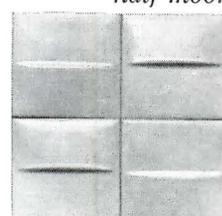
*half moon*



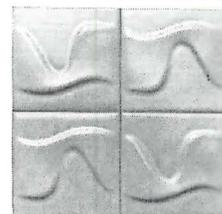
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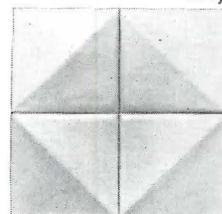
*starfish*



*sand dune*



*surf*

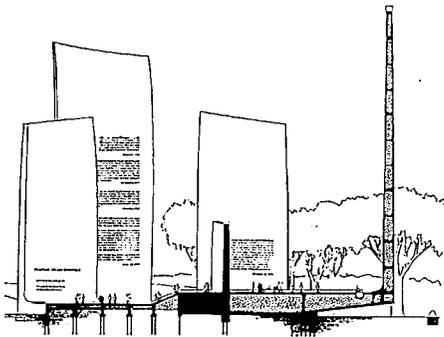


*limbo*



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*Designs specially created for Robertson by industrial designer Peter Quay Yang, A.S.I.D.*



*The F.D.R. Memorial Competition*

Dear Editor: Your "P.S." on the F.D.R. competition (FEBRUARY 1961 P/A) was excellent.

In the past 25 years I have worked on many competitions, won several, received many citations and awards, and lost many. On many of the losses the griping was loud and strong. As one of the competitors in this one, however, I believe Pederson, Tilney & Associates hit the nail right on the head and deserve real support for their strong, poetic statement that will result in an outstanding monument to a great President.

I think it is most unfortunate that there is the strong feeling evident to kill competitions when the entire profession could benefit widely by increasing their number manifold in the field of Governmental building.

This monument should be built, and I support you wholeheartedly in this worthy cause.

SIDNEY L. KATZ  
New York, N.Y.

Dear Editor: I have read your "P.S." column on the F.D.R. Memorial (FEBRUARY 1961 P/A). I like it very much.

I am surprised to hear that Fritz Gutheim criticized it. I am sorry to have missed that. On the other hand, I saw what John Crosby wrote and I confess that it was not good at all.

WILLIAM LESCAZE  
New York, N.Y.

Dear Editor: Thank you very much for letting me see your "P.S." (FEBRUARY

1961 P/A) and your kind words about Mr. Biddle.

I have great respect for anything Mr. Biddle does, but I do not consider that I have any voice in the choice of a Congressional memorial.

ELEANOR ROOSEVELT  
New York, N.Y.

Dear Editor: I cannot tell you with what joy and gratitude I read your "P.S." for the FEBRUARY 1961 P/A.

EDMUND N. BACON  
Executive Director  
City Planning Commission  
City of Philadelphia

Dear Editor: Thank you for sending on the proof of your forthcoming column. My remarks were not as unpremeditated as you may think. The week before the competition was judged, I prepared a careful survey of the three major competitions of design interest that were analogous and had preceded it: the Gandhi, Fermi, and St. Louis Competitions. I had an ample chance to study the six elected entries in model form, the twenty-two additional premiated designs, and to hear the report of the jury and the press conference with Mr. Biddle and others of the commission. It was my conclusion then—and still is now—that the competition was a noteworthy advance in the treatment of that most difficult problem—the memorial. It advanced significantly our understanding of monumentality. It showed decisively the impact of modern sculpture upon architectural design. My objection to the winning design is that it is a meaningless form and serves only as a collection of billboards for quotations. But to a greater extent, I believe that this competition has advanced so significantly our capability to produce great architectural memorials that it would be wrong for the commission to consider that its difficult job has now been concluded and that it has a final design that need only be sold to Congress and built. Instead, I have urged them to pursue further the creative aspects of their assignment.

I am troubled by the other point in your column: that my remarks would give aid and comfort to those opposing competitions. I am sure that a reading of either or both of the articles I wrote for *The Washington Post* would not support the view that I oppose competitions, but rather that I am heartily in favor of them and indeed would like to see competitions more widely employed (and

even the organization of competitions greatly diversified and improved to make them more satisfactory to painters, sculptors, landscape designers, and others who now find themselves competing under rules designed wholly for architects). More deeply, however, I am troubled by the thought that a writer on such topics must consider "guilt by association" among the other hazards of his job.

I hope that the forthcoming book on the competition will provide the complete documentation that it assuredly deserves, and that you will have some opportunity there to extend your remarks, which I have found most interesting.

FREDERICK GUTHEIM  
The Washington Center for Metropolitan Studies  
Washington, D.C.

Dear Editor: At the risk of being accused of "sour grapes" because of the fact that our office submitted an unsuccessful entry in the competition, I find myself forced to disagree with the opinions expressed in your editorial about the Roosevelt Memorial Competition (FEBRUARY 1961 P/A).

The winning design would be perfect as an attention-getter at a world's fair, where it would be "here today and gone tomorrow," but it is doubtful if it even conforms to the requirements of the competition program, which clearly states that the design should be in harmony with and complete the other memorials in the area. The major problem in fulfilling this basic requirement was to avoid the tendency to produce just such spectacular "world's fair" designs and still not be archaically conventional. From that point of view, the designs of Luders and Associates and of Rolf Myller fulfill the requirements of the program much better than those of the other finalists.

The editors of our professional magazines seem to be filled with concern these days about what you call the "confused" character of present-day design. And some of our most publicized designers have fallen into the habit of applying the words "serenity" and "delight" to all unusual and often irritating forms that appear to be neither serene nor delightful to anyone but themselves. Those words, like ivy on a building, or like pierced grillwork placed in front of unharmonious elements in an attempt to make the design appear orderly, are expected to explain away a multitude of architectural sins.



First National Bank, Atlanta, Georgia. Architect: Francis P. Smith and Henry Howard Smith. Fixtures: Benjamin Division, Thomas Industries, Inc.

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In your remarks about the two designs you admire most, you seem to be carrying the torch for perfect examples of the very confusion you profess concern about. You seem to forget, as the jury apparently did too, that the object of the competition was not to produce a monument to the present confused state of architectural design. Competitors were supposed to design a permanent memorial to a great individual, to stand for all time in a beautiful natural setting of trees and flowers and water and sky, a purpose and setting for which tricky, complicated, and forced forms appear particularly inappropriate.

It is difficult to understand how such a distinguished jury could observe the quiet dignity of the existing memorials and attribute any such characteristic to some of the designs selected. Since most of the competitors will have formed strong opinions as to the proper solution to the program, I submit that it would be interesting to furnish all of them with reproductions of all of the designs submitted in the first stage of the competition and to poll them as to their first six choices, with the proviso, of course, that no one could vote for his own design! If such a poll is taken, I will wager you a full-course dinner at the Pavillon that the designs selected by a majority vote of the competitors will not agree in more than two instances with those selected by the jury. And, further, that neither of those two will be the ones your editorial selected as the best.

KENNETH C. BLACK  
Lansing, Mich.

### *Applause for the Design Awards*

Dear Editor: JANUARY 1961 P/A just received and I must congratulate you on this exciting presentation of architecture.

You are further to be commended on the selection of the jury that so carefully and intelligently marked the projects for your consideration.

However, I would like to make one small observation. I cannot help but notice the similarity of the First Award, the office building by Pei, to the one designed for M.I.T. by Pei and O'Neil Ford (a juror) as consultant. I approve, however; he's our Texas egg.

ROBERT M. LITTLE  
Miami, Fla.

Dear Editor: Thank you so very much for your most interesting and provocative issue (JANUARY 1961 P/A). But most of all, sincerest thanks for the great emphasis throughout on the excellent jury's penetrating observations and remarks

raising most serious questions that face—or, at least should face—all architects.

You have done a good job!

HENRY HILL  
San Francisco, Calif.

Dear Editor: I am pleased with your results for the Eighth Annual Design Awards.

It is certainly a notch or two above last year's. You did a fine job of presentation.

WILLIAM W. CAUDILL  
Houston, Texas

Dear Editor: Your Design Awards issue (JANUARY 1961 P/A) is both a graphic and journalistic success. May I add my views?

I should like to amend Dean Colbert's criteria for judging a building to: (1) Image: for example, mystery or explicitness, dignity or levity, flamboyance or modesty; (2) Idea: for example, order or disorder, horizontal or vertical, large or small, floating or earthbound. I have placed them in order of importance, for we could not afford emotionally to have the Miesian search for Idea at the expense, very often, of appropriate Image.

This is what I see in several of the projects exhibited:

Rapson's Arts and Science Center gives much promise in its elevation, but then the planning exhibits a rather strait-laced, stiff quality. The same life that is expressed so marvelously from the elevations should be spoken from the plan.

Pei's office building for Hawaii has that sureness of touch and that certain abstract appropriateness of ambiguous use of building which no one can miss. Yet none of the humor of the man emerges from the building. The design has a certain mechanistic quality that is not completely expressive of a dynamic commercial activity. Ernest's house has the same failing, which is even a larger sin for this building type.

While trying terribly hard it is true, the controversial fire station still succeeds in showing us that life exists here, that a man has touched this. It could be a fine building.

Katselas' office building gives promise for the future. Its environment is very important, but, taken out of context, it seems a happy mixture of the mystery of space with the discipline of order. I reserve judgment on the not very completely revealed exterior.

Katselas and the fire station are the only projects that seem to recognize one of the greatest contributions of the 20th Century—the free plan. Where are the

students of Wright's organic concepts and Mies' early work? Except in these two projects, we see life as an intellectual process, not as an emotional one. We need the balance of both for sustaining meaningful architecture. Our emotions are expressed by what I call Image, and our intellect by what I call Idea. Image is the reason for the need of architecture, and Idea is our method.

MACY DUBOIS  
Don Mills, Ontario, Canada

### *Japanese Gardens: A Unique Art Form*

Dear Editor: In reviewing my book, *Japanese Gardens for Today* (FEBRUARY 1961 P/A), James C. Rose made some cogent arguments for seeking within the context of American civilization itself "our own spirit and message, however grim that prospect may be." I heartily agree with him. But this quest inwards should not preclude our studying the arts and philosophy of another culture, which, acting as a catalyst, can help us to discover the potentials of our own culture.

Wherever man lives, he combines his art with nature in such proportions as to create around himself a changed landscape. I have carried this point further, saying that art and nature are integrated in a Japanese garden with such balance and respect for the integrity of materials that what emerged is not merely a mechanical mixture but rather the creation of a unique art form with its own disciplines. The local, private quality of these disciplines essentially does not determine the depth of response to this art form. Nor does it restrict its universality. It depends more upon individual sensitivity than upon whether you are a native of Japan or of this country.

Realizing that there is for some people something seductive about good, clear photographs of gardens, I warned against the tendency toward shallow imitation of fragments. But I was also aware of the greater good to be derived from even vicarious contact with these gardens through profuse illustrations with interpretive captions and a relatively short text. Each reader gains from the book whatever he is capable of grasping. The trained, critical artist need look only at the photographs, read the brief theory and draw his own conclusions, while the textual material on practice and the representative plant list, which is neither exhaustive nor all-inclusive, is intended for the amateur or newcomer, who also deserves consideration.

DAVID H. ENCEL  
New York, N.Y.

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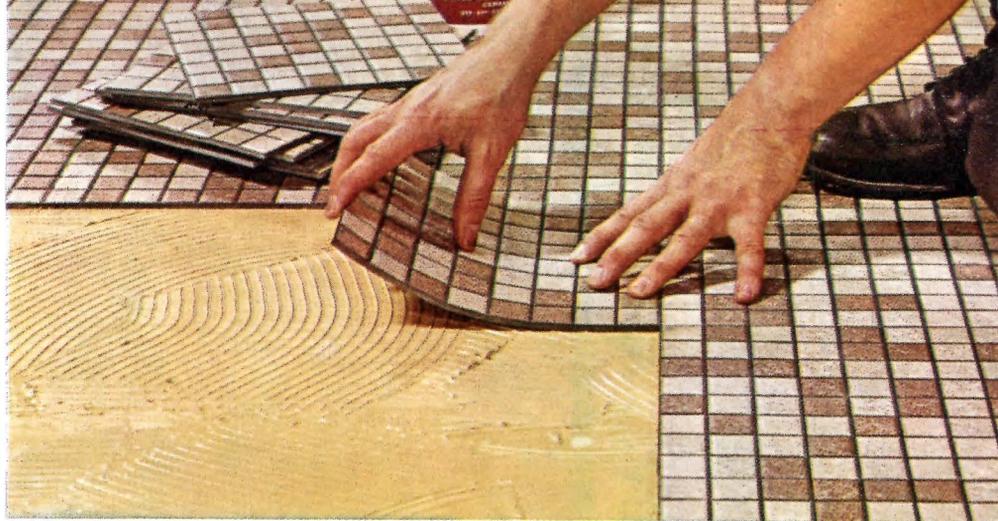
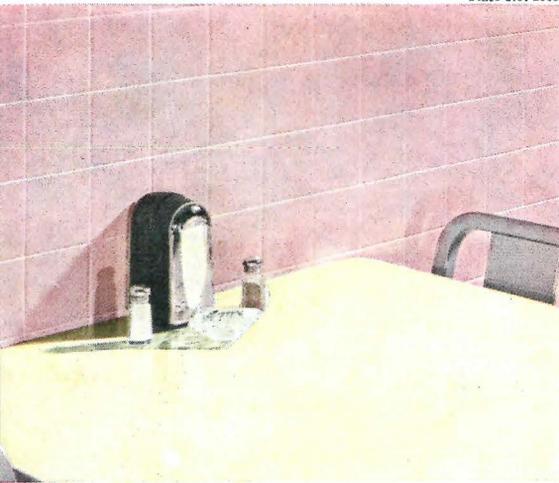


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**CERAMIC TILE**

BY SYBIL MOHOLY-NAGY

Professor, School of Architecture, Pratt Institute, New York, N.Y., Writes a critique of Theory and Design in the First Machine Age. Reyner Banham. Frederick A. Praeger, Inc., 64 University Pl., New York 3, N. Y., 1960. 338 pp., illus. \$12.50

The now middle-aged generation of architectural practitioners and teachers was weaned on Sigfried Giedion's *Space, Time and Architecture*, which first appeared 19 years ago. It seems from comments and reviews that Reyner Banham's book will replace it with those students who have enough intellectual curiosity to ask for the sources of modern architecture.

The decisive difference between Giedion's and Banham's approach to the problem implies much of the criticism that can be leveled against the new book. Giedion's history is thoroughly visual. One might disagree, as this reviewer does, with many of his interpretations and selections, but there has remained throughout almost 20 years a fresh, incessantly stimulating experience within these pages. Visual creators speak through visual creations, and never mind the connecting mucilage of the word. There emanates from the Giedion book a reverence for creativeness, to whose service he has dedicated himself; it is this, I am certain, that has contributed much to the lasting appeal of his work.

Reyner Banham's book is a highly erudite and industriously constructed Procrustean bed in which the living reality of art and architecture has been forced into conformity with a preconceived theory. It is completely unvisual, and the illustrations—disconnected from the text—are no more than token reminders of the most familiar works. They play no part in the abstract analysis. His theory is that the outstanding designers—painters, sculptors, and specifically architects—have worked since about 1880 under the compulsion of "the first machine age"; their inspiration as well as their realizations were derived from a total affirmation of the age of technology. If Banham's book were not written so well and his effort not one of such evident conscientiousness, one would be tempted to stop right here and dismiss the whole book as a fallacy. But there is too much quality in the execution not to deserve attention. This quality lies in its profound familiarity with the aesthetic theories of the 19th and 20th Centuries. Any student of the startling conversion of the French academicians to cast-iron architecture as an aesthetic enrichment will enjoy his carefully selected quota-

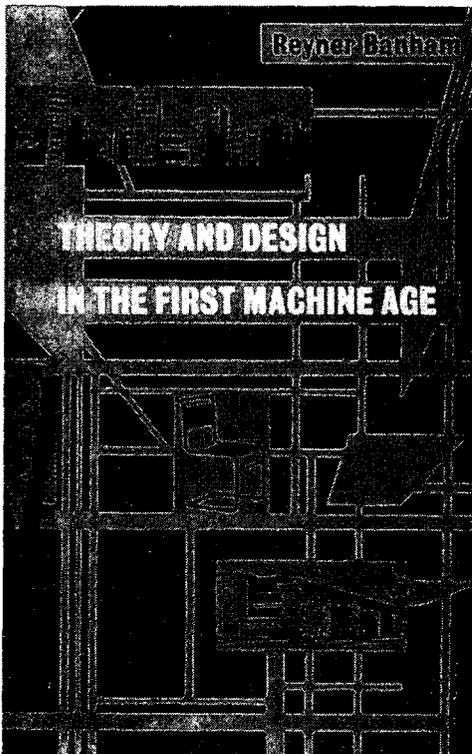
tions from Guadet, Viollet-Le-Duc, Charles Blanc, and Choisy. But it seems absurd to assume a profound influence of these theories upon the new concrete architecture of Perret and Garnier, and through them upon Le Corbusier and his followers.

Banham, like all traditionally oriented art historians, suffers from a gross overestimation of the effect of books and theories on the actual creation of art and architecture. Not only are designers in all fields a notoriously unlettered group, but any form-space creation worth remembering springs from that strange and unanalyzable interaction of vision and rationality conceived in the mold of effective spaces. In Banham's interpretation, this space is virtual, theoretical, shaped in the mind of the designer according to changing theories of his times. In reality, however, the physical site, the biological need, the expanse of canvas, and the raw chunk of stone or clay are the point of departure. The theoretical systematizations come later and are, in fact, an excellent touchstone for the vitality of the actual creation. It is no coincidence that Banham's book is at its best when it speaks of two 20th-Century movements—Futurism and de Stijl—because both were founded as visual comments on abstract theories, and both failed completely as architectural realities. Marinetti's contention of modern man as "extended into the machine and multiplied by it," and his overquoted claim of a racing car as aesthetically superior to a Greek sculpture, seem moderate compared to Theo van Doesburg's: "The machine is par excellence a phenomenon of spiritual discipline. Materialism as a way of life and art took handicraft as its direct psychological expression. The new spiritualistic sensibility of the 20th Century has not only felt the beauty of the machine, but has also taken cognizance of its unlimited expressive possibilities for the arts. . . . Under the supremacy of materialism, handicraft reduced men to the level of machines; the proper tendency for the machine (in the sense of cultural development) is a unique medium of the very opposite, social liberation."

Although there can be no doubt that this absurd Romanticism (leaving out the enormous historical range of creativeness and symbolism in hand-made products) was the optimistic obsession of the postwar generation of 1920, there is rich evidence that it was quickly abandoned. Banham gives the impression of a frantic juggler when he tries to keep

Continued on page 204

## An Overestimation of Theory





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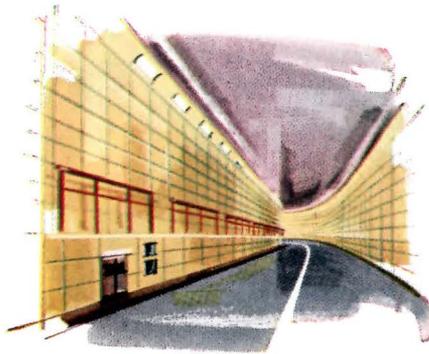
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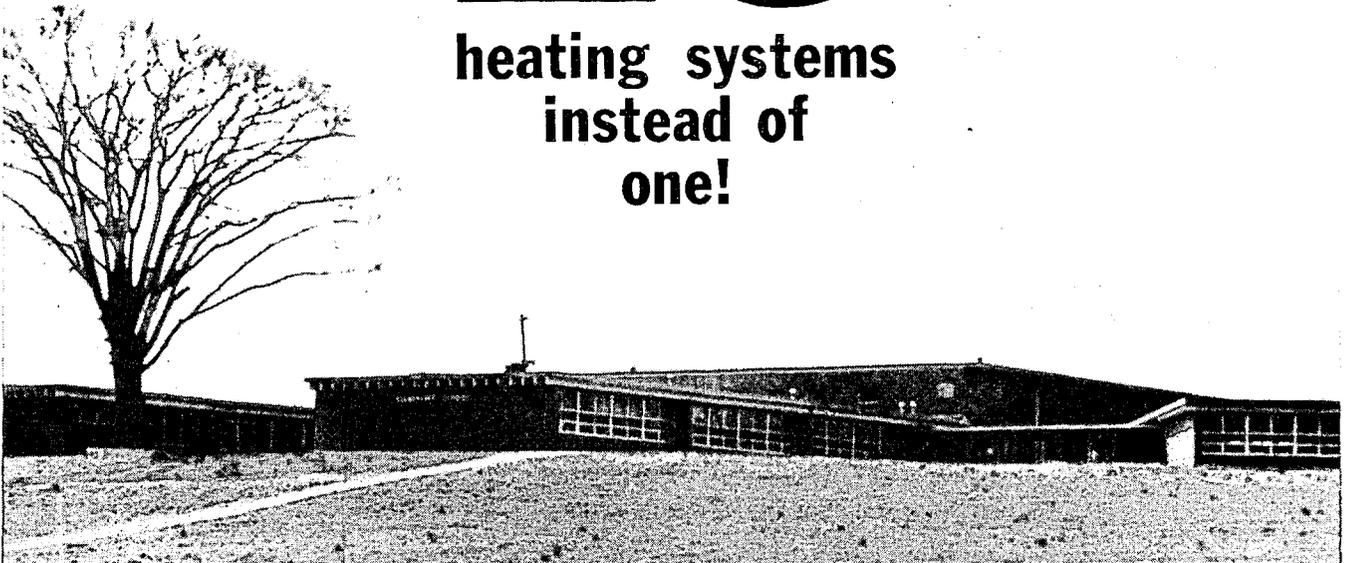


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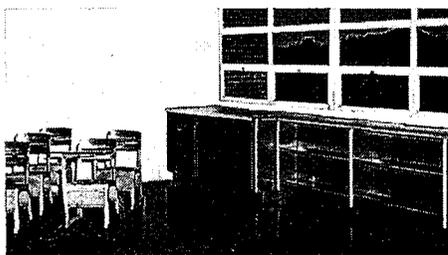
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Continued from page 200

his machine theory flying, while being a sufficiently honest historian to report on the attempted unification of handicraft and machine production as the core of the Bauhaus program. He credits Moholy-Nagy with having swerved the expressionistic-Morrisonian concepts of Gropius and Itten, as Bauhaus founders, toward mechanization and machine worship; and he uses Moholy-Nagy's first book, *From Painting to Architecture*, as evidence. This book, like everything that followed it in Moholy-Nagy's art and teaching, was actually conceived in total

ignorance of the profuse theories Banham quotes as the historical ground on which the Bauhaus finally grew. The goal was a recognition of biological fundamentals within the new landscape of technology, a passionate search for a redeeming harmony underlying all manifestations of the human mind. Functionalism was understood as only one of the multitude of energetic charges set off by the dynamics of vitality. Painting, sculpture, photography, and especially the stage were never subject to the functionalist creed; they remained autonomous.

In his conclusion, Banham deplors

the failure of his protagonists to realize "theory and design of the machine age" in the International Style. And of all possible sources, he quotes Buckminster Fuller in a devastating denunciation of contemporary architecture as having failed to live up to the technological potential offered by industry. After much admiration for high scholarship, it is here that one balks at Banham's loss of his native intelligence. He constructs an impossible syllogism by concluding: all architecture of the first machine age aimed at architectural technology; all architecture of the first machine age failed to realize this goal; consequently all designers participating in this abortive program failed. Actually, all the men of real creative ability quoted by Banham went through a period in their youth of experimentation with new possibilities, which they later—to a man—discarded as merely instrumental. Furthermore, Banham tries to furnish evidence through the testimony of an engineer whose claim to being an architect has devaluated his contribution and obscured the issue. "The International Bauhaus," wrote Buckminster Fuller, "never went back of the wall surface to look at the plumbing . . . they never inquired into the over-all problem of sanitary fittings themselves. . . . In short they only looked at problems of modifications of the surface of end-products, which end-products were inherently sub-functions of a technically obsolete world."

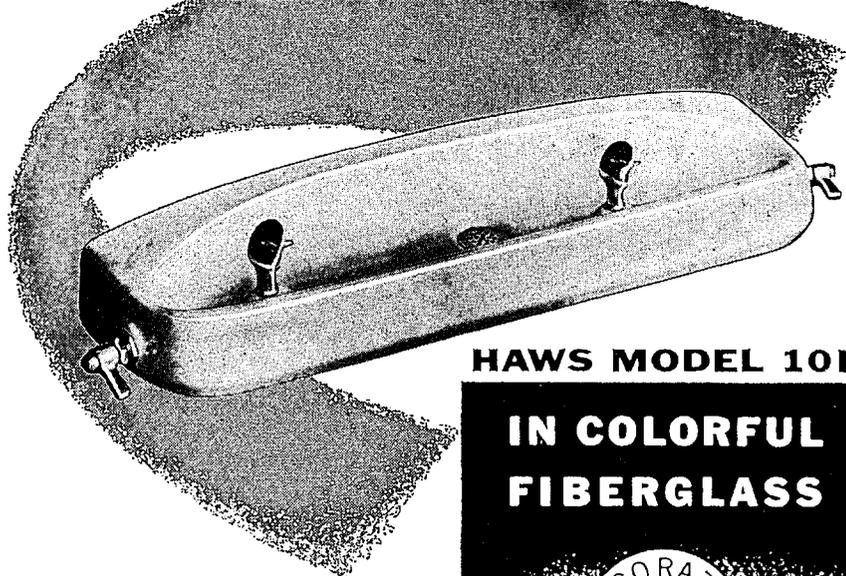
It was precisely the conscious or sub-conscious realization that a technological world is bound to be perpetually obsolete that re-established architectural consciousness after the abortive integration attempts following the First World War. To state now, in 1961, that this insight never took place, and that there is no visual evidence to prove it, is to distort the past and deprive our students of sources that can yield a good deal of inspiration. Rather than seeing these sources as failed statements of something that never existed, namely Banham's "first machine age," they should be studied as the life histories of men who were the first to define the boundaries that separate technology from creativeness, who tried to re-establish, as it were, the hierarchy of symbols that assigns a vastly different significance to Ronchamp and a geodesic dome.

*Hero of the Future: the City*

The Master Builders: Le Corbusier, Mies van der Rohe, Frank Lloyd Wright.

Continued on page 210

## 2 BUBBLER BEAUTY



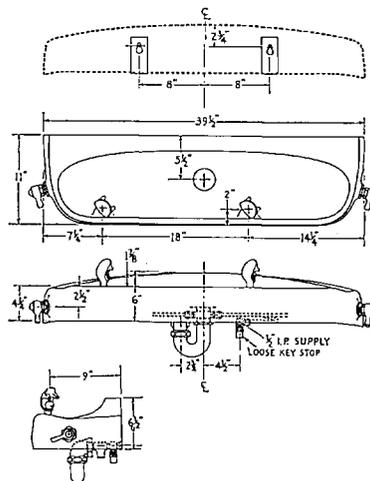
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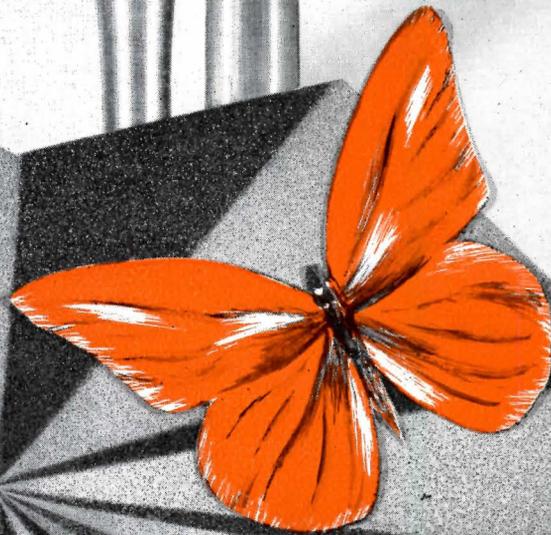
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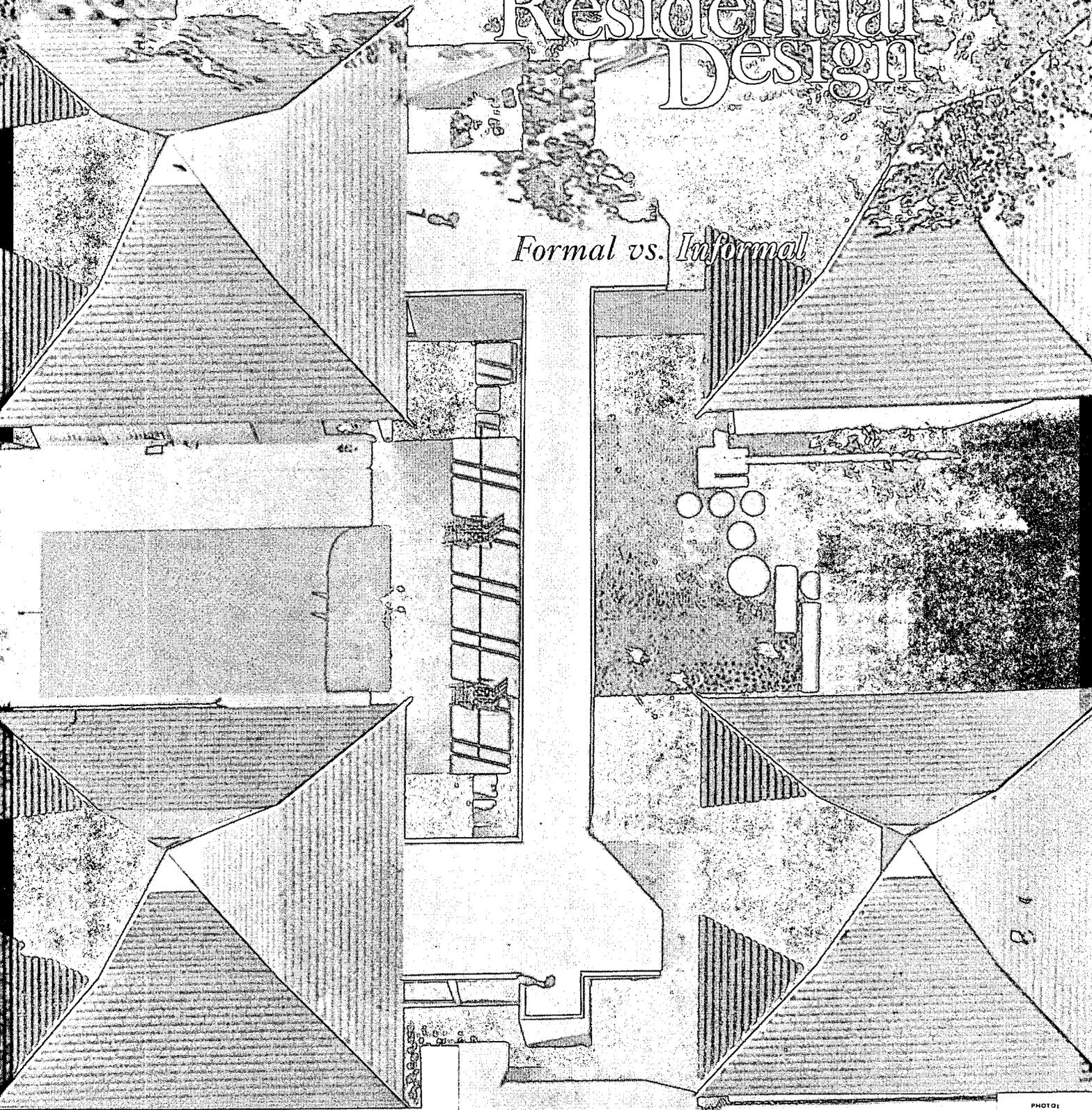
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# Residential Design

*Formal vs. Informal*



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Part III of the Symposium on the State of Architecture, conducted by Editor Thomas Creighton, presents Technological Freedom, dealing with today's technology and its implications. This last part of the series of running commentary of fifty architects on the state of architecture, discusses the implications of mass



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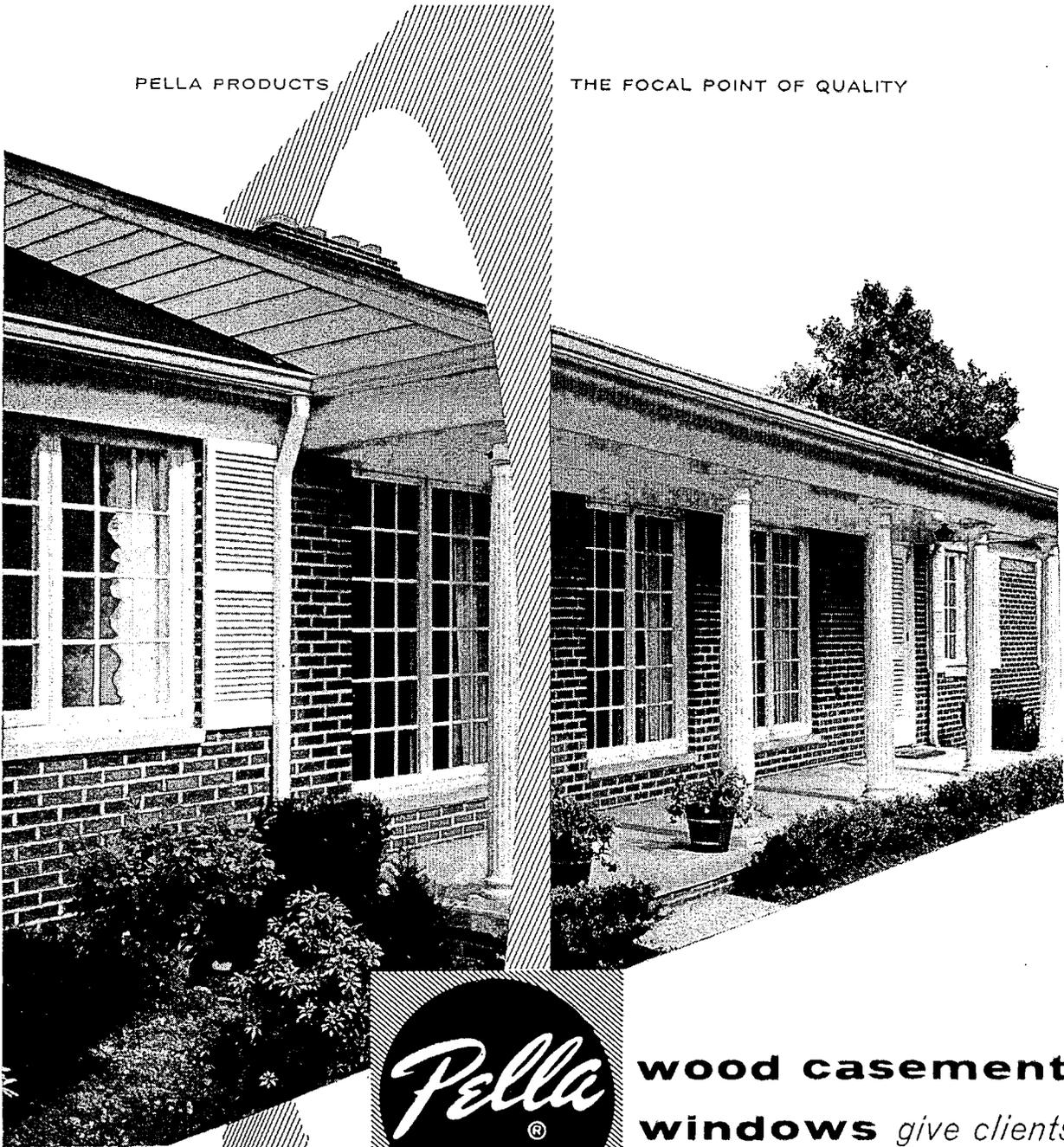
production and building components; the wide range of choices open to the architect in present technology and use of materials; the use of concrete technology and its influence on design; the use of steel and other metals, and whether they restrict or free the designer; and the possibilities of new materials and techniques.

These articles plus many more interesting features—including the P/A regulars—Interior Design Data, Materials & Methods, News Report, make the May P/A a truly outstanding issue.

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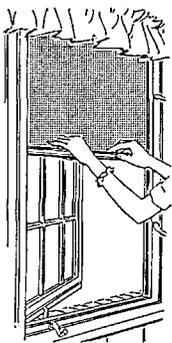
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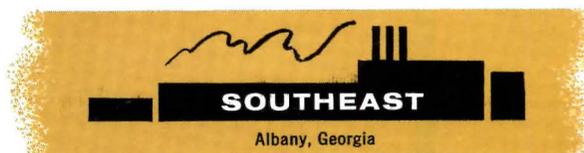
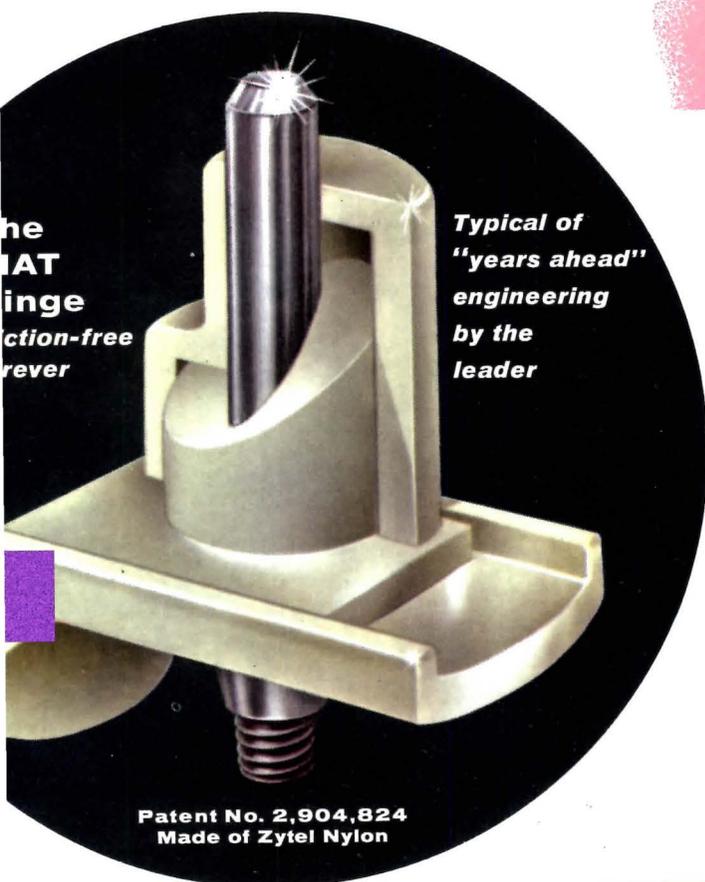


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Continued from page 204

Peter Blake. Alfred A. Knopf, Inc., 501 Madison Ave., New York 22, N.Y., 1960. 400 pp., illus. \$6.50

Peter Blake, an editor of *Architectural Forum*, has selected Le Corbusier, Mies van der Rohe, and Frank Lloyd Wright as the star "artists" of his new book on 20th-Century architecture. The book should be popular with the general public, for Blake writes with knowledge, sympathy, pace, and excitement, and he

makes the stories of these three key builders absorbing reading. Supplied with almost enough illustrations and plans, and a fine jacket design by Arthur Hawkins, *The Master Builders* joins a growing list of books on the key architectural figures of our time.

Blake arbitrarily categorizes each of his three subjects: Le Corbusier is linked with the mastery of form, Mies with the mastery of structure, and Wright with mastery of space. But for the most part, the author lets their work speak for it-

self, and resorts to little special pleading to justify his themes. If Le Corbusier emerges as the builder with "faultless French taste," a true product of the Mediterranean civilization, Mies is portrayed as the great classicist stemming from inflexible German logic, and "the most self-effacing architect of his epoch." Wright, "the last of the true Americans," a product of the country as opposed to the city, had "strength, character, life, heart," and when his work was done, "architecture had given mankind a new promise of civilization."

And what a catalog of accomplishment these three have amassed. The list, although familiar, is nonetheless staggering. The creativity is fantastic, forged out of mind and heart and mysticism: the two Taliesins, the Morris store, the Rosenbaum and Kaufmann houses by Wright; the Tugendhat house, Barcelona pavilion, and Seagram building by Mies; and Chandigarh, Ronchamp, and the plan for St. Dié by Corbu.

All of us have been influenced in varying degree by these three and their pupils (for all were teachers). Blake refers to them as "the law givers of the new architecture," and his provocative last chapter, titled "Prospect," states his belief that the new generation of architects must work within the disciplines these three have established. He concludes that "the time for individual heroes is past, and that the hero of the future must be the city itself." As Blake puts it, "the alternatives are architecture or Disneyland, civilization or chaos."

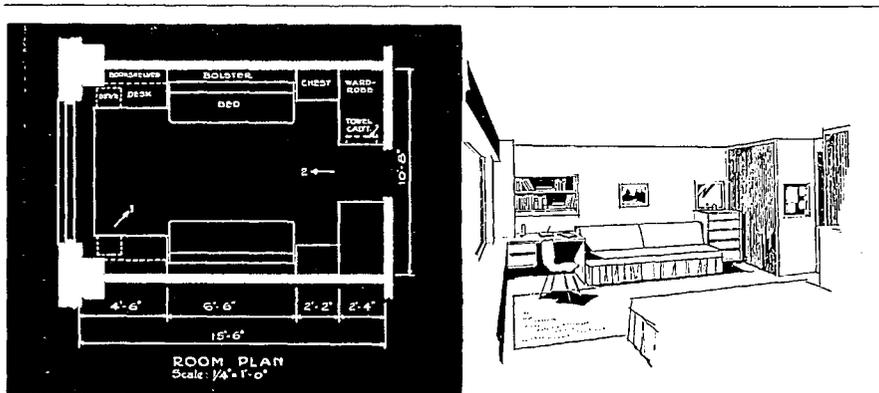
GEORGE H. FITCH  
Director, Municipal Art Society  
First Vice-Pres., American Federation of Arts  
New York, N.Y.

### An Architect in Yugoslavia

Serbian Legacy. Cecil Stewart. Harcourt, Brace & Co., 750 Third Ave., New York 17, N.Y., 1960. 135 pp., illus. \$6

Serbia as a nation has once again disappeared from history books and maps; yet this part of present-day Yugoslavia has a splendid artistic heritage. For Americans, its past and people were dramatized during the 30's by Louis Adamic in his minor classic *The Native's Return*, and by Rebecca West in her *Black Lamb and Grey Falcon*, a literary tribute to the Serbs that can never be equaled. Now Cecil Stewart, a professional architect and director of a British architectural school, has given us his description of Serbia's artistic past with an emphasis upon church architecture and art. It should be emphasized, however, that Stewart has not written his

Continued on page 216



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We went to the Howard Johnson Motor Lodge in Memphis, Tennessee, to find out. Lewie Webb, managing director, and Austin K. Hall, AIA, gave us the answers. *(see next page).*



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**Mr. Webb:** Approximately six months. We opened the first building with 22 guest units in June, 1960. All three wings with a total of 50 rooms were in operation by the middle of July. So far, we've served over 16,000 guests. And we have broken ground for two more buildings, which will raise our total to 100 rooms.

**Question:** To what do you attribute this success?

**Mr. Webb:** Well, the Howard Johnson franchise is a big asset, of course. But the inviting appearance of our establishment, as you approach it, is what stops them. You've noticed we've used lots of glass in the restaurant, office and guest units. This is a principle laid down by the Howard Johnson chain that really works: *Let people see what to expect before they enter.*

Our location on U.S. 51 is and will become an increasingly important factor. And we're the motel nearest to the airport. When completed, the N-S Interstate Highway interchange will be only 900 feet from our entrance.

**Question:** Do you get much repeat business?

**Mr. Webb:** Indeed we do. About 40% of our guests come back for return visits. We already have several reservations for rooms during next year's football season. And many of our guests find it so pleasant here, they extend their stay for several days.

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Austin K. Hall, AIA, and Lewie Webb, Managing Director, discuss 100-room addition to Motor Lodge in Memphis.

**Mr. Hall:** You can see we've tried to provide all the comforts. You can turn on or turn off the lights, television or music without stirring from bed.

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**Question:** What kind of glass is it?





Dining room in restaurant has mirror wall made of *Parallel-O-Plate*, twin ground for truest reflection.

Mr. Hall: No, we used it to effect heating and air-conditioning economies. Each room has an individual thermostat. Insulating glass helps keep room temperatures constant without excessive demand on the system.

Question: What is the temperature spread in Memphis?

Mr. Hall: About 100 degrees. Sometimes the temperature drops 60 degrees in 5 to 6 hours.

Question: With that drastic a drop, don't you get frost or condensation on those window walls?

Mr. Webb: Only once, and that was due to a leaky heater discharging too much moisture into one of the rooms.

Question: That window wall affords a wonderful view of the terrace and swimming pool, but don't the guests feel a lack of privacy?

Mr. Webb: On the contrary, guests enjoy the "open world" feeling we've created. They hardly ever draw the drapes until they're ready to retire. Instead they relax, watch a sunset from their room, stroll out and enjoy the fun around poolside.

Question: How do you control sun heat and glare?

Mr. Hall: We've used roof overhangs, and have extended the walls of each unit beyond the window wall. That not only helps shade the rooms, but forms a private patio for each unit.



Mr. Hall: Insulating glass. Two panes of  $\frac{1}{4}$ " plate glass with a  $\frac{1}{2}$ " air space between them.

Mr. Webb: That's a feature I insisted on having. We're very sound-conscious here in Memphis. It has won the "Quietest City" award 14 times. An unnecessary toot of your horn can cost you a \$5.00 fine. But right here is about the noisiest place around town.

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Insulating glass, of course, helps keep rooms cooler in summer.

Mr. Webb: *Thermopane* has worked out so well, we're considering using it to replace the single glazing in our office.

We spent the night at this Howard Johnson Motor Lodge and enjoyed a relaxing sleep, undisturbed by inside or outside noise. Why not try it yourself, next time you are in Memphis?

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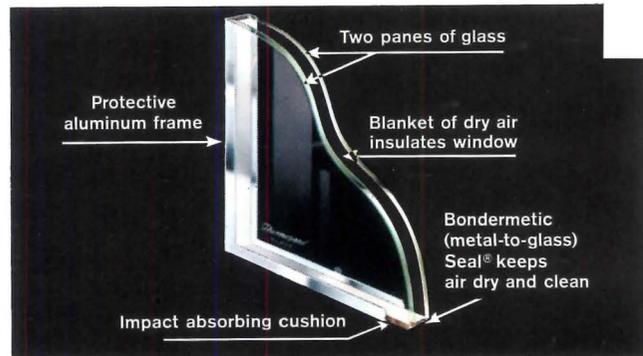


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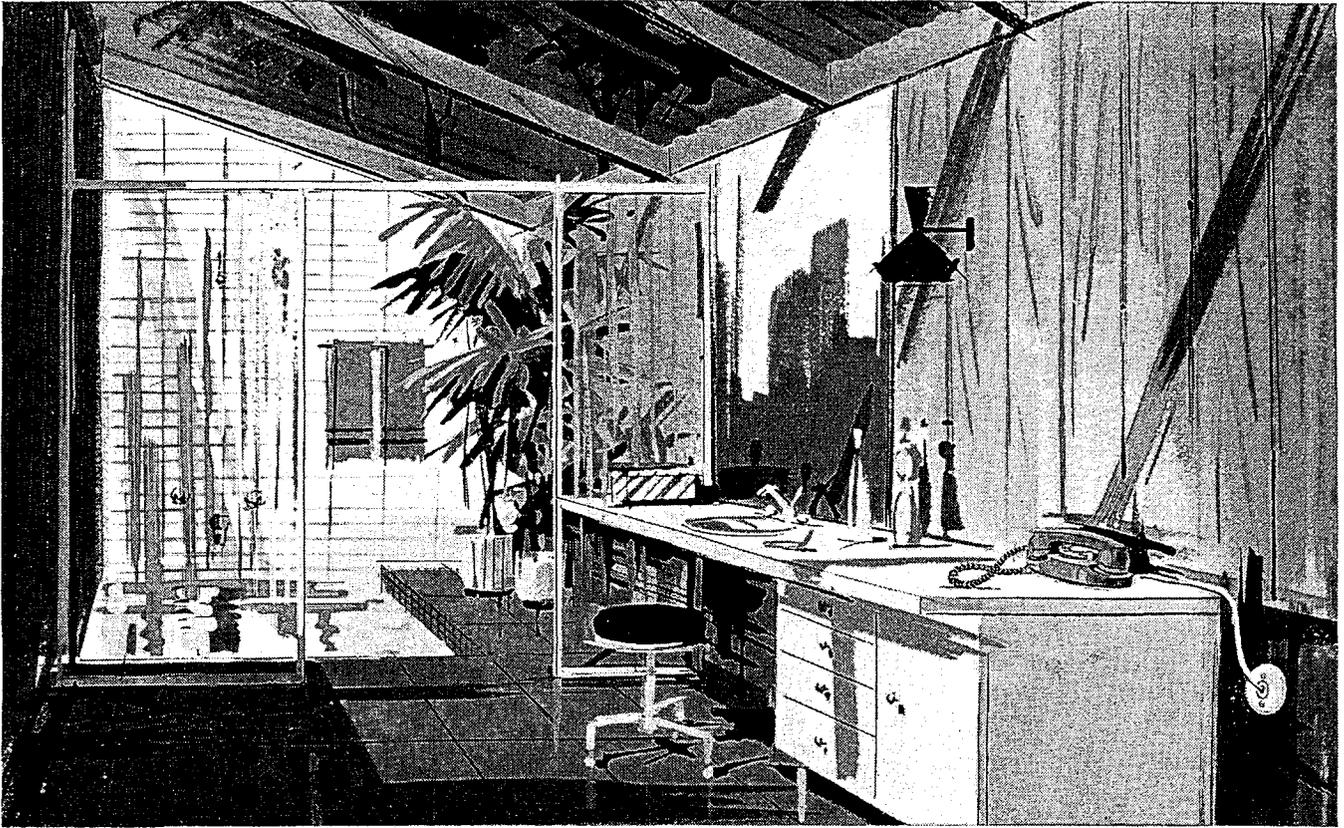


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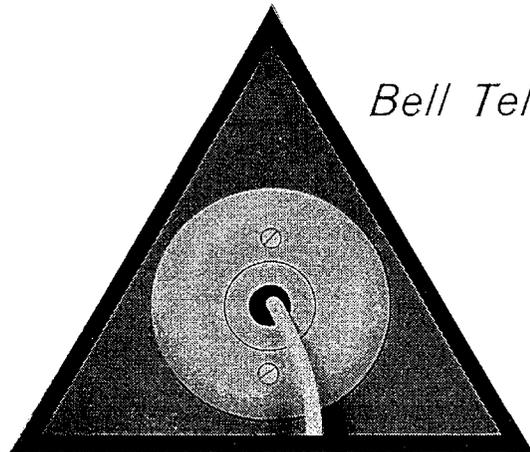
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Continued from page 210

account for the art historian; his efforts are those of a popularizer rather than of a specialist.

This book, the product of Stewart's recent travels in Yugoslavia, can be recommended for its fresh and up-to-date description of buildings that would not appeal to the average tourist, even if they were more accessible. Although Tito has connected Belgrade and Zagreb with a superhighway, the average road in

Yugoslavia is unpaved, and it is advisable to travel in the hardy and sure-footed jeep if one plans to get off the beaten path.

Stewart's professional training is much in evidence. I particularly admire his diagrammatic sketches of churches, which catch the character, both in structure and in plan, of the buildings he describes. These skillful and simplified drawings are to be highly recommended to the student of architecture, particu-

larly the young professional who is lucky enough to travel abroad.

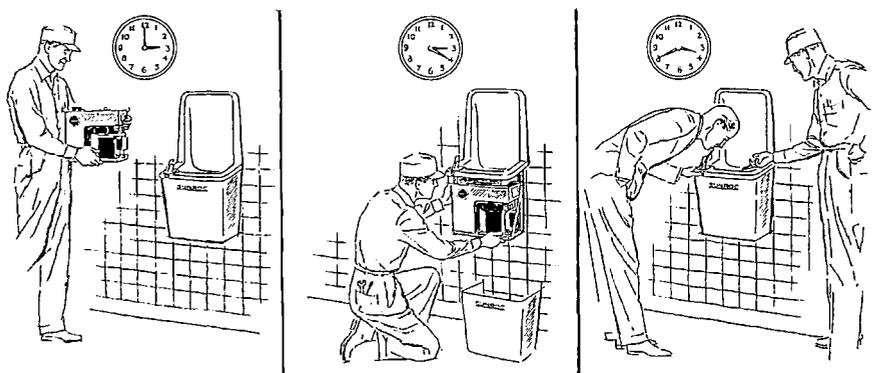
But what distinguishes a Serbian church from, say, a 12th-Century Sicilian or Greek church? Here one must tread carefully, for the heritage of Serbia is shared throughout that vast area influenced by the proliferation of art from Constantinople, the capital of Byzantium. The most important model for those building in the Byzantine tradition was the great church of Santa Sophia, where the spatial possibilities of domical architecture and the splendid decorative effects of mosaics served as inspiration to many generations of architects and builders throughout the Balkans. The churches about which Stewart writes, therefore, are variations on a theme. Perhaps part of the charm of Serbian architecture, as Stewart pertinently suggests, is the impressive effect possible in such a tiny structure as St. Luke's at Kostor. The interior of this church, built in the 12th Century, would crowd a congregation of more than fifty people, yet it retains an impressiveness in spite of its size. Indeed, by including such a clumsy and unwieldy structure as the cathedral at Sarajevo, built in the 19th Century, Stewart shows by contrast the sureness of scale possessed by the medieval Serbian builders.

The Serbs shared with others an interest in the decorative possibilities of brickwork, especially in the apsidal exteriors of their churches. One is immediately reminded of similar brickwork in neighboring Greece—high praise for the Serbs! In fact, the variety of interesting surfaces and textures found in these brick churches contains a valuable lesson for today's architects.

It is to Stewart's credit that he did not ignore the bloodshed and disaster characterizing the Serbian people's troubled past. His side trips into Serbian history, however, are not always carefully related to the churches or monuments under discussion. And in spite of the mysterious character of the Bogomil sect and their intriguing carved monuments, one might have preferred firsthand information about Serbian domestic architecture that only Stewart would have.

The time span of Stewart's book is immense—from Rome to the present—and yet a colorful and coherent national style emerges in spite of a succession of foreign masters and artistic influences. In this fact above all others must lie the real genius of the Serbian people. The Byzantine Empire, the long Turkish domination, and, more recently, the influ-

Continued on page 220



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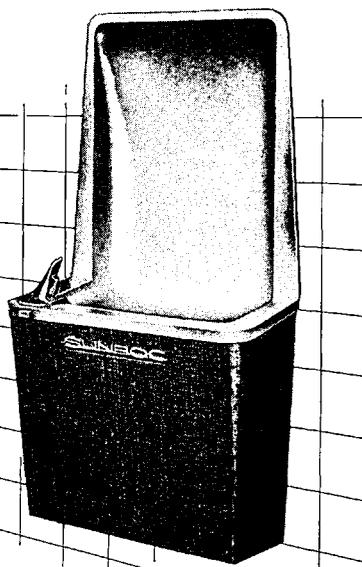
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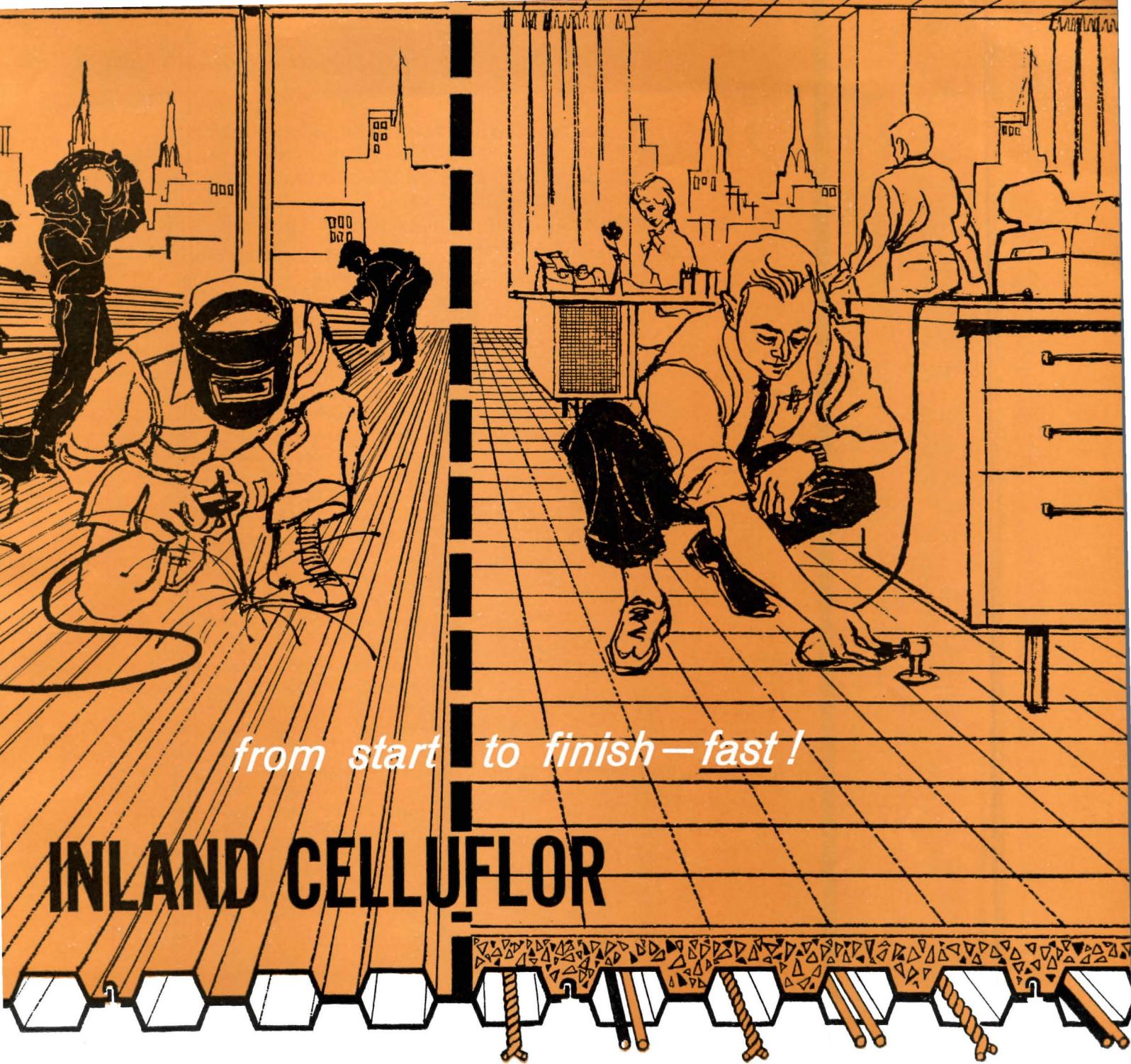
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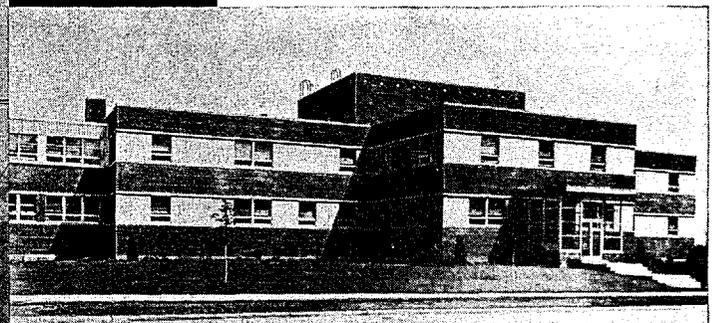
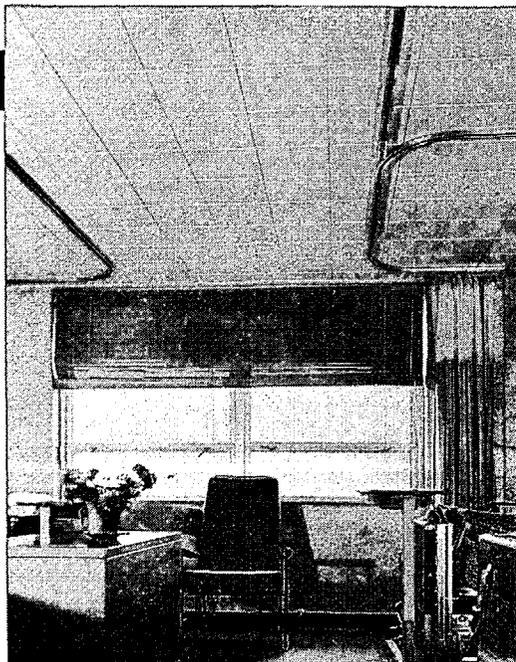
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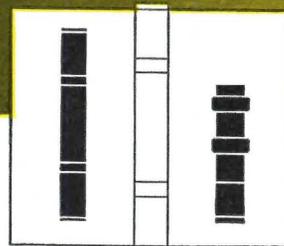
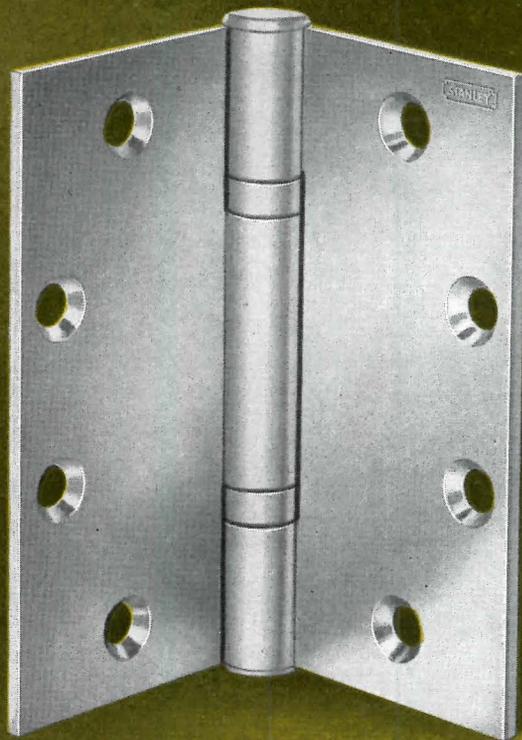
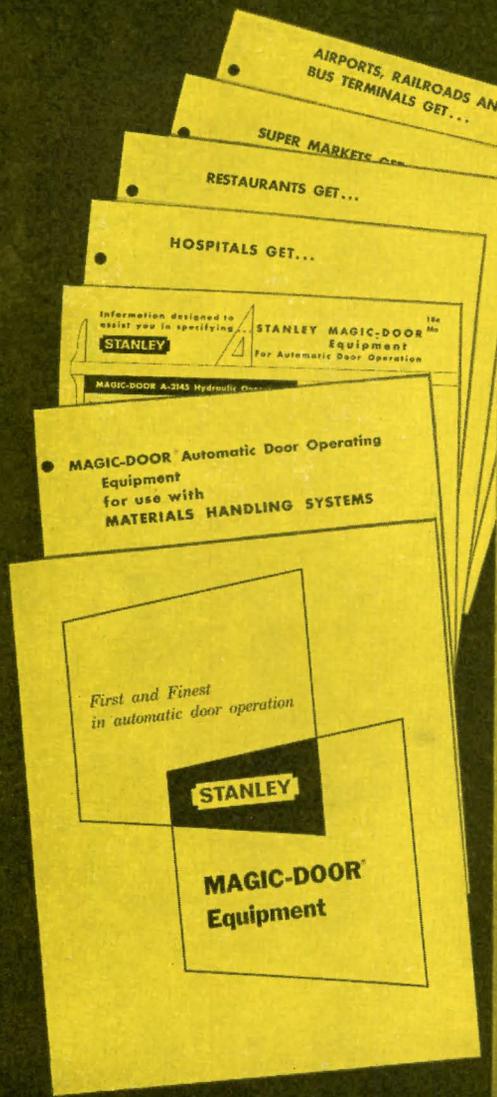
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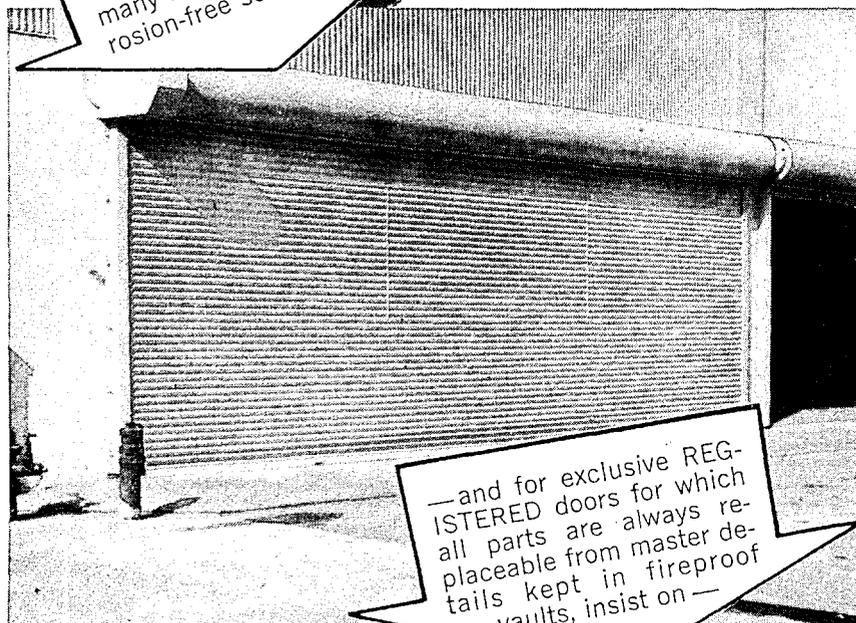
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*Continued from page 216*

ence of the Austro-Hungarian Empire, are reflected in Stewart's text as well as in his photographs and drawings.

Stewart's photographs, as reproduced in this book, do not live up to the description on the dust jacket as "magnificent." They are bound together in the back of the book, which is hardly convenient, but is an understandable economy. To this reviewer, however, it seems an unfortunate oversight to have given them no captions. Minor irritations though these may be, they do detract from the effectiveness of the book. We are, in general, however, in Cecil Stewart's debt for giving us a most pleasurable and readable account of his architectural tour of Serbia.

MARK L. PEISCH  
Columbia University  
New York, N.Y.

### *Governmental Policy Redefined*

Federal Credit and Private Housing: The Mass Financing Dilemma. Charles M. Haar. ACTION Series in Housing and Community Development. McGraw-Hill Book Co., Inc., 330 W 42 St., New York 36, N.Y., 1960. 408 pp., tables, graphs. \$12.50

Professor Haar of Harvard Law School has written a comprehensive review of Federal programs for residential mortgage credit. He gives the history and nature of the major agencies operating in this field, most of them (the major exception being the VA housing program) components of the Housing and Home Finance Agency.

This detailed examination of the administrative and legal framework of the national housing credit programs and policies goes well beyond the interest of most architects, whose primary concern may well be: why won't the FHA or VA finance contemporary design houses? Haar's concern is broader than this somewhat parochial—though nonetheless important—view. He is interested in the implications of the Federal credit system for the nation's housing supply and, in his final chapter, discusses a number of ideas designed to improve the system.

Among the points he mentions is the continuing emphasis of Federal mortgage-insurance programs on protecting the mortgage lender rather than on directly aiding the homeowner or tenant. Coinciding with this emphasis has been the Government's attitude, especially prevalent in VA and FHA activities, of considering its aims essentially identical to those of private finance capital, rather

*Continued on page 232*



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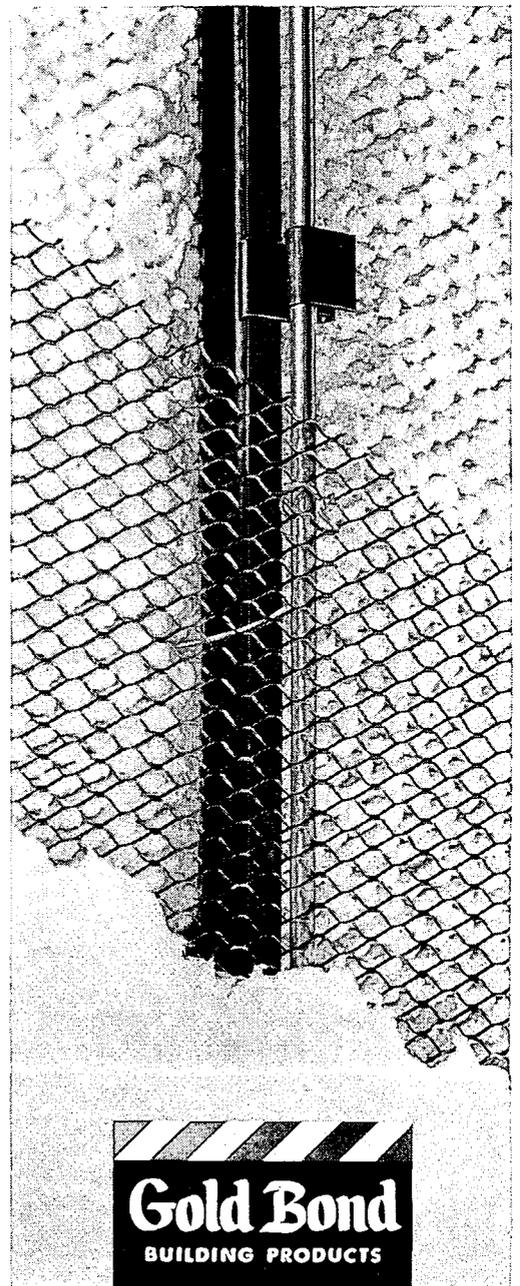
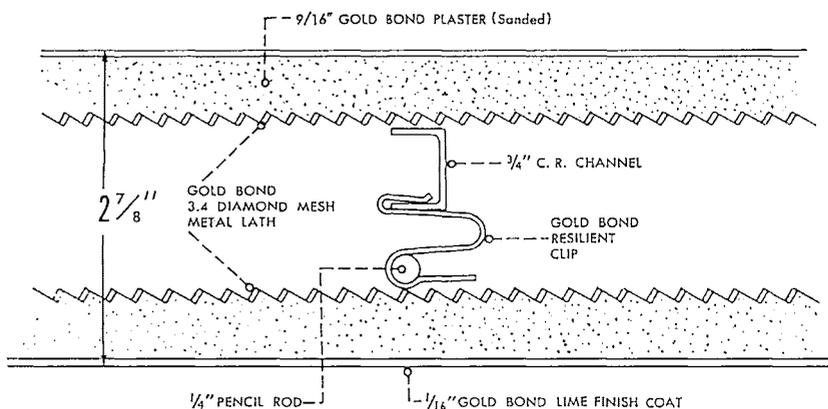
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It's constructed of 3/4" channel studs, with pencil rod attached to one side by resilient clips. Metal lath is then wire-tied to the pencil rods and also to the opposite side of the 3/4" channel studs. A 9/16" thickness of sanded plaster is then applied to both sides of the partition with a 1/16" lime putty finish coat.

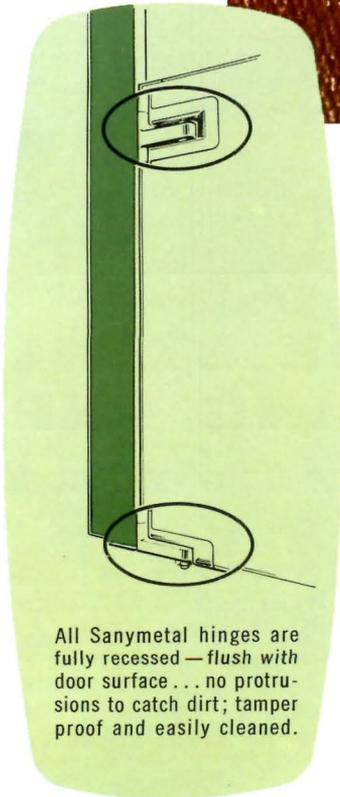
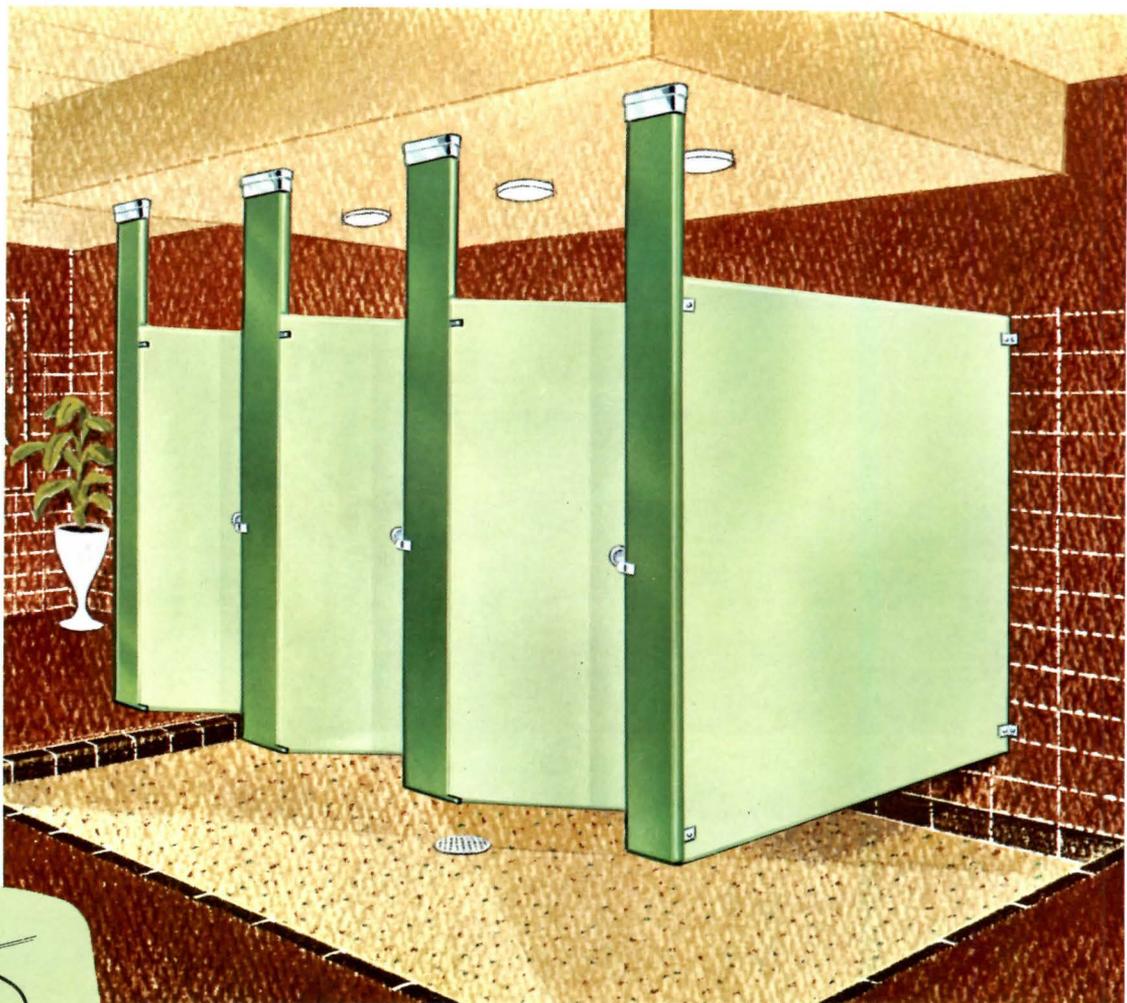
The accumulated space saved can mean reduced construction cost per square foot of floor space. Add the bonus of excellent sound control and you have a quality system that satisfies everyone. Familiarize yourself with this unique partition system. Ask your Gold Bond® Representative for a demonstration, or write Dept. PA-41 for complete technical information.

NATIONAL GYPSUM COMPANY, BUFFALO 13, NEW YORK



a step ahead of tomorrow

One idea from the imaginative new, full-color brochure "Design Studies", showing recessed area for easy floor cleaning.



All Sanymetal hinges are fully recessed—flush with door surface . . . no protrusions to catch dirt; tamper proof and easily cleaned.

## SANYMETAL PARTITIONS...

*Easiest*

to order  
to install  
to clean

Sanymetal's complete layout and engineering service saves you time and effort . . . simply specify room dimensions plus partition requirements and the expert Sanymetal staff works out all details.

In addition to the ease of specifying and ordering, Sanymetal's completely flush design . . . concealed latch and mechanism, factory installed integral hinge brackets and flush hinges mean far faster, easier installation and unsurpassed ease of maintenance.

It all adds up to lowest in-place cost and longest care-free life. Your Sanymetal representative has the full story or write direct.



Nameplate identifies every compartment

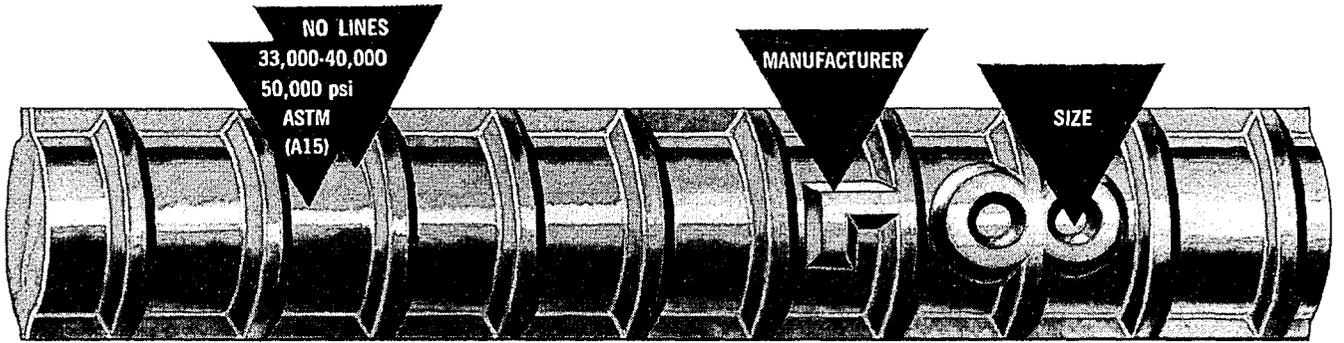
"For information turn to reader service card Circle No. 302"

*Sanymetal*<sup>®</sup>

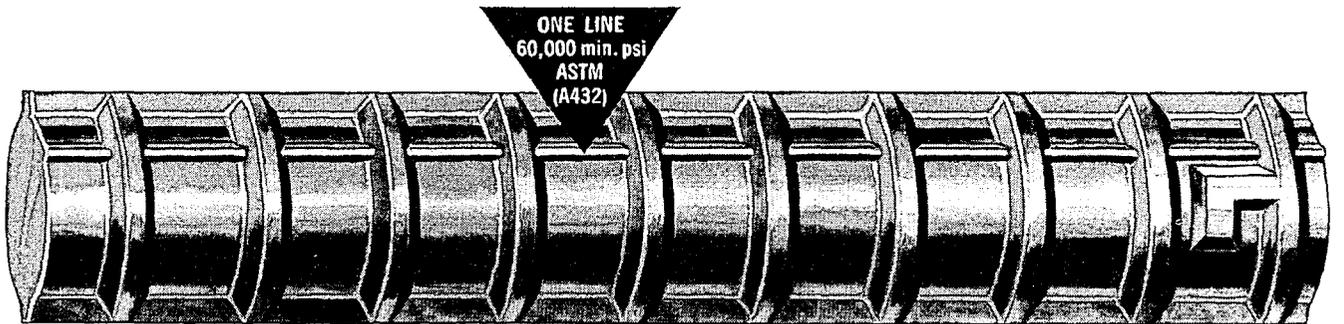
world's leading

producers of toilet partitions

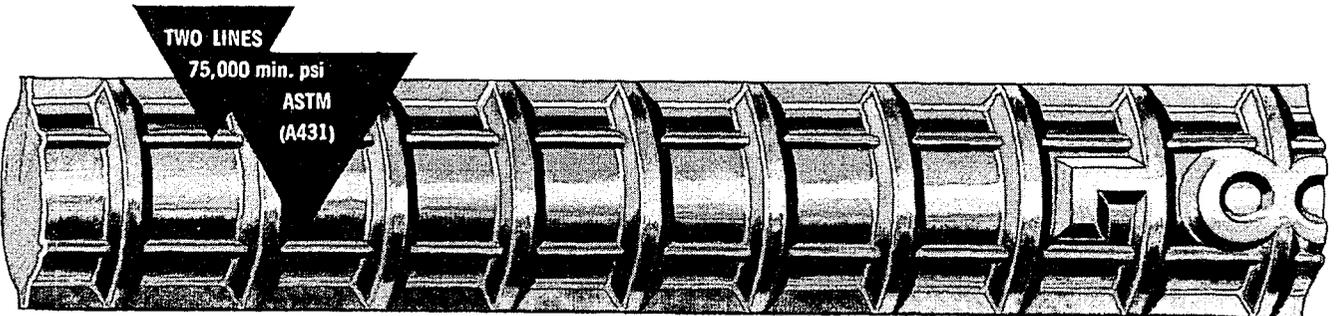
1721 Urbana Road, Cleveland 12, Ohio



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## SHOW SIZE AND STRENGTH



## OF EVERY LACLEDE STEEL REINFORCING BAR

*fast, easy identification saves construction time and cost*

Metallurgical research has developed high-strength steels that substantially improve the efficiency and economy of reinforced concrete design — saving as much as 15% of the total construction cost of the structure.

Laclede now brings you this steel reinforcement in new, easy-to-identify bars that can be used with assurance under the Ultimate Strength design methods of the A.C.I. building code. With this positive identification, the worker can quickly find the right bar specified for the job. The clear marking of the grade of steel minimizes the need for inspection and testing.

Specify these time-saving, money-saving Laclede bars for your next construction job.



**LACLEDE**



**STEEL COMPANY**

QUALITY STEEL FOR INDUSTRY AND CONSTRUCTION

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AMERICA IS ENTERING THE CERAMIC TILE AGE

*Ceramic tile  
is the attraction*  
... the character-setting  
surface ... the  
invitation to enter  
and buy

MOSAIC<sup>®</sup>

ANY STORE IDENTIFICATION IN CERAMIC TILE A.I.A. FILE NO. 23-A





PLATE 668

## Mosaic Ceramic Tile

Attracts • Invites • Sells

On the preceding page, you see a most practical and appropriate concept of design in ceramic tile which creates both store identification and customer invitation before the store is entered.

Selling starts at the sidewalk and a carpet of tile brings the customer in. In ceramic mosaic tile, this carpet is colorfully distinctive, unaffected by wear and easy to clean. Almost unlimited design effects are at the designer's command.

On this page, you'll find distinctive tile treatments that give stores personalized character, rich environment and permanent freedom from maintenance problems.

The exclusive Mosaic patterns . . . Byzantile®, Formfree®, Mosaic Medley® and others . . . are specially appropriate for store exteriors. The Mosaic Design Department will assist in their selection on request. The Mosaic Tile Workbook for Architects is in Sweets. For additional data, write The Mosaic Tile Co., Zanesville, Ohio or 131 N. Robertson Blvd., Beverly Hills, Calif.

668—J. C. Penney Co. Arch.: Armet & Davis. Tile Contr.: Continental Marble & Tile Co. Byzantile Pattern 2524-A.

669—Bank of America. Arch.: Continental Service Co. Tile Contr.: Continental Marble & Tile Co. Special Mosaic Medley Pattern.

687—Woolworth Store. Arch.: Victor Gruen Assoc. Tile Contr.: Duffy Tile Co. Mosaic Medley Pattern.



PLATE 669

### THE MOSAIC TILE COMPANY

Member—Tile Council of America, Inc. and The Producers' Council, Inc.

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PLATE 687

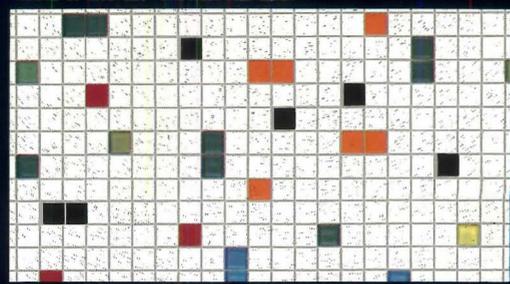
BYZANTILE PATTERN 2524-N2



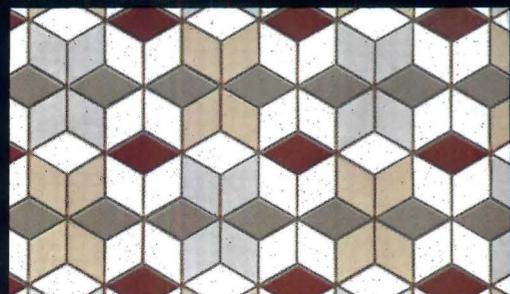
MOSAIC MEDLEY PATTERN 2302-VG8A



"HOUSE OF MYSTERY" PATTERN 3021-WJAA



BYZANTILE PATTERN 2533-N3



EXCLUSIVELY-MOSAIC PATTERNS which illustrate the great variety of character effects that can be achieved in Mosaic ceramic tile.

For free estimates on Mosaic Tile, see the yellow pages for your Tile Contractor, Ceramic





# FREE!

## Professional interior color-planning tailored to your specific building designs!

**H**ERE'S a way to save yourself time and work, while rendering an even better, more complete service to your clients.

- Instead of spending hours on color-planning for each job, simply call your nearest PPG Architectural Representative who will work with you or your associates. He'll furnish a detailed color-planning survey *without charge!*

- This service is not only free; it's the finest! Each survey you receive from your PPG Architectural Representative is based solidly on the principles of COLOR DYNAMICS, the famed scientific system of painting that does a beautiful job of relating color and *color psychology* to modern architecture!

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on your current jobs!

Mail coupon now!



Pittsburgh Plate Glass Company  
Paint Division, Dept. PA-41, Pittsburgh 22, Pa.

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- Please send me free booklet(s) on the use of COLOR DYNAMICS in
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| <input type="checkbox"/> schools,  | <input type="checkbox"/> other buildings. |

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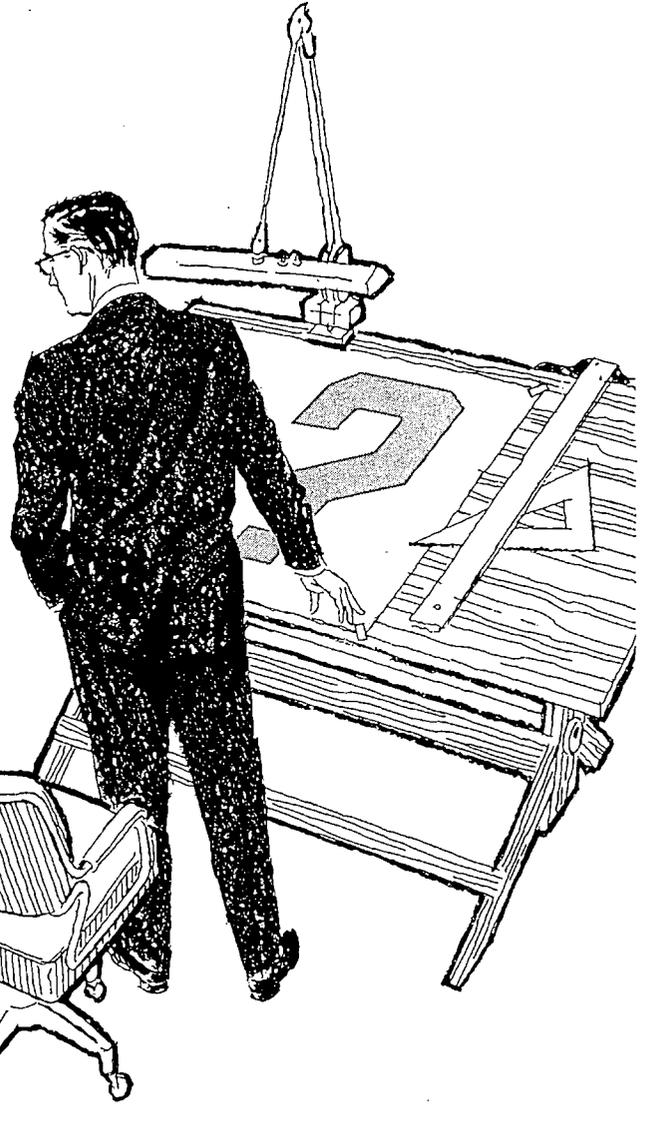
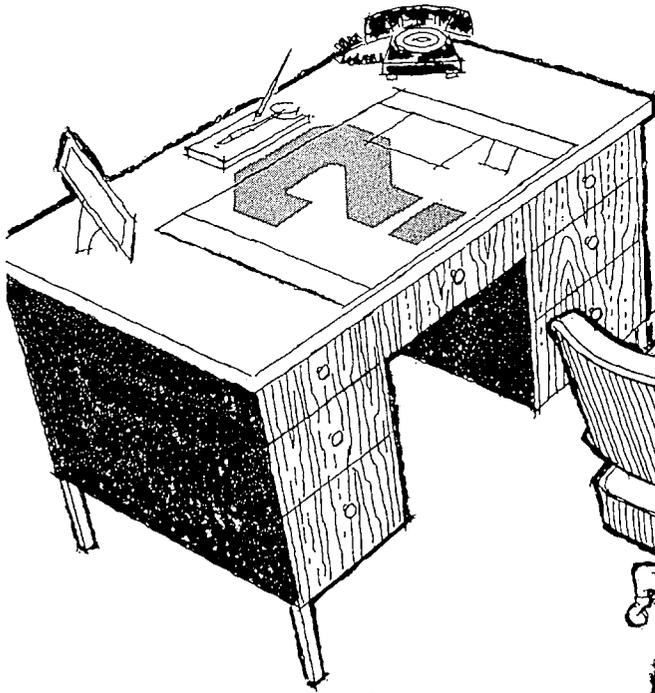
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**PPG**® **PITTSBURGH**® **PAINTS**®  
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*Quietly follows any contour*



Engineer: CHARLES A. MAGUIRE & ASSOCIATES, Providence; General Contractor: GILBANE BUILDING COMPANY, Providence; Cafco Contractor: E. F. BYRNES COMPANY, Boston

## PROJECT TURNKEY - INTELEX ELECTRONIC POST OFFICE, Providence, Rhode Island

The thin-shell concrete roof structure and steel tie beams were **CAFECO** treated for sound control, fire retardancy, and elimination of concrete finishing costs.

Here's real **DESIGN FREEDOM . . .** and **INSTALLATION ECONOMY!** Cafco Sound-Shield quietly follows the parabolic contours of the nation's first, fully automated post office building, Project Turnkey, Providence, Rhode Island. A continuous Cafco "blanket" of **INTEGRALLY HARDENED** fiber was mechanically applied to Turnkey's sweeping ceiling in a **SINGLE APPLICATION.**

**CONTOUR ADAPTABILITY** speeds the job. Joint alignment, scribing, fitting and other operations required for pre-formed acoustical materials are eliminated. **MONOLITHIC** Cafco may be applied directly to exposed beams, metal deck, concrete and other wall and ceiling surfaces with facility, efficiency and economy. Travertine textures — fine, medium and coarse fissuring — with complete **COLOR SELECTION** and **UL-tested** fire retardancy further distinguish Cafco Sound-Shield installations from coast

to coast and throughout Canada. Our catalog in Sweets Architectural File (39-B-1) further details Sound-Shield advantages.

For design freedom and job economy, consult your Cafco sales engineer or contractor. Cafco-trained contractors, servicing the construction industry in 50 states, Canada and Australia, are equipped to provide every specification and job service.

### **ROOM-TO-ROOM SOUND TRANSMISSION**

A Sound-Shield ceiling system offers a 50 db. reduction in sound transmission over ceiling height partitions — unmatched in economy and performance by preformed systems — yet providing these plus values . . .

- UL-tested 3-hour fire retardancy
- High sound absorption
- Controlled, joint-free texture

Write for complete details and specifications.

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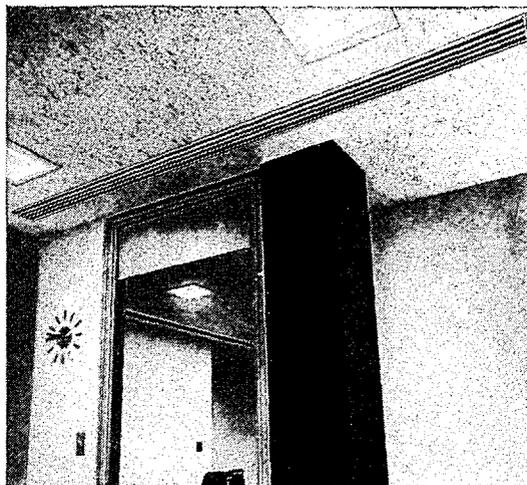
Here is the new Anemostat ASL Architectural Straight Line Air Diffuser installed in the Willard Straight Hall of Cornell University at Ithaca, New York. This new ASL unit for ceiling or wall application combines the superior air diffusion characteristics of all Anemostat air diffusers with the esthetic appearance of a slender unit with symmetrical vanes. The ASL diffusers are easy to install; no screws, nuts or bolts are needed.

Write for Anemostat Catalog ASL-70

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ENGINEER:

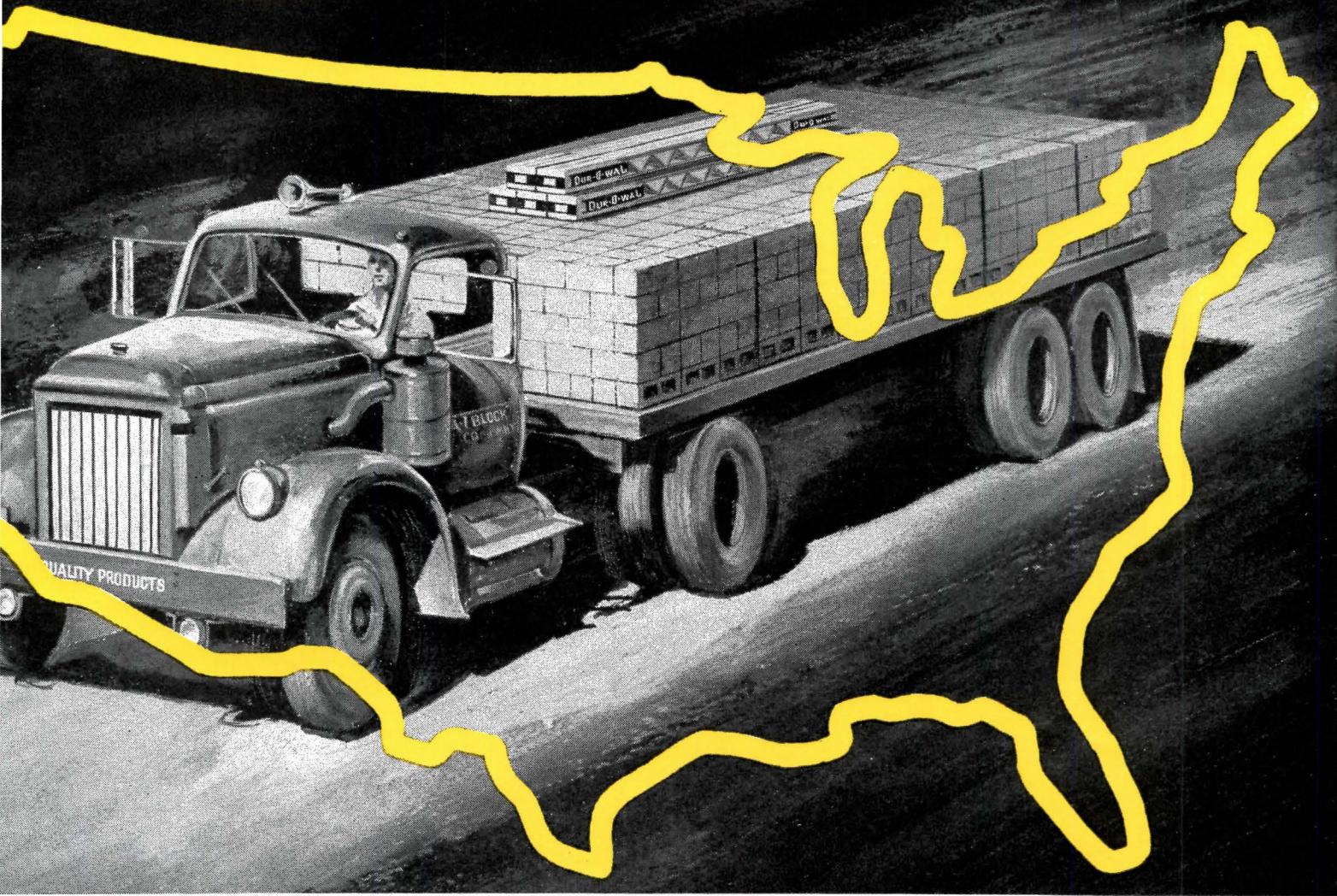
Leigh St. John Associates, Binghamton, New York

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AMERICA'S MOST WIDELY USED, WIDELY DISTRIBUTED MASONRY WALL REINFORCEMENT



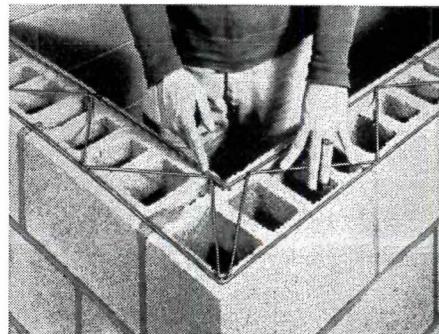
## Wherever you build with block Dur-o-wal is available

Fancy claims aside, this is the significant fact about Dur-o-wal: It is more widely wanted than any other type of masonry wall reinforcement.

Consequently, Dur-o-wal is more widely distributed—the *only* nationally distributed brand. Eight strategically located Dur-o-wal factories serve more than 8000 dealers who in turn serve every part of the United States. Wherever you build a ma-

sonry wall, you can get Dur-o-wal!

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*Two engineered products that meet a need. Dur-o-wal reinforcement, shown above, and Rapid Control Joint, below. Weatherproof neoprene flanges on the latter flex with the joint, simplify the caulking problem.*

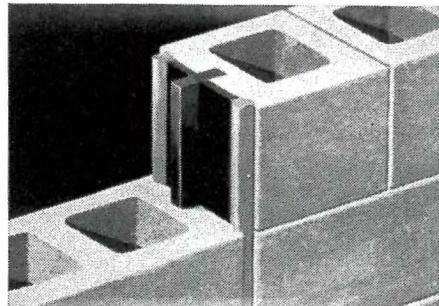
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**RIGID BACKBONE OF STEEL FOR EVERY MASONRY WALL**

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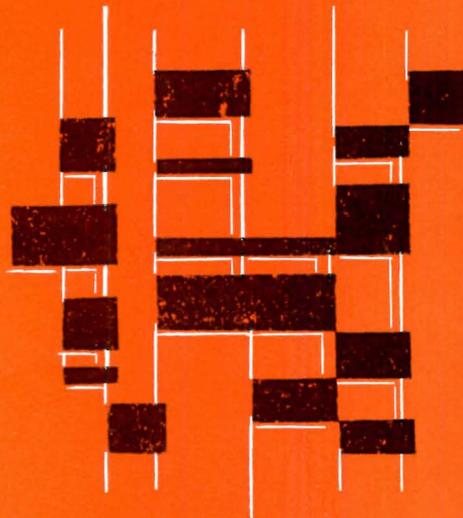


## A STATEMENT OF POLICY

A metal curtain wall can be only as good as the combined skills of the architect and the manufacturer permit. With any architectural product, the manufacturer's role is vital, because upon his skill and integrity in following the architect's specifications depends the satisfactory performance of the design.

In metal curtain walls, this factor is especially important. The degree to which necessarily difficult technical problems are successfully met depends on the quality of the manufacture just as surely as on the skill of the architect.

At Michaels, we are interested only in quality metal wall projects—those for which custom detailing is practiced and those employing standard sections which fully comply with monumental engineering requirements. Custom detailing can usually be provided at moderate costs, only slightly more than those of "adapted" standard systems.



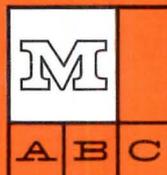
Metal curtain walls are not competitive with window wall construction. They cannot be, because they are especially engineered for monumental construction, designed for deflection control and heavier wind loading conditions.

We at Michaels are interested in those projects for which the architect needs and desires special detailing assistance, those jobs for which the architect and owner will invite and accept bids *only* on the basis of the established specifications.

We are, in short, interested in those jobs for which quality is both essential and *insisted upon*. It is on this basis that we invite your inquiries.

**THE MICHAELS ART BRONZE CO., INC.**

P. O. Box 668, Covington, Ky., Plant & Office: Kenton Lands Rd., Erlanger, Ky.



*Continued from page 220*

than taking cognizance of the greater social responsibility that a Government agency should accept in aiding individuals and communities.

DAVID A. GROSSMAN  
Advance Planning Associates  
Cambridge, Mass.

### *The First on Fuller*

The Dymaxion World of Buckminster Fuller. Robert W. Marks. Reinhold Publishing Corp., 430 Park Ave., New York 22, N. Y., 1960. 240 pp., illus. \$12

The scientist-engineer-philosopher Buckminster Fuller is certainly one of the most original and significant thinkers of this century. For some time there has been an urgent need for a book on his work, because to the layman, when explaining his own ideas, he has been almost universally puzzling and often incomprehensible. Marks' book is important as the first on Fuller; it is particularly valuable in that it presents the man and his work with such clarity. The author is a good writer, and his enthusiasm for and knowledge of his subject (he has known Fuller for some eighteen years) gives his style an *authority* and energetic tautness. In the preface he states that "the form and language of this book are fitted as closely as possible to their subject; and this subject is a protean maverick." He manages to make this so-called "maverick" comprehensible.

In organization, the book is both biographical and explanatory. Certain emphasis has been placed on interpreting Fuller as an individual, his philosophy, even his ancestry. Two chapters titled "Fuller: The Man and His Philosophy" and "Nonconformity and New England Conscience" give the reader not only facts and pertinent incidents (often amusing) in Fuller's background, but also an insight into the way his mind operates. His is a scientific mind, concerned with a comprehensive view of the physical world, and constantly oriented to the broadest of social needs. In Fuller's words: "The problem of a comprehensive design science is to isolate specific instances of the behavior pattern of a general, cosmic energy system, and to turn these to human use."

Using this biographical material as a base, Marks proceeds to discuss and explain the diverse directions of Fuller's work. Chapters deal with the early Dymaxion house, the Dymaxion transport units, the evolution of Fuller's theories and work with "energetic-synergetic" geometry, cartography, and finally with

*Continued on page 237*

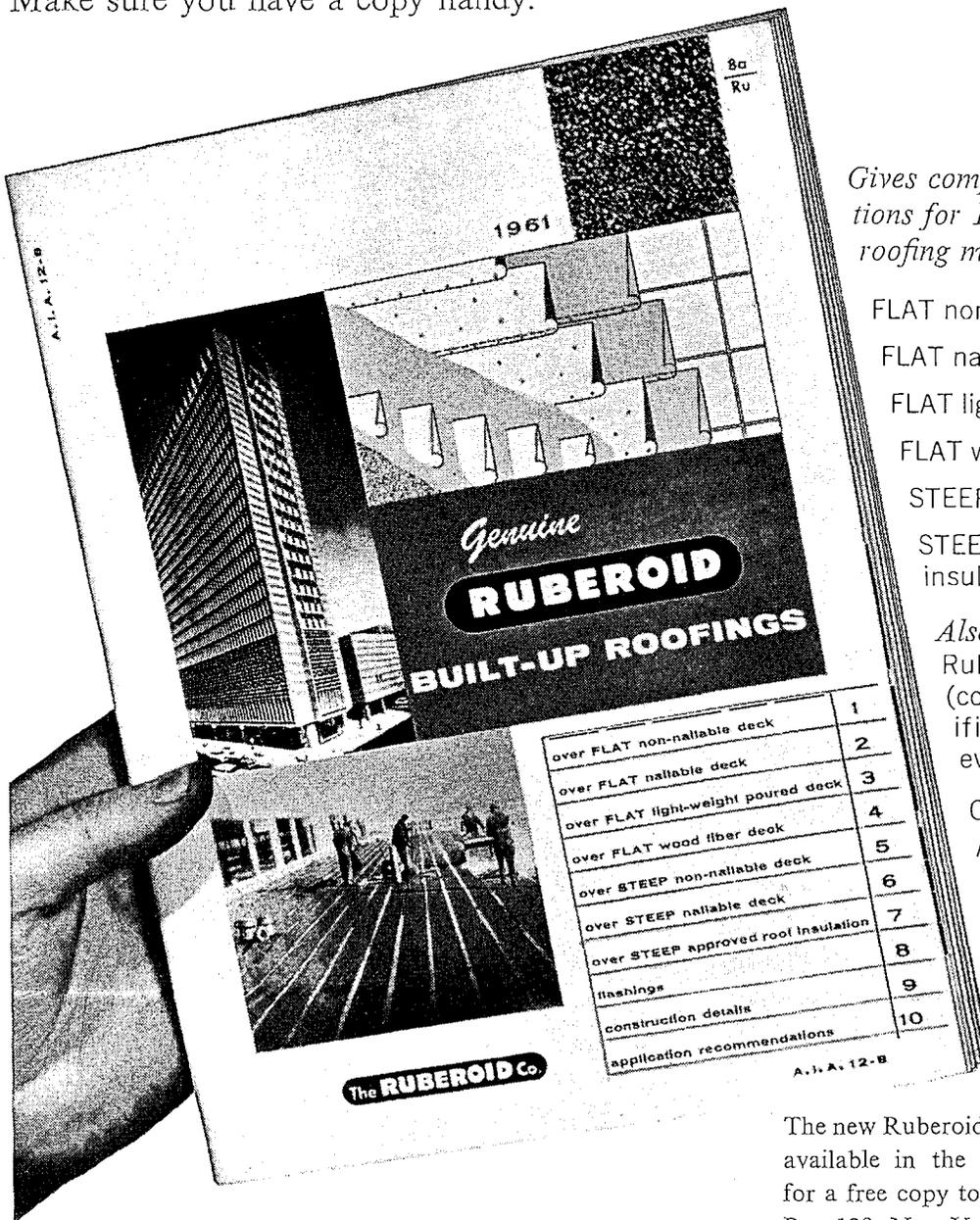
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- FLAT nailable deck
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- STEEP approved roof insulation

*Also:*

Ruberoid Flashtite flashings (cover a wide range of specifications to meet almost every conceivable condition)

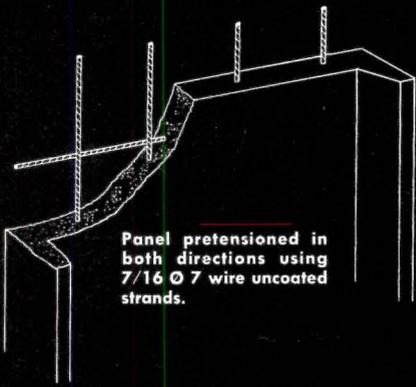
- Construction details
- Application recommendations

The new Ruberoid Built-Up Roofing Catalog is available in the 1961 Sweets Files. Or, write for a free copy to: The RUBEROID Co., P. O. Box 129, New York 46, N. Y.

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PRECAST CONCRETE CURTAIN WALL UNITS  
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largest office building*



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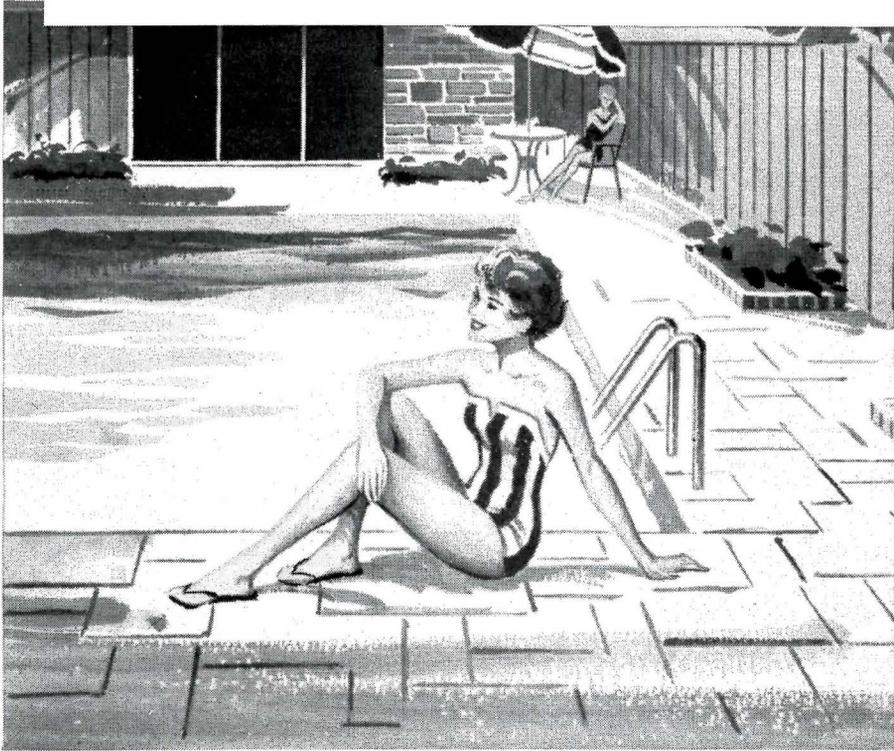
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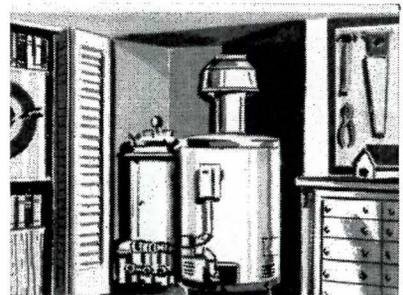
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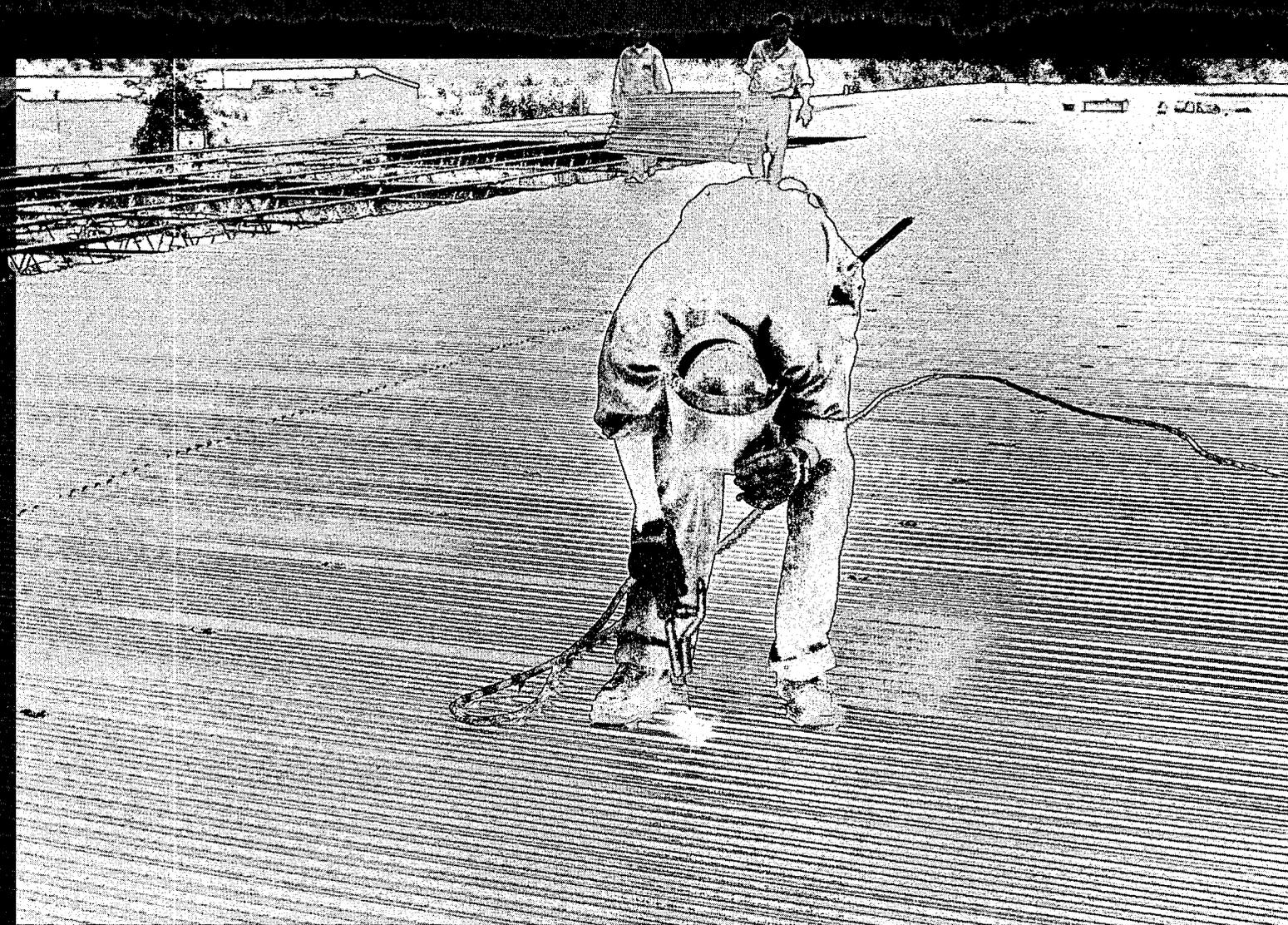
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This new Bellevue, Wash., warehouse was designed by Frankfurter, Harstad & Associates; general contractor: Sellen & Hansen, Inc.; sub-contractor for roof: Pioneer Sheet Metal & Roofing, Inc. All are Seattle firms.

## Bethlehem Slabform in new warehouse roof saves time, money, and materials

Slabform,\* Bethlehem's solid steel formed sheet for floor and roof construction, was used in building the roof of a new drug warehouse in Seattle. Some 30,000 sq ft of Bethlehem's standard Slabform were placed in combination with insulating concrete to form what is known in the trade as an insulating-concrete, high-strength steel roof system. The concrete was placed to a 2½-in. thickness, and covered with conventional built-up roofing.

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Continued from page 232

geodesic structures. More than half the book is illustrative material, including photographs, drawings, and charts. It ranges from free-hand sketches to patent-application drawings. At times, this illustrative material may seem more all-inclusive than selective, but for the first book on Fuller this is probably desirable.

Significantly, Marks manages to convey a very important aspect of Fuller's work: his method of *evolving* solutions. The aesthetic or design implications of his work are a by-product, not sought by formal or stylistic means. Subconsciously, the scientist becomes an artist. The end-product (be it an automobile, a map, or the world's largest dome) is a result of a generative process of *creative* scientific investigation and imagination. This is important to understand not only in his work, but for another reason as well. Surrounding Fuller and growing from him are a continuing series of student-disciples who, like waves, continue to expand the limits of his work. Their index of individual creativity seems to be extremely high—higher, in fact, than that of the followers of the other major figures of the design world today.

The "energetic geometry" to which Fuller constantly refers seems to be generative on a human creative level also.

WILDER CREEN  
Assistant Director  
Department of Architecture and Design  
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New York, N.Y.

### *Disciplined But Not Mechanized*

Planen und Bauen im Neuen Deutschland (Planning and Building in the New Germany). Edited by Bund Deutscher Architekten BDA, Deutscher Architekten und Ingenieurverband DAI, Bund Deutscher Garten und Landschaftsarchitekten BDGA. Westdeutscher Verlag, Koeln/Rhein 1960. 654 pp., illus. \$24

This new book represents a comprehensive and encyclopedic survey of planning and building in Germany from the beginning of the reconstruction, about twelve years ago, to the present. Since the three leading professional organizations are responsible for the editorship (the Bund Deutscher Architekten corresponds exactly to the AIA), we can be assured that nothing of importance has been omitted.

The sheer quantity of new building is

astonishing, almost embarrassing; the aesthetic impact of the majority of the new architecture is overwhelming. It seems futile to mention either individual buildings or individual architects. Suffice it to say that this publication confirms the impression one gains traveling through postwar Germany—a highly disciplined, but not mechanized, identity of artistic trends in spite of individual accents.

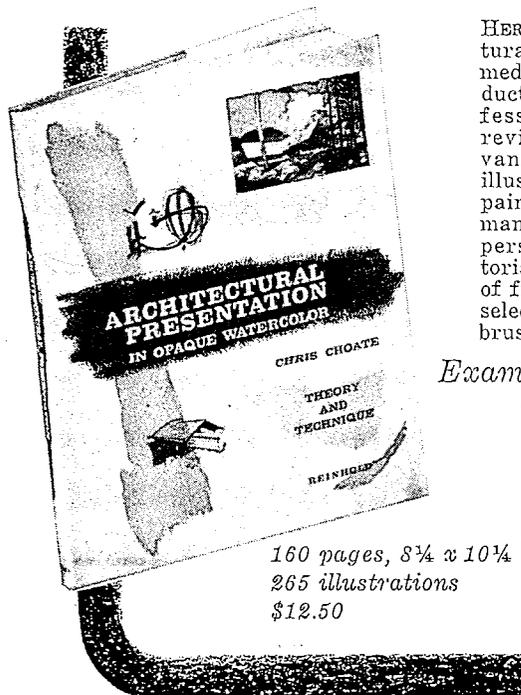
All types of buildings are presented—from religious, educational, industrial, and recreational architecture to hospitals, stadiums, inns and hotels, indoor and open-air swimming pools. Last and not least are a great number of private houses, from the most pretentious to the plainest. Equally important in the book are the systematic discussions of city planning, the sociological basis of urban development, regional planning, and the relationship between nature and architecture. These essays are well documented with illustrations of new structures.

Although the essays appear only in German, the captions for the more than 1500 illustrations (including ground plans and cross-sections) are printed in

*Continued on page 244*

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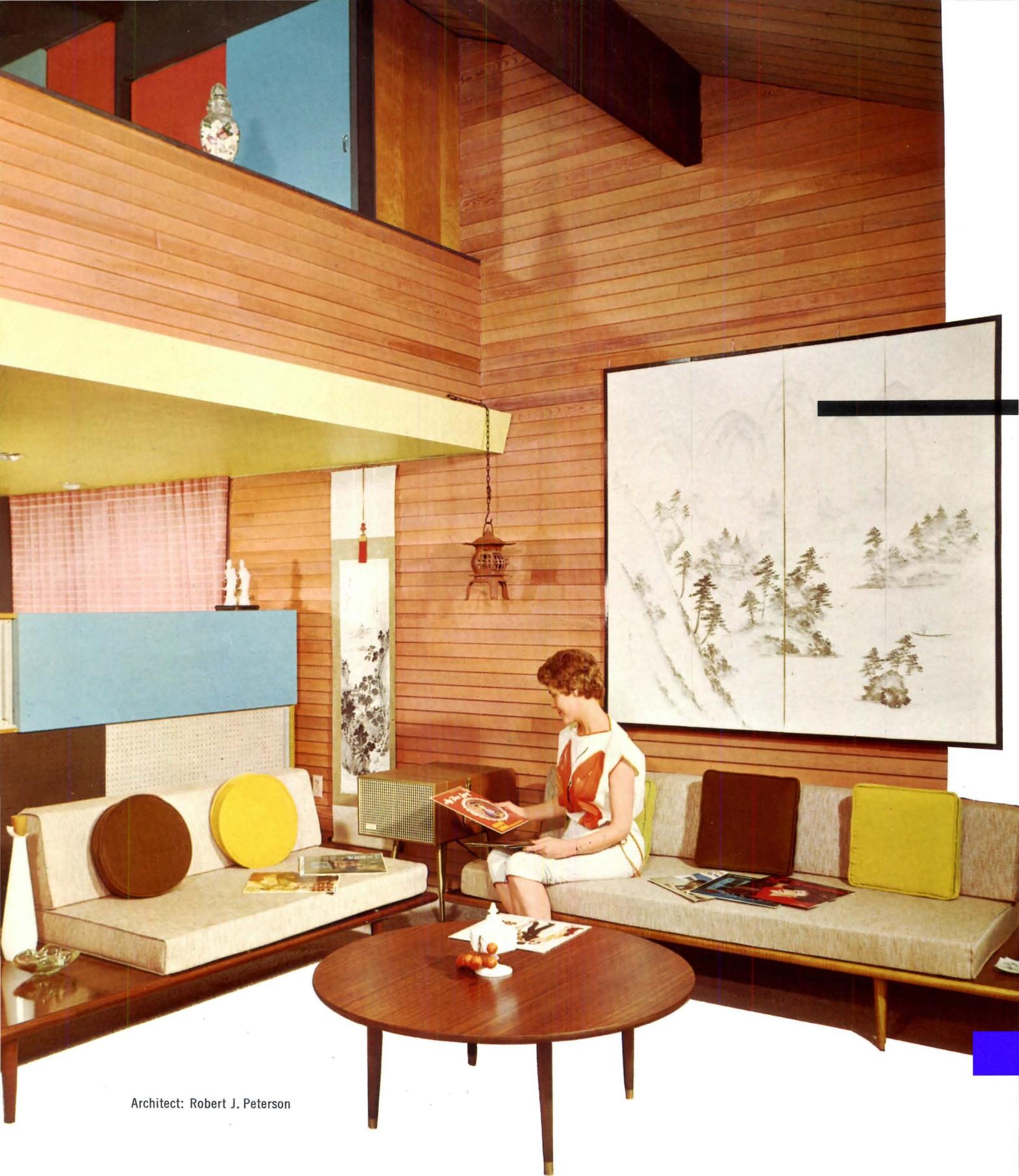
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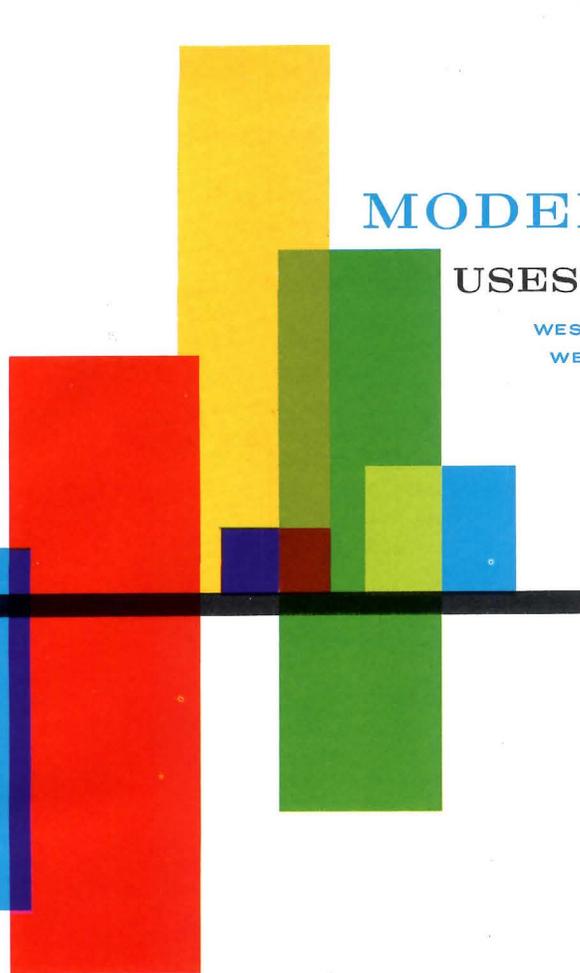


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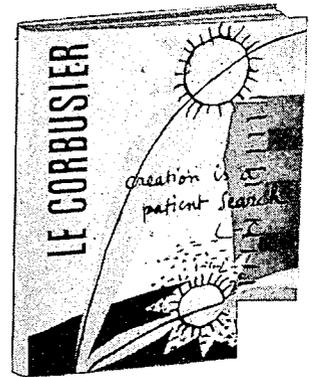
The second half of the book is devoted to an intimate self-portrait of Le Corbusier at work. Photographs of his workroom provide an evocative background for his discussion of

the "patient search" for creative expression. A wide selection of his drawings, which range from a rough picture shorthand to complete ink drawings—works of art in themselves—is included.

Finally, Le Corbusier explains the leit-motifs that run through his work and illustrates them with details from his buildings which point up the specific elements of his architectural conception.

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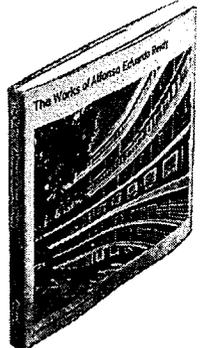
By SIEGFRIED GIEDION. The hallmarks of the architecture of Affonso Eduardo Reidy are boldness of line and concept, simple and well-organized solutions to complex problems, and striking structural effects. These characteristics are clearly shown in the pictorial portions of this book, which cover almost three decades of the famous Brazilian architect's work.

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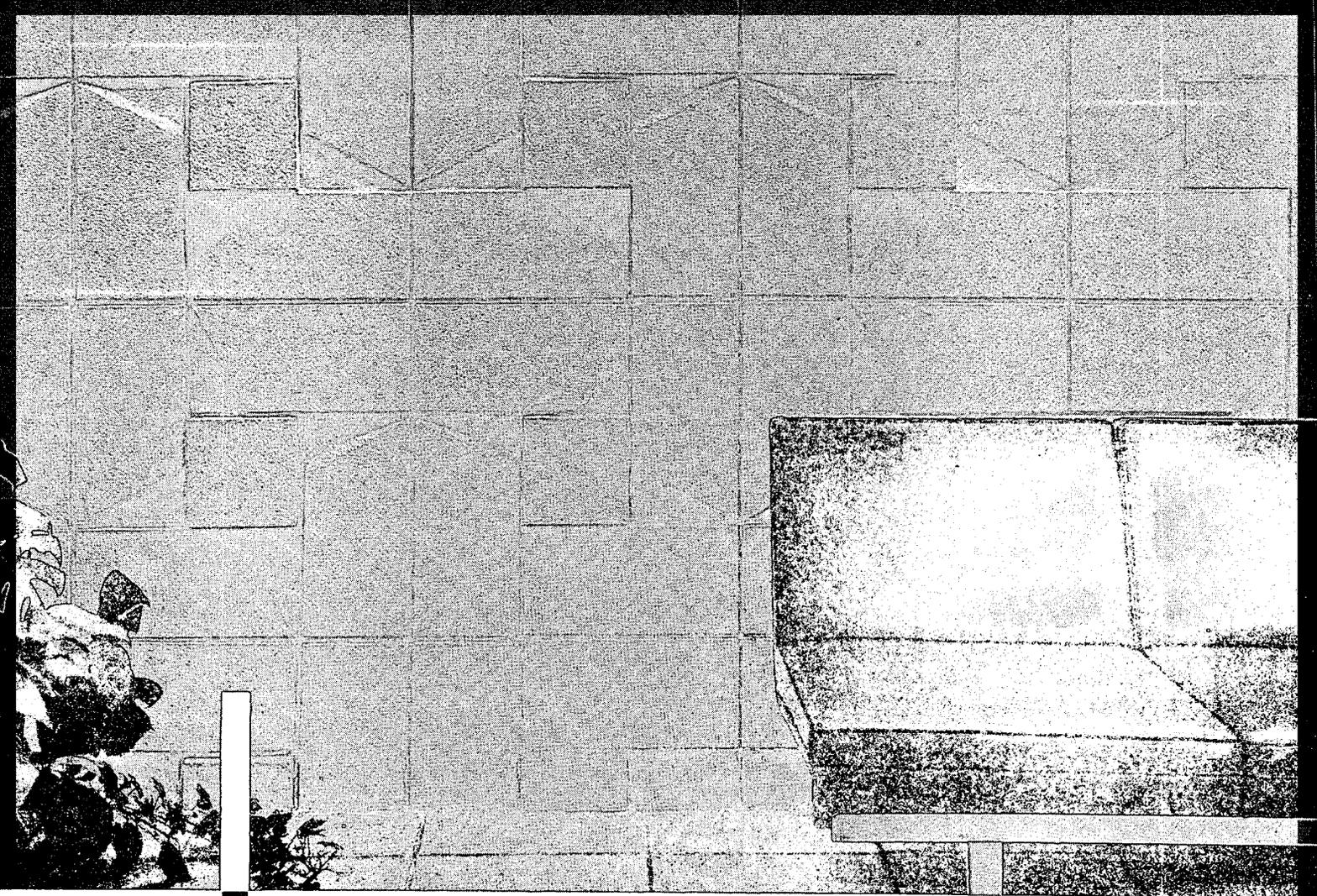
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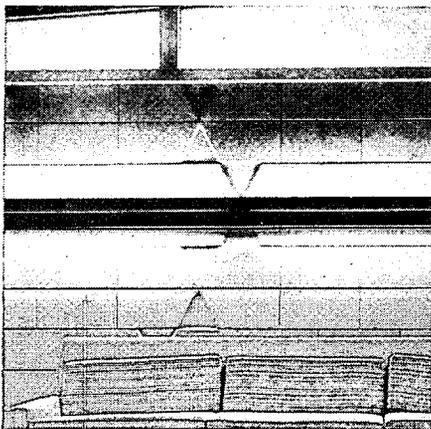
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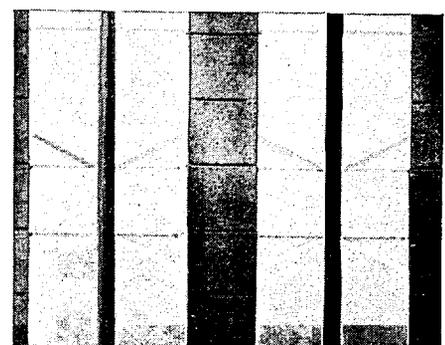
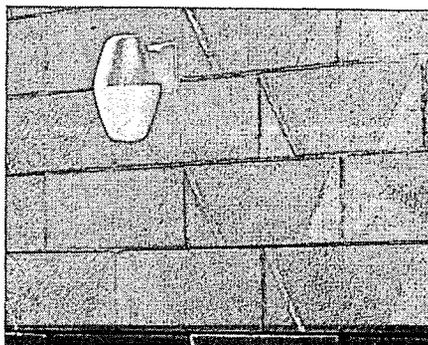
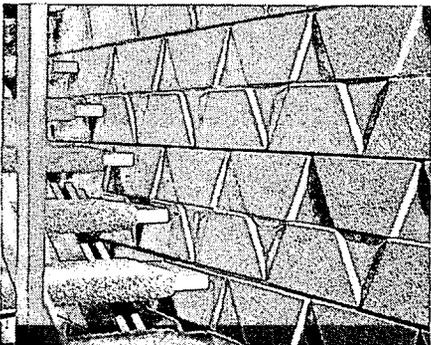


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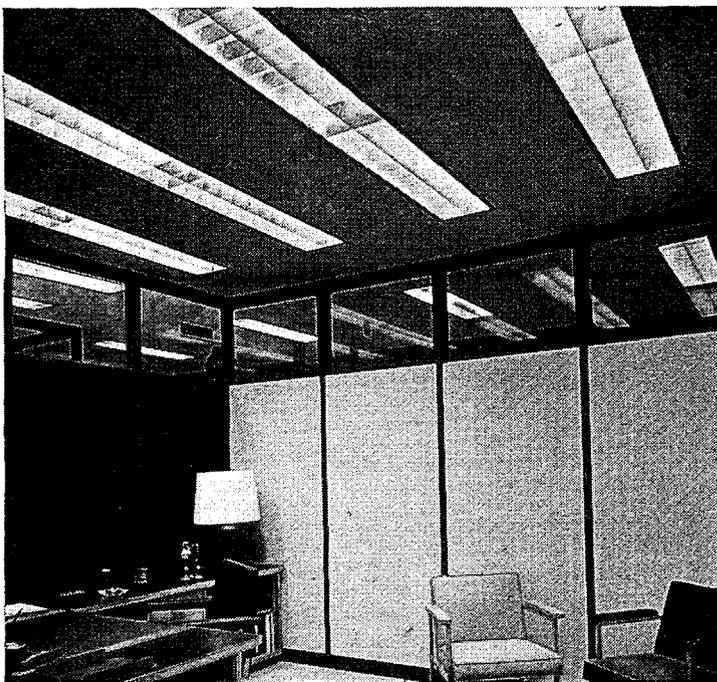




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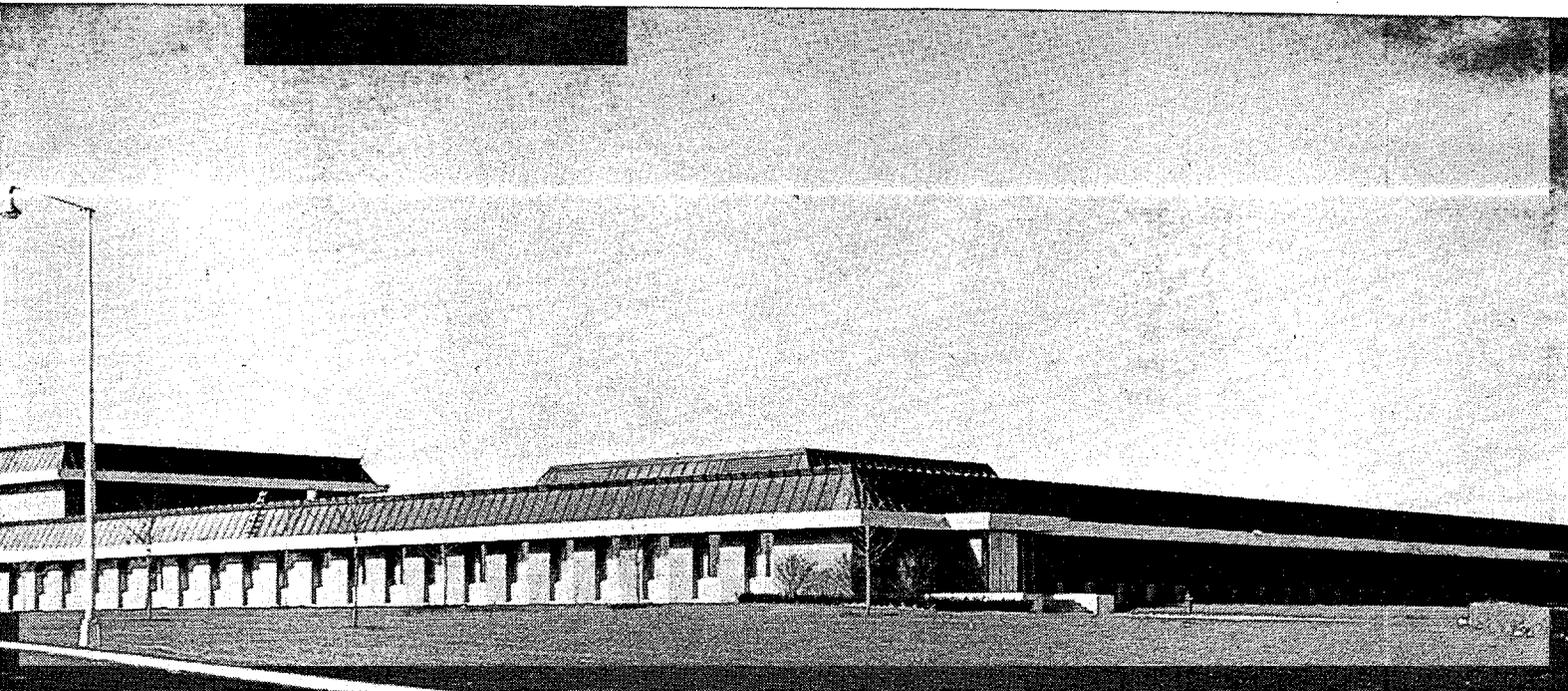
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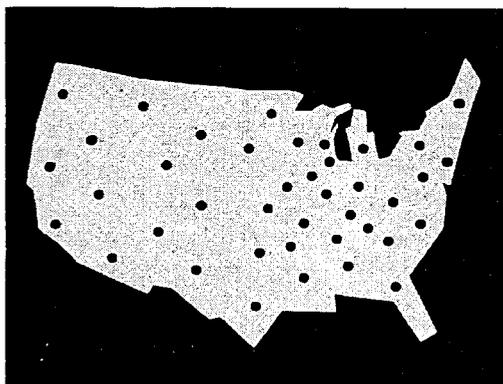
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**The Golden House of Nero: Some Aspects of Roman Architecture.** Axel Boethius. (Jerome Lectures, Fifth Series). University of Michigan Press, Ann Arbor, Mich., 1960. 195 pp., illus. \$15

**Garages and Service Stations.** Rolf Vahlfeld and Friedrich Jacques. Leonard Hill Ltd., 9 Eden St., London N.W. 1, 1960. 263 pp., illus. \$9.50

**Egyptian Sculpture of the Late Period.** Bernard V. Bothmer. The Brooklyn Museum, Eastern Pkwy., Brooklyn 38, N.Y., 1960. 370 pp., illus. \$15

*The first comprehensive study of the sculpture of this period (700 B.C.-100 A.D.), published in conjunction with the widely acclaimed exhibition at the Brooklyn Museum. The exhibit's 140 sculptures are documented in detail; comments cover an additional 1000 sculptures. Limited edition.*

**The Cathedrals of England.** Harry Batsford and Charles Fry. Revised by Bryan Little. B.T. Batsford Ltd., London, 1960. Distributed by The Macmillan Co., 60 Fifth Ave., New York 11, N.Y. 224 pp., illus. \$3.75

*Enlarged tenth edition of a work originally published 25 years ago and cited by the New Statesman and Nation as a "permanent book for the shelf."*

**Plastics as Building Construction Materials.** Prepared by nine students of the Harvard Graduate School of Business Administration, under direction of General Georges F. Doriot. Structural Plastics Associates, P.O. Box 13, Belmont 78, Mass., 1960. 130 pp., tables. \$18.50

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**The Mural Painters of Tuscany: From Cimabue to Andrea del Sarto.** Eve Borsook. Phaidon Books. Distributed by Doubleday & Co., 575 Madison Ave., New York 22, N.Y., 1960. 176 pp., illus. \$12.50

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*Continued on page 246*

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Continued from page 244

changes in relationship between painting and architecture, and developments in technique.

**Guide to Design Criteria for Metal Compression Members.** Column Research Council, Engineering Foundation, 313 W. Engineering, University of Michigan, Ann Arbor, Mich., 1960. 112 pp., illus. \$5

Condensed summary of recent and past research on metal compression members in buildings and bridges. Construction metals under ASTM Specifications are covered, including the new ASTM-A36 structural carbon steel.

**Fluorescent Lighting Manual (Third Edition).** Charles L. Amick. McGraw-Hill Book Co., Inc., 330 W. 42 St., New York 36, N.Y., 1961. 416 pp., illus. \$12.50

All essential data for the design, installation, and maintenance of fluorescent-lighting systems. New information reports on advances in wiring and control methods, developments in high-output lamps, and latest IES recommendations.

**ACI Index, 1905-1959.** American Concrete Institute, P.O. Box 4754, Redford Station, Detroit 19, Mich., 1961. 350 pp. \$9

Complete list of technical papers on concrete technology from ACI Proceedings and its successor, the present ACI Journal.

**Flood Proofing: An Element in a Flood Damage Reduction Program.** John R. Sheaffer. Department of Geography Research Paper #65. University of Chicago Press, Chicago, Ill., 1960. 198 pp., illus. Distributed by Department of Geography, Rosenwald Hall 24, University of Chicago, Chicago 37, Ill. \$4

Report analyzing one of several available adjustments used to mitigate flood losses. (Others are flood protection, insurance, or land-use regulations.) Full discussion of 21 elements in a flood-proofing program, some of which are coatings to prevent seepage, cut-off valves on sewer lines, and steel bulkheads to prevent entry of flood waters through doors and windows. Several flood areas are cited as case studies.

**Tu Wan's Stone Catalogue of Cloudy Forest: A Commentary and Synopsis.** Edward H. Schafer, University of California Press, Berkeley 4, Calif., 1960. 144 pp., illus. \$4.50

In China, from the 8th through the 12th Centuries, a mania for collecting unusual garden rocks developed. Tu Wan's Catalogue, written in the 12th Century, was the first Chinese book on the subject of garden stones. Presented here are essays on symbolic significance and uses of stones, and English synopses of Tu Wan's articles on 114 types of stones.

**Experiments in Creative Art Teaching.** Victor d'Amico. Museum of Modern Art. Distributed by Doubleday & Co., Inc., 575 Madison Ave., New York, N.Y., 1960. 64 pp., illus. \$2.50

The role of art education in an increasingly technological society, and some practical applications of theory, discussed by the Director of the Museum's pioneering Department of Education.

**Civil Engineering Handbook (4th Edition).** Edited by Leonard C. Urquhart. McGraw-Hill Book Co., Inc., 330 W. 42 St., New York 36, N.Y., 1960. 1174 pp., illus. \$17.50

Fully revised and enlarged edition, prepared

by 14 outstanding authorities, containing extensive data on 10 fields—surveying; railway, highway, and airport engineering; mechanics of materials; hydraulics; stresses in framed structures; steel design; cement, concrete, and reinforced concrete; soil mechanics and foundations; sewerage and sewage disposal; water supply and treatment.

**Art Themes and Variations: Five Centuries of Interpretations and Recreations.** K.E. Maison. Harry N. Abrams, Inc., 6 W. 57 St., New York 19, N.Y., 1960. 224 pp., illus. \$17.50

Discussion of improvisations by important artists on the works of other great painters.

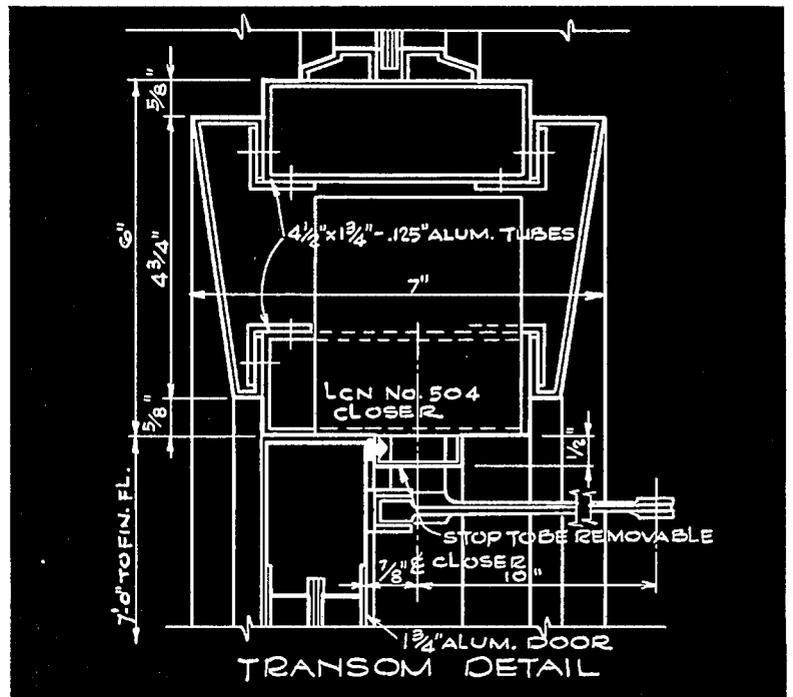
**The Etruscans in the Ancient World.** Otto Wilhelm von Vacano. St. Martin's Press, Inc., 175 Fifth Ave., New York 10, N.Y.,

1961. 195 pp., illus. \$6.50

A history of the Etruscans, who lived in the plain between Florence and Rome from the 8th to the 1st Century B.C., and were finally overpowered and absorbed by the Romans. Outstanding architecture—cupola tombs and rock-hewn cemeteries—is included in this comprehensive picture of the Etruscans' science, language, politics, religion, and art.

**Outline of European Architecture (Jubilee Edition).** Nikolaus Pevsner. Penguin Books Inc., 3300 Clipper Mill Rd., Baltimore 11, Md., 1960. 740 pp., illus. \$30

Considerably revised and expanded edition of the Pelican classic, which now includes over 600 plates and a new final chapter dealing with developments from 1914 to the present.



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for LCN Overhead Concealed Door Closer Shown on Opposite Page

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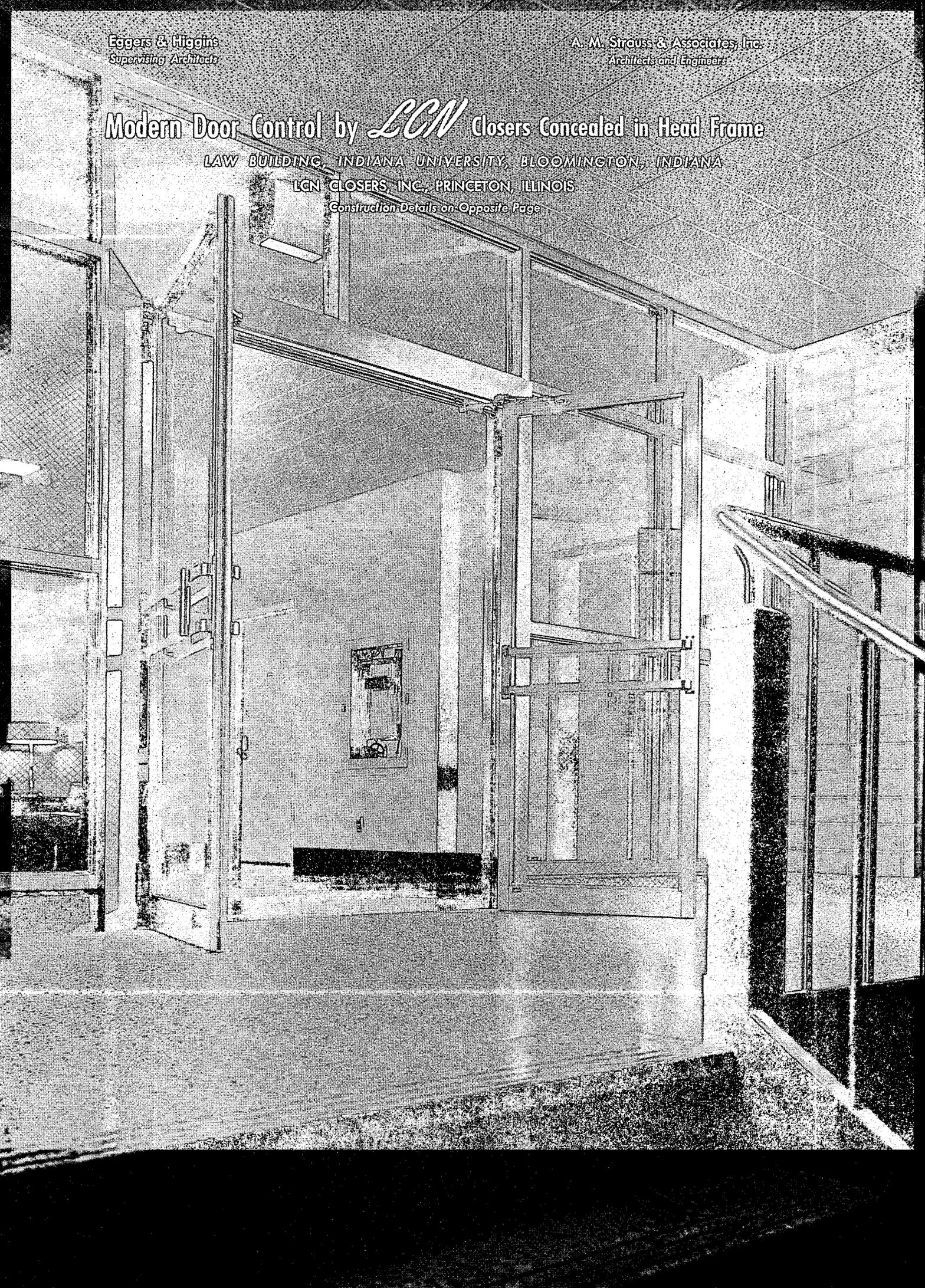
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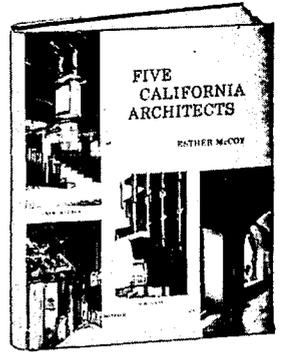
Construction Details on Opposite Page



The first full study of the pioneering work in modern architecture of Bernard Maybeck, Charles and Henry Greene, Irving Gill and R. M. Schindler

by ESTHER McCOY  
with a section on the Greenses  
by RANDELL L. MAKINSON

# FIVE CALIFORNIA ARCHITECTS



MAYBECK

Presents a penetrating appraisal of Maybeck's unique ability to blend the classical and vernacular styles with ease and authority. Mrs. McCoy says of Maybeck, "For him there was no dead architecture. All ages were the present, and when he became a practicing architect, he went to the past to be refreshed, as he dipped into the industrial world of the Twentieth Century, bringing together disparate elements in a timeless world of his own invention."

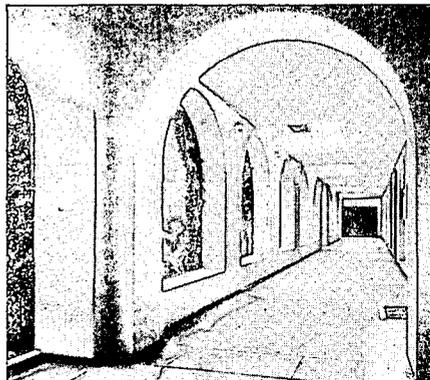
Shown here is the portico entrance of his Christian Science Church in Berkeley. Maybeck called this church—recognized today as one of the great works of modern architecture—a creation in the spirit of the past.

HERE IS the exciting history of the rise of the California school of architecture as seen through the work of five men who gave it impetus and direction. Author Esther McCoy writes from the viewpoint of one who has been closely associated with both architects and their achievements. She brings to this book not only a profound understanding of their professional careers and major works but also a penetrating critical appraisal of their legacy to the present generation of architects.

The book reflects the vitality, the imagination, the eagerness to experiment with new forms and materials that characterize the contributions of Maybeck, the Greenses, Gill and Schindler to the growth of American architecture. Many of the striking photographs were taken by the author herself to illustrate design innovations traceable to these men, such as the glass wall with sliding doors, the shed roof with wide overhang, the moveable non-bearing partitions, the use of poured concrete, and the first small low cost homes. These photographs, along with an abundance of drawings and design plans will serve as a source of inspiration for today's builders and designers.



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GILL

Describes Gill's early work in monolithic concrete and his struggles to introduce flush detailing in interiors, and to strip ornaments from exteriors. Mrs. McCoy also describes the architect's activities in community housing, including the design and site plan for a low rent cottage court for workmen's families.

The loggia pictured here is an excellent example of two great influences on Irving Gill's work—the missions and adobes of California and the architect's own passion for simplicity.



THE GREENES

Randell L. Makinson traces the development of the Greenses' highly individualistic style from its source—a deep study of wood, an appreciation of the Japanese, a respect for the Swiss, and a love of nature—to its fulfillment in their bold use of heavy timber, projected rafters, extensive masonry walls, stained board and batten sliding, and the incorporation of the garden into the total design.

Numerous photos, such as this one of the entry hall of the Blacker house, beautifully illustrate their success in the use of natural materials.



SCHINDLER

R. M. Schindler arrived in California in 1921 by way of Vienna and Wright's office in Taliesin. He called himself a space architect and immediately set out to introduce new shapes into architecture. In his notes on the Wolf house shown here, he wrote that he had consciously abandoned "the conventional conception of a house as a carved mass of honeycombed material protruding from the hillside, and created a composition of space units to float above a hill." The book includes a detailed discussion of Schindler's structural systems which permitted him to use concrete in an interplay of abstract forms.





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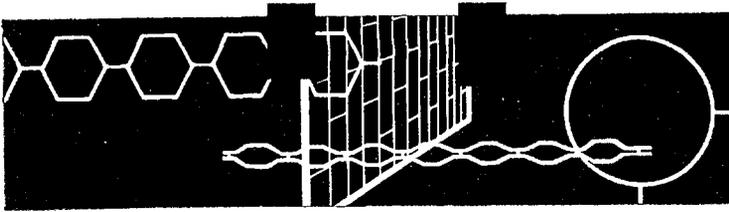
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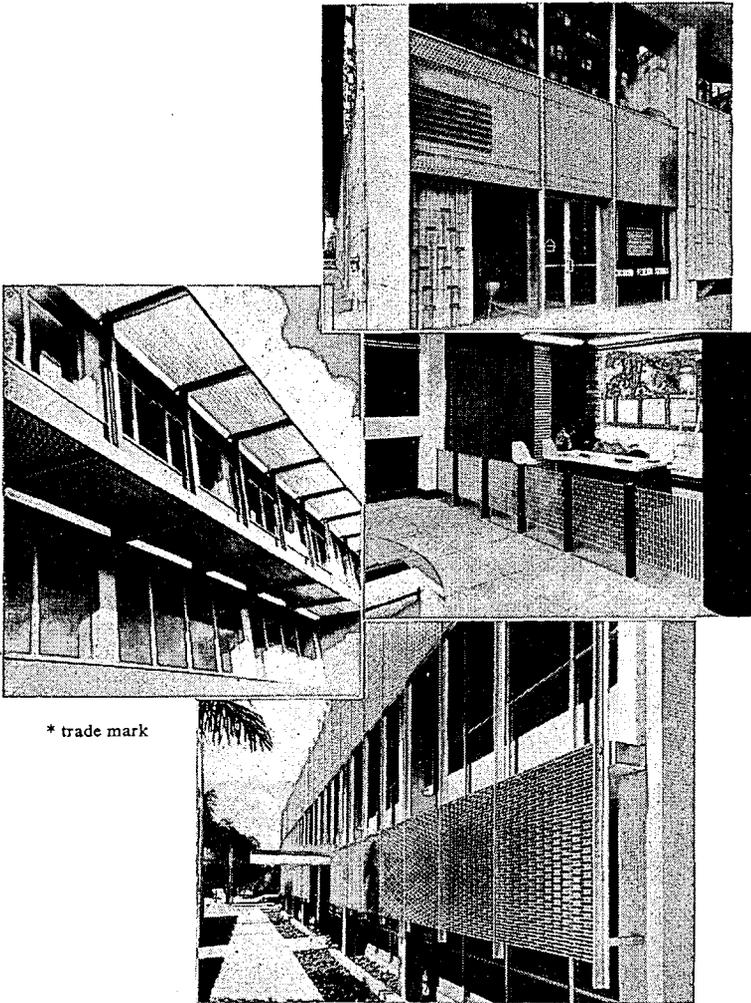
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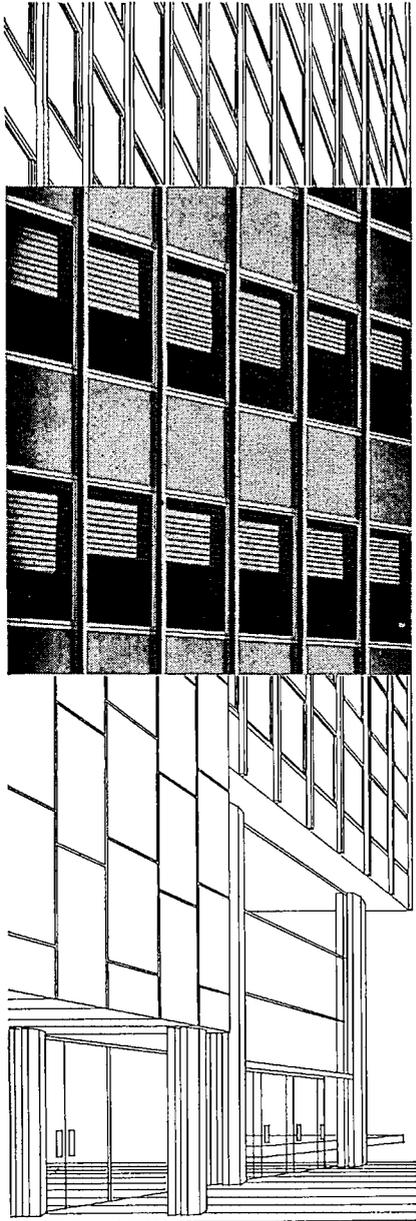
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## NOTICES

### *A P/A Acknowledgment*

In the January-February 1961 issue of *The Military Engineer*, there appeared an article entitled "Prestressed Structural Steel" by Charles C. Zollman. Subsequently, the article "Prefixed Structural Steel," by the same author, was published in the MARCH 1961 P/A. Much of the text presented in both magazines was similar, and some of the illustrations were identical, although lengths of presentation, number of photos and drawings, and general layouts were dissimilar. Since the copyrighted article in *The Military Engineer* appeared first, it would have been proper for P/A to have acknowledged that certain parts of its article had been reproduced, with editing, by permission of *The Military Engineer*. However, the editors of P/A were unaware that Zollman's article would be published in the engineering magazine prior to their own publication. When this became known, P/A's mechanical production schedule made it impossible to include proper acknowledgment credits. Therefore, at this time, the editors of P/A would like to express their appreciation to *The Military Engineer* for allowing them to publish the Zollman article, in similar form, without proper acknowledgment credits.

### *New Addresses*

SAMUEL GARNETT, Consulting Engineer, 150 Nassau St., New York 38, N. Y.

SASAKI, WALKER AND ASSOCIATES, INC., Architects, 23 Main St., Watertown, Mass.

### *New Firms*

JULIUS BLUM AND GEORGE E. JAMISON, principals in firm of BLUM & JAMISON, Architects, 4 E. Locust St., Newark, Ohio.

JOE J. JORDAN, Architect, 2219 Delancey Pl., Philadelphia 3, Pa.

LEO KORNBLATH ASSOCIATES, Architects, 18 E. 41 St., New York, N. Y.

### *New Partners, Associates*

OSCAR A. HANDLE, JR., made an Associate in firm of CHARLES F. MCKIRAHAN AND ASSOCIATES, Architects, Ft. Lauderdale, Fla.

THOMAS HUME, DONALD F. SIRINE, made Associates in firm of SHERWOOD, MILLS AND SMITH, Architects, Stamford, Conn.

AUSTIN E. COX, PIERRE L. CREASE, DON-

ALD L. NUDD, made Associates in firm of SCHERR & MCDERMOTT, INC., Industrial Designers, Akron, Ohio.

HARRY B. MAHLER, made an Associate in firm of FRANK GRAD & SONS, Architects-Engineers, Newark, N.J.

JOHN D. PECK, made an Associate in firm of ARTHUR C. LUCAS, JR., Architect, Suite 900, Alworth Building, Duluth, Minn.

HERBERT POMERANTZ, made an Associate in firm of S.W. BROWN, Consulting Engineers, New York, N.Y.

### *Elections, Appointments*

WILLIAM BRADFORD SPROUT, JR., PERRY D. LORD, MAARTEN D. DEN HARTOG, elected Directors and Officers, and WILLIAM B. COFFIN, WILLIAM STANLEY PARKER, J.P. DEN HARTOG, elected Consultants in firm of STURCIS ASSOCIATES INC., Architects-Engineers, Boston, Mass.

### *International Planning Service*

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### *Relinquishment of Office*

MAURICE F. PARKINS resigned as Principal City Planner with the DETROIT CITY PLAN COMMISSION to devote all his energies to his firm, PARKINS, ROGERS & ASSOCIATES, City Planning and Urban Renewal Consultants, Ferndale, Mich.

### *P/A Congratulates . . .*

PAUL M. AUGENSTEIN named President of CHRYSLER CORPORATION'S AIRTEMP DIVISION.

RALPH F. GOW, in firm of NORTON COMPANY, elected President.

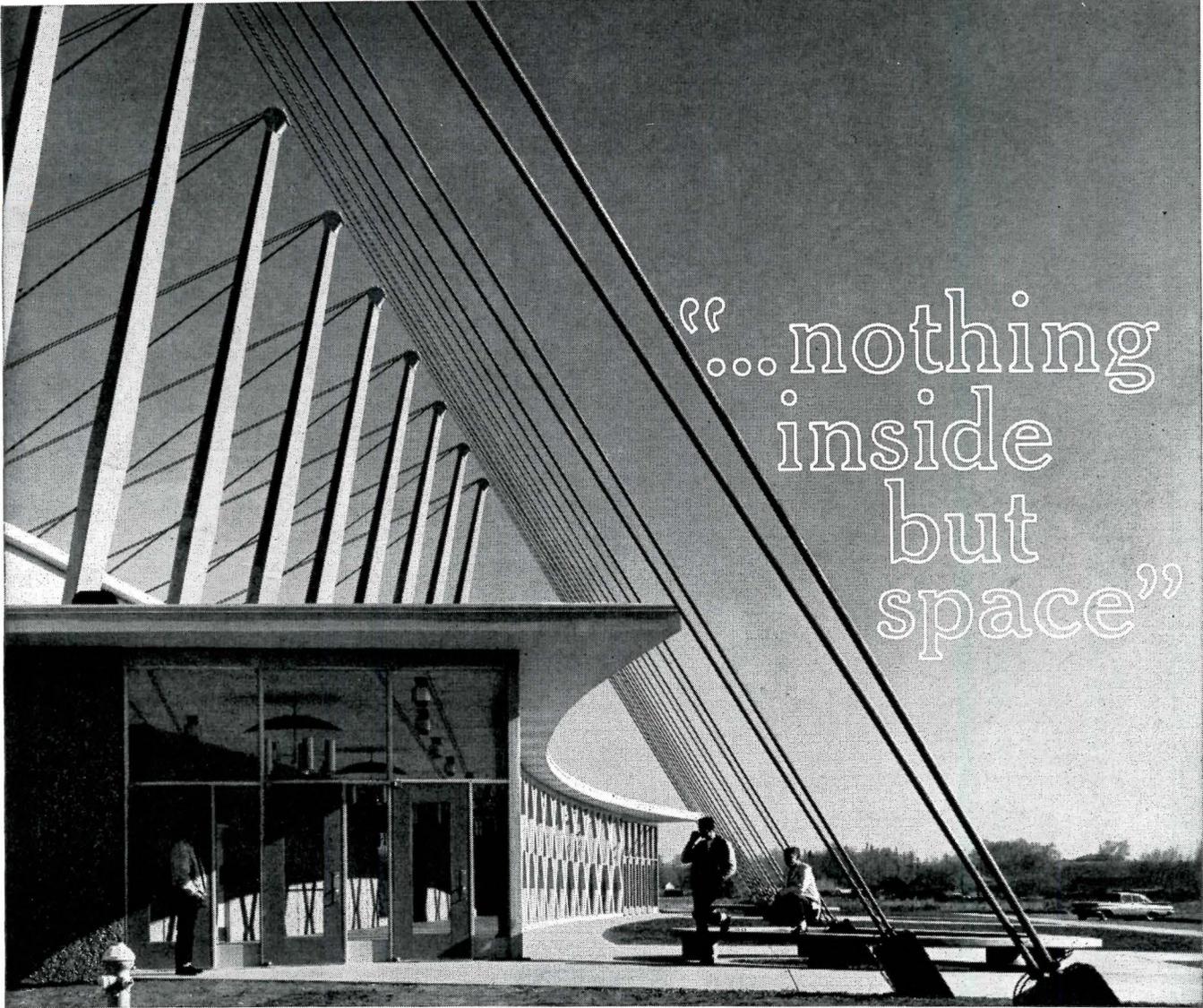
JOE P. GRANTHAM, in firm of UNITED STATES GYPSUM CO., appointed to newly created post of Manager of Central Architect Service.

LAURENCE L. PRINCE, in firm of BRADLEY WASHFOUNTAIN CO., named Sales Manager.

### *New Subsidiary of Alcoa*

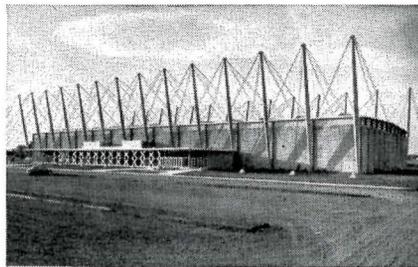
ALUMINUM COMPANY OF AMERICA announced the organization of a new, wholly owned subsidiary, ALCOA BUILDING PRODUCTS, INC., to market residential aluminum building products.

## Suspended Roof for New College Gymnasium



“Column-free on the inside” is the way the architect describes this exciting and wholly utilitarian structure. It is the Physical Education Building of the Central Washington College of Education, Ellensburg, Washington. It is 150 ft wide by 390 ft long and contains, among other things, a main gymnasium, upper gymnasium, field house, swimming pool, apparatus room, two four-wall handball courts, two classrooms, 14 offices and, locker rooms, dressing rooms, etc.

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*Architect:* Ralph Burkhard, A.I.A., Seattle  
*Structural Engineers:* Anderson, Birkeland, Anderson, Tacoma

*General Contractor:* Earley Construction Company, Tacoma

*Prestressed Concrete Fabricator:* Concrete Technology Corp., Tacoma

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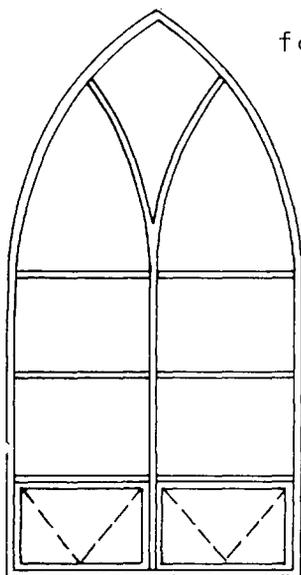
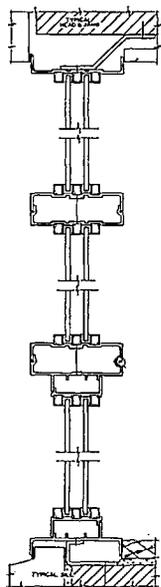
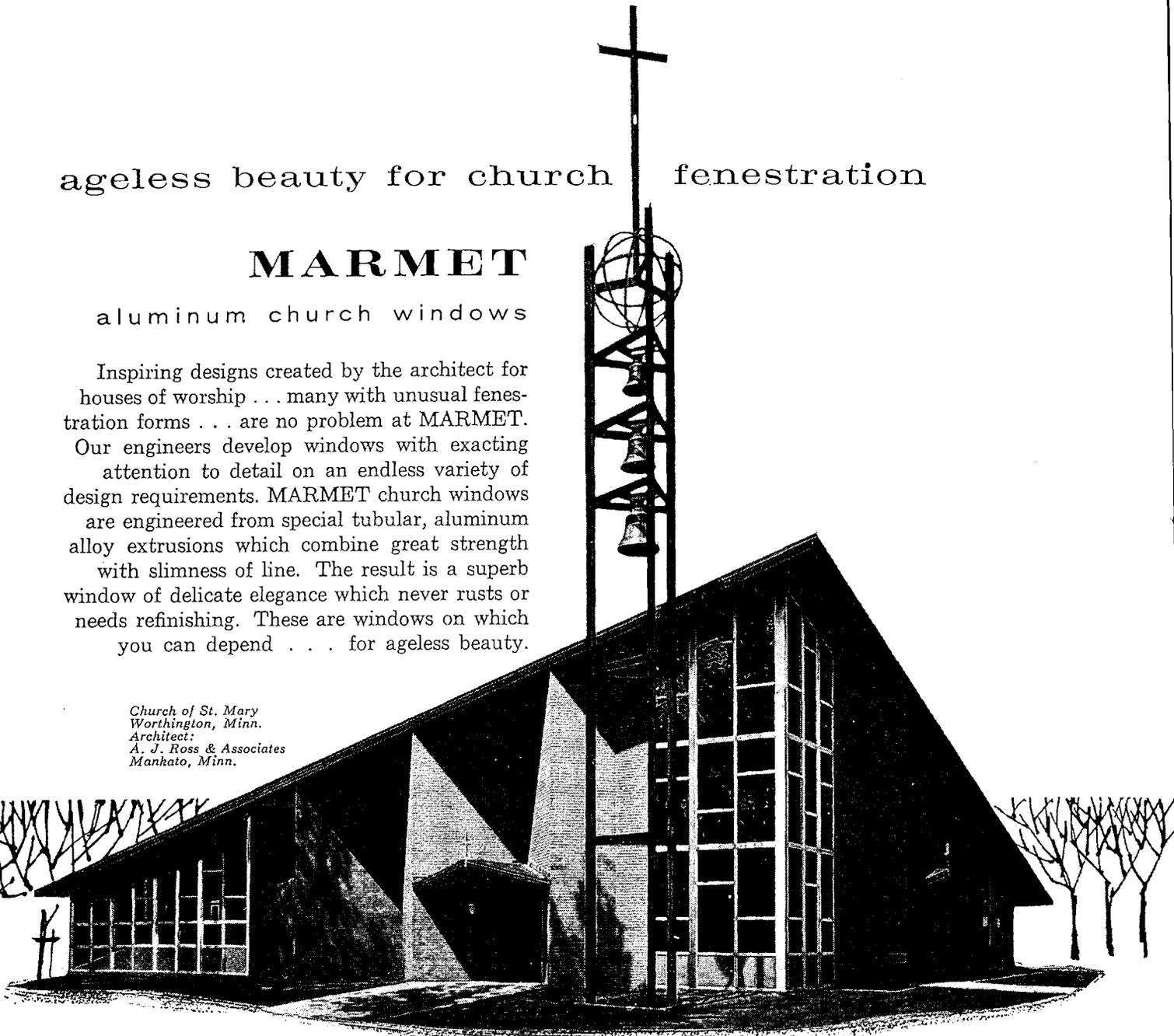
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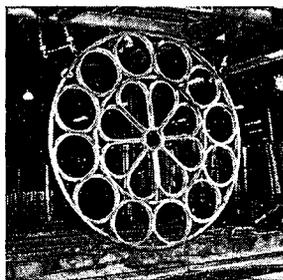
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Cross sections here show the snap in glazing beads. A special bead (not shown) with an extruded extension arm to cover the third slot, allows windows to be glazed singly at first, simplifies a later change to stained windows . . . up to 3/8" thick leaded glass.

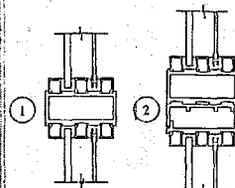


### Etched finish "stays new" indefinitely

An ageless, gleaming luster is produced in a special dip treatment that removes all surface impurities . . . assures even weathering.

### SERIES 100

This cross section through a typical rose window sash shows the alternate slimline muntin at (1) and operating sash in frame at (2).



For additional information on the complete line of MARMET products—consult Sweet's Catalog File No. 17a or write to MARMET for catalog  
Mar. 61-w



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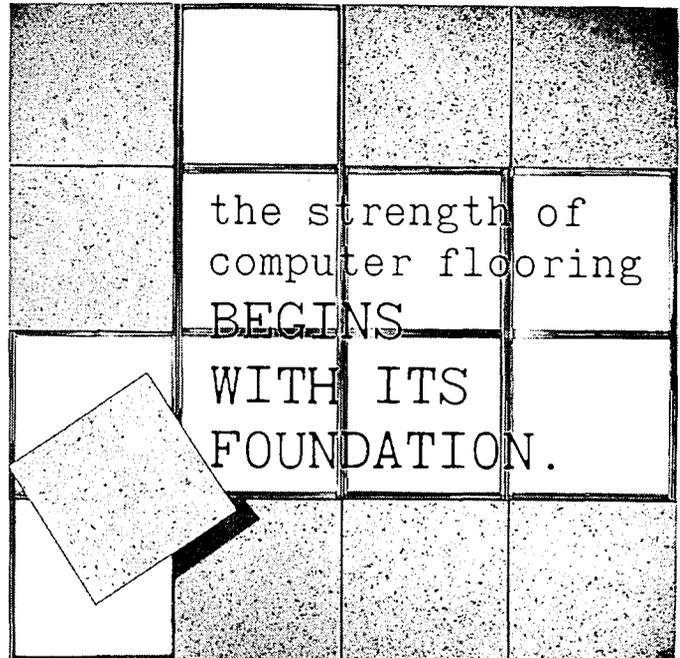
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Norman H. Lighter

P.S.

Talking of confusion in architectural design, practice, and use of technology, which we are doing so much this year, leads me to think of the physical confusion apparent in many architects' offices. Once before, I wrote of a trip I made many years ago, which has always remained in my mind, when I visited *all* of the architectural offices in several cities. It was an appalling experience to call on literally every office in town, and come away with an impression of shoddy, second-rate professional activity alleviated by too few competent-looking, business-like or studio-like work places. I have been doing quite a bit of calling on architects recently, in a number of cities, and my physical impression of the outer offices and the drafting rooms is again a vivid recollection.

I almost feel at this point that I can tell very nearly what sort of work is being done in a given office within the first few minutes of a visit—before the perspectives and models are brought out and before I begin to poke among the tracings on the boards. Confusion and sloppy thinking, or efficiency and intelligent inquiry, are apparent in the way one is received, in the way the waiting space is furnished (not necessarily with furniture, but even with magazines on a table or photographs on a wall), and in a sort of intuitive appraisal of personnel. Interest in the work going forward, or purely routine operation, become even more clear in the architect's own office. (I learn a lot about a man, I feel, by a quick stock-taking of his own library). And in the drafting room there is immediately a sense of exciting work being developed, or of days merely being spent.

This sort of reaction has almost nothing to do with suaveness, richness, or sophistication in "design" of the offices. One firm that turns out entirely routine work has one of the most handsomely designed and detailed offices I know. *Fortune* on the waiting-room table is no more an assurance of creative ability than is the *Evergreen Review*. I sat recently in front of a pleasant fire in a studio where the roof leaked, and looked at some extremely capable drawings. Work was going on in several corners of the room, and it was going on in a creative, excited manner. However, a few days later, I sat in another studio that was a rabbit's warren of discarded sketches, dirty ash trays, and soiled coffee cups, and the work going on in the corners that had been cleared in that room was distracted and confused.

Just what it is that indicates creative design and capable drafting in one office, whether it is expensively finished or roughly thrown together, and unimaginative business production or confusion and uncertainty in others, is hard to describe—but I know that I can sense it. The physical signs certainly include the amount of clutter: too little, no real study evident; too much, a lack of direction and conviction.

I have one other method of evaluating an architect without seeing his work; I probably should not give this one away, because it may make my friends self-conscious. It is the man's own method of using a pencil. I find it most revealing to have him make me a sketch of something very unimportant on a pad at his own desk. I don't know how many architects realize how completely they disclose themselves—at least to other architects—when they draw a diagram or a map. Clearness of thought (or its reverse) and directness of expression (or its opposite) are very evident in this architectural brand of calligraphy. Recently, Eero Saarinen drew me a little map showing how to get from his place to my next stop, and I enjoyed watching him make what was a handsome, as well as a clear, bit of architectural graphics.

I shall look for more inviting offices and more interesting doodles from the profession as signs of the next advance in architecture.