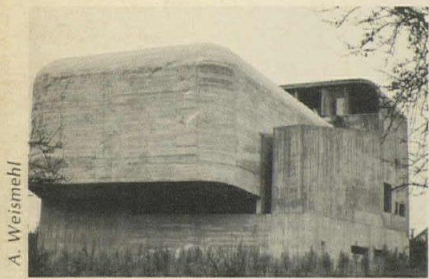


Cover: National Center for Atmospheric Research  
 Boulder, Colorado  
 Architect: I. M. Pei  
 Photographer: © Ezra Stoller (ESTO)

**FEATURES**

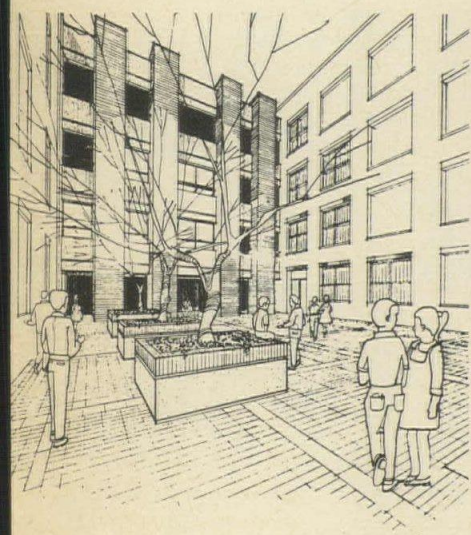
- 133 **AN ARCHITECTURE OF PLACE THAT UNITES PAST AND PRESENT**  
 Four current projects by Ulrich Franzen reflect the architect's strong conviction that a building's environment should be the critical generator of its architectural form.
- 145 **A BUILDING DESIGNED FOR SCENIC EFFECT**  
 I. M. Pei's National Center for Atmospheric Research, its setting a mountainside high in the Rockies, is a direct response to its spectacular site and to a highly philosophical program.
- 155 **RESIDENTIAL DEVELOPMENTS FOR HIGHER DENSITY AT HUMAN SCALE**  
 An oceanside resort complex and a group of apartments and townhouses, both in Florida, respond to two urgent contemporary problems; increasing density and preservation of human scale.
- 161 **SOME NEW DIRECTIONS IN FRENCH ARCHITECTURE**  
 A report on the current architectural scene in France by a young architectural graduate of Illinois Institute of Technology who has recently returned from nearly two years of work and study there.
- 169 **NURSING HOMES DESIGNED FOR MORE THAN CUSTODIAL CARE**  
 Some changes in the character of the patient care requirements in nursing homes under the impact of Medicare are reflected in some new architectural solutions.



A. Weismehl

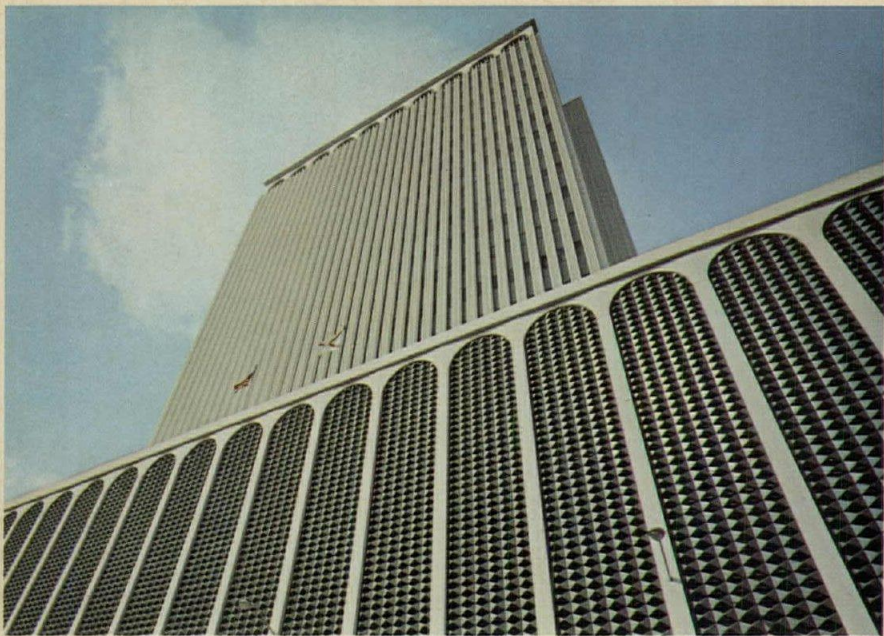
**BUILDING TYPES  
 STUDY 376**

- 177 **SOME CURRENT ANSWERS FOR URBAN SCHOOLS**
- 178 **THE ONE ROOM SCHOOL RETURNS AS DOME FOR TEAM TEACHING**  
 The Paul Klapper School (P.S. 219), Flushing, Queens  
 Architects: Caudill Rowlett Scott
- 180 **A BIG COMPREHENSIVE HIGH SCHOOL USES A NEW "300" PLAN**  
 Maine Township High School South, Park Ridge, Illinois  
 Architects: Caudill Rowlett Scott; McCaughey, Erickson, Kristmann & Stillwaugh, Inc.—associate architects
- 182 **PRIVACY AND QUIET HIGHLIGHT K-4 SCHOOL FOR URBAN RENEWAL**  
 The Timothy Dwight School, New Haven, Connecticut  
 Architects: Schilling & Goldbecker; Eliot Noyes & Associates—design consultants



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Architect: Harry A. MacEwen  
Tampa, Fla.  
Fabricator: Architectural Products Division  
H. H. Robertson Company

**It had to be more than aluminum.**

**It had to be Alcoa.**

**In Tampa, the Exchange National Bank Building** had to be aluminum by Alcoa. The bankers decided they needed a new building—on the same site. The architect got together with Alcoa early in the planning. Through each phase of the building, Alcoa's total capabilities worked for him—applications engineering, research facilities, process development and, most of all, the Alcoa people, who really know how to make aluminum work in architecture.

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The Sol Dec application on the Tampa Bank Building is the largest on record, enclosing a nine-level parking garage at the base of the building. For air circulation and light, 34 percent of the solar screening system is open area. An aluminum curtain wall, with porcelain-coated extrusions for trim caps and window frames, covers the remaining 13 floors of the building.

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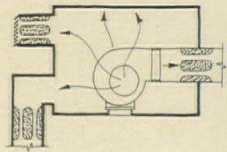


# ARCHITECTURAL RECORD

CONTENTS: OCTOBER 1967

- 184 COMMUNITY ACTION SETS CRITERIA FOR ZONED HIGH SCHOOL  
The New Eastern Senior High School, Detroit, Michigan  
Architects: Linn Smith, Demiene, Kasprzak, Adams, Inc.
- 186 A GYM INITIATES MASTER PLAN TO EXPAND AN OLD SCHOOL  
Washington & Lee High School Gymnasium, Montrose, Virginia  
Architects: Stevenson Flemer, Eason Cross, Harry Adreon,  
Associated Architects
- 188 RENOVATION SCHEME ADAPTS OLD SCHOOL FOR FUTURE  
Joseph H. Wade Junior High School (P.S. 117), Bronx, New York  
Architects: Frederick G. Frost Jr. & Associates
- 190 SCHOOLS CAN BE INTERWOVEN INTO FABRIC OF NEW TOWNS  
Two schemes for educational facilities in new towns by Paul Kennon and  
Robert Venturi

## ARCHITECTURAL ENGINEERING



- 193 NOISE CONTROL—MORE ENGINEERING THAN ART  
A broad look at new concepts of noise control and design techniques to  
help architects and engineers anticipate noise problems and to “design  
out” some of these problems in the early planning stages.
- 209 PRODUCT REPORTS
- 210 OFFICE LITERATURE
- 315 READER SERVICE INQUIRY CARD

## THE RECORD REPORTS



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- 9 BEHIND THE RECORD  
“Architects And Drawings; Will There Be A Change?” By Emerson Goble
- 10 PERSPECTIVES
- 35 THE RECORD REPORTS
- 40 BUILDINGS IN THE NEWS
- 46 LETTERS
- 81 ARCHITECTURAL BUSINESS  
Building activity .....83  
Cost trends and analysis .....87  
Cost indexes and indicators .....89  
Practice/Office Management .....93
- 104 CALENDAR AND OFFICE NOTES
- 300 REQUIRED READING
- 312 ADVERTISING INDEX



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### THE COMMUNITY COLLEGE: AN EMERGING BUILDING TYPE

For the first time next month, the RECORD will devote an entire Building Types Study on College Buildings to the "community college," that rapidly developing institution of higher education which provides two-year programs for (1) the high school graduate who intends to transfer to a four-year college or university; (2) technical or vocational training; and (3) continuing education. Unlike the old "junior college," the new community colleges are located "where the students are," and are more generally nonresidential. Some of the new problems, and a variety of master planning solutions, will be presented in the Study.

### ARCHITECTURAL OPPORTUNITIES IN 1968

The F. W. Dodge Construction Outlook for 1968 will provide the annual forecast of activity in building as well as nonbuilding construction—a preview of next year's architectural business trends.



McGraw-Hill



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## ARCHITECTS AND DRAWINGS; WILL THERE BE A CHANGE?

My architect friend's charge—next page, two months ago—that “architects are trained to draw, but not to think,” has bothered me a little. You may remember that I parried his thrust by saying that architects were trained to draw in order to encourage creative thinking. But there are certain aspects of his thought that lead to further speculation.

It is difficult to imagine an architect who was *not* trained to draw. I am sure my friend, himself an architect, had no such thought. What he obviously meant was that an architect tends to substitute drawing for thinking. Or, to put it even more sharply, he tends to start drawing too early, before the thinking is properly rounded out. Here is where the questions begin: *and* the possibility of change.

How about the computer, for one thing? We all have heard about computers which will do actual drawing of plans in two dimensions; will turn a two-dimensional drawing about and show you what the three-dimensional object drawn would look like from the other side; or will complete or refine a casual sketch. Or a computer might show you various alternatives, and cost them out for you. Or it might extend a drawing of some detail—like an egg-and-dart design—endlessly.

It seems obvious that, while these are present possibilities, they remain in the future for most architects' offices. But certainly one can expect that many of the reasons for the continual sketching or mechanical drawing will be obviated by computer techniques, or graphic developments of other kinds. It is difficult

to imagine a complete set of working drawings made by a computer, or beautiful renderings, or presentation drawings, or what not. But mechanical devices will do—or already have done—many of the preliminary visual tasks while the scheme is in design.

It is doubtful, in any case, if any mechanical gadget is ever going to dilute an architect's downright love of a good drawing. Whatever it be—perspective, isometric, plan, section, anything—an architect responds to a beautifully executed drawing. And my friend found a hazard here.

That fondness for drawings might tend to block mental processes. How many hours I have spent in architects' offices, through many years, looking at their wonderful drawings! An editor soon learns that his visit is the occasion for pulling out those handsome drawings. And that there is a ritual about it. Not that I regret it; that is what an editor calls on an architect for, to see what he is doing, so naturally he is soon looking at drawings. What I mean is that conversation takes some odd twists, when you must stop to admire drawing skill. It is like the conversational break when a grandmother pulls out the snapshots.

And the charge is that such breaks disturb the serious thinking processes about the design of a building. There is always the temptation to start drawing out some preliminary suggestion, which then tends to take on too much substance just because it is there in the drawings. When it becomes necessary to change something, the designer tends

to save what he can of his drawings. Yes, we know all about that effort in an editorial office. I mean about writing. You get fond of anything you spend so much time over. You find yourself becoming committed, just by the act of setting it down. Reminds me of the lady chatter-box, who replied, when somebody asked her if she ever stopped to think, “How do I know what I think until I hear what I have to say?”

Architects have a block—I have complained about it before—on communication. They feel that communication is done with drawings; whereas what it amounts to is that you communicate by drawings with other architects, but not with clients. For clients you draw just to impress them, not to communicate with them. Try the telephone. And get things settled; then draw.

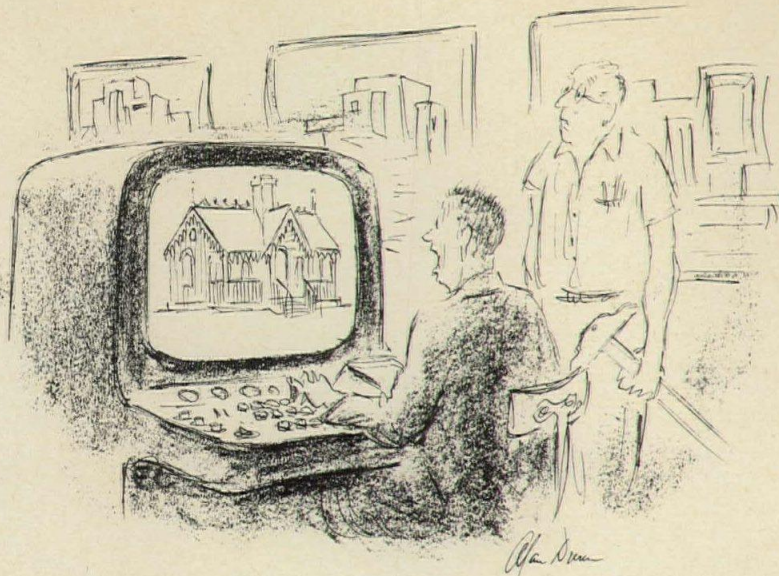
There is another fixation here: that you get paid for drawing. It is the making of drawings that takes time, and time is what you are selling. All very simple. True, you must draw when you get things agreed upon, but clients don't pay for drawings: they buy a building design.

What is different about it (neglecting the computer)? Why, it's the general speed-up in all communications. Clients have been wised up (or so they think) by reading or seeing or viewing pictures of everything around the globe. Your beautiful drawings are likely to be just one more example of today's graphic art, that is, unless they represent a real solution. It has been something more than 600 years since Giotto qualified himself as an architect simply by drawing a perfect circle in one grand swoop.

I hope architects will always do beautiful drawings—our magazine loves them—but it is a simple fact that their power to impress the world is shrinking.

—Emerson Goble





"Of course I fed it the right data—  
Call IBM and hurry!"

## Please don't file me away; at least while I'm alive

The gruesome thought suggested by that headline has always been, in a way, a guiding principle for my wife and myself in any selection of living quarters. We haven't always been confirmed suburbanites, but from earliest days together we have always agreed that "home" had to have something individual about it. And for all we have been hearing lately about megastructures and so on, one architect still believes in our theory.

He is Paul Rudolph, being interviewed by Art In America. He has this unique concept of an apartment house:

"Most apartments are thought of in terms of packages into which everything is shoved. Indeed most buildings today are thought of as packages. I don't think of them that way. I think that traditional housing has always shown the individual living unit, and quite often the individual room, very clearly. And this has broken it down in scale and made it quite human. You are able to relate yourself to, well, where you live. You don't live in a box. So the intent [he is describing his proposed Stafford Village, in Virginia] is that one sees the individual living units, which are put together in a multiplicity of ways."

Some architects still remember the word "scale," and still relate it to the word "human."

## One-to-one-to-one windows and Mies is the only one

Still quoting Paul Rudolph, in Art In America, just for fun:

"We used to think in this country that the curtain wall, or the one-to-one-to-one arrangement of windows, which of course Mies van der Rohe has done better than anyone else, would become the vernacular of architecture, even the anonymous architecture. In point of fact, as far as I can see, only Mies has ever been able to handle it—almost no one else has. In a sense it becomes the most demanding of all systems, and even in Mies' hands, when you come to such things as getting a garage door into the Seagram Building, it looks as if the whole building is having hiccups, because the door size for the automobile entrance is very different from anything else. So actually, curtain-wall architecture is really the opposite of vernacular architecture."

It's all very confusing, in the vernacular, that is.

## Condominium sets new status for living—or so it says

We have a long release from a Los Angeles builder who tells us in solemn terms that "professional people, executives and business owners are moving into condominiums and town houses in greater numbers than other income groups." Great, great news! It's like saying that people with more money spend more money.

The release is an obvious attempt to put condominium living on a status plane. It is billed as a joint study by the National Association of Home Builders and the Urban Land Institute, and they do seem to make a fact of the rising status of such developments, especially those complete with recreational facilities, and care-taking services.

One interesting point was that distance to work didn't seem to be much of a factor. People go to the best condominium just like they go to the best suburbs.

## New York to study spaces, but how about getting paid?

New York City is nicely snarled up over some determined efforts by the city administration to improve parks and other outdoor spaces. The city is planning a \$55,000 study by Lawrence Halprin & Associates, of San Francisco, for which Mayor Lindsay announced the objectives:

"We have given new emphasis to the quality of living in New York by stressing the vital necessity for high-quality design. The careful placement of buildings, tree planting, lighting and 'street furniture' will create a more intimate and beautiful environment. The study will assist us in meeting these goals."

The trouble is that the announcement was somewhat diluted by the City's controller's office, which refused to pay for previous services of Halprin, Marcel Breuer and Kenzo Tange. It seems two of them are not registered architects in New York. And that the silly fellows started work before the contracts were properly signed, and seem to expect to be paid for this early work. Or, maybe the Mayor's office just did not clear all the red tape with the controller's office.

If you just happen to smell a bit of politics around here somewhere, you are so right. And I personally am afraid my cynic's badge is again coming out of the drawer.

—E. G.





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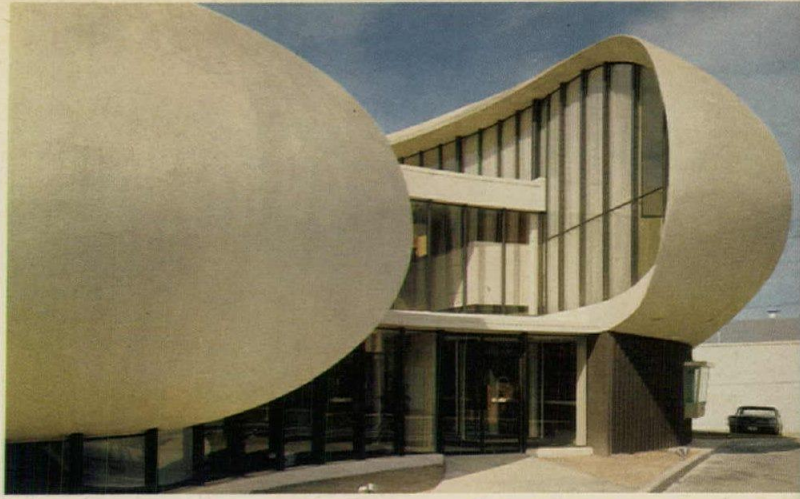
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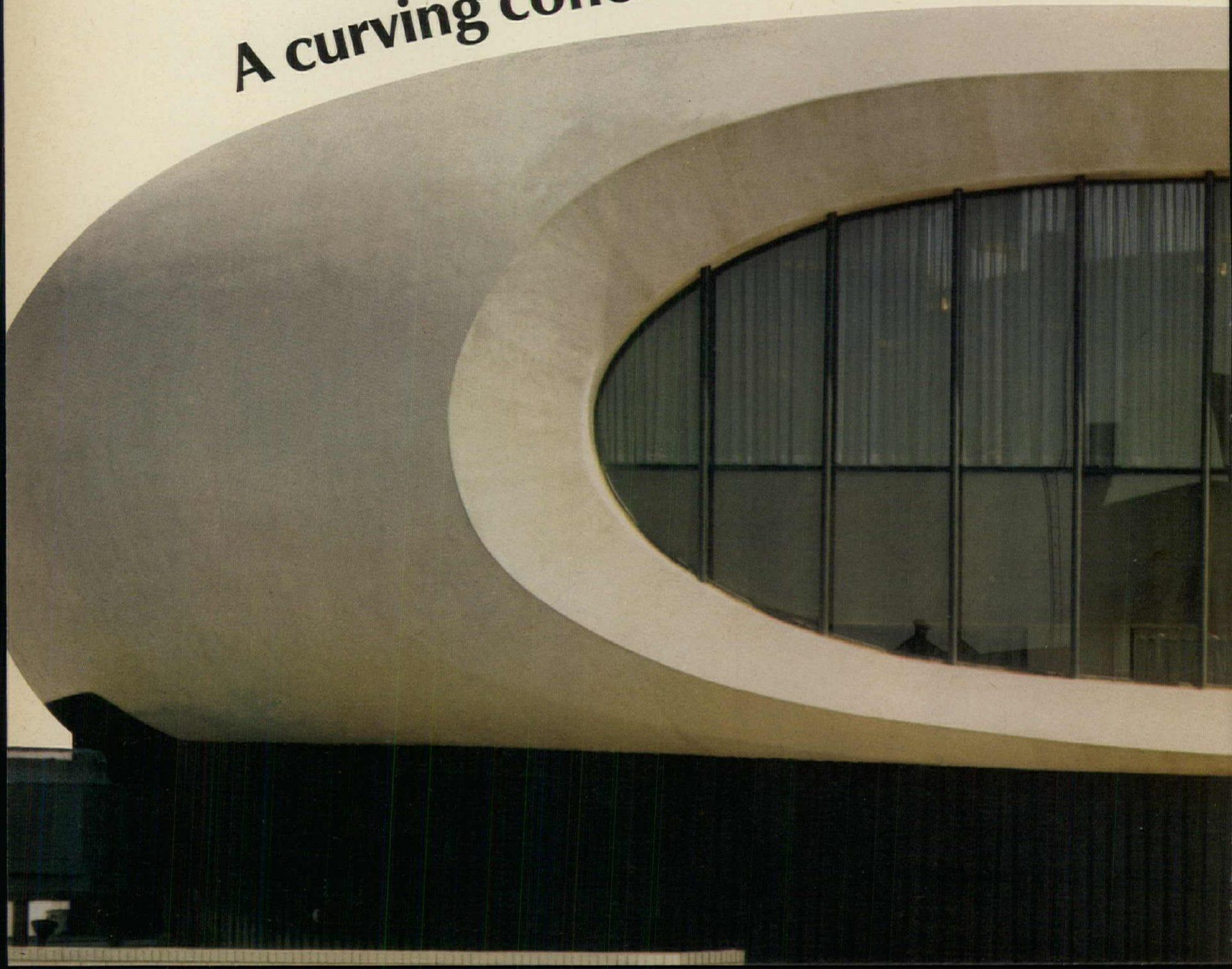




Key Savings & Loan Association, Denver, Colorado  
Architect: Charles Deaton

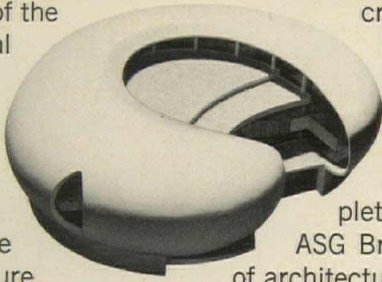
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**A curving concrete shell pierced for**





**ASG Bronze plate glass and Starlux® clear plate glass serve functional roles in futuristic bank.** • Denver architect Charles Deaton conceived this striking building as a free-form sculpture. After modeling the basic spiral shape in clay, he sliced off part of the shell with a knife to create a large oval window. A twist of the modeling loop produced a small "V"-shaped window on one side. Still another cut, and a curving soffit took shape over the entranceway. • When the building was realized in concrete, the oval aperture (below), because of its southern exposure, was glazed with ASG Bronze plate glass. Its subtle hue significantly reduces glare and brightness and adds



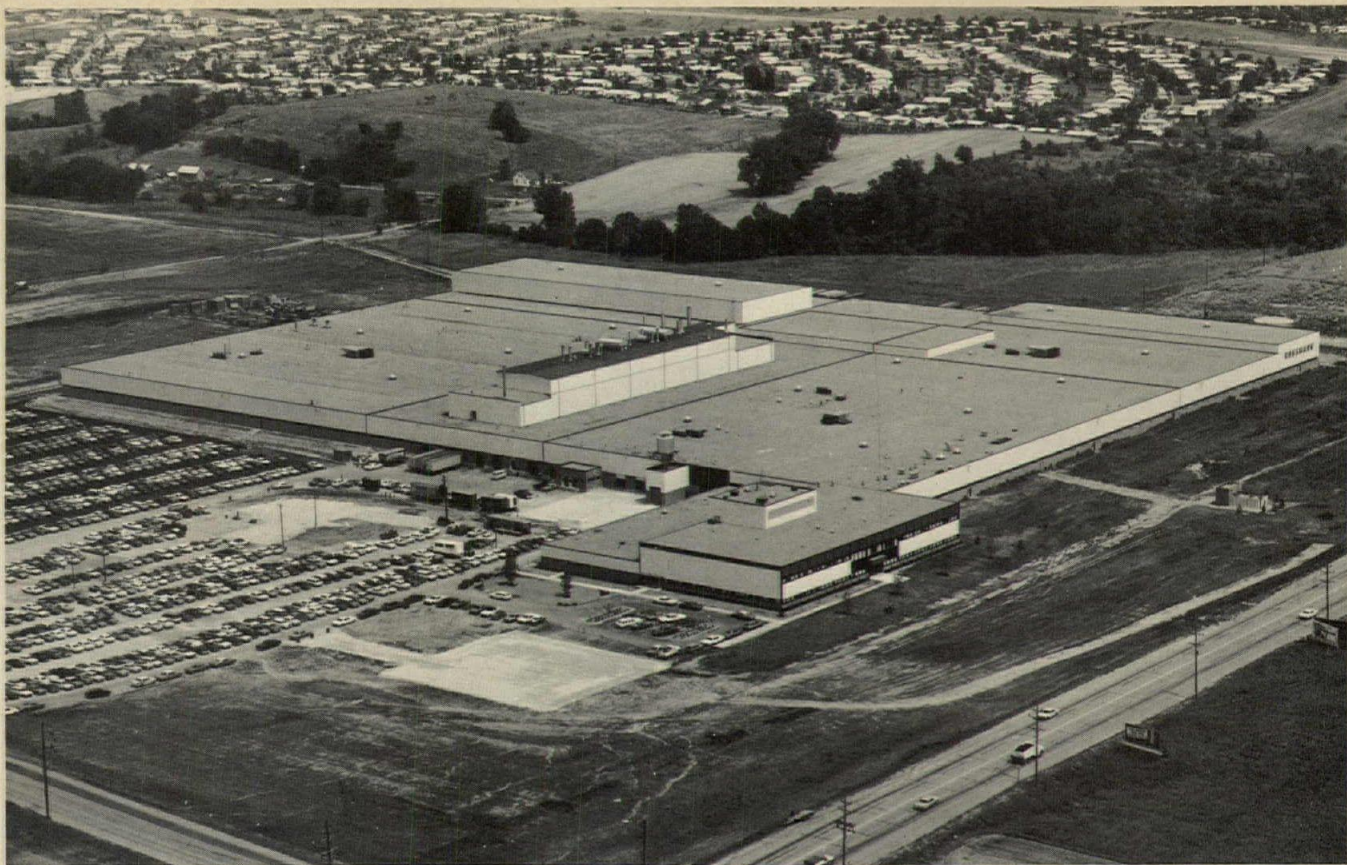
warmth and richness to interior colors. • The rest of the building is glazed, inside and out, with ASG's clear Starlux twin-ground, polished plate glass. Walls of Starlux two stories high follow the curve of the concrete shell and bring natural light to the main banking floor. Interior offices on the main and upper levels are walled with Starlux, creating an unexpectedly light and airy look in this sculptured building. • If you would like complete information on Starlux clear plate glass, ASG Bronze plate glass and the complete line of architectural glasses manufactured by ASG, write: Department D10, American Saint Gobain Corporation, P.O. Box 929, Kingsport, Tennessee 37662.

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The new plant and office, biggest in the industry, covers more than 800,000 square feet—almost 22 acres—on a 75-acre site that includes parking space for 2,000 automobiles.

To obtain maximum economy in the roof and floor spans of the structure, which is a quarter mile on each side, the builder used Laclede Straight Chord Steel Joists, both standard and composite types. Reduced construction time resulted from the easy handling and placement of the joists.

Austin Co. of Des Plaines, Ill., engineered the big project in suburban St. Louis. Stupp Bros. Bridge and Iron Co. was the structural steel contractor.

6738





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Three Rivers apartments, Fort Wayne, Indiana

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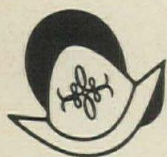
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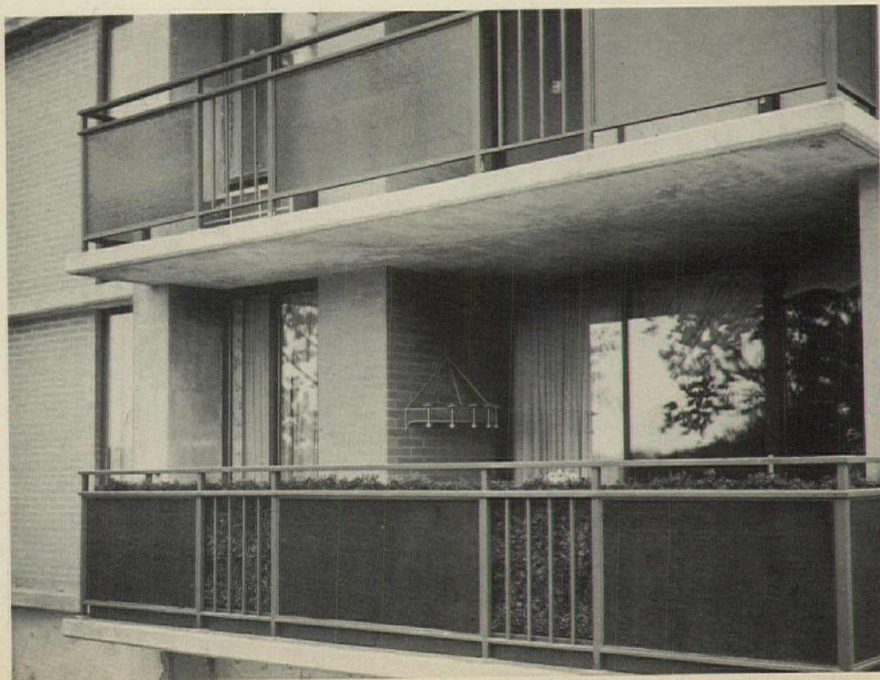
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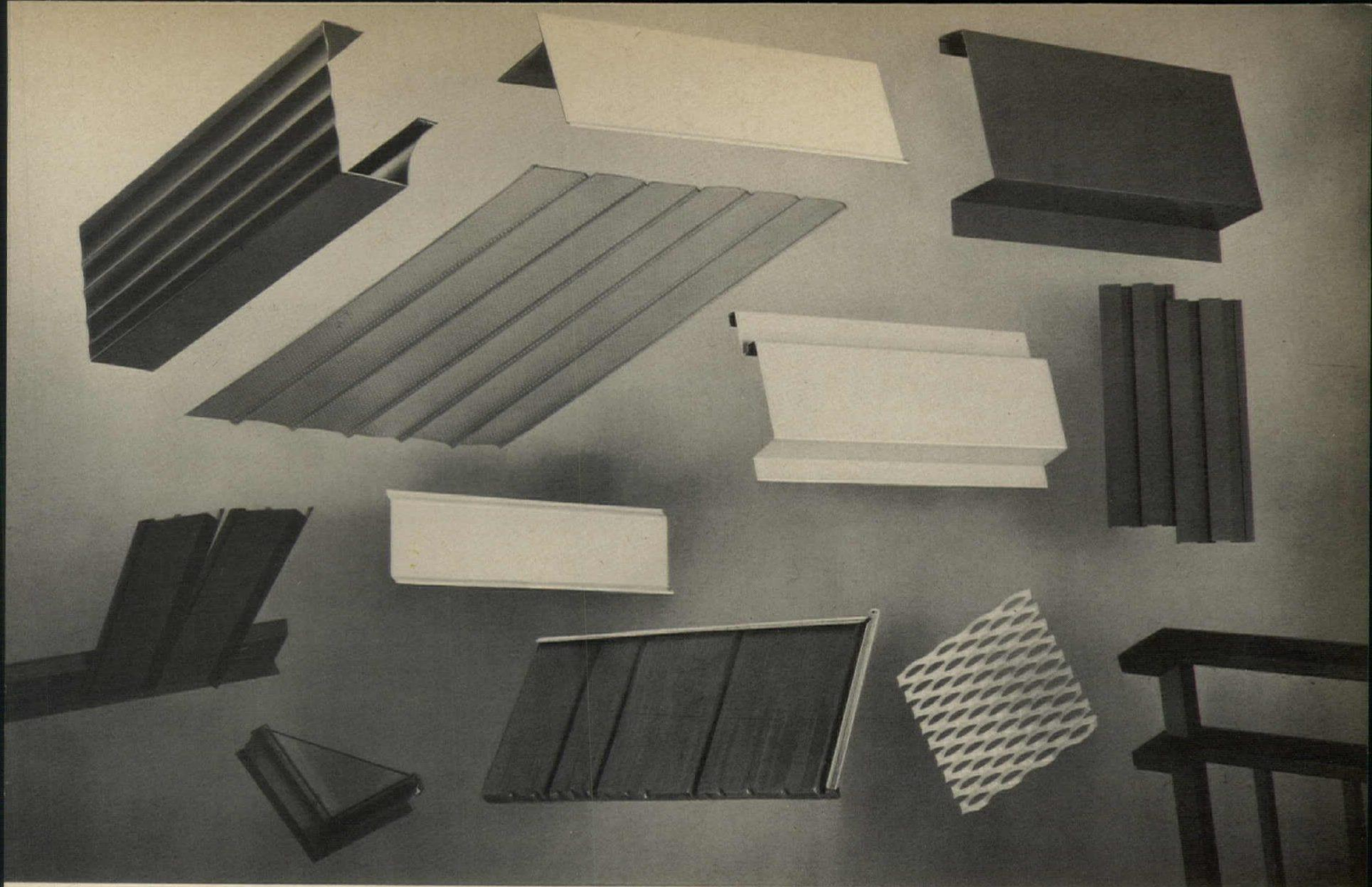
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Fluropon is a fluorocarbon coating fused to steel or aluminum to form a highly protective, durable finish. Other examples of metal buildings components that can be Fluropon beautified and shielded for long life include: louvers, fascia, trim, gravel and insulation stops, gutters, expanded and perforated metal, roofing and many, many more.

#### **SPECIFICATIONS:**

All exposed exterior metal (aluminum and/or HDG steel)—including panels, spandrels, columns, supports, mullions, leaders, fascias, copings, louvers, battens, screens, flashing, jambs, sills, fenestration and hardware as applicable and as detailed—shall be chemically cleaned, pre-treated (primed in the case of HDG steel) and coated with Fluropon as manufactured by DeSoto, Inc. Fluropon must be applied by an experienced processor in accordance with Fluropon fusion process instructions printed by the manufacturer. Colors as selected by the architect. (*Long-form specifications available on request.*)

Fluropon coated aluminum or hot dipped galvanized steel panels, louvers and window wall components are commercially available from:

#### **BUILDINGS & BUILDING PANELS**

**Aluminum Company of America**  
Alply Products Division  
1501 Alcoa Building  
Pittsburgh, Pennsylvania 15219

**Aluminum Company of Canada, Limited**  
P. O. Box 6090, Montreal 3, Quebec, Canada

**The Binkley Company**  
Building Products Division  
P. O. Box 70, Warrenton, Missouri

**Inland Steel Products Co.**  
P. O. Box 393, Milwaukee, Wisconsin 53201

**Kaiser Aluminum & Chemical Sales, Inc.**  
300 Lakeside Drive, Oakland, California

**The R. C. Mahon Co.**  
Building Products Division  
6565 East Eight Mile Road, Warren, Michigan 48091

**Pasco Steel**  
1301 Lexington Avenue, Pomona, California 91766

**Plasteel Products Corporation**  
McAdams Avenue, Washington, Pennsylvania

**Rheem Dudley Buildings**  
A Division of Rheem Manufacturing Co.  
14001 South Garfield Avenue, Paramount, California

**H. H. Robertson Company**  
Architectural Products Division  
Pittsburgh, Pennsylvania

**Elwin G. Smith & Company, Inc.**  
100 Walls Street, Pittsburgh, Pennsylvania 15202

**Soulé Steel Company**  
1750 Army Street, San Francisco, California 94119

**Stran-Steel Corporation**  
P. O. Box 14205, Houston, Texas 77021

**Walcon Corporation**  
4375 2nd Street, Ecorse 29, Detroit, Michigan

**George D. Widman, Inc.**  
17823 Evelyn Avenue, Gardena, California 90247

#### **WINDOWS, LOUVERS AND ACCESSORIES**

**The William Bayley Company**  
1200 Warder Street, Springfield, Ohio

**Blomberg Building Materials**  
1453 Blair Avenue, Sacramento, California

**Construction Specialties**  
55 Winans Avenue, Cranford, New Jersey  
725 Twin Oaks Valley Road, San Marcos, California  
895 Thermal Road, Port Credit, Toronto, Canada

**O. O. McKinley Company, Inc.**  
P. O. Box 55265, Indianapolis, Indiana 46205

**Metal Trim, Inc.**  
Box 632, Jackson, Mississippi

**Porce-Len Incorporated**  
31 Haig Street, Hamden, Connecticut 06514

**Contact your Fluropon**  
**Representative At DeSoto, Inc.**  
Offices:

8600 River Road, Pennsauken, New Jersey 08110  
609-665-6700

1034 S. Kostner Avenue, Chicago, Illinois 60624  
312-632-3700

Fourth & Cedar Streets, Berkeley, California 94710  
415-526-1525

Forest Lane & Shiloh Rd., Garland, Texas 75041  
214-276-5181

10 East 40th St., New York, New York 10016  
212-689-7717



**DeSoto, Inc.**  
Chemical Coatings Division

1700 S. Mt. Prospect Rd., Des Plaines, Illinois 60018



# 4 wheel drive

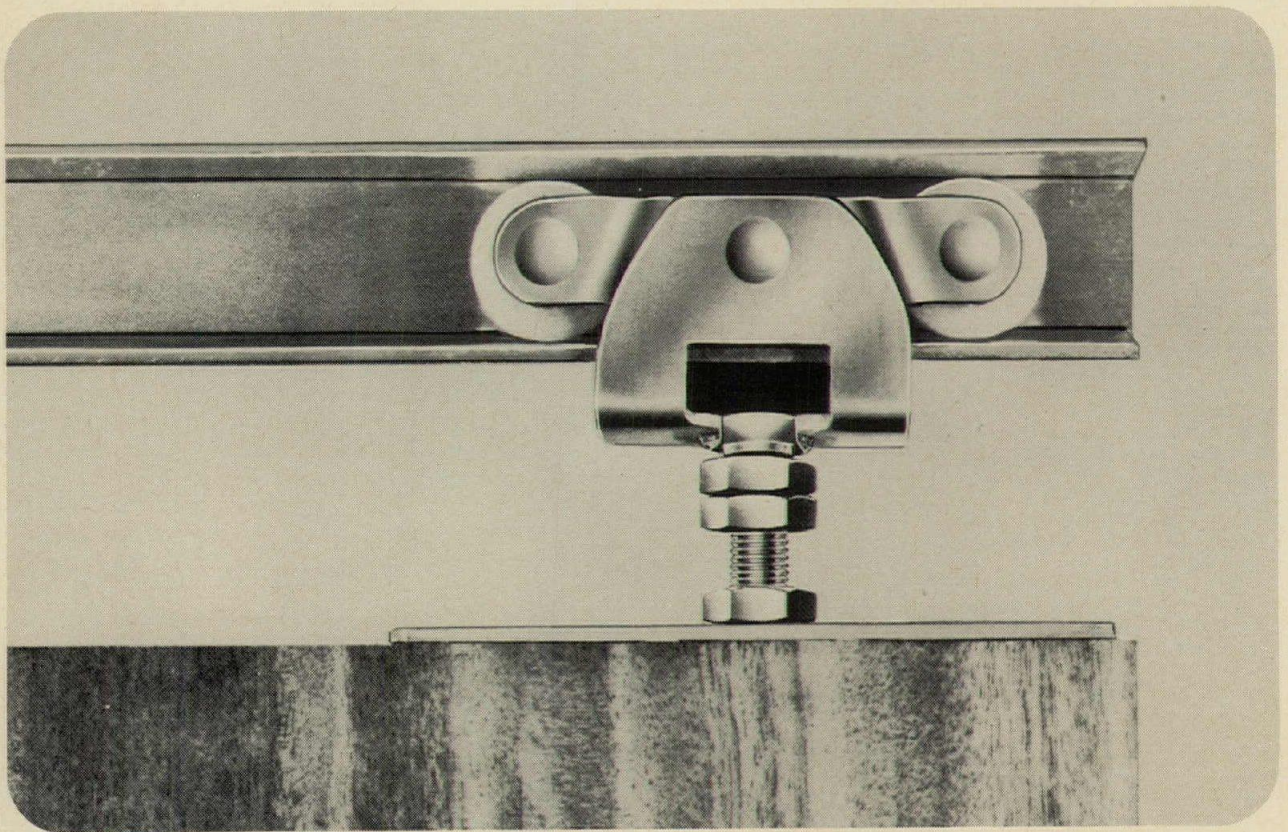
*Each Grant 7000 Sliding Door Hardware carrier has four wheels. Eight per door. Sixteen wheels supporting a pair of by-passing doors. Just one uncommon feature in a very unusual line of hardware.*

The 7000 line boasts innumerable other characteristics which help make it the most specified sliding

door hardware. These include: *rocker arms insuring constant wheel-track contact, non-dust collecting tracks, balanced load distribution, nylon wheels, ball-socket suspension principle for misalignment compensation.*

More features are shown in the Grant catalog. It's yours for the asking.

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*For more data, circle 10 on inquiry card*





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By Sonneborn

Long Lasting • Manufacturer Installed • Economical  
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*low  
maintenance*



*beautiful*

Why your clients will be impressed when you specify  
**SEAMLESS FLOORING by SONNEBORN**

**A. Easy to maintain**—Less maintenance than any other type of flooring you can specify . . . lower maintenance costs.

Because it's seamless, Sonneborn flooring gives your client unbroken, easy-to-keep-up beauty. No seams to trap dirt.

There's no problem keeping Sonneborn Seamless Flooring shining clean. Sweeping or clear water rinsing will restore the floor after even the heaviest daily traffic, with occasional cleaning or brightening.

**B. Easy to use**—Sonneborn Seamless Flooring has such over-

all versatility that you can design with effective beauty for any decor.

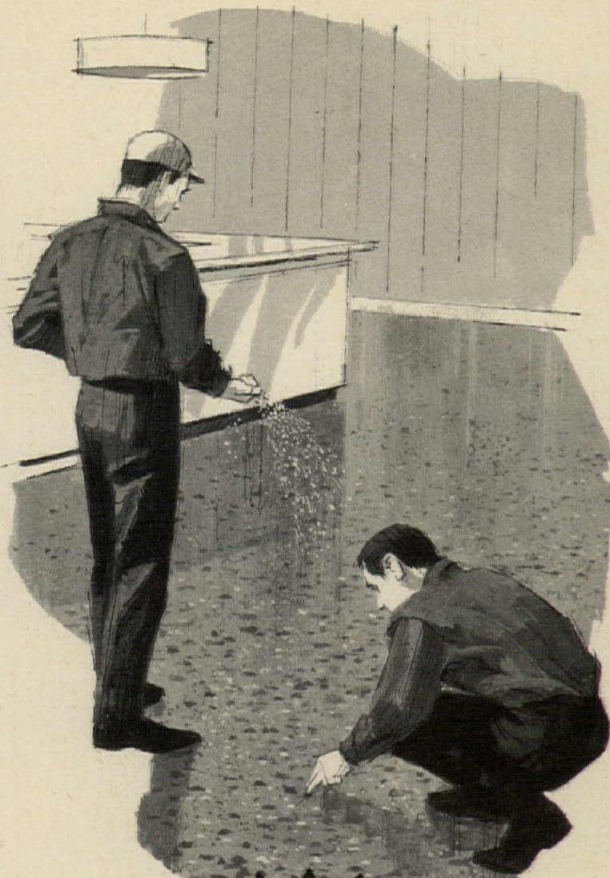
With a range of 22 basic colors that can be mixed in any proportion and accented with colored or metallic highlights, you can design a floor that's compatible with any decor.

**C. Easy to live with**—The finished floor takes heavy traffic in stride—even stiletto heels—no bothersome permanent indentations as with other resilient flooring. If floors are accidentally gouged or damaged, repairs are easily made.





**PRACTICAL**



**SONNEBORN MAKES IT**  
 YOUR ASSURANCE  
**SONNEBORN INSTALLS IT**  
 OF QUALITY

Seamless Flooring's elasticity gives cushion-comfort underfoot. Acoustical effect muffles and reduces noise. The inherent resilience plus pleasing texture promotes firm footing and slip resistance. Its thermal insulating quality is another aid to foot comfort.

**D. Manufactured and installed by Sonneborn**—From raw materials to manufacture to final installation, Sonneborn controls the entire Seamless Flooring operation. We take full responsibility for the installed job. All Seamless Flooring work is under complete supervision of our full-time staff of specially trained Sonneborn Technicians. This is your single source of undivided responsibility.

To make it completely clear on our responsibility, you have it in writing as to where we stand concerning the final flooring

installation. It's all spelled out with no problems of "who's responsible for what." Sonneborn takes responsibility for the complete job—*installed*.

**E. Easy to get**—Sonneborn Seamless Flooring can be applied at a cost competitive with any other fine flooring . . . your clients' best long term value.

For a free illustrated brochure in full color on Sonneborn Seamless Flooring plus more information on our "single point of responsibility" contract, write today.



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 1700 S. Mt. Prospect Rd., Des Plaines, Ill. 60018. Phone (312) 296-6611

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## Overhead Door Corporation announces the beginning

Think about how your custom home designs can be improved by including a garage door that can actually contribute to the overall beauty of the home. The "OVERHEAD DOOR" electric, the door that opens and closes by remote control can do this for you. The "OVERHEAD DOOR" is available in literally hundreds of beautiful designs encompassing every architectural style and treatment. That's why we call it the

"gracious" garage door. They are available in standard widths up to 18 feet and custom-engineered in special sizes, giving you greater design flexibility. Give your imagination free rein; we can supply the perfect garage door for any home you design! You can specify The "OVERHEAD DOOR" electric with total confidence. It's rugged. No other door in the industry has so many quality construction features. Of course,



*Solid state, portable transmitter opens and closes garage door automatically by radio control from your car.*





## of the gracious garage door era.

it's only natural that we build the best garage doors in the world; we invented them. Every door we sell we also install. To make sure it's done right. Then we back it with a full one-year warranty on both workmanship and material. When you specify The "OVERHEAD DOOR" you can count on fast, reliable installation and service. There's a factory-trained distributor of The "OVERHEAD DOOR" within

minutes of almost any job site in the country. You're in the gracious garage door era. Why not take full advantage of it? The "OVERHEAD DOOR" electric can lend an inspiring new latitude to your design possibilities. Worth investigating, don't you think? For more information about the men who stand behind The "OVERHEAD DOOR", please turn the page.

*For more data, circle 12 on inquiry card*



**OVERHEAD DOOR CORPORATION**  
General Offices: Dallas, Texas 75202  
Manufacturers of The "OVERHEAD DOOR"  
and electric operators for residential and commercial buildings





**The men standing in back of The "OVERHEAD DOOR"  
also stand behind it.**

Next to the product we sell, these men are our pride and joy. They're door men, factory-trained specialists who are eminently qualified to help you select the door or doors best suited for any application; commercial, industrial, or residential. We make doors of wood, steel, aluminum, and fiber glass in any size to fit any opening. Specify The "OVERHEAD DOOR" electric and you put the vast technical knowledge and experience of these men to work for you.

Your client will appreciate it. And he'll remember it. Always specify The "OVERHEAD DOOR". It's the door you can stand behind, because we do. For full details call your local distributor. He's listed under "OVERHEAD DOOR" in the white pages of your phone book. Or, refer to our catalogue in Sweet's Architectural File. Another open and shut case for The "OVERHEAD DOOR". For more information about The "OVERHEAD DOOR", please turn back one page.

**Sales • Installation • Service**



**OVERHEAD DOOR CORPORATION** • General Offices: Dallas, Texas 75202 • Manufacturers of The "OVERHEAD DOOR" and electric operators for residential and commercial buildings

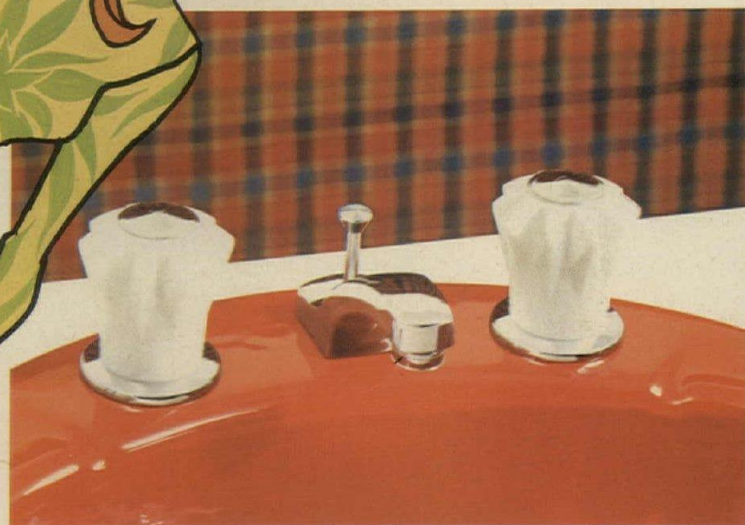
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FOR THE BOLD LOOK, THE CROWNING TOUCH:

## NEW FLAIR FITTINGS BY KOHLER

*Flair...far and away the most elegant fittings ever offered as part of a regular line. Flair...a gem-like blending of acrylic and brass. Flair...now available from Kohler in four decorator choices: amber with polished brass; charcoal, white or clear with chrome.*



Flair fittings provide the crowning touch for Kohler's "Bold Look" color schemes, vividly portrayed in this year's consumer advertising. Here is Flair trim in white and chrome, fitted to an Antique Red lavatory.



Charcoal against blue, a handsome pairing. Used with Kohler Accent Color lavatories—in any of five sprightly shades—Flair fittings afford the "just right" finishing touch.

Here's a rich combination: amber on polished brass. Particularly effective when matched with Kohler's "go-with" color of the year...Avocado!

Flair fittings boast traditional Kohler excellence all the way. Diamond-bright acrylic. Highest quality brass. Superb craftsmanship. Pictured: clear on Blueberry.



## KOHLER OF KOHLER

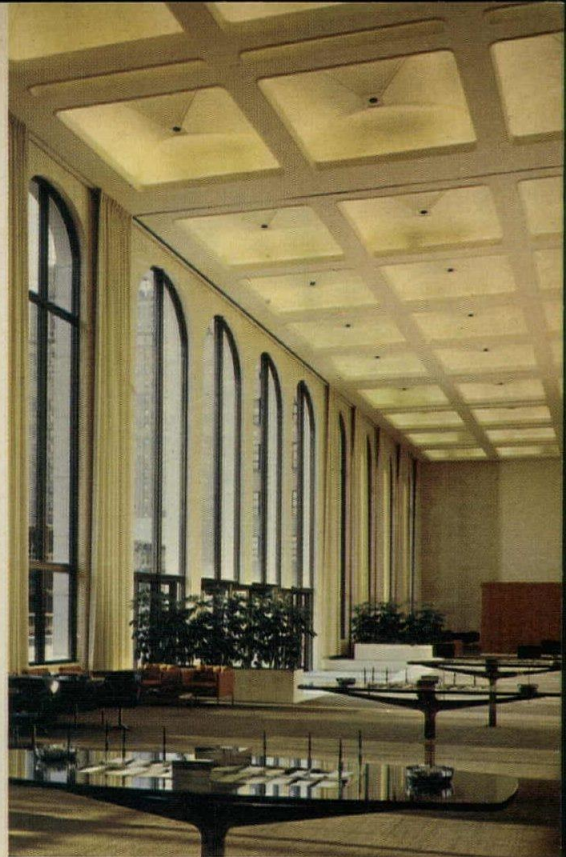
the Bold Look for '67/Kohler Co., Kohler, Wisconsin  
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Manufacturers and Traders Trust Company Bank Building,  
One M & T Plaza, Buffalo, N. Y.  
Architect: Minuro Yamasaki, Detroit, Michigan  
General Contractor: John W. Cowper Company, Buffalo, N. Y.  
Subcontractor: Buffalo Acoustical Corporation.

## Can there be empathy between ceiling tile and unique architectural design?

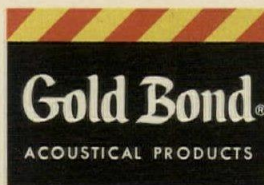
This new bank building presents visual delights to the viewer through the delicate beauty of the facade. But step inside. The continuity of design manifests itself in every aspect of spatial control including the acoustical ceilings.

Gold Bond® Travacoustic in the fine-fissured "Abbey" style identifies itself with today's architectural design. The exclusive Travacoustic® production process was easily adapted to meet the architect's requirements for cus-

tom sizes. The effect is a blend of function and subtle texture in concert with the architectural theme.

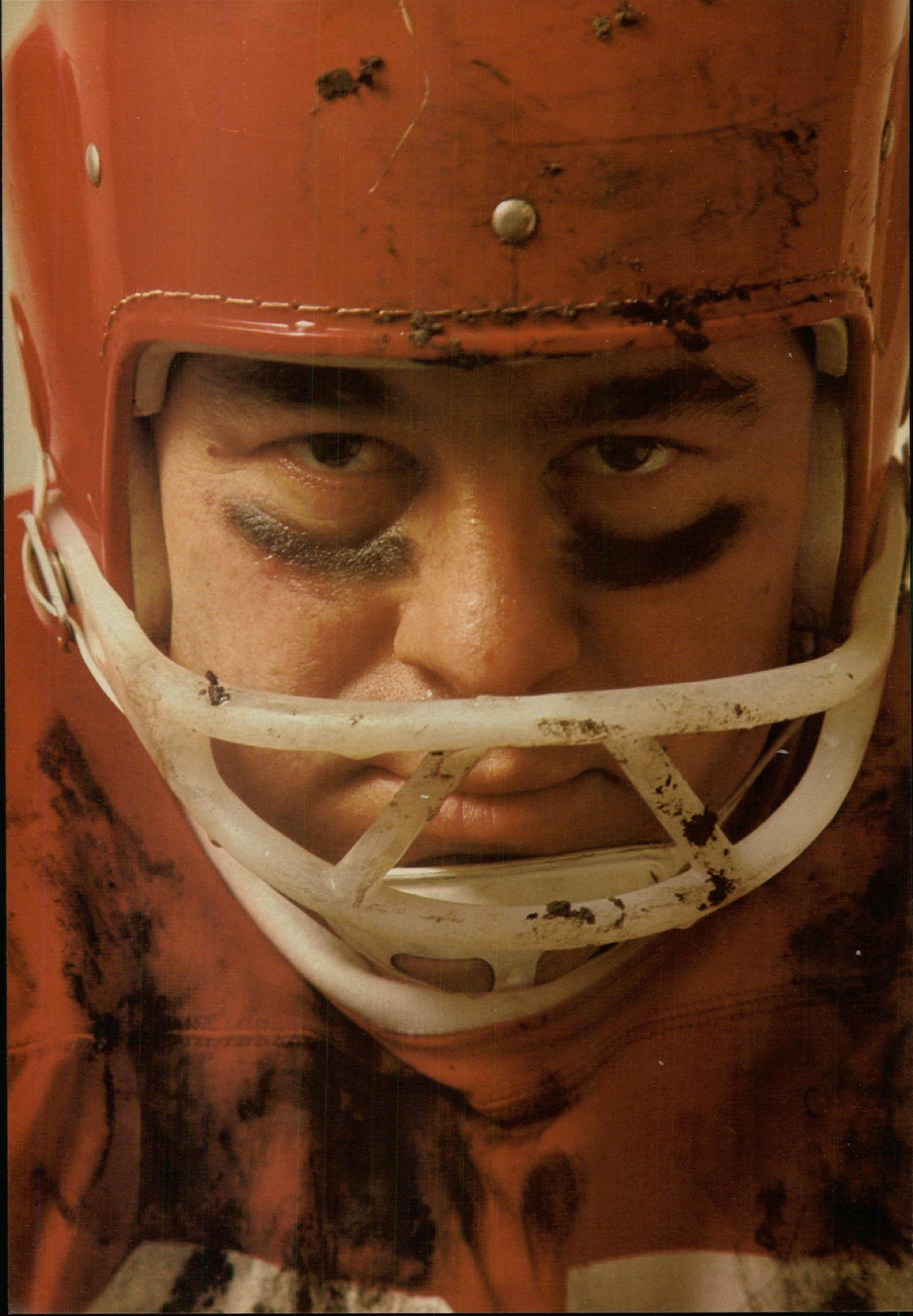
The freedom to create through the medium of building products depends on product flexibility. So meet Travacoustic Abbey, the empathic ceiling tile.

Write today for the Gold Bond Changing Spectrum of Ceiling Systems, Travacoustic Abbey issue. National Gypsum Company, Department AR-107C, Buffalo, New York 14225.



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# Give me a room with some guts



## *Give him PACE by Simmons— it'll handle the pre-game calisthenics*

"Horse" Fitzgibbons doesn't know much about interior design. But he knows what he needs in his room—tough furniture—the kind that can hold its own day after bruising day.

So give him new Simmons PACE, the dormitory furniture designed to take on the "Horses" for years to come, while providing all the comfort, room and practical working area a student needs.

PACE systems capitalize on every

inch of floor space, often freeing up enough for additional rooms. The Wall-a-Bed® is a real space saver and features the famous Beautyrest mattress for full comfort and long-term durability.

Seven standard wardrobes can be used individually or in a variety of combinations. They can be assembled by unskilled laborers in minutes for a considerable savings in labor costs.

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Simmons PACE represents true value for the school and freedom for the architect/designer.

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**SIMMONS**

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For  
modern hospitals  
with critical traffic flow

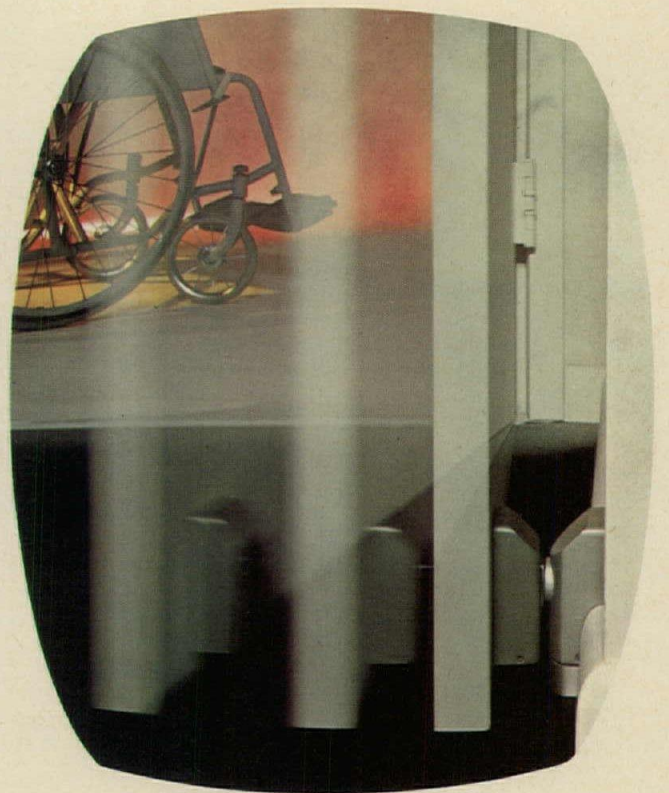
## NORTON CLOSERS CONTROL DOORS —

Hospital doors with complete functional control can also be attractive. With Norton® Closers you can select control for the particular hospital need and traffic flow and still need not compromise architectural esthetics.



### EASY MOVEMENT OF PATIENTS AND SUPPLIES

with Norton Delayed Action Door Closers. When a door is opened, it remains open for an adjustable period of time, 15 to 60 seconds. Patients can be moved through with ease. Employees can move supplies, food, and medicines quickly. In many cases, the need for two employees is eliminated. For patient rooms, wards, supply rooms, kitchens, corridors, therapy, and X-ray rooms.

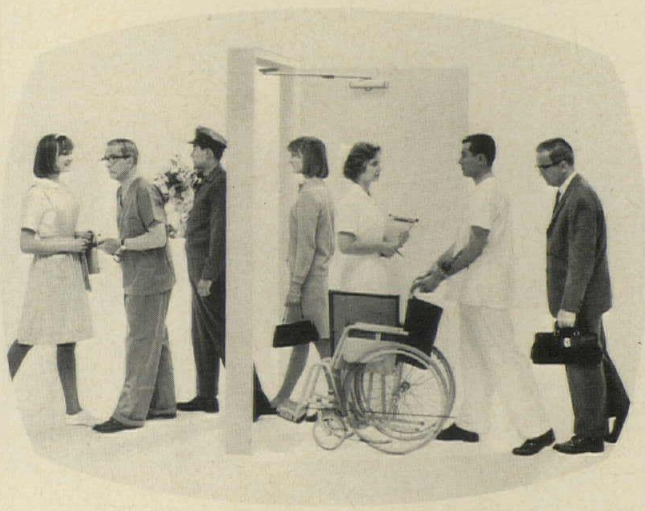


### AUTOMATIC RELEASE FOR MAXIMUM FIRE SAFETY

with Series 6900 electromagnetic door holder. Wings, corridors, wards or any area can be sealed automatically with the automatic door release. Listed with Underwriters Laboratory, this unit is compatible with all approved fire and smoke detectors. When smoke or fire exists, all doors close; if power fails units fail safe. Series 6900 for 12, 24, or 120 volt systems.



# NOT DESIGN



## EXTRA SAFETY FOR TRAFFIC AND DOORS

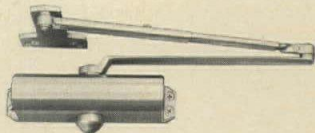
with Norton Series 6100 Uni-Trol Controls. Safety for door and frame from the shock-absorber spring in the soffit plate; this combination door closer and door holder absorbs the shock of repeated openings. Safety for normal traffic by completely controlling the door during opening and closing. And when holder is engaged, keeps the door out of the way of heavy traffic. Ideal for main entrances, cafeterias, emergency wards, service entrances or wherever traffic is heavy.



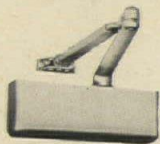
## PATIENT SURVEILLANCE FROM THE CORRIDORS

with Norton Hospital Hold Open Closers. You know what your patients are doing without entering the room. No need to open the door and disturb them. Patient room doors are held open at 45 degrees for observation, 15 degrees for ventilation, and 90 degrees for easy entrance and exit. Regular Surface Closers; Two-Point Hold Open at 15 degrees and 90 degrees with Series 1600.

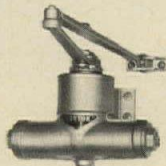
The features described above are available with most of these popular Norton Closers. See your Norton Representative or write for Manual HC.



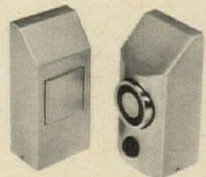
SERIES 1600 CLOSERS



SERIES 7000 CLOSERS



REGULAR SURFACE CLOSERS



SERIES 6900 DOOR HOLDERS



**NORTON**® DOOR CLOSER DIVISION

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make your  
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 and  
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 with  
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 WHITE**



**Lord & Taylor Department Store, Falls Church, Va.** Architect: Michael G. Kasin, Annandale, Virginia. Planners & Designers: Raymond Loewy & William Smith Assoc., New York, N. Y. Gen. Contractor: Allen Bros. & O'Hare, Memphis, Tenn. Medusa StoneseT Masonry Cement: Hudson Supply & Equip. Co., Washington, D. C. Split Block By: Baltimore Concrete Corp., Baltimore, Md.

- The modern, popular split block facade of this fashionable department store imparts a feeling of dignity and welcome to approaching clientele.
- Concrete masonry units made with Medusa White Portland Cement like this split block provide you with free design versatility in color — shape — texture and size to interpret better the purpose of the building. And at the same time you give your client economy — reduced maintenance — complete fire safety — and beauty that increases with age. Ask your concrete products producer about Medusa White units or write us direct at P. O. Box 5668, Cleveland, Ohio 44101.



**MEDUSA** PORTLAND CEMENT COMPANY

White & Gray Portland Cements • White, Gray & Custom Color Masonry Cements • ChemComp® Shrinkage-Compensating Cement

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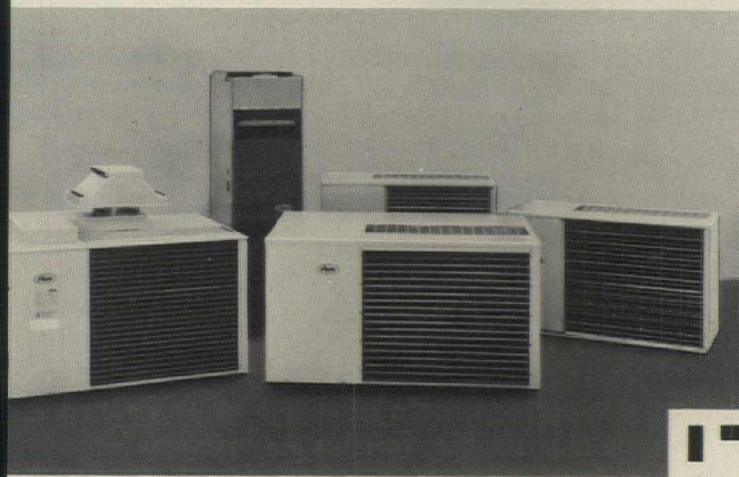


# Hot and bothered over which air conditioning to specify? Cool it - with Payne

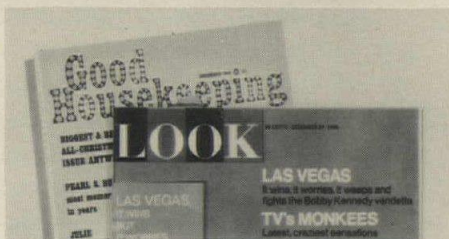
**AS SPECIFIED** — Quality that protects your reputation! Payne's superior design combines with reliable components and careful assembly to assure each Payne unit performs as promised. Backing this up, a strong, reliable warranty from a company in business to stay.



**AS SPECIFIED** — Installation by professionals with service back-up! Payne dealers are Air Management Specialists. Men who are in the air conditioning business full time . . . who know their equipment and how to install it to save you time and money. Men who are prepared to provide back-up fast and competent service you can count on.



**AS SPECIFIED** — Equipment for each job, for a complete-choice line! Compact units — between sizes — or units tough (alone or in multiples) to handle almost any kind of job. Split systems, all gas, all electric, electric combination — that cool and heat. Payne has it.



**AS SPECIFIED** — A name brand that commands customer acceptance! Payne is a name that's respected — by both builders and their customers. They've seen Payne advertising, they know Payne's reputation. When you specify Payne, you make the builder's selling or rental job easier — and his customers or tenants happier.

Want more reasons to pick Payne? Just fill in the coupon and we'll rush all the facts about Payne heating and air conditioning to you.

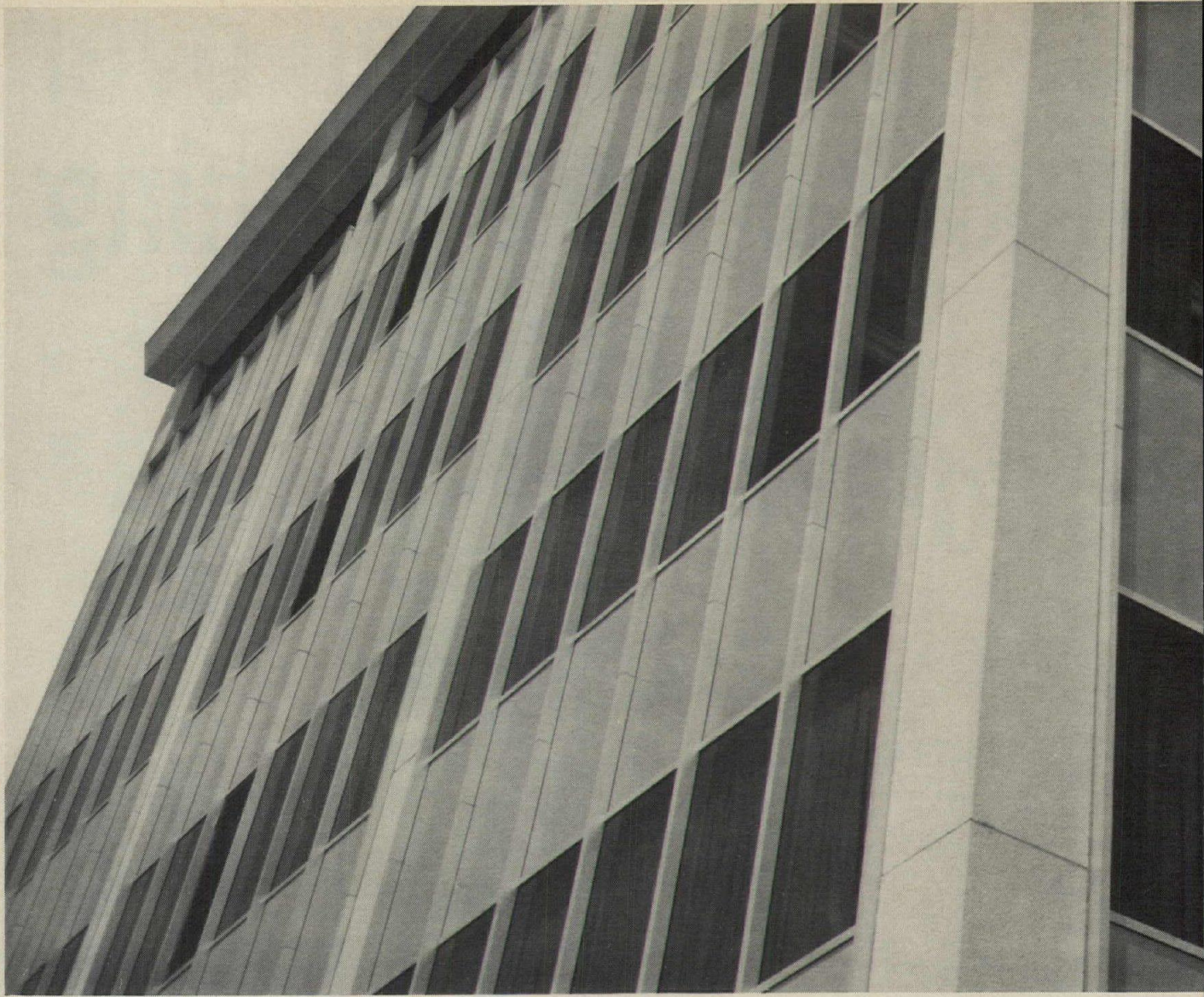


To: The Payne Company  
Department Number J  
855 Anaheim-Puente Road  
La Puente, California 91747

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## Lower initial costs in Union Bank Square?

Union Bank Square, in Orange, California, is a dramatic example of the economy of All-Electric buildings.

The All-Electric Central Tower is a six story office building, steel curtain wall construction, with 84,000 sq. feet of gross space. It was completed in August of 1966.

Right next door is the North Tower, a non-All-Electric building of similar construction and the first building in the complex to be erected.

Calculated on a per-square-foot-basis, the combined overall initial, operating and maintenance costs for the All-Electric Central Tower are lower. Electric strip heaters in the ducts and refrigerated electric air conditioning accounted for significant savings in first cost.

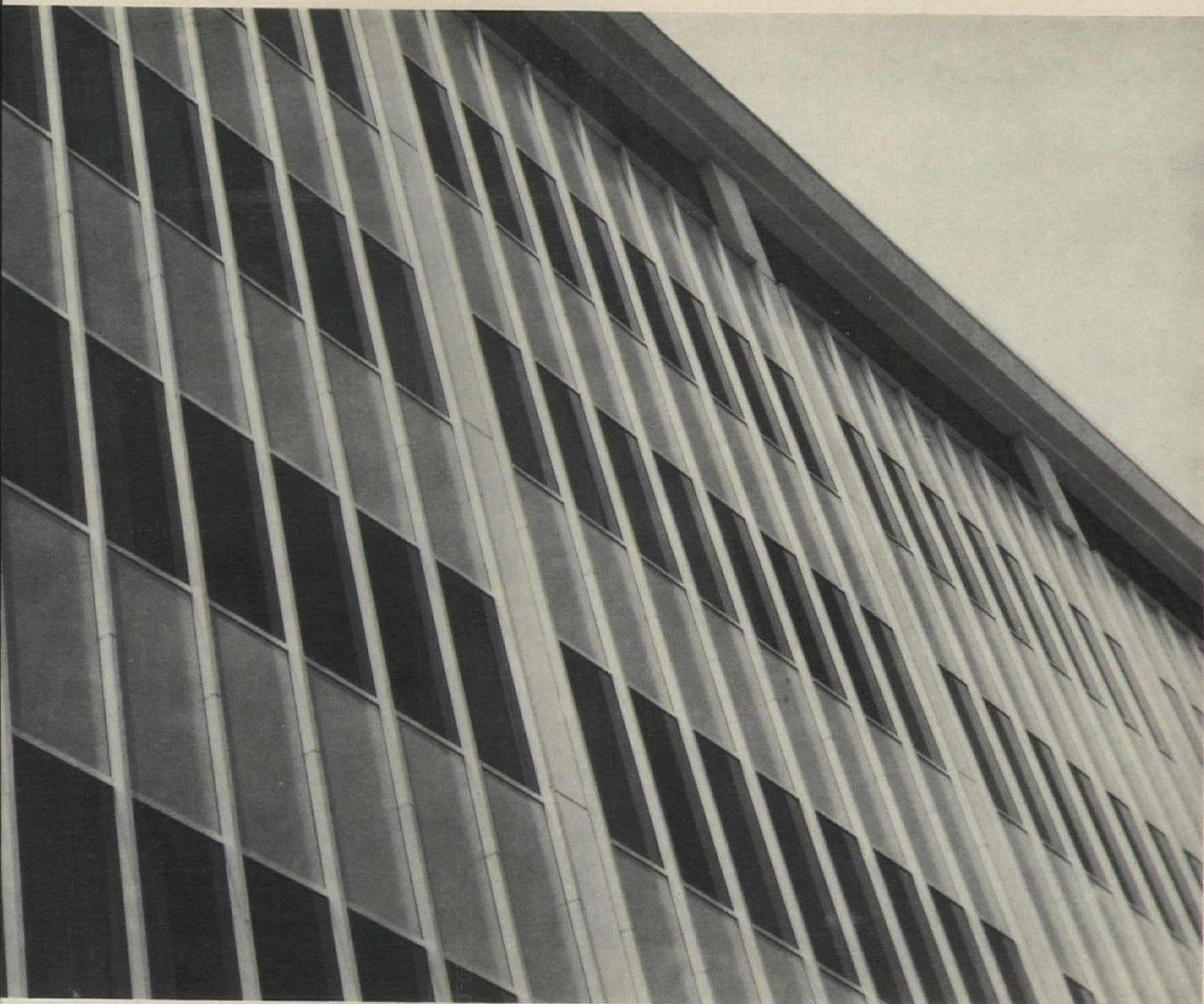
Annual operating costs are just under 25 cents per sq. ft. per year. Maintenance time on the space conditioning system in the Central Tower is two thirds less than in the North Tower.

Canal-Randolph Corporation, owner and operator of Union Bank Square, has found that claims for All-Electric buildings are proven in practice.

That's why the third building in the complex, the twelve story South Tower, will also be all electric. Scheduled completion date is July of 1968 and leasing operations for space in this luxury office building have already begun.

We can give you hundreds of other case histories of low annual cost of All-Electric buildings. Write Marketing Engineering, P.O. Box 62, Terminal Annex, Los Angeles 90051.





# and total annual cost All-Electric Central Tower

Central Tower, Union Bank Square, Orange, California. A Canal-Randolph Property

## Building Profile

### GENERAL DESCRIPTION

Six-story building  
84,000 square feet office tower  
Steel curtain wall construction

### OPERATING COSTS

Total electric Operating Costs – 25¢ per sq. ft. per year

### ELECTRIC LOAD

Connected lighting and miscellaneous load – 250 KW  
Electric space conditioning equipment –  
Cooling – 300 Tons  
Heating – 374 KW  
Electric Water Heating – 15 KW

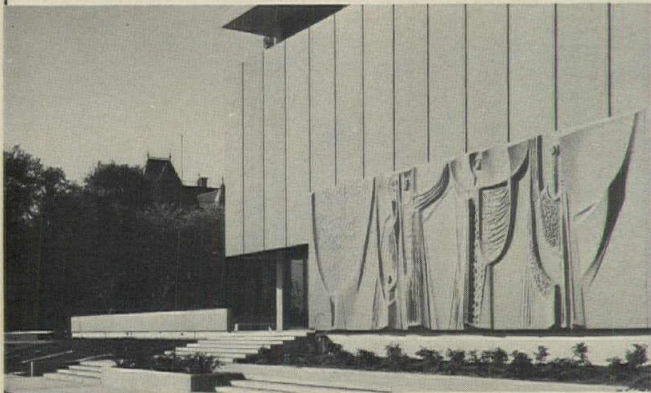
### SPACE CONDITIONING

Double-duct electric heating and cooling system

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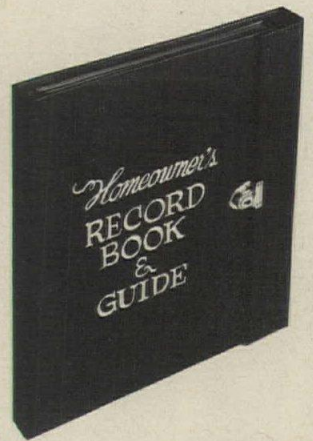
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A unique publication distributed daily to new home-planning families reported by F. W. Dodge giving manufacturers an opportunity to offer their product literature to over 50,000 prime prospects annually.

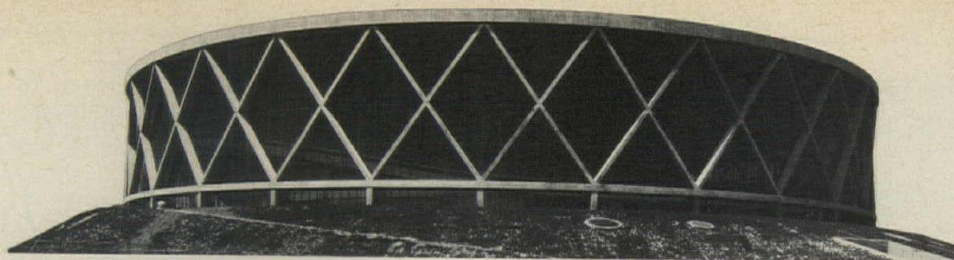
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Please send me the HOMEOWNER'S RECORD BOOK & GUIDE for 10 days free examination. In 10 days I will remit \$6.95 plus any local tax and postage. Otherwise, I will return the book postpaid.

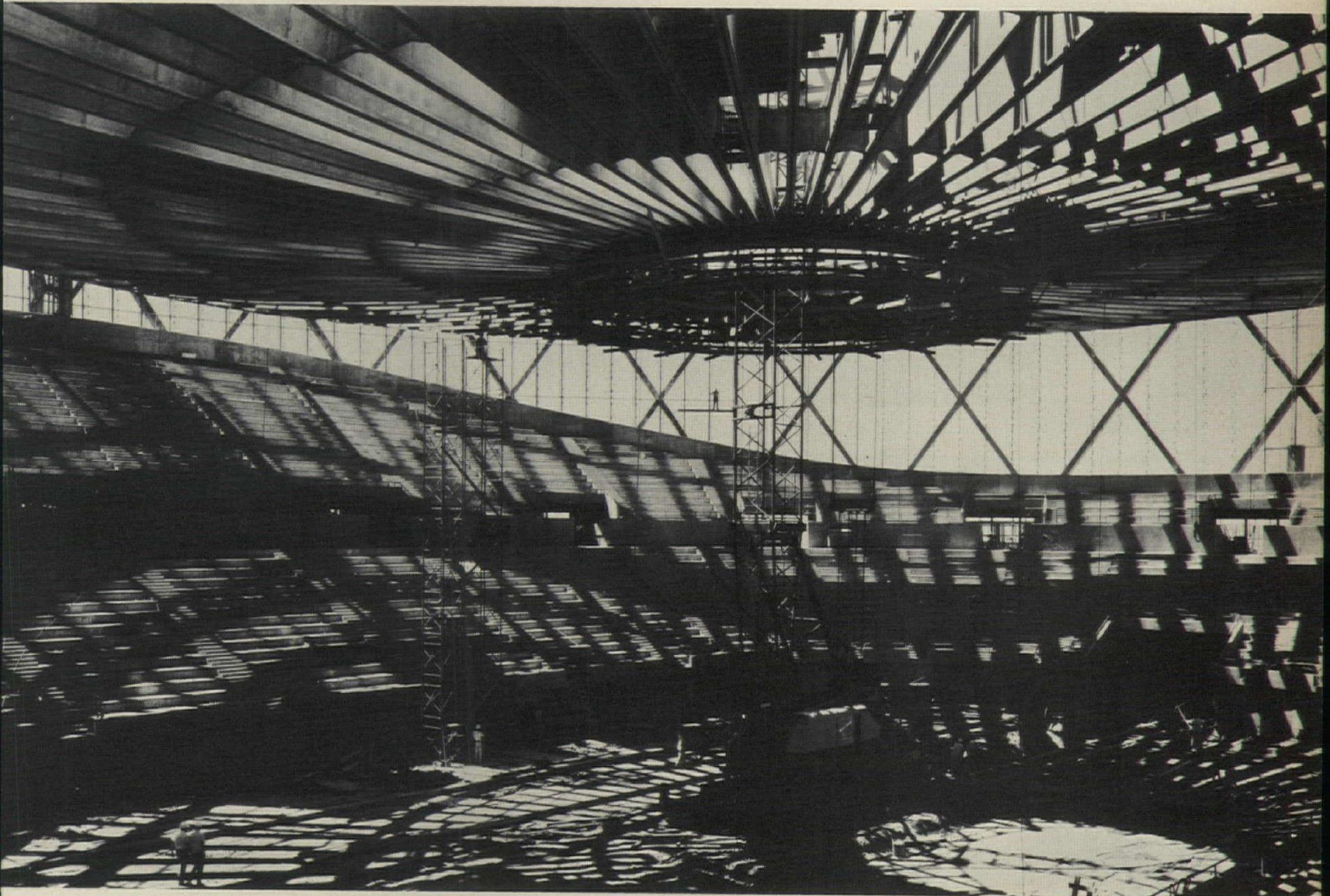
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ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

For more data, circle 19 on inquiry card





# A SUSPENDED ROOF OF CONCRETE



**OAKLAND STADIUM COLISEUM COMPLEX—Oakland, California**  
**Architect & Engineer:** Skidmore, Owings & Merrill, San Francisco  
**General Contractor:** Guy F. Atkinson Company, South San Francisco  
**Concrete Supplier:** Pacific Cement and Aggregates, Oakland

A distinct highlight of the new Oakland-Alameda sports coliseum complex is this unique suspended roof system used on the arena. The roof is comprised of ninety-six 2½" diameter steel cables radiating from a 45' diameter steel tension ring, at the center, to a 420' diameter concrete compression ring. Each cable supports a lightweight concrete stiffening rib manufactured with Basalite lightweight expanded shale aggregate. The ribs were precast in segments, lifted into place and joined with cast-in-place lightweight concrete closures.

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Write or call Basalt for technical assistance and data. **Basalt Rock Company, Inc.**, Aggregate Division, Napa, California 94558. Phone 707/226-7411.

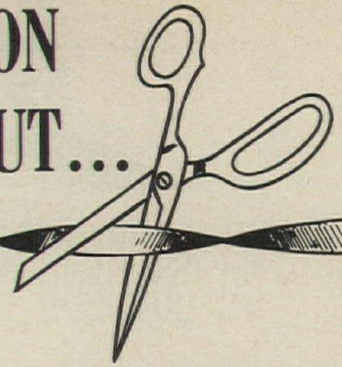


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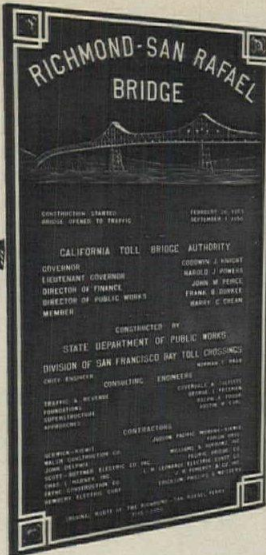
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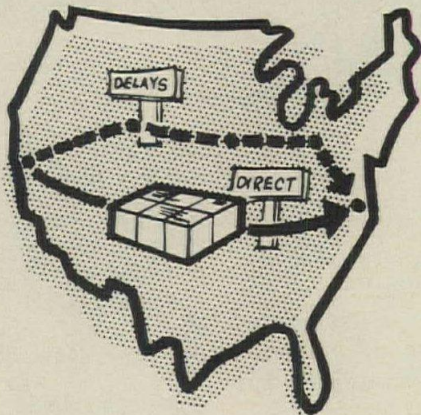


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# Three cheers for the elderly... and their nurses.

Elderly patients sometimes have trouble using bathroom fixtures. As nurses who have to help them know. Now American-Standard offers three special fixtures—designed for the needs of older people.

## **Chair-height Cadet\* toilet.**

This elongated-bowl toilet is 18" high, which is about 4" higher than usual toilets. A boon to patients who have trouble raising their bodies. Permits direct wheelchair transfer with minimum risk. Extra-long bowl design puts more area under water for increased sanitation, allows for a larger, more com-

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## **Wheelchair lavatory.**

The chair with seated patient rolls right under this big 20" by 27" lavatory of easily sanitized vitreous china. Water on the side and front edges drains back into the concave-shaped bowl. Flat back ledge is punched for 12" centers (for wrist handles) and 4" centers for Push-Pull\* single-control fitting.

## **Perineal Bath†.**

Bathes the patient in clean, running

water of predetermined temperature. Has the back, arms and contoured seat of a chair—the patient sits comfortably and securely without need for constant supervision. Easily sanitized vitreous china. Obsoletes the old-fashioned sitz bath with its awkward crouching and rapidly cooling pool of soiled water.

Look to American-Standard for products that make life a lot more cheerful for both patient and staff. See your American-Standard representative for more information, or write American-Standard, 40 West 40th Street, New York, N.Y. 10018.

\* TRADEMARK AR&SS CORP. † PATENT PENDING

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**And in Surgery.  
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And in the Boiler Room.  
And, of course,  
in the "Where's my nurse?"  
Department.**

There's more to Executone hospital communications than two-way intercom between nurse and patient.

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## Insurance companies pledge \$1 billion for capital investment in ghettos

Responding to a plea from President Lyndon Johnson urging that the private sector of the economy involve itself in helping to solve urban problems, the Institute of Life Insurance, a trade association of 348 companies, announced last month that it will make available through individual companies, on a *pro rata* basis relating to assets, \$1 billion for capital investments to be used for "housing and getting industry into the hard-core ghetto areas of our country."

The funds will be used for capital investments that the insurance companies "would not otherwise be making" in housing, industrial enterprises and hard-

core ghetto areas. The new money will be in addition to the normal investment of the insurance companies and, with FHA support, is intended for investment in "high risk areas."

The funds will be dispensed at the outset within existing programs, largely through FHA, with emphasis on rent supplement programs. The funds will be invested on a decentralized basis, with each insurance company working with each individual sponsor or project builder under such terms as section 221 (d) (3) and 221 (d) (4) of the housing act.

Just eight days after the insurance company participation was announced at

the White House on September 13, the first eight projects under the program were announced by Secretary Robert C. Weaver of the Department of Housing and Urban Development. The projects, selected because they were ready to start immediately, will include two in Cleveland, and one each in Pittsburgh; Pasco, Washington; Albuquerque, New Mexico; Jacksonville, Florida; Sumter, South Carolina; and Lake City, Florida. The insurance companies will buy the mortgages on these rent supplement projects, investing \$7.7 million for 695 housing units. Review process has also begun on 30-odd other projects in 30 cities.

## Architects receive grant to study "humane" urban design

Architects Paul Rudolph, Ulrich Franzen and I. M. Pei, as a result of a grant from the Ford Foundation, will each undertake "to explore the esthetic and humane—as distinguished from the primarily technical—dimensions of a major—and actual—problem in urban design."

The two-year studies by Mr. Franzen and Mr. Rudolph, of two real areas in New York City, will be assisted by a Ford grant of \$488,000 to the American Federation of Arts, Inc., while Mr. Pei's plans for his project are now under discussion with the Foundation. The purpose of the grants will be for the architects "to search out new concepts of physical form that are more livable and workable than those produced by traditional practice."

Mr. Franzen's project will be a study of the entire length of Lenox Avenue in Harlem, a 200-foot wide, 35-block-long boulevard which serves as a commercial and institutional focus for a large segment of the community. His purpose will be to seek ways of making it a more vital and integral part of the residential areas that adjoin it.

Mr. Rudolph will study the area along and adjacent to Canal Street, in Lower Manhattan, a proposed route for a Lower Manhattan Expressway. He will explore how such a highway, properly conceived, could complement and rein-

force the quality of adjoining areas rather than having a blighting influence as is too often the case.

The bulk of the funds will go towards preparation of large-scale models, renderings, photographs and explanatory materials, which will be presented as an exhibition at the Whitney Museum of American Art in New York City, which will later be circulated for four years throughout the nation, and towards publication of the materials.

## Potomac task force calls for unified conservation effort

A multi-disciplinary task force headed by Arthur Gould Odell, Jr., past president of the American Institute of Architects, has called for Congress to establish a Potomac Development Foundation. The Foundation, which would be funded by Congress over a five-year period at \$50 million per year, would be responsible for restoration of the Potomac river basin in Washington, D.C., as a national treasure and as a model for the entire country.

The task force, assembled two years ago by the A.I.A. at the request of Secretary of the Interior Stewart L. Udall, urges that the entire valley and its resources be considered as a unified, living entity, rather than a "random grab-bag of distantly related values."

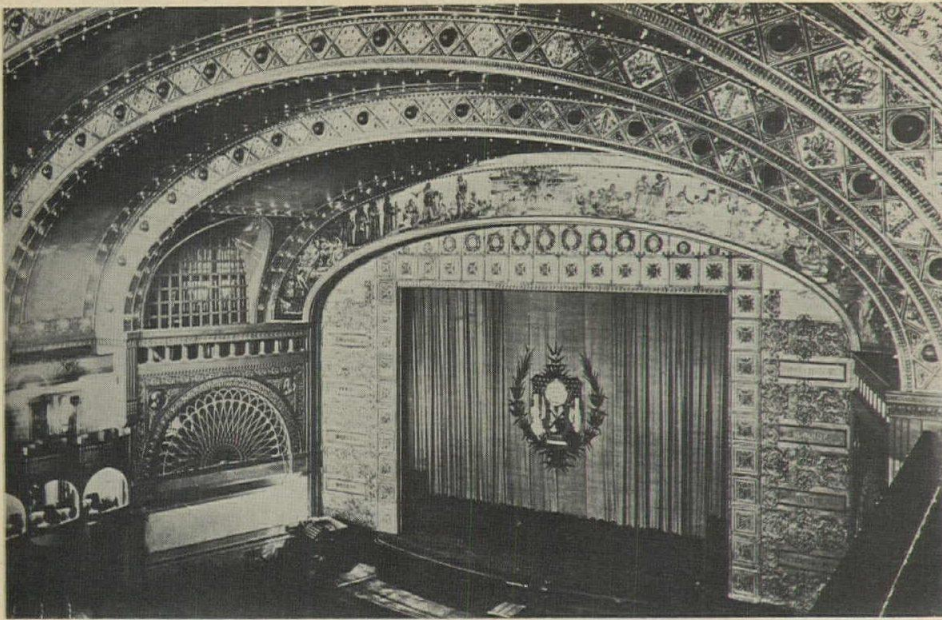
A method of design analysis, which

considers suitable approaches to development of the river basin landscape, parcels the land into three distinct geological settings beginning at the river's edge. These settings are treated in depth to illustrate suitable visual characteristics, fundamental erosion, pollution and water conservation principles. The case is also developed for lands that should not be built upon.

## RECORD HOUSES wins citation from printing industry

RECORD HOUSES of 1967, the mid-May issue of ARCHITECTURAL RECORD, has been presented a Certificate of Award in the Graphic Arts Awards Competition sponsored by Printing Industries of America. The award, in the category of "magazines and house organs," was accepted by Herbert L. Smith Jr., editor-in-charge of RECORD HOUSES, in ceremonies at the P. I. A. convention in Washington, D.C., on September 19. The award, for "outstanding design, quality of production and uniqueness of presentation" was given to McGraw-Hill, Inc. and Judd & Detweiler Inc., printers, for ARCHITECTURAL RECORD, and cited the following participants: Lanman Lithoplate Company; Jan White, designer; Alex H. Stillano, art director; Joseph R. Wunk, production manager; and James E. Boddorf, advertising manager.





## Chicago's Auditorium Theater will reopen after restoration

The Auditorium Theater in Chicago, designed by Dankmar Adler and Louis Sullivan and first opened in 1889, has undergone a restoration costing nearly \$2 million, and will have a grand reopening on October 31 with a performance of "A Midsummer Night's Dream" by George Balanchine's New York City Ballet. This will be the first musical production performed in the Auditorium since 1941. The structure was then turned into a U.S.O. center, after which it fell into disuse.

Architects in charge of the restoration were Harry Weese and Associates (assisted by Crombie Taylor, architectural historian and George Izenour, theater consultant), whose aim was to restore the building "as closely as possible to the

same condition it was on opening night, December 4, 1889."

Restoration work included: much replastering, including ornamental plaster; new seats (cast from one of the original seats) installed on the main floor; electrical wiring updated; new carbon filament bulbs (as in original) throughout; new carpeting in foyers with reconstructed Sullivan pattern; new red aisle carpeting; new toilet facilities and lounges in basement; remodelling of dressing rooms; new ventilation in dressing rooms; new electric coils for heating with cooling cycle to be installed in the near future; and a new air supply and return system for the foyer area.

General contractor for the project was Sumner M. Sollitt.

## RECORD senior editor will be honored with C.C.A.I.A. award

Elisabeth Kendall Thompson, senior editor of ARCHITECTURAL RECORD, who is based in San Francisco, will receive this year's Public Information Award of the California Council, American Institute of Architects. The award, established in 1965 to recognize outstanding performance in the field of public information in the areas relating to or in the interest of the architectural profession in California, will be presented to Mrs. Thompson at the C.C.A.I.A.'s 22nd annual convention to be held from October 5-8 in San Diego.

In announcing the award, the California Council reported that her "many years of perceptive reporting and analysis of architecture and design and her valuable public service as a member of civic and professional committees concerned

with improving man's environment led to her selection."

The citation will read: "To Elisabeth Kendall Thompson, editor, author and educator whose many years of knowledgeable architectural journalism and service to the profession have created understanding, for both architect and layman, of the heritage, goals and unlimited future potential of architecture."

## Obituaries

**Irving W. Hadsell**, former president of the F. W. Dodge Company, now a division of McGraw-Hill, Inc., died September 11 at age 74. After graduating from Columbia University in 1914, Mr. Hadsell joined F. W. Dodge as a copywriter for Sweet's Catalog Services in Chicago in 1916 and later switched to sales. In 1929 he was named vice president in charge

of F. W. Dodge's Construction News & Statistics Division, and was named vice president of the company in 1953. Mr. Hadsell was named president of F. W. Dodge in 1959, and when the firm was acquired by McGraw-Hill, Inc. in 1961, he was elected to the Board of Directors of the parent company. He retired in May, 1963.

**Dennis O'Harrow**, executive director of the American Society of Planning Officials since 1954, died suddenly in Berlin on August 29 at age 58. Mr. O'Harrow was elected president of the International Federation of Housing and Planning in 1966, the second American elected to that office, and, at the time of his death, he was presiding over the International Congress of that organization. Mr. O'Harrow received a Bachelor of Science degree in civil engineering from Purdue University in 1931. He came to A.S.P.O. in 1948 as assistant director. He was one of two Americans ever to be named an honorary member of the Town Planning Institute of the United Kingdom. In 1965, Mr. O'Harrow received the American Institute of Planners' Distinguished Service Award for "outstanding professional service to urban and regional communities through outstanding quality of practice of the art and science of planning."

**Henry Hodgman Saylor**, first editor of the Journal of the American Institute of Architects and editor of several other professional architectural magazines in a career that spanned over half a century, died August 22 at age 87. Mr. Saylor, who completed a special course in architecture at the Massachusetts Institute of Technology in 1901, was associated with the following publications: editor of *The Architectural Review*, 1904-06; editor, *Country Life in America*, 1906-09; editor, *American Architects*, 1909; editor, *House and Garden*, 1909-11; editor, *Architecture*, 1926-36; associate editor, *American Architect and Architecture*, 1936-37; founder, editor and publisher, *The Architect's World*, 1938; associate editor, *Architectural Forum*, 1938-41; and first editor of the *A.I.A. Journal*, 1944-56. Mr. Saylor joined the American Institute of Architects in 1926, was elevated to Fellowship in 1952, and received the Kemper Award of the Institute for distinguished service by a member in 1954. Mr. Saylor participated in the planning of the present garden of the A.I.A.'s Octagon headquarters and was always thereafter its solicitous and creative curator. Following his retirement in 1956, he served the Institute as historian, preparing several reports on the history of the garden and the Octagon restorations.

more RECORD REPORTS on page 293





**Vollrath walked in  
to the walk-in business...**



We walked into the walk-in business...

# with our eyes wide open

We're now manufacturing modular walk-in cooler/freezers.

## How come?

After a thorough examination of the food service equipment industry and our role in it, we decided that the modular walk-in is a natural extension of our already large line of mobile equipment. So we walked in.

## Frameless construction.

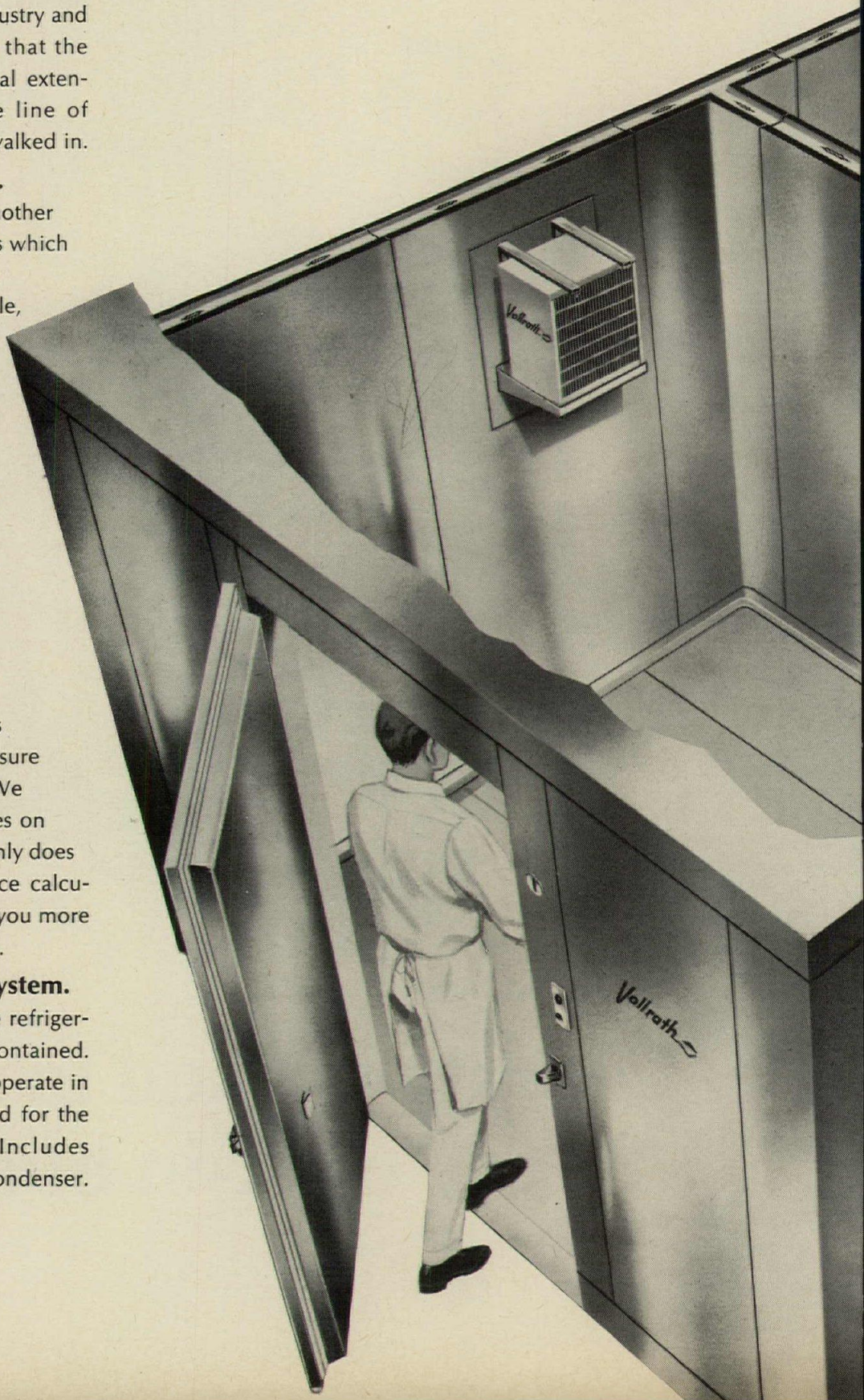
Rather than produce just another walk-in, we're offering units which incorporate the latest, most modern features. For example, we use foamed-in-place urethane insulated stainless steel modular panels for maximum rigidity and insulation qualities. (We use other metals, too.) This eliminates the need for wooden frames and braces. Tongue and groove panel ends insure a positive seal between modules.

## The full measure.

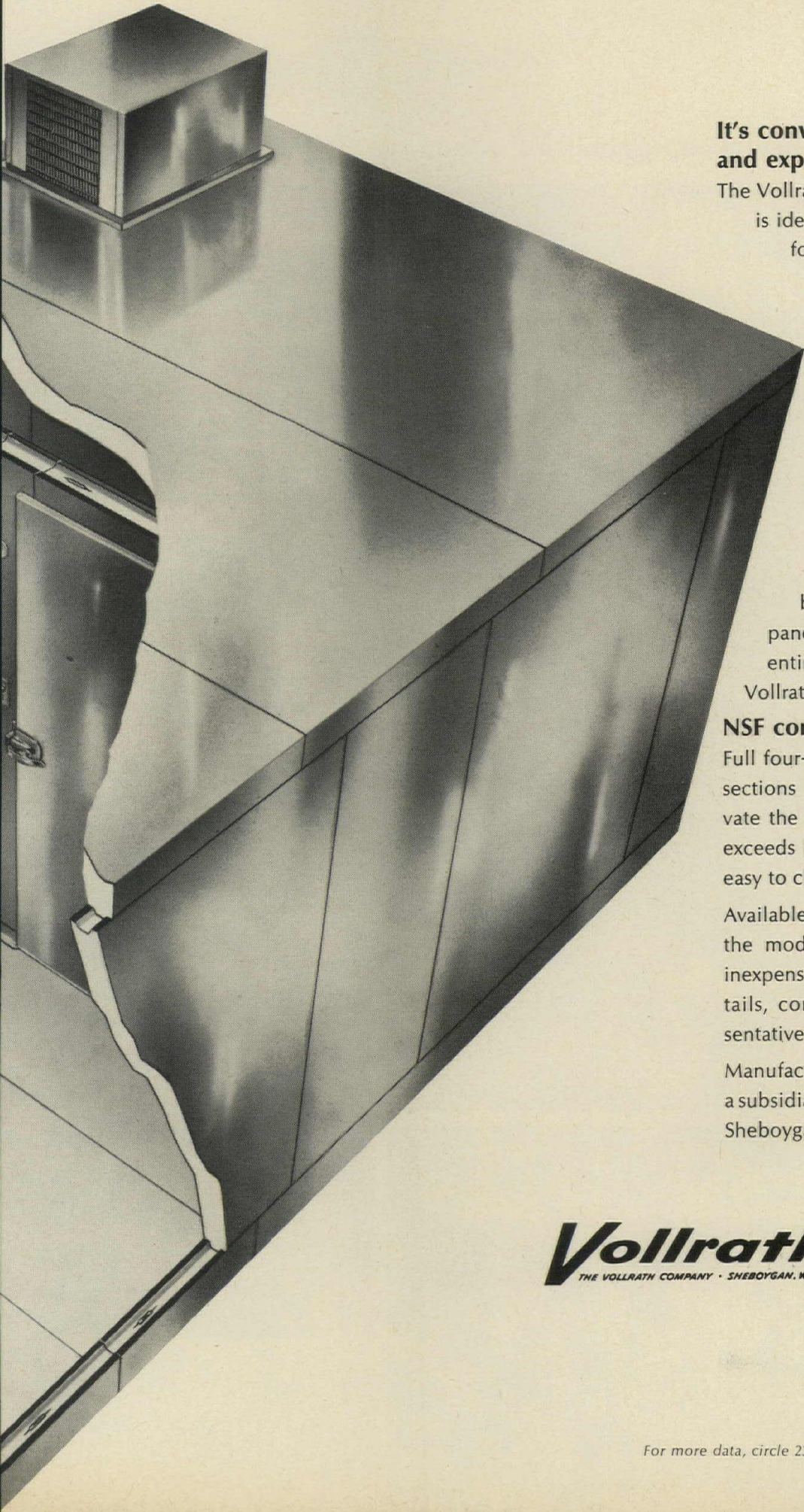
Unlike other manufacturer's units, Vollrath walk-ins measure out to the full stated size. We don't short you a few inches on nominal dimensions. Not only does this simplify your own space calculations, but it actually gives you more refrigeration for your dollar.

## Package refrigeration system.

Vollrath's compact package refrigeration unit is entirely self-contained. Ready to plug in, ready to operate in one-tenth the time required for the average remote system. Includes compressor, fan, coil and condenser.







## It's convertible— and expandable!

The Vollrath modular walk-in cooler is identical to the freezer except for the refrigeration unit. So you can convert back and forth at any time, simply by changing the refrigeration unit. The four-inch urethane foam insulation is more than sufficient for any type of food freezing operation. And, as your business grows, you can increase your cooler capacity simply by adding on more modular panels. Or you can even add an entire freezer section onto your Vollrath cooler.

### NSF construction.

Full four-inch-thick floor and ceiling sections have coved corners to elevate the seams above the floor. This exceeds NSF requirements; makes it easy to clean.

Available in a wide variety of sizes; the modular panels permit simple, inexpensive customizing. For full details, contact your Vollrath Representative or write for a new catalog. Manufactured by Vollrath-Erickson, a subsidiary of The Vollrath Company, Sheboygan, Wisconsin, Dept. AR-10.

**Vollrath**  SINCE 1874  
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## Architects propose new housing concepts to improve the quality of life in the city

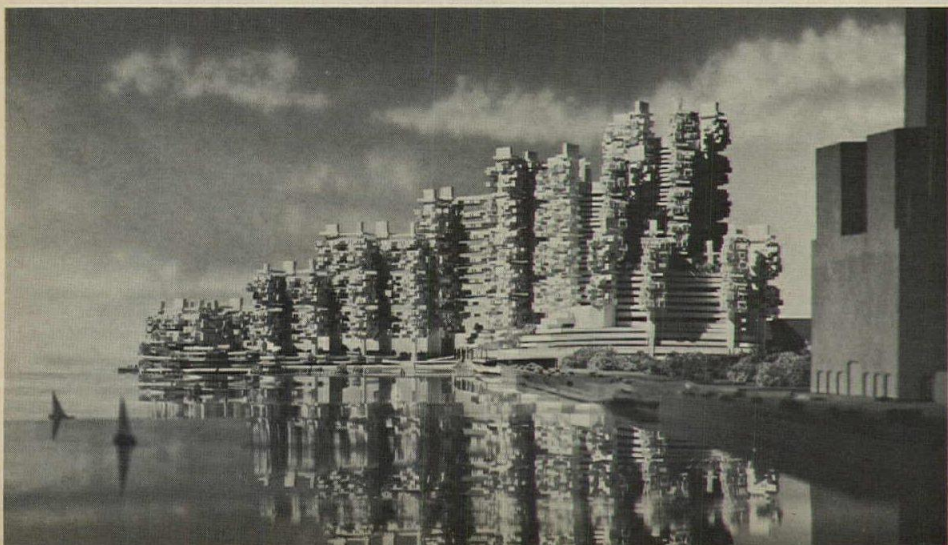
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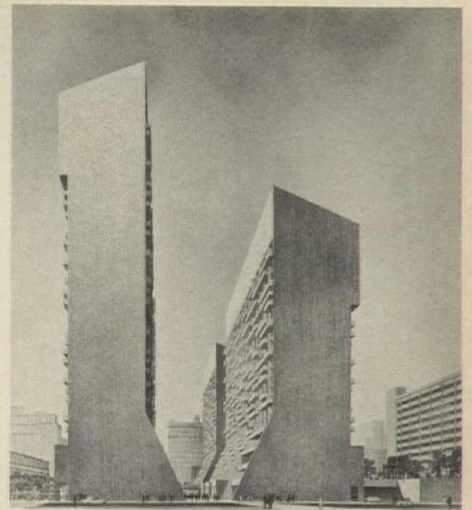
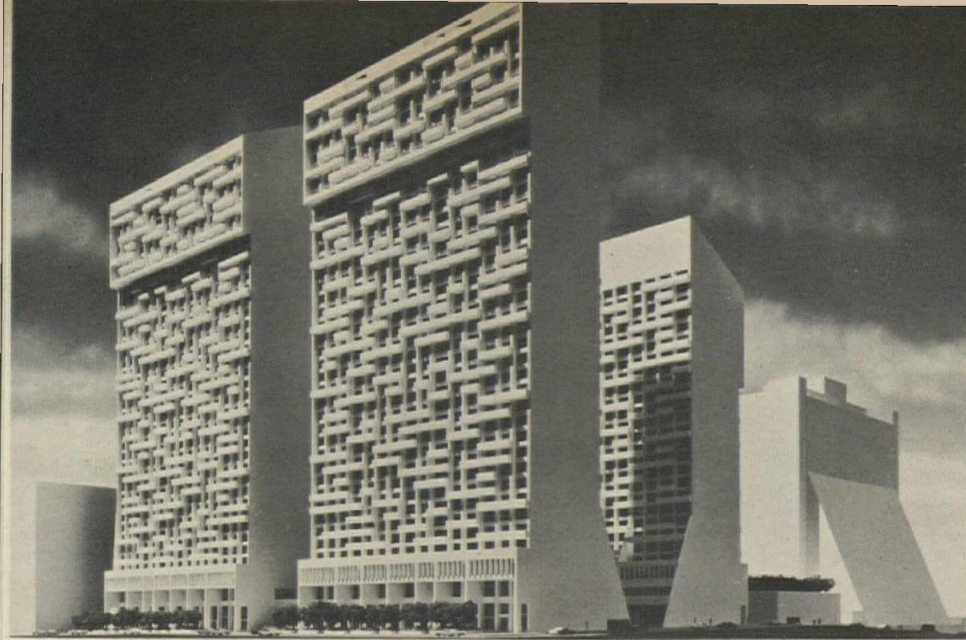
A **Graphic Arts Center** proposed for a site on the Hudson River, New York City, designed by Paul Rudolph, is intended to utilize prefabrication techniques to create as a multi-functional, multi-use building complex. The scheme, intended to provide high-quality industrial space for New York's legal and financial printers and color lithographers, would devote 12 levels to: a trucking-service floor; parking for 2,100 cars; a plaza level with elementary school; recreational facilities; five floors for use (starting at plaza level) by the color lithographers terraced back over the plaza; and seven floors for use by legal and financial printers. Total square footage for these functions would be 3,285,000.

This industrial complex is intended to serve as a "man-made hill" terraced for residential and commercial use above. Two office towers, one 31 stories and the other 17 stories, providing 1,455,000 gross square feet, would complete the concept.

The community would include 4,050 apartment units. This housing would be made of light-weight prefabricated units, similar in construction to those used in the mobile home industry. These units would be supported by cables hung from large trusses cantilevered from vertical towers. These cores are placed at right angles to each other, thereby allowing one to brace the next. The apartments would be arranged in an overlapping manner, so that the roof of the lower units would form a terrace for the units above.





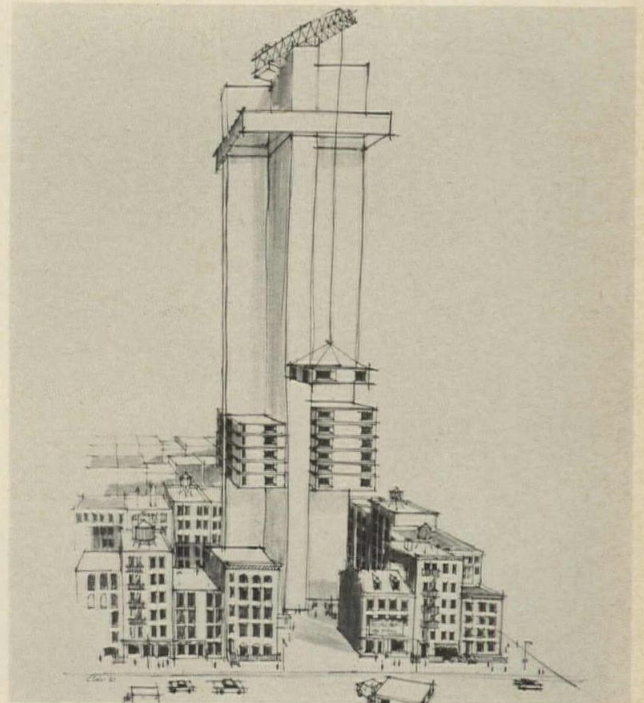


**The West Yard middle income apartment complex**, New York City, designed by Philip Johnson with Samuel Paul & Seymour Jarmul, will consist of four apartment towers containing 1,600 units plus penthouses. Two of

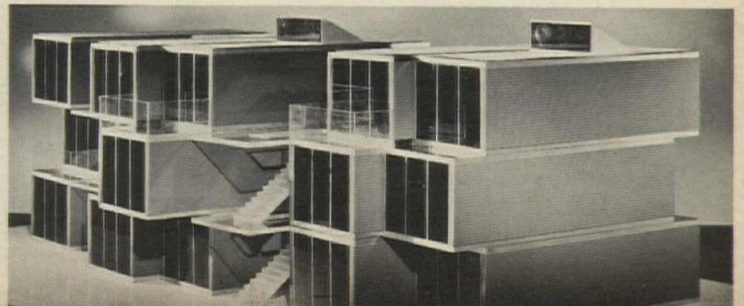
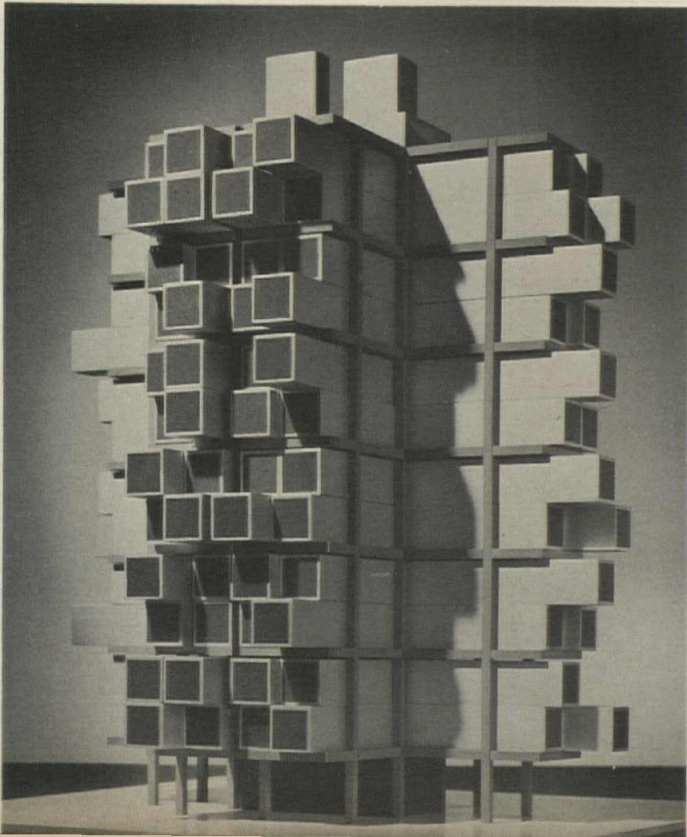
the towers will have 25 stories and the other two will have 38 stories. Apartment sizes will vary from one-room studios to three-bedroom units and penthouses. Balconies, available to 80 per cent of the apartments,

will be placed "at random" with tenants specifying size and placement. Also included in the \$60-million complex will be a five-level, 830-car underground garage, enclosed two-story shopping mall and a two-acre park.

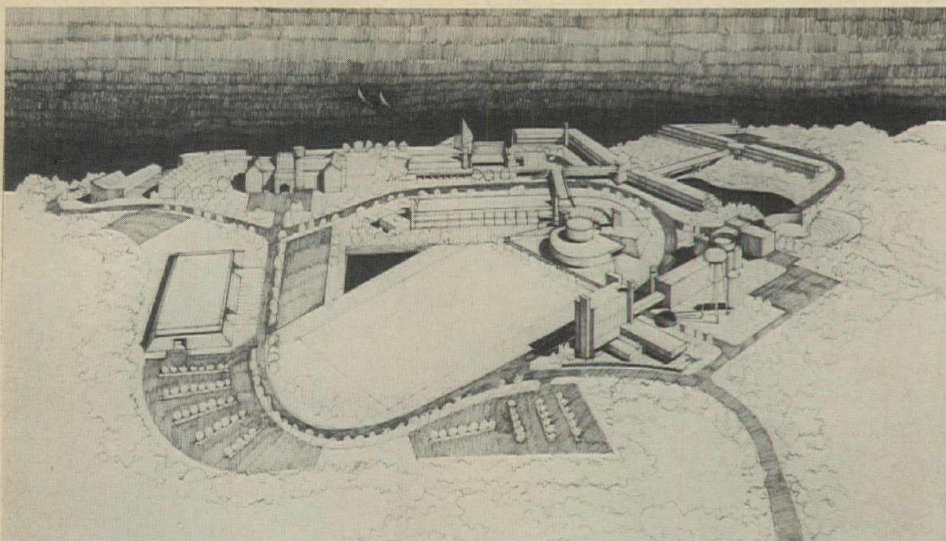
**New housing with a minimum of relocation** has been proposed by Frederick G. Frost Jr. & Associates, Architects. In the Frost proposal, 30-story towers containing elevators, fire stairs and other facilities would be constructed on a block, with only two houses being initially demolished to make room for the towers. Once a tower is in place, manufactured modules containing the dwelling units would be suspended from carrying members attached to it. The modules, with all interior and exterior surfaces prefinished, would be equipped for lighting, heating, cooling, ventilation, plumbing and communications ready for connection to distribution lines in the towers. As each unit is installed, families in adjacent dwellings would move in, with the old houses being razed for space for support facilities. Inventor of the "Suspended Module Buildings" system used in the plan is Christian Frey, and Lev Zetlin & Associates is consulting engineer.



**New concepts in mobile homes**, designed by Dalton-Dalton Associates, Architects, under commission to the Jones & Laughlin Steel Corporation, are intended, say the architects, to "show that technology and materials used in mobile home manufacture can be applied to the solution of housing problems plaguing urban America." The town house scheme, below, stacks steel-framed units atop and alongside each other in a preassembled stairway structure. The high-rise solution at left is a steel skeleton frame containing individual residence units which would be hoisted in place and plugged into a permanent core. The designs were first shown at the Mobile Homes Manufacturers Association Suppliers' Show held last month in Chicago.

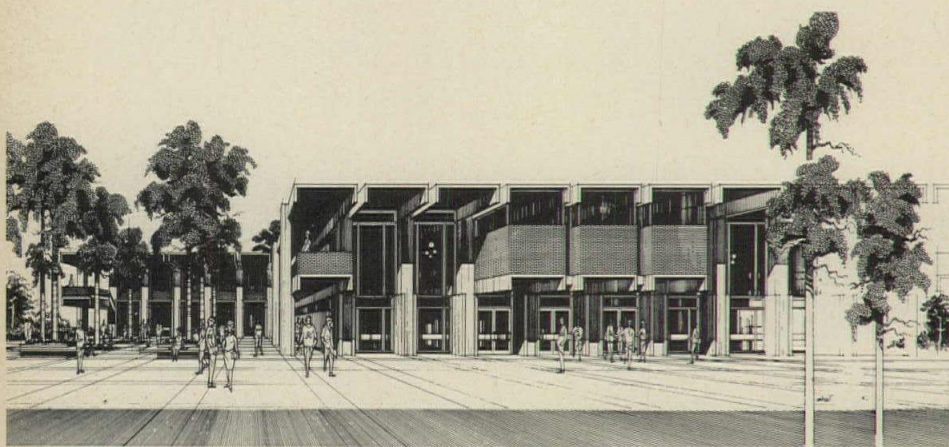
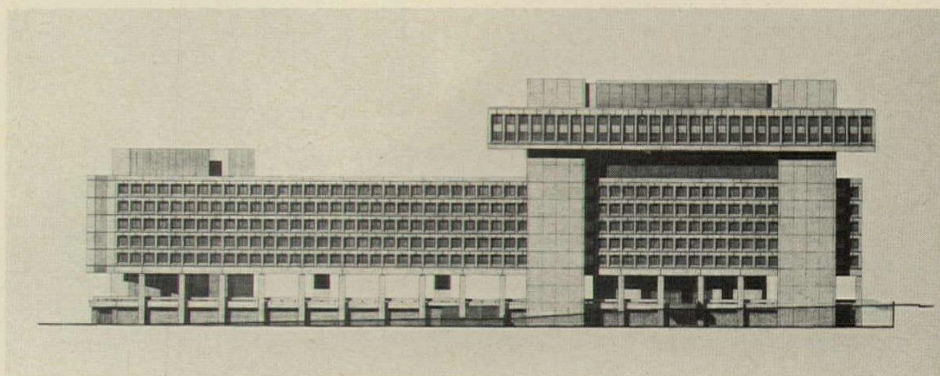




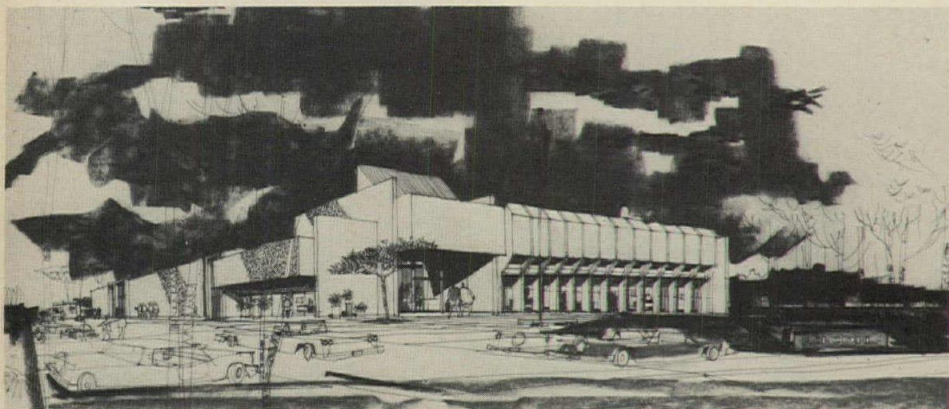


**The master plan for Sands Point Fetsch College**, Sands Point, New York, designed by Melvin Beacher, proposes construction in three phases for a projected enrollment of 1,200. The buildings, of reinforced concrete and concrete block construction, will be organized around an elevated ceremonial plaza. The first phase of construction will be rehabilitation of two existing buildings on the site and a new co-educational dormitory for 300 students. Other buildings will include administration, faculty lounge, maintenance, student union and dining, science, faculty housing, boathouse, library and visual arts center, classroom, gymnasium, chapel and six dormitories.

**The Federal Bureau of Investigation Building**, Washington, D.C., designed by C. F. Murphy Associates—Stanislaw Gladych, designer in charge—is the first major government building set to go under construction along the newly planned Pennsylvania Avenue (July, 1964, page 23). The FBI Building will be organized around a courtyard which will be open to the Avenue by a 78-foot wide aperture. Construction of the building, which will contain 2.3 million square feet, will be of reinforced poured-in-place and precast concrete. It will have 11 floors above grade and three levels below, including a 700-car garage.



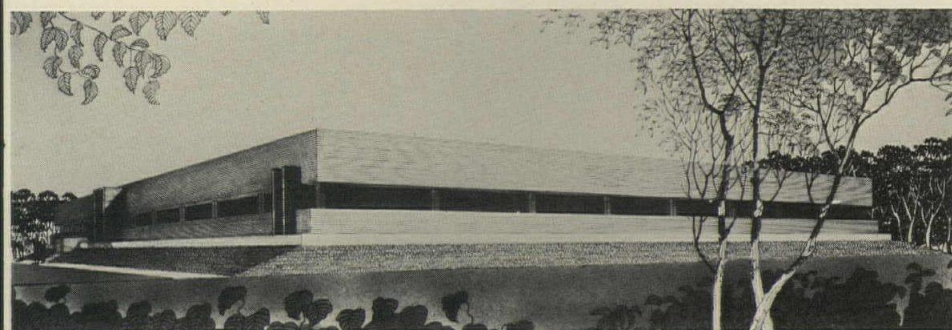
**The Cafeteria Building** for California State College at Hayward, designed by Campbell & Wong & Associates, will be a two-story structure with basement which will serve as a temporary student union area. The main floor will be used for snack dining with the upper floor for full-course dining. Cooking preparation facilities will be in the basement with dishwashing facilities located adjacent to dining areas. All columns and 10-foot-wide channel slabs will be precast, prestressed concrete. Redwood slat grille treatment will be used in the spaces between the channel slabs and in the U-shaped columns, integrating lighting and acoustical treatment.



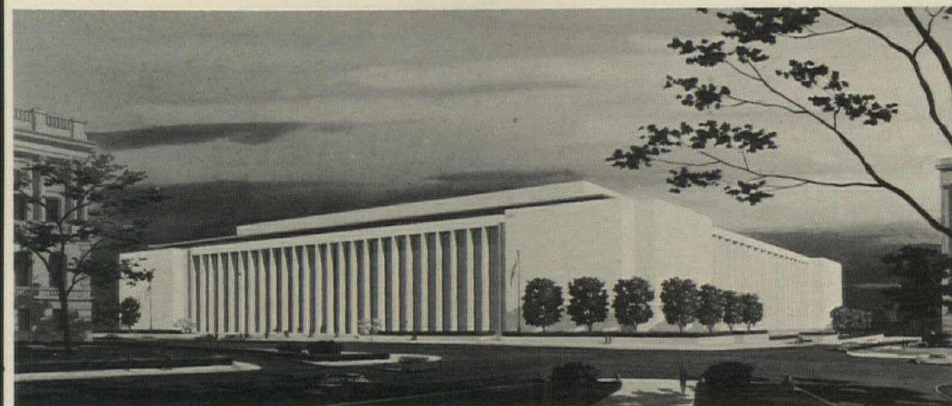
**An industrial and office building** for the Cicoil Corporation, Canoga Park, California, designed by Dorman/Munselli Associates, will include facilities for small electronic parts assembly, raw material processing, storage and main offices. The building will contain 24,000 square feet. Construction will be of precast concrete, with precast sunshields to give sun protection to second floor executive offices. The building provides for future expansion of 60,000 square feet. Construction is scheduled to begin this fall.



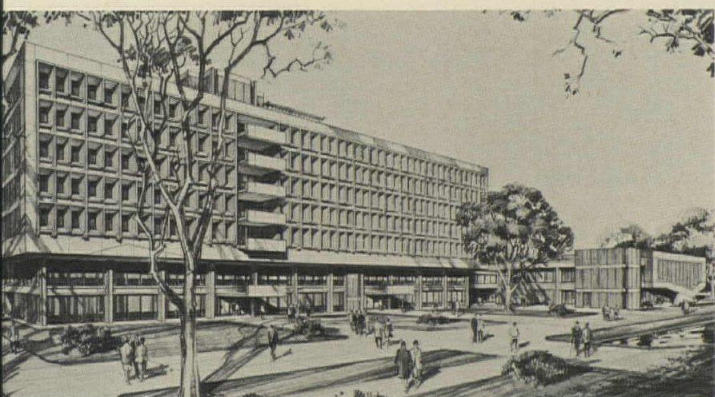
A **rehabilitation center** for Manhattan State Hospital, Ward's Island, New York City, designed by Caudill Rowlett Scott, will expand programs now under way at the mental hospital, preparing patients for their return to normal living. The building, with a capacity of 500 to 1,000 patients, will be composed of one-, two- and three-story elements developed down a sloping site. The white concrete structure will be exposed in all areas and will be integrated with mechanical and heating systems. Other exterior materials are dark buff colored brick and black gasketed curtain wall detailing. The \$3-million project is being erected under the Mental Hygiene Facilities Improvement Fund.



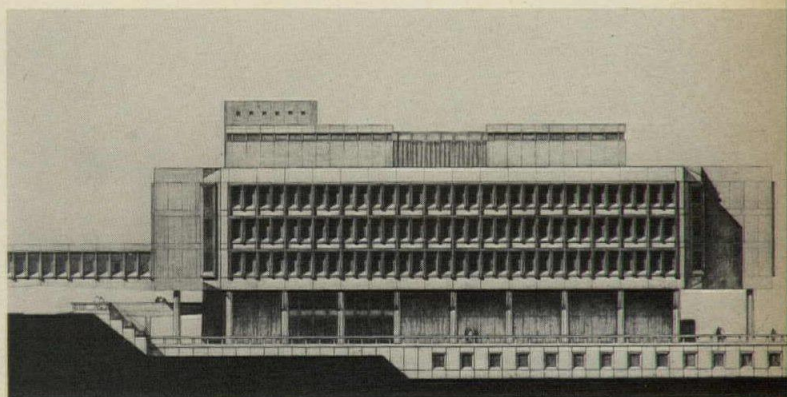
**Number One Corporate Center**, the first in a complex of office buildings at Moorestown Corporate Center, Moorestown Township, New Jersey, designed by Tofani and Fox, will provide approximately 30,000 square feet of office space. Building materials will be brick and steel and windows will be deeply set to provide sun control. Developers of the project are Gross and Kowit.



**The Library of Congress James Madison Memorial Building**, Washington, D.C., designed for the Architect of the Capitol by Roscoe DeWitt, Alfred Easton Poor, Albert Homer Swanke, Jesse M. Shelton, and A. Pearson Almond, associate architects, will be a \$75-million structure with six levels above grade and three below. After disclosure of the design, the Madison Memorial Library Committee of the American Institute of Architects issued a report calling for a new set of design requirements to be formulated by Congress as part of a new master plan for Capitol Hill, and calling the building "visually unsatisfying and functionally inadequate."

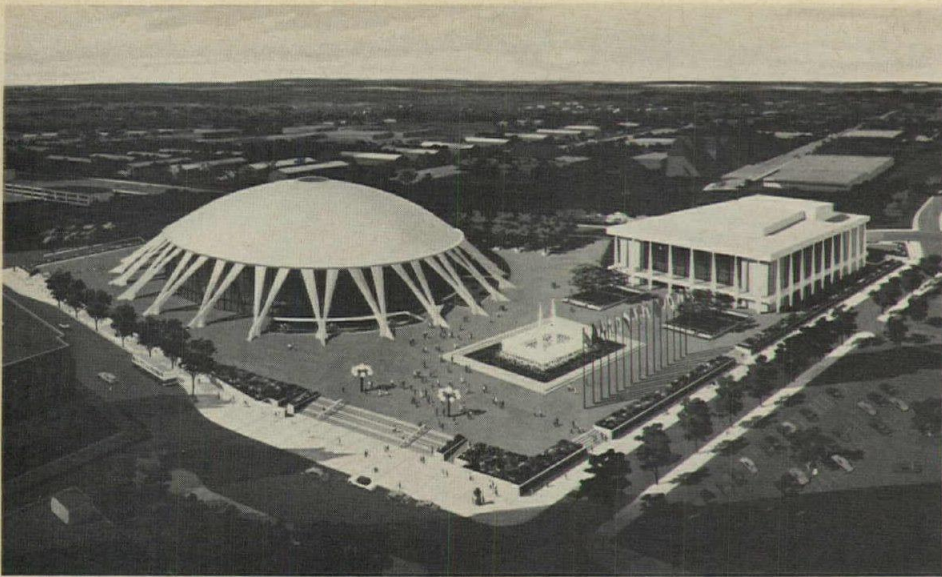


**The Classroom, Laboratory & Office Building**, University of Massachusetts, Amherst, designed by Coletti Brothers, will have a two-floor classroom section connected to a lecture hall section, both of poured-in-place concrete, topped by five floors of offices. The office floors will have no columns—prestressed concrete tees supported on the exterior by precast, post-tensioned concrete loadbearing panels form the floor and roof system.



**The Psychology, Laboratory, Classroom & Office Building**, University of Massachusetts, also designed by Coletti Brothers, is a six-level, \$4-million project using the same type of structural system as the project at left. The upper three floors contain laboratories with offices on the periphery. The lower floors contain classrooms, teaching laboratories and clinic. Acoustical consultants are Bolt, Beranek and Newman, with doors, walls and floors to be acoustically treated.

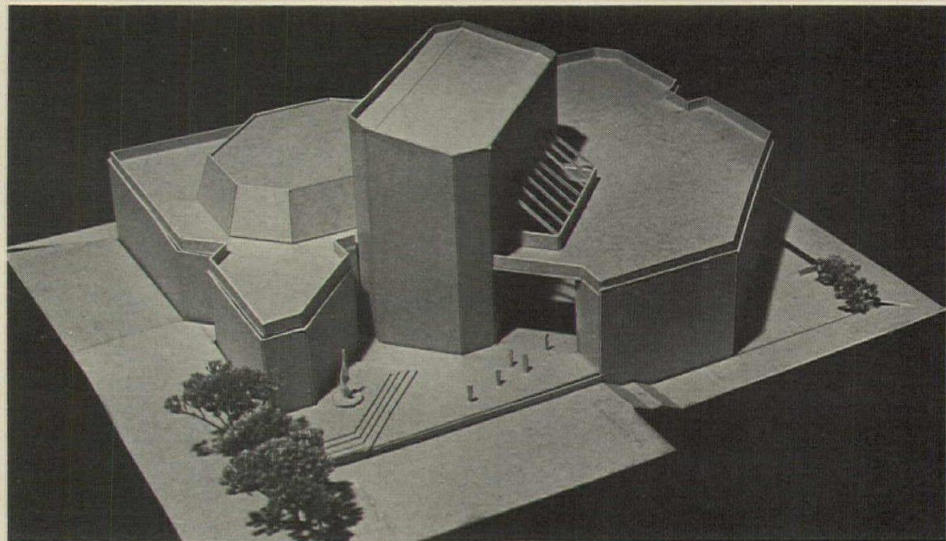




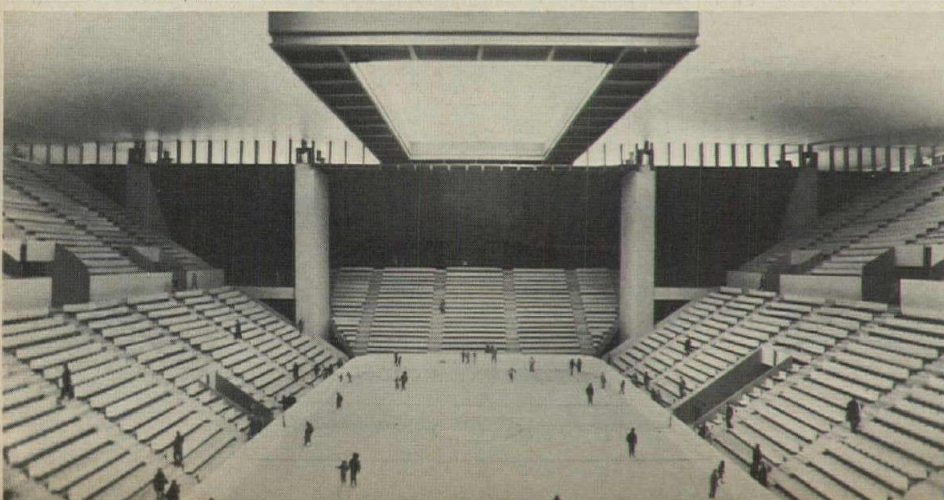
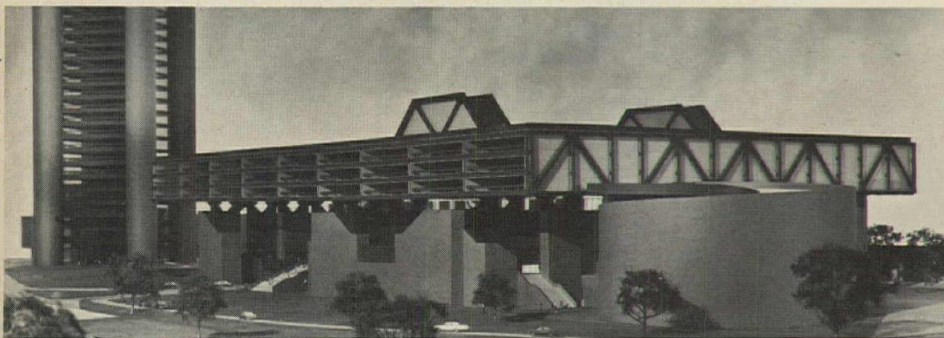
Fred Habit Studio

A cultural and convention center for Norfolk, Virginia, designed by Williams and Tazewell & Associates with Pier Luigi Nervi and Antonio Nervi as architectural consultants, will contain a coliseum seating up to 12,000, a theater building with a main hall seating up to 2,500 and a rehearsal hall seating 400, an underground exhibition space of 80,000 square feet, and an underground garage for 600 cars. The coliseum will be covered by a dome 440 feet in diameter and 100 feet high supported by 24 V-shaped concrete buttresses. Construction on the \$18-million complex is scheduled to start this fall.

The Annenberg School Center for Communication Arts and Science, University of Pennsylvania, Philadelphia, designed by Vincent G. Kling and Associates, will contain three major theaters and their support facilities. Included will be a main theater seating 950, with a proscenium variable in width from 30 to 60 feet, which also converts to a thrust stage; a laboratory theater seating 220; and a workshop theater seating 140. The four-level building, which will cost \$4.1 million, will have as building materials deep-colored red brick, bronze-colored exposed roofing surfaces, bronze-colored window frames and trim and solar bronze glass.



Chalmer Alexander photos

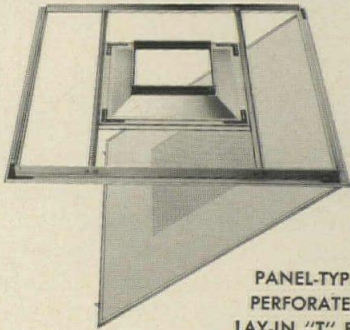


The Coliseum and Convention Center, New Haven, designed by Kevin Roche John Dinkeloo and Associates, will have a four-story, 2,400-car garage structure located on the roof, providing the spanning structure for an arena. Below the garage will be the arena containing a 17,000-square-foot ice rink surrounded by four banks of seating for 9,000. The arena will seat 10,200 for basketball and 11,500 for conventions. Also contained in the structure will be an exhibition hall of 38,000 square feet, with an additional 30,000 square feet of exhibit space available by converting the arena. The \$15-million building, located adjacent to the Knights of Columbus International Headquarters designed by the same architects (September, 1965, page 43), will have supporting columns of reinforced concrete covered with plum-colored tile similar to that used in the headquarters building. The garage will be constructed of a steel which will oxidize naturally to a dark cinnamon brown.

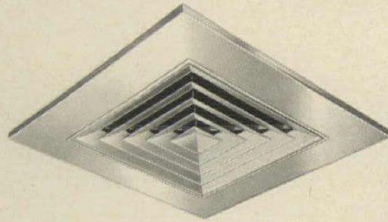


# The ORIGINAL Nylon-Fitted, Vibration-Proofed, ANODIZED Aluminum Grilles, Registers and Diffusers!

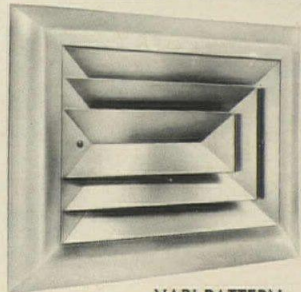
**AirGUIDE Offers a Full Commercial-Specification  
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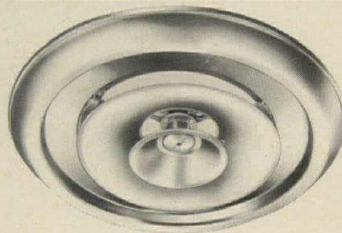
PANEL-TYPE  
PERFORATED  
LAY-IN "T" BAR



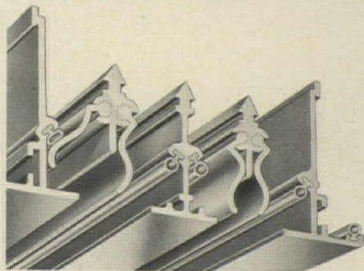
PANEL-TYPE  
LOUVER FACE, LAY-IN "T" BAR



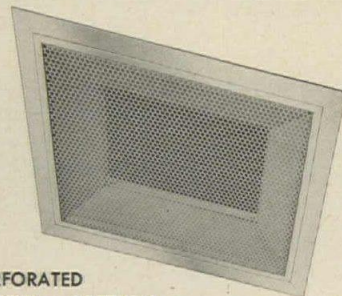
VARI-PATTERN  
1, 2, 3, 4 WAY CEILING DIFFUSERS



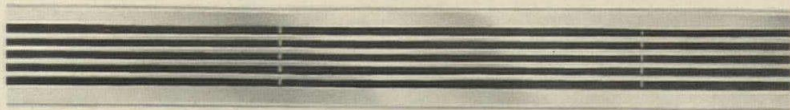
ROUND ANODIZED ALUMINUM  
CEILING DIFFUSERS  
ADJUSTABLE and 2-POSITION



"AIR-SLOT" Continuous - Line  
CEILING DIFFUSERS

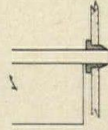


PERFORATED  
SUPPLY and RETURN  
CEILING DIFFUSERS

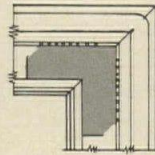


LINEAR CEILING DIFFUSERS

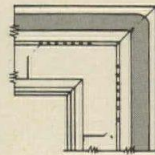
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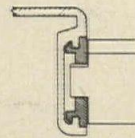
"Corner-loc" miter construction is twice as rugged as any welded corner, tighter too!  
U.S. Pat. No. 3,125,944



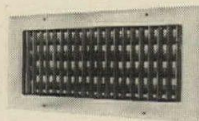
"Air-loc" vinyl gasket is permanent in metal channel. Never works loose. Can't decompose. Positive seal  
U.S. Pat. No. 3,125,944



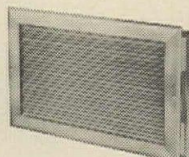
Nylon multi-louver mechanism is foot-proof. No rivets or linkages to rattle or vibrate. Trouble free!  
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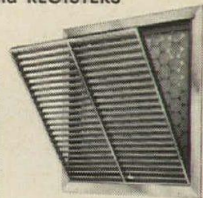
Vinyl inserts cushion Return Air and Door Grille blade assembly. Rugged I-beam mullion adds beauty and strength.  
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GRILLES and REGISTERS



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For more data, circle 24 on inquiry card



## A.I.A. headquarters: pros and cons

Regarding your comments on the new design for the headquarters building of the A.I.A. in Washington, I congratulate you on being bold enough to say publicly what many of us have thought privately. I liked especially your analogy of the "little old lady." Just what the A.I.A. can do now is anyone's guess, but if they do decide to start all over again with another competition, you have my vote as a member of the jury.

*Henry Hardinge Menzies, A.I.A.  
Boston*

It is a mockery to the profession and an insult to its leaders that the Washington Fine Arts Commission disapproved the design for the A.I.A. headquarters that was selected through competition by the A.I.A. board of directors.

How can an agency or commission disapprove a product of a profession that was selected by the very governing body of that profession. By definition the A.I.A. headquarters in Washington represents the supreme decisions in the profession of architecture, the mother art. It is recommended that any architects on the Washington Fine Arts Commission who voted against this design be suspended from the Institute.

*Wallace D. Jeong, A.I.A.  
Los Angeles, California*

Your voice, added to the Fine Arts Commission of Washington, slowly, but ever so surely portends the doom of fine architecture for Washington. The stylized Apian Way which was synthesised so beautifully in Washington is sad commentary on the state of American architecture. The neo-classic, the imitation classic and federal styles designed by architects and non-architects have too long prevailed on the Washington scene.

Truly, we have not done much to preserve our heritage, limited though it may be. However, a building such as the Octagon, which has represented the Gentlemen's Club architectural approach for all too many years, must be replaced with the Mitchell and Giurgola building. The M & G building may not be compatible with the garbage so prevalent on Washington's landscape, but it is a fine building nevertheless and the architec-

tural publications and the A.I.A. must make a stand—a stand much overdue.

The day-to-day practice of architecture and the efforts to convince clients that we cannot rely on applied archaeology is difficult enough. However, when the architects design a building for themselves and it comes under the scrutiny of a body of people who can then qualify the architects, the profession is seriously damaged. I have never heard of a surgeon being criticized for his method of stitching if the patient lived, nor an attorney criticized for his methods in court if his client was acquitted.

Therefore, as a body, we must stand and let the public know that we are one as a unified group. Please stay with your comments which have been extremely well conceived over the past years and do not indulge in criticism again.

*E. Abraben, A.I.A.  
Fort Lauderdale, Florida*

When you finally get round to saying it, you say it right. What you say about the A.I.A. Mitchell-Giurgola project needed saying exactly as you have done.

*Roger Montgomery, Director  
Urban Renewal Design Center  
School of Architecture  
Washington University  
St. Louis*

My congratulations on your "Behind the Record" editorial criticism concerning the A.I.A. office building. Your comments were well conceived, to the point, and well deserved by the architectural profession. Perhaps your fortitude will encourage others to take a more critical look at the aesthetic and planning (or lack of it) attributes of this solution for our national headquarters. Maybe some will even "see" the monster in the back garden!

*Edward L. Verkler, A.I.A.  
Associate Professor of Architecture  
Texas Technological College  
Lubbock*

## From mole hills: mountains

Your editorial and your statement in "Perspectives" in the May issue is to be commended. Anyone whose sole knowledge of architectural practice was derived from reading the professional publications would assume that only Taj Mahals

and Lever office buildings are designed by architects. Unfortunately, this is the literature read by the architectural student, and this is the impression given by the architectural schools, so that the student enters an office with grandiose ideas and is ill-equipped psychologically and technically for the work he will have to do.

The tendency of architects to scoff at the small project is detrimental to the profession. From the point of view of public relations, it is catastrophic. On the one hand our professional organizations pressure the state legislature to restrict the practice to licensed individuals. On the other, we refuse small jobs, frustrating the small home owner. Many read the publicity statements we put out and have their appetites whetted for an architect's assistance. I have received many calls stating, "I have called four architects, and they said this job is too small for them; do you handle small alterations like this?"

Alteration work is a tremendous field and the national manufacturers are just becoming aware of the potential. The number of private dwellings being increased in size or modernized is stupendous. The contractors are learning how helpful an architect's services can be and the home owner, too, is becoming more conscious of our professional ability. Their contacts, in turn, lead to many larger projects. This is also true of small house work as well as smaller industrial and commercial structures. The profession has an opportunity to alleviate the blight on our landscape created by builder-originated monstrosities and should not hesitate to accept its responsibility.

*Leon Rosenthal, AIA  
Babylon, N.Y.*

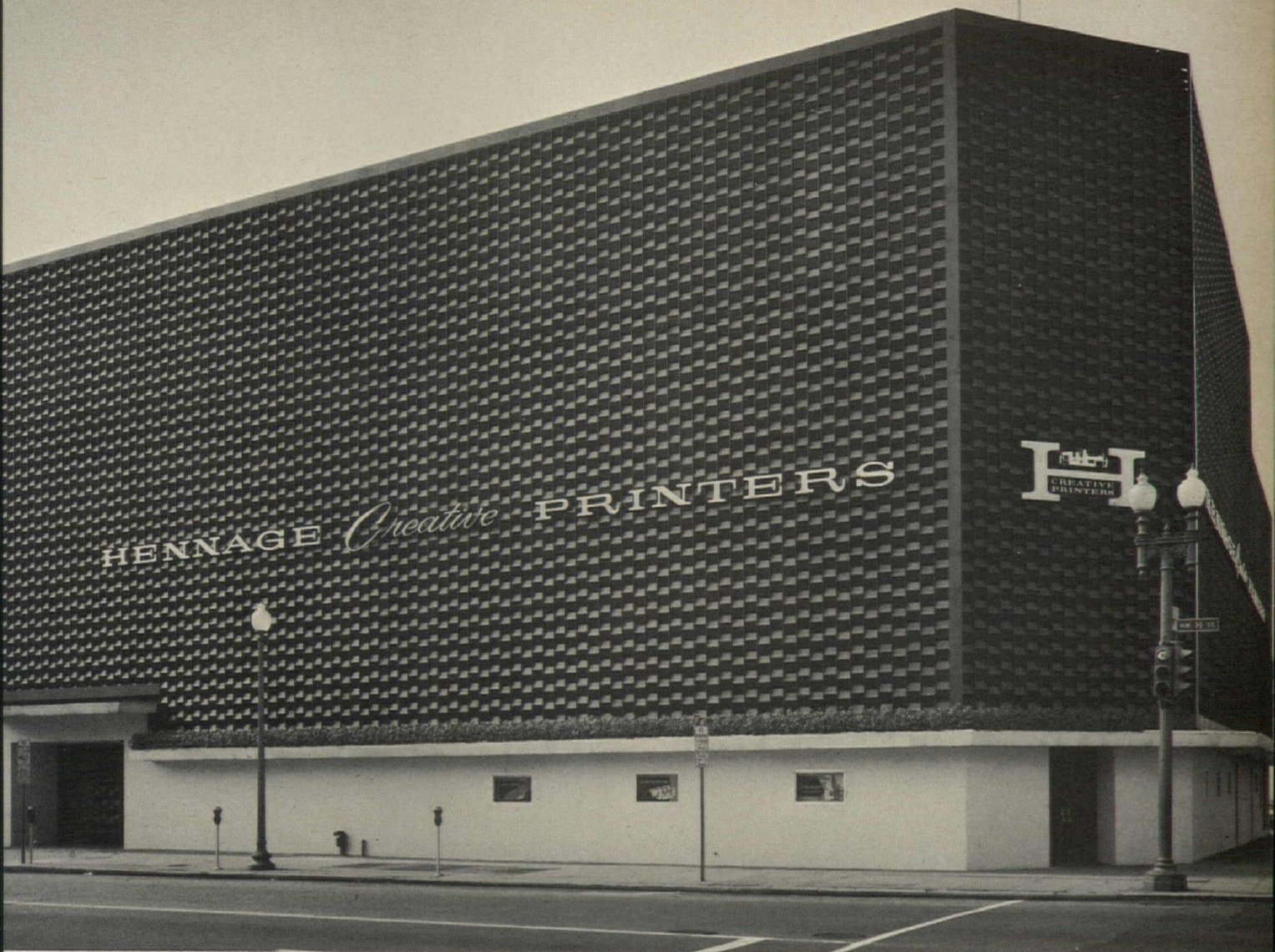
## One more consideration

On pages 87 and 88 of your July issue is an article by Lawrence C. Jaquith, economist, concerning imported building materials. His first paragraph gives an estimate of a half-billion dollars worth of imports going into construction of domestic projects in 1966.

Although Mr. Jaquith points out the effect which foreign steel products,

*more letters on page 50*





ARCHITECT: S. THOMAS STATHES, A.I.A., KENSINGTON, MD.

## "MONUMENTAL"—LARGE SCALE BORDEN DECOR PANEL

The aluminum facade shown on the eye-arresting Washington, D.C. building which houses Hennage Creative Printers is a special custom design, using Deca-Grid style Borden Decor Panel in one of Borden's bold new large-scale patterns known as "Monumental".

Using "T" bars for greater spans and greater strength, these large patterns allow as much flexibility in design as do the smaller versions of Deca-Grid, but add greater scope to the

architect's creative design and provide strong visual impact at greater ranges.

The facade illustrated is the result of close cooperation between Mr. Joseph Hennage, head of the printing firm, and Borden's architectural department. This new design uses structural tees at 12" o.c. and large 7" reversing tabs which give approximately 80% closure to the screen. The resultant strong shading effect nearly eliminates vision of the building behind the screen.

Write for latest full-color catalog on Borden Decor Panel

*another fine product line of*

### **BORDEN METAL PRODUCTS CO.**

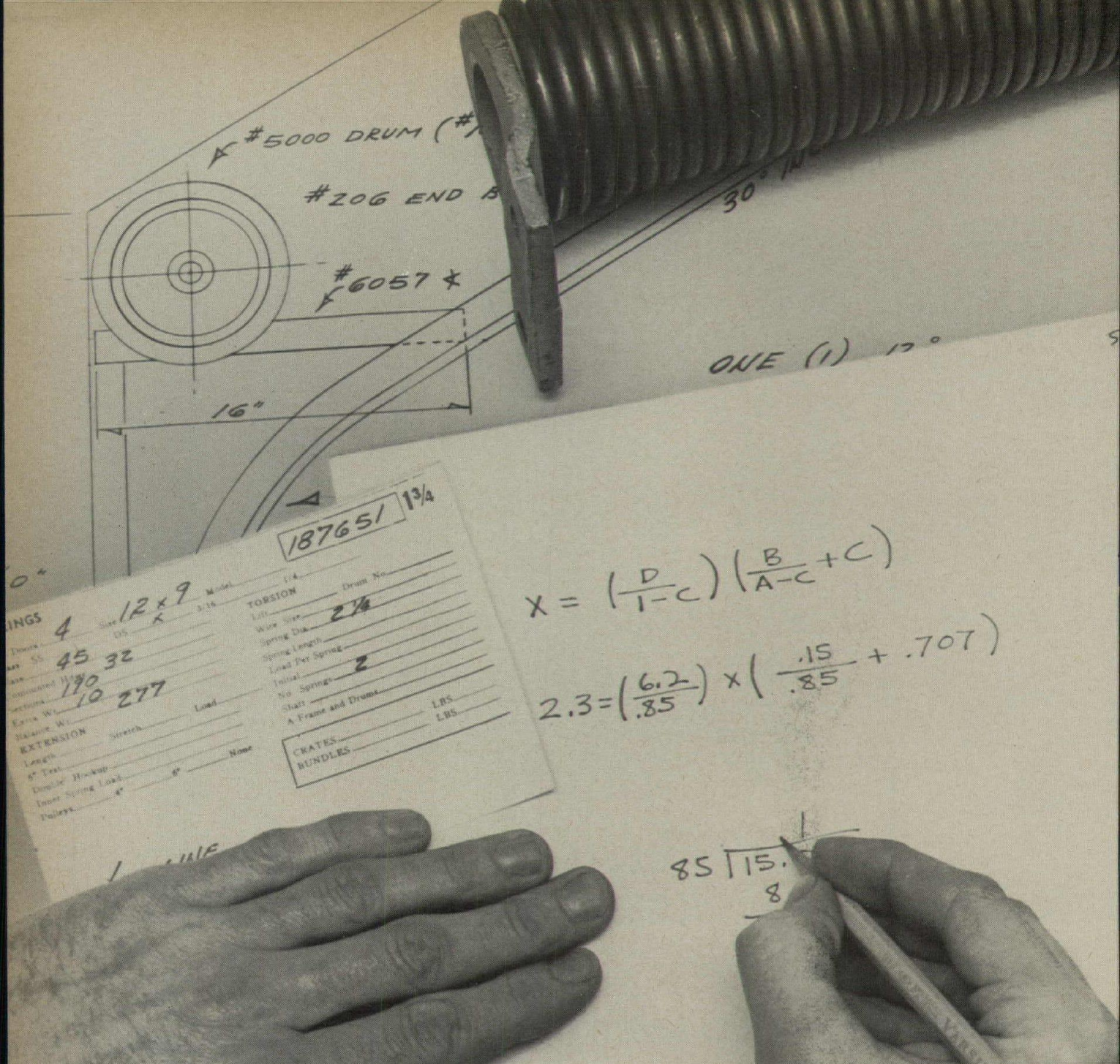
MAIN OFFICE: 822 GREEN LANE, ELIZABETH, NEW JERSEY • Elizabeth 2-6410

PLANTS AT: LEEDS, ALABAMA; UNION, NEW JERSEY; CONROE, TEXAS

When in New York City, see our exhibit at Architects Samples, 101 Park Avenue

*For more data, circle 25 on inquiry card*





## Raynor custom winds springs for each overhead-type door? Why doesn't everyone?

Amazing, but true. Raynor calibrates each spring to within a half pound of the finished door weight! (Even including paint, glass and hardware). Costly? Sure. It also takes extra time and special machines to custom wind and load test every single spring. But, Raynor knows it's the only way to assure perfect balance and longer life in overhead-type doors.

That's another reason why all Raynor doors — wood, Raylon (fiberglass), aluminum or steel — give extra years of smooth, trouble-free operation. And, to top it all off, every Raynor door is permanently registered on data film for positive identification and quick replacement of damaged parts years from now. Specify Raynor — it's the brand you can depend on.



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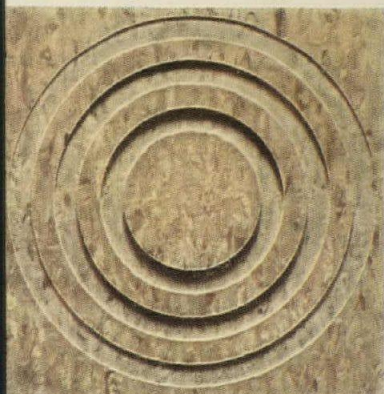
For more data, circle 26 on inquiry card



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 Flooring Contractor: Clark Carpet Company, Albany, N. Y.  
 General Contractor: Conforti & Eisele, New York, N. Y.  
 Architect: Copeland, Novak & Israel, New York, N. Y.

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Turned down sample shows the pattern at 3 depths.

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*continued from page 46*

ceramic tile, lumber and glass have had on American industries, he then makes this statement at the bottom of page 87: "Competition in building materials from imports has a most obvious benefit to the architect and his client—lower costs." He goes on to say that domestic producers may regain their competitive position by "more intensive research" and "new productive methods."

This sounds plausible on the surface, but analysis reveals other factors which were not mentioned as affecting the price of building materials manufactured here vs. abroad. For example, labor costs in the U.S. are upwards of 40 per cent of the selling price for flat glass products. Labor and management costs for a domestic flat glass manufacturer are over 50 per cent of selling prices. Any economist should not ignore this simple fact: when labor and management costs abroad are from one-seventh to one-third of those in America, total operating costs for a foreign firm are approximately 58 per cent to 67 per cent of a U.S. manufacturer. Economists frequently are very facile in avoiding the powder keg issue of the higher wages which U.S. manufacturers have to pay in their factories than do their foreign competitors.

There is little likelihood they will ever be on a down escalator any more than taxes.

While it behooves an architect to invest his clients' money wisely by specifying quality products at a favorable price, architects and their clients are still dependent on American purchasing power for their own future livelihood. Libbey-Owens-Ford's two window glass plants in Charleston, W. Va. and Shreveport, La. have operated at 47 per cent of capacity during the first six months of this year. We have 1,196 fewer hourly workers in these two factories than in 1956. Nine hundred of them live in Charleston which is in Appalachia where the past two administrations have spent vast sums and wept buckets of tears over the plight of the people. Getting down to basics and not theory, these 900 workers would have received over \$7 million annually, based on the U.S. Chamber of Commerce statistics showing that for each 100 industrial jobs a community gains \$803,000 more local income per year.

If architects continue to be a party to the wholesale exporting of jobs to foreign plants, there eventually will be no need for them to design new factories, office buildings, schools, churches, and other buildings, as the greatest country

on earth and in history may become a vast Appalachia. They have the allegiance of our representatives who worked in the dark of the Geneva moon on the favorable-to-foreigners further tariff reductions.

Franklyn R. Hawkins  
Advertising Manager  
Libbey-Owens-Ford Glass Company  
Toledo, Ohio.

*The decision of whether to support foreign industry at the expense of our own industry is one that must be made by each architect and his client depending on all the quality and cost considerations that you suggest. I agree that "new productive methods" are an over-simplification of the possible solutions. We, as editors, do not underestimate the seriousness of the problem facing you and other manufacturers, but we do feel we must give our readers all the information possible with which to make their decisions.*

—WW

#### **Air conditioning and architecture**

I have just finished re-reading the two parts of your excellent survey on air-conditioning, and I want to congratulate you on this really superior presentation. The text is clearly written and technically cor-

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GENERAL  ELECTRIC



rect, and the illustrations are excellent. All in all, it is a first-rate job, and every architect could profit by a careful study of this material.

I lecture in the College of Architecture at Arizona State University, giving the course which is called Mechanical and Electrical Systems. Most of our first semester is taken up with air conditioning, and I would like very much to be able to use your articles as supplementary text material. They are far better than the textbook that we are currently using. My students are fourth-year architects, and a good proportion of them work part-time in the architectural offices here in the Phoenix area. I make a practice of giving copies of ARCHITECTURAL RECORD as prizes to my students when they do exceptionally well on quizzes, term projects, and examinations. The man who gets the highest score receives the current issue—but I do not want to give away the July and August editions, because this material is too important.

*John I. Yellott, President*

*John Yellott Engineering Associates  
Phoenix*

#### Money: a point missed

I would say that the only point missed in an otherwise excellent article on Mont-

gomery Village (July, pages 134-141) was the complications involved for the developer and his team in working under this town sector ordinance. These are not only technical but monetary. It is obvious that a great deal of front money for both design and development is necessary to achieve the desired goals under this procedure; more than under the normal development pattern.

You may want to go into this point, and I think it is an important issue, as many developers have had serious trouble getting into projects and not realizing the depth of the water.

In the July, 1965 zoning application document, this cost is partially spelled out. The investment in planning is not covered in the report, but on page nine of the Dewberry portion of the report, it indicates that 18 months went into preparation of the documents and exhibits. Naturally a substantial amount of time and money has been spent since then and only now is it evident that construction is underway.

*George E. Kostritsky*

*Rogers, Tailiaferro, Kastritsky, Lamb  
Baltimore, Maryland*

#### So much praise and so little space

Like other Canadian architects, I was

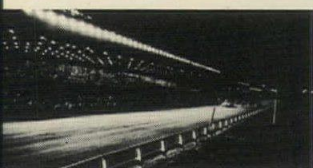
pleased by RECORD's generous coverage of Expo '67 in the July issue and particularly flattered by the inclusion of the Ride Center and its buildings, representing the La Ronde Amusement Area.

Perhaps it could have been noted that La Ronde is much more than the Ride Center including such attractive projects as Fort Edmonton, an old west village; Children's World; the Carrefour, an international shopping bazaar; the Garden of Stars theater; Le Village, a beautifully scaled version of old Quebec; and more. It has been compared with Tivoli in Copenhagen, but it has an up-to-date bezaz all of its own. All of this work was planned and designed by private architectural firms, landscape architects, site planners and industrial designers with co-ordination by the chief architect's staff. It is unfortunate that in general reportage or even in the official Expo guide, little or no credit has been given for the work at La Ronde.

Like a number of popular magazines, RECORD photographed the Ride Center and its gateway as typifying the "fun" of La Ronde. You will therefore excuse my small display of chargin when I observed in relation to this photograph, the sole attribution to Mr. Sean Kenny and his

*more letters on page 58*

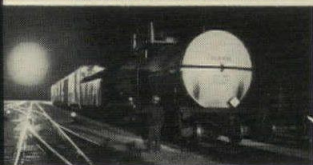
# SPOT<sup>TM</sup>



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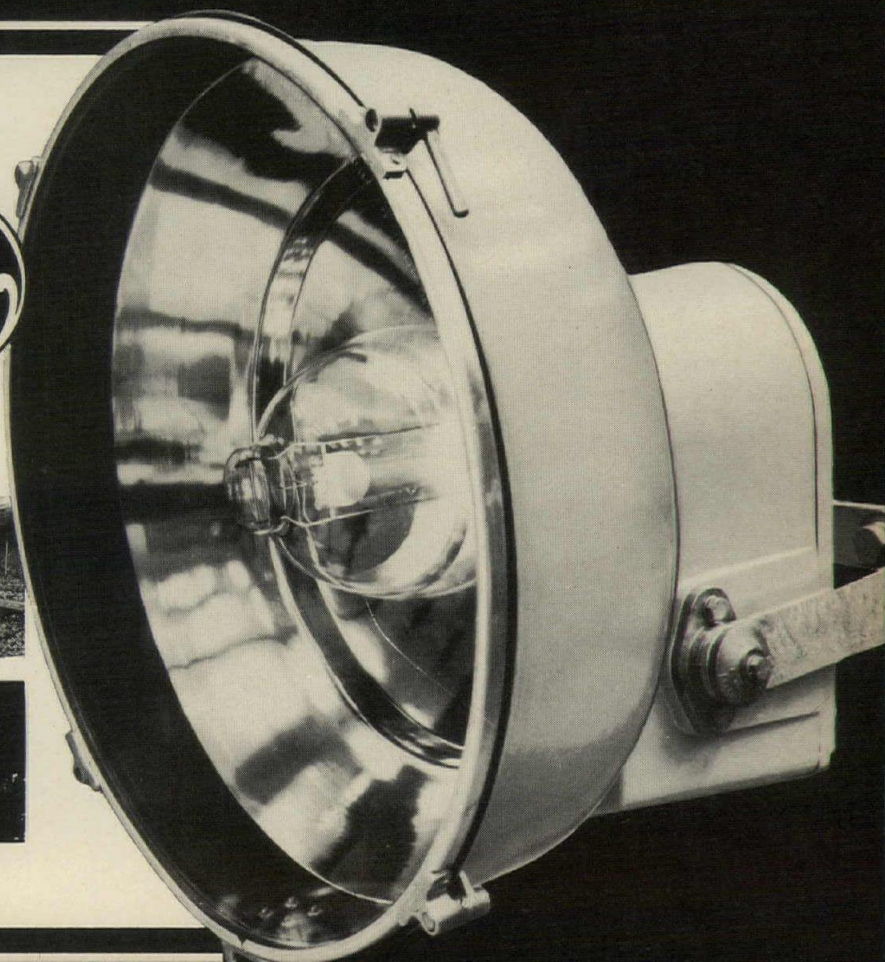
sports fields . . .



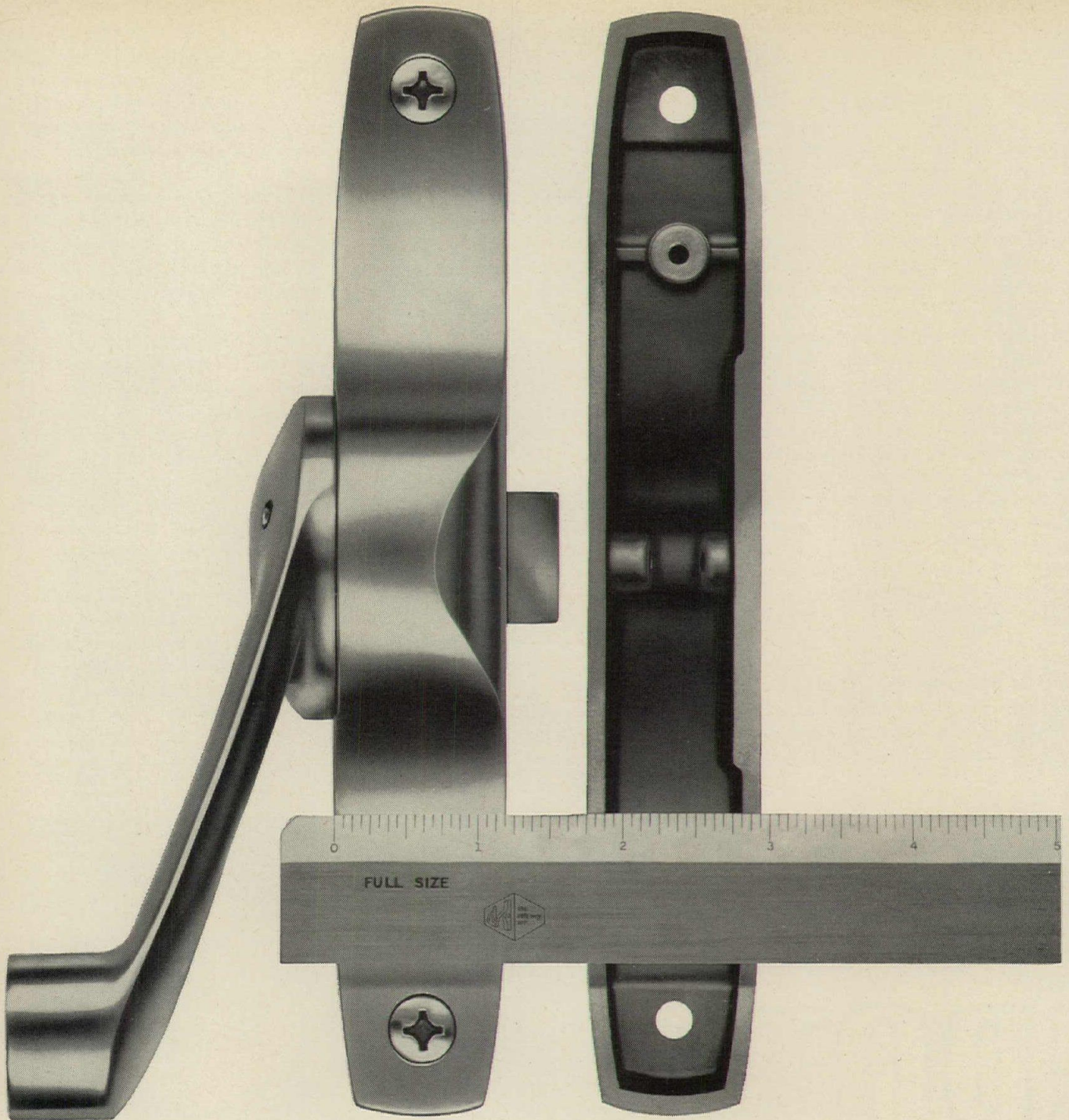
railroad yards . . .



and architectural lighting.







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**UNITED STATES GYPSUM**

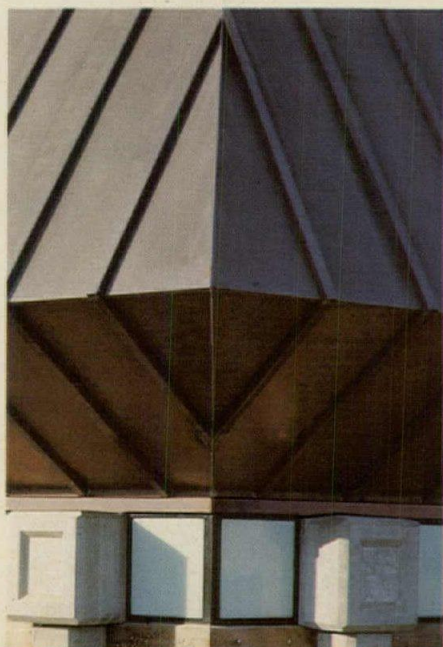
\*Reg. U. S. Pat. Off. †Patent Pending

*For more data, circle 164 on inquiry card*

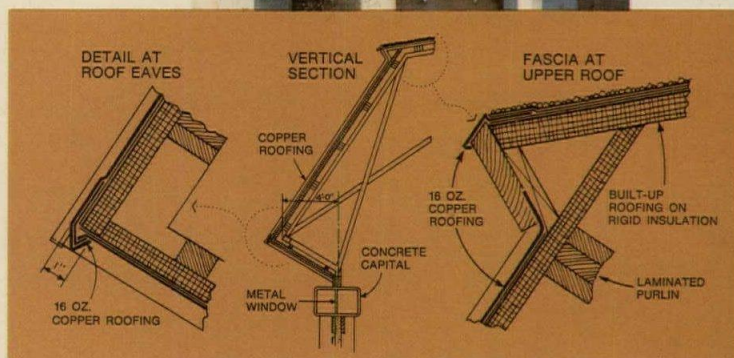




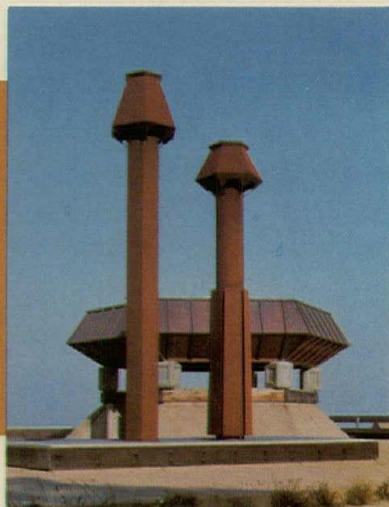
**New Field House, University of California at Santa Cruz.** Copper encloses the terminal chords of the two-way steel truss that spans the large main area of the building. Repetition of copper above an open stairway unites the design. The unusually prominent drip created at the eave gives strong definition to the roof.



**The workability and rich color of sheet copper** were used to good advantage by architects Callister, Payne and Rosse in the design of this college athletic building. Copper combined perfectly with the buff of the concrete and deep color of the redwood. A few years of weathering should make them harmonize even more beautifully. The ease of joining and forming sheet copper simplified the installation. And the enduring copper roofing, flashing and fascia should require no maintenance for many, many years.



Details of the roof eaves and upper roof fascia are shown above. For a new 96 page handbook of sheet copper fundamentals, design details and specifications, write for "Contemporary Copper".





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It's unusual because it combines the luxury of pile with the practicality of vinyl. Without the disadvantages of either.

### The Unique Powerbond Sandwich.

Powerbond is constructed like a sandwich. With 4 distinct layers of materials fused together. (Fused, not simply glued.)

There's a super-dense pile of Allied Chemical commercial nylon with a circular cross-section. Over 168,000 tufts a sq. yd. More than twice as dense as normal commercial carpet.

Next, a polypropylene primary back. Then a pure vinyl precoat. Finally, a secondary vinyl cushion backing. Or a solid vinyl back plate, where extra cushioning isn't necessary. (Note the total use of vinyl. For ultimate stability.)

Powerbond is powerful. It anchors pile loops for life. In fact, they'll have to break before they can loosen or unravel.

Another thing. The vinyl backing allows Powerbond to be cemented to any type of floor. Permanently cemented. Not even moisture can affect it.

**The Beautiful Wear Plan.** There isn't a commercial application where Powerbond couldn't be used. Including hospitals, offices, schools, supermarkets, etc.

Its 12 colorful tweed combinations are easy on the eyes. While the super-dense pile is easy on the feet. It also muffles noise. Prevents expensive product breakage. And won't ripple or buckle. Ever. So anything on wheels rolls easily on its smooth surface. But people won't slip.

And talk about wear. Powerbond is rugged and abrasion-resistant. Scuff marks won't scuff. Or mark. Spiked heels won't spike. And traffic patterns won't show.

### Maintenance is Last. And Least.

The super-dense cylindrical-shaped pile is so super-dense it holds spills, dust and dirt right on the surface. So they can be vacuumed or sponged off. Quickly, easily. Without special know-how or special cleaning aids.

So maintenance takes less effort, time and money.

Which will really floor your clients.



Send more facts and swatches on new Powerbond Pile Vinyl.

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Title \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_  
State \_\_\_\_\_ Zip \_\_\_\_\_

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Contract Division Dept. 14

\*TM of Collins & Aikman

For more data, circle 31 on inquiry card

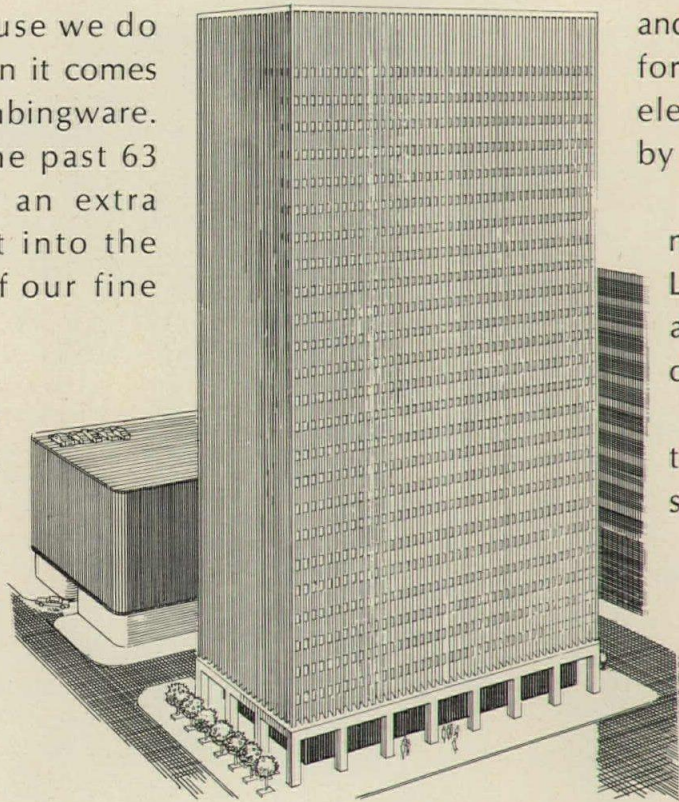


# What do architects and Eljer have in common? Our reputations. And we can't afford to lose them.

Let's face it. Every time you design a building, you put your reputation right on the line.

We know. Because we do the same thing when it comes to designing plumbingware. That's why, for the past 63 years, we've put an extra measure of effort into the Master Crafting of our fine fixtures.

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Natural Gas Building, which is completely equipped with our fixtures—466 to be exact.

It's Houston's first total-energy building, and its unique power system for all heating, cooling and electrical needs is provided by gas-fueled turbines.

When designing your next building, specify Eljer. Like you, we build a product as though our reputation depended upon it.

For further information call your Eljer representative or write: Eljer, Dept. AR7, P.O. Box 836, Pittsburgh, Pa. 15230.

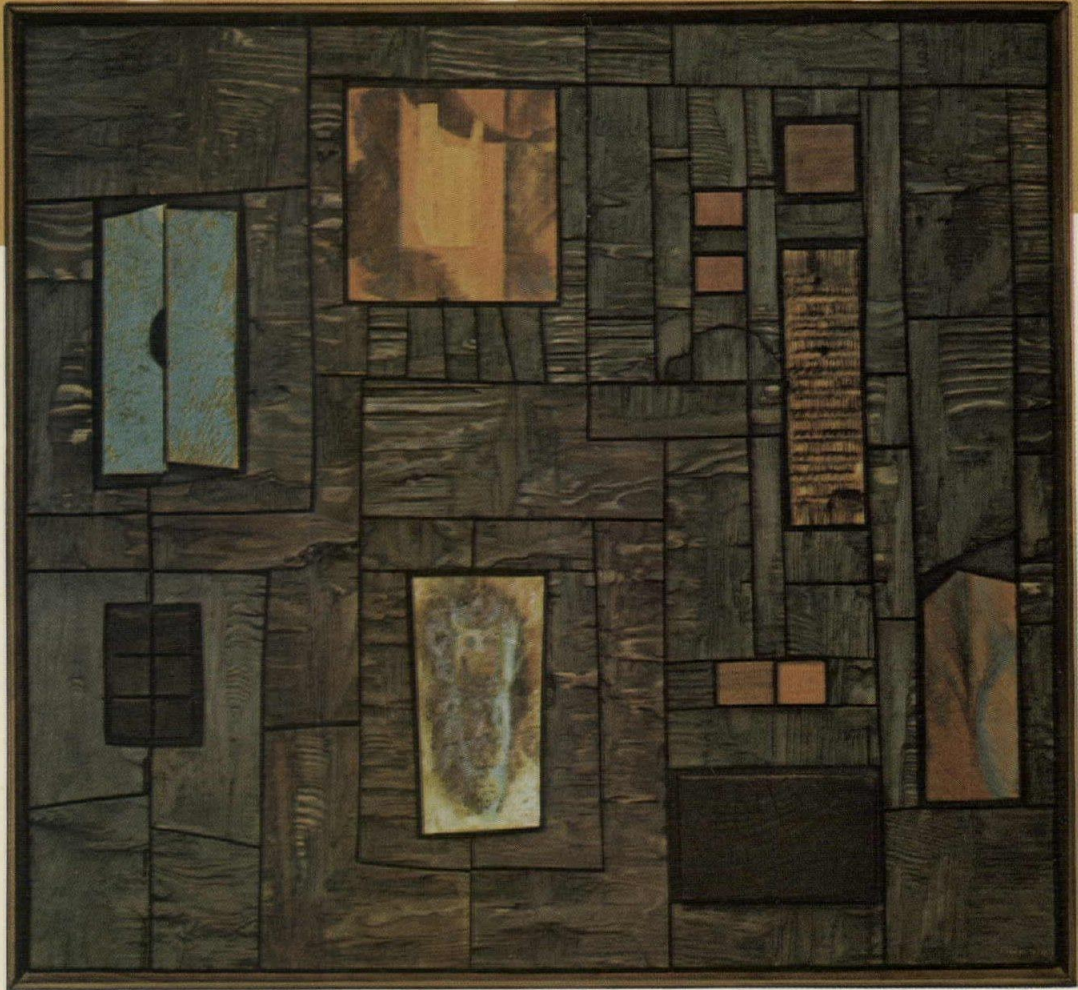
Houston Natural Gas Building / Architects: Lloyd, Morgan and Jones, A.I.A., Houston, Texas / General Contractor: H. A. Lott, Inc., Houston, Texas / Mechanical Contractor: Keith Plumbing and Heating Co. / Owner: Century Properties and Gulf Interstate Co. / Wholesaler: Thermal Supply Co., Houston, Texas

**MASTER CRAFTED**  
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SINCE 1904 FINE PLUMBING FIXTURES

Eljer Plumbingware Division/Wallace-Murray Corporation

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**Dark Night** by Robert Pierron—a sculptured wood relief from the private collection of WOODWORK CORPORATION OF AMERICA

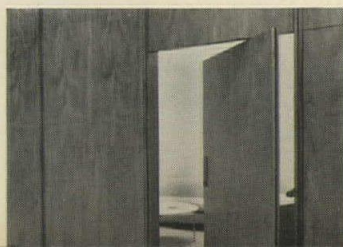
**FREEDOM TO CREATE IN WOOD...** The promise of wood in the hands of a sensitive designer adds beauty to structure... form to function... feeling to flexibility. For more than two generations our single-source custom service has enabled architects and designers to unleash their total creativity on the wonderful warmth of wood. We invite you to think of wood as the medium... freely... unconcerned with construction and installation. We can produce it.



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## LETTERS

continued from page 51

associates, the designers of the Gyrotron. The Ride Center was planned and designed by this office as were the building block structures that house games and food concessions.

Our work formed part of a collaboration by Norman Slater, architect and industrial designer, Francois Dalle-gret, designer inventor of weird automobiles and electronic sculpture and Len Levitan, industrial designer.

The task was considerable and involved researching the nature of fun in design terms, in a limited time.

Joseph Baker Architect  
Montreal, Quebec

The credits given for the pictures in our July issue were the only ones we could find in the massive Expo Information Manual. We are sorry if the pictures were not credited properly.

Please realize, however, that it would be impossible for us, in the space we have, to list every architect, planner and designer involved in La Ronde.



## A healthy perspective

Some months ago, a friend of mine cleaned out the attic of an old house and came across a pile of RECORDs, dating from 1923 into the early 1930's. I have enjoyed leafing through them and am beginning to feel that my attitudes towards architecture are developing a healthy perspective through these old magazines. Particularly interesting are the articles concerning "modern design." I noticed one illustration from the October 1930 issue (above left) of a handsome—and imaginative—design of an office building by Mies and was reminded of an apartment tower in Chicago (right) now under construction which is shown in a current issue of one of the concrete industry magazines. What is the saying about a prophet not being honored in his time?

Fielding L. Bowman, A.I.A.  
New Canaan, Connecticut

P.S. RECORD is doing a fine job; each issue is interesting and informative.

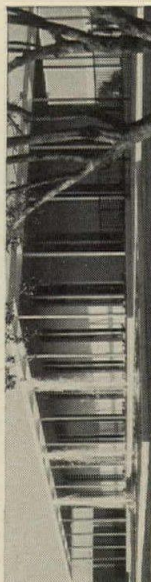


## Missile Systems Div. of Atlantic Research Corporation selects two Da-Lite® automatic projection screens.

The Atlantic Research Corporation's Missile Systems Division, Costa Mesa, California, utilizes two projection screens. Both fully automatic. And both made by Da-Lite, the originator of the first electrically operated screen.

**Why Da-Lite?** Fully automatic operation—goes down and up, and out of sight, at the touch of the button • Ease of handling • Space conservation • Built-to-last construction • And sensible prices.

Electrically operated Da-Lite screens (4 models in all) are designed for easy installation on the wall, ceiling or



within the ceiling. Sizes from 50" x 50" thru 20' x 20'. The Da-Lite screens were purchased from A. F. Milliron Co., Inc. Write for information and the name of a franchised Da-Lite dealer near you.

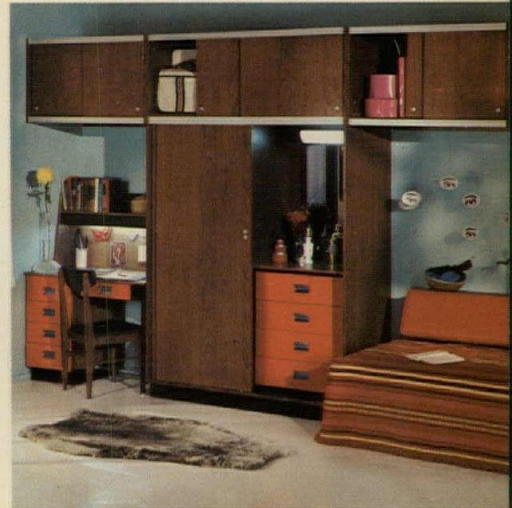


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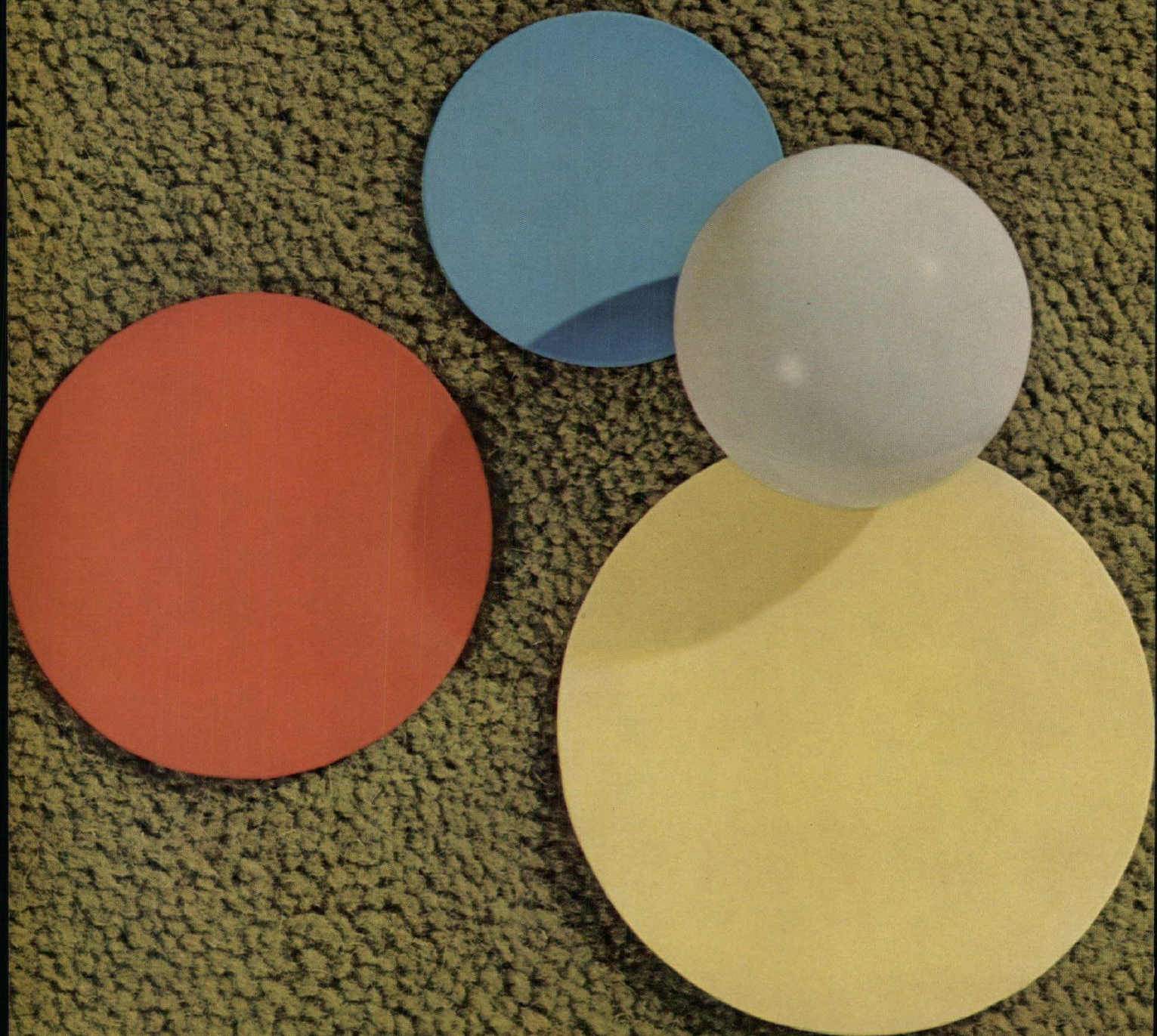


**ROYALMETAL**





# PRISMATIC LIGHTING





# how it shapes light to reveal color, texture, form

Color, texture, form—these are the elements you design with. The lighting you specify must reveal them fully and faithfully. How well lighting performs this task determines the success or failure of any job. Here are some facts you should know about a lighting tool that brings out all the color, texture and form you put into your design—the Holophane prismatic CONTROLLENS.®

## Controlling light

The Holophane Controlens, as its name indicates, is a lens designed to control light. Like a louver, frosted globe or diffusing panel, it is placed between the raw light source and the eye. Unlike these other enclosures, however, the Controlens has a surface of prisms precision-engineered to direct light rays where they work most effectively to reveal texture, define form and enhance color.

## How the Controlens reveals texture

A textured surface consists of peaks and valleys. Excessively directional illumination floods peaks with light, leaves valleys in dense shadow. Totally diffused light illuminates peaks and



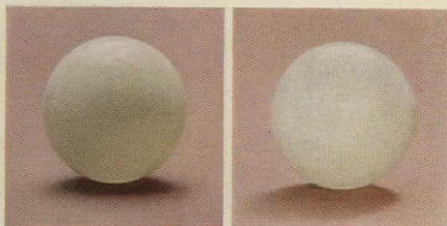
Texture is fully revealed under Controlens illumination.

valleys equally. Definition is lost, appearance is bland and lifeless.

Holophane Controlens avoids these extremes. It delivers a *balanced blend* of directional and diffused light—*controlled* light that produces good highlights and just the right amount of shadow to bring out all the character and detail of the materials you design with.

## How the Controlens defines form

Strictly directional light obscures form by overdefining it—lighted areas are too bright and shadows too dense to convey the shape and feel of an object. Completely diffused light, on the other hand, produces insufficient contrast and creates an uninteresting, one-dimensional uniformity.



Shape is completely defined (right) under light from Controlens. Highlights are good, shadows soft. Under improper lighting (left) highlights are missing, shadows excessively dense and harsh.

The Holophane Controlens delivers enough directional light to achieve shadow and definition, and enough diffused light to avoid harsh contrast. The forms in your design emerge fully modeled and defined.

## How the Controlens enhances color

This same careful combining of directional and diffused light enables the

Controlens to reduce the color-veiling effects of glare to a minimum. The result is *balanced* illumination that calls forth all the richness and drama of the colors you specify.



True, rich color (right) emerges when illuminated with light from Controlens. Excessively diffused light (left) veils true object color.

## How to specify the Controlens

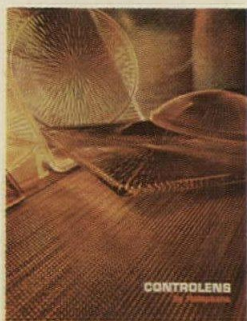
The Holophane Controlens comes in a broad range of sizes, shapes and styles—in both acrylic and glass—to satisfy all your requirements for fluorescent and incandescent lighting. Holophane manufactures the Controlens for more than 50 leading fixture manufacturers. You can specify a Controlens for practically any make or model of luminaire.



A round Holophane Controlens in a recessed incandescent luminaire.

Write for Holophane's illustrated, 64-page Controlens catalog. It contains specifications and full data on the widest and most versatile line of prismatic lenses available. The booklet is free to designers, and there is no obligation.

# HOLOPHANE



Holophane Company, Inc.  
1120 Avenue of the Americas  
New York, N.Y. 10036

H10

Please send me the 1967 Controlens Booklet

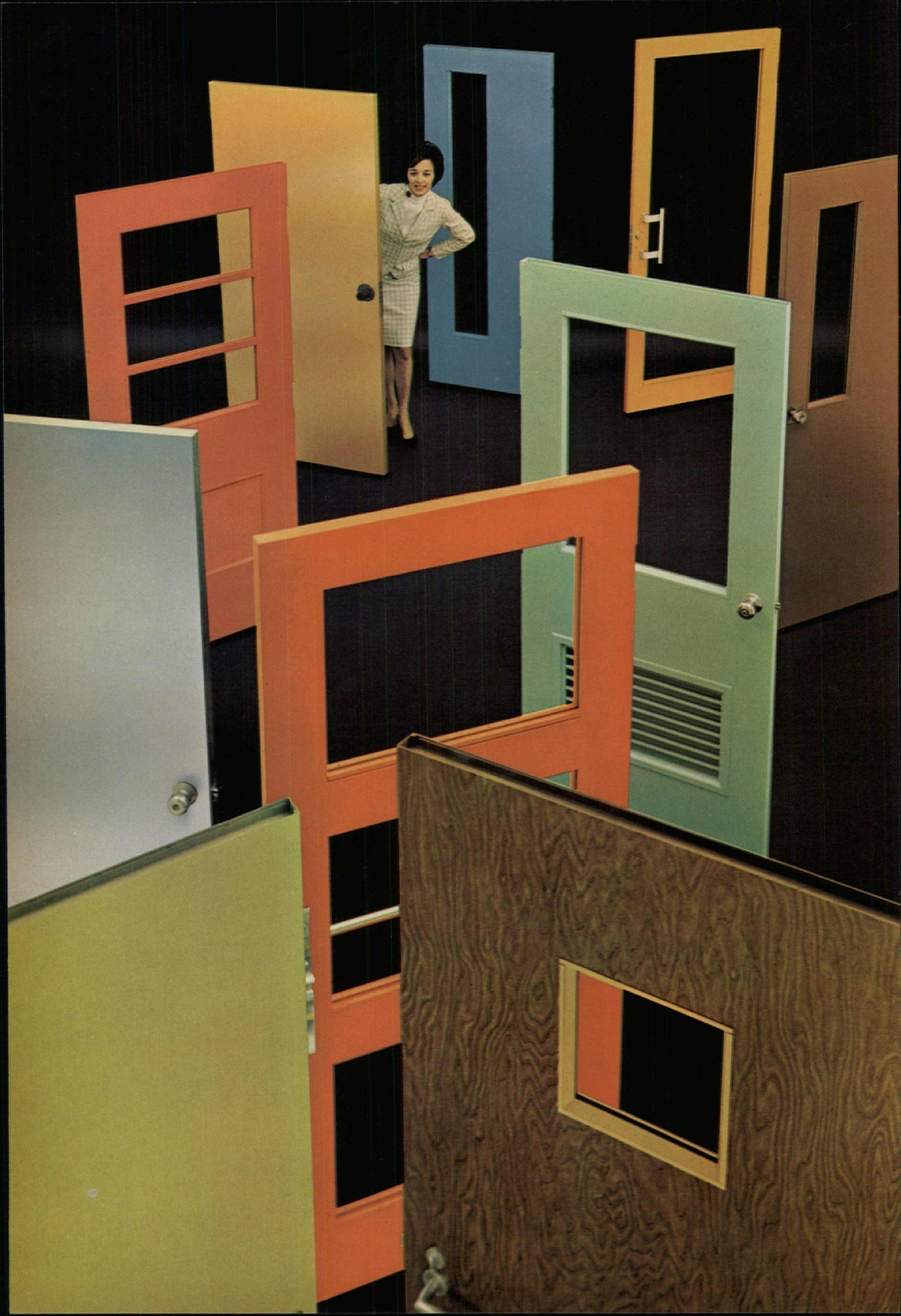
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# The pick-a-door line

**Discover Versatility. Discover Steelcraft.**

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Discover the vast, new world of design opportunities that are yours through unlimited choice. Discover Steelcraft. Send for our color folder, "The Pickadour Line." Do it today. Write Steelcraft, 9017 Blue Ash Road, Cincinnati, Ohio 45242 U.S.A.



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For more data, circle 36 on inquiry card



# Prestressed concrete slabs go up at the rate of a-floor-a-week in high-rise Denver condominium

More than 500,000 square feet of prestressed concrete double tee slabs helped complete Denver's 22-story Polo Club Condominium a month ahead of time.

When crews were ready for these 8-foot-wide slabs, the slabs were there. On-time delivery from the prestressed concrete supplier, teamed with erection directly from flatbed transport trailers, resulted in slab placement averaging one floor a week.

The Polo Club is one of the tallest reinforced concrete bearing wall buildings in the area designed for both wind

and seismic loads. It features a large, enclosed atrium, roofed with prestressed beams and fiberglass domes for year-round enjoyment.

An added benefit appreciated by residents in this 158 unit, multi-story structure is prestressed concrete's good sound absorption quality.

Today quality conscious prestressed concrete suppliers throughout the nation are relying on TUFWIRE® and TUFWIRE Strand for their prestressing needs. Whether for high-rises, parking decks, offices, bridges, or recreational

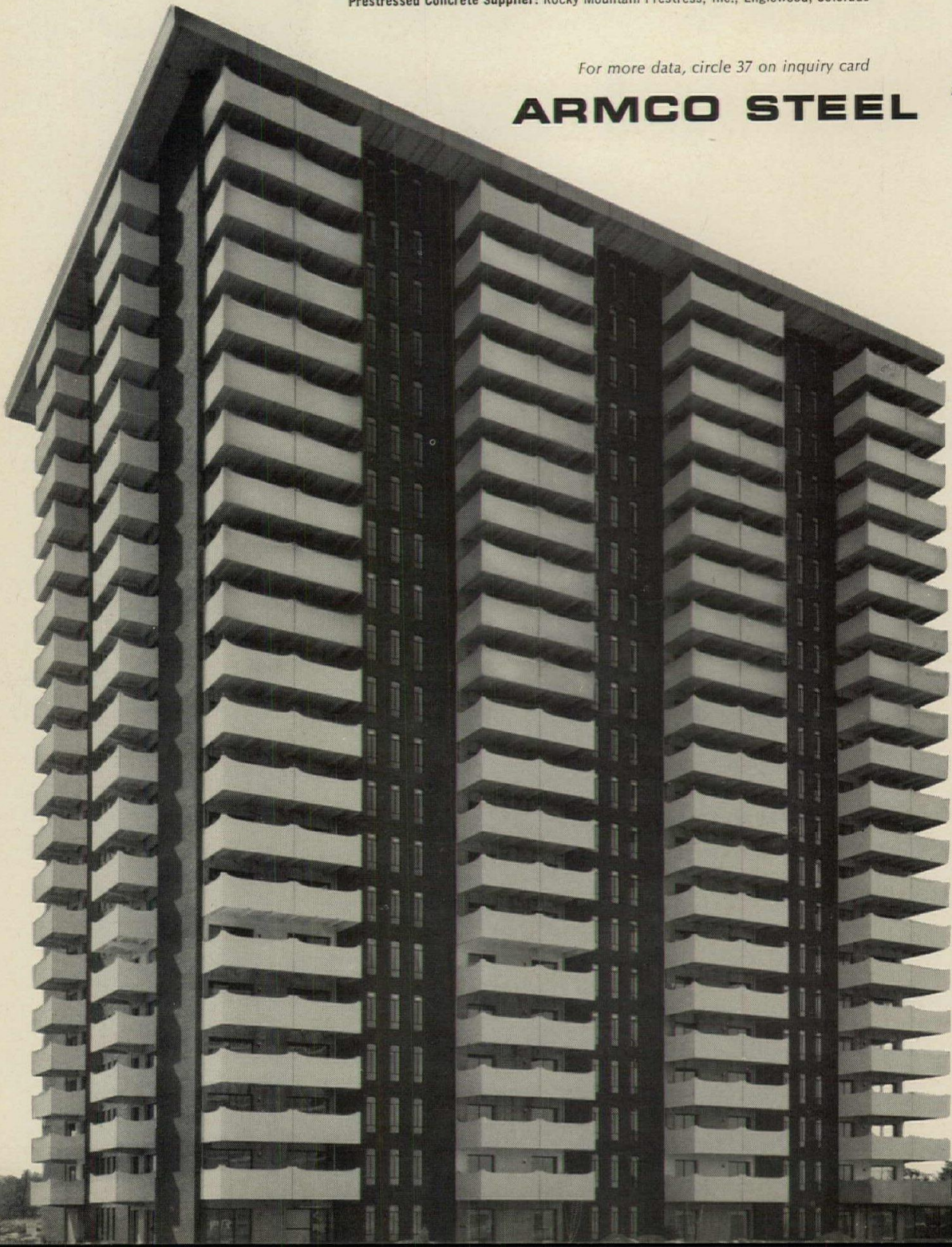
centers, they find continued satisfaction in TUFWIRE Products backed by years of service-proved dependability.

Many of these prestressed concrete projects are described in our illustrated booklet *Prestressed Concrete—a Growing Concept in Construction*. For a quick look at this popular building technique, write for your free copy today. TUFWIRE, TUFWIRE Strand, and other Union Wire Rope Products, are made by Armco Steel Corporation, Department W-3147, 7000 Roberts Street, Kansas City, Missouri 64125.

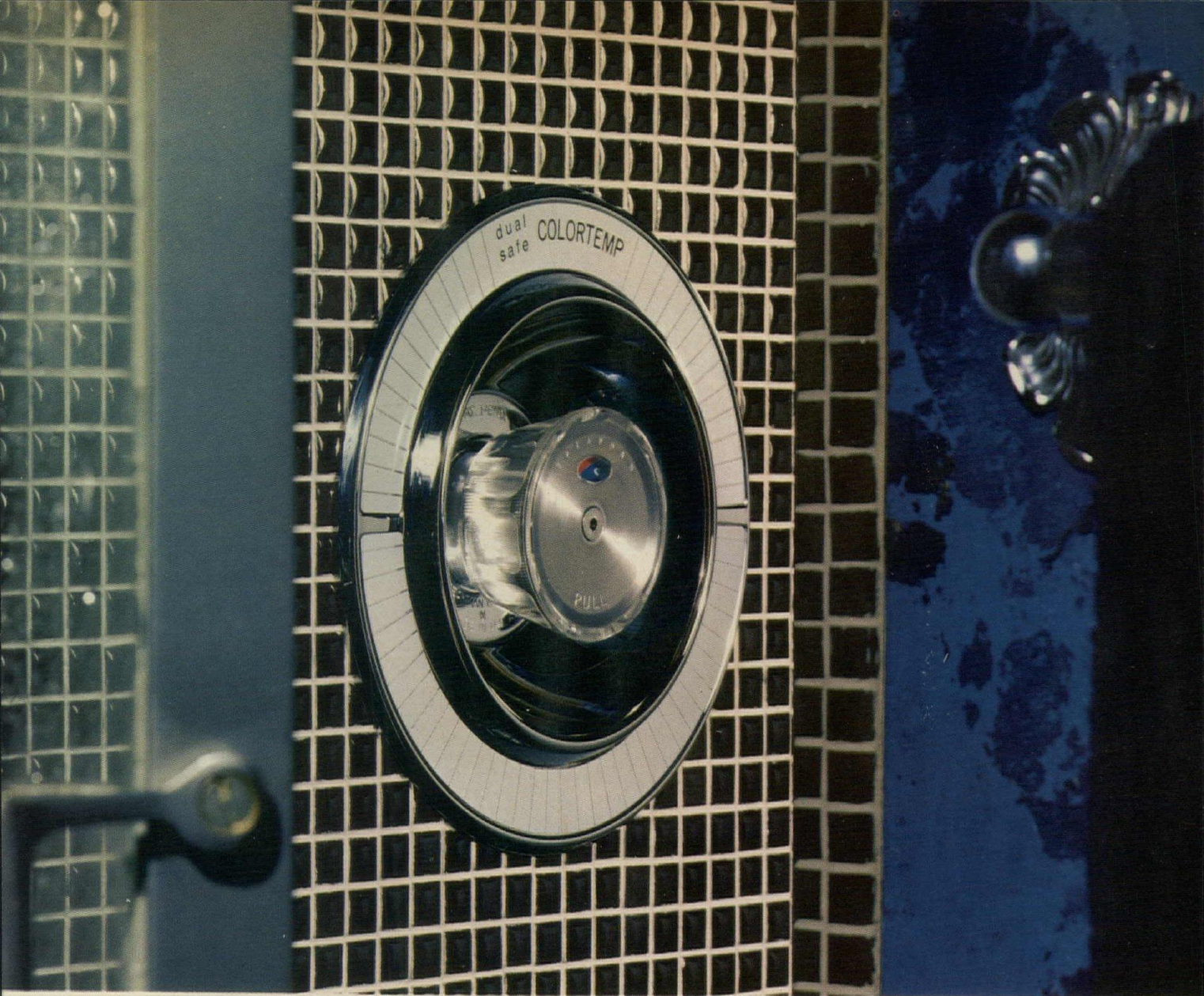
Owner: The Polo Club, Inc., Denver, Colorado  
Architect: Roland Wilson & Associates, Denver, Colorado  
Structural Engineer: Sallada and Hanson Consulting Engineers, Denver, Colorado  
General Contractor: Craftsmen Construction Co., Inc., Denver, Colorado  
Prestressed Concrete Supplier: Rocky Mountain Prestress, Inc., Englewood, Colorado

For more data, circle 37 on inquiry card

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# You'll have to face it. An office divider should be good to look at.

If everyone had a private office, you wouldn't need to specify Panel Dividers. But they don't. So you do.

Our Panel Dividers embody a revolutionary new concept in office dividers. It's called beauty. Take a look at ordinary partitions and you'll see what we mean.

We figure that if you surround people with attractive panels instead of ugly ones, you'll help their morale. And their output. It won't hurt your client's corporate image, either.

Our Panel Dividers are just the right height. Fifty-two inches. So they won't interfere with air conditioning or lighting. But they will interfere

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The design is the same as our other contemporary style furniture. Blends in handsomely. And you can leave them free-standing or furniture-support. Either way, they won't fall down on the job.

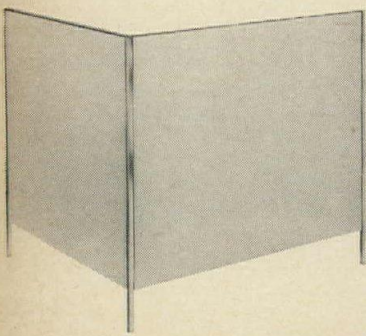
Art Metal furniture looks beautiful and beautiful—a solid investment for management.

We'll be happy to send you a brochure of our "5200" Panel Dividers, and tell you where they can be seen.

Write today. You'll hear from us, posthaste.



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## We'd like to thank the Tulsa Airport for giving us a great story on Four Seasons® carpeting.

**The problem:** 700 sq. yds. of unsightly concrete.

**The solution:** 700 sq. yds. of Royal Red Four Seasons.

**The results:** An enhanced passenger service image, and a colorful and practical new setting for the building itself. Not to mention comfort and non-slip safety for passengers.

The airport management selected Four Seasons by General Felt Industries for the outdoor installation because of its proven ability to withstand wear and tear, and for the ease and economy of installation and upkeep.

Since it's made with a face of 100% Marvess® olefin,

a Phillips 66 fiber, Four Seasons indoor-outdoor carpeting resists rot, mildew, stretching, shrinking and fading. And it resists stains. Dirt washes or hoses right off.

And if you're wondering how it looks, you might remember Four Seasons made with Marvess is so rich

and colorful, it's used indoors. It's ideal for adding comfort and warmth to areas you thought of, but never dared carpet before. Think about Four Seasons. It could lay the groundwork for some great ideas.

**MARVESS OLEFIN**  
A PHILLIPS 66 FIBER

**FOUR SEASONS INDOOR-OUTDOOR CARPETING**  
A PRODUCT OF GENERAL FELT INDUSTRIES INC.

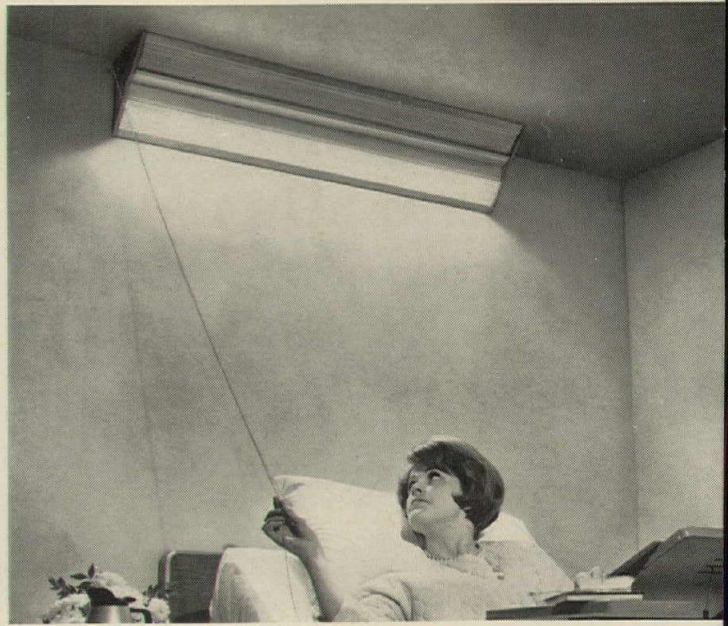
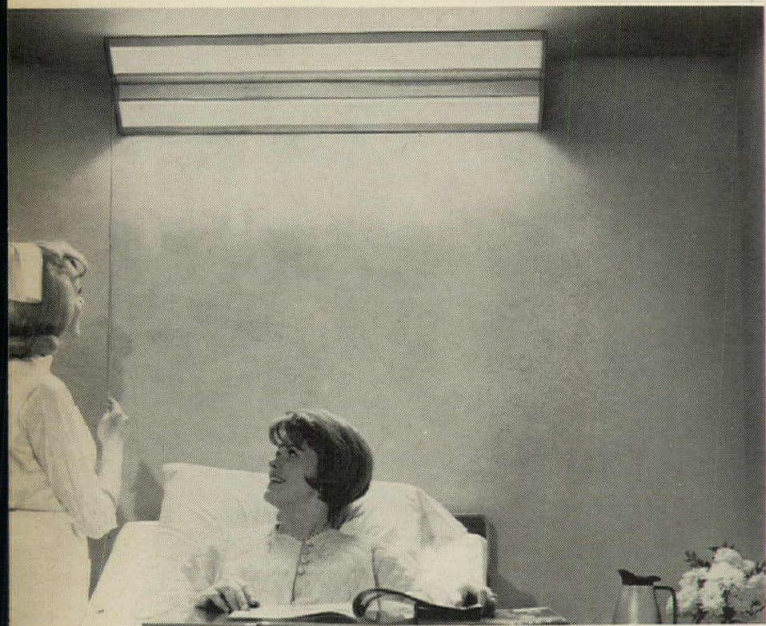
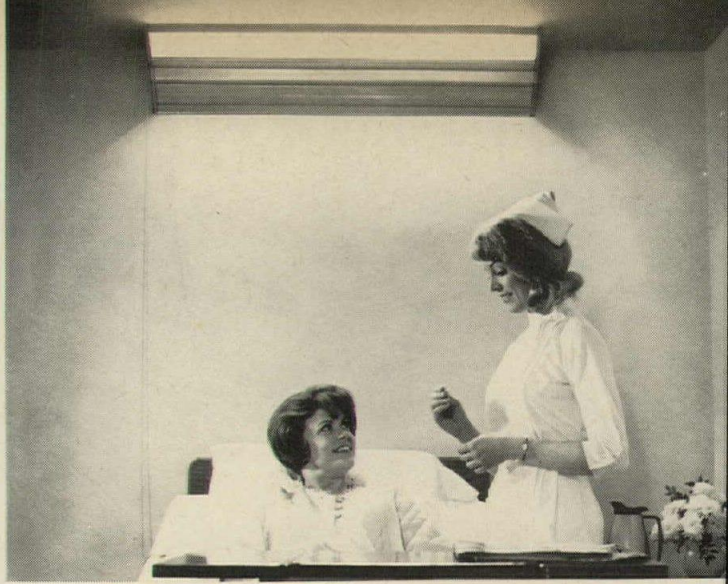
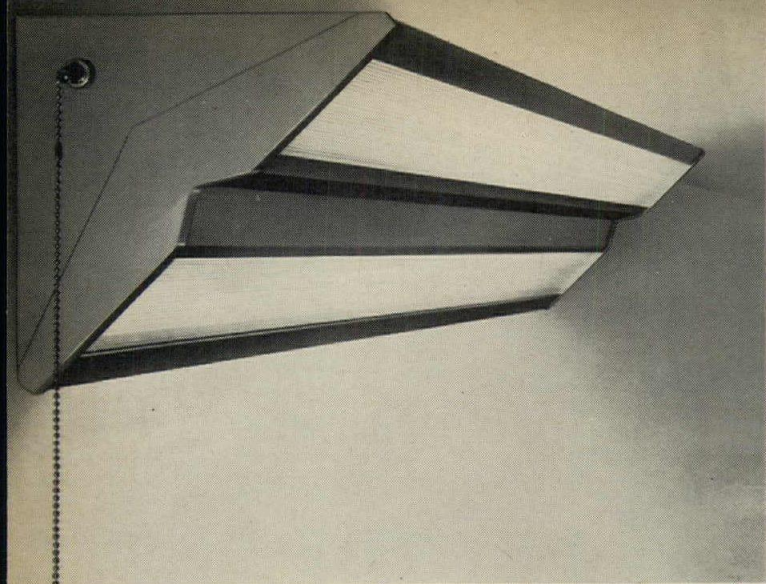
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## Who likes what in a hospital bed luminaire?

**PATIENTS** like the bottom light. Here's a soft fluorescent reading light for the patient's use. And this is one light that meets the IES-recommended hospital specification: 30 foot-candles at the normal reading position in a patient's bed. Patient comfort means a lot, too. Mounted up by ceiling, any heat from this fixture is kept well above the patient's head.

**NURSES AND DOCTORS** like the top light. The top light functions as a routine examination light that can be controlled from a wall switch or a pull chain. LPI's new Serenity luminaire installs at the junction of the wall and ceiling. This puts it up and out of the way of patients, doctors, nurses and hospital personnel. Frees the wall behind the patient for things like a nurse call system or a traction apparatus.

**ADMINISTRATORS** like both lights. And why not? LPI's Serenity luminaire covers all of the concerns of the administrator. Like preventing objectionable spill light at adjacent beds with directional acrylic lenses. Or having the fixture up by the ceiling so that patients can't pull it down while trying

to pull themselves up. And there's no housekeeping because there's no wall-projecting surface to catch dust. Administrators can also rest assured that maintenance men will hardly be aware of Serenity's existence, except for an easy relamping. And of course it's UL listed.

**ARCHITECTS** like its lighting efficiency, crisp design. With Serenity's three sharply controlled light patterns, an architect can put light where he wants it. And the clean, crisp lines of LPI's luminaire fit right in with good architectural design for new construction or for remodeling. Virtually the entire visible area of this fixture, excluding lenses, is anodized, extruded aluminum. And this can make the difference that counts with an architect. (Of course, many architects have become familiar over the years with LPI's tradition of quality fluorescent luminaires.)

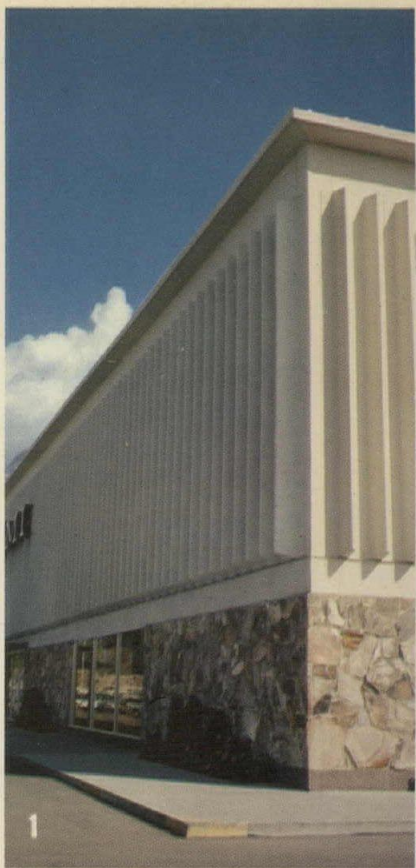
Want to know more about the new Serenity fluorescent luminaire for hospital beds? Then contact an LPI representative, or write directly to us.

## Answers that count with the people who count.

**LPI** FLUORESCENT LIGHTING

Lighting Products Inc., Highland Park, Illinois 60035





ARCHITECTS: (1) JOHN GRAHAM & COMPANY; (2) DANIEL, MANN, JOHNSON & MENDENHALL; (3) JOSEPH D. LANSING; (4) FRIDSTEIN & FITCH; (5) PAUL HALLBECK ASSOCIATES; (6) CONE AND DORNBUSCH.

## PRESTRESSED CONCRETE

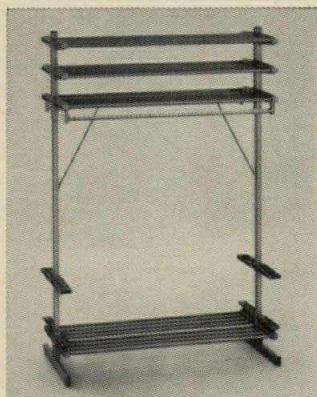
offers beautiful solutions to a wide range of design problems for every building type. Best man to talk to in the earliest planning stage is your local PCI member. Odds are he has good answers to questions you face right now. If you don't know his name already, write us at 205 W. Wacker Dr., Chicago, Illinois 60606.



For more data, circle 42 on inquiry card



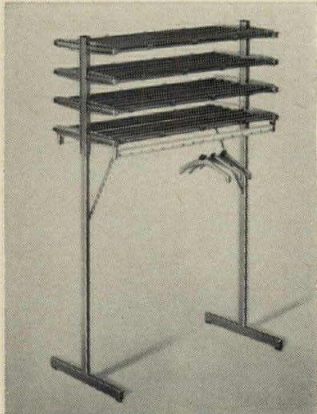
# ALL NEW KRUEGER HAT AND COAT RACKS



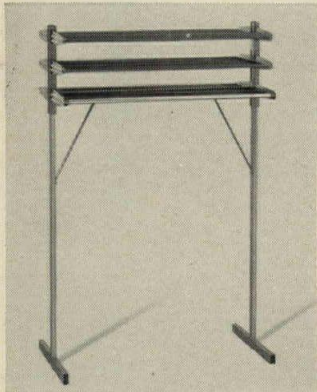
Handsome CHANCELLOR floor rack



CLASSMATE wall rack convenience



Efficient CHECKMATE floor rack

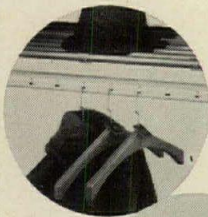


Practical STEWARD floor rack

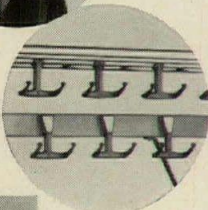
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Orderly hook system



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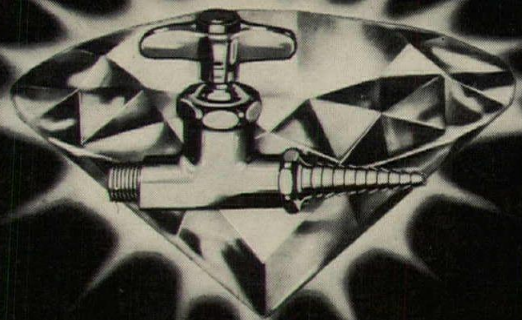


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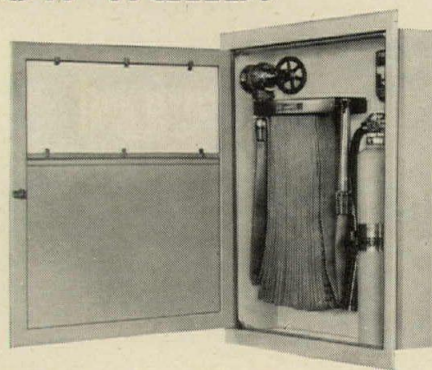
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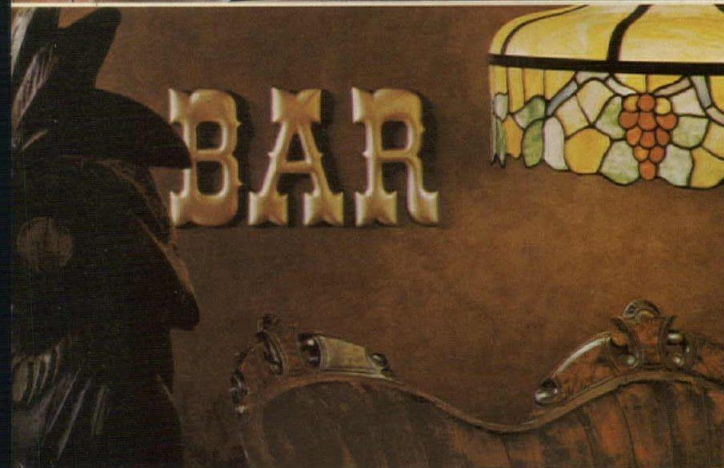
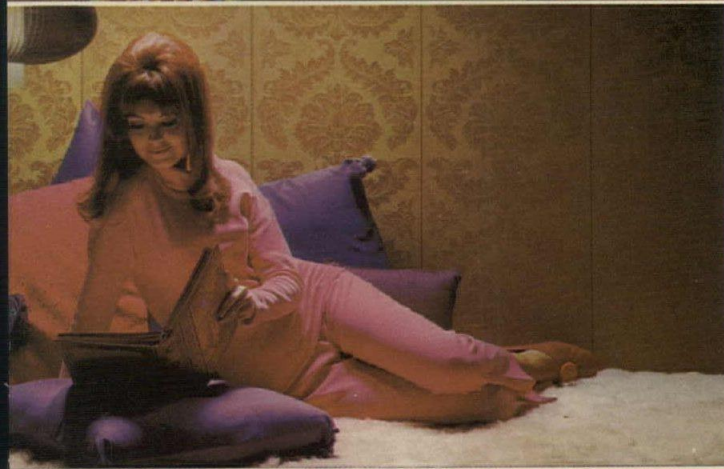
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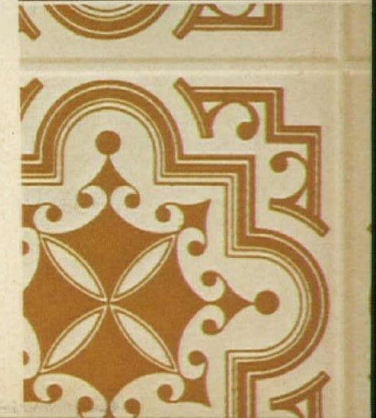
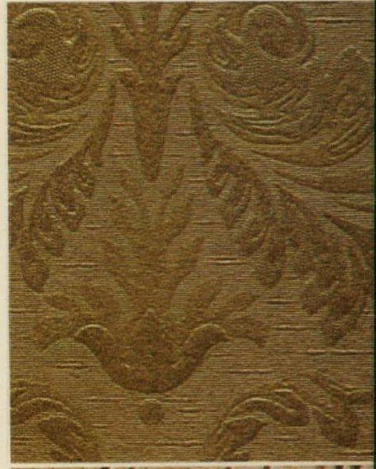
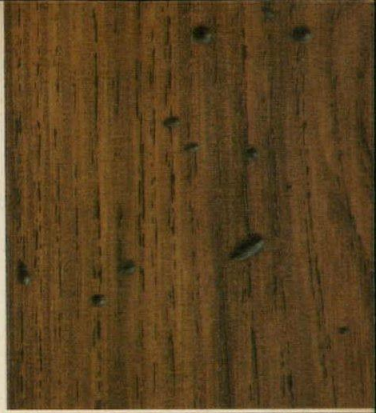
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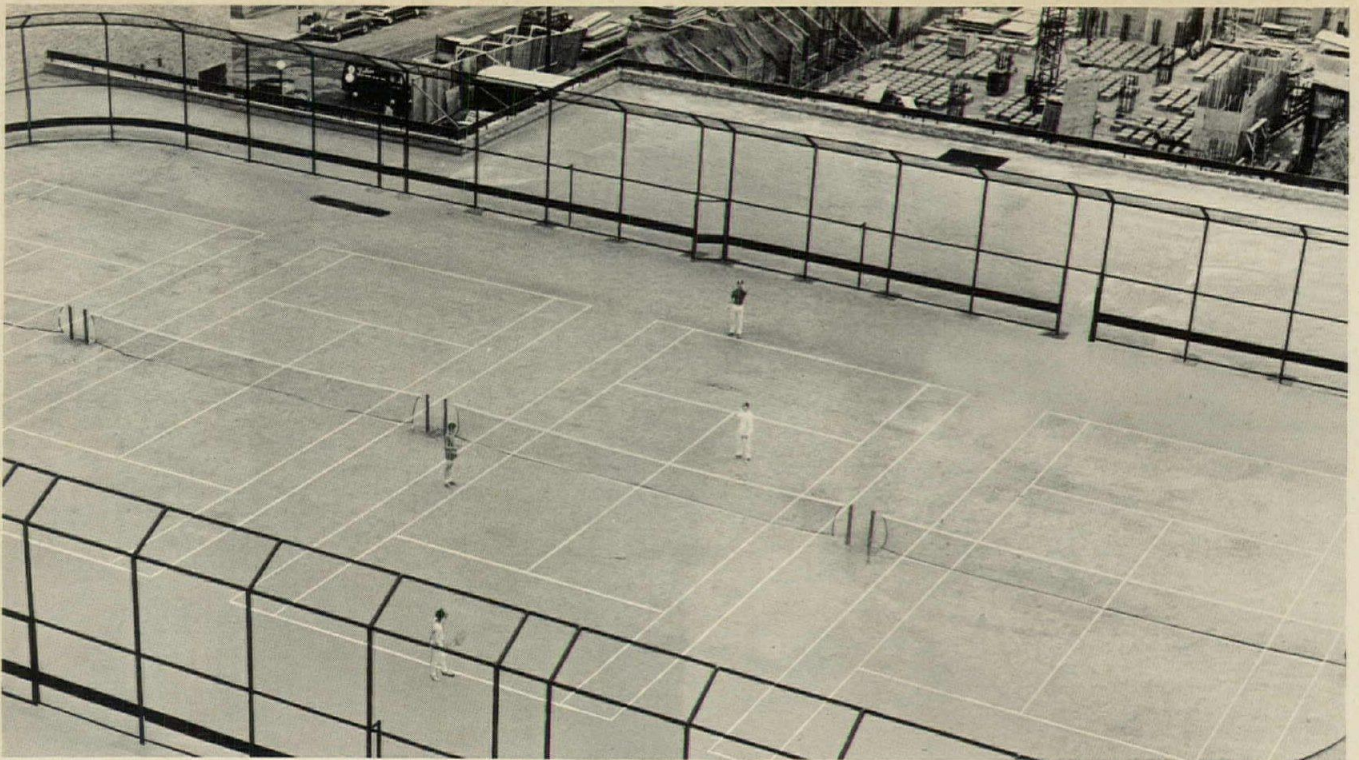
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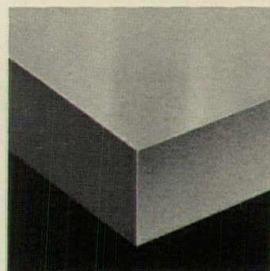
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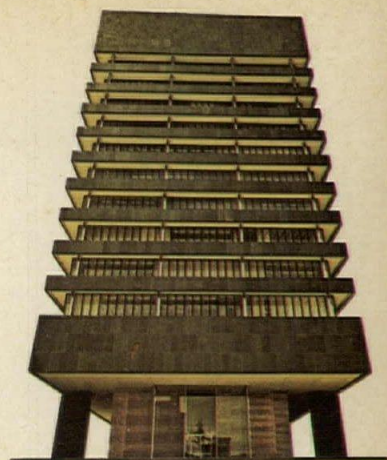


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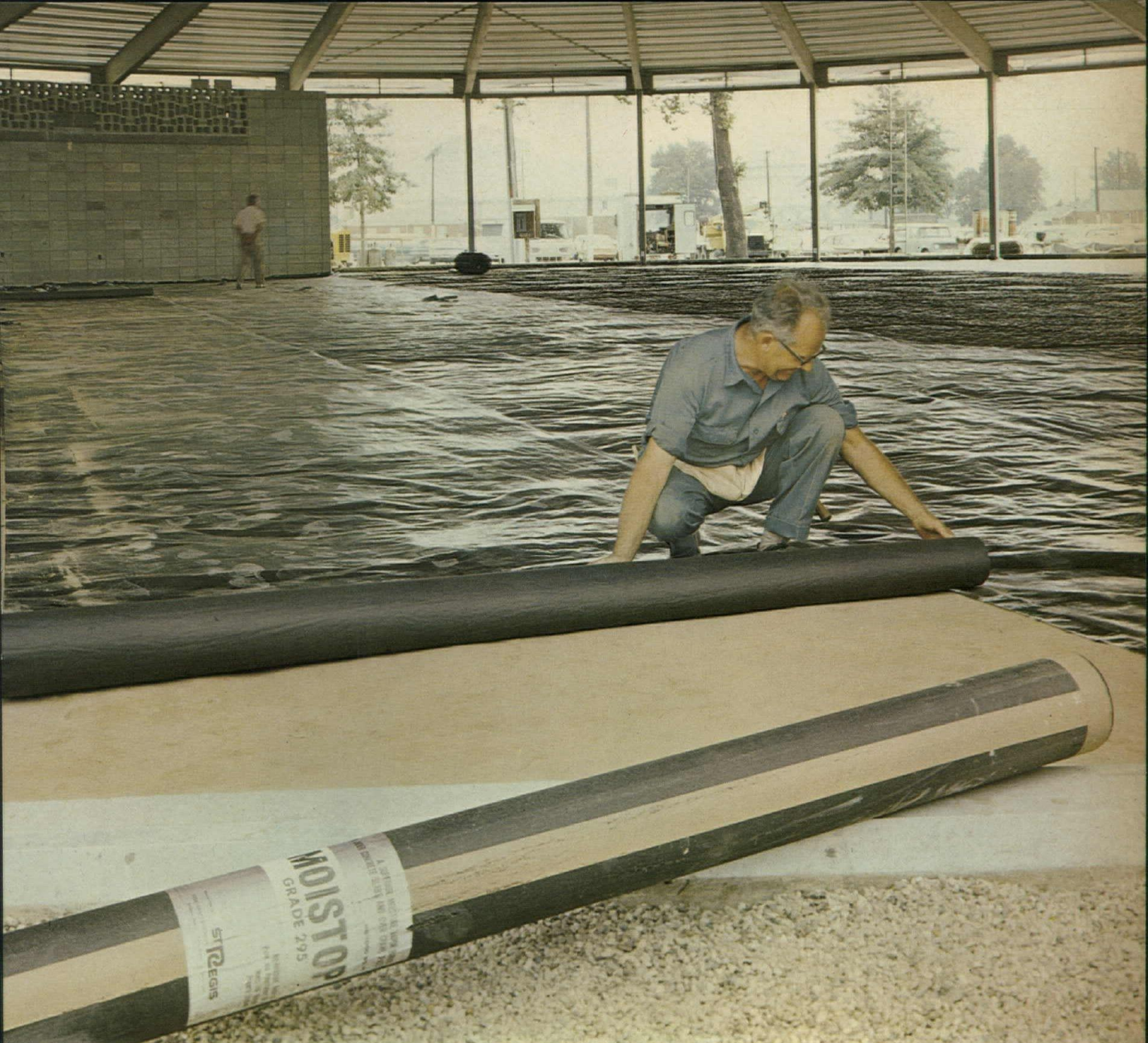
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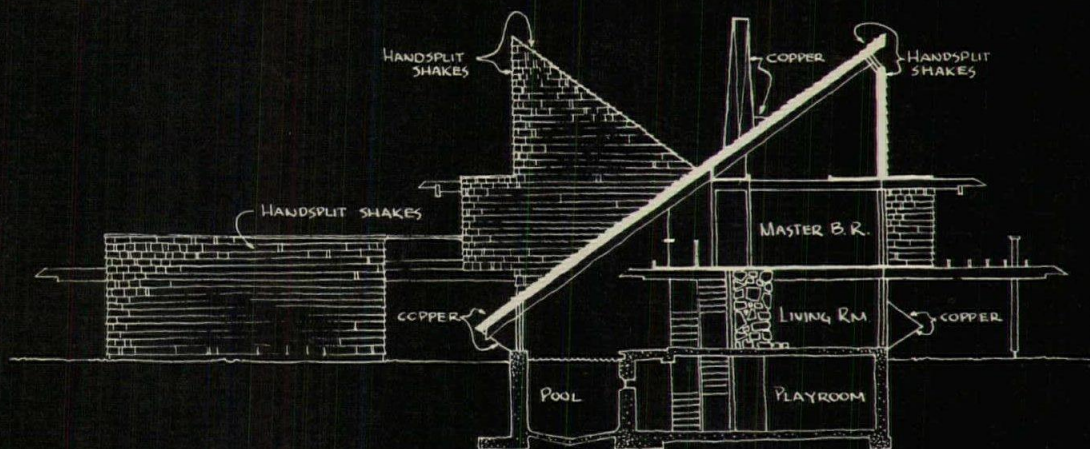
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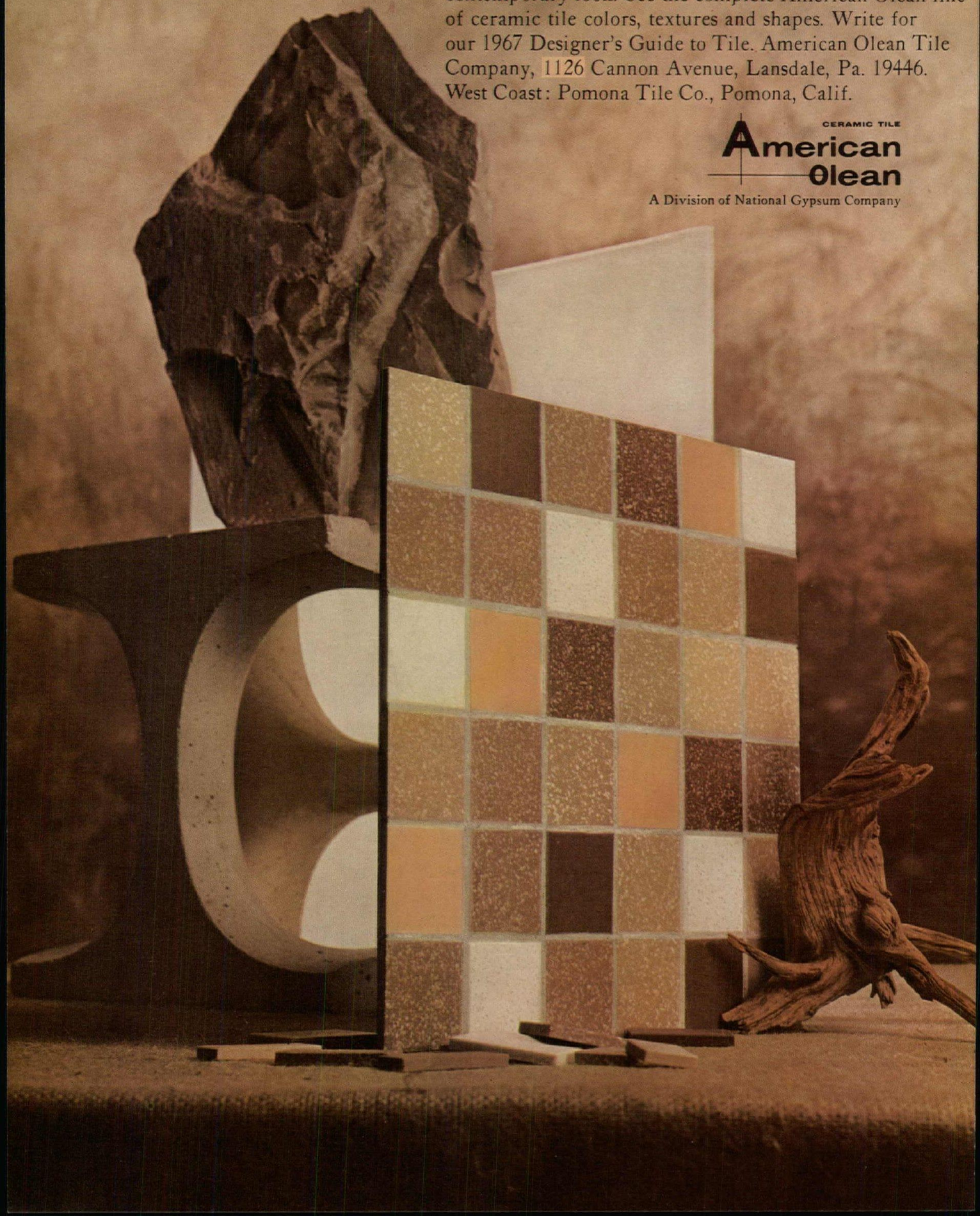


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## Congress reviews low-income housing plans

Congress is now examining the details of plans to help lower-income families buy their own homes.

Democratic Senator John Sparkman of Alabama and his housing subcommittee were taking a look at the so-called "Sparkman House" plan last month. Republican Senator Charles Percy of Illinois and his staff have been fighting for his "Home Ownership Foundation" idea. Other senators have joined the drive to create something which ghetto area residents can use to buy their own homes.

The powerful combination of the new ideas plus the summer riots has added urgency to congressional debate, although a final new program isn't expected to go to President Johnson for signature until almost Christmastime.

### Three plans focus on interest subsidies

All of the ideas follow along one theme: partially subsidize the interest costs of a mortgage to bring the monthly payments down within reach of lower-income families.

▪ **Senator Sparkman's plan** would rely on private mortgage lending institutions to issue and hold these partially subsidized mortgages. The subsidy would go directly to the mortgage banker; if enacted, this would be the first time Congress went along with a "banker's subsidy" rewarding him for making the loan to a lower-income family.

▪ **Senator Percy's plan** is somewhat similar, although he prefers to avoid the existing bureaucracy by creating a new "Home Ownership Foundation." This foundation, quasi-private, would issue government-backed bonds to raise money. It would then go through local

"home ownership" groups to finance mortgages for lower-income families.

▪ **Another plan**, after which the "Sparkman House" concept was patterned, would accomplish basically the same results—but the Federal National Mortgage Association would issue and hold mortgages instead of private firms doing the job. This is what happens, incidentally, to the 3 per cent mortgages insured by FHA under the moderate-income 221 D-3 program.

### Johnson's quandary: to spend or not to spend

Whatever results, and at press time the eventual outcome of all the congressional interest was by no means certain, President Johnson has found himself in an intriguing political quandary. There are existing housing programs that can do similar jobs; and the new program would cost more money at a time when he's trying to persuade Congress to raise taxes by holding back on his budget.

This is why the President has publicly disavowed stories that his administration favors the "Sparkman House." Yet he can't oppose a new plan that would let ghetto residents buy their own homes.

True, his housing lieutenants helped the Alabama senator with the technical points, but the White House and Senator Sparkman insist this doesn't imply administration backing.

### Subsidies ride on larger bill revising "701" planning aid

The lower-income home ownership plan, whichever one results, is only the tip of a huge omnibus housing bill being considered by Senator Sparkman's housing subcommittee last month. Many other changes—in all of the various housing laws under consideration—will be included in this one big bill.

Perhaps the most significant one, over the long run, involves the basic 701 Planning Assistance Program. The 701 idea, helping local planning bodies do their work by providing partial Federal aid, has been around since 1954, when it was first conceived.

Over the years, various changes have been made piecemeal; this year, Congress has revamped the entire program to recodify the law and add some new ideas.

Congress appears willing to go along with enlarging the 701 grant plan to include rural multi-county planning groups. Planning bodies representing "regions" and "districts"—both rural and urban—would become eligible for aid. State planning agencies could provide added assistance to interstate and intrastate planning groups including districts and regions.

The over-all authorization would be increased by \$20 million, earmarked for the new "district" planning bodies. Further, an extra \$10 million would be authorized for special pilot efforts to do comprehensive public facility planning on a regional or metropolitan basis.

While there's no specific change in the legislative language contemplated, the subcommittee was expected to make clear that private planning firms can participate in the 701 program.

#### ARCHITECTURAL BUSINESS THIS MONTH

Building activity .....	83
Cost trends and analysis.....	87
Cost indexes and indicators.....	89
Practice/Office Management .....	93



## A.I.A. paper proposes mode of working with Defense

The A.I.A.'s government liaison committee has published a "working relationship" statement, although A.I.A. hasn't endorsed the document.

The paper attempts to spell out just what architects should expect from Defense Department construction agencies which contract for design services, and what the contracting officers should expect from architects.

While filled with "fudge" words such as "adequate" or "insofar as prac-

ticable," the document is more than just some bland generalizations or principles.

For instance, according to A.I.A.'s committee, an A/E firm should produce redesigns at his own cost if bids "exceed the budget established by the contracting officer and agreed to by the architect." There is a proviso, however, that "conditions beyond the reasonable control of the architect" must be assessed before he has to live up to that commitment.

Several engineering societies have come close to endorsing the document, although doubt remains about some of the wording. So far, however, none of the design professional groups have formally endorsed the statement.

And, on the flyleaf of its statement, the committee has acknowledged that the document is "only a bench mark and that further negotiations between the A/E community and the military services will be undertaken."

## HEW group urges deeper studies to guide federal aid

The effects of the environment on the nation's health should become the focus of a massive research effort, says a top-level panel of experts.

HEW Secretary John Gardner asked a special task force on environmental health to draw up the blueprints for new programs, and the group picked out environmental design as one area of need. Says group chairman Ron Linton, former staff director for the Senate Public Works Committee:

"The task force recommends that, by 1973, the [HEW] Department develop, through research, basic data sufficient to establish human levels of tolerance for crowding, congestion, noise, odor, and specific human endurance data for general stress and accident threats, including traffic, home and recreation accidents."

The group felt the administrative machinery by which federal aid funnels through state and local governments should be overhauled. A broader, all-encompassing attitude should replace the "rifle" approach of grant programs aimed at specific ills.

But the task force took on much more than the usual health problems; federal, state and local governments should draw up "criteria and standards for physical and mental health, for housing, urban development, and transportation" to be used as requirements for federal aid.

The group based much of its approach on the findings of Dr. Leonard Duhl, psychiatrist for the Department of Housing & Urban Development; he argues that "if we are to create a better environment, we need a better com-

bination of urban housing, schools, and parks. We need a better combination of administrative expertise. We must begin writing combined, or multi-performance, construction specifications, so that work can be done better at lower costs."

Dr. Duhl contends it is cheaper and more efficient to consider the sociological and psychological factors of environment before new, low-cost housing is designed than after it is constructed. If these factors are neglected, he says, "it is likely the new housing project will find itself seriously lacking."

The common practice of shelving task force reports isn't anticipated for this group's effort; while not publicly stated, most HEW policy planners view the Linton Report as the seedbed for new legislative programs in the coming year or so.

## Washington briefs

**The Senate** has gone along with President Johnson's request for \$40 million to keep the rent supplement housing scheme moving; now the House, which denied all new funds, and Senate must work out differences.

**President Johnson** has ordered a new study of how to make use of surplus federal property as potential sites for more lower-income housing.

**FHA and the Small Business Administration** have worked out a deal so that ghetto area businesses can be located more easily in 221 D-3 housing projects, thereby serving the moderate-income families while providing added income to the non-profit housing owner to pass along to tenants in the form of reduced rents.

**The "turnkey" method** of constructing public housing got a boost from the White House recently; President Johnson ordered more such projects and asked further that private property management firms be contacted to provide services on contract to local public housing authorities. The National Association of Housing and Redevelopment officials promptly said more money and better administration of existing policies from Washington is needed more than another new idea from the White House.

**Progress toward United States-British reciprocal practice** is being made by NCARB and ARCUK, Britain's Architectural Registration Council. Both councils have now formally approved the proposal which would permit British registered architects and American architects holding the certificate of NCARB to engage in reciprocal practice once they have met any local requirements for ex-

aminations and practical experience. The British council is now setting up a working party to work out details.

**GAO reviewed contract costs** at two NASA space flight centers (Goddard and Marshall) to compare costs of the use of private A/E firms to the use of civil service employees in A/E design. The review showed that due to elimination of many contractor supervisory and administrative personnel, an estimated annual saving of as much as \$5.3 million could be achieved at the two centers if these services were performed by civil service employees.

**The VA is holding A/E firms to the 6 per cent fee limitation** for all services (including travel), despite the fact that the General Accounting Office will not enforce the ruling pending congressional action. VA is the only agency to comply with the 6 per cent limitation ruling.



COMMENT AND CONTRACT TABULATION

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

# Aftermath of the credit squeeze

Last year's credit shortage was still having a depressing effect on building activity during the early months of 1967. As a result, total building contract value in the opening half of 1967 lagged 6 per cent behind the year-earlier amount (see table below).

Residential building bore the brunt of the credit squeeze, of course. Losses in all regions forced national housing contract values down 13 per cent. Non-residential building values were held to a 1 per cent gain.

Geographically, however, the impact of the scarcity of credit varied considerably. Only one area of the country, the Southwest, registered an increase in total building. Tight money conditions showed no visible effect on nonresidential contract values as they rose 26 per cent. This increase more than balanced off a 10 per cent decline in the residential category, boosting total building values 6 per cent.

Four regions sustained losses in both building categories. In three of these areas, a decline in nonresidential values closely matched the decline in residential values.

The New England states suffered the greatest setback during the first half of 1967 as residential and nonresidential values both tumbled 19 per cent. Total

	Nonres. Bldg.	Res. Bldg.	Total Bldg.
New England	-19%	-19%	-19%
Mid Atlantic	+ 5	-24	- 9
Southeast	- 4	- 6	- 5
Ohio Valley	+ 9	-12	- 1
North Central	- 6	- 7	- 6
South Central	+ 4	-11	- 4
Southwest	+26	-10	+ 6
West	+ 1	-15	- 9
Total U.S.	+ 1	-13	- 6

F. W. Dodge Company

building contract values in the Southeast and North Central regions fell 5 and 6 per cent respectively.

No such balance occurred in the West, however. While nonresidential values fell 2 per cent from the year-ago six-month level, residential contracts dropped 15 per cent. Though a lack of available funds undoubtedly contributed to this decline, the tail-end of a lengthy housing market depression in the West was also a significant factor.

The biggest decline in residential contracts during the period occurred in the Mid-Atlantic states where weaknesses in all parts of this building cate-

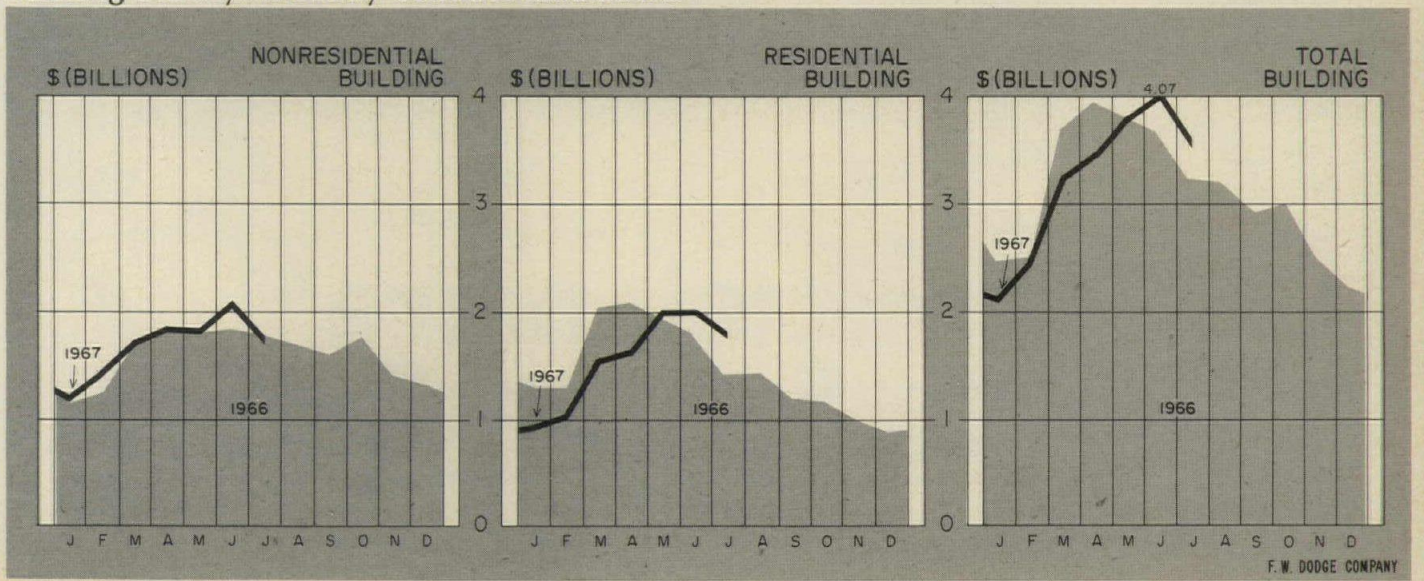
gory dropped values 24 per cent. However, total building fell only 9 per cent as nonresidential values gained 5 per cent on the strength of advances in educational, public and recreational facilities.

Total building values in the Ohio Valley almost approached the level set during the first half of 1966, trailing by only 1 per cent. A surge of more than 40 per cent in manufacturing and recreational buildings provided most of the gain in nonresidential building values. However, heavy losses in hotel and motel contracts lowered total residential values by an offsetting 12 per cent.

In the only region to exhibit a pattern somewhat resembling that of the nation as a whole, the South Central area showed a loss of 4 per cent in total building values. Despite a 4 per cent rise in nonresidential values, residential contracts dipped 11 per cent.

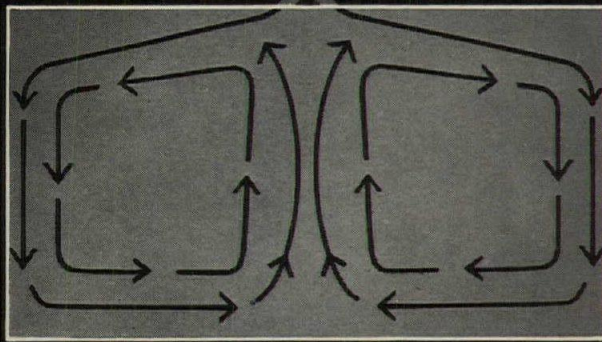
By mid-year, however, things were looking decidedly better. The Dodge Index (seasonally adjusted) was back in the vicinity of its previous high level, indicating that the hangover of last year's credit problem had been worked off during the sticky first half. The balance of 1967 is expected to show enough strength to produce a small gain for the year as a whole.

## Building activity: monthly contract tabulations



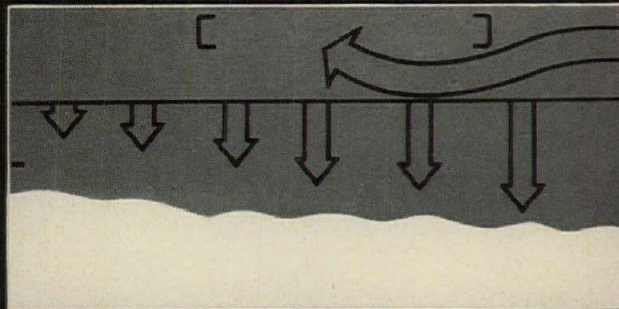


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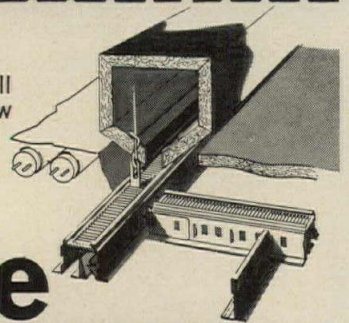
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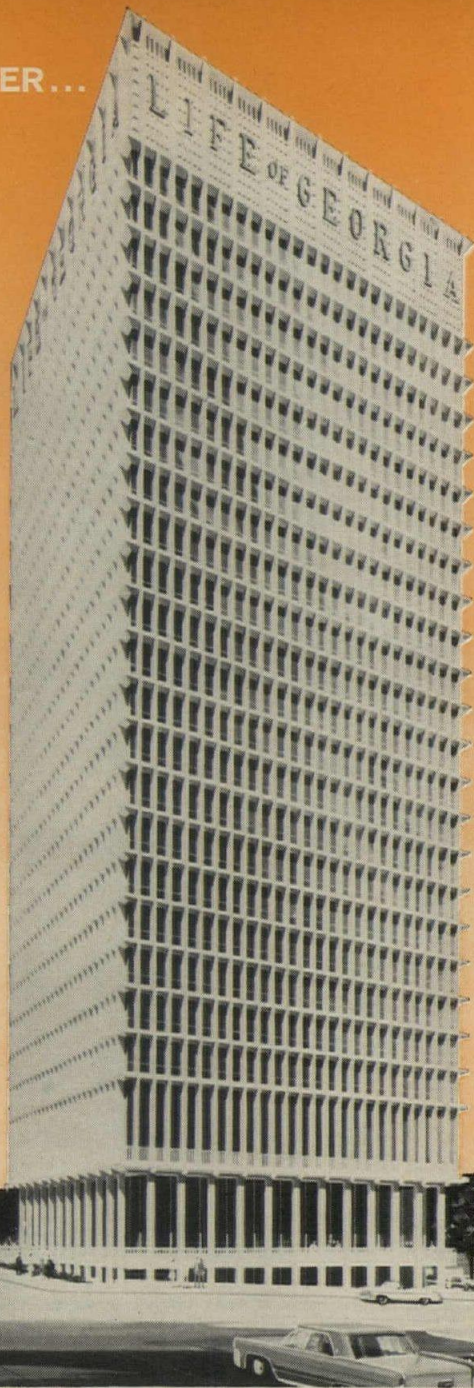
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AR-10

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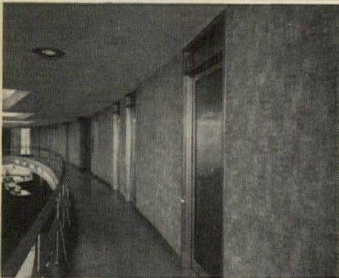
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## TRENDS AND ANALYSIS

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## CPM: The earlier, the better

Each year Critical Path Method gains greater acceptance as a necessary technique of modern construction economics. And one fact is becoming increasingly apparent, though it has not gained widespread recognition—the earlier in the design stage CPM is introduced, the more useful it becomes. Those individuals who are aware of the possible applications of CPM to the whole construction process will quickly point out that the potential of this technique has not been realized, and when it is, the architect and owner will benefit most.

The primary value of CPM in the construction industry is as a vehicle for a more accurate and logical approach to the planning, scheduling and control of a project. But it has other uses. Its structure—a network of scheduled activities—implies much more than, say, a contractor's network. The activities can be conceptual, as in planning or design; mechanical, as in specific, easily quantifiable tasks; or both. This is why CPM has proven useful for planning and scheduling in other industries for completely different types of work. As long as a number of people are performing a number of tasks simultaneously, the only practical way to find the most efficient method of completion is via CPM—or something like it. In construction, the architect needs CPM since he is most frequently responsible for project control. And most advantages that he gains from efficient planning and management through CPM are passed on to the owner.

But again, the one period where the architect can most benefit from the use of CPM is the stage where it has been least used—during early design, in the pre-bid period, just as soon as the budget is set. Many CPM schedules are not drawn until after the bidding. Its effectiveness is substantially reduced when this happens.

### Most criticism of CPM grows out of misuse

There have been various criticisms of CPM as it is presently applied to the construction process. It would be more ap-

propriate to criticize the misuse of CPM, rather than the concept itself. One often heard criticism is that CPM is not responsive in the field. Yet in nearly every case where this supposed shortcoming has been observed, it is the result of inadequate preparation of the schedule or lack of proper monitoring.

Much of the dissatisfaction with CPM has been expressed by contractors. It should be pointed out that many contractors—especially the larger ones—prepare and use CPM themselves and have been quite successful with it. But the character of the industry is such that a great deal of CPM work is subcontracted. Since it is difficult to specify quality, many contractors shop for a CPM subcontract much as they would for anything else. More often than not they get what they pay for: low quality work that is *not* responsive in the field and does not give the architect the necessary information to meet problems when they occur.

Further, despite encouraging talk about a construction team composed of the architect, general contractor and subcontractor, secrecy and reticence often mark the relationship between the team members. Contractors have historically been reluctant to reveal their proposed plan of operations in full detail to the architect. They often feel that the architect may not understand their plan and may later hold them to expressed goals which might turn out to be unimportant to the progress of the project.

One procedure which has been devised to overcome all of the above difficulties is beginning to catch on with many architects, owners, and government agencies. This procedure takes fuller advantage of the capabilities of CPM for project control by getting architects and contractors involved early in the basic planning decisions.

### Critical path is most critical in the early stages

The early weeks of any construction project are the most important for the development of a workable critical path

schedule. Not only is it imperative to get the project off to a rational, well-informed start, but also during these early weeks the major subcontractors can give more attention to planning. Indeed subcontractors should understand their role in the over-all schedule even before a formal subcontract agreement is signed. Moreover, valuable time is frequently wasted because the CPM consultant is not engaged immediately after an award. He requires even more time to identify the major project features.

Once a CPM schedule is prepared and action is taken on it by the field forces, it must be correct. If it is not—if it has major weaknesses or hasn't considered key relationships between the contracting forces—it will invariably be abandoned. The critical path schedule ought to be a logical statement of the operative solution to a problem. Used properly, it requires that all of the contracting forces think through the various elements of the project. CPM is inherently a tell-tale technique. It not only exposes all facets of the project but, moreover, does so in an impartial manner.

The procedure for a successful application of CPM works like this: The architect develops his own network or engages a CPM consultant long before the job is advertised for bid. In addition to an understanding of network scheduling techniques, the CPM consultant must have a complete familiarity with construction methods. A preliminary critical path schedule is prepared based on available contract drawings. Since this schedule is a dynamic model of the project, valuable information can be obtained from it even before a contractor has been selected. The schedule will assist the architect in determining a realistic completion time for the project, the steps that must be taken if early completion is required, the critical interfaces or milestones for multi-phase projects, the possibility of early partial occupancy of certain project facilities, the effect of weather and season on key project dates, manpower requirements, and a host of similar data.



### **A preliminary schedule greatly assists bidders**

The preliminary CPM schedule, with explanatory data, should be made available to prospective bidders. The bidders should understand clearly that the schedule is supplied to them only for their information and assistance in preparing their bids, and that it does not prescribe a particular method for performing the work. Contractors supplied with such schedules during the preparation of their bids report that it is of great assistance to them. If potential contractor difficulties have been considered in determining completion dates or other project milestones, the CPM schedule will illustrate this. It can also indicate problems (or, hopefully, the lack of them) which might arise from manpower requirements, winter work, or long lead times on the delivery of materials. This enables contractors to evaluate the relative difficulty of achieving project goals much more accurately. It serves to eliminate many unknowns, and in turn leads to better bids.

Under this procedure, the CPM consultant is engaged not only to prepare the preliminary CPM and serve as construction scheduling advisor to the architect, but also to furnish technical CPM expertise through the construction phase.

### **The successful bidder can then revise the plan**

When a general contractor is selected, his estimator and superintendent can sit down at once with the CPM consultant. Their revised CPM schedule then becomes the working plan and schedule of the general contractor. He then assumes responsibility. The plan is no longer the CPM consultant's concept of how the project should be executed but is instead the contractor's official schedule.

At first glance this would appear to pose some difficulties. It might seem that the contractor is obliged to consider, at least initially, the preconceived plan of the consultant. In experience, however, this difficulty seldom materializes. In fact, contractors find it to their advantage to begin planning with the assistance of a skeletal CPM network. CPM techniques almost invariably require an initial network which for one reason or another proves to be unsatisfactory. With a skeletal program already prepared this time consuming initial dry run is eliminated for the contractor and he can begin work at once on a sensible, informed plan.

It must be remembered that the architect, while gaining many advantages from CPM, also has certain obligations. For example, a proper schedule will tell him when he will receive shop drawings

for various aspects of the work. In turn, it will tell the subcontractor when he may expect to receive the approval or comments of the architect with respect to these drawings.

Throughout the life of the project the contractor, architect, owner and others who have obligations to complete work or perform services, report the status of their activity to the CPM consultant on a periodic basis, usually monthly. The consultant then measures this progress against the schedule, and reports project status, existing difficulties, potential trouble areas, etc., to all parties.

The CPM schedule becomes what it should always have been—a dynamic tool used by all members of the construction team interested or responsible for project control. It also becomes an objective and more or less a public document reflecting accomplished fact in relation to a previously agreed upon plan.

More and more CPM networks are being drawn up in this manner—usually when working drawings are 60% to 70% complete. But there are two major reasons why an earlier starting point would be even more advantageous.

### **Early CPM analysis can save much expense**

If CPM is introduced just as soon as the budget is set the probability of keeping the project within the requirements of time and cost increases. Specifically, more time is available for establishing optimum phasing and for pinpointing the timing of critical interfaces. Obviously the closer the drawings are to final completion, the more difficult it is to make any major adjustments for weather, manpower requirements, labor negotiations, the bidding market and other characteristics of the project locale, which would affect the cost and timing of construction.

Secondly, it theoretically permits the architect to simulate and evaluate the effect of each design detail on the rest of the project.

For example, the architect may be debating among several alternatives for a particular detail. Taken separately each detail might be more or less identical in cost. Yet in terms of its relationship to the rest of the project—one item might be much more or less expensive.

If a certain detail is more expensive than another in this sense, the architect has no way of spotting this fact without reference to a CPM schedule. By submitting each alternative to CPM analysis, he is simulating the actual impact on time and cost that would occur, if that detail were included in the project.

In actual practice, of course, examining each detail in this manner would be prohibitive. And on those items vital to the functional and aesthetic requirements of the building, time-cost trade-offs are inappropriate. But they are appropriate for many items—especially those in the HVAC, electrical and plumbing systems in complex laboratories and hospitals. It has even been suggested that the consulting engineer submit a simple CPM showing the impingement of his basic system and alternative systems on construction time.

If the architect can make it clear to the owner that early CPM analysis can allow him to put money into the building that would otherwise go into temporary heat, overtime pay, and expensive equipment, he can convince him that it is a well justified expense, quite small compared to the potential saving.

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## **LA airport to provide sound insulation for nearby homes**

Los Angeles International Airport has become the first major commercial airport in the United States to launch a test program to reduce the effects of aircraft noise by acoustically treating homes in the vicinity of the airfield, according to Louis Warschaw, president of the Los Angeles Board of Airport Commissioners.

At its regular meeting, the Airport Commission gave preliminary approval for the negotiation of consulting contracts with Norman L. Pedersen, Los Angeles architect and structural engineer, and Wyle Laboratories of El Segundo for the development and implementation of such a program.

Dealing with residential properties in selected locations adjacent to Los Angeles International Airport, the contracts would involve two phases: (1) a study, not to exceed 30 days, which includes preparation of a plan for the program and selection of the residences, definition of objectives and methods to be used; and (2), actual insulating work on the homes and evaluation of results obtained, which will require an estimated four to six months for completion.

The Los Angeles Board of Airport Commissions last June adopted a resolution authorizing the issuance of \$75 million to finance a multi-million dollar master plan development. Bids were received September 27 for the purchase of \$40 million in revenue bonds, and a second series of \$35 million is scheduled for sale in mid-1968 Commission President Warschaw said.



## INDEXES AND INDICATORS

William H. Edgerton  
 Manager-Editor, Dow Building Cost Calculator,  
 An F. W. Dodge service

### OCTOBER 1967 BUILDING COST INDEXES

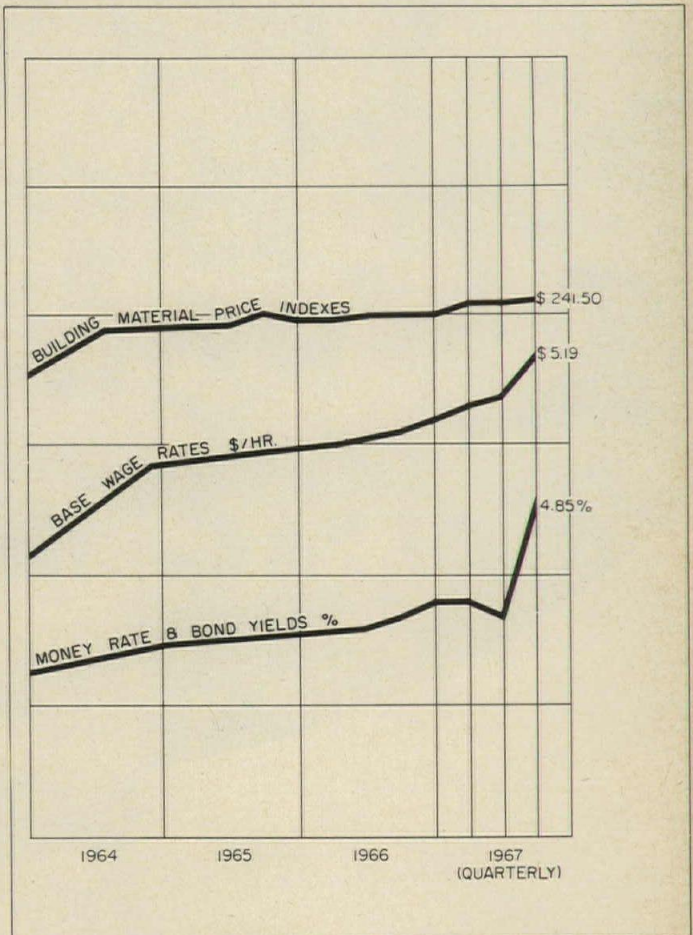
1941 averages for each city = 100.0

Metropolitan area	Cost differential	Current Dow Index		% change year ago
		residential	non-res. & non-res.	
U.S. Average	8.5	282.6	301.1	+2.10
Atlanta	7.2	319.5	338.9	+1.85
Baltimore	7.7	282.2	300.2	+1.90
Birmingham	7.5	258.2	277.6	+1.52
Boston	8.5	253.7	268.5	+1.49
Chicago	8.9	315.8	332.2	+2.63
Cincinnati	8.8	274.1	291.3	+3.49
Cleveland	9.2	289.0	307.1	+1.14
Dallas	7.7	263.6	272.2	+1.39
Denver	8.3	289.4	307.6	+2.49
Detroit	8.9	289.3	303.7	+1.49
Kansas City	8.3	252.3	267.1	+1.31
Los Angeles	8.3	288.9	316.1	+2.45
Miami	8.4	275.2	288.9	+0.81
Minneapolis	8.8	284.8	302.8	+3.78
New Orleans	7.8	255.2	270.4	+3.05
New York	10.0	297.5	320.0	+3.20
Philadelphia	8.7	282.2	296.3	+2.63
Pittsburgh	9.1	260.9	277.4	+1.26
St. Louis	9.1	279.7	296.4	+1.85
San Francisco	8.5	364.3	398.6	+1.27
Seattle	8.4	259.7	290.2	+3.18

Differences in costs between two cities may be compared by dividing the cost differential figure of one city by that of a second; if the cost differential of one city (10.0) divided by that of a second (8.0) equals 125%, then costs in the first city are 25% higher than costs in the second. Also, costs in the second city are 80% of those in the first (8.0 ÷ 10.0 = 80%) or they are 20% lower in the second city.

The information presented here indicates trends of building construction costs in 21 leading cities and their suburban areas (within a 25-mile radius). Information is included on past and present costs, and future costs can be projected by analysis of cost trends.

### ECONOMIC INDICATORS



### HISTORICAL BUILDING COST INDEXES—AVERAGE OF ALL BUILDING TYPES, 21 CITIES

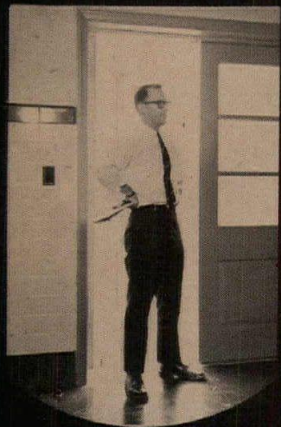
1941 average for each city = 100.00

Metropolitan area	1966 (Quarterly)								1967 (Quarterly)						
	1952	1960	1961	1962	1963	1964	1965	1st	2nd	3rd	4th	1st	2nd	3rd	4th
	U.S. Average	213.5	259.2	264.6	266.8	273.4	279.3	284.9	286.3	287.3	290.4	286.6	292.7	293.7	296.5
Atlanta	223.5	289.0	294.7	298.2	305.7	313.7	321.5	322.2	323.3	328.5	329.8	332.4	333.4	334.6	—
Baltimore	213.3	272.6	269.9	271.8	275.5	280.6	285.7	288.6	289.6	289.4	290.9	290.4	291.5	294.9	—
Birmingham	208.1	240.2	249.9	250.0	256.3	260.9	265.6	267.1	268.1	269.7	270.7	272.9	274.0	273.8	—
Boston	199.0	232.8	237.5	239.8	244.1	252.1	257.8	258.5	259.6	260.9	262.0	262.9	263.9	264.8	—
Chicago	231.2	284.2	289.9	292.0	301.0	306.6	311.7	312.6	313.7	318.9	320.4	320.4	321.3	327.3	—
Cincinnati	207.7	255.0	257.6	258.8	263.9	269.5	274.0	274.7	275.7	277.2	278.3	278.7	279.6	287.3	—
Cleveland	220.7	263.1	265.7	268.5	275.8	283.0	292.3	293.0	294.1	299.2	300.7	300.0	301.3	302.6	—
Dallas	221.9	239.9	244.7	246.9	253.0	256.4	260.8	261.7	262.6	265.8	266.9	267.6	268.5	269.5	—
Denver	211.8	257.9	270.9	274.9	282.5	287.3	294.0	294.6	295.5	296.6	297.5	297.6	298.5	304.0	—
Detroit	197.8	259.5	264.7	265.9	272.2	277.7	284.7	285.5	286.5	295.7	296.9	298.0	299.1	300.1	—
Kansas City	213.3	237.1	237.1	240.1	247.8	250.5	256.4	257.3	258.2	260.0	261.0	260.8	261.9	263.4	—
Los Angeles	210.3	263.6	274.3	276.3	282.5	288.2	297.1	298.0	298.6	301.6	302.7	303.6	304.7	309.0	—
Miami	199.4	256.5	259.1	260.3	269.3	274.4	277.5	278.4	279.2	282.9	284.0	283.4	284.2	285.2	—
Minneapolis	213.5	260.0	267.9	269.0	275.3	282.4	285.0	285.7	286.6	288.3	289.4	292.0	293.1	299.2	—
New Orleans	207.1	242.3	244.7	245.1	248.3	249.9	256.3	257.1	258.0	258.8	259.8	262.3	263.4	266.7	—
New York	207.4	265.4	270.8	276.0	282.3	289.4	297.1	297.8	298.7	302.8	304.0	309.4	310.6	312.5	—
Philadelphia	228.3	262.8	265.4	265.2	271.2	275.2	280.8	281.7	282.6	285.3	286.6	287.1	288.1	292.8	—
Pittsburgh	204.0	243.5	250.9	251.8	258.2	263.8	267.0	268.9	270.1	270.7	271.7	272.2	273.1	274.1	—
St. Louis	213.1	251.9	256.9	255.4	263.4	272.1	280.9	282.2	283.2	287.0	288.3	290.3	291.3	292.3	—
San Francisco	266.4	327.5	337.4	343.3	352.4	365.4	368.6	376.2	377.7	384.7	386.0	388.1	389.2	389.6	—
Seattle	191.8	237.4	247.0	252.5	260.6	266.6	268.9	271.1	272.1	273.9	275.0	276.5	277.5	282.6	—

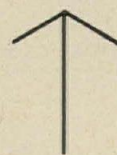
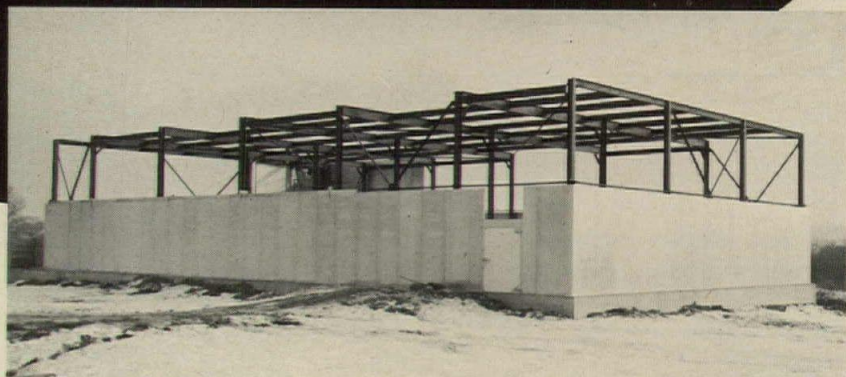
Costs in a given city for a certain period may be compared with costs in another period by dividing one index into the other; if the index for a city for one period (200.0) divided by the index for a second period (150.0) equals 133%, the costs in

the one period are 33% higher than the costs in the other. Also, second period costs are 75% of those in the first period (150.0 ÷ 200.0 = 75%) or they are 25% lower in the second period.





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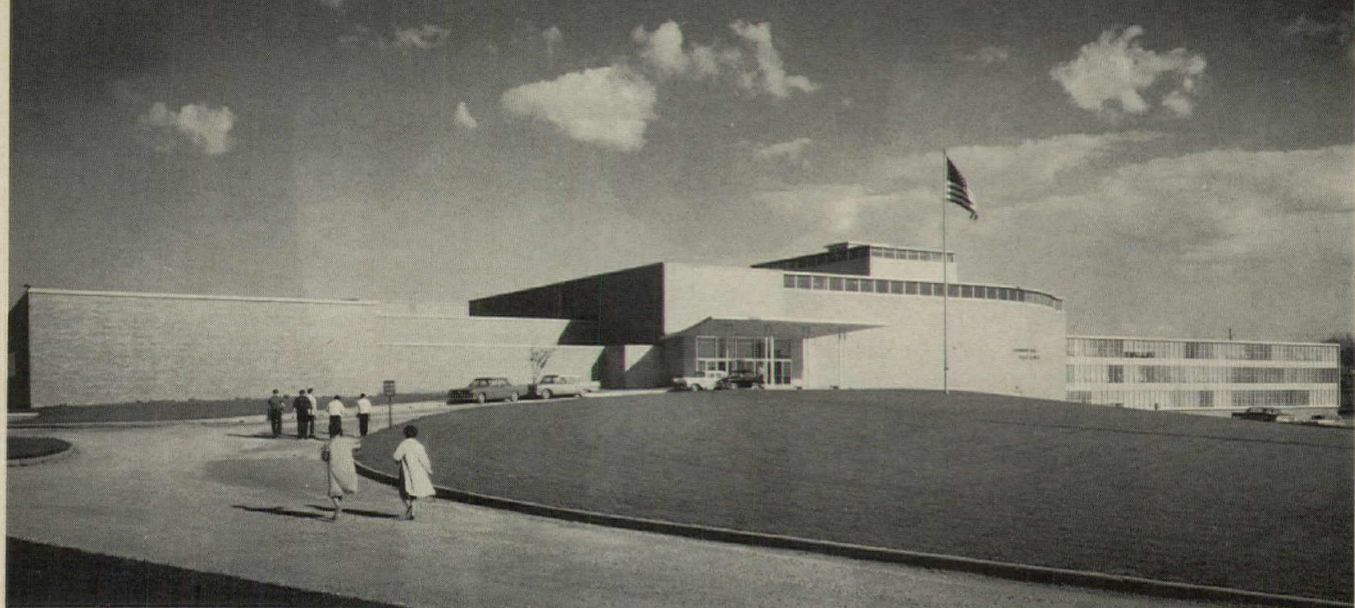
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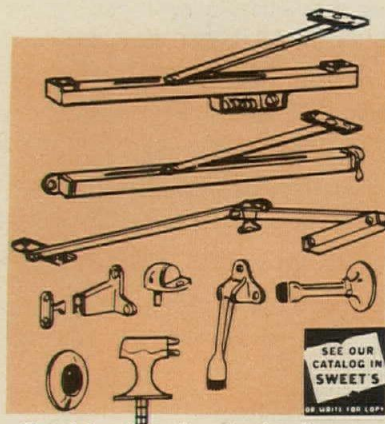
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## Texas firm adopts micro-records storage and retrieval

Caudill Rowlett Scott has solved the problem of information storage and retrieval by converting all of its records (visual and documentary) to a computerized microfilm file system. Information, including copies of drawings, renderings, specifications and photographs, can be located and retrieved in seconds. According to the firm, benefits accrued (including a complete duplicate set of security files) more than compensate for the system's cost, figured at less than \$13,000 per year for the first five years. And that includes reduction to microfilm of about a million pieces of past records now stored in warehouse, as well as all viewing and filing equipment with the exception of the IBM 1130 computer to which the system is adapted. (The firm has been expanding management and planning jobs for the in-house computer for about two years.)

### Records must be permanent and readily accessible

Since there is no statute of limitations on the responsibility of architects in Texas, architects in that state must permanently retain their files. But the problem of information storage is compounded for CRS by a growing number of projects per year and increased quantities of file material per project. For about 160 currently active projects, the firm averages 1,200 items of record per project. Fur-

thermore, according to C. Herbert Paseur, managing partner, CRS was aware that it was constantly redesigning many uniform construction features such as ships ladders, flashings and curbing. Still, the only alternative to redesigning was the even more time-consuming task of retrieving a particular drawing from the company's file of completed projects.

In the past this meant that a draftsman working on a particular feature, knowing that it had been done before by the firm, would go to his project manager. The project manager would try to recall what completed project drawing had the feature, and then send an office boy to search for it in the project's storage bin located in the warehouse across town. Usual results: frustrating failure. Finally the project manager, if he was determined, would go to the warehouse himself and find the correct drawing—"perhaps recognizing it by a coffee stain." Returning the drawing to the warehouse was equally chancy.

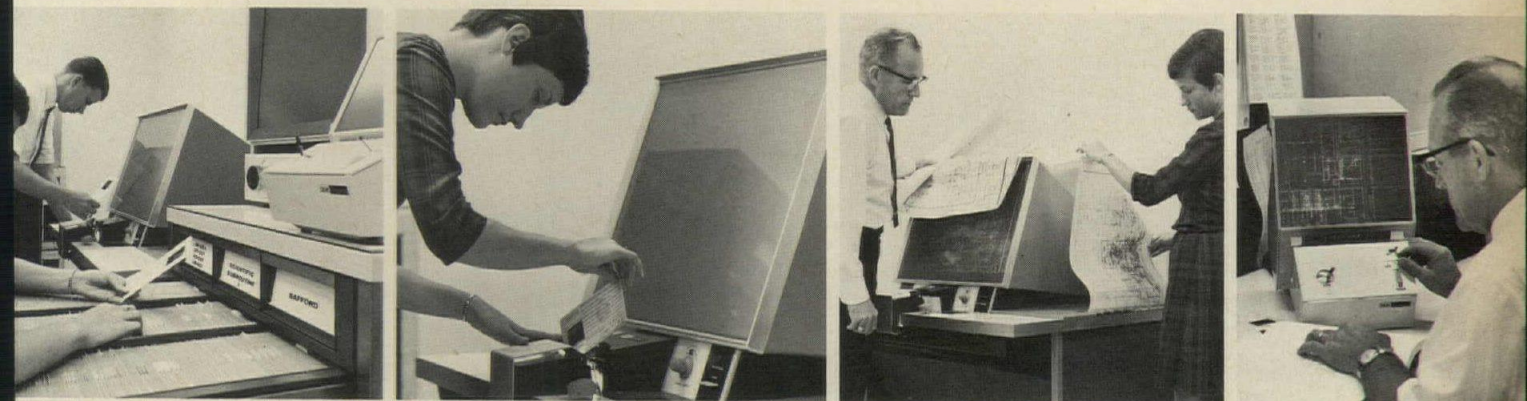
### A million-piece file gets finger-tip control

With the new microfilm system, information can immediately be obtained in the 400-square-foot Information Storage and Retrieval Center (ISRC), staffed by a full-time clerk who is responsible for maintenance, operation, filming, and all filing of information. The Master Central

File, the heart of the center, includes a micro-copy of all information on every project—the entire job history of the firm. Thus, the employee requiring specific information from a project drawing need only go to the center and obtain the appropriate aperture card or micro-jacket from the clerk, view it on the reader, and secure—within 20 seconds—either a hard copy enlarged back to original size from the viewer-printer, or a microfilm copy card for inclusion in a satellite file from the diazo copier. If specification sheets or correspondence are required, microfiche mountings may be obtained for viewing and copying. Since master file cards never leave the center, the old problem of lost or out-of-file situations is eliminated.

Security is another salient feature of the system. Should the complete office file be destroyed, duplicate cards stored in a bank vault are readily obtainable; and microfilm copies are acceptable as evidence in court, should a legal question arise.

But most important, the system provides more information in less turnaround time, permitting expensive personnel to capitalize on the firm's experience. Says Paseur: "The less time we have to devote to prosaic non-creative matters, the more we can give to approaching clients' needs in a way to meet those problems unique to his project."



Index locates any drawing in microfilm aperture card. Reader-printer makes full-size hard copy, or desk-top viewer gives instant reading.



**Retrieval center provides instant recall and reproduction**

All information on each project is generated, stored, and retrieved by project phases which correspond to the phases (schematics, design development, construction documents, bidding and construction) outlined in a typical architectural contract: pre-contract information; programing reports, color renderings and model photos; construction documents, specifications; color slides, shop and as-built drawings.

For the filing of visual material an index card is prepared for each exhibit while it is being put on film by an outside service. The returned film is then mounted on one of the two forms of aperture cards, matched to its index card, and duplicated for filing in the security file, master file, and index file. The microfiche mountings for correspondence and specifications are also proc-

essed outside and then returned for inclusion in the master file.

Information may also be retrieved from the IBM 1130 by subject matter, enabling personnel working on current projects to benefit from all similar past project solutions. Presently anticipated categories of retrieval are 1) details, 2) component combinations of details, and 3) architectural spaces.

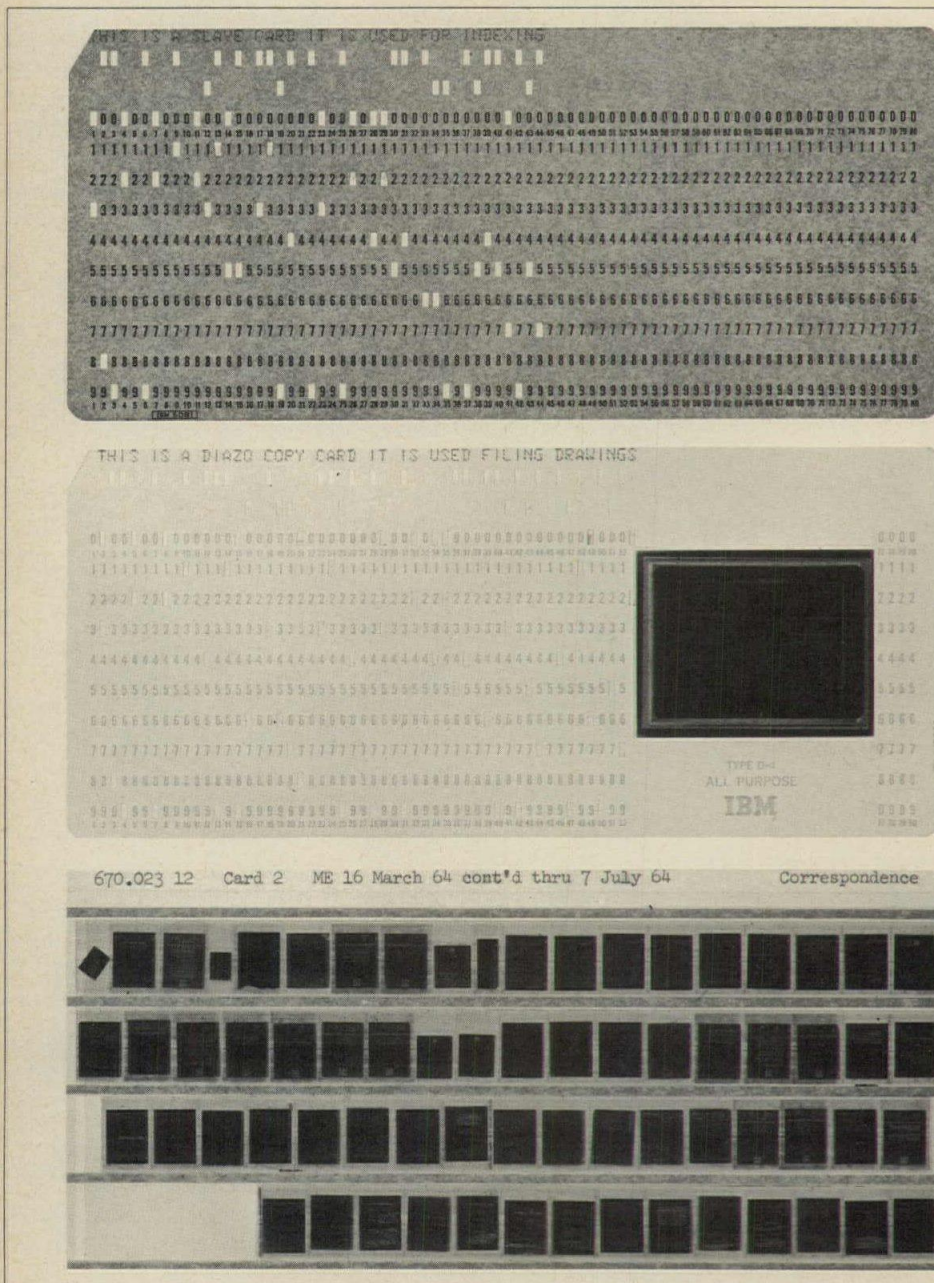
**Computer-linked system has potential for broader use**

Before full implementation of the ISRC system, a pilot study of 15 projects verified and refined feasibility of the system, and revealed a number of areas where further development would be desirable.

In addition to standard filing and retrieval operations, the system has built-in potential for expanded services which will be developed further. For example, Mr. Caudill wants additional category-

capability built into the system, permitting research into CRS history of such specific items as "zero detailing." The jacket/microfiche concept will be utilized to film additional information including accounting records and programing and promotion files. Eventually the architectural, mechanical, electrical and plumbing production departments will each have a satellite file for their use consisting of an in-use viewing file and reader, and a portable desk viewer. The study further indicated that while quality prints can be obtained on work already completed, some changes in drafting materials and techniques would improve copy quality on future projects.

During the transition period, until the micro-copy file is fully integrated in the activity of the firm, the active central file will be maintained. But eventually, once the backlog has been filmed, all originals will be destroyed.



Components of the computer-linked micro-records system include punched index card (top) used to locate aperture cards (center) with mounted films of drawings or renderings; or to find microfiche (bottom) which carries 16-mm mountings of pages of specifications, correspondence or other documents.





***"People can work without plumbing.  
And they can work without air conditioning.  
But they just can't work without telephones."***

Fairchild Hiller Corporation's facilities manager, A. S. Damiani, knows what he's talking about.

He's seen buildings outgrow their communications capacities time and time again. He's tripped over exposed wires. Cables running across floors. Seen holes being drilled for telephone wires right after a building had been finished.

And he was *determined* this wasn't going to happen to the new Sherman

Fairchild Technology Center near Washington, D. C.

That's why he called in a Bell System Architect and Builder Service Representative at the very beginning.

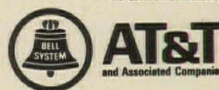
The result: not just the most modern telephone system possible, but a system which provides for every foreseeable *communications* need.

Data-Phone\* service. TWX. Even closed circuit TV using Bell Telephone System lines.

All cabling is concealed... yet the installation still insures the owner easy access, painless movement and quick expansion.

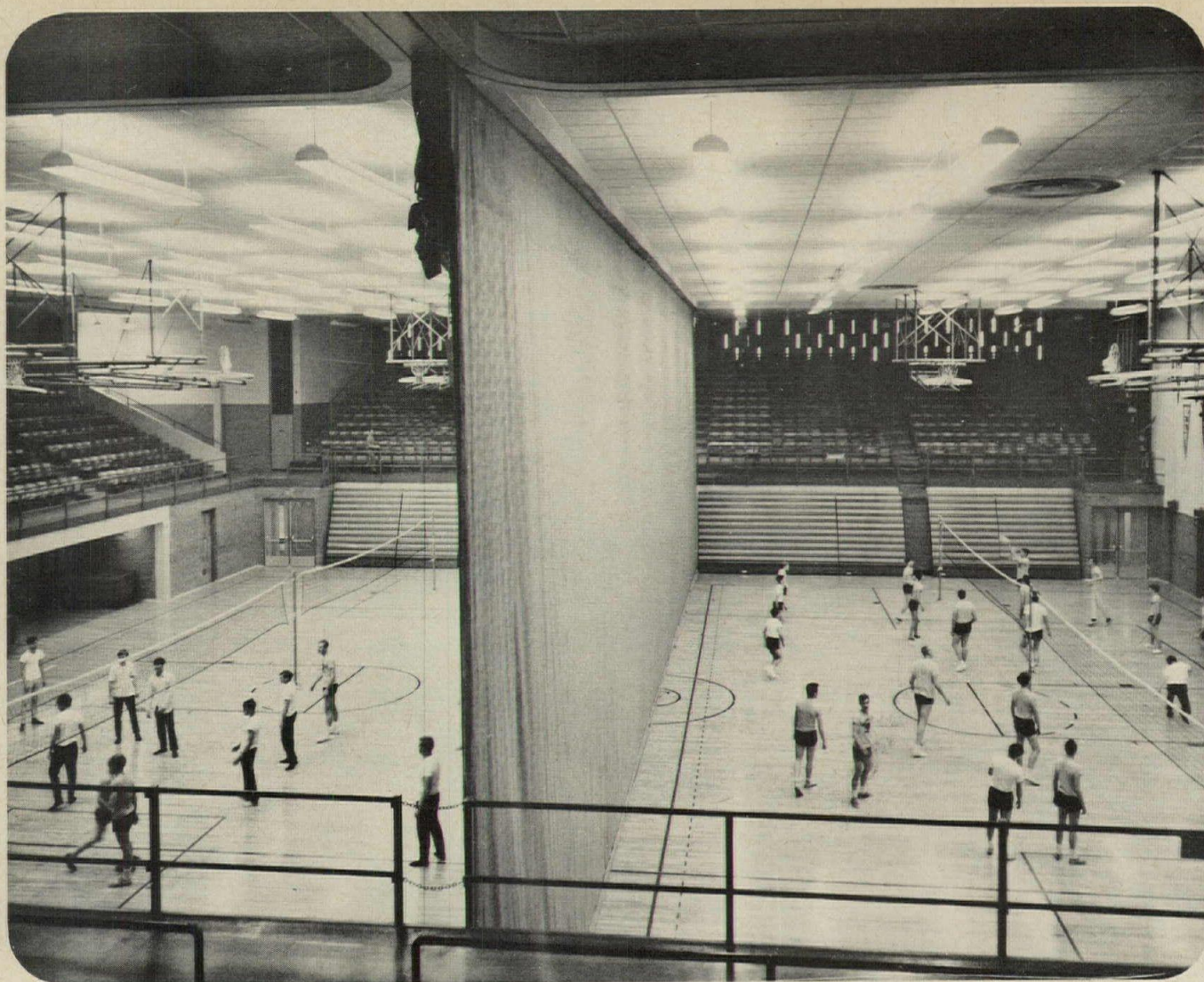
To make sure your next building is as modern as modern communications can make it, simply call 212-393-4537 collect. We'll send you a complete list of our Architect and Builder Service Representatives.

\*Service mark



For more data, circle 60 on inquiry card





## How to divide and conquer noise...with Lead

Can you imagine trying to explain wrestling techniques to a class while a volley ball game is going on in the same gym? Instructors faced with this problem found it impossible even though the gym was visually partitioned by a heavy canvas curtain. The shouts and whistles were just too much competition. In Akron's new Harvey S. Firestone High School, the problem is eliminated by a leaded vinyl curtain which divides the large gym into two acoustically-separate units. The main curtain consists of two separate sheets with a

12 inch air space between them. Either or both can be raised or lowered electrically. Secondary curtains which move on overhead tracks like draperies close off the bleacher sections along the walls. All the curtain material is leaded vinyl coated on a durable fabric backing and was supplied by the Duracote Corp. of Ravenna, Ohio. A pleasing turquoise color and an embossed pattern give it an attractive appearance. Noise annoys everyone. It destroys privacy and impairs efficiency. Conquer it with lead.

**ST. JOE**


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## The place:



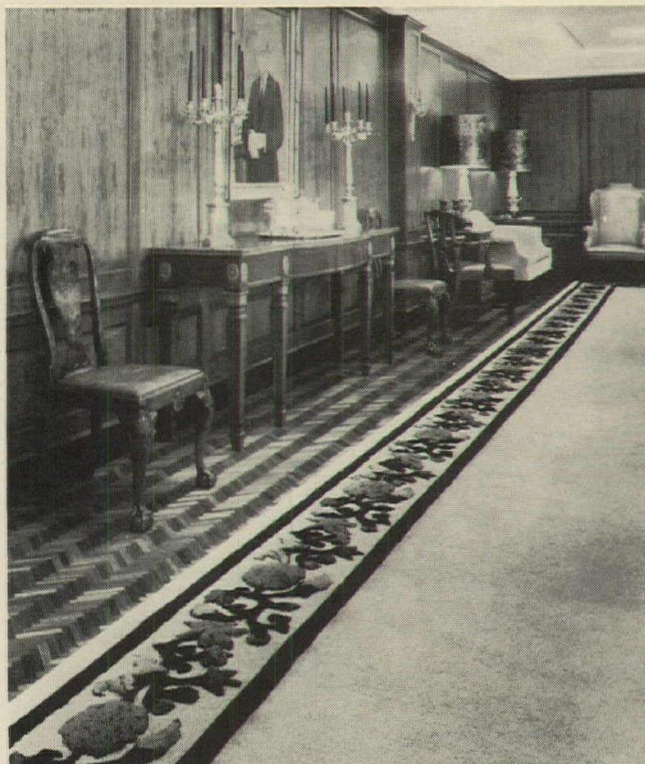
The stately  
First National Bank of Mobile,  
Mobile, Alabama



## The man:

Mr. Mark Lyons III, President,  
Gulf Flooring and Supply Co.,  
Mobile, Alabama

## The carpets:



**Bigelows.** Specially created custom rug in the Board Room has colors and border design keyed to the two antique Chinese urns on either side of the fireplace.

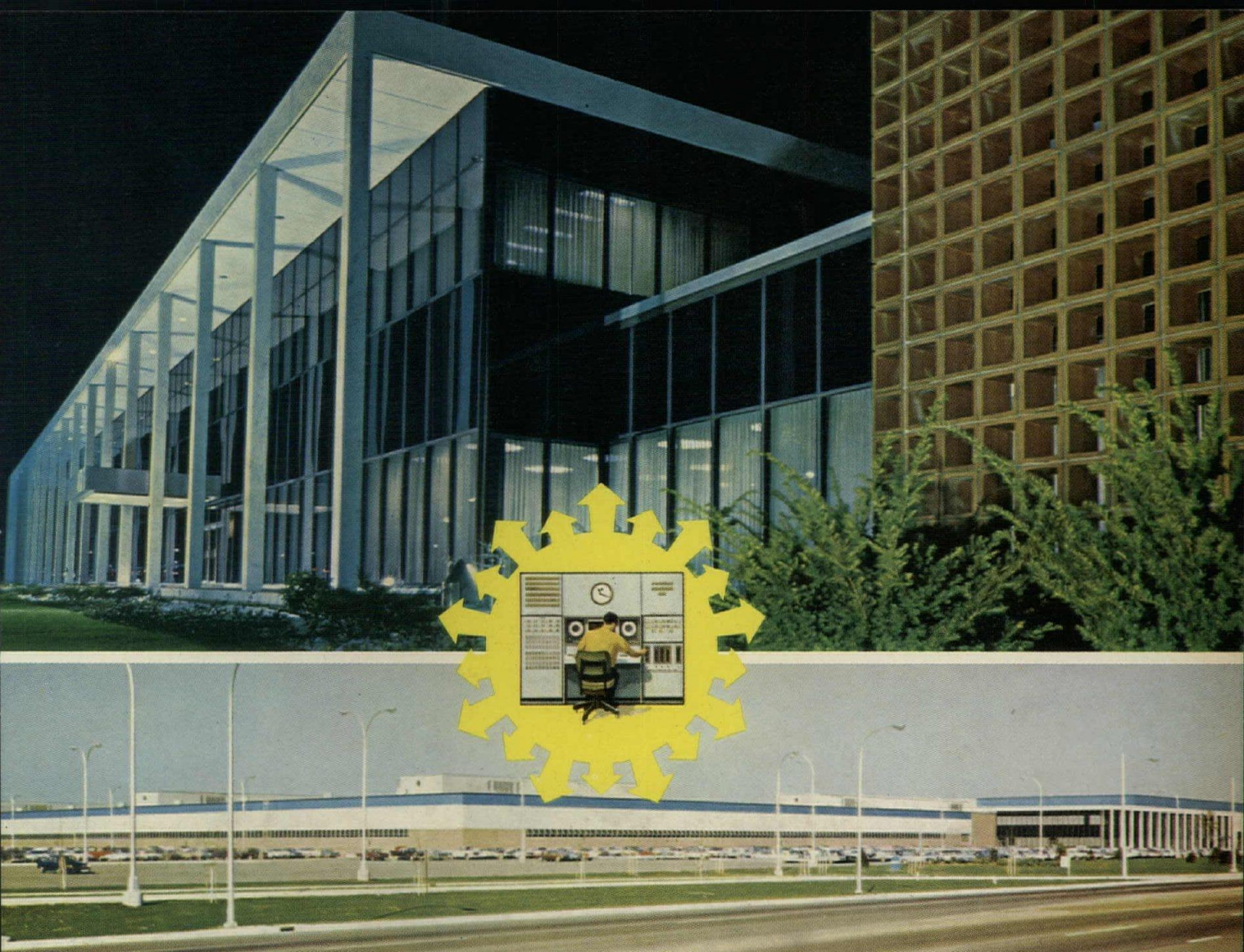
Why do people like Mark Lyons specify Bigelow? Because they know that for every hospital, hotel, motel, bank or other commercial building, Bigelow has or can custom-create the perfect carpet. We've done it since 1825. Our carpet counselors will give you all the help you need in solving any kind of

carpet problem—at no charge. Simply call your nearest Bigelow sales office. Or for a colorful, free brochure on commercial carpets, write Dept. A, 140 Madison Avenue, New York, N. Y. 10016. Find out for yourself why **people who know buy Bigelow** ▶

Bigelow sales offices are located in Atlanta, Boston, Chicago, Cleveland, Dallas, Denver, Detroit, Los Angeles, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, San Francisco, Seattle.

For more data, circle 64 on inquiry card





One man operates the Honeywell Control Center that starts, stops, adjusts, reveals, alarms, monitors, analyzes, and checks almost everything in an industrial plant. Shown here: Two views of 57-acre Chrysler Corporation Sterling Stamping Plant, Detroit, Michigan. Architects and Engineers: Giffels and Rossetti, Inc., Detroit.

## Now! Honeywell **1-man** Control of an entire plant that pays a $33\frac{1}{3}\%$ annual return

That's right, most plant owners save enough in operating costs to pay for Honeywell automated control in 3 years or less... a  $33\%$  annual return on investment!

### One man at the control center:

- reads and adjusts temperatures.
- starts, stops and adjusts equipment.
- protects an entire plant against fire and intrusion.

**Five systems.** Honeywell offers 5 different systems to fill your needs, and more fire and intrusion detectors than anyone else, so you can pick exactly the protection you need for each

commercial building job.

**Greatest reliability.** Only Honeywell offers microelectronic circuitry for infinite life expectancy and reliability.

**Personal follow-up.** There's a field staff of Honeywell Building Automation Systems Engineers to help your clients get full payback.

In short, Honeywell can design, build, install, guarantee and service the complete temperature control and protection system you need for any commercial building you design.

**Make us prove it.** For examples of operating economies in other plants, just mail the coupon.



### FREE BOOKLETS!

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Have a Building Automation Systems Engineer call with examples of operating economies.

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Minneapolis, Minn. 55408

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Firm \_\_\_\_\_

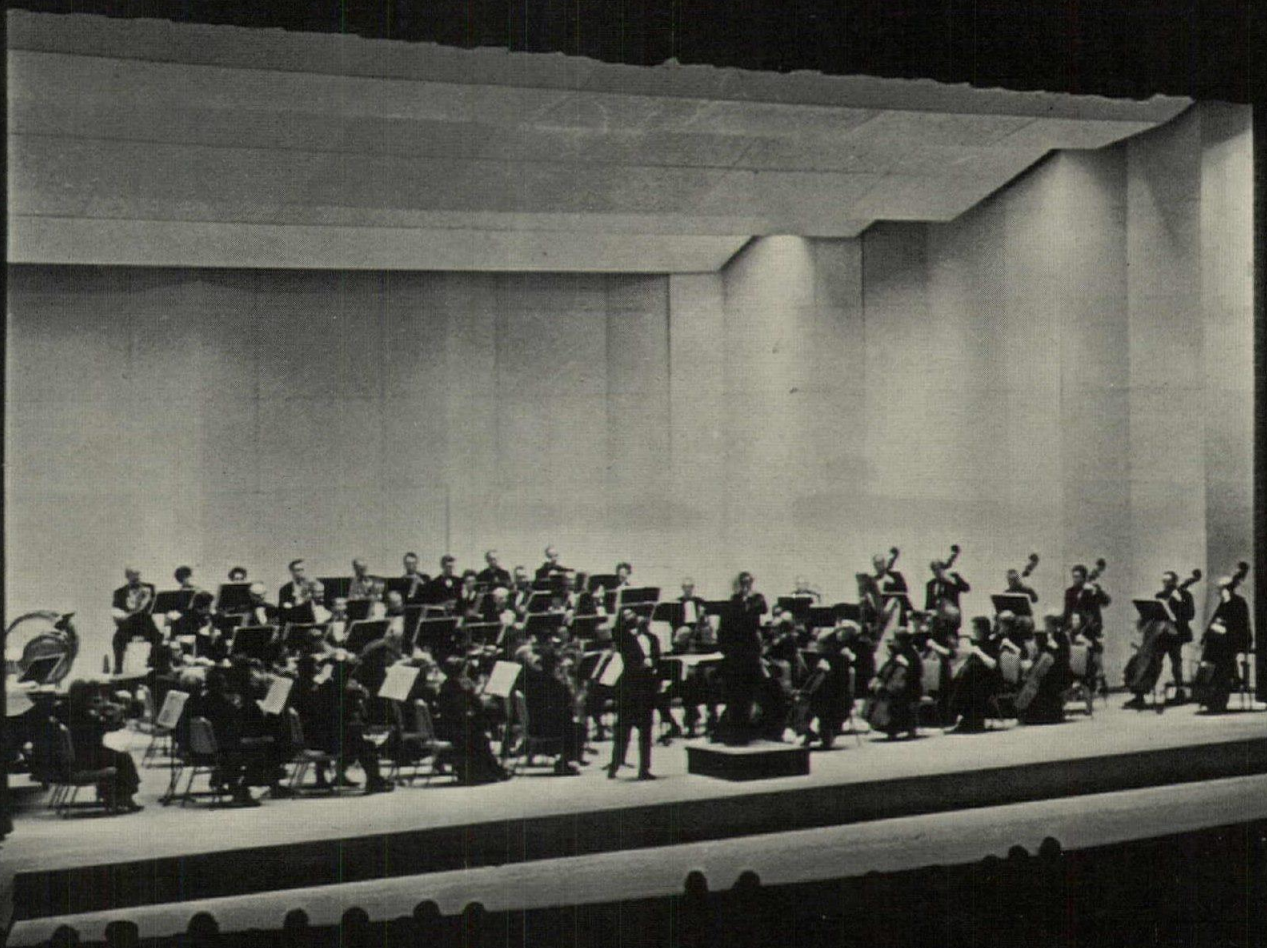
Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

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automation systems help  
make people more productive



# Project The Total Performance



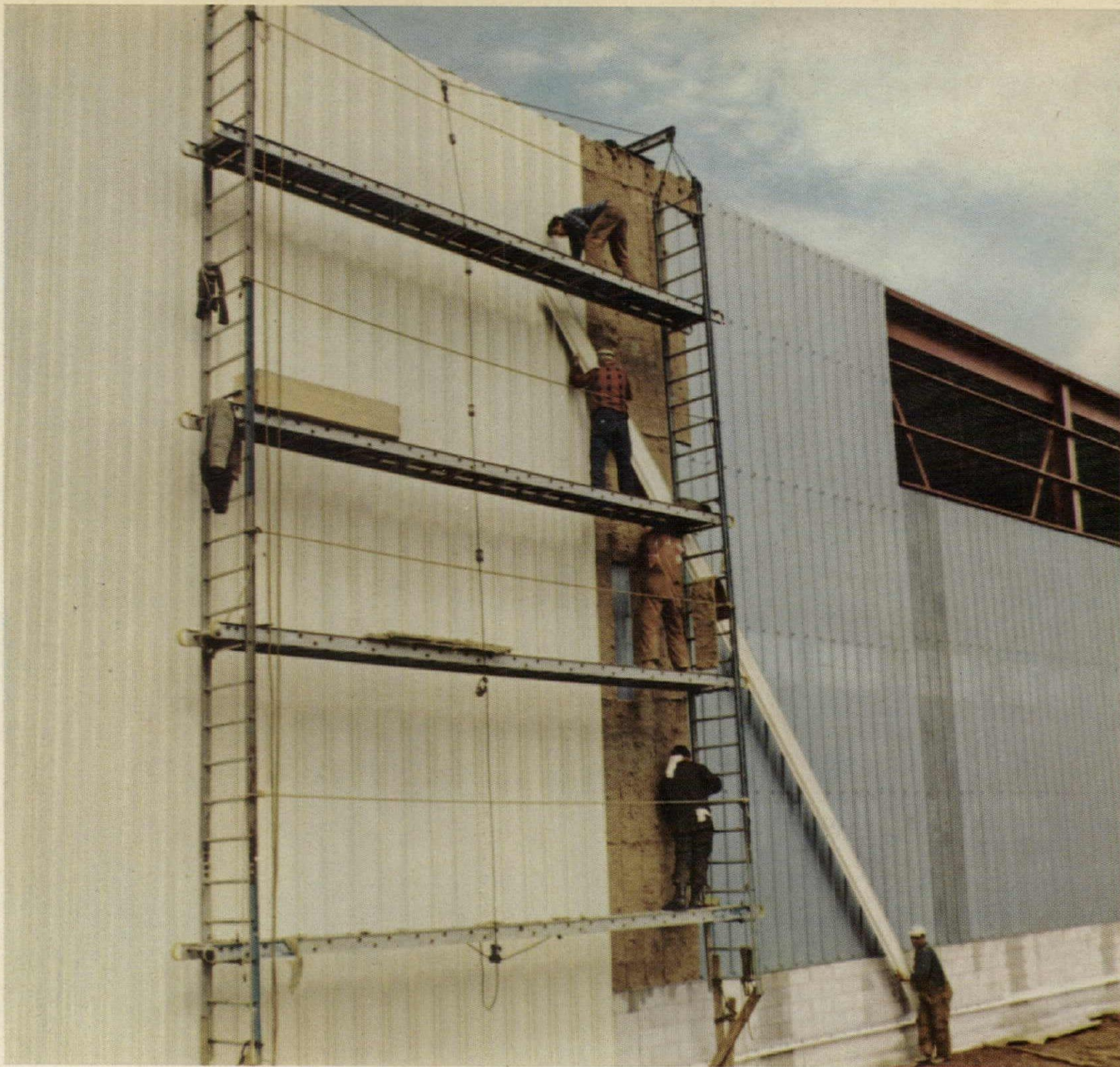
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*For more data, circle 65 on inquiry card*





## Metal walls go up faster ...and last and last with finishes of Kynar® 500!

Metal walls go up nearly 10 times faster than brick or masonry walls, and cost  $\frac{1}{3}$  to  $\frac{1}{2}$  as much. They can be taken down quickly for easy access or plant expansion.

What's the best protection for the metal? Finishes of Kynar 500! They come in a wide selection of colors; assure perfect color match panel for panel. They're durable: won't crack or craze, take abrasion

in stride. Accelerated tests by Pennsalt, plus years of exposure data project 30 years of maintenance-free life!

For your next industrial building, consider metal walls highlighted by a colorful finish of Kynar 500. For more information, contact Plastics Department, Pennsalt Chemicals Corporation, 3 Penn Center, Philadelphia, Pa. 19102. (215) LO 4-4700.

Make your base specification Kynar 500!



*For more data, circle 66 on inquiry card*



# ON THE CALENDAR

NOVEMBER

**2-4** Central States A.I.A. Regional Conference—Mayo Hotel, Tulsa, Okla.

**5-7** Western Mountain States A.I.A. Regional Conference—Broadmoor Hotel, Colorado Springs, Colo.

**14-16** North Central States A.I.A. Regional Conference—St. Paul Hilton, St. Paul, Minnesota.

**15-17** Semi-annual meeting of Consulting Engineers Council of the United States—Olympic Hotel, Seattle.

**30-December 1** Seminar on "Metallic Materials in Architectural and Structural Applications"—Polytechnic Institute of Brooklyn, Brooklyn, N. Y.

**30-December 2** International Conference on Masonry Structural Systems, conducted by the College of Engineering, University of Texas—University of Texas, Austin.

# OFFICE NOTES

OFFICES OPENED

**Don Brandenburger, A.I.A.**, announces the establishment of offices for the practice of architecture and planning, 251 Kearny Street, San Francisco.

**Howard Francis Sims** is now engaged in architectural practice with offices at 321 South Main Street, Ann Arbor, Mich.

**Wiley & Wilson, consulting engineers and associated architects** of Richmond and Lynchburg, Va., have opened North Carolina offices in Suite 1923, Wachovia Building, Winston-Salem.

**Preston R. Luce** is now engaged in the general practice of architecture with offices at the Woodbury Building, Hampton, New Hampshire.

**H. Carleton Godsey** has opened an office as **H. Carleton Godsey Associates, A.I.A., Architects** providing comprehensive architectural services at 334 East Broadway, Louisville.

**Clark and Enersen—Olsen, Burroughs and Thomsen**, a Lincoln, Nebraska firm of architects, engineers and planners, has opened a branch office at Grand Island, Nebraska. The new office is headed by architect **Larry Westerbeck**.

**W. Kelly Oliver** announces the opening of an office for the practice of architecture at 305 Detroit St., Denver.

NEW FIRMS, FIRM CHANGES

The firm **Gertzoff, Nuckolls and Warfel, Inc.** has been established at 207 East 37th St., New York City. The new lighting consultant firm will specialize in architectural and in theatrical illumination.

**Bradford Shaw** has formed a partnership with **Robert L. Hamill Jr., A.I.A.** The new firm name is **Hamill/Shaw Associates**, located at 1120 Lewis St., Boise, Idaho.

**John K. Harasciuk** has been named senior planner in the firm of **Morton Z. Levine and Associates, Inc., Architects, Engineers and Planners**, Skokie, Ill.

**Earl A. Freels and Robert S. Borders** are now on the architectural staff of **Linesch and Reynolds**, environmental planners of Long Beach, Calif.

The architectural firm **John Morse & Associates** of Seattle has named **James F. Hamilton** an associate of the firm.

**Clifford J. Ocheltree Jr.** has joined **P & W Engineers, Inc.** of Chicago as chief mechanical engineer.

**J. Streeter Wiatt Associates** announce that the firm's name has been changed to **Wiatt, Watson & Cole Architects**. Their office is at 746 Adams Ave.,

*our 43rd year*

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- sound-proof
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**SEE OUR CATALOG IN SWEET'S**

*continued on page 125*

For more data, circle 67 on inquiry card



# George Nemeny uses ceramic tile for beauty and freshness to up-date Stanford White design.



George Nemeny (F.A.I.A.) tore down walls, installed skylights, window walls and white ceramic tile to update this Kings Point, N.Y., house designed by Stanford White at the turn of the century. He flooded the dark interior with light and centered on highlighting a magnificent view of Long Island Sound while retaining the spirit of the Classic Revival original.

Glazed ceramic tile for kitchen countertops and splash areas provides a sanitary, scratch-stain-burn-resistant and easy-to-clean surface for preparing food. The center island topped with tile offers an attractive cooking and snack spot with work and storage areas combined.

Unglazed ceramic tile gives a safe, non-slip, easy-to-clean surface for bathroom floors, walls and the step-up tub in the master bath. Floors in the kitchen, dining room, powder room and solarium are also ceramic tile. The builder for this rejuvenation was Laimons Birkmanis and Cramer Bros. of Cold Spring Harbor installed the tile.

For a long-lasting, carefree material that offers you unlimited design ideas for interior and exterior use in either new or remodeling projects, specify ceramic tile made in the U.S.A. The triangular mark at right appears on every carton of wall tile, ceramic mosaic tile and quarry tile when you select and install Certified Quality Tile. This seal is your assurance that tile is regularly sampled and tested by an independent laboratory to meet the most rigid government specifications (SPR R61-61 and SS-T-308b). For more data about Certified Quality Tile and tile installation see Sweets Architectural File or write: Tile Council of America Inc., 800 Second Avenue, New York, N.Y. 10017.

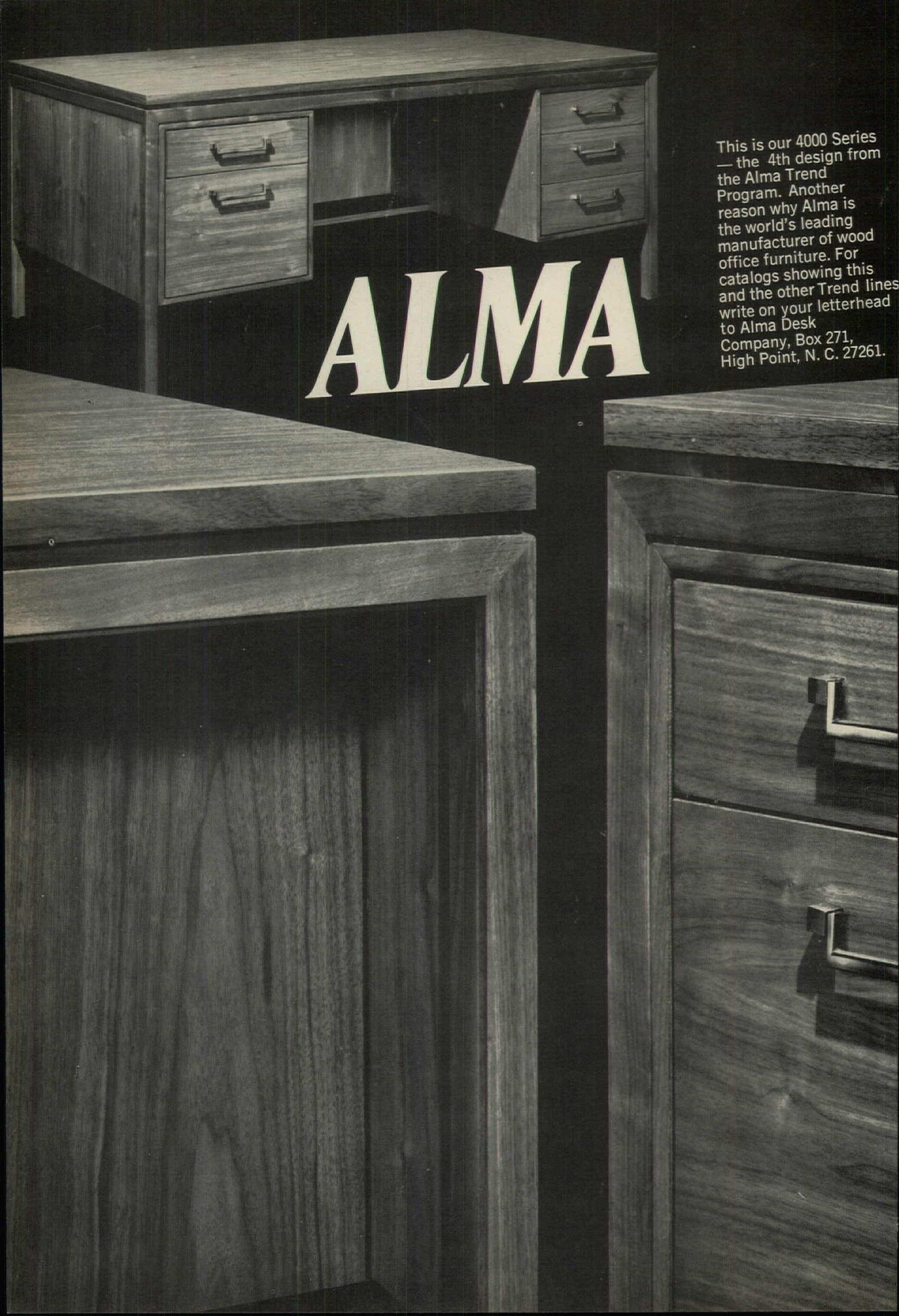


MEMBER COMPANIES: American Olean Tile Co., Inc. • Cambridge Tile Manufacturing Co. • Continental Ceramic Corporation • Florida Tile Industries, Inc. • Gulf States Ceramic Tile Co. • Hoffman Tile Mfg. Co., Inc. • Huntington Tile, Inc. • Keystone Ridgeway Company, Inc. • Lone Star Ceramics Co. Ludowici-Celadon Company • Marshall Tiles, Inc. • Mid-State Tile Company • Monarch Tile Manufacturing, Inc. • Pomona Tile Manufacturing Co. • Sparta Ceramic Company • Summitville Tiles, Inc. • Texeramics Inc. • United States Ceramic Tile Co. • Wenzel Tile Company • Western States Ceramic Corp.



For more data, circle 68 on inquiry card





# ALMA

This is our 4000 Series — the 4th design from the Alma Trend Program. Another reason why Alma is the world's leading manufacturer of wood office furniture. For catalogs showing this and the other Trend lines write on your letterhead to Alma Desk Company, Box 271, High Point, N. C. 27261.



# window paint't



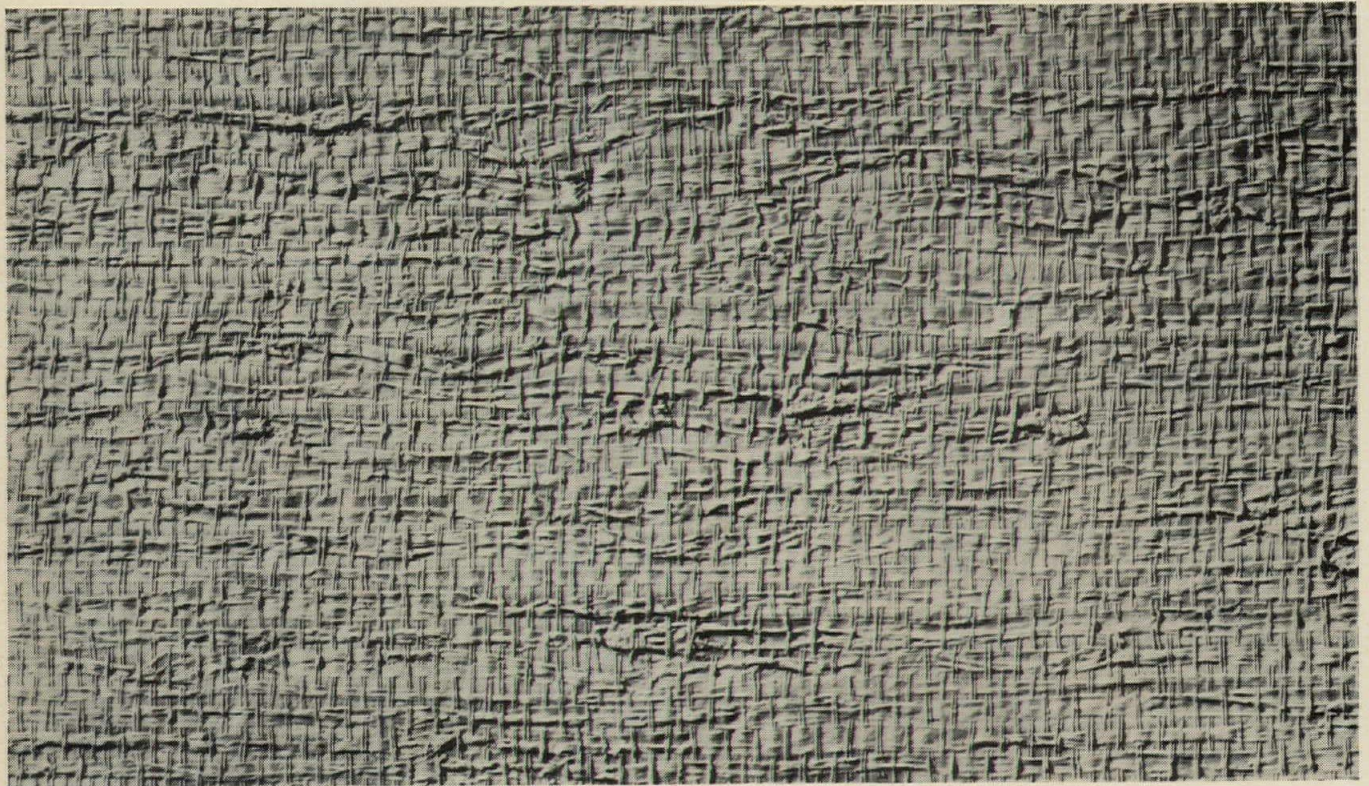
**BAYLEY**

William Bayley windows—both aluminum and steel—may be specified with the new Bayco finish. Unlike traditional paint, Bayco finish won't crack, peel, blister—and it resists chemical attack. Big advantages are **low cost** color control by the architect, tough protective finish that lasts for years, and no field painting. Bayco finish is applied by a special process to fabricated windows only after super cleaning and super drying. And, of course, Bayley will join your team to achieve the color effect you want. Bayco finish is also available on Bayseal weather stripped steel windows. For details write The William Bayley Company, Springfield, Ohio 45501.

*For more data, circle 70 on inquiry card*



# We've improved grass cloth.



We call ours Tamara. It's a Koroseal vinyl wall covering.

It gives you the same expensive look of natural grass cloth, but there the similarity ends.

Koroseal is economical.

It resists smudges, scratches, stains and all the other perils that ruin the real thing. It won't shred, chip, flake, yellow, fade or crumble.

It's easy to hang, too. To keep clean. It's washable, over and over again. Even flame-resistant.

Koroseal grass cloth comes in Pure White, Bone White, Tea Leaf Green, Eggshell, Ivory, Opal, Oriental Blue, Bamboo, Limed White, Natural, Hemp (a few

shades darker than natural), Olive, Ming Red, Taiwan Tan, and Char Brown.

We've improved other natural wall coverings as well. Burlap. Split cork bark. Silk. Linen. Handwoven straw. Tapestry.

If you like the real thing, you'll like our improved version of it even more.

So next time, use Koroseal vinyl wall covering. 30 patterns. 500 colors. Write B.F. Goodrich Consumer Products, Akron, Ohio 44318.

*Koroseal—T.M. Reg. U.S. Pat. Off.*

**B.F. Goodrich**

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# Anemostat® diffusers— silent, efficient performers at the Los Angeles Music Center

MARK TAPER FORUM

AHMANSON THEATRE

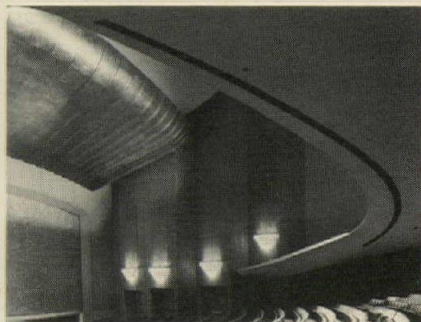
Air diffusers for the \$33.5-million Music Center of Los Angeles County had to meet these primary criteria—blend with the elegant decor, deliver effective air flow patterns in huge halls as well as smaller areas, and be quiet enough not to disturb the sensitive ears of music lovers.

Several types of Anemostat diffusers were chosen for the trio of outstanding buildings. In the Dorothy Chandler Pavilion and Ahmanson Theatre, for example, Anemostat's ALD Architectural Linear Diffusers became unobtrusive elements of the interiors. These linear units distribute 250,000 CFM of air to the pavilion with no audible hisses or hums.

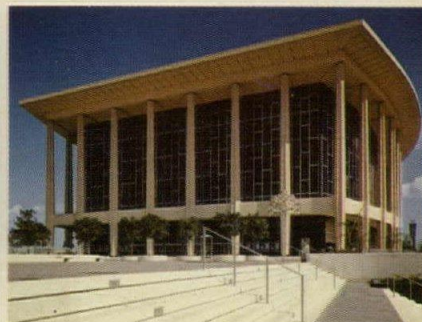
Anemostat EA-1 square diffusers and C-2 circular diffusers handle smaller spaces in the three buildings. They mount flush, look trim, and offer similar air handling flexibility and quiet operation.

Write for a catalog of Anemostat's complete line of air distribution equipment. Anemostat Products Division, P.O. Box 1083, Scranton, Pa. 18501.

Architect and Engineer: Welton Becket & Associates • General Contractor: Peter Kiewit Son's Company • Air Conditioning Contractor: F. B. Gardner Company, Inc. (pavilion); A&S Air Conditioning Company (forum and theatre)



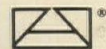
ARCHITECTURAL LINEAR DIFFUSER



DOROTHY CHANDLER PAVILION



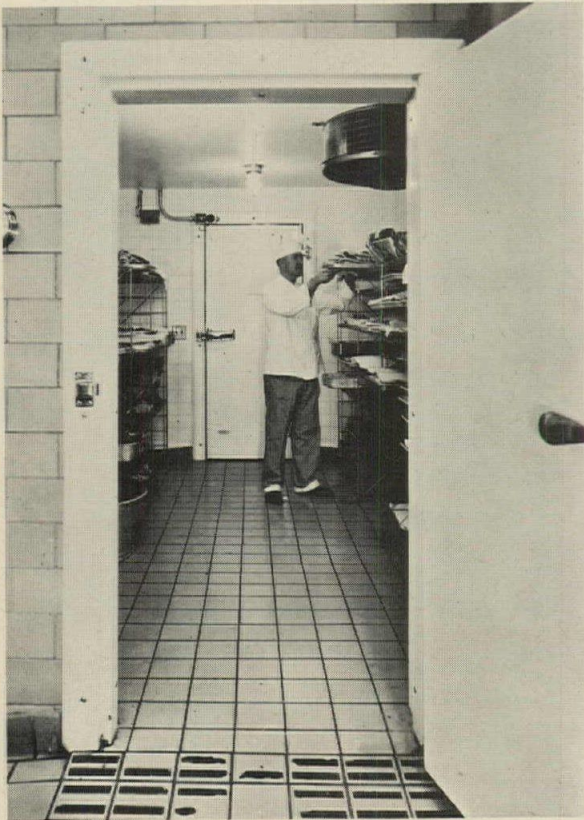
**ANEMOSTAT PRODUCTS DIVISION**  
**DYNAMICS CORPORATION OF AMERICA**



For more data, circle 72 on inquiry card



# Jamison Food Service Doors match your brightest, cleanest, most sanitary interiors



Lightweight Jamolite® plastic doors offer modern, attractive appearance. Door in foreground is cooler door. Jamolite freezer door with Frostop® is in background.



Jamison FS double cooler and freezer doors in hotel kitchen are completely stainless clad for easy cleaning and bright appearance.



## NSF APPROVAL

National Sanitation Foundation Testing Laboratory, Inc. has awarded seal of approval to Jamison Metal Clad and Jamolite Food Service Doors as meeting high public health standards.

In food service installations throughout the country, attractive Jamison doors are by far the leading specification. For better appearance, for easier operation and longer life, the top choice is Jamison! Write for catalog data to Jamison Cold Storage Door Co., Hagerstown, Md.



See-Thru plastic door for food service is transparent, lightweight and easy to operate. Door is acrylic plastic, 1" thick.

□ COLD STORAGE DOORS BY  
**JAMISON**  
 JAMISON DOOR COMPANY • HAGERSTOWN, MD.

For more data, circle 73 on inquiry card



## This school's steelwork is "painting" itself




Dos Pueblos High School photographed 10 months after erection. Architect: Cooke, Frost, Greer & Schmandt, Santa Barbara, California. Structural Engineer: Stanley H. Mendes, Santa Barbara, California. General Contractor: James I. Barnes Construction Company, Santa Monica, California. Structural Steel Fabrication & Erection: Griffin Fabricators, Inc., subsidiary of Griffin Steel and Supply Co., Inc., Bakersfield, California.

The exterior columns in Dos Pueblos High School, Santa Barbara, California, a 17-building complex, are made of the steel that "paints" itself—USS COR-TEN Steel. As it weathers, USS COR-TEN Steel develops a tight, dense oxide coating that seals out corrosion. If the oxide is scratched, it heals itself.

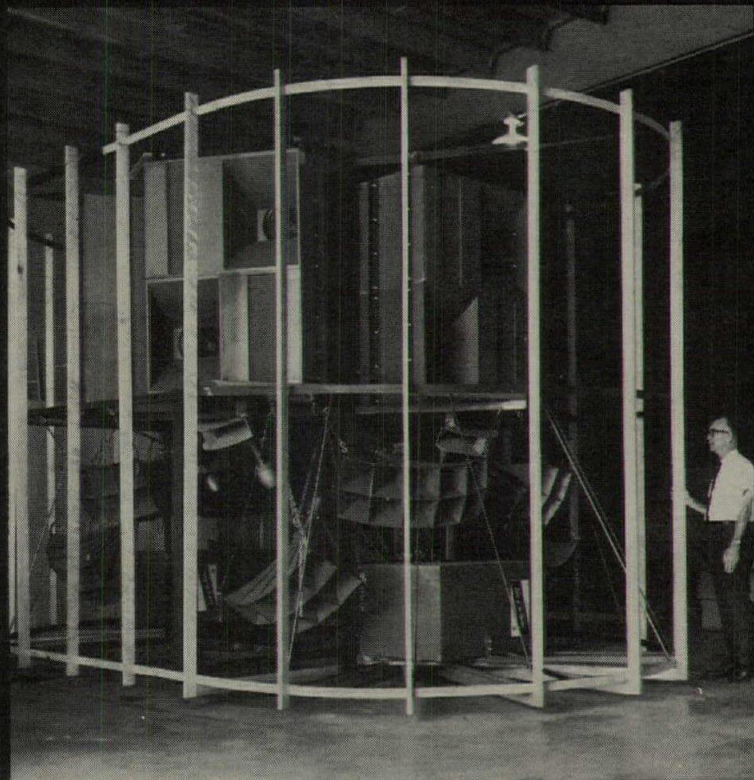
The architect chose COR-TEN Steel for its rich, earthy color and texture, and to minimize maintenance. Steel which required painting would have cost less initially, but, in the long run, would cost considerably more than COR-TEN Steel because of the need for periodic

maintenance and repainting.

Bare USS COR-TEN Steel is a natural for maintenance-free good looks in structural use. It is about 40% stronger than structural carbon steel, so members can be lighter and more graceful. USS COR-TEN Steel is available in a full range of structural shapes, plates, bars, and sheets. For full details on USS COR-TEN Steel for architectural use, contact a USS Construction Marketing Representative through our nearest sales office, or write U. S. Steel, Room 4683, 525 William Penn Place, Pittsburgh, Pa. 15230. USS and COR-TEN are registered trademarks.

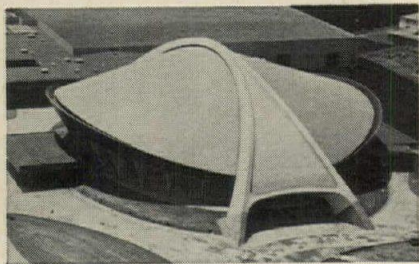
 **United States Steel: where the big idea is innovation**





## 2½ ton hi-fi.

A bit heavy for the average living room, but just perfect for the 24,000

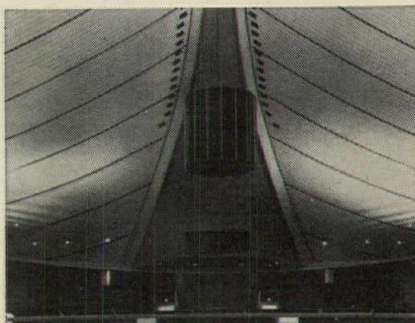


square-foot arena at the new Anaheim Convention Center. 2½ tons of Altec "Voice of the Theatre"® speaker components make up a speaker system straight out of a concert hall. Just what the Center's arena needed to sound like one.

The giant cluster, covered with grille cloth, is suspended from the

arena's dome. It provides speech and music reinforcement for events as diverse as boxing and ballet, musicals and mass meetings. Hence the need for concert hall quality. Hence Altec.

Altec sound equipment is used



Architect: Adrian Wilson & Associates. System installed by Hannon Engineering, Inc., Los Angeles, an authorized Altec Sound Contractor.

throughout the 15-million-dollar complex. Modern all-transistor amplifiers, control consoles, and a multitude of low and high-level speakers and speaker systems contribute to the perfection of the total environment designed into the Convention Center.

Altec sound systems are installed and maintained by factory-trained authorized Altec Sound Contractors. You'll find one listed in the "Yellow Pages" under "Sound Systems." Please give him a call to discuss your sound project, present or pending. Or for further information, write Dept. AR-10.



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# KINNEAR

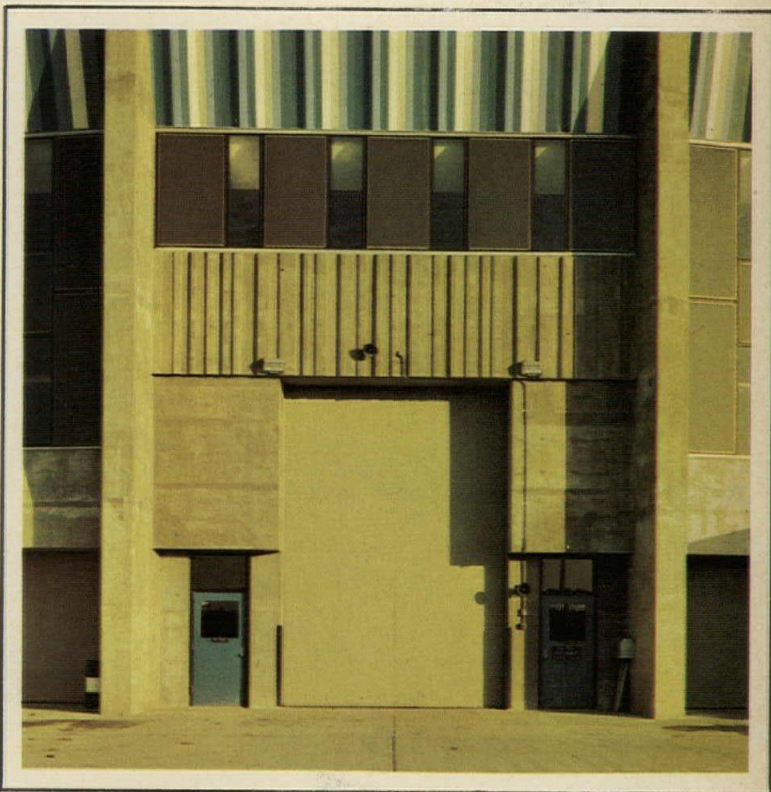
offers the many benefits of coiling operation  
to many public building applications...

Kinnear has the product to do the job that is required — be it a rolling door, rolling shutter or rolling grille. Each of them offers the space economy and durability of upward coiling operation. In the interlocking slat, Kinnear Engineers originated the design principle that has now been time proven throughout the world for over 70 years. And to this day, it has not been excelled for efficiency from any standpoint.

## rolling doors...

Stored on a compact coil above the lintel, all floor, wall and ceiling space around the opening is cleared when the door is open. When closed and locked, the heavily galvanized steel, interlocking slat curtain gives maximum protection against weather, fire, vandalism — **and hard daily use.** (Also available with automatic closing mechanism and U/L Labeled as a fire door.)

Ask about Kinnear "Chart Doors" — push-up chain or motor operated. Frequently, with a little alteration of your specification, they can be used with a savings of many weeks of delivery time.



## rolling shutters...

Whether it's a pass window, concession counter — or even a wall cabinet — it can be neatly and securely closed and locked with a Kinnear Counter Shutter. Developed especially with architectural appearance in mind, all mechanism is designed for maximum concealment and the curtain is composed of a small artistic steel, stainless steel or aluminum flat slat.

Where a fire rated counter shutter is required ask about the new FYR-DOR.

## rolling grilles...

When it's desirable to barricade an opening or corridor against trespassers, without sacrifice of air, light or vision, the Kinnear Rolling Grille is a perfect answer. The ornamental assembly of steel or aluminum bars and links is attractive in any style architecture; and flexibility and operating efficiency of the grille are similar to Kinnear Doors or Shutters. For the ultimate in convenience they can be equipped with electronically controlled motor operation.

When you specify any of Kinnear Products, you have the safeguard of "Registered Life Extension" backed by Kinnear's nationwide installation and service organization. Call Kinnear on your projects.

Also manufacturers of door operators and wood, steel, aluminum or fiberglass overhead doors.



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that endures.

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**CORNING™**  
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Impervious.

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**RAINS CLEAN.**  
Stays clean.

**DEFIES**  
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corrosion,  
impact,  
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when backlighted  
at night!)

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Stays flat.  
Won't ripple.

No stress  
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Exterior.  
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our bronzes  
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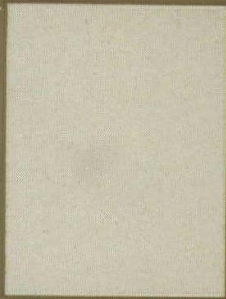
Brochure.  
See card.

**CORNING**  
BUILDING PRODUCTS

*For more data, circle 76 on inquiry card*



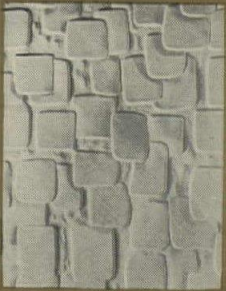
## DESIGN CRITERIA



No. 101



No. 102

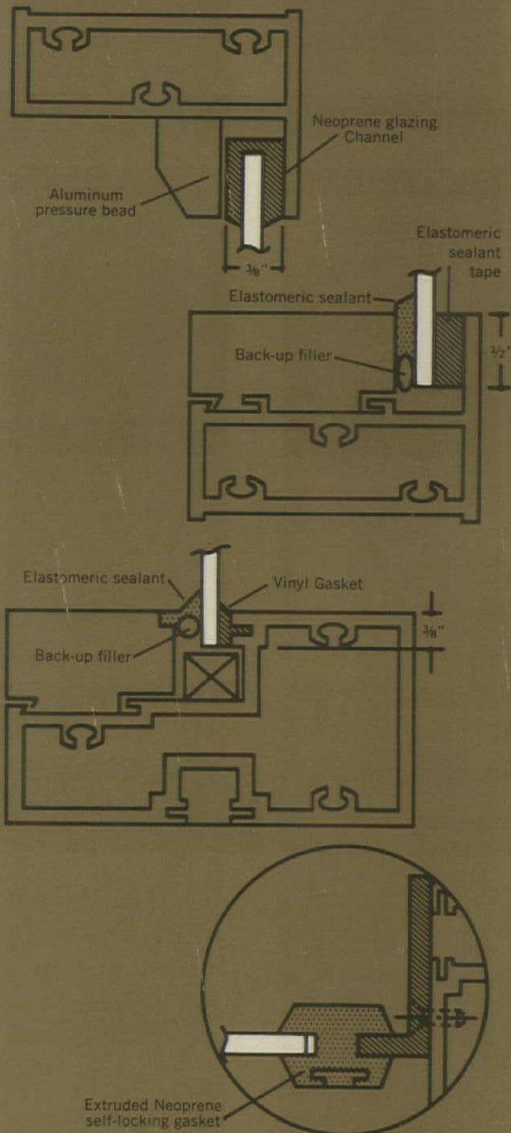


No. 103



No. 104

## SUGGESTED GLAZING DETAILS



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1105 North Front Street  
Niles, Michigan 49120

Lupton Manufacturing Co., Inc.  
700 E. Godfrey Avenue  
Philadelphia, Pennsylvania 19124

North American Aluminum Corp.  
5575 N. Riverview Drive  
Kalamazoo, Michigan 49004

Northrup Architectural Systems  
999 South Hatcher Avenue  
City of Industry, California 91745

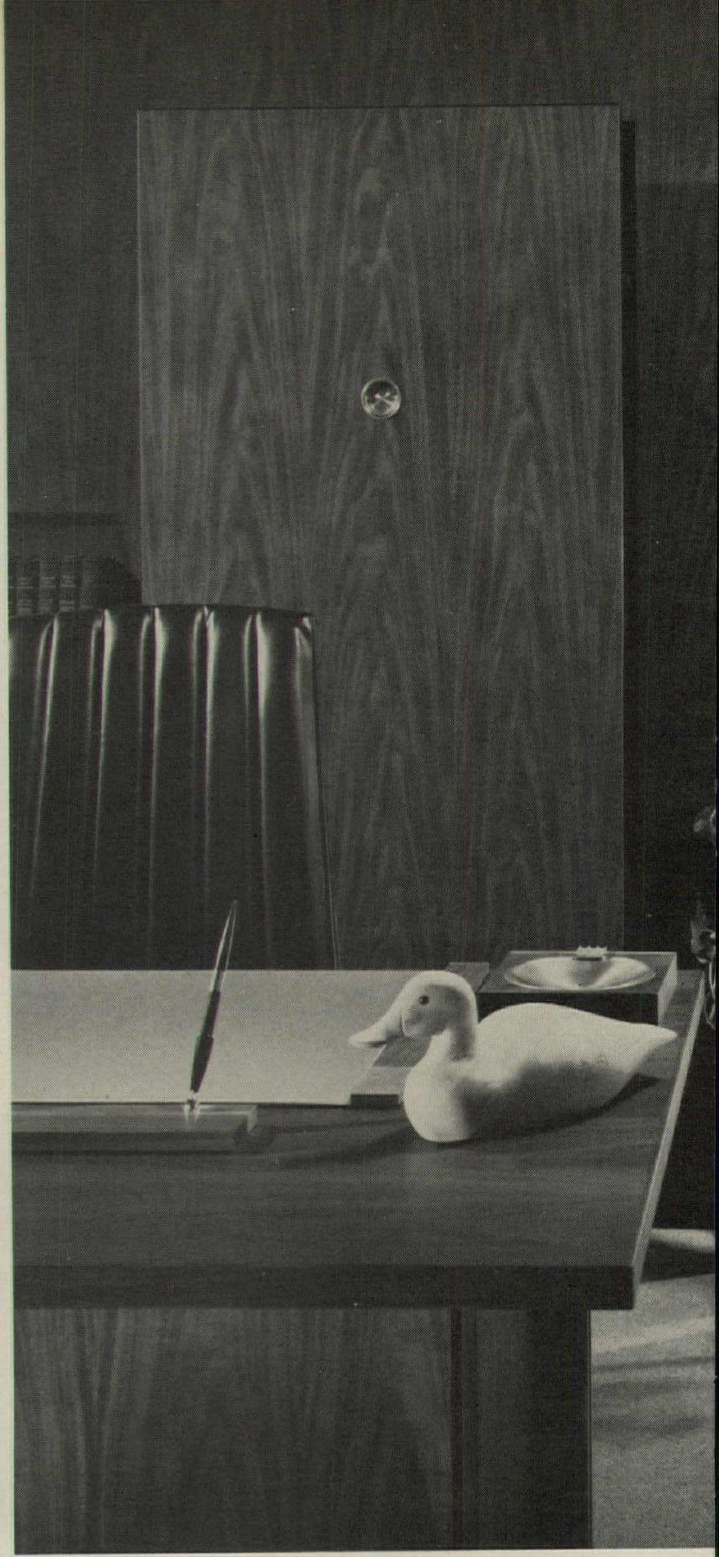
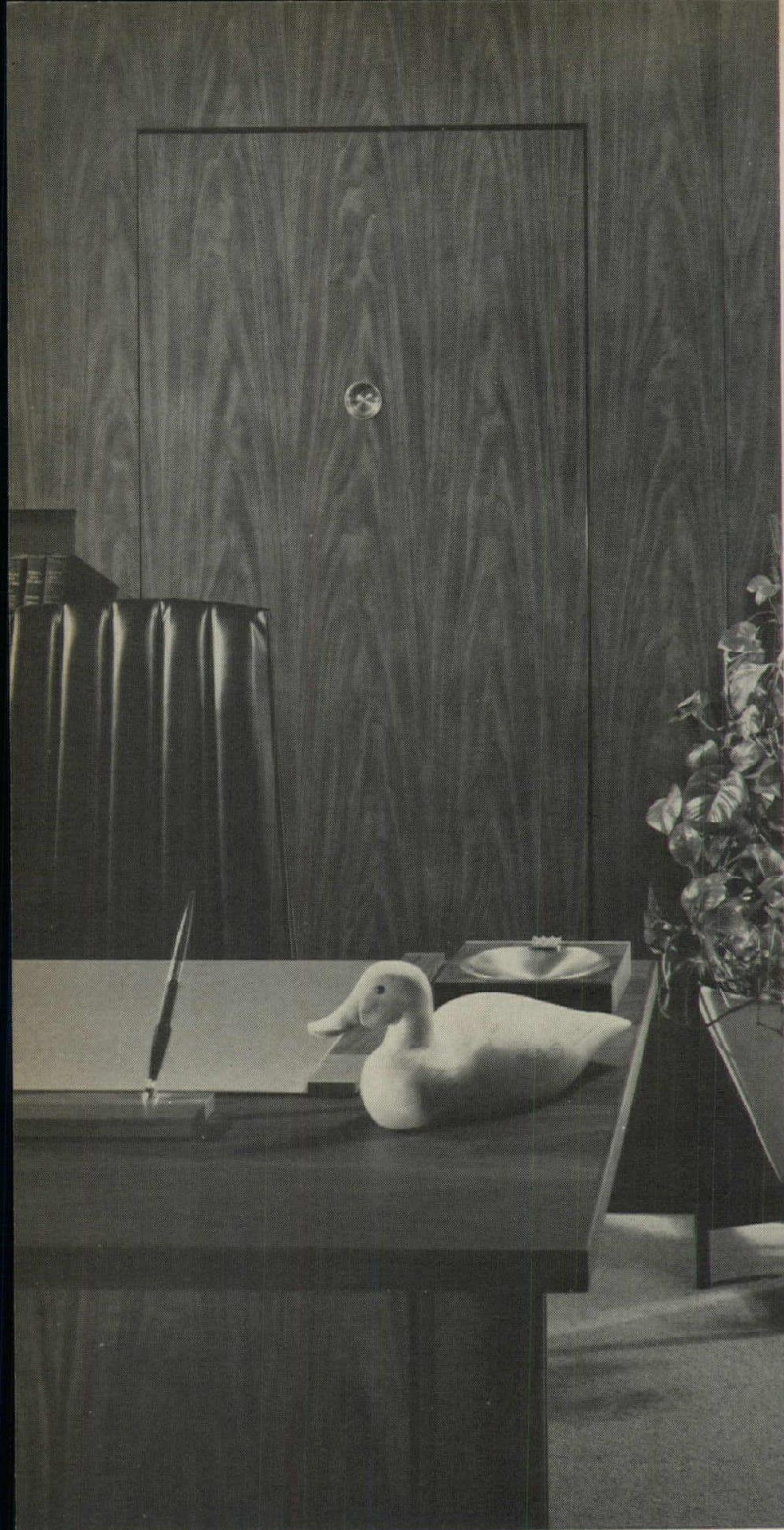
Porterfield Industries, Inc.  
164 N. W. 20th Street  
Miami, Florida 33127

Soulé Steel Co., Inc.  
1750 Army Street  
San Francisco, California 94124

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## Introducing a wall...that rolls into a wardrobe

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... holding 4 hats, 6 topcoats, 3 pair of rubbers, a set of galoshes, an attaché case and a few strange executive-type items (to name a few). This office space saver is designed for architectural beauty, reliability and simple installation. For product excellence in executive office equipment and accessories, with the architect/designer in mind, specify . . .

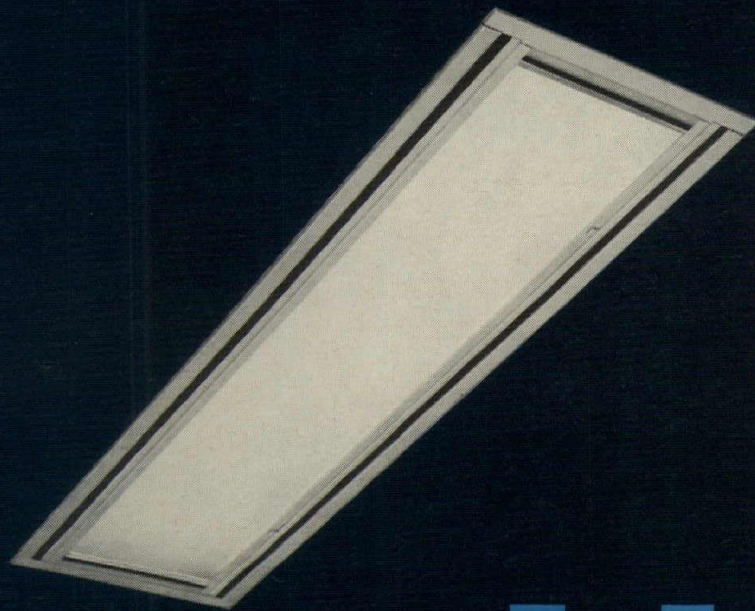


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# cool it

## You will when you light with our new Air Troffers

Wakefield Air Troffers let you say goodbye to heat build-up, smudgy ceilings and stale air. Our three new models adapt to your every need. One unit, the ASR, *brings in* a continuous flow of fresh, clean air, while the HTR model *removes* heated air. The benefits are multiple. Along with a fresher environment, you get cooler, more efficient fluorescent

tubes. And if you want to *combine* complete air exchange, try our CTR model.

Here's something else you get with *all three* units: Adjustable air flow, dirt and light traps, a selection of lenses and a wide choice of boots. What about looks? Wakefield Air Troffers give the architect a sleek, simple, uncluttered design. A design that won't clash with his. Modular 1' x 4' and 2' x 4' sizes add even more versatility in use.

So whether you're lighting a room or a building, why not cool it, too? Send for our new Air Troffer catalog, while you're thinking about lighting. It's free. And it could be the brightest move you'll ever make.

ITT Wakefield Lighting Products, International Telephone and Telegraph Corporation, P. O. Box 195, Vermilion, Ohio 44089.

WAKEFIELD LIGHTING

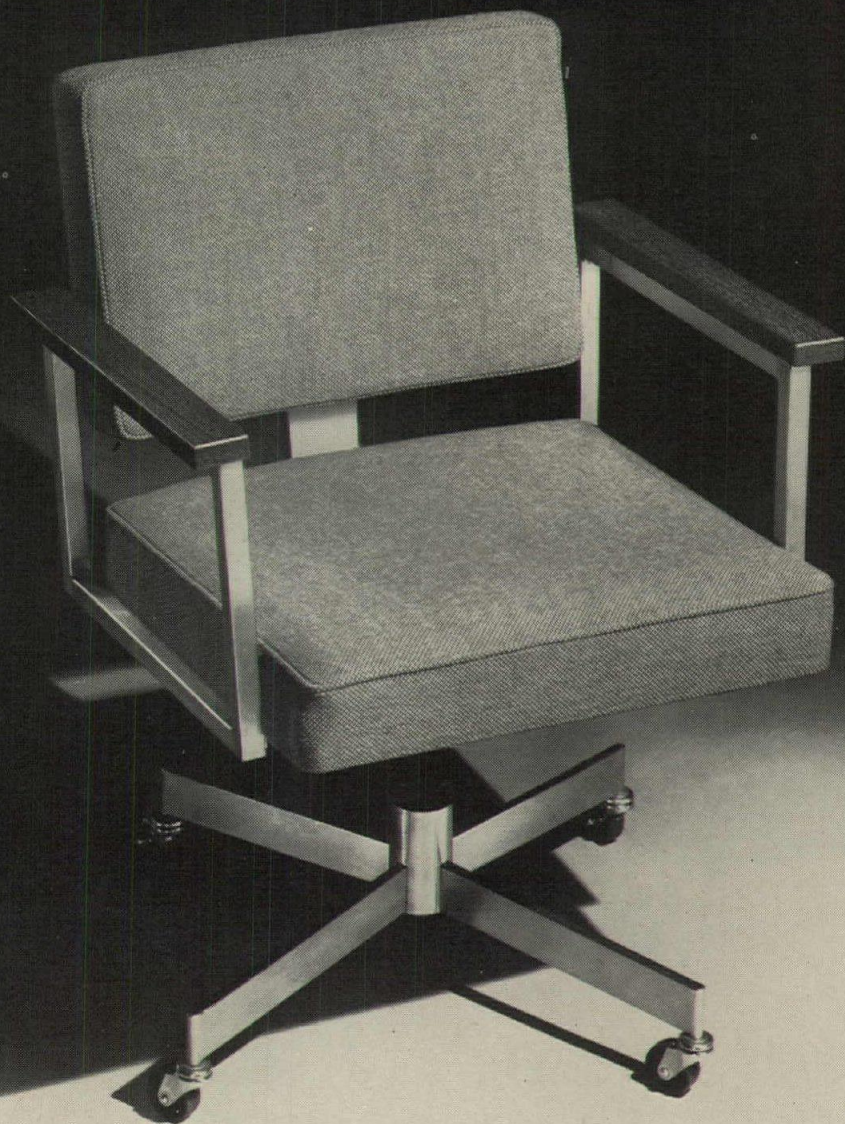
ITT

In Canada, Wakefield Lighting Ltd., London, Ontario

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# relax



**New Sturgis 1700 Line chairs only *look* expensive.**

Slim. Smart. With hidden hardware and a metal back support that's neatly contoured and concealed inside the upholstery. Plus special flat spring suspension in the foam cushion to provide comfort and prevent wrinkles.

Price? Surprisingly low. If you're searching for a chair bargain that doesn't look—or feel—like one, send for a color brochure on the Sturgis 1700 Line. The Sturgis Company, Dept. AM-111, Sturgis, Michigan 49091.



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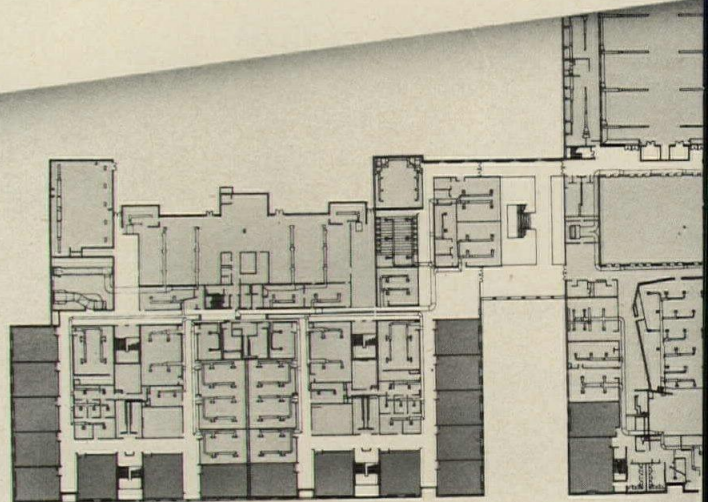
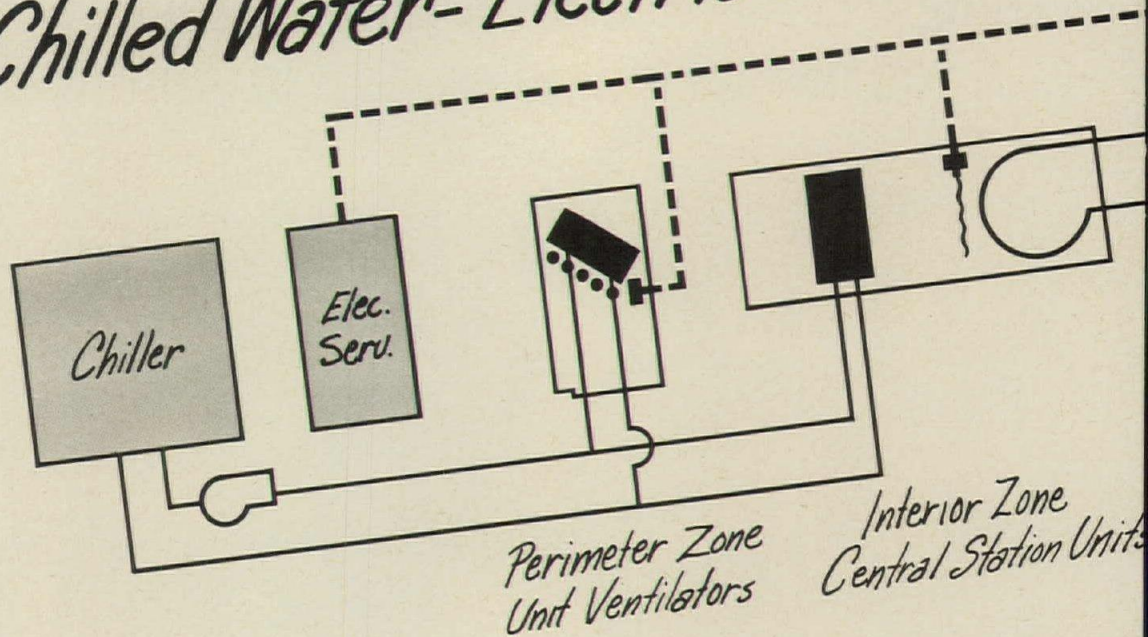
**A single climate conditioning system would be fine  
if you had no outside rooms in your plans. But...**





# Ed Davies had to design for outside and inside room

## *Chilled Water - Electric Heat*



Everett Associates, Architects; The Gilboy Associates, Consulting Engineer; Joseph B. Rogers, Mechanical Contractor.



# t Freedom High. And he did it at \$2.47/sq. ft.

If Freedom High School in Bethlehem, Pennsylvania, had all interior classrooms, Ed Davies of Gilboy Associates could probably have called for a central system and been done with it.

But Freedom High wasn't designed that way. It has both perimeter and interior rooms, and no one system—unit or central—would do the best job for both situations.

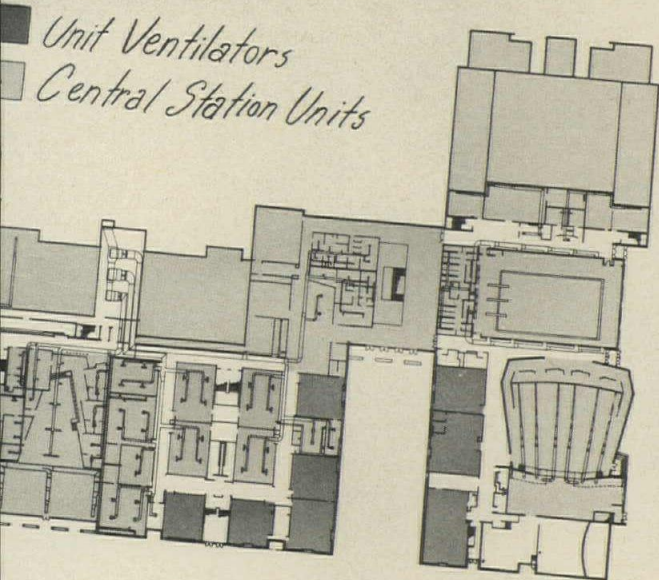
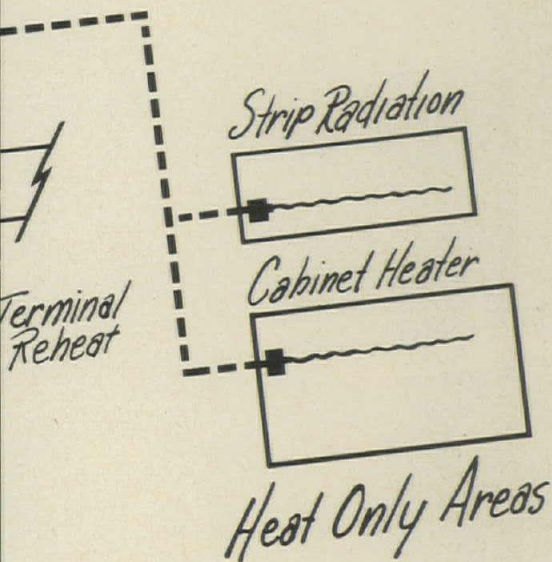
So he designed a system for Freedom High using central equipment for interior zones and unit ventilators for peripheral classrooms. And every bit of that equipment came from one source: Nesbitt.

The system uses chilled water for cooling and electric resistance for heating. A central chiller feeds both the individual Nesbitt Unit Ventilators and the Nesbitt Central Station Units. This unusual combination resulted in the lowest installed tonnage of air conditioning. For heating, the unit ventilators use five-step electric heating elements, while the central station units use electric heating with terminal reheat.

(An interesting sidelight: the school was originally designed with a Nesbitt four-pipe all-hydronic system. But the electric company offer of a blanket one-cent energy rate, with no demand, applicable to both lighting and air conditioning, prompted this change to a chilled water cooling, electric heating system. Nesbitt could handle that one too with no trouble.)

The combination system at Freedom High provides full-time, room-by-room control even when spaces are subdivided or opened up. And all for \$2.47 per square foot for year-round air conditioning—\$4.15 for the complete air conditioning and electric contracts.

Write for the Freedom High Cost Data Report. Nesbitt Operation, ITT Environmental Products Division, Philadelphia, Penna. 19136.



NESBITT **ITT**



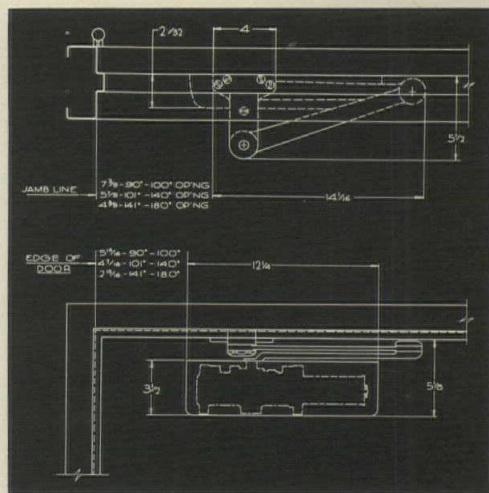




continued from page 104

# LCN

## for modern door control



Details of installation for stop-face-mounted  
"Smoothee" closer shown in photograph

### Main features of the LCN 4110 Smoothee® Door Closer

- 1 Fully hydraulic, providing efficient, full rack-and-pinion control of the door
- 2 Easily adjustable general speed, latch speed and spring power (may be increased 50%)
- 3 Adjustable hydraulic back-check fully effective before 90 degrees of door opening
- 4 Available with hold-open or fusible link hold-open arm (90° to 180° opening)
- 5 Finished tan lacquer, statuary, aluminum or prime for painting to match trim; plated available

Full description on request  
or see Sweet's 1967, Sec. 16e/Lc



**LCN CLOSERS, PRINCETON, ILLINOIS**

A Division of Schlage Lock Company

Canada: LCN Closers of Canada, Ltd.  
P.O. Box 100, Port Credit, Ontario

PHOTO: Auditorium Entrance, North Central High School, Indianapolis, Indiana; Everett I. Brown Company, Architects

Montgomery, Ala.

**Kemp Mooney** has joined **Stevens and Wilkinson** as a designer. The architecture-engineering firm is located in Atlanta, Georgia.

**John F. Hennessy, Jr.** has been elected president replacing **John F. Hennessy, Sr.** in the consulting engineering firm of **Syska & Hennessy, Inc.** **Arnold L. Windman** and **Alfred C. Zuck** have been elected as vice presidents. The firm is at 144 East 39th St., New York City.

**David F. M. Todd, A.I.A.** announces that the firm **Ballard Todd Associates** will continue the practice of architecture as **David Todd and Associates** at 305 East 65th St., New York City.

The Vancouver, B. C. architectural firms of **Townley & Matheson**, **Kelly Humphrey & Ritchie** and **John L. Kidd and Associates** have merged to form the firm **Townley, Matheson & Partners**. The new firm will work in conjunction with **Dexter, Bush & Associates, Ltd.**

Architect **Robert J. Grossman** has been named an associate of **Trogon-Smith, Architects, A.I.A.** located at 800 Sherwood Bldg., Spokane, Wash.

**David R. Gallagher, A.I.A.** and **Philip L. Vander Myde, A.I.A.** are now associate partners of **Vosbeck-Vosbeck Associates, Architects**, The Lloyd House, 220 North Washington St., Alexandria, Va.

**Larry Vance** is now with **Richard Weingardt & Associates, Consulting Engineers** in Denver and Sterling, Colo.

**Woodward, Clyde, Sherard & Associates** have named **Dr. Robert L. McNeill** and **George E. Hervert** principals; **Dr. Yves Lacroix** and **Gerald L. Baker** vice presidents; and eight new associates, **Lloyd Cluff**, **Lewis Oriard**, **William Black**, **Louis Lee**, **Donald Westphal**, **Leonard Krazynski**, **William Johnson**, and **Frank Waller**. The firm maintains 13 offices in cities across the country.

**Richard L. Dorman A.I.A.** announces the association of **Peter Munselle A.I.A.** and the formation of **Dorman/Munselle Associates, Architecture and Planning**. The new firm, formerly **Richard L. Dorman A.I.A. and Associates**, is at 113 North San Vicente Blvd., Beverly Hills.

**Fred Toguchi Associates Architects** has appointed **Deryck G. Muehlhauser** an associate in the firm.

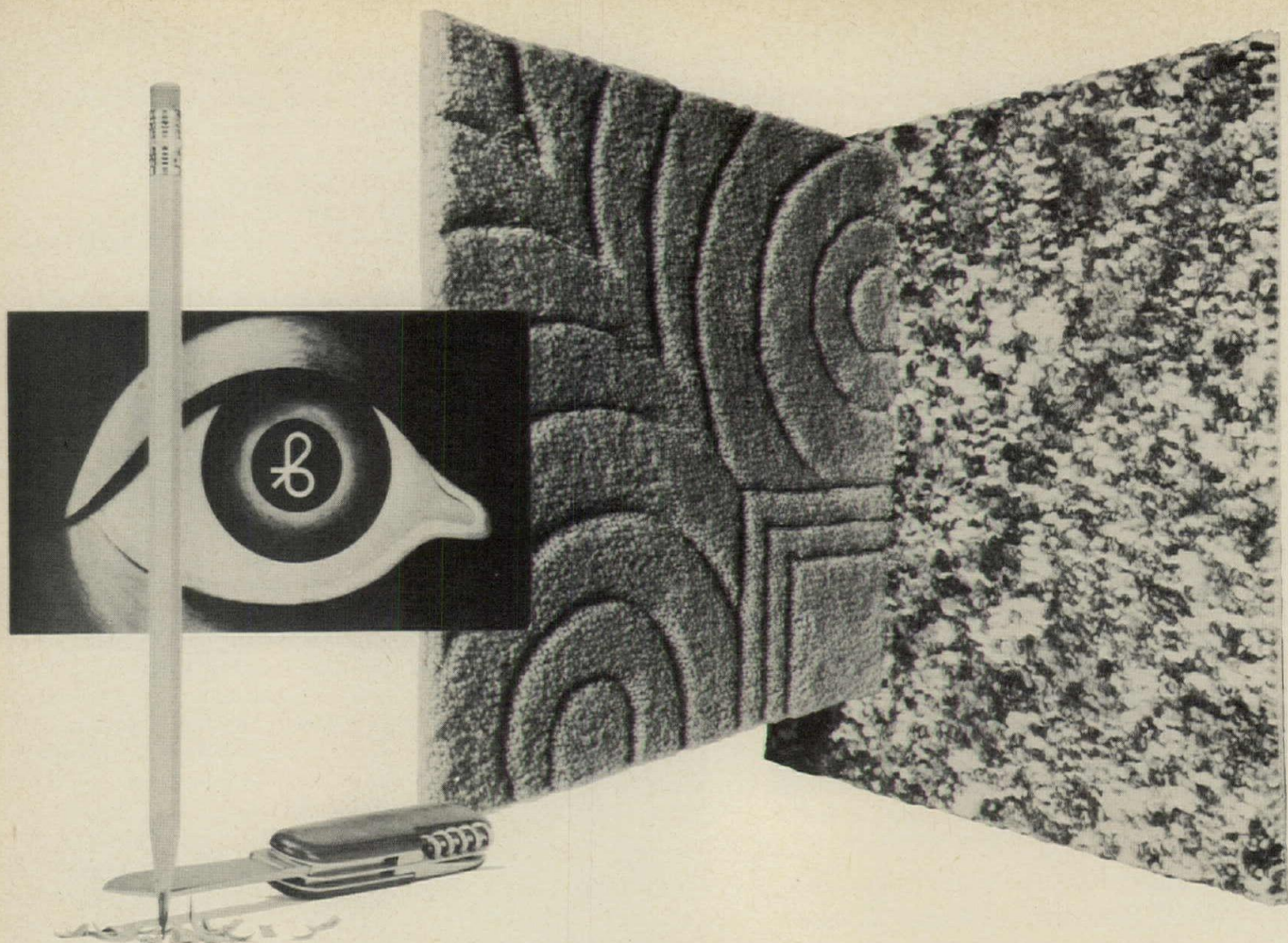
**David Schwerd, Saunder Schaevitz** and **Joseph P. Napolitano** are now junior partners of **Rouse, Dubin & Ventura Architects/Engineers**, 55 W. 42 St., New York.

**Faulkner, Stenhouse, Fryer and Faulkner, Architects** have admitted **Wallace J. Nichols, A.I.A.** as associate.

continued on page 131

♦ For more data, circle 81 on inquiry card





## you see so much more in carpeting when you call in Berven of California

The sharp pencil of a tight budget need not cross out the aesthetic contribution of Custom Carpeting. Question is: How tight is "tight"? For example, Berven Of California will custom-dye and custom-weave a wide selection of its custom qualities at a cost comparable to that of other's medium-priced stock broadloom. These are but the beginning of intriguing custom effects designed to give your project a rewarding touch of individuality. Should you decide, however, that the budget calls for stock broadloom, aesthetics still need not be overlooked. Turn to Berven Tufted Broadloom. Discover the fresh textural styling and sure use of color that spring from our Custom Carpet heritage. The pricing is most refreshing, too. May we call or send samples?

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E3

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The Dow Chemical Company, Construction Materials Sales, Dept. 71331, Midland, Michigan 48640.

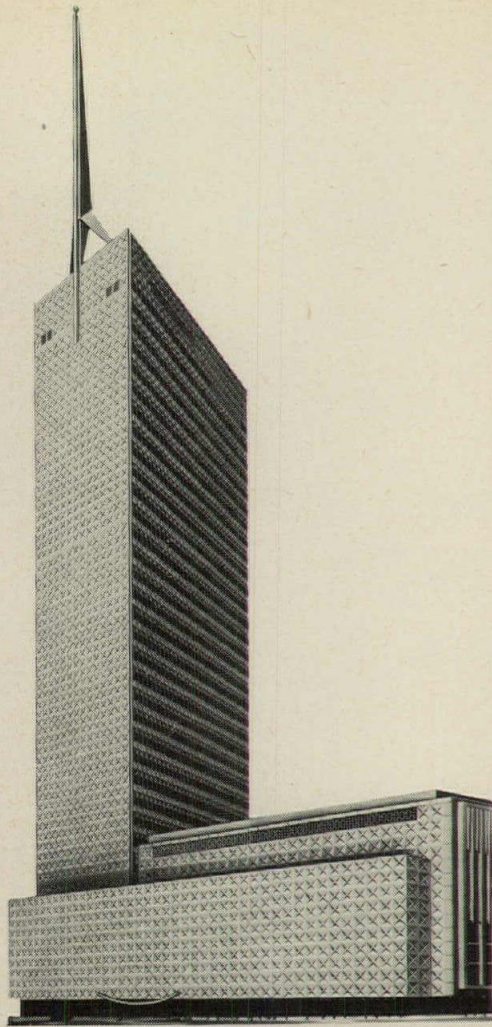
**At 40 below, Saraloy bends your way.**

Flexible in temperatures ranging from  $-40^{\circ}$  to  $+175^{\circ}$ , Saraloy<sup>®</sup> 640R brand plastic flashing has no plasticizers, hence no migration. This means long life, no call-backs. Can be cut to fit on the job. Solvent weldable.

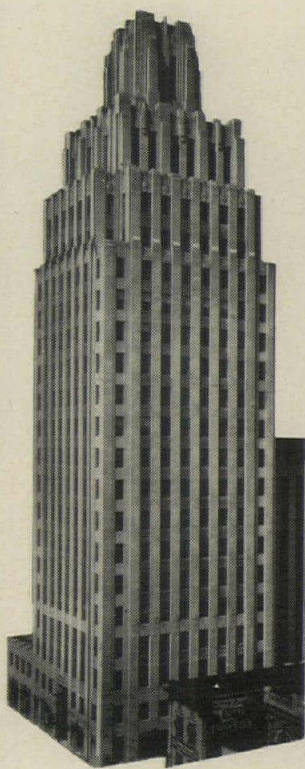
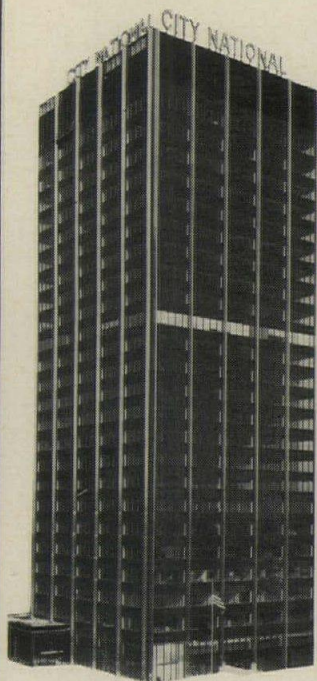
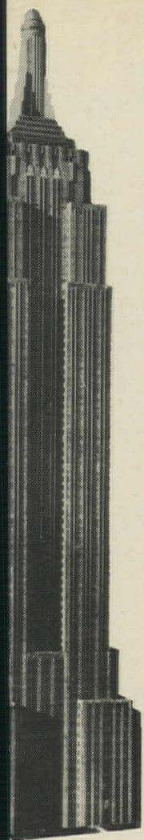


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Name your building. Chances are American Bridge can show you how to save money with steel—especially in the planning stage. We've been involved in more different types of steel construction—both large and small—than any other fabricator-erector in the country. Whether office buildings, industrial buildings, bridges, stadiums, tanks, schools—you name it—American Bridge has built it.

Modern buildings have structural steel frames for some very good reasons. For instance, new high strength structural steels cut costs and weight because they're two to three times stronger than carbon steels. Steel is weldable and makes bracing and fastening much simpler. With steel you can integrate structural and architectural space for low unit cost and low unit weight per square foot of floor area. You can use a combination of steels at different strength levels to achieve almost any aesthetic effect while you cut costs. There's no special season for steel, either. It goes up fast any time of the year. And when it's time to remodel, steel makes it less expensive and easier. Only steel can be safely altered, extended or reinforced without damaging the integrity of the building's structure.

We're steel specialists—so we can give you the best structural work possible for the least cost. American Bridge starts from scratch on every job—no matter what the size—to find ways to fabricate and erect your structure as efficiently as possible. Talk to American Bridge first about any building or remodeling project. Write American Bridge, Room 4777, 525 William Penn Place, Pittsburgh, Pa. 15230.



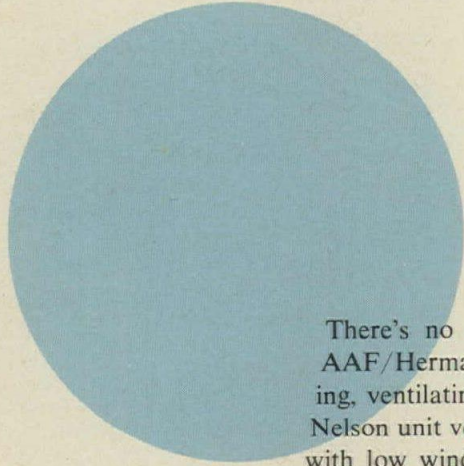
**American Bridge**

Division of United States Steel

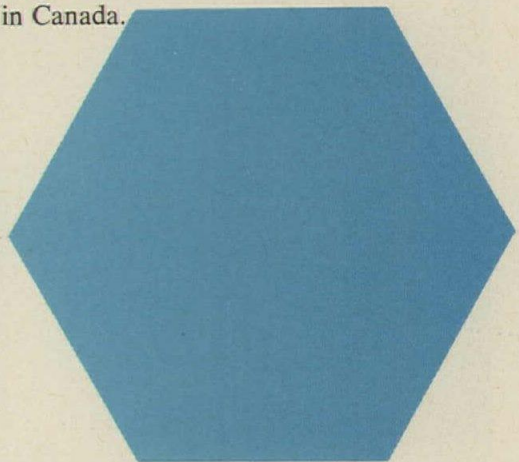


# UNIT VENTILATORS

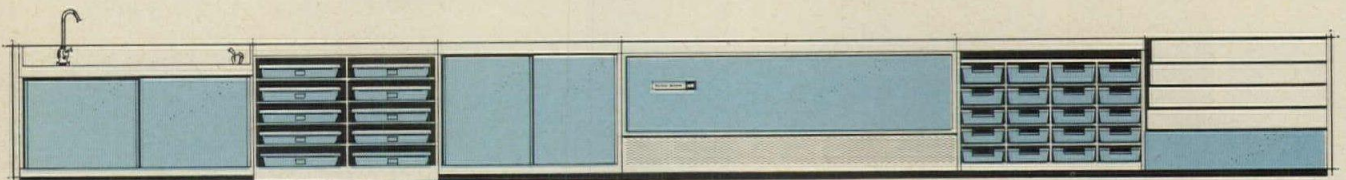
Circular, trapezoidal, hexagonal schools.  
We give them the air they need.



There's no end to school design possibilities with AAF/Herman Nelson unit ventilators doing the heating, ventilating and air conditioning. □ AAF/Herman Nelson unit ventilators deliver fresh, clean air to schools with low window sills, schools without windows at all, to circular schools, cluster schools and schools with flexible floor plans. Whatever shape today's schools take, we make the ideal thermal environment to fit. □ Chances are, we've already got the classroom heating, cooling and ventilating system for the school you've yet to design. □ Or, if a school air problem has you cornered now, your Herman Nelson representative could well be a great help. In any event, call or write American Air Filter Company, Inc., 215 Central Avenue, Louisville, Kentucky 40208. By the way, Herman Nelson know-how and products are also available in Canada.



**AAF** Herman Nelson  
SCHOOL PRODUCTS DIVISION

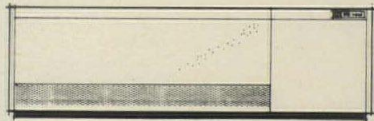


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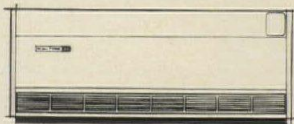


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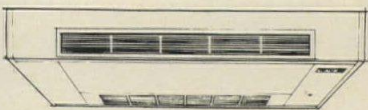
## A complete line for any school application



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**NELSON/aire** cabinet heater and air conditioner. Ideal for offices, entrances and smaller rooms. Thin-profile unit adapts to any wall thickness. Can be used with steam, hot water, or electric resistance coils. Self-contained units available in 8,000, 12,000 or 15,000 BTU/hr cooling capacities. Lets you air condition now or later.



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**George W. Neff, Herman A. Hassinger** and **Gerald F. Schwam** announce the affiliation of their architectural practices and the opening of an office under the name **George W. Neff/Hassinger and Schwam, Architects-Planners**. The new firm's offices are at 39 East Schoolhouse Lane, Philadelphia.

**Anton Tedesco, D. Eng.**, formerly with **Roberts and Schaefer Company**, is now in private consulting engineering at 26 Brookside Circle, Bronxville, N.Y.

**Albert Edwards Margetts, Jr., R.A.I.C.**, has joined the Detroit firm of **Eberle M. Smith Associates, Inc.**, Architects and Engineers, as a staff architect. The firm is located at 950 West Fort Street, Detroit.

The architectural firm, **Damon-Worley-Cady-Kirk & Associates** of Cleveland and Youngstown, Ohio, has named **Thomas W. Bode** and **Jack C. Wessenaer** associates. They are based in the Youngstown office, 275 West Federal St.

**Paul Kennon, A.I.A.**, has joined **Caudill Rowlett Scott**, Houston architects, planners and engineers, as an associate.

**Burns & McDonnell Engineering Company** has admitted **Walter R. Giese, A.I.A.**, to partnership. The firm is at 4600 East 63 St. Trafficway, Kansas City, Mo.

**Wilton L. Ferguson, Louis N. Maloof, Edward F. Menefee, Edward C. Wundram** and **John A. Wurz** are now partners in the architectural and engineering firm of **Heery and Heery**.

**Lester H. Seiler** has been named a vice president of **A. Epstein and Sons, Inc.**, architects and engineers of 2011 West Pershing Road, Chicago.

**Angus McSweeney, Inc.** announces the formation of a new corporation under the name of **McSweeney and Schuppel Architects, Michael D. Kelly Associate**. The address remains 2960 Van Ness Ave., San Francisco.

**Everett D. Finney** has joined the New York office of **Charles Luckman Associates** as project architect.

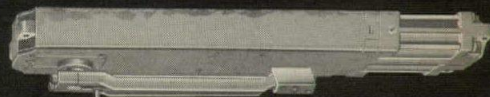
**George E. Galayda** has been named an associate of **Smith, Hinchman and Grylls Associates, Inc.**, Detroit-based architects, engineers and planners.

**Swensson and Kott Architects Inc.** announce the opening of its new facilities at 2104 Sunset Place, Nashville, and the change of its name to **Earl Swensson Architects Inc.**

**Albin H. Rothe Associates, Inc.** has opened a new office under the name **Albin H. Rothe, Architect and Construction Management Consultant**, 7 Oak Drive, Upper Saddle River, New Jersey.



# TOUGH AND TENACIOUS



Rixson's No. 808 and 0808 series overhead concealed (in a 1 3/4" x 4" head frame) closers—Small in size yet tough enough to do the job—minimum maintenance—optimum door control safety.

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Facings and Construction: Aluminum Co. of Canada. Architect: Karl Schwanzer, Vienna.

# How many sandwiches can you count in this Expo 67 pavilion?

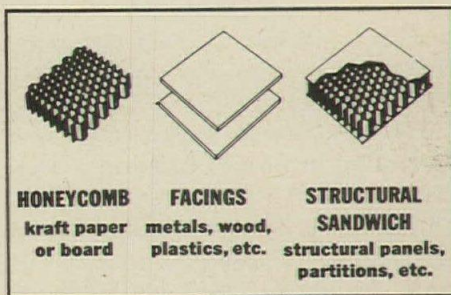
There are 264 triangular aluminum faced panels in the Austrian Pavilion.

And every one is fabricated with Union Camp Honeycomb structural sandwich core.

Why Union Camp Honeycomb?

Most of the Expo 67 pavilions are built on newly filled land, and beefing up a foundation is expensive. But structural sandwich panels made with honeycomb keep weight to a minimum while maintaining maximum *strength*. In fact, honeycomb has the most favorable strength/weight ratio of any structural core material made. Yet honeycomb core density is only 1½ lbs. per cubic inch.

Modular honeycomb panels require less time and labor than conventional construction. Floor, wall and roof sections are lighter and easier to handle. So if your building problems involve strength, weight or economy, maybe you should get to the core of the matter, too. With Union Camp Honeycomb.



Honeycomb, as manufactured by Union Camp, is a resin-impregnated kraft fibre structure fabricated as to form nested hexagonal shaped cells. This remarkable lightweight material is similar in appearance and principle to the honeycomb of bees—yet is as modern as the space-age. Honeycomb is manufactured in various grades and sizes and can be designed to meet the requirements of a variety of design problems. Honeycomb is especially effective when panels combining light weight and high structural strength are required.



Austrian pavilion's large modular structural units are made up of four separate panels. Each panel is filled with Union Camp kraft Honeycomb cores. These give facings continuous support—eliminate need for rivets or spot welds that have to be finished off before painting.

Union Camp Corporation, 233 Broadway, New York, New York 10007

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HONEYCOMB CORES

Union Camp

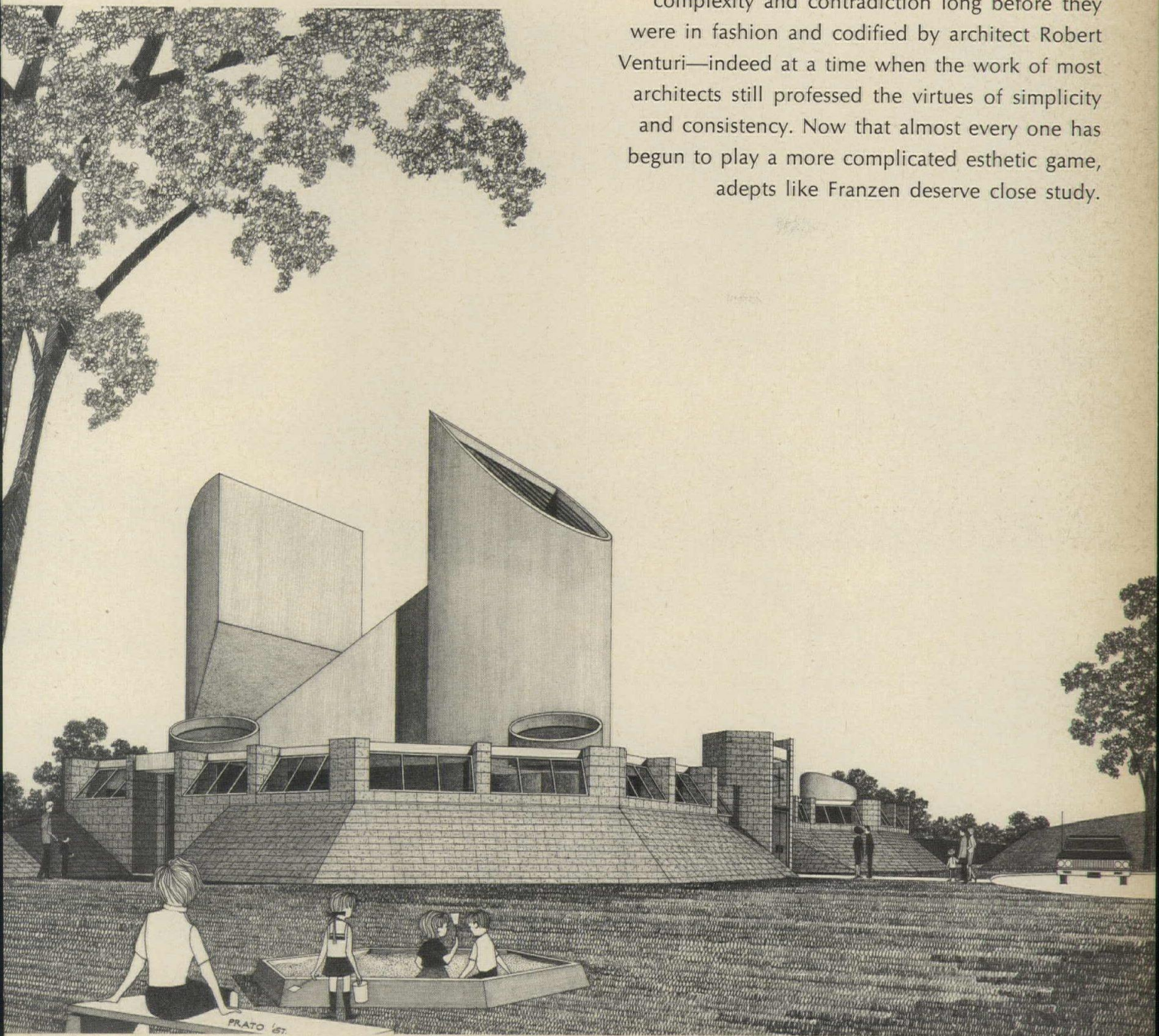


# COMPLEXITY AND CONTRADICTION IN THE WORK OF ULRICH FRANZEN

Ulrich Franzen believes that his buildings get their design energy through the successful resolution of problems posed by their environment.

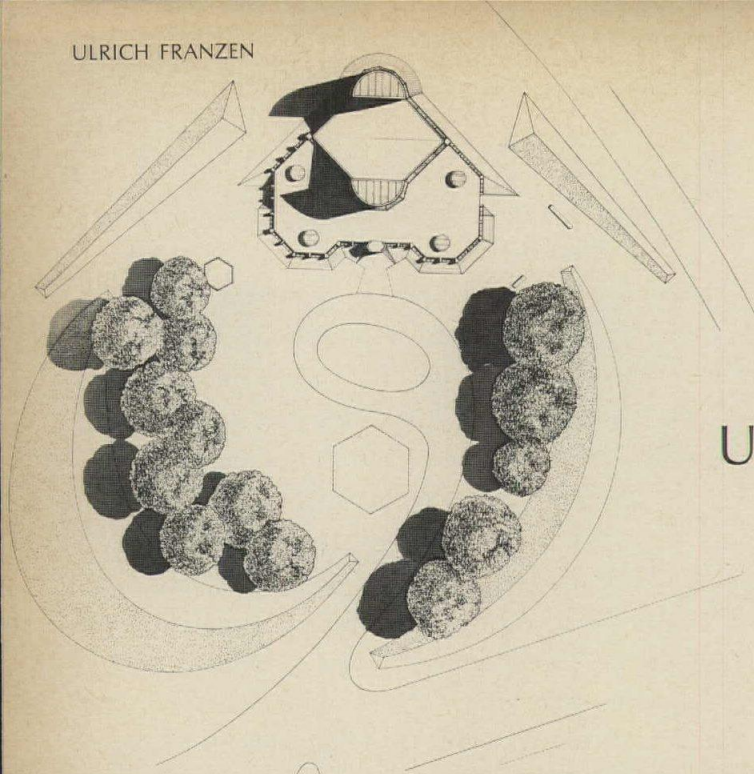
No advocate of universal flexible space, he asserts: "If you can move a building from the place for which it was designed to a different place, and it still looks good, it is a bad building."

The four current projects which follow reveal that in his reach for the ideal design for a particular program and setting, Franzen is well served by a design vocabulary made extensive by his strong understanding of modern as well as historic forms. This enlightened eclecticism caused his work to exhibit the principles of complexity and contradiction long before they were in fashion and codified by architect Robert Venturi—indeed at a time when the work of most architects still professed the virtues of simplicity and consistency. Now that almost every one has begun to play a more complicated esthetic game, adepts like Franzen deserve close study.



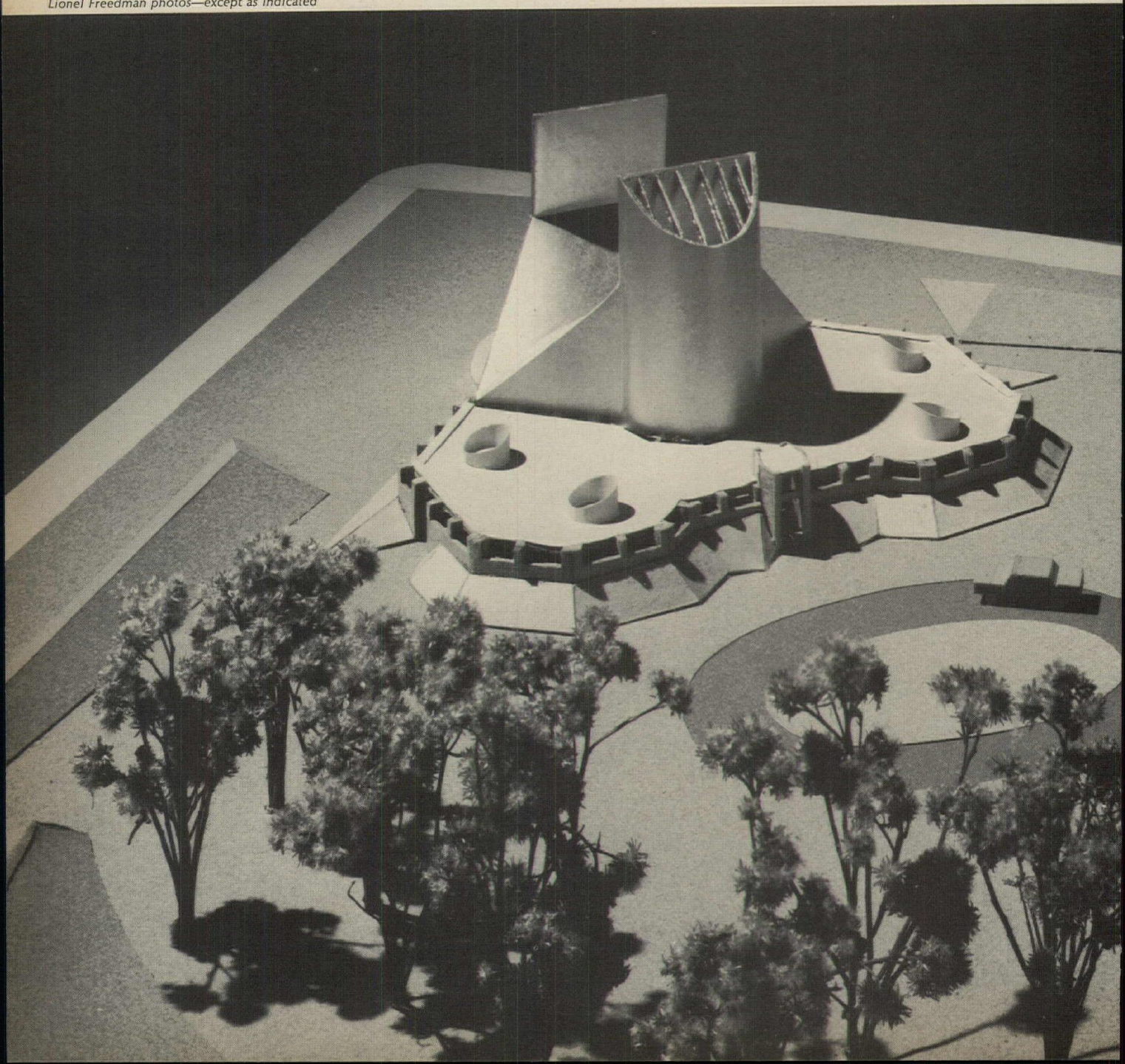


ULRICH FRANZEN

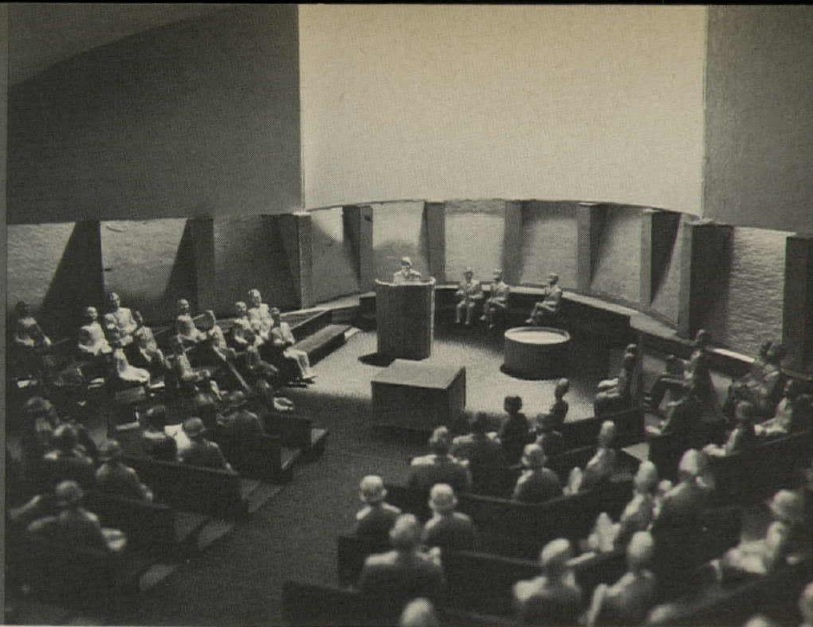
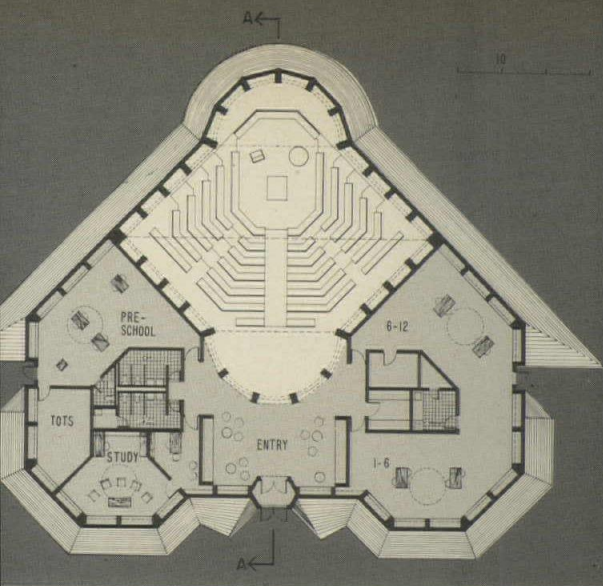


THE ELK GROVE  
UNITED PRESBYTERIAN CHURCH:  
A SKILLFUL ASSEMBLY  
OF ADAPTED FORMS

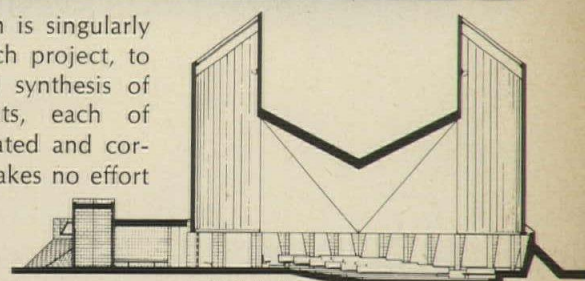
*Lionel Freedman photos—except as indicated*







► Architect Ulrich Franzen is singularly able, as in this new church project, to produce an accomplished synthesis of assorted stylistic elements, each of which has been boldly stated and correctly used. This design makes no effort to conceal its debt to Frank Lloyd Wright, Le Corbusier, and their distinguished disciple Louis Kahn.



SECTION A-A

The plan, Wrightian in its geometry, neatly articulates the separation and contrast between the low-ceilinged, intimate quality of the teaching space and the vertical thrusts of the worship space. The latter is shaped by two great skylit shafts which come to Elk Grove by way of Chandigarh and Rochester. To be built of laminated wood arches and beams, they will be covered with aluminum on the exterior, and give an impression of lightness neatly juxtaposed against the church's heavy masonry base. The horizontal element has its own skylights, similar to forms which first gained widespread attention when they appeared as light sources for the chapels at Corbu's Monastery of La Tourette.

Designed for a construction cost of approximately \$170,000, and a total cost excluding land of \$200,000, the church is a relatively simple and economical structure. The building will be on grade with a minimum of three feet of excavation. Berms covered with flat cast-concrete pavers extend to the clerestory windows of the classroom element.

ELK GROVE UNITED PRESBYTERIAN CHURCH, Elk Grove Village, Illinois—pastor: Reverend Robert G. Long. Architects: Ulrich Franzen and Associates—associate-in-charge, Samuel E. Nysten; structural engineers: Garfinkel Marenberg and Associates; mechanical engineer: J. L. Altieri.

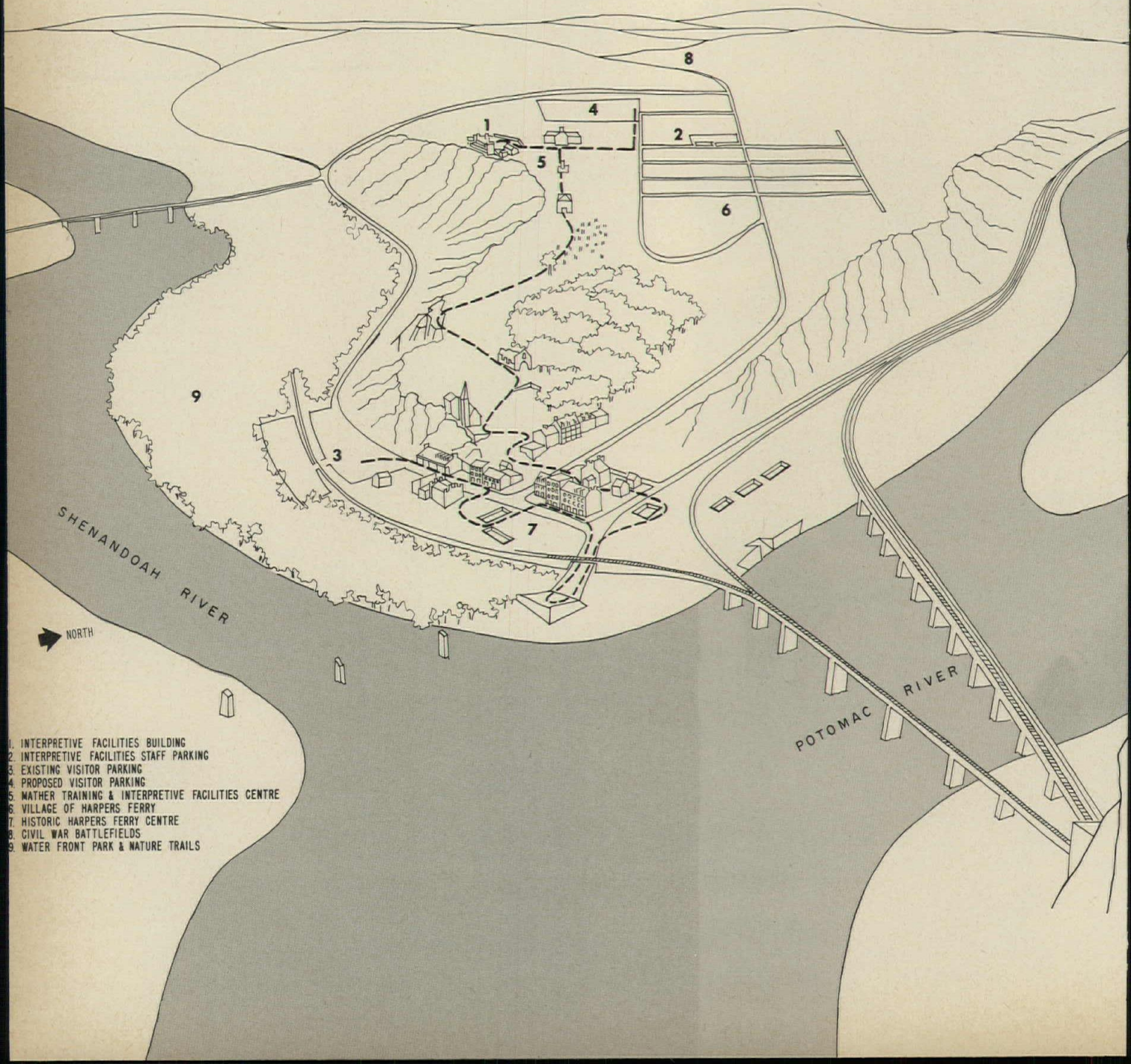
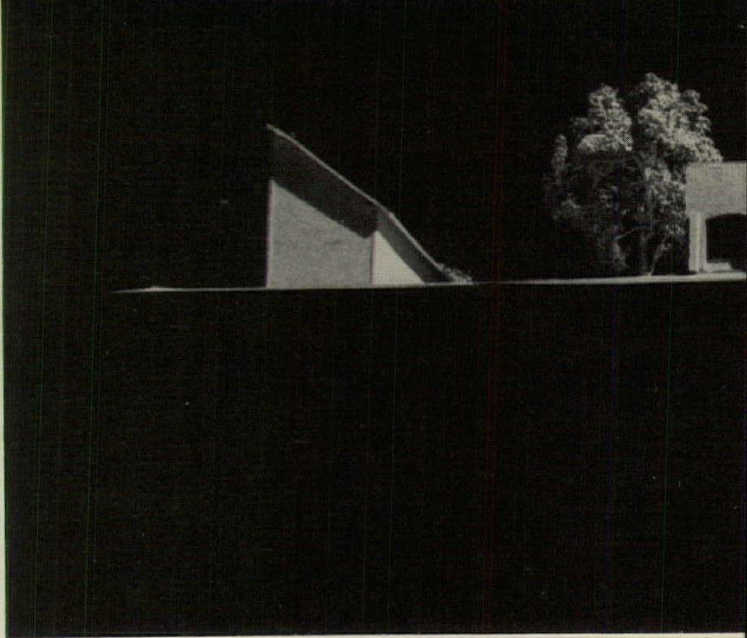
The church will rest upon an open flat plain and be surrounded by built-for-sale houses typical of mobile young middle-class families. Franzen strove to achieve a sense of *place* for this house of worship, by working with elements which suggest permanence and enclosure.

The solid appearing textured concrete block walls indicated in the rendering on page 133, and the carefully sculptured berms shown in the plot plan and model photograph at left, are designed in a manner to reconcile opposites. These forms help distinguish the church from its surroundings, and establish its separateness and importance—yet at the same time they reach out, invite and welcome the worshipper into the religious precinct, and then contain him within it.



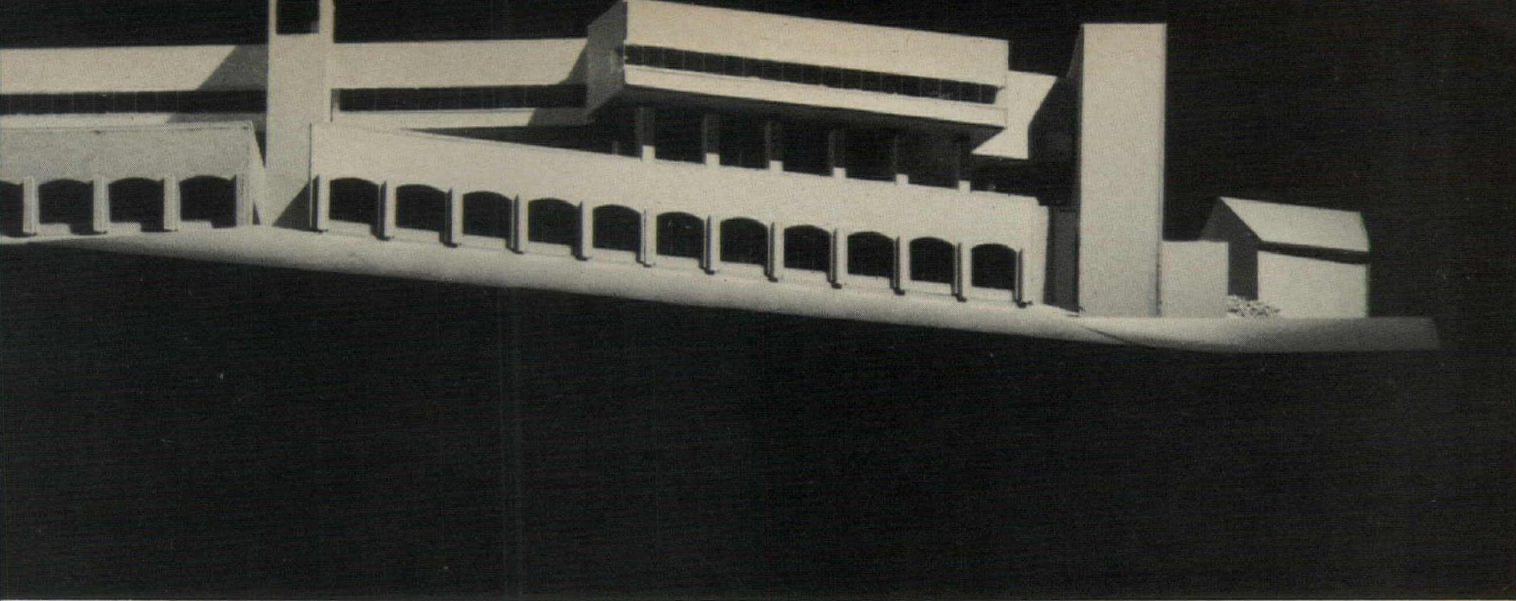


# BUILDING FOR THE NATIONAL PARK SERVICE: DESIGNED TO RESPECT AN HISTORIC SITE



- 1. INTERPRETIVE FACILITIES BUILDING
- 2. INTERPRETIVE FACILITIES STAFF PARKING
- 3. EXISTING VISITOR PARKING
- 4. PROPOSED VISITOR PARKING
- 5. MATHER TRAINING & INTERPRETIVE FACILITIES CENTRE
- 6. VILLAGE OF HARPERS FERRY
- 7. HISTORIC HARPERS FERRY CENTRE
- 8. CIVIL WAR BATTLEFIELDS
- 9. WATER FRONT PARK & NATURE TRAILS



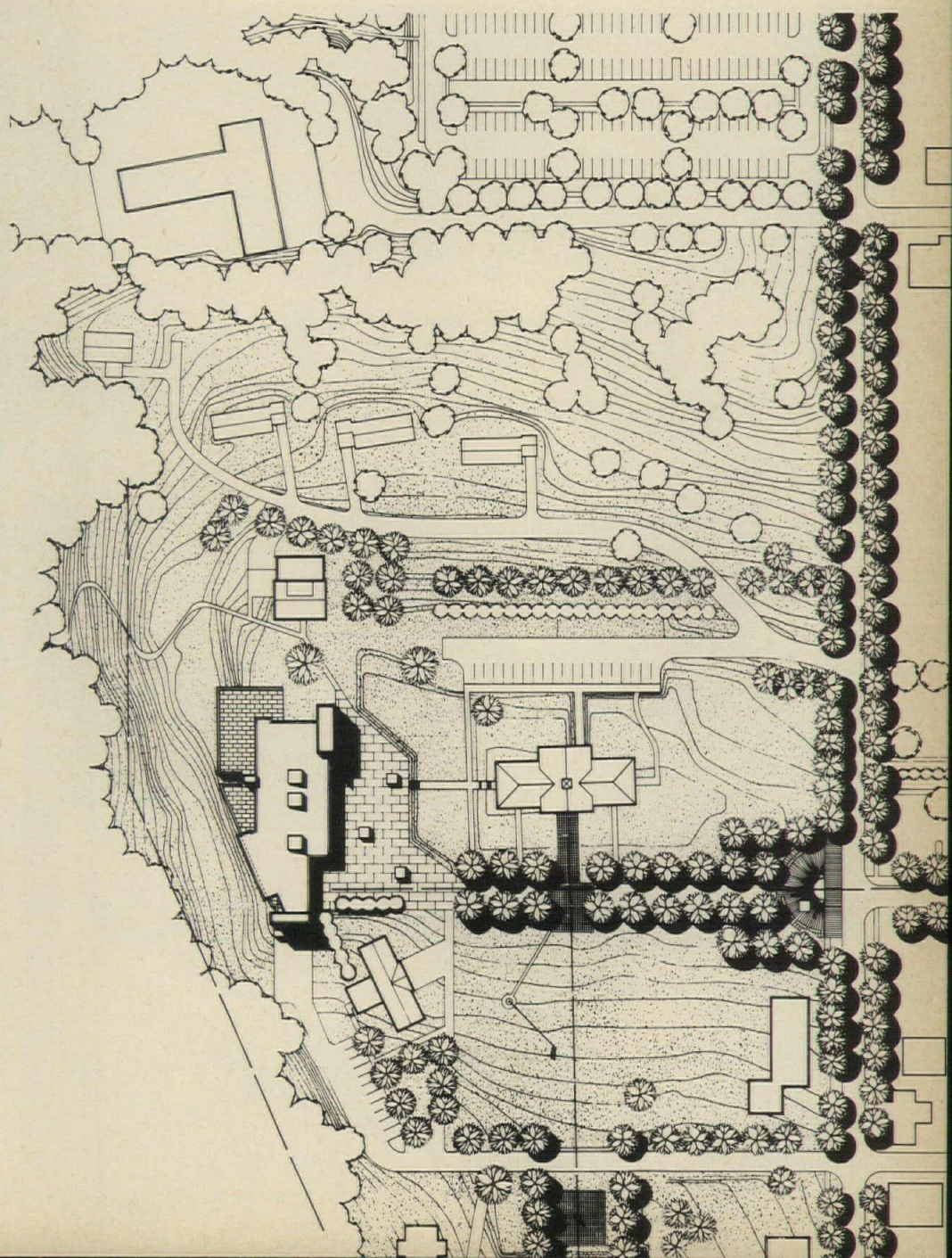


► The old town of Harpers Ferry—site of a major battle of the Civil War—is now in the process of restoration. Dramatically located at the confluence of the Shenandoah and Potomac Rivers, the town and its surrounding hills have long been a popular national park. Recently Harpers Ferry was selected as the location for a so-called Interpretive Facilities Building to serve the entire national park system as the place where exhibits and displays would be designed and constructed. Because of the beauty and historic importance of this site, great care was taken in the program writing and in the final approval of this design.

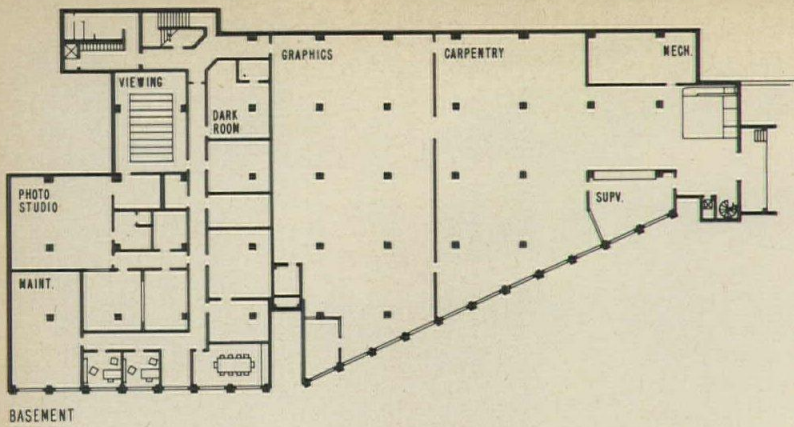
The model photograph above shows Franzen's new building as it will appear on the brow of the hill, as seen from the opposite side of the Shenandoah River. The podium which supports the terrace is strongly assertive. Inspired by Roman aqueducts, it will consist of load-bearing brick arches. In contrast, the second and third floors recede from view beyond the edge of the terrace. Influenced by Corbusier, these elements of the structure are supported by light rectilinear post-and-beam construction.

The side of the building facing the Shenandoah is freely asymmetric following the cliff edge. The facade which faces inward toward the symmetrical campus of Storr's College is quiet, orderly and subtly related to the classic pattern of the old grounds. The forecourt of the new building will become the focus of the complex. (The college no longer functions as such and its buildings have been taken over by the National Park Service.)

The structure will be entirely of reinforced concrete. Continuous flat slabs will be supported by large columns set in bays 20 feet square. Except for the terrace podium, all exterior walls will be of local brick veneer on block backup with insulation in the cavity. They are non-load-bearing.

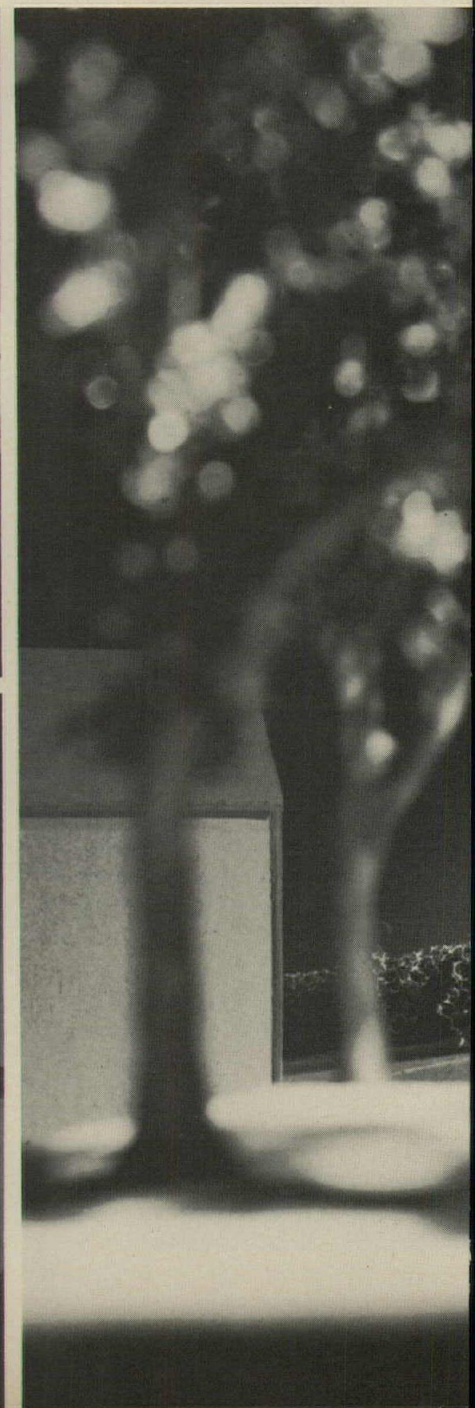
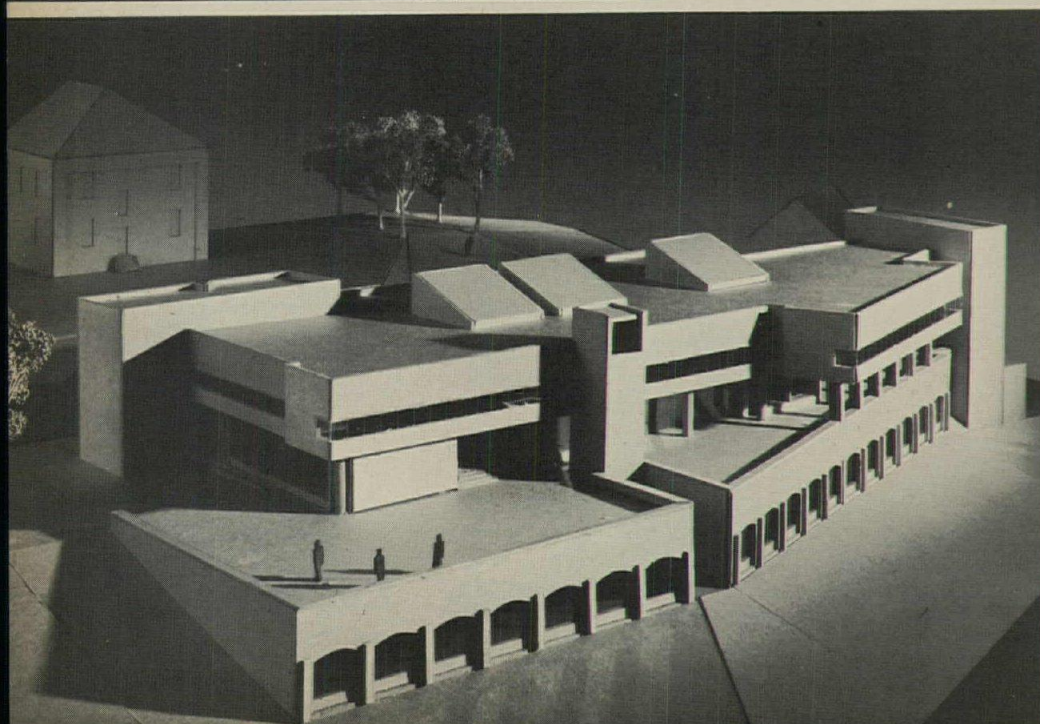
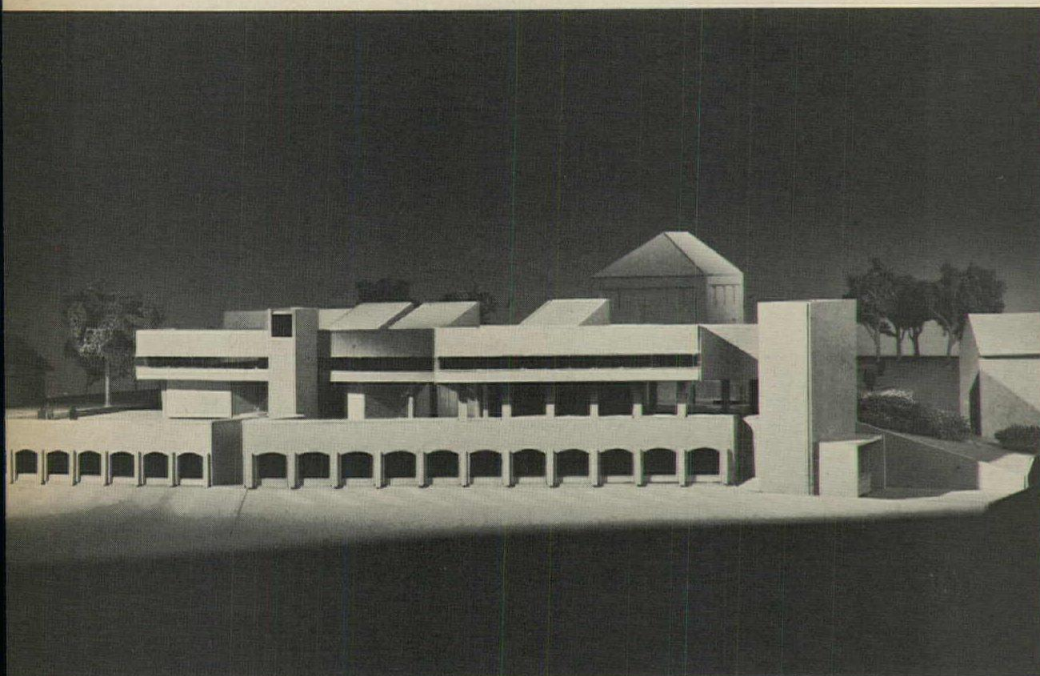




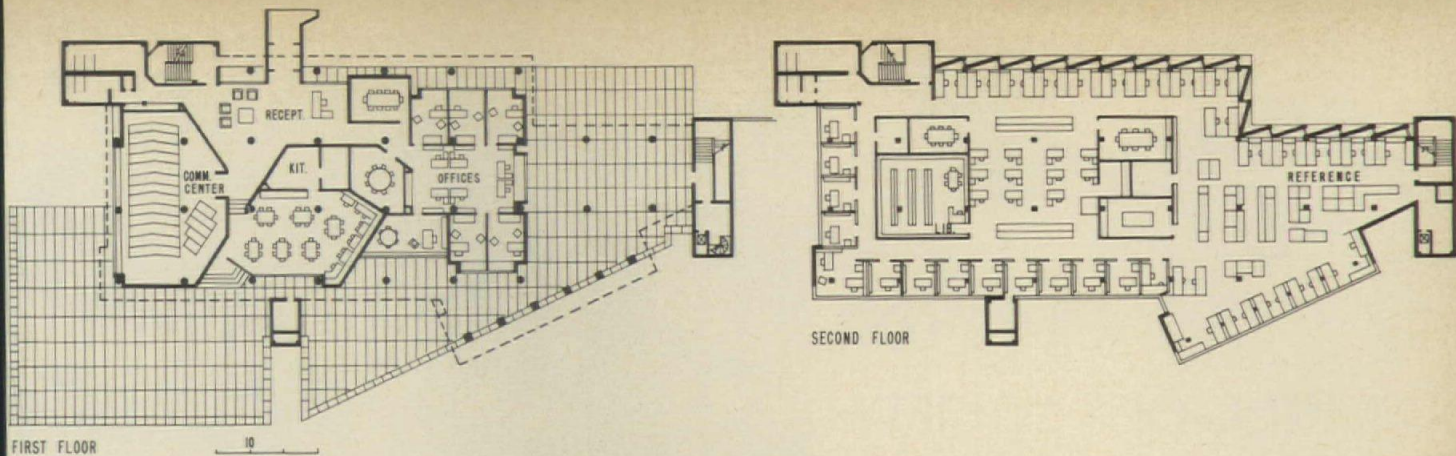


The basement level houses the shop, areas and audio-visual facilities and the first floor main entry level houses the public spaces and headquarters offices. On the top floor are small studios. The reception area is arranged to facilitate exhibitions. The floor of the coffee lounge has been raised to give it a separate setting and to improve the view over the terrace and valley. Glass areas are carefully related to function: modest-size arcaded openings will be provided at the shop and audio-visual level. Maximum openings under overhangs are planned for the public areas. The top-floor studios have slotted openings to reduce heat load and glare, and central skylights to illuminate the interior spaces.

THE INTERPRETIVE FACILITIES BUILDING, Harpers Ferry, West Virginia; owner: The National Park Service. Architects: *Ulrich Franzen and Associates*—project manager, *Keith Kroeyer*; structural engineer: *Andrew G. Elliott*; mechanical engineer: *J. L. Altieri*.







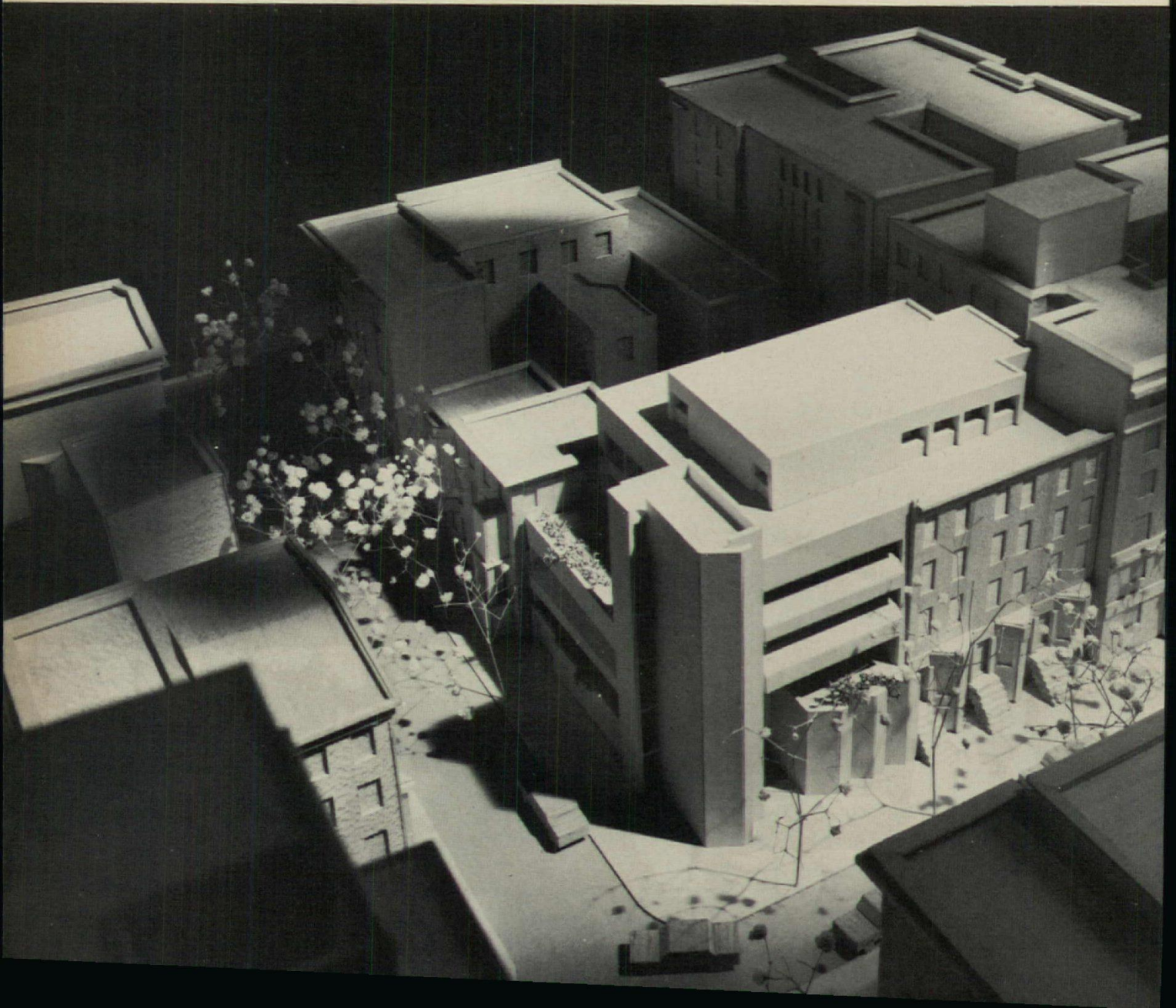


ULRICH FRANZEN

FACILITY FOR  
A RELIGIOUS SOCIETY:  
A VICTORY FOR  
NEIGHBORHOOD SCALE



*Marko and Marko photo*

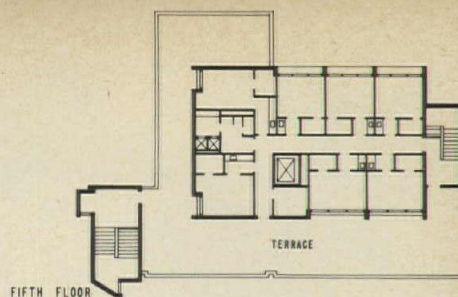




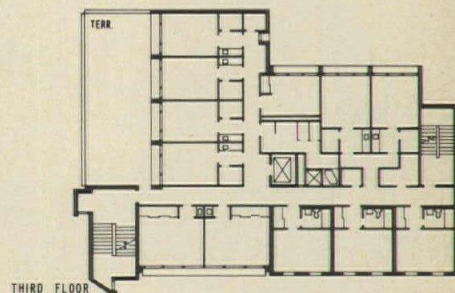


► The inclusion of three undistinguished 19th-century facades, behind which one half of this complex structure hides, might at first glance be dismissed as a quixotic attempt by Franzen to preserve the conditions of contradiction. In this case, however, the rules of the esthetic game were not established by the architect, but by New York City's Landmarks Preservation Commission. This body is empowered by the Landmarks Preservation Law to reject construction proposals which in its opinion will damage the appearance and quality of a so-called "Historic District." In turn the Commission is in a unique position to support construction which in its judgment helps maintain the character of the landmark neighborhood.

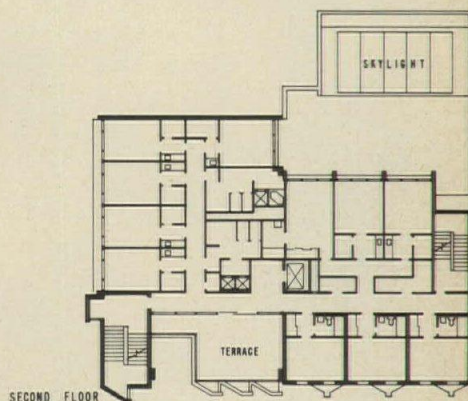
On December 1, 1965 the Commission designated Brooklyn Heights as New York City's first Historic District and earlier that year the Federal Government named it a national registered historic landmark. The Watchtower Bible and Tract Society, the official organization of the Jehovah's Witnesses movement, wished to build a 12-story dormitory and classroom building on the corner site which they presently own—shown in the photograph above opposite. A strong civic group, the Brooklyn Heights Association, supported by the New York City Commission, persuaded the Watch Tower officers to hire Ulrich Franzen to design a five-story structure more in scale with the residential quality of the old neighborhood. If the new building were to conform to present zoning codes, however, it would still be too high. The three facades are to be preserved therefore, not because anyone believes they have intrinsic architectural merit apart from their over-all scale, but because their preservation enforces a satisfactory height limitation on the adjacent structure, which is to be the first new project to be built in any officially designated landmarks district.



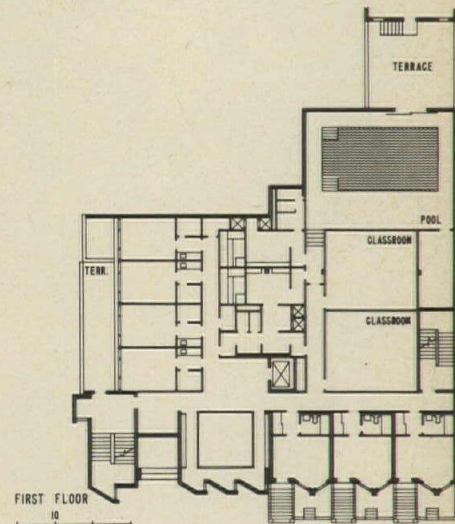
FIFTH FLOOR



THIRD FLOOR



SECOND FLOOR

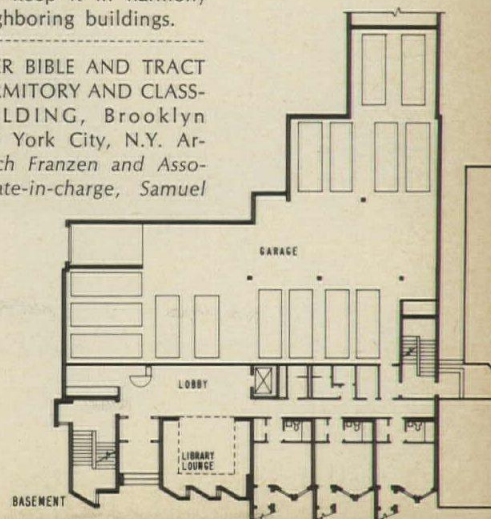


FIRST FLOOR

10

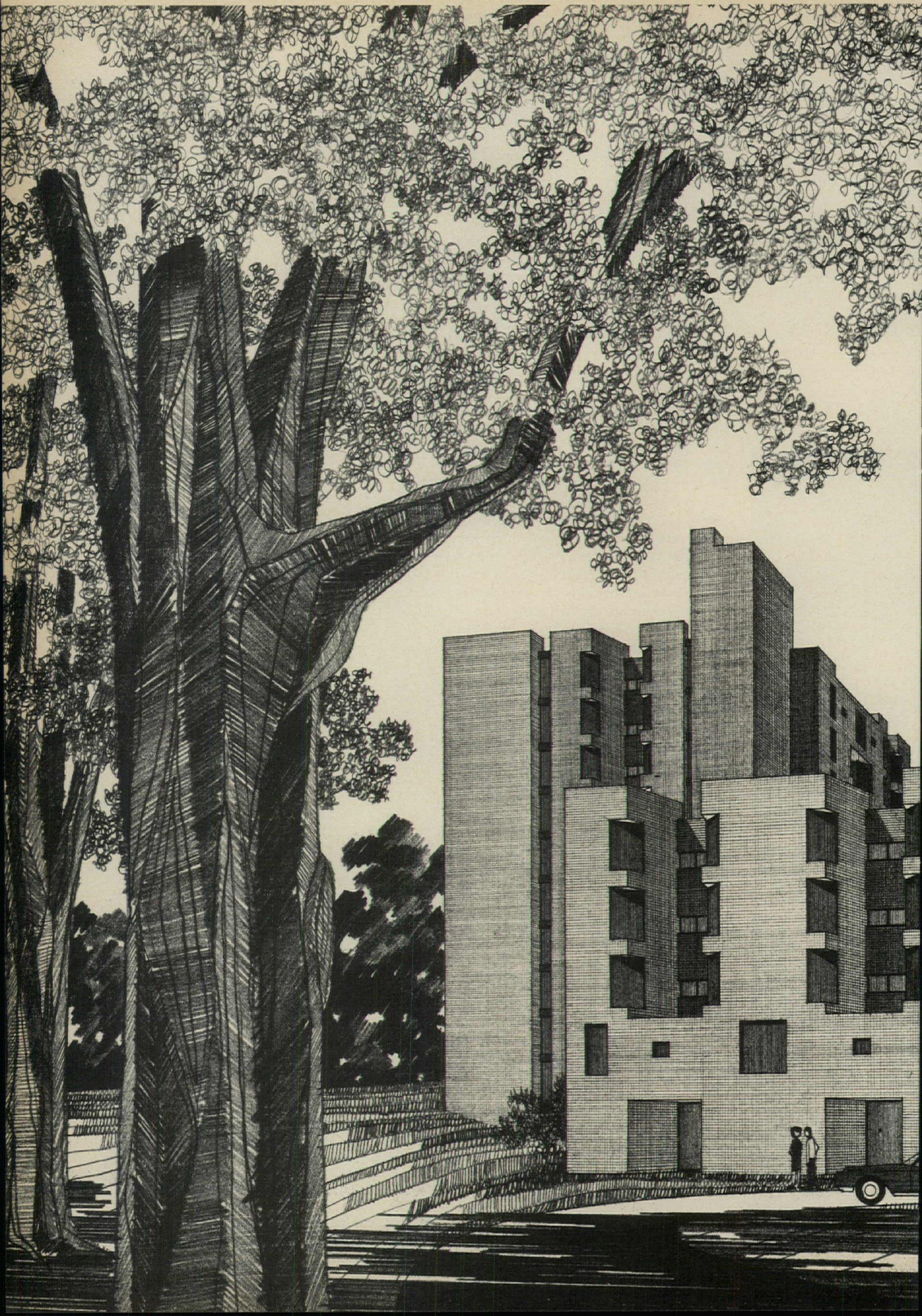
Use of brick, and break-up of the new building into elements of residential scale, keep it in harmony with the neighboring buildings.

WATCHTOWER BIBLE AND TRACT SOCIETY DORMITORY AND CLASSROOM BUILDING, Brooklyn Heights, New York City, N.Y. Architects: Ulrich Franzen and Associates—associate-in-charge, Samuel E. Nysten.

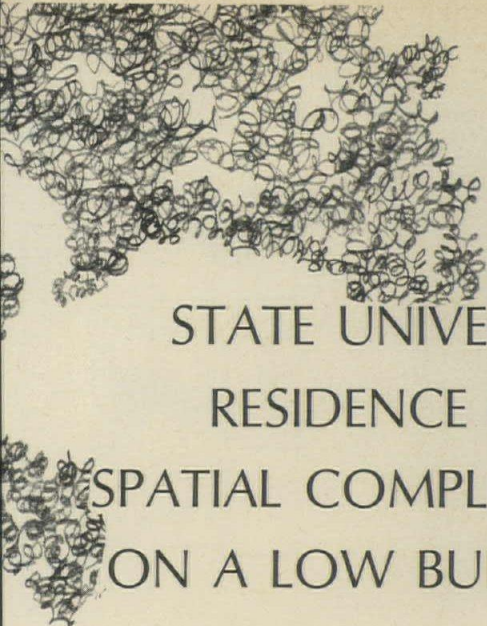


BASEMENT

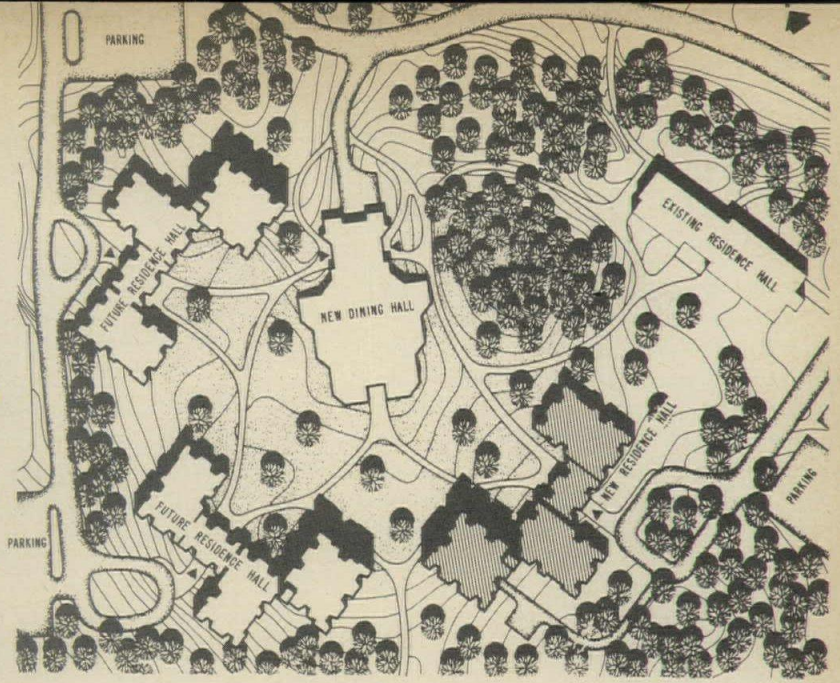






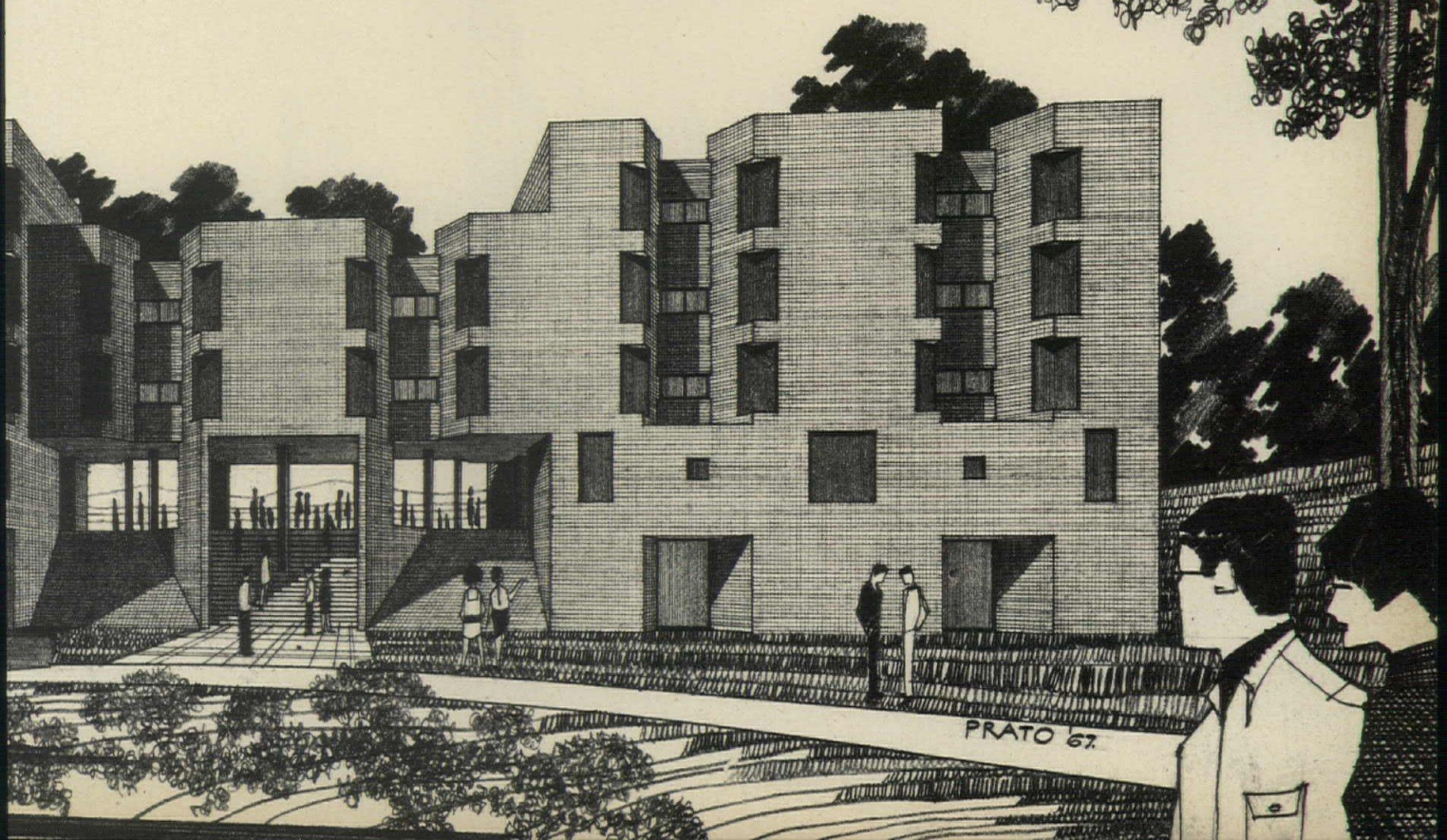


STATE UNIVERSITY  
RESIDENCE HALL:  
SPATIAL COMPLEXITY  
ON A LOW BUDGET



► This residence hall for the University of New Hampshire has an unusually plastic facade for a building to be constructed by a state university within its predictably restrictive budgets. The trick here is in the room shape, shown overleaf, which gives each of the two students in a room a window, either vertical or square, which opens to his own restricted bit of turf. Further elements which complicate and enhance the exterior masses are the student study lounges, seminar rooms, more formal lounge spaces and house-director suites. These elements are bounded by exterior walls continuous within a single plane which contrast effectively with the concave and convex surfaces of the walls which form the exterior enclosure of the dormitory rooms.

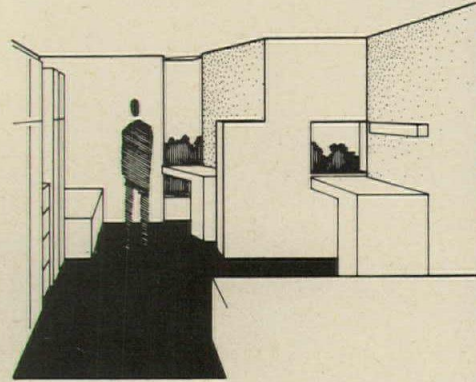
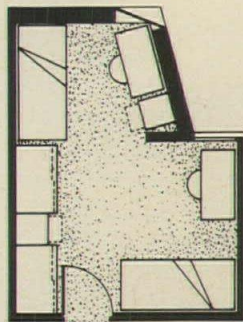
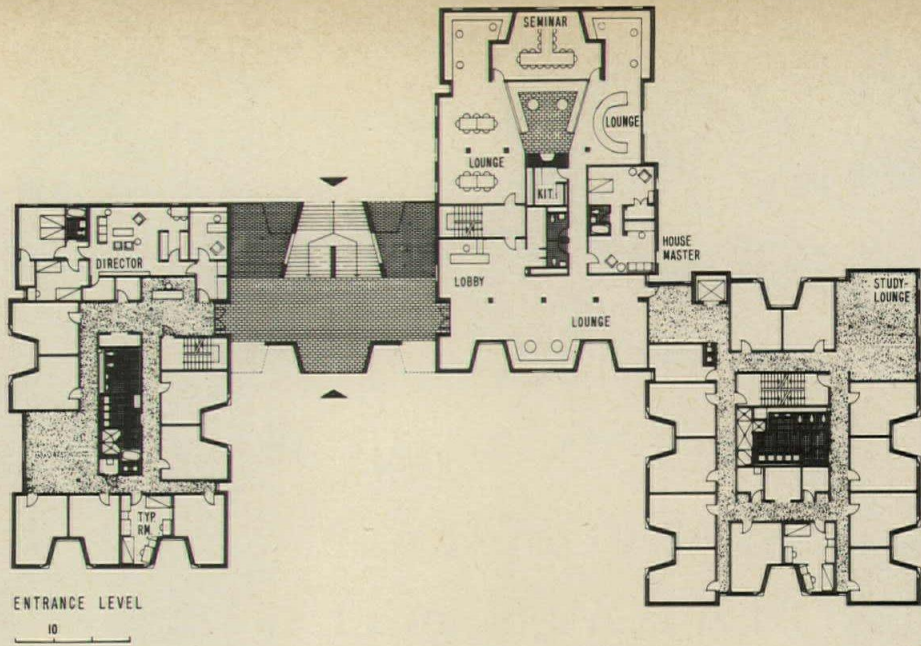
The residence hall houses 450 stu-



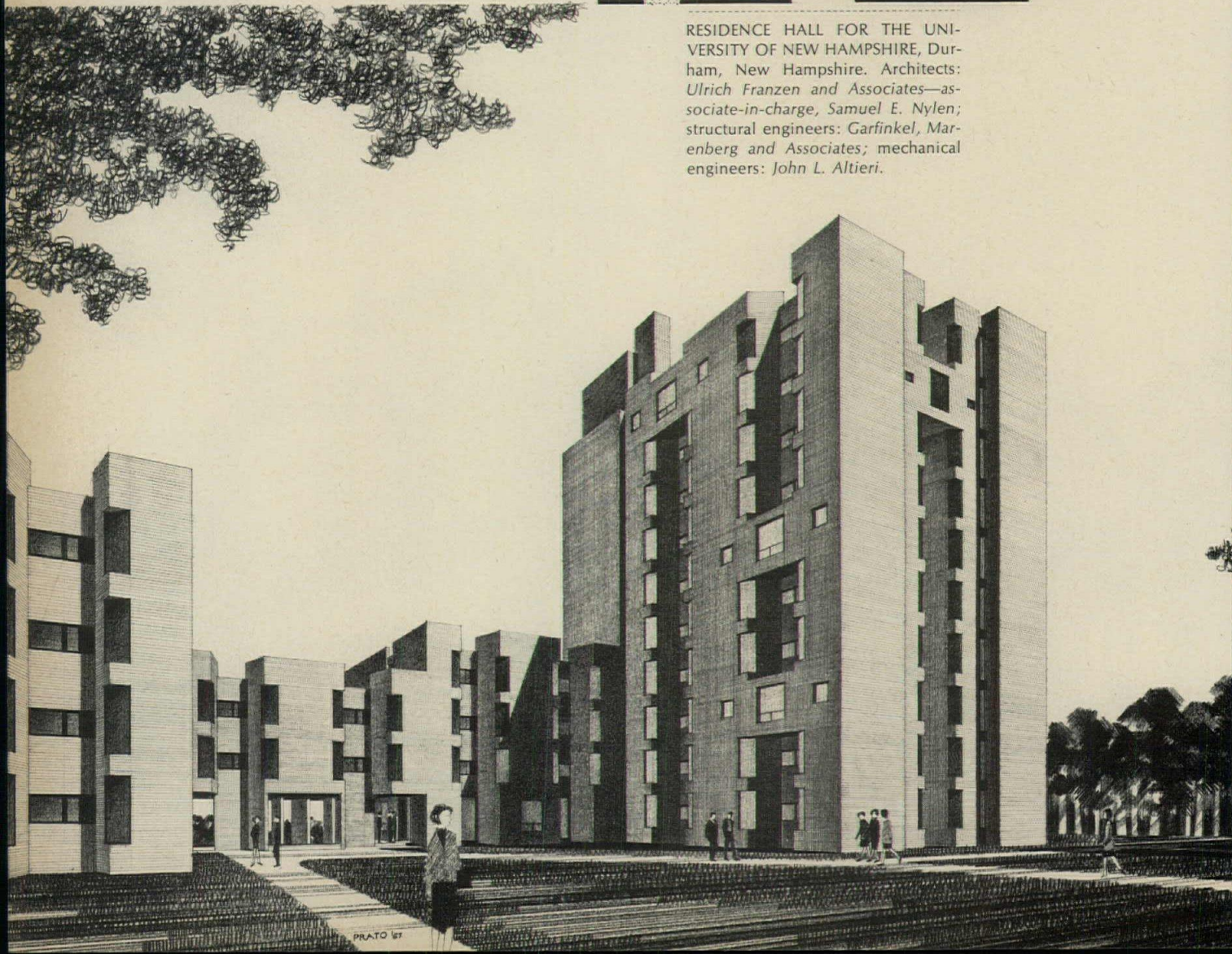


dents in groupings of 24 to 26 per floor. The smaller groupings minimize corridor lengths and reduce traffic and noise. The building masses are broken down into elements of varying heights ranging from three and four stories to ten. This helps foster a sense of identity between the students and the spaces they occupy within the larger complex. Research has shown that two students can better adapt to the extremely constricted quarters which have become standard in low-cost dormitory construction if they can study without having to look at each other. Franzen's scheme admirably performs this function within the minimum allowable space (see drawings, right).

The perspective drawing below shows the hall as it will appear from the central landscaped space, a natural raised clearing which will be kept free of cars. The perspective on the preceding page shows the approach up a handsome flight of stairs from the vehicular level. The site plan indicates future residence buildings and the location of the projected dining hall.



RESIDENCE HALL FOR THE UNIVERSITY OF NEW HAMPSHIRE, Durham, New Hampshire. Architects: Ulrich Franzen and Associates—associate-in-charge, Samuel E. Nysten; structural engineers: Garfinkel, Marenberg and Associates; mechanical engineers: John L. Altieri.





# A BUILDING DESIGNED FOR SCENIC EFFECT

I. M. Pei's

National Center for Atmospheric Research is a direct response to a spectacular site and a highly philosophical program

By Jonathan Barnett

I. M. Pei's National Center for Atmospheric Research would be a difficult design to understand if it were removed from its setting on a mountainside in Boulder, Colorado. The arrangement of the building on its site is clearly the key concept, and the internal relationships—while they work well enough—do not give the building its form.

Only a few years ago architects and critics were saying that buildings would no longer be designed in this way, from the outside in, as mass instead of space; and the Atmospheric Research Center does not possess the other supposedly indispensable characteristics of "Modern Architecture" either. Not only is it not a part of a uniform international style, but it is quite different from other work that Pei was designing and building at the same time; regularity and flexibility are hardly salient characteristics; the structure is not expressed; and the architect made a special effort to use indigenous materials as the aggregate for the concrete, a philosophy much more akin to those picturesque country houses built from stone quarried on the site than to modernist ideas about factory fabrication.

While we no longer expect such a building to produce a denunciation in some English architectural magazine (with the architect being excommunicated from the modern movement's "main stream" and some general aspersions about American frivolousness and lack of seri-

Jonathan Barnett is a former associate editor of ARCHITECTURAL RECORD who is now a Principal Urban Designer for the New York City Planning Department staff.

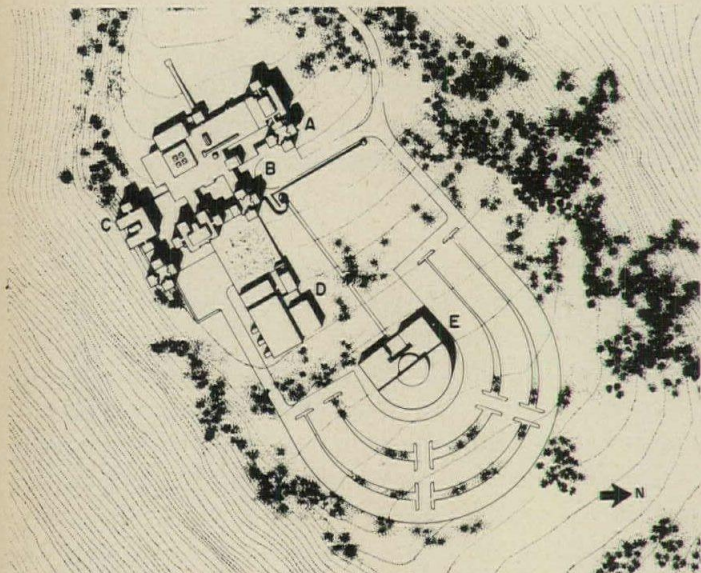


ous architectural understanding) we are still having some trouble lining up architectural philosophies with what architects are actually doing. There has been much recent speculation that architecture is entering a "Mannerist" phase of complexity and contradiction. In evaluating this idea it is important to separate the complexities and contradictions which are actually architectural from those which exist only in the mind of the theorist. Much of what is happening today can be viewed as traditional, with architects trying to respond to important problems by discovering the essence of ideas that had produced successful solutions to such problems in the past.

The Atmospheric Research Center is a traditional building in that sense, and a direct response not only to the character of the site, but to the basic nature of the program as well.

The site was selected by the client well before the process of interviewing architects began. The client, a non-profit corporation that receives funds from the National Science Foundation but is owned by a consortium of universities, is a national center for inter-disciplinary research into all problems relating to the atmosphere. It could have been located in a great number of places. While there were clearly some practical considerations favoring the selection of Boulder—a university town at a relatively high elevation, close, but not too close, to a major city—the site was really chosen for its spectacular beauty.

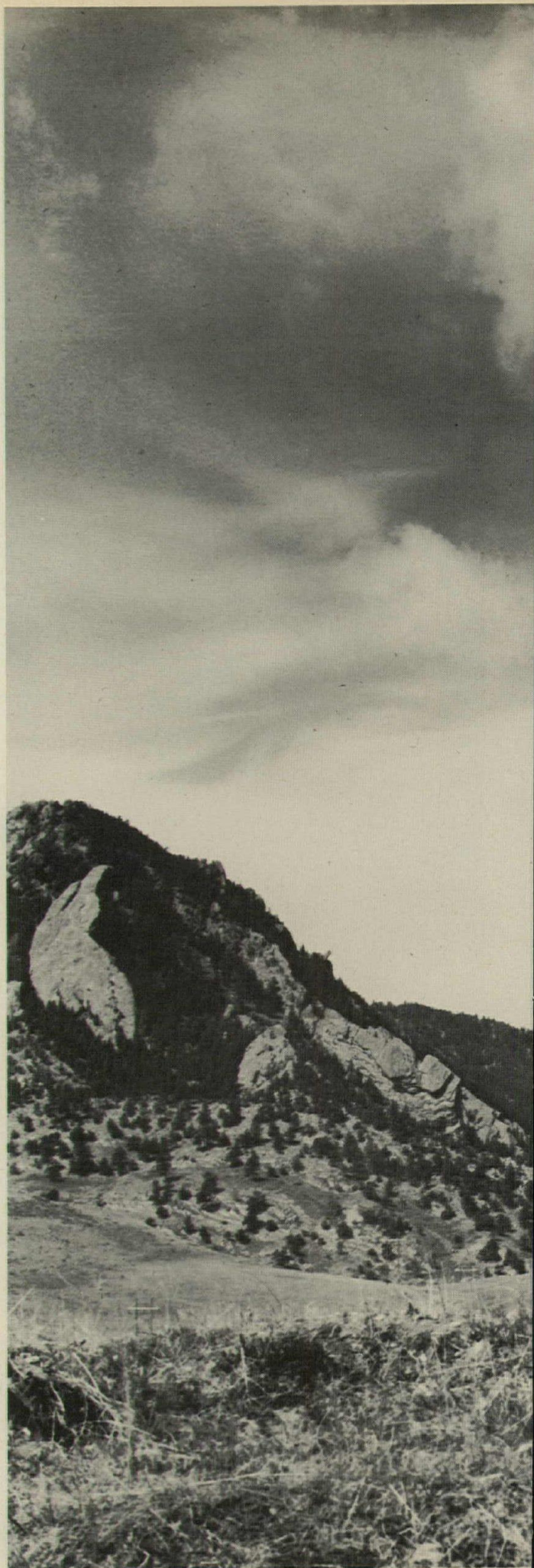
It is a mesa on the side of one of the eastern-most ranges of the Rocky Mountains. It thus affords both a



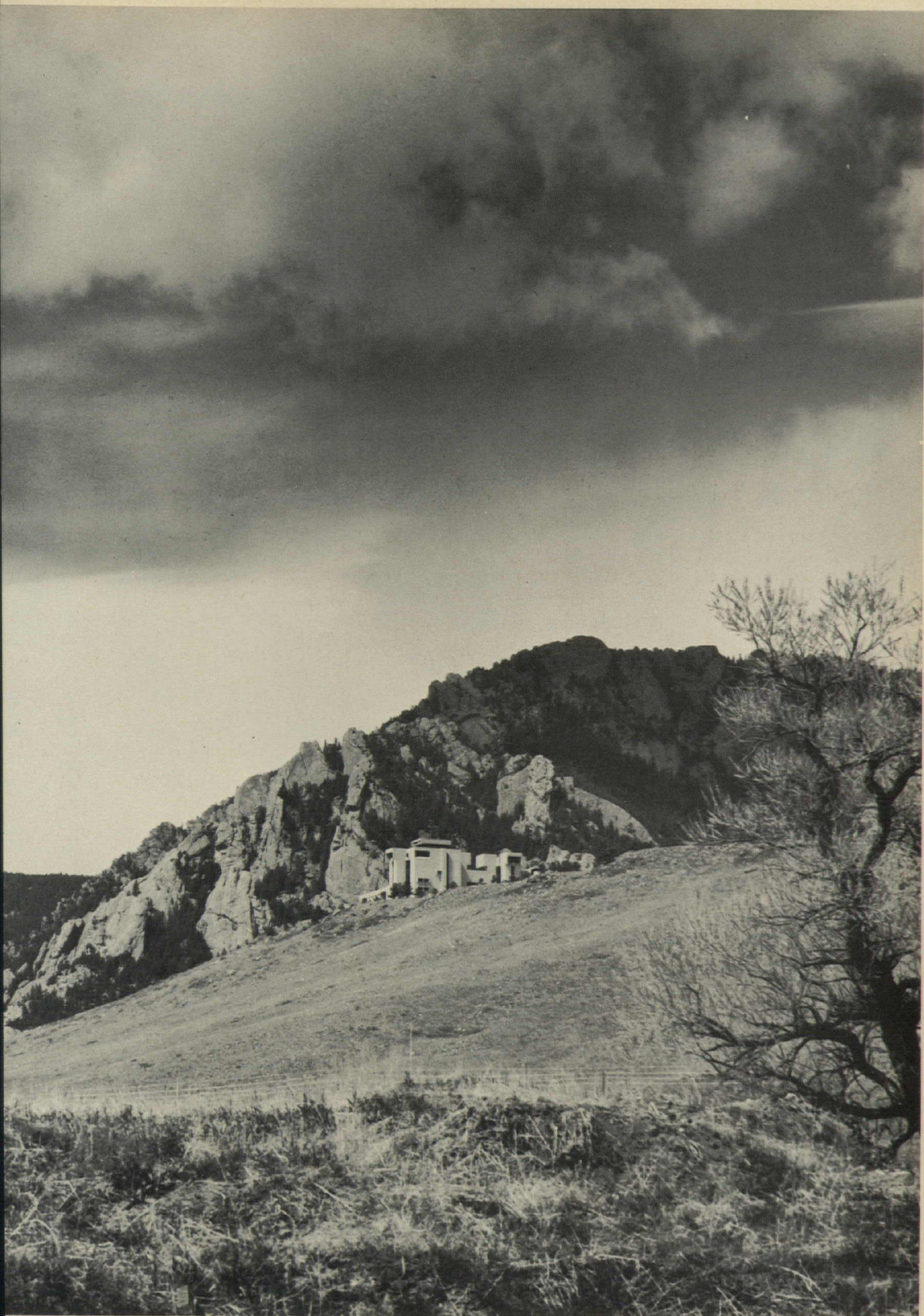
Site plan and photograph shows how building adapts to slope of mesa. The central mass and buildings A and B have been completed. The viewer is looking at the building from the east, approximately as the site plan is oriented.

vista of mountain peaks and a panorama of the town and plains below. It is a setting with strong similarities to that of the Air Force Academy in Colorado Springs, some 100 miles to the south.

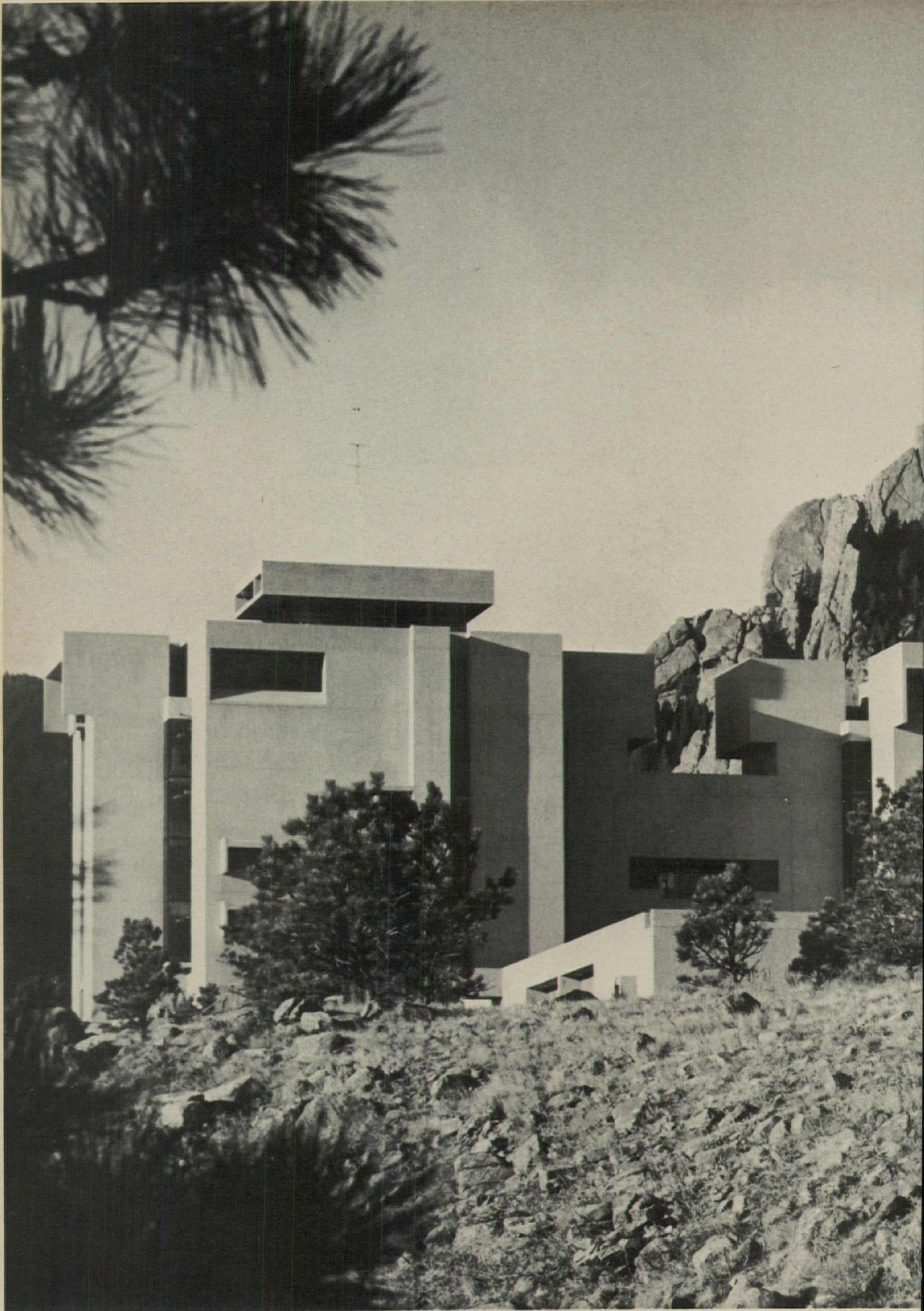
The client's program was essentially a philosophical one: it concentrated on stating what was not wanted, rather than on setting stringent requirements. The view of research facilities that emerged was of places that





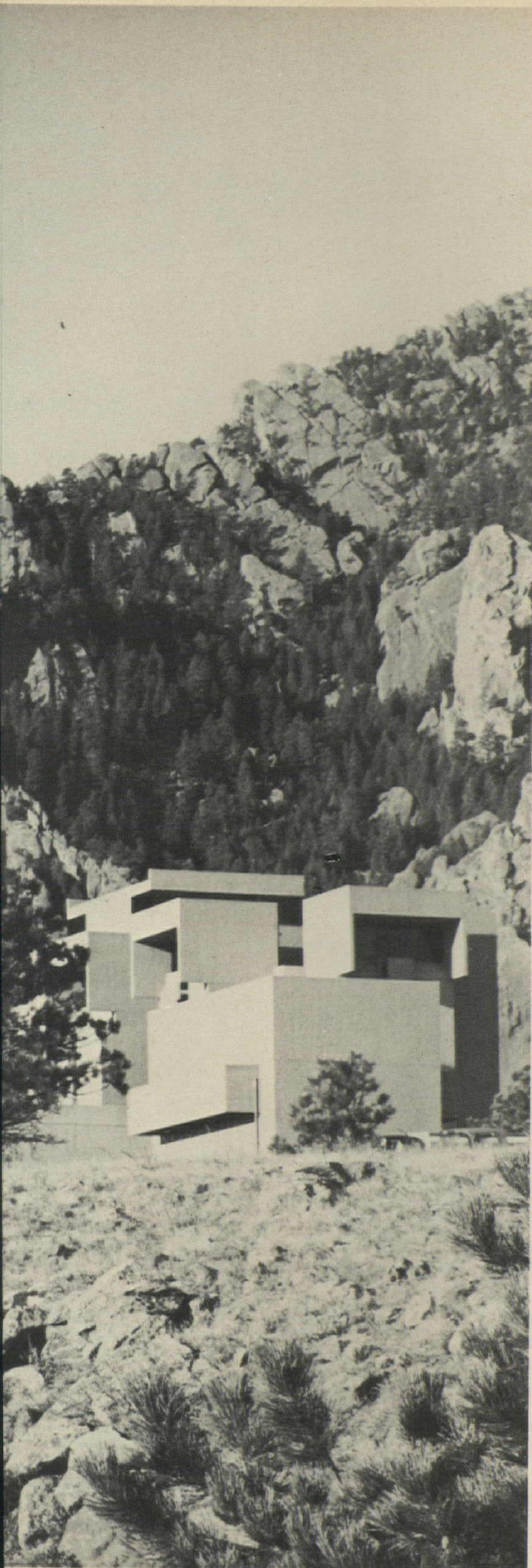






National Center for Atmospheric Research





should be personal, idiosyncratic and possibly slightly shabby; definitely not uniform, shiny, or regimented.

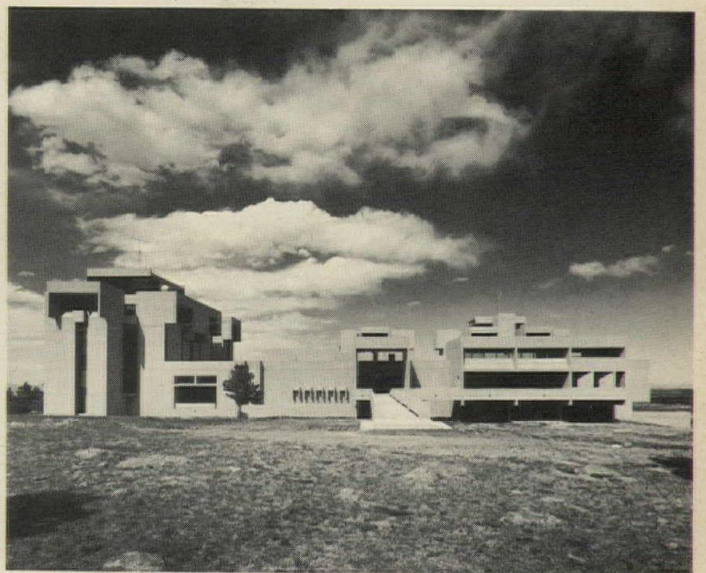
Nor was there any clearly delineated series of functions that could, or should, be expressed. The type of research done generally required more thinking than concocting. The proportion of each was uncertain, however, and in any event likely to change, so that, as the servicing requirements were only moderate, there was no rationale for making a clear separation between offices and laboratories. The client did not mind if the resulting building was a confusing place to visit, as long as it was a good place to work.

In the end, the architect found that the program was philosophical because the function of the building was philosophical. It was to be a place to think, and the thinking would be done in abstruse realms along the fringes of human knowledge. Thus the forms that expressed the function must needs be philosophical as well.

Pei's response, after considerable experimentation, was in effect to design a castle, and then remodel it into a laboratory. The castle was a response to the site and the "ivory tower" aspects of the program; the remodeling just set in motion a process of minor changes and arrangements that presumably will go on indefinitely.

The castle keep is a two-story building at the southern end of the site which contains elements like the meeting room, library, and dining room that everyone in the complex will use, along with certain support facilities.

Individual offices and laboratories occupy the towers, which are linked to the general-use building by



bridge-like elements. The towers are grouped in pairs, also linked by bridges. In one pair, Building B, the smaller tower contains offices and the larger one laboratories. The other pair, Building A, contains only offices, although it looks quite similar to Building B.

A later stage will include another pair of towers, a long span building for types of research not possible in smaller laboratories, and a conference center.

It is the design of the towers which provides the key to this building's highly successful relationship to







its site. In the towers, Pei deliberately suppresses the structural expression of the floor-to-floor height and fragments internal volumes in order to create scale-less masses that can hold their own against the surrounding mountain peaks. The hooded balconies at the top supply the place of battlements and give the towers form.

The fragmentation produced by the towers allows Pei to adjust his building to the sloping site, so that, in his words, "building and podium are one." Fragmentation and irregular disposition of the building's elements also insures that the observer never sees the full extent of the complex at one time, which prevents a final judgment on the building in relation to the mountains.

The comparison with the Air Force Academy is instructive. There, massive walls establish a podium, on which stand rectangular buildings whose extent is clearly defined and whose structural cage is clearly expressed. Pei says that the Air Force Academy design works because the large glass areas combine into a scale-less reflecting mirror, a solution that Pei was denied because of requirements for wall space and temperature control.

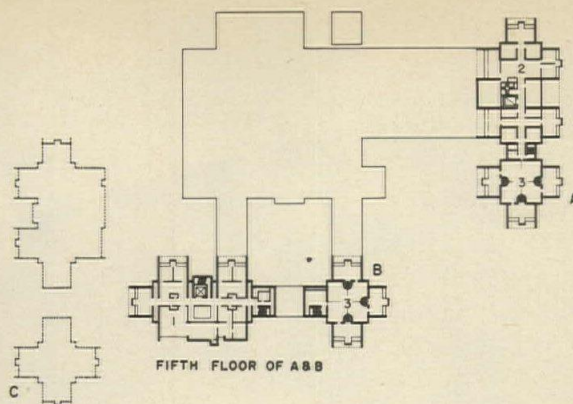
Actually, the Air Academy, from a distance, reads as an attempt to impose its geometric order on some particularly rugged scenery, while Pei's building—on the principle of "if you can't beat 'em, join 'em"—uses an aggregate of native rock to blend with its surroundings. The towers of Pei's building also have a scenographic effect of their own, which is particularly impressive from the masterfully designed approach road.

The two least satisfying qualities of the Atmospheric Research Center are its equivocal nature as a form and a certain disquieting thinness about some of the elements that one expects to be more massive.

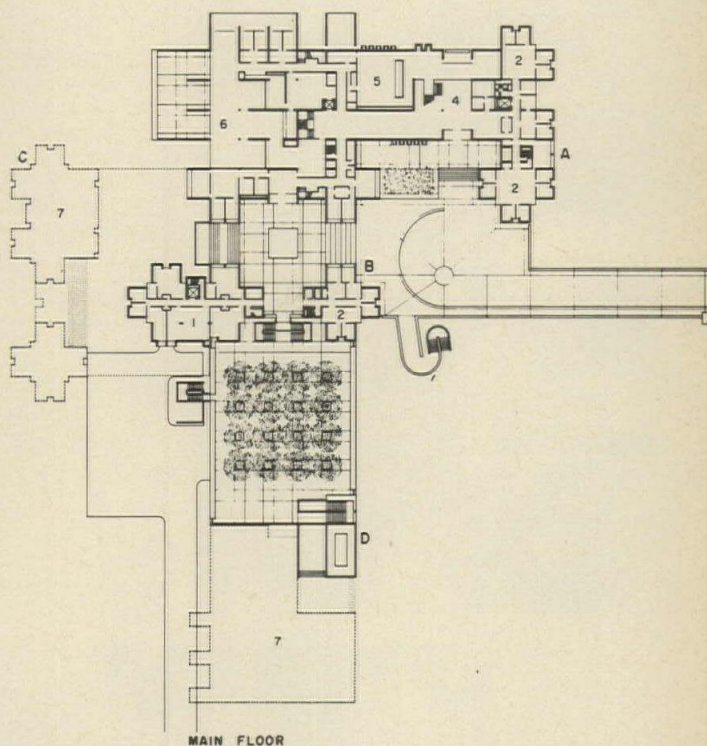
The equivocal quality is the result of the building being neither a clearly defined object in the landscape nor a self-effacing element of the landscape. It is thus probably an inescapable consequence of the way the architect approached his design. Wright's "Falling Water," which also is neither object nor landscape element, produces a similar effect of not quite knowing where you are; but a quality which is piquant in a house can be disturbing in a large building.

The appearance of excessive thinness occurs whenever a cross section of the concrete wall is actually exposed to view, chiefly in a number of round-arched door openings and in the overhangs at the top of the towers. The concrete wall turns out to be a stiff, sheet-like element, where the deep window recesses had led you to expect something much more like masonry construction.

But, if the building's vocabulary does not cover all the potentialities of modern structural materials, it still shows a highly sophisticated ability to come to terms with what modern technology can do, without producing a polemic about what technology is. In common with several other important buildings of recent years, the Atmospheric Research Center shows that it is no longer necessary to think about "Modern Architecture," but simply about architecture. That ought to be enough.



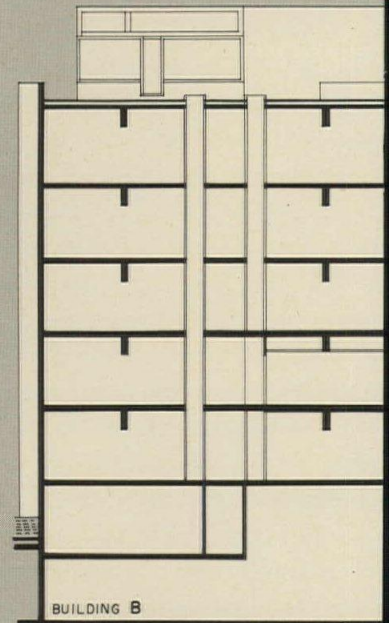
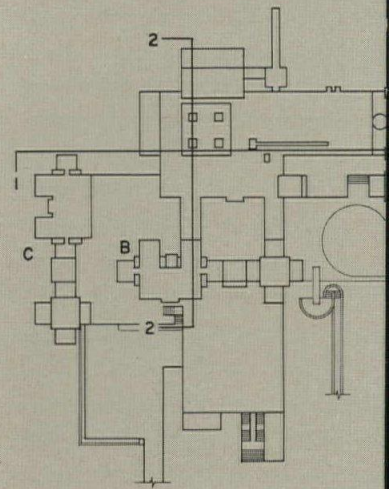
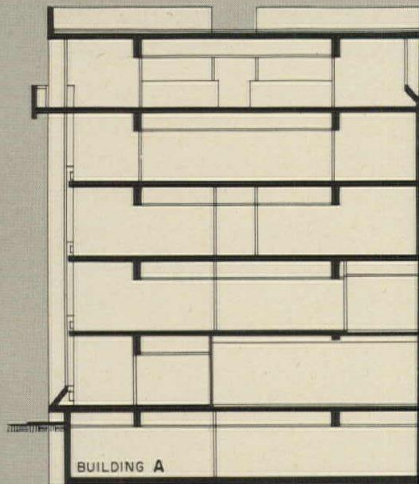
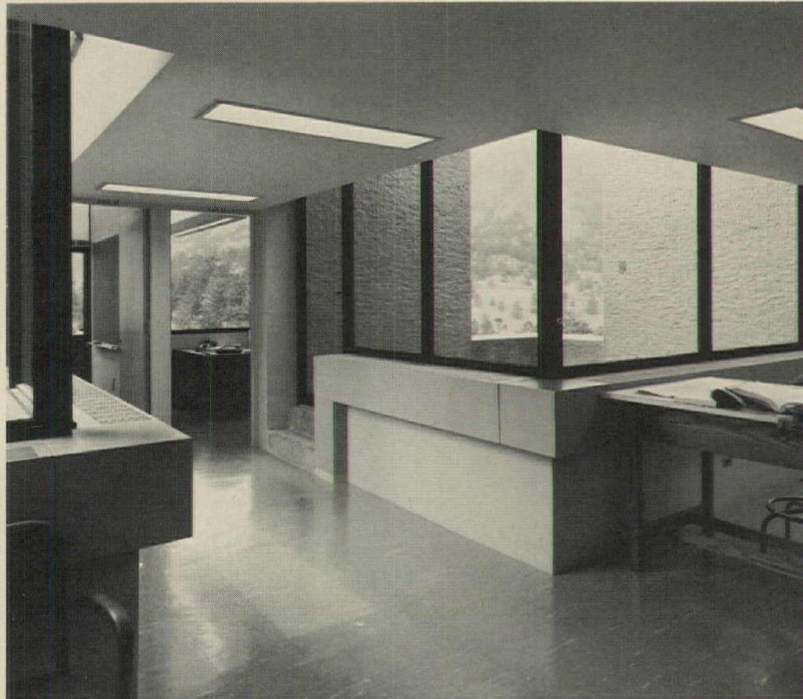
Main floor and top floor plan shows how laboratory and office tower relate to facilities used in common. 1—Laboratories. 2—Offices. 3—Roof terraces. 4—Main entrance. 5—Meeting room. 6—Lounge. 7—Future expansion. Letters relate parts of building to site plan, page 146.



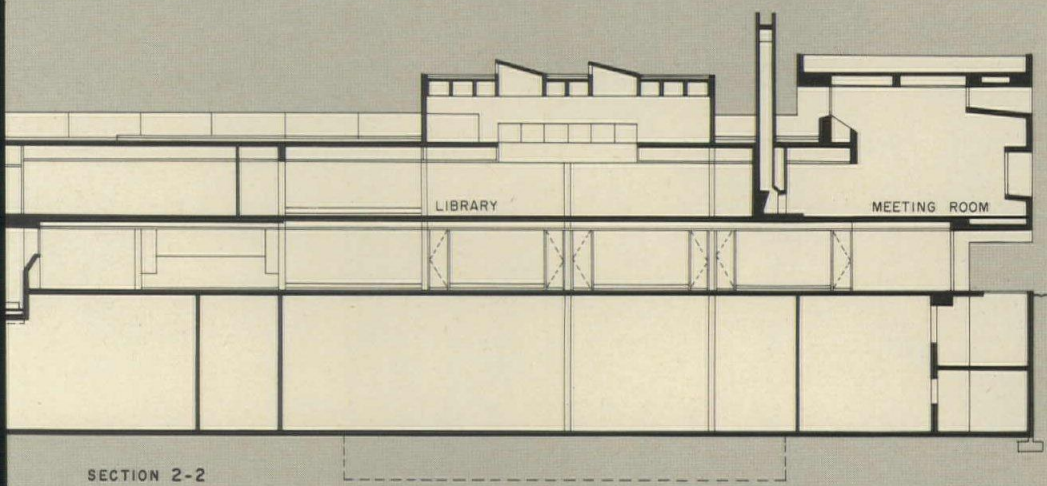
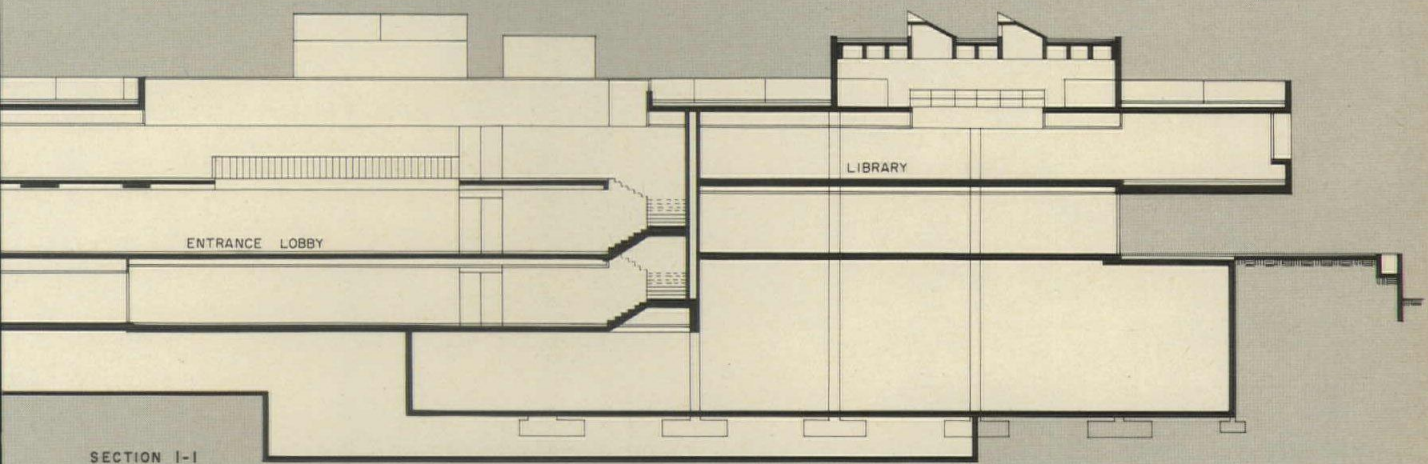




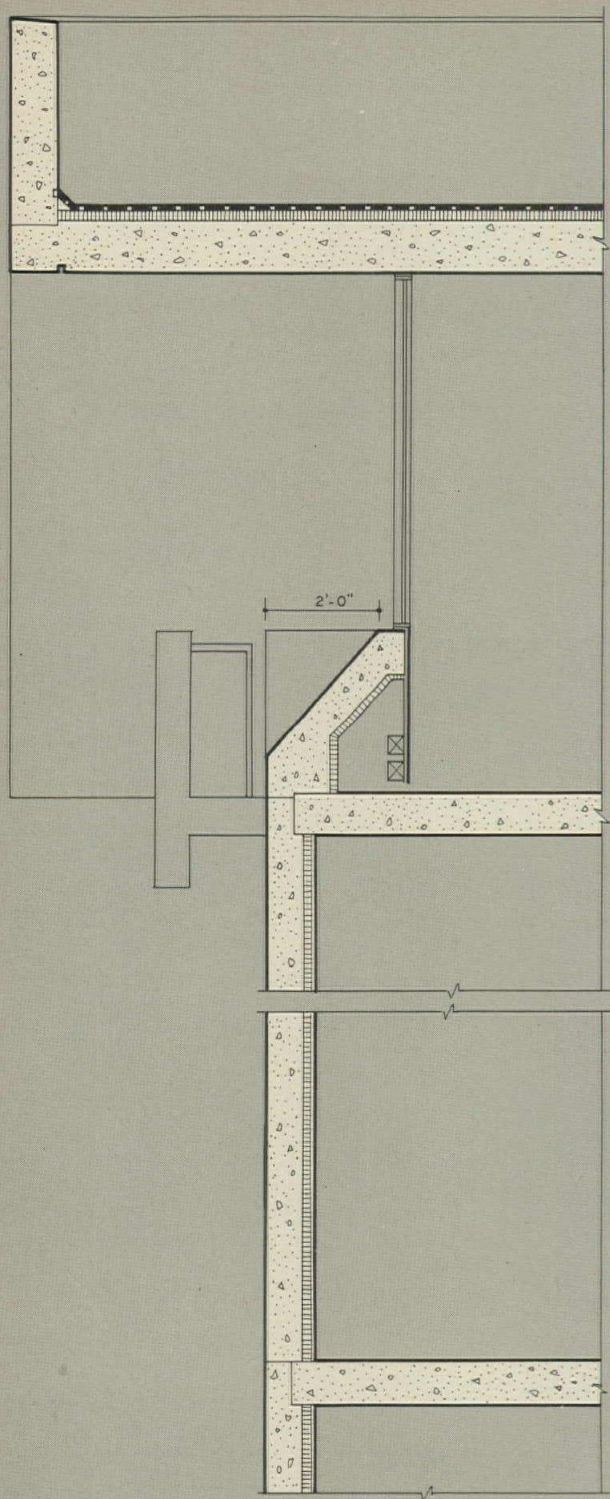
Most of the interior spaces in the building have extensive scenic views, with the exception of the library, which is essentially an internal room. Photo at top is of the lounge, rather like a club in character; at left, the interior of the library with a circular stair leading to the carrels; and below, the top floor of one of the laboratory buildings.



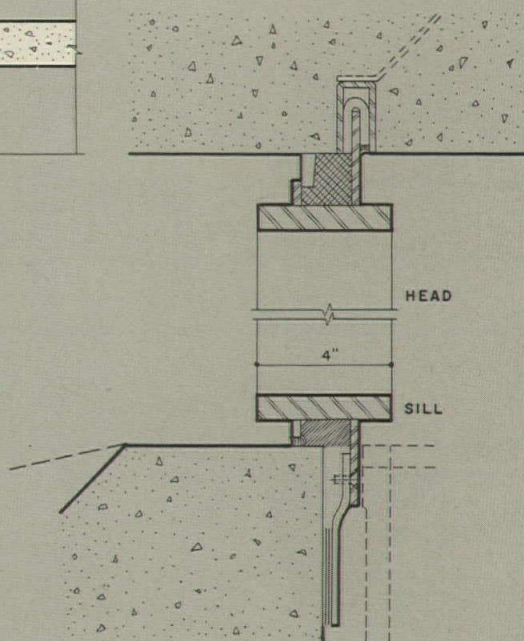






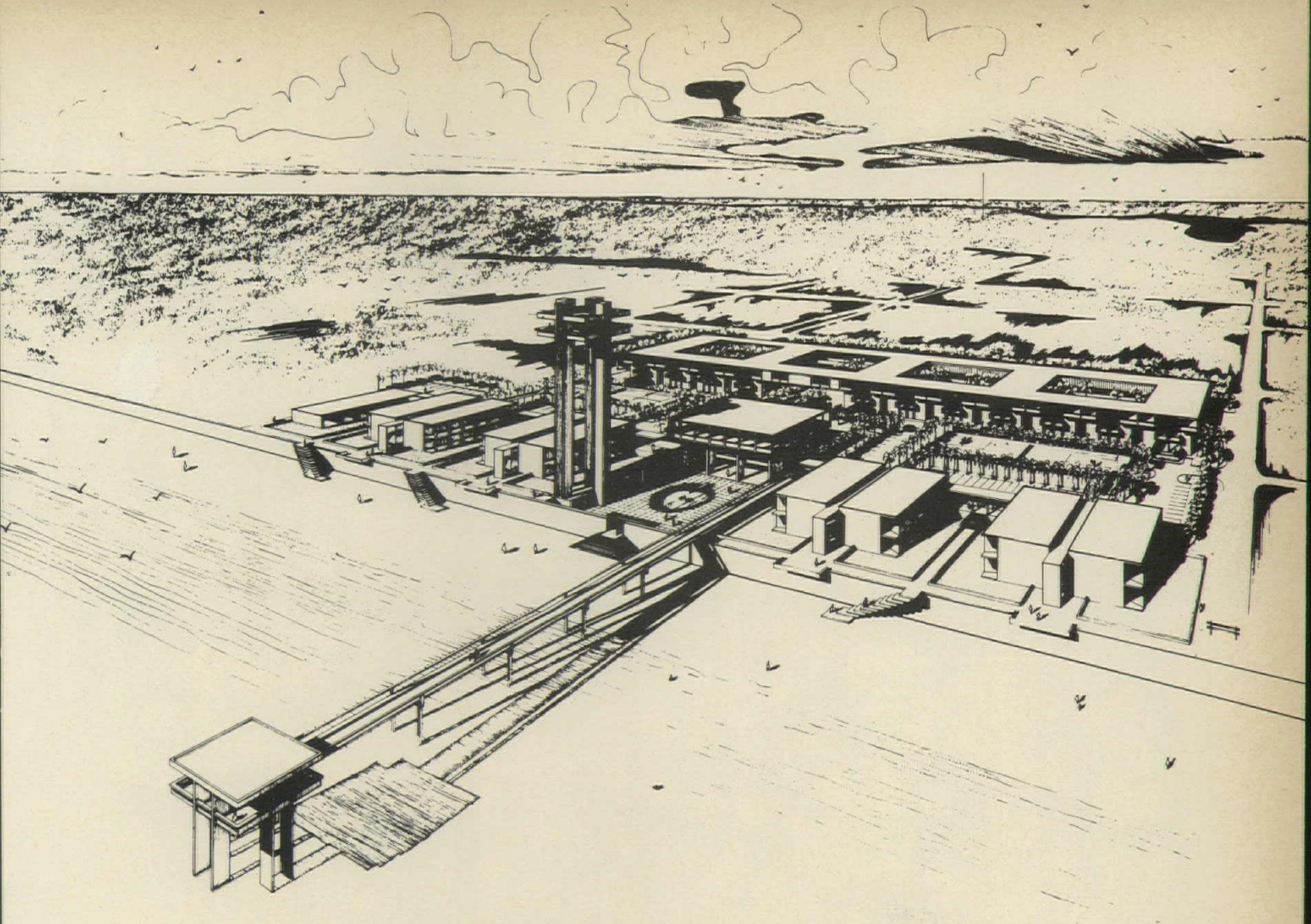


Wall section of top floor laboratories shows the building's characteristic profile. The necessary reinforcing structure, is, of course, completely hidden. Window detail is typical of the way in which connections between poured-in-place and factory-made elements are made throughout the building.



NATIONAL CENTER FOR ATMOSPHERIC RESEARCH, Boulder, Colorado. Architects: I. M. Pei & Partners—James P. Morris, Richards Mixon and Robert Lym (interiors), associates-in-charge; structural engineers: Weiskopf and Pickworth; mechanical engineers: Jaros, Baum & Bolles; general contractor: Martin K. Eby Construction Company, Inc.





## TWO RESIDENTIAL DEVELOPMENTS IN FLORIDA

These two projects—the Place by the Sea, an oceanside resort complex, and Victoria Park apartments and townhouses—meet head-on two urgent contemporary problems: increasing density and preservation of human scale. They are also happy solutions to the personal challenge of design, especially in the matter of interior space, where architect William Morgan was especially concerned with achieving quality “worthy of the occupants.”

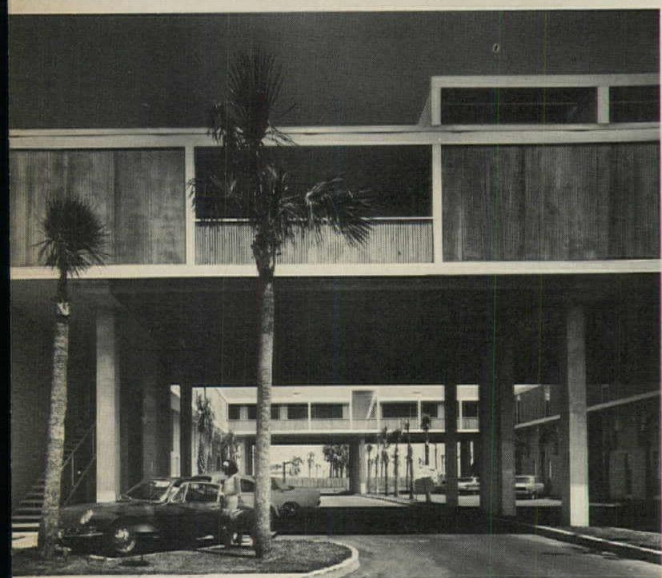
**THE PLACE BY THE SEA AT ATLANTIC BEACH, FLORIDA, is**

**1**

a large resort development which will ultimately include motel units, cabanas, clubs and restaurants, a 600-foot pier extending into the Atlantic Ocean, and a 120-foot high tower with a bar at the top. Just completed is the first phase of its construction, 100 apartment units and two swimming pools. Over the next four years, the new buildings will replace buildings battered in storms. The completed apartment building is actually two buildings under one comprehensive roof. The apartment units are grouped around four landscaped courts, three of which offer protected outdoor space for sitting and swimming. The fourth court, open at ground level at both ends, is a through access to the beach. The well-ordered exterior design of the building derives directly from the interior space—and spatial quality is the essence of the architect's solution here. Of the apartment types, the most interesting are the two-bedroom units on the second floor where the living rooms are two stories in height, creating a “noble space,” with a view through full-height glass panels.

THE PLACE BY THE SEA, Atlantic Beach, Florida. Architect: *William Morgan*; consulting structural engineers: *Haley W. Kleister; Waitz and Frye*; general contractor: *Preston H. Haskell Company*.

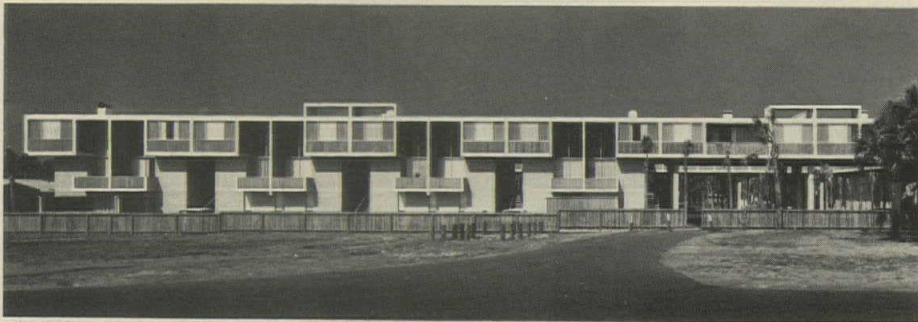
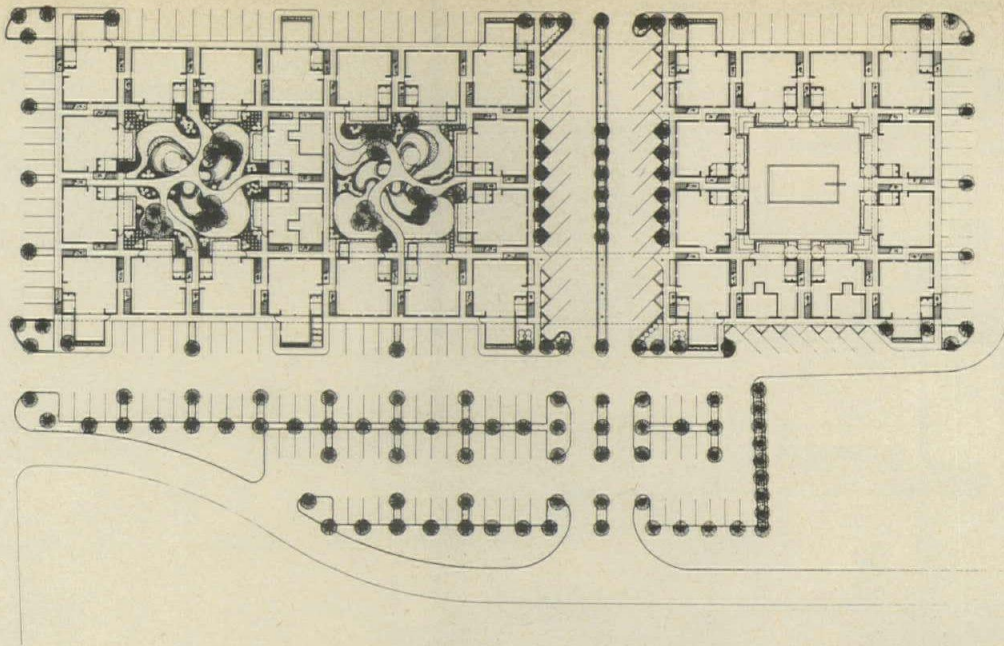




At night the two-story living rooms are clearly expressed as strong elements of the exterior (top). By day (right) they emphasize the particular spatial quality of these units in contrast to the other two types. Access to beach is through court (above).

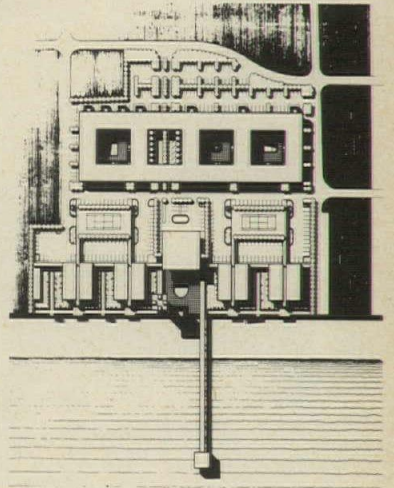




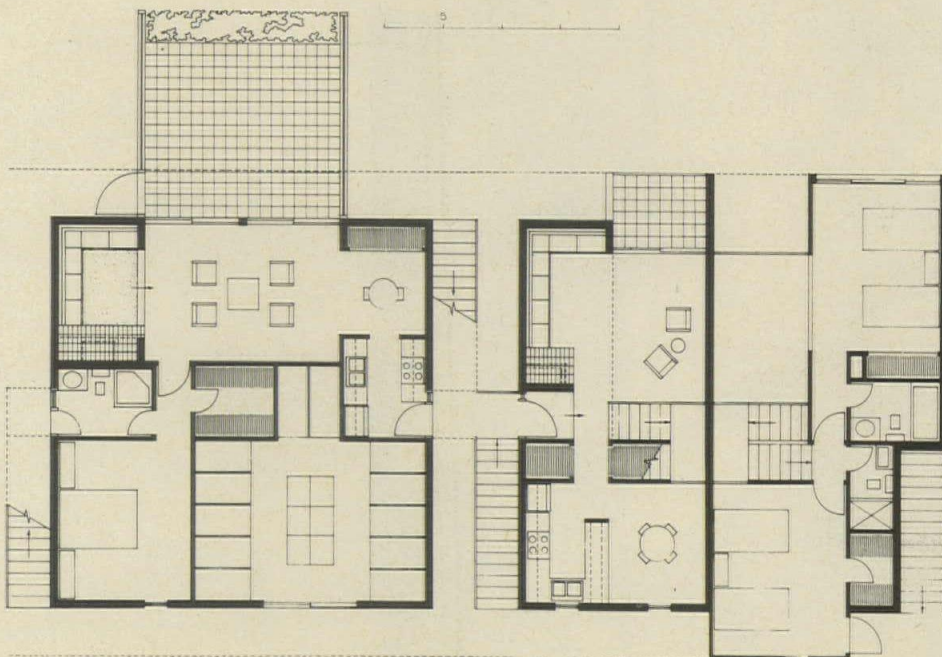


Alexandre Georges photos

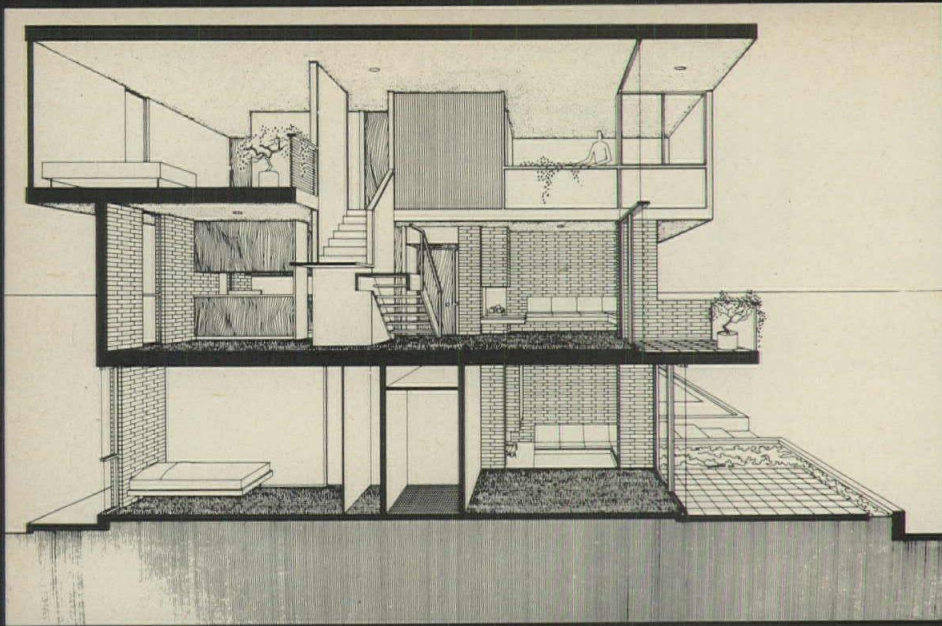
The continuous line of the comprehensive roof over the apartment structures is broken only by firewall projections which define centers of each court.



One- and three-bedroom units are on ground floor with two-bedroom two-story units above. Grouping these types (and a few four-bedroom penthouse units) determined much of exterior design, yet retained integrity of individual units.





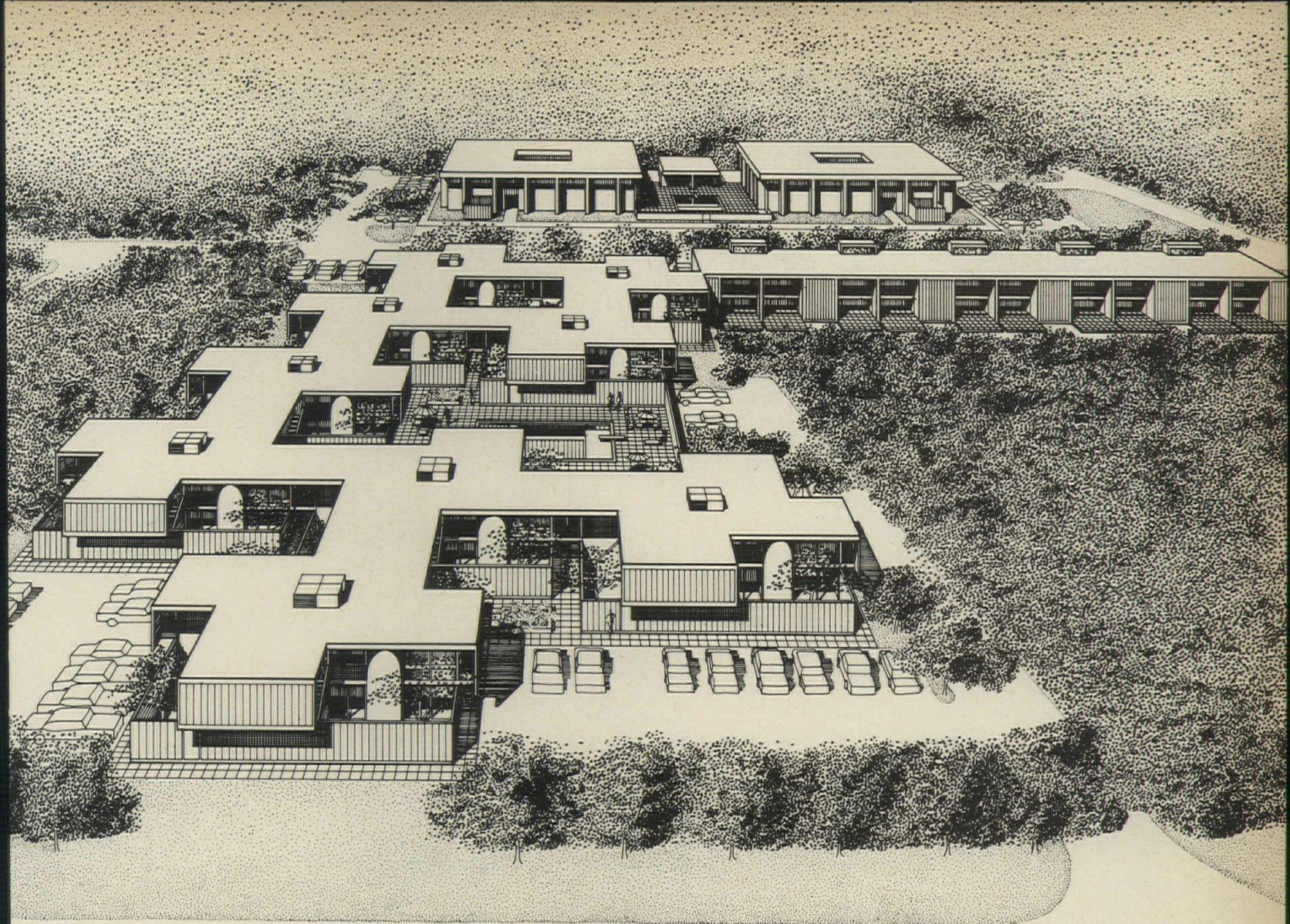


Ascending the stair at one end of the two story living room provides changing views outward to ocean, inward to bedroom balcony, dining space below, and sheltered fireplace cove under balcony—a "controlled variety within an agreeable order." Entrance to two-story space is through low-ceilinged foyer.



Materials are simple: second and third floors are wood framed; bearing walls are concrete brick; interior walls are plywood or gypsum board.

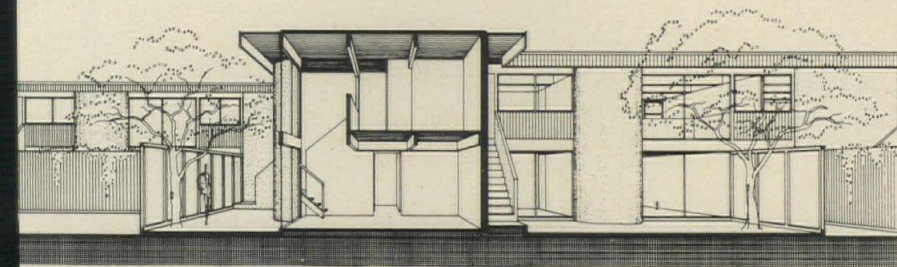




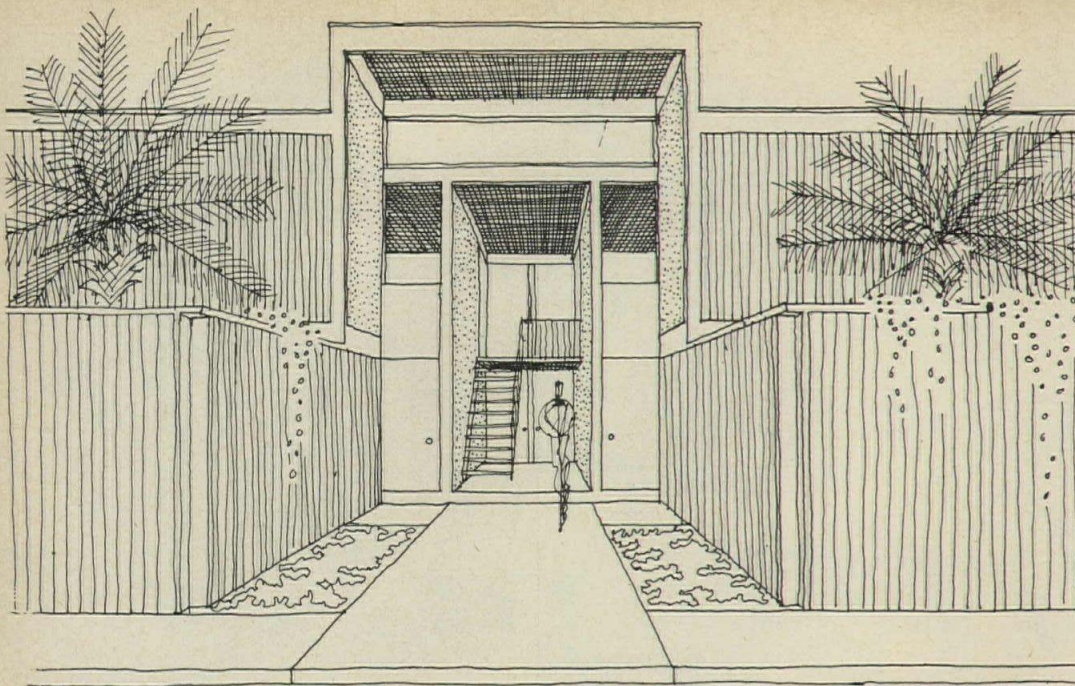
## 2 VICTORIA PARK APARTMENTS AND TOWN HOUSES, also at

Atlantic Beach, not far from The Place By the Sea, are being built in two phases: phase one, now complete, consists of the two apartment buildings seen at the top of the perspective view above. Designed around courts, these one-bedroom units proved so successful that they were fully rented before construction was completed. The second phase, now under construction, combines apartments and townhouses. In the two-story, three-bedroom town house, however, the architect's emphasis on spatial design continues the exploration suggested in *The Place by the Sea*. The plan of this town house—a clear derivation from Wright's "Suntop" project at Ardmore, Pennsylvania—uses a 32- by 32-foot module for each town house which with its neighbors forms a 64- by 64-foot pinwheel. Each unit has its own private garden, but the ingenious connection of units provides entry courts and, at the center, a large open space with a community swimming pool. Upper floors overhang six-foot wide paved pedestrian ways around each unit.

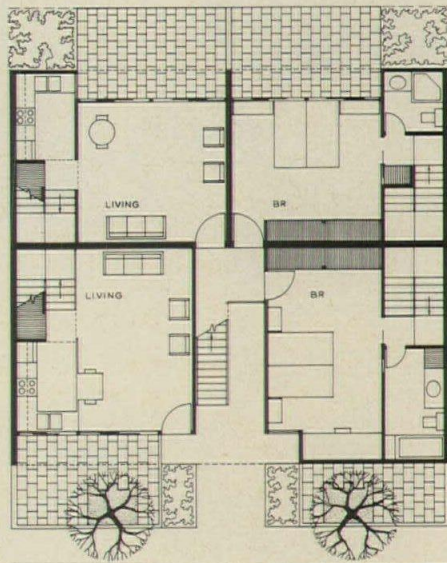
VICTORIA PARK APARTMENTS, Phase One, Atlantic Beach, Florida. Architect: *William Morgan*; consulting structural engineers: *Haley W. Kleister; Waitz and Frye*; general contractor: *Lomar Builders, Inc.*



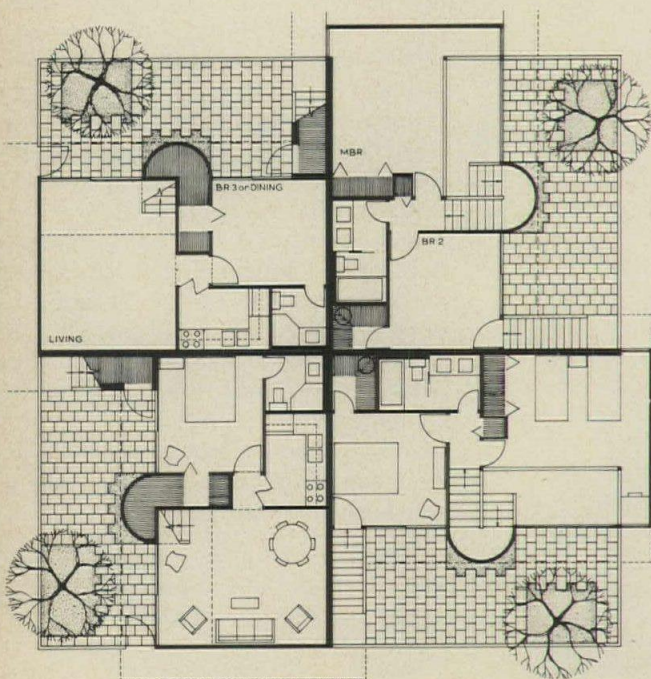




The first units completed at Victoria Park are apartment buildings with two-story one-bedroom units—actually, narrow townhouses. The entrance to one group of units, shown in the sketch above, makes a dramatic play of spaces and planes in the stair hall to the upper floor. Each unit has its own private garden.



5



Each unit is essentially a two-story townhouse, whose main rooms face a private garden. The major interior space is, as at Place by the Sea, a living room a portion of which is two stories high. This high space, along with the stair turret, defines the vertical dimension of the unit. The master bedroom balcony opens onto it. The buildings are of heavy timber construction on concrete slabs.



# Some new directions in French architecture

Constraint sometimes makes for liberty. In France, since the World War II reconstruction period, social, economic and political restrictions seem not to have inhibited architectural development—but to have challenged it.

Visiting professional critics, even in the past few years, have generally felt that the most creative architecture in that country—aside from the work of Le Corbusier and Perret—was completed before this generation. But it can at least be argued that the number of individual architects working towards new techniques and vocabularies is increasing, and that the quality of their efforts is improving. What dynamics and development have taken place, have been accomplished in the face of considerable complacency and a considerable reluctance by officials—government and otherwise—to admit that living in an architectural past made it more and more difficult to live and function efficiently in the present.

What has been accomplished? By volume, perhaps not much. But new ideas and fresh designs seem to be growing out of four different developing movements:

The first includes architects who are strongly influenced by the work and teachings of Le Corbusier but who are forming their own vocabularies and thought as changing conditions and economic possibilities provide new bases for Corbu's philosophies. Two examples of work in this direction are shown on the following pages.

A second movement includes architects who are basing their current projects and research on a visual articulation of existing social forms in man's urban environment, who are working to improve the visual clarity of buildings. Two examples are on page 164.

A third group includes a growing number of architects who, refusing to accept any of the existing forms, are working towards fresh and personal conceptions of possible environments. Their viewpoints often radically oppose each other—their common link is fresh form. Two examples of this kind of work are on page 166.

A fourth group of architects continues to work with the idea that the most positive way to create an architecture is to use and further develop technology. An example of this line of thinking is shown on page 168.

By Leonard Alain Weismehl

Leonard Alain Weismehl has a degree in architecture from Illinois Institute of Technology and returned to Chicago last spring after nearly two years of work and study in France.

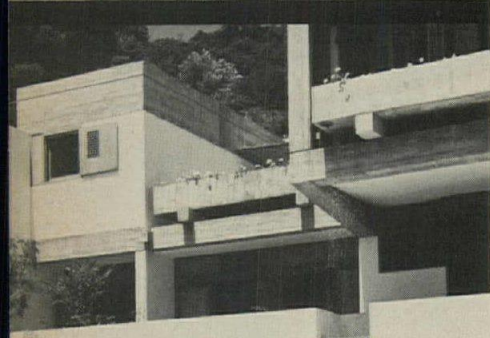


# Some of the new work in France is developing

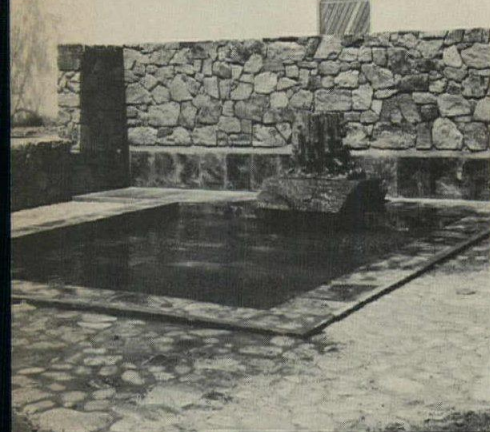
A. Weismehl



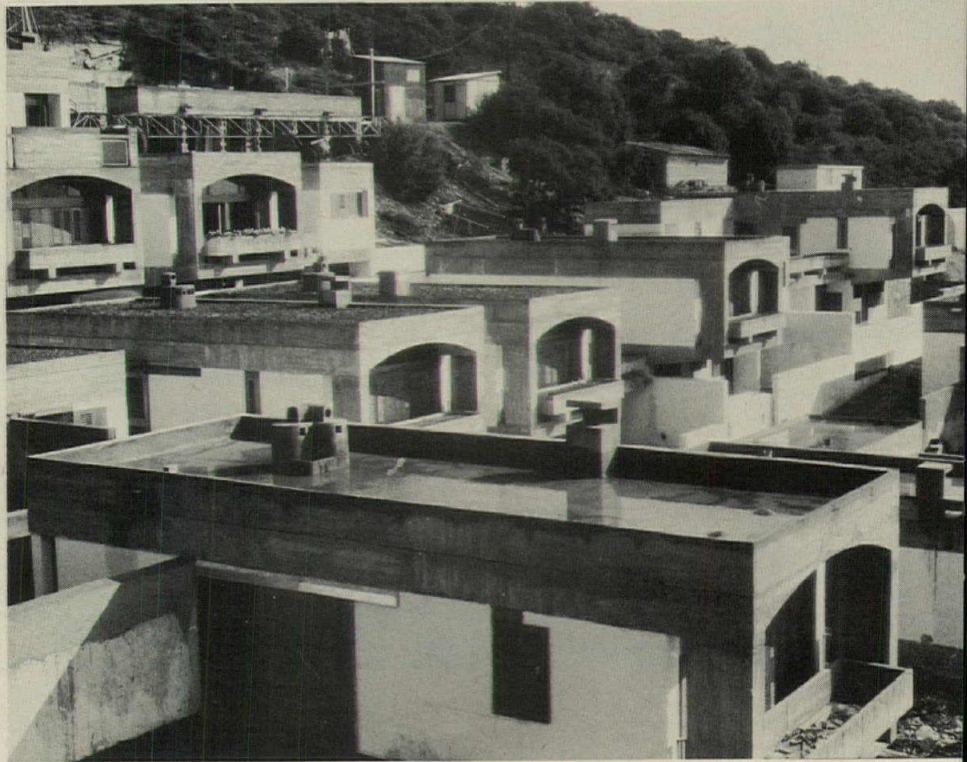
Pierre Joly—Vera Cardo



Pierre Joly—Vera Cardo

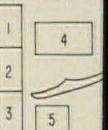


A. Weismehl

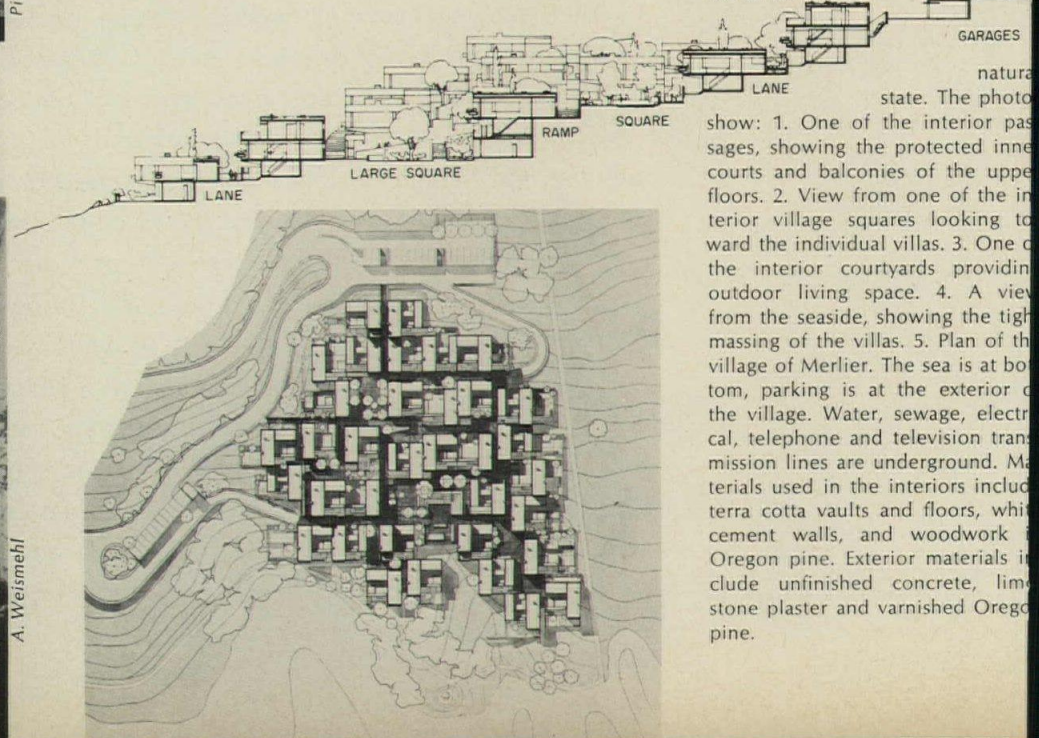


One example of new work with its roots in Le Corbusier's teachings is this highly spirited and rationally planned vacation complex on the Cote d'Azur. Shown in the photos is one of a series of five linked communities on a 250-acre site; all of which contrast sharply with the random development of the surrounding area. In each of the villages, the tight spatial organization and consistent use of materials has resulted in a pleasing unity. Each village has been planned and built in the scale and character of a Mediterranean hill town.

Architects: L. Arretche, J. Renaudie, P. Riboulet, G. Thurnauer, J. L. Veret.



Chateau Volterra will have 200 houses in five compact villages spread along 250 acres of land overlooking the sea. The open land will be cooperatively owned, and will include a beach, boat houses, a club with swimming pool, tennis, restaurant, shops, and supervised play areas for children. Outside the built-up or developed recreation area, the land will be left in its



state. The photos show: 1. One of the interior passages, showing the protected inner courts and balconies of the upper floors. 2. View from one of the interior village squares looking toward the individual villas. 3. One of the interior courtyards providing outdoor living space. 4. A view from the seaside, showing the tight massing of the villas. 5. Plan of the village of Merlier. The sea is at bottom, parking is at the exterior of the village. Water, sewage, electrical, telephone and television transmission lines are underground. Materials used in the interiors include terra cotta vaults and floors, white cement walls, and woodwork of Oregon pine. Exterior materials include unfinished concrete, limonite stone plaster and varnished Oregon pine.

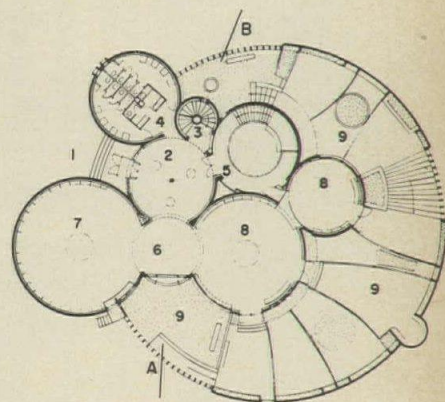




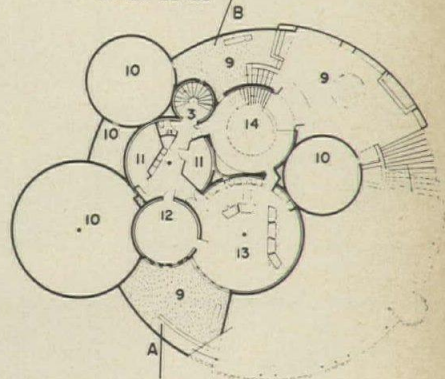
Keystone photo

Another example: This small children's library in Clamart, to the south of Paris, which serves as both a cultural and visual center for the local community. The scale and concept effectively enliven the anonymous character of the surrounding apartment structures. The architectural language used in this play of cylinders relates effectively to a child's scale of activity and interest. Open to the view from above, the library and multi-level terraces are enclosed at ground level by a low surrounding wall. Rough concrete, textured white cement and Oregon pine reinforce the freshness and lightness of the interior and exterior spaces.

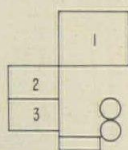
Architects: J. Renaudie, P. Riboulet, G. Thurnauer, J. L. Veret.



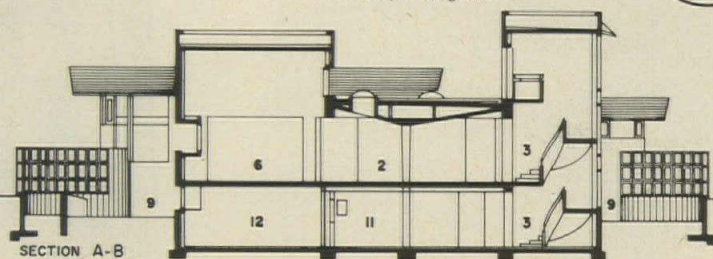
UPPER LEVEL



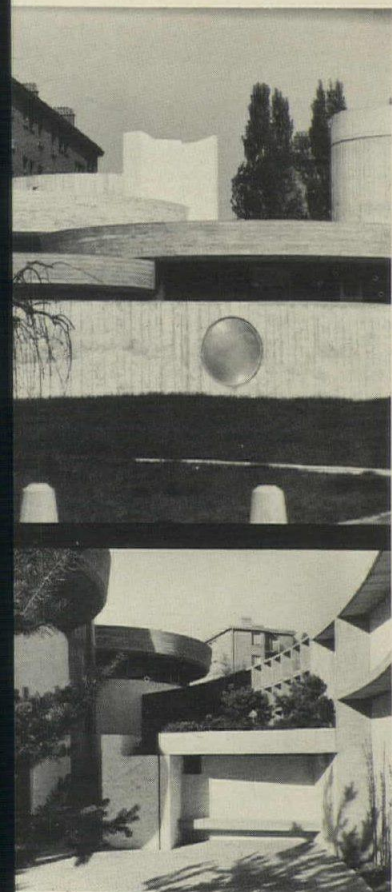
LOWER LEVEL



1. Entry
2. Cloak room
3. Principal stairway
4. Washrooms
5. Gallery of story telling room
6. Reception
7. Lending
8. Reading room
9. Garden
10. Technical
11. Storage
12. Librarian's room
13. Activities annex
14. Story telling room



SECTION A-B



Claude Michaelides

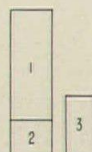
1. From the surrounding apartment units, the playfulness and interest of the intersecting cylinders is especially effective. 2. Detail of the low enclosing wall. The circular glass element admits concentrated light on the interior surface. 3. A detail of the courtyard.



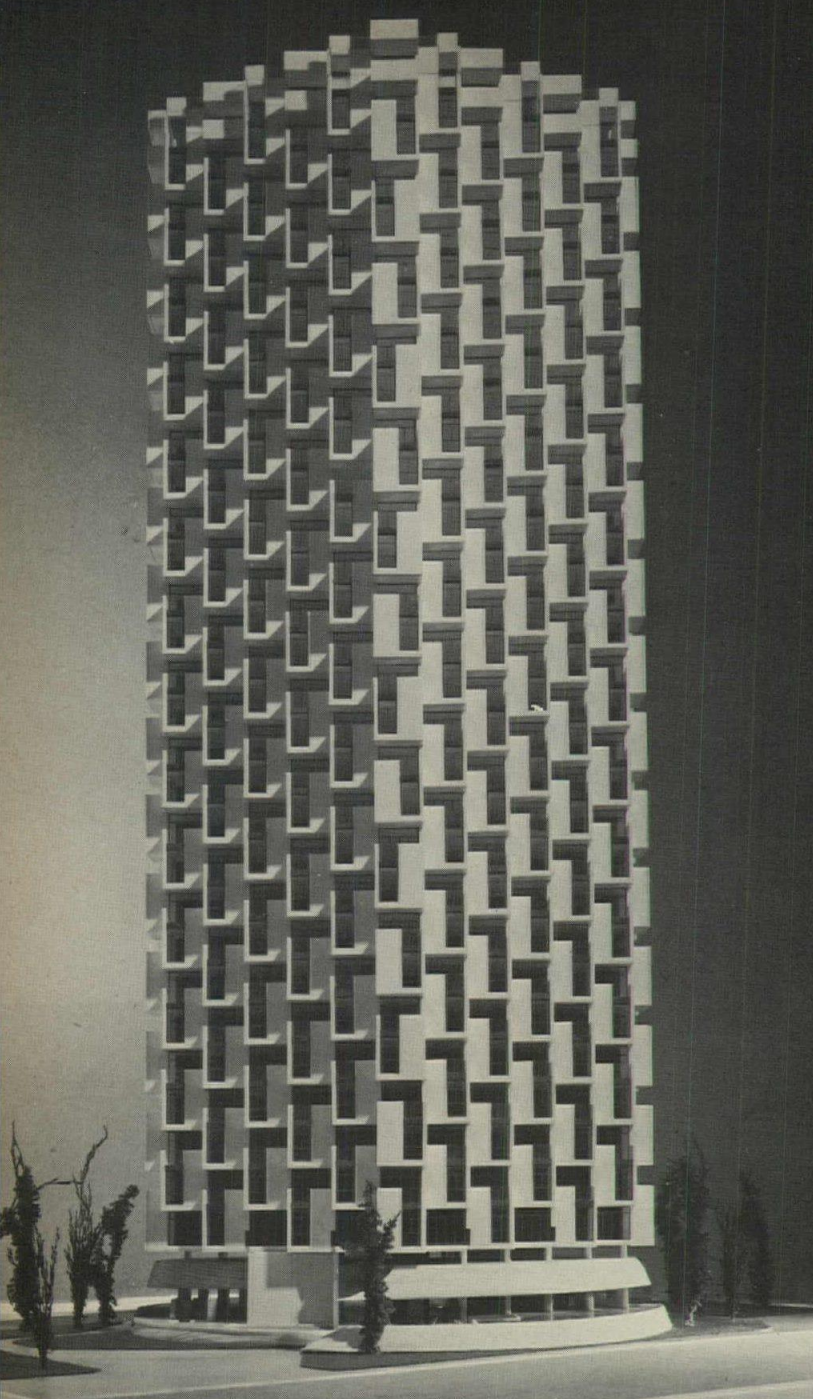
## A strong, but subtle, expression

In both of these apartment buildings—one in Grenoble (left) and one in Paris (below)—the sculptural effect grows directly and sensibly out of the staggered plan arrangements and resulting articulation of separate apartment units. Nonetheless, the pattern of light and shadow on the facades is independent of the individual levels and rooms, and presents to the viewer in the street below interesting and constantly changing patterns.

Architects: for the Grenoble building at left: *R. Anger and M. Heymann*; for the Paris building below: *R. Anger and Puccinelli*.

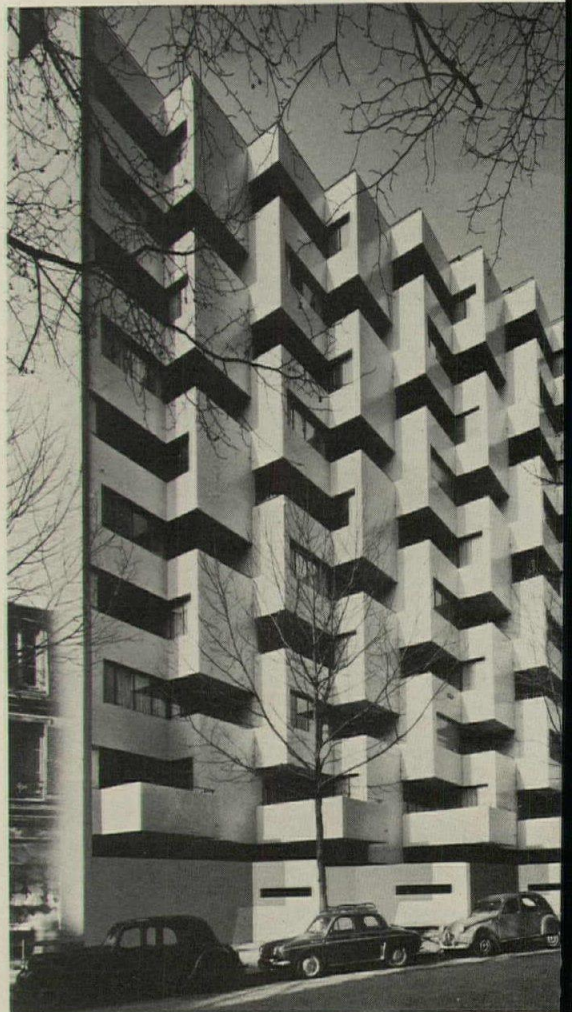
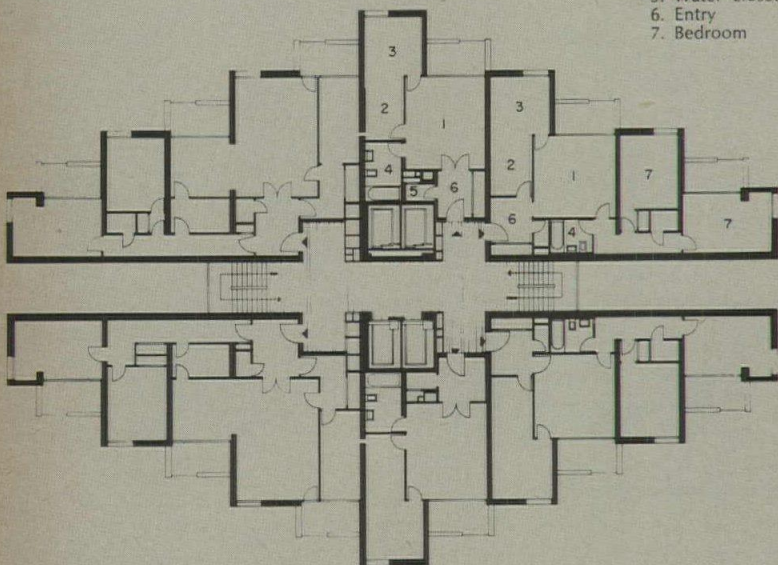


1. Model view of the newly constructed Residence of the Green Island in Grenoble. 2. The plan shows the staggered room arrangement around a tight concentration of vertical building services in the building core. 3. An apartment building on rue de Pyrenees, Paris, 1962.



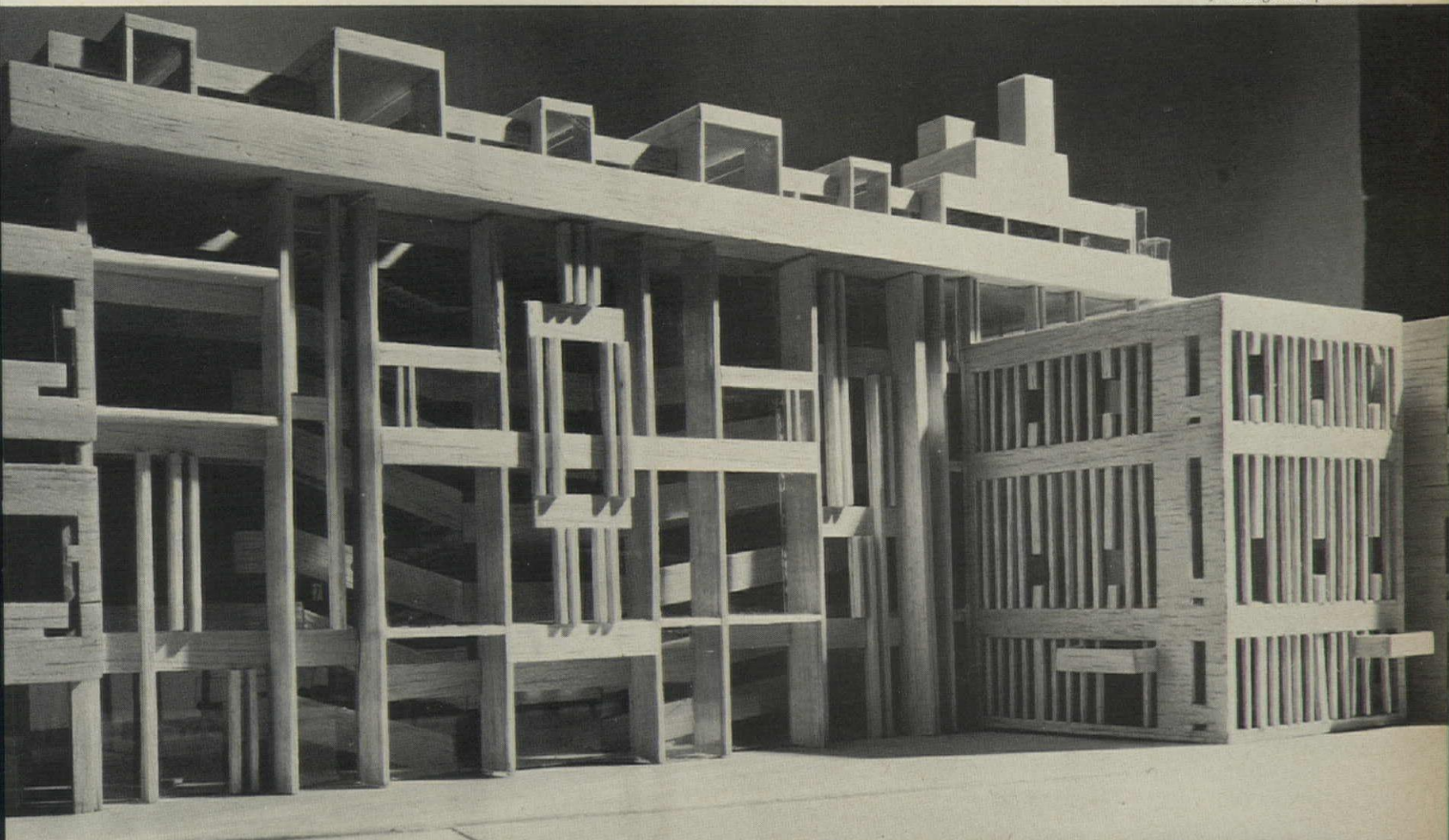
Studio Martin photos

- 1. Living room
- 2. Kitchen
- 3. Dining area
- 4. Bath
- 5. Water closet
- 6. Entry
- 7. Bedroom





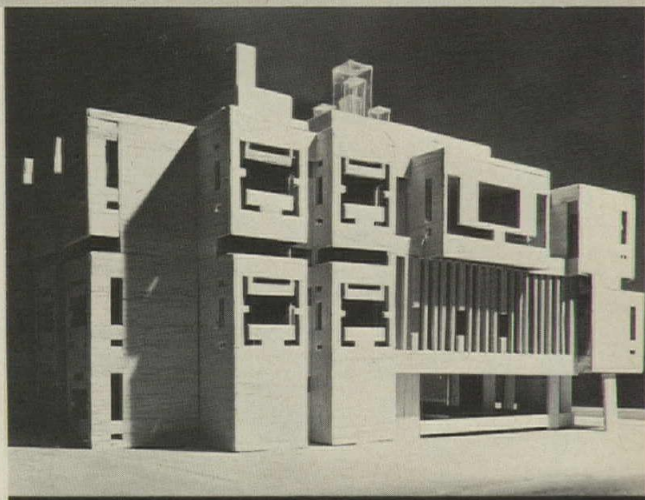
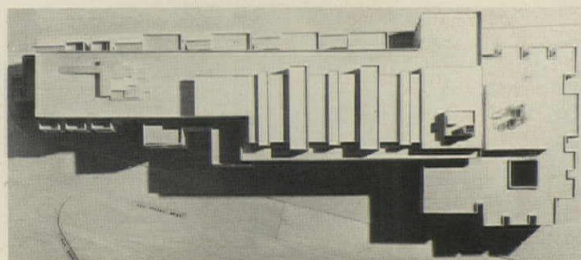
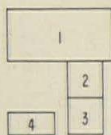
J. Biaugeois photos



This newly proposed administration center for the city of Pantin to the north of Paris groups all public service activities for the community in one building. It is notable that each of the different departments—police, social security, tax service, weights and measures, professional orientation, archives, etc.—is articulated, though of course the pattern cannot be read from the exterior. The architects have physically and visually separated the services within the same building, assigning to each the position and space necessary for proper functioning.

Architects: J. Kalisz and J. Perrotel—Atelier d'Urbanisme et d'Architecture.

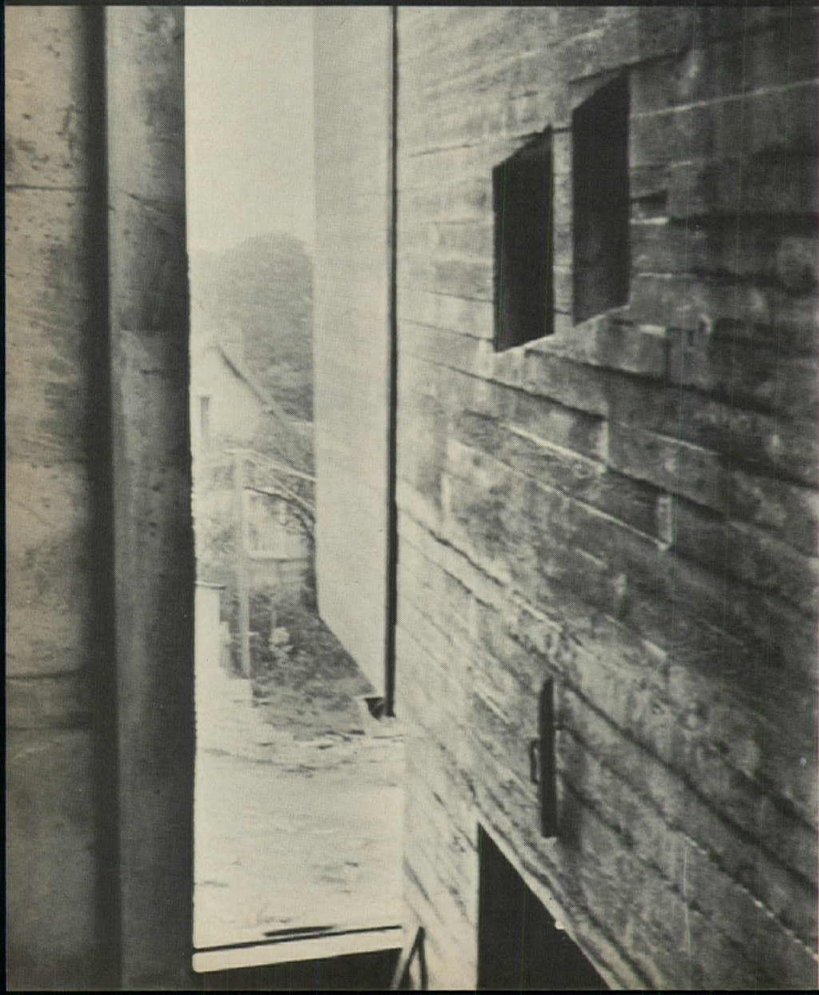
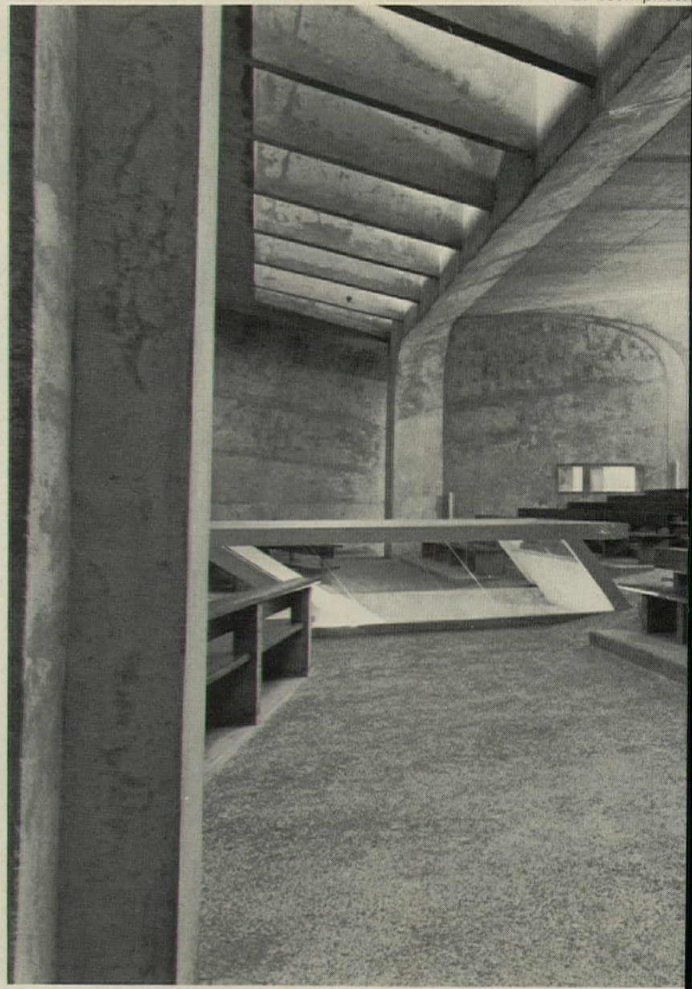
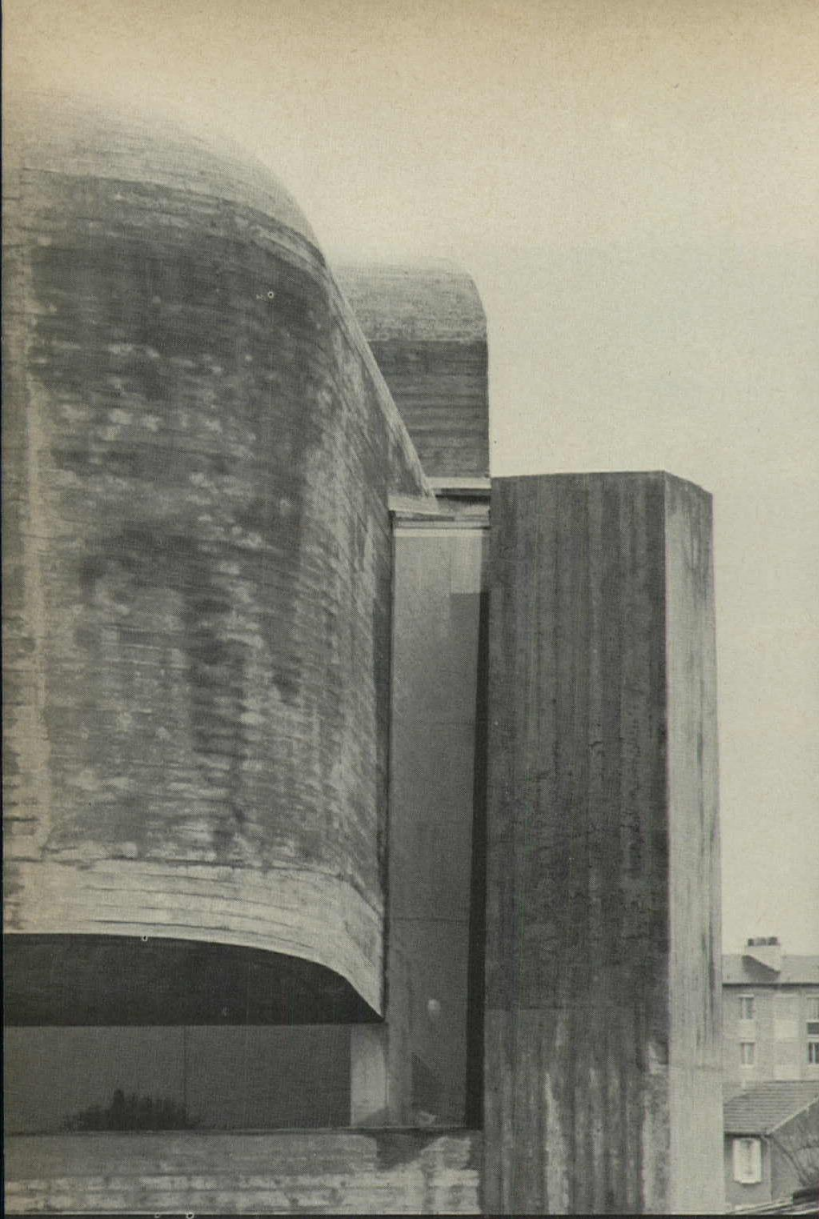
1., 2., 3. The strongly patterned exterior is varied and complex, but extensions and setbacks suggest the varied functions within the center. 4. The plan view shows the kitchen, restaurant and roof terrace. The canal and surrounding area will be treated to provide easy access to the center from all sides.





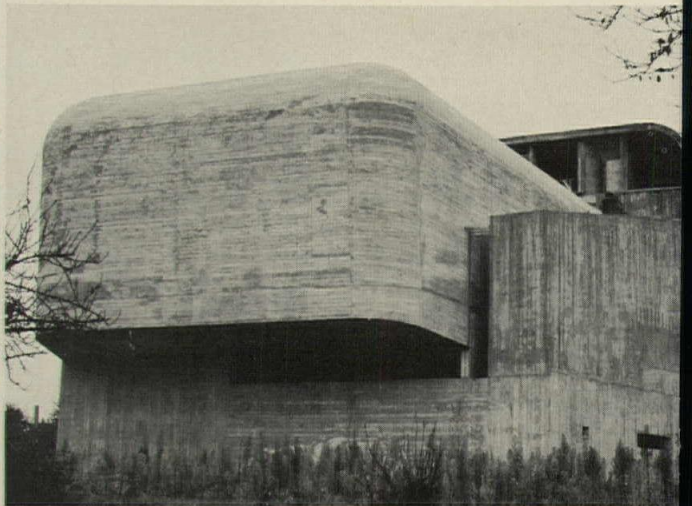
## Another group of French architects

E. Leon photo



This church at Nevers represents one of the earliest manifestations of a new theory of experimental architecture: life on inclined planes, the expression of cantilever and seeming instability, a continuity of movement from interior action to exterior space. This structure is and means to be in bold opposition with its environment; the inclined interior and the suspended nave are conceived to give a new dynamism to religious life.

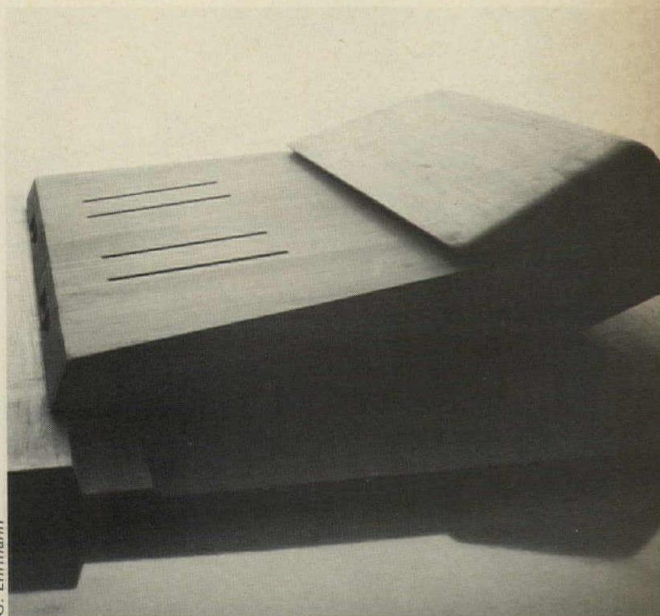
Architects: *Architecture Principe*—C. Parent, P. Virilio.



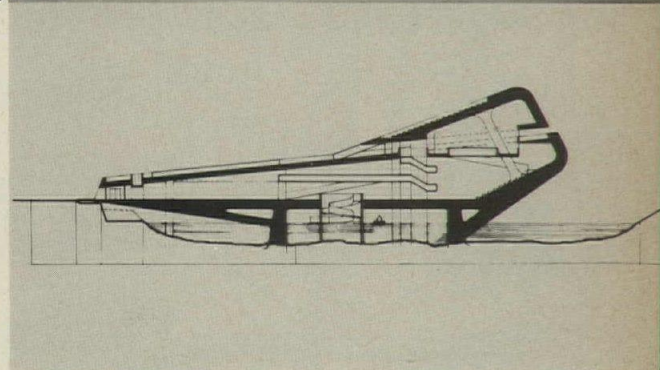
A. Weismehl photos



# is striving towards new shapes and environments

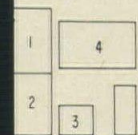


G. Ehrmann

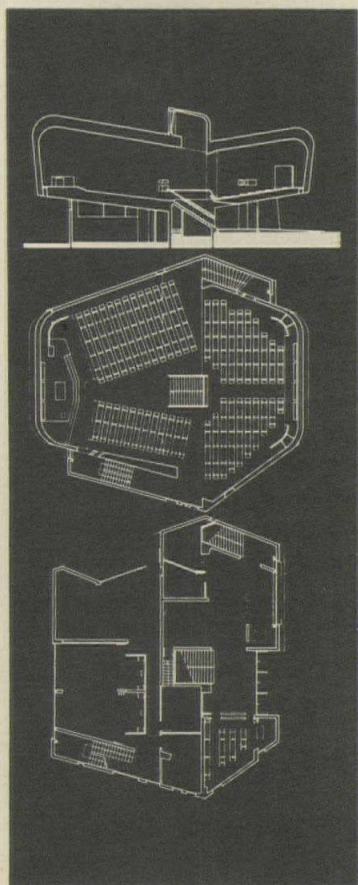


The massive but simple form of this proposed exhibition center at Charleville extends upward from its base over the Meuse River toward the opposite hill. It would act as a large public gathering place in providing the space necessary for an annual fair and the equipment necessary for two theaters, a banquet hall, a restaurant, a cafeteria and secondary services, in addition to serving as a public promenade area.

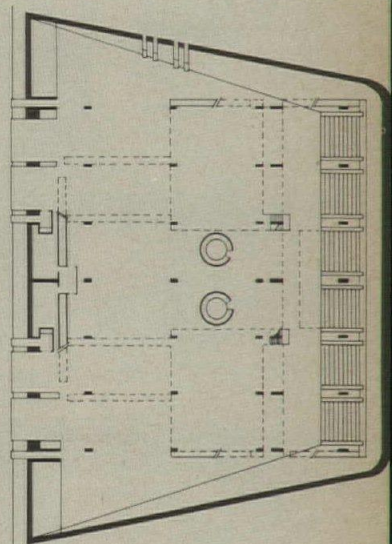
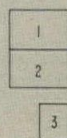
Architect: *Architecture Principe*—C. Parent, P. Virilio.



1. The shapes and forms of the church are bold and totally unrelated to the land or environment. 2., 3. These two photos show the interpenetration of the shells of the building. 4. The interior of the nave looking toward the confessionals. In the separation between the two shells is found the secondary accesses, one descending toward the reunion and catechism rooms, the other to the sacristy and the baptistry. In the center of the plan and in the photo above is seen the main stairway. The altar is in the east-west axis of the principal stairway. Since its inauguration a few months ago, the church has found an increasing number of active parishioners in addition to a host of visiting lay and professional people.

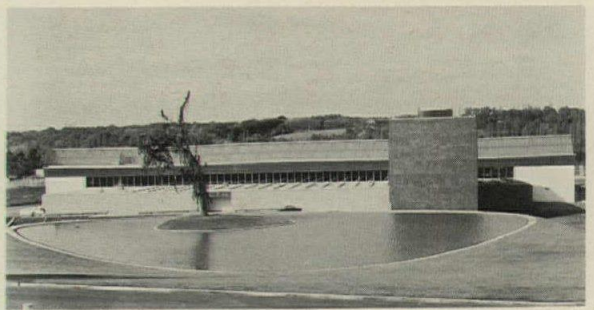
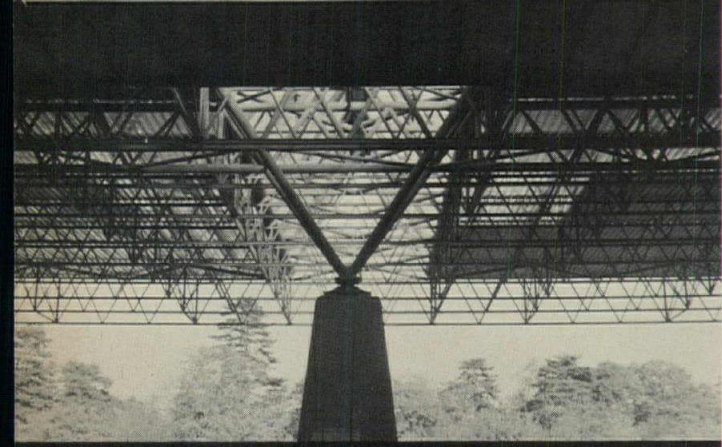
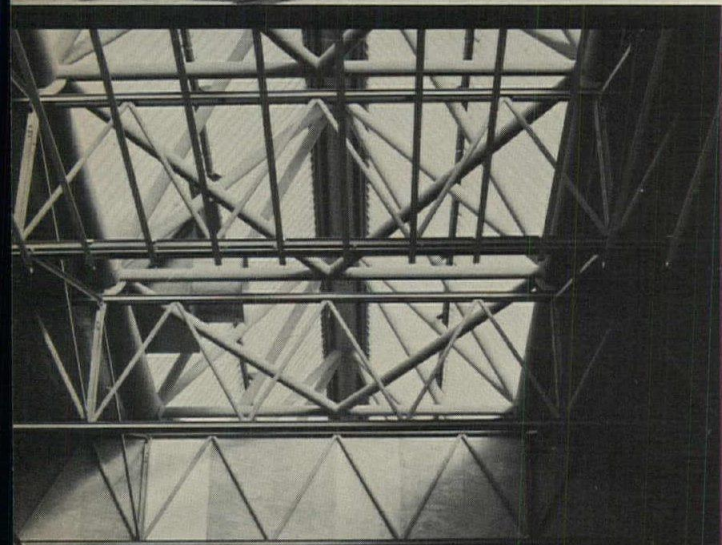
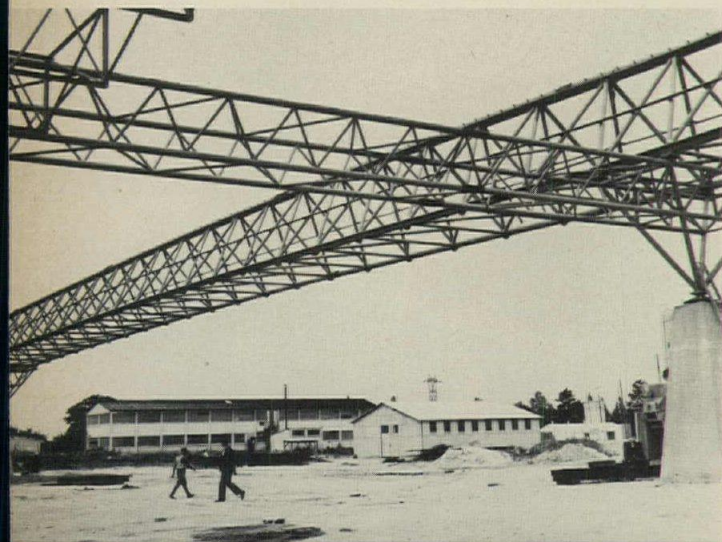


1. Model of the proposed center.
2. Section.
3. Plan.



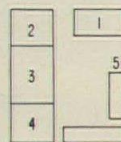


## And technology is helping create rational and spirited designs

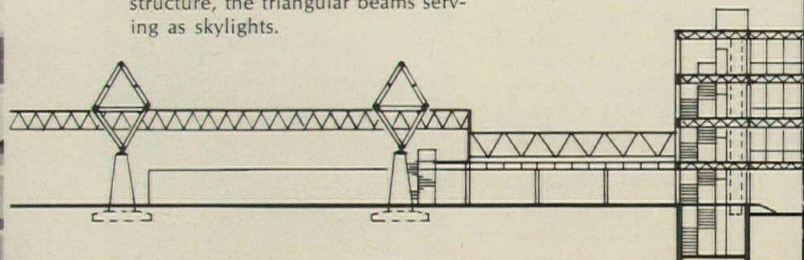
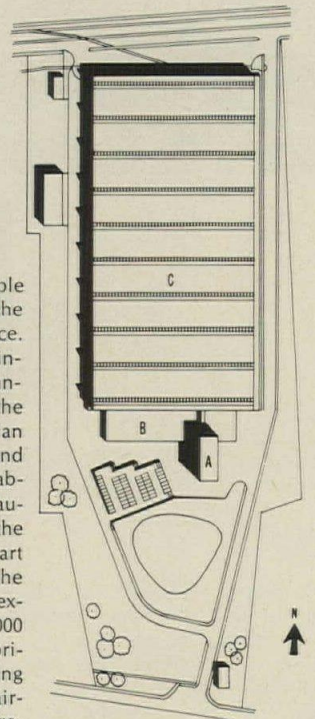


Technical research and structural refinement have been expressed in the design of this modern paper factory in Melun, southeast of Paris. In the manufacturing area, the architects chose to construct a vast covered space with few interior points of support (column spacing is 220 by 80 feet) as a result of two facts: the need for flexibility in machinery layout, and the use of some machines over 100 feet long. The structure, the internal organization and the site planning have been combined to produce a strong yet subtle total concept.

Architects: G. Calderon, G. Carpentier.



1. The exterior of the plant is simple and bold, but does not express the factory from the site entrance. . . . 2. enormous spans of the interior. 3. A detail of the column-beam connection. 4. View of the interior of the factory. 5. The plan is simple. A is the commercial and administration building; B is the laboratories and lockers and restaurant for the personnel; C is the manufacturing area. The lower part of the factory is completed; the covered area represents future expansion, an eventual total of 225,000 square feet. For the principal fabrication of the printing and cutting of paper cartons, an important air-conditioning installation was required to provide a constant temperature and humidity. In the factory, the ceiling is hung from the superstructure, the triangular beams serving as skylights.





## NURSING HOMES

The impact of Medicare on nursing home design and construction has been extensive—although less dramatic than many had anticipated. Federal funding programs initiated in the National Housing Act of 1959 had already accelerated the construction of new and replacement facilities for the long-term, primarily custodial care of a rapidly growing population of infirm aged. Further, the Act had set up prerequisite standards of space (100 square feet minimum for a single bed room, etc.) and of “skilled” personnel that were making the old “white elephant” mansions run by retired nurses obsolete and unprofitable. The principal effect of Medicare on newer nursing homes has been to change the character of care to shorter stays for more acute illnesses and to emphasize geriatric rehabilitation in addition to, if not instead of, simple custodial care. This was brought about, of course, by the legal limit of 100 days subsidized care under Medicare.

So, while Medicare has increased the population from which admissions to nursing homes are generally drawn, it has generated a demand for so-called “extended care” facilities which may or may not be incorporated in nursing homes. In fact, the term itself implies an extension of conventional hospital facilities (rather than extended time of stay) and calls for a modified, less costly scale of care than is demanded of general hospitals. Many hospitals are providing such extended care facilities and are thus absorbing some of the load that was predicted for nursing homes.

Meanwhile, increasing social security and insurance programs combined with generally rising levels of income are making it possible for more and more families to provide conventional, long-term nursing home care for those who were formerly cared for by the family itself. New facilities, meeting today's standards, are not the forbidding burdens on the family conscience that some older places were. As Rex Allen points out in the article which follows, the modern nursing home can be a pleasant refuge. The need for them is great and growing, and, as these exhibits show, it can be met effectively.



**New concepts in nursing homes:  
the "custodial facility"  
gives way to design  
for active extended care**

The tragedy of nursing homes has been that too often they are nothing more than custodial facilities—places where society shucks off its responsibility and washes its collective hands of the nuisance of caring for the disabled, the infirm, the aged and the senile. Except that it may be closer to home, there is very little difference in social function and philosophy between such a custodial nursing home and the mammoth state mental hospital—an institution which is fortunately ceasing to be an accepted solution to the care of the mentally ill. So too, it could be hoped, the nursing home will give way to a new type of facility, an "extended care" facility which has an active treatment program and may have a close affiliation with a center of medical care. Such a facility is less complex than an acute hospital but provides a program of care centered on the concept of rehabilitation, of restoring patients to vital roles in the community.

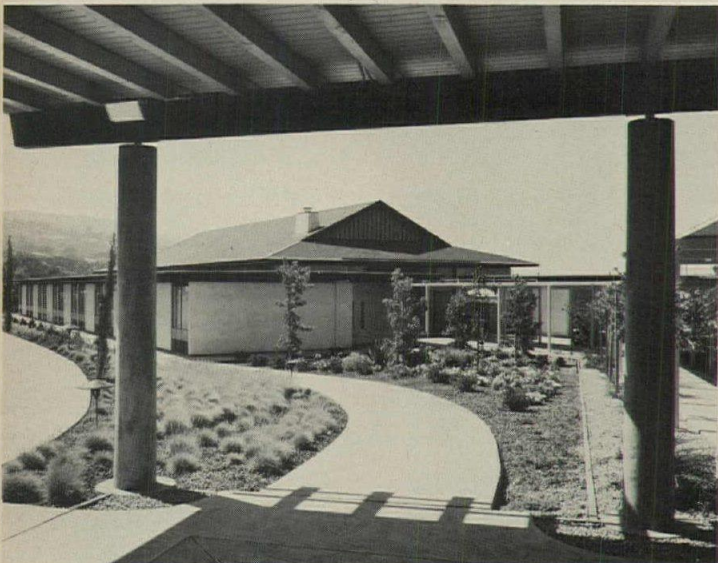
A parallel trend is the development of communities for the elderly. Across the country these have taken different forms depending on their sponsorship. It would appear that the most successful have been those which have had a particular unifying force—either a religious affiliation or an ethnic association.

**A common interest and varied facilities  
enrich programs for the elderly**

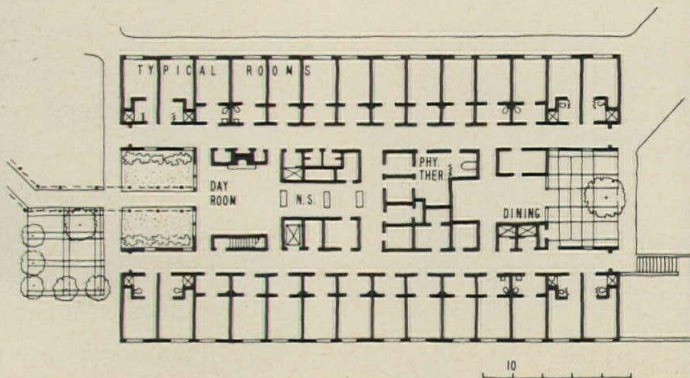
It is conceivable that other social bonds could be equally successful—golf, literature, bridge, the drama, etc. Simply providing seclusion, or exclusion, is not enough. In fact, such developments appear to suffer from the same kind of stultification as the conventional nursing home.

Interestingly, combining an extended care facility with housing for the elderly enriches both. Instead of an isolated nursing home, the elderly are provided with a center for health care and the incapacitated are assured of close social contact with friends and neighbors. An example of such a combination is the *Sequoias* in Portola Valley, California (below). This community for senior citizens was established by the Presbyterian

By Rex Whitaker Allen



**Sequoia Health Center's** new nursing home in Portola Valley, California, designed by architects Rex Whitaker Allen & Associates in association with John S. Bolles, provides extended care services for an existing clinic as well as conventional nursing home care as required in this 230-apartment community for the aged. The facility has 30 bedrooms, mostly two-bed units, each with toilet and basin. The home shares dietary and occupational therapy facilities with the clinic, accessible via covered walk.





church in 1965. It consists of 230 apartments in single-story buildings grouped around beautifully landscaped courtyards. It occupies a leveled hilltop in a secluded valley approximately six miles west of Palo Alto. Medical care was originally provided by a staff nurse and a doctor who visited a small clinic at Sequoias daily and by a contract with the Palo Alto Hospital.

### Sequoias' expanded medical care gives residents reassurance

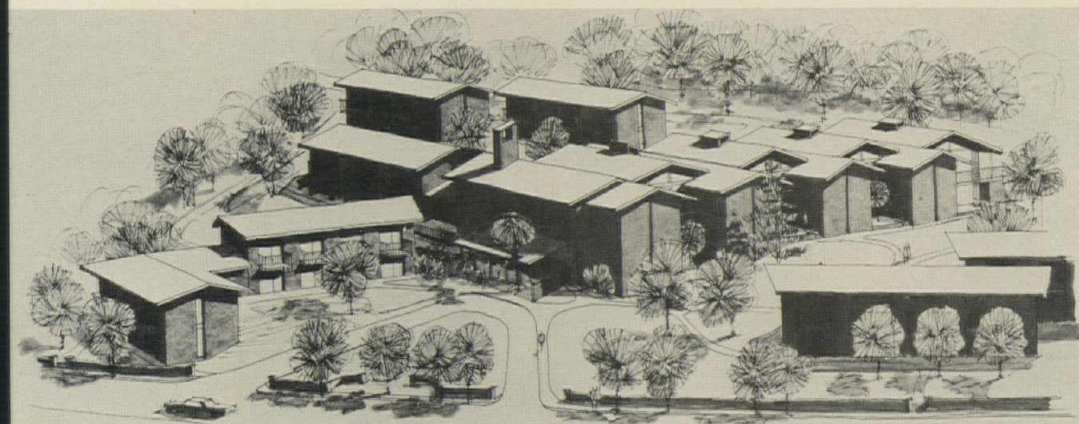
It was decided very soon that care could be improved by building a nursing home adjacent to the existing facility. It was felt that such a unit would keep the residents who need care closer to their friends, that by expanding treatment facilities an active program could be initiated not only to help those who became ill, but also to help keep other residents in good health, and that the examination and treatment services should be expanded. The new building was programmed to have 30 rooms (most of which were large enough to contain two beds), three examining rooms, a physical therapy room, day rooms, nurses' charting area, utility rooms, etc. Shops and studios for occupational activities were available in the main central building. Since it was reasonable that the dietary requirements of the new building be handled from the main central kitchen, it was obvious that a nearby site should be selected. At the same time, it was felt that the nursing building should be as inconspicuous as possible. This latter requirement meant that despite its completely different occupancy, the new building should conform to the design of the existing structure. The only site available near the main kitchen required extensive filling, the cost of which was justified because of operational savings. Since the kitchen was at a lower level than the main dining room and the other buildings, locating the new building at the same level minimized both its visual importance and the amount of fill required. The result has been a successful blending of services to hale and ailing residents which has benefited both.

Another example of a similar proposal is at the Aldersly

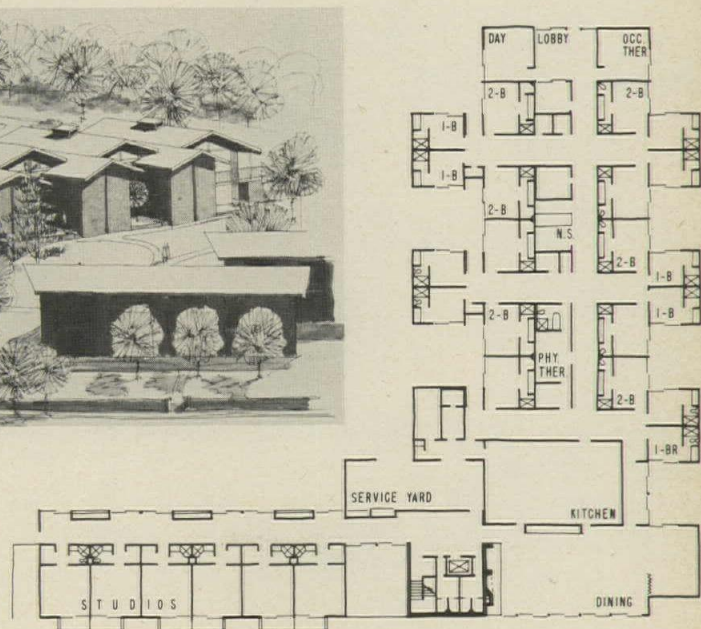
Danish Home in San Rafael, California (below). This facility was started in 1921 by the Danish community in the San Francisco Bay Area. Because the original buildings no longer met current standards, it was decided in 1959 to master plan their gradual replacement. This included replacing the 13-bed infirmary with a 30-bed nursing home. Again in the design of the new buildings it was felt that there should be no violation of the scale of the residential units. The problem was compounded in this case by a steeply sloping site with its main approach from below. The solution was an unusual configuration for a nursing unit comprising half private and half two-bed rooms, staggered to shorten the corridor length and also to provide an opportunity to break the roof lines and thus reduce the scale of the structure.

### Extended care through affiliation makes nursing homes more effective

Both of these buildings, one in operation, the other projected for the near future, have sites which encourage ambulation—Sequoias by a secluded courtyard as well as a view of bowling-on-the-green; Aldersly by a hillside that challenges all its residents and may be responsible for a mortality age level that is higher than any similar California community. Both are examples of nursing homes which by being affiliated with a residential community have extended the concept of care beyond mere custody. A type of affiliation which may have greater medical advantages, but less social value, is affiliation with a general hospital, and there may be other types yet to be explored; for example, combining child care with care for the elderly. Would this not also be to the enrichment of both? Both need care, a sense of security and a challenge. A combination could again change custodial nursing into an active program for care. Henry Sigerest in his "History of Medicine" insists that "medicine is not so much a natural as a social science." Perhaps these extended care facilities (and the projects on the next pages) will prove his point.



The Aldersly Danish Home community for the aged in San Rafael, California, is beginning its second phase of construction according to a master plan and building designs by architects Rex Whitaker Allen & Associates, with a new 30-bed nursing home and 10 non-ambulatory resident units replacing an old 13-bed clinic. Phase I completed 14 ambulatory residential units with ancillary service and administration buildings, described in February 1965 issue.





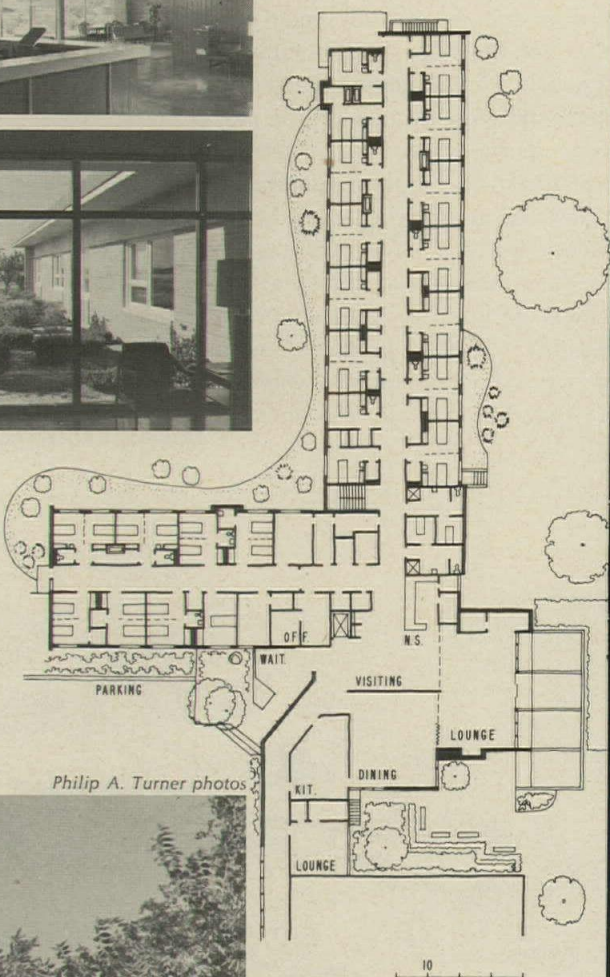
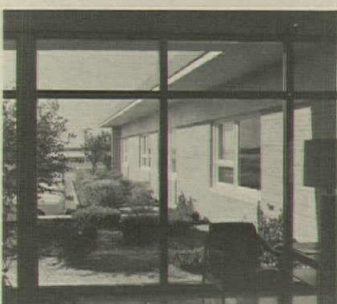
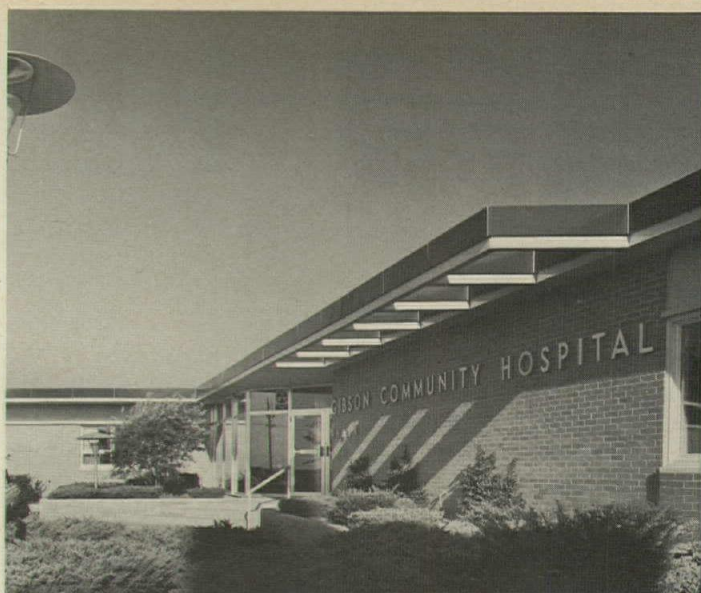
## Community hospital annex shares services for extended care

This L-shaped annex to the existing Gibson Community Hospital provides a nursing home both for the long-term, primarily custodial nursing care of the aged; and the shorter-term, rehabilitation care—increasingly in demand under the provisions of Medicare. With full hospital services conveniently available, the need for separate, high-cost hospital facilities—lab, X-ray, surgery, etc.—is eliminated, and some administrative and food-preparation services can be shared. Thus, the nursing home is able to provide a wide variety of services while retaining as much as possible of the residential quality conducive to both privacy and group activities.

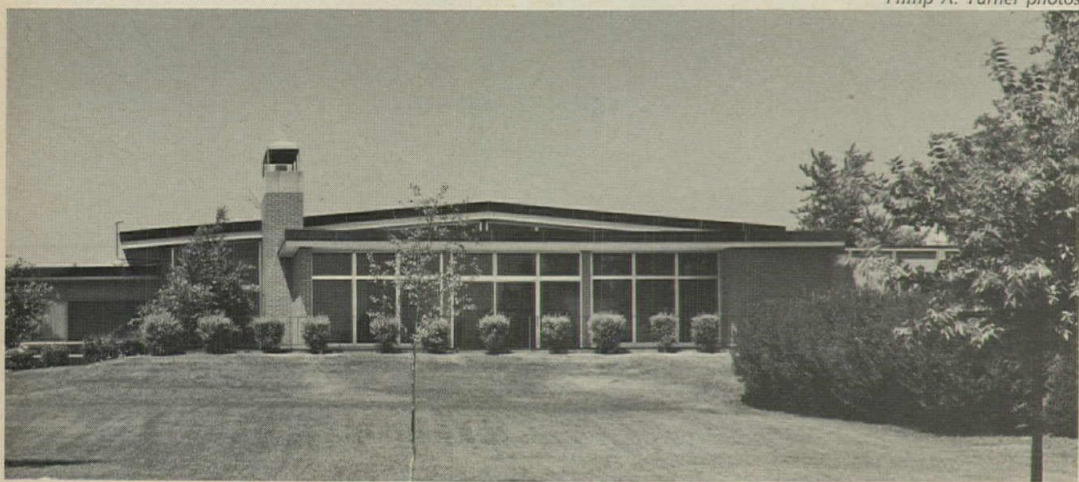
The nurses' station at the corner of the L overlooks the shorter corridor where the more intensive care patients are located. It is also in direct communication with the longer, light-care corridor and the lounge and visiting areas. A gabled roof over the lounge and dining areas permits clerestory daylighting at the north end of those areas, while south-facing glass in the lounge overlooks a terrace and landscaped grounds.

Patients' rooms are single- and double-bed rooms at first-floor level. Double rooms are divisible by curtain or folding partition and arranged so that a toilet serves two patients, a bathtub serves four. There are separate, central bathing facilities for those needing help in that activity. On the basement level are departments for physical and occupational therapy, group activity and storage. This hospital-nursing home combination has proved a financially and functionally practical arrangement.

GIBSON COMMUNITY HOSPITAL ANNEX, Gibson City, Illinois. Architects: *Coder Taylor Associates*.



Philip A. Turner photos



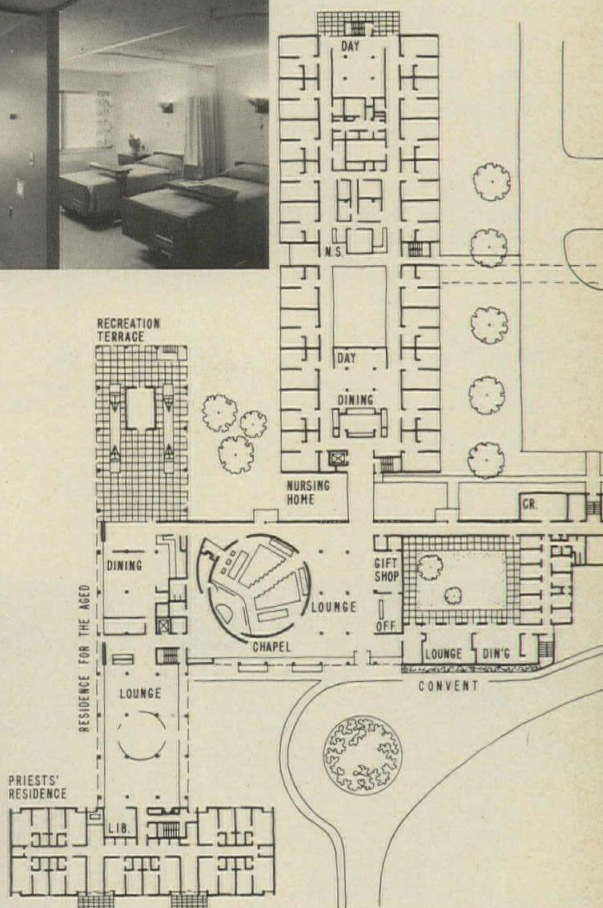


## Hotel-hospital-nursing home provides progressive care for elderly

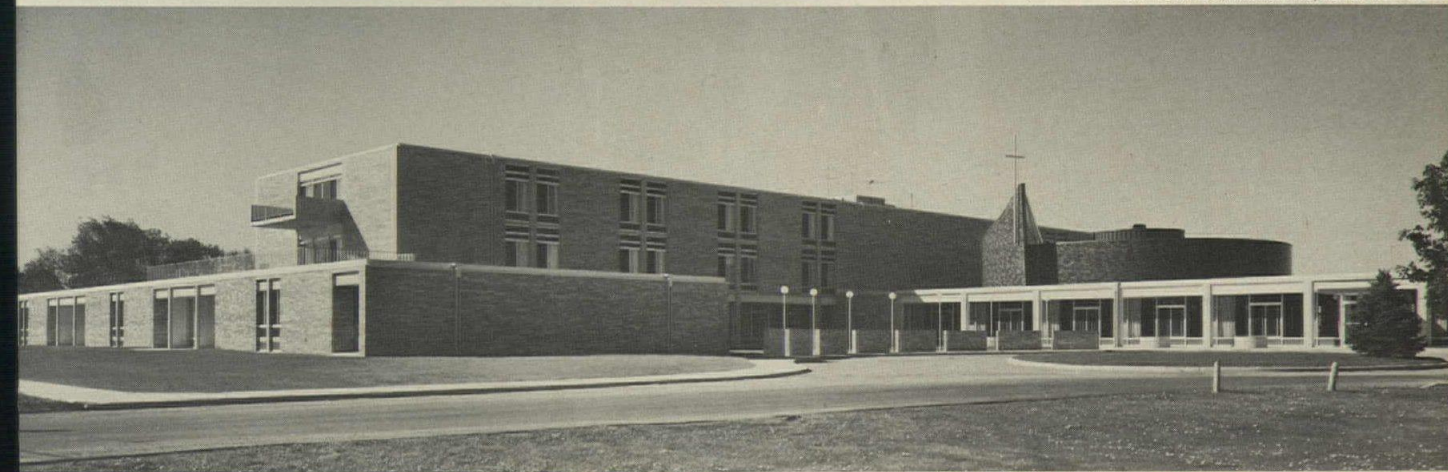
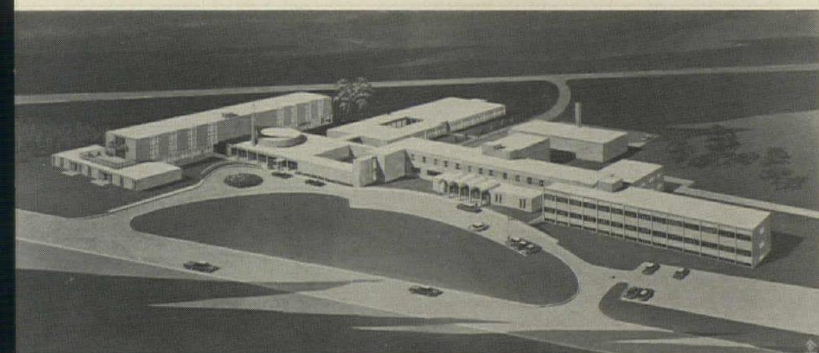
Designed to include a residence for the healthy aged, a nursing home and a general hospital, the Regina complex offers progressive care to the aged without the necessity of transferring residents from one institution to another. The nursing home, less than 100 feet by enclosed corridor from the full-service hospital, provides adequate, but non-intrusive nursing care. Groups of three patients are housed in suites consisting of a water closet, a single and a double bedroom. Each room is provided with an intercom. Bathing facilities and rooms for non-ambulatory patients requiring special care are concentrated near the nursing service areas for maximum efficiency and control, and a registered therapist is available for those desiring or needing physical or occupational therapy. Noteworthy features of the home include a separate cafeteria, provisions for companionship in two dayrooms, a balcony overlooking the Mississippi Valley, and an interior courtyard which permits daylight to enter the occupational therapy area and the corridor in the basement.

All-weather corridors connect the nursing home to the residence area where healthy retirees enjoy a wide range of personal freedom including choice of room furnishings, unrestricted access to grounds, private dining room, cafeteria and residence kitchen for snacks. The chapel, for the use of nursing personnel, residence patients and visitors, gives distinctive architectural expression to the complex, emphasizing the religious motivation of the Sisters of Charity, who own and operate the institution.

REGINA MEMORIAL HOSPITAL NURSING HOME AND RESIDENCE, Hastings, Minnesota. Architects: Bettenburg, Townsend, Stolte and Comb.



Dale Peterson/Warren Reynolds Associates





## Layered inner courts augment three levels of care

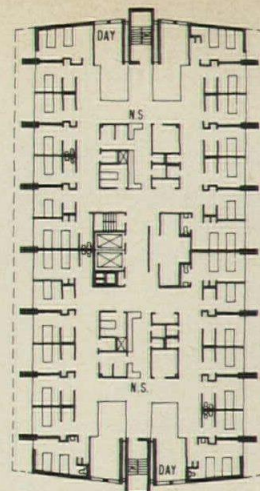
To provide a facility for progressive long-term care in a building independent of its changing neighborhood in Charleston, West Virginia, architects William Breger and Associates have created in the St. Francis Nursing Home a self-contained, inner-directed environment.

The nursing home is designed to accommodate 116 patients for an average stay of six months each, half in single-bed and half in double-bed rooms. Ground and basement levels provide service and activity areas. On the second floor—the intensive care area—splayed walls allow bed-ridden patients a view. The third- and fourth-floor internal courts are progressively larger, allowing light, air, and the experience of non-enclosure. Here, long-term ambulatory patients in need of behavioral or physical care have space for exercise and relaxation, while the nurses' stations close by retain control over their activities.

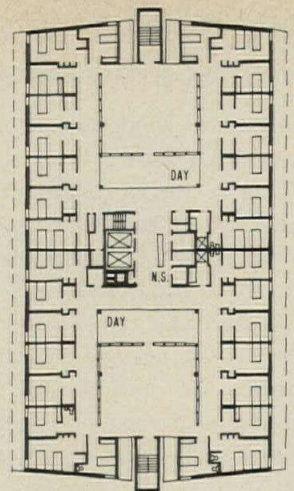
The structure attempts an economical resolution to the problem of cantilever construction. Its 8-inch flat slab construction is supported on concrete piers except for the concrete end walls, stair towers and precast mullion walls around the inner courts.

Ultimately, the St. Francis Nursing Home will be part of a complete medical community consisting of two 116-bed medical units and required service facilities, a nun's residence and chapel, and a housing unit for the elderly.

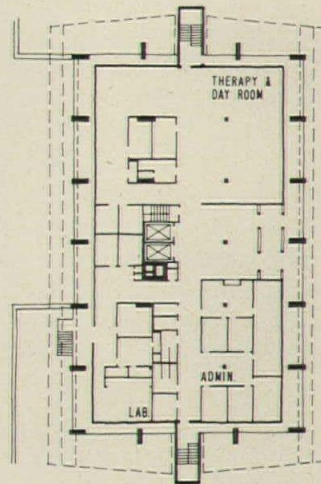
ST. FRANCIS EXTENDED CARE HOSPITAL, Charleston, West Virginia. Architects: William N. Breger and Associates; associate architects: Bowman & McKelip; mechanical engineers: Batlan & Oxman; structural engineer: Paul Gugliotta; medical consultants: Dr. Michael Miller, Professor Harold Baumgarten.



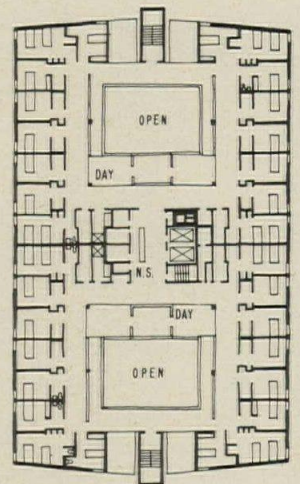
SECOND FLOOR



THIRD FLOOR

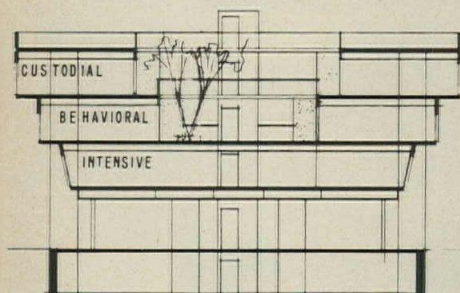


FIRST FLOOR



FOURTH FLOOR

Robert Galbraith photos





## Capistrano-by-the-Sea offers privacy with a view

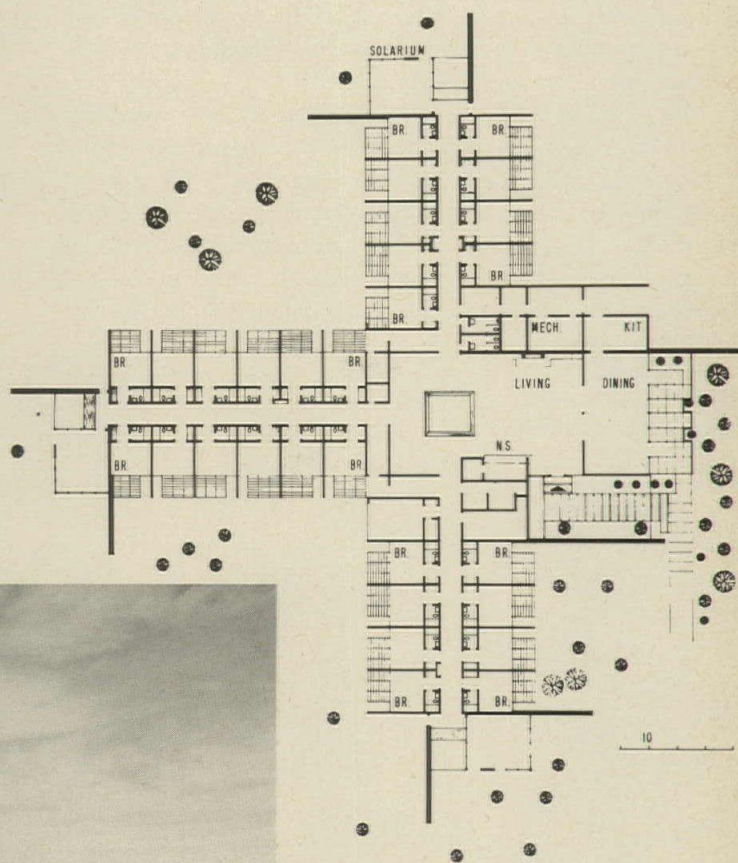
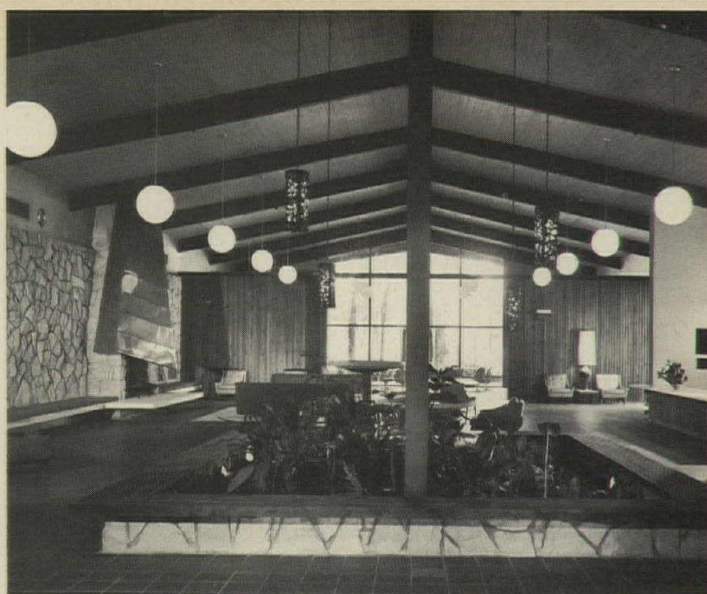
Capistrano-by-the-Sea, in Dana Point, California, is in concept and execution a rural nursing home. The exceptionally beautiful setting is emphasized and highlighted by designers Ramberg & Lowrey to create a tranquil, nature-oriented living experience. Ocean, trees and rolling hills are everywhere visible—from the private patios, from the three solarium-terraces, from the large windows in the group living area and at the ends of the three bedroom wing corridors. The corridors also feature skylights which create a light and airy effect; and the nurses' station, main lounge, and dining areas are treated with exposed woods and stone to further the country atmosphere. Exterior building materials compliment the softness of the setting while the low-pitch gable roof and crisp line of the fascia provide refreshing contrast.

Interior design is as practical as it is pleasant. The single rooms, complete with private water closet, storage and patio facilities assure each patient the luxury of privacy. For small group gatherings, the solarium-terrace at the end of each wing is ideal, and the central location of main lounge, dining, and bathing areas unites the wings into a single community.

According to a projected master plan for the entire 20-acre site, a total of seven buildings similar to Capistrano, an existing neuropsychiatric hospital and a new central administrative building will ultimately offer patients full services.

CAPISTRANO-BY-THE-SEA, Dana Point, California. Architects: Ramberg & Lowrey; builder: Orange Coast Construction Company.

Julius Shulman photos





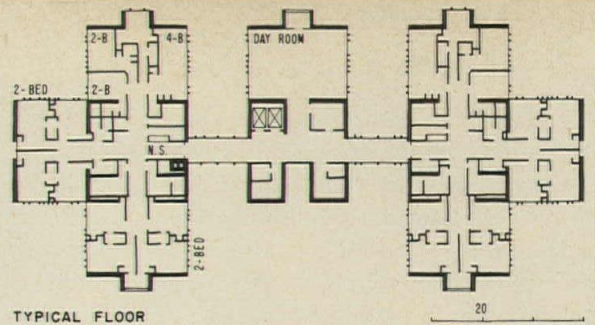
# Forbes Pavilion Nursing Home is in and of the city

Located on a commercial street in the center of a Pittsburgh medical district, the Forbes Pavilion Nursing Home creates a pleasant nursing home for patients who prefer an urban environment. From the spacious second-floor garden plaza, patients can freely survey the city, and, in addition, they can occasionally take supervised excursions to nearby museums, theaters, libraries, and concerts.

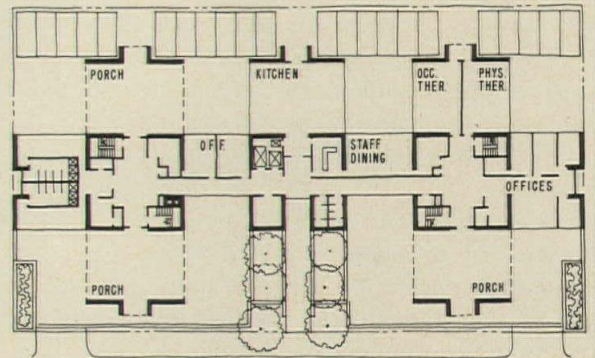
To provide a workable and meaningful internal environment, careful intermingling of convalescent and rehabilitation patients can be regulated in each of the four 25-room floor levels. Group identity, an important problem in such a large institution, is thus assured; while single isolated wings, still in proximity to all nursing and circulation services, are available for those patients whose condition demands separation from the community. The flexibility of the design thus permits the administrator to adapt to his patients' changing mental and physical needs. Privacy can be regulated by the patient himself in terms of access to the central day room, small lounge areas, and balconies.

The first and second levels provide two 1,764-square-foot units of rental space, a central lobby accessible from street and parking areas, and parking facilities for a total of 65 cars. "L" shaped reinforced concrete walls define the major areas within the structure. Structural walls are rough concrete, spandrels are the same color concrete rubbed smooth. Mullions project, defining each unit and acting as moderate shading for the gray tinted glass.

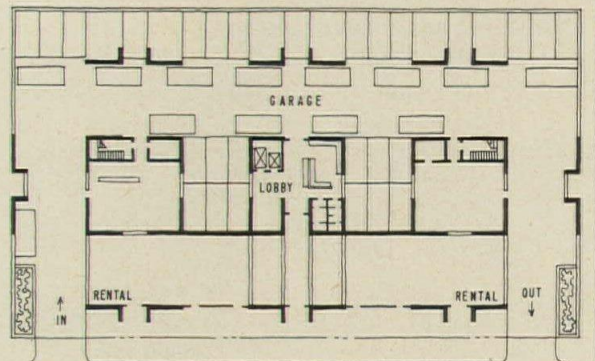
FORBES PAVILION NURSING HOME, Pittsburgh, Pennsylvania. Architect: Tasso Katselas; contractors: Navarro Corporation.



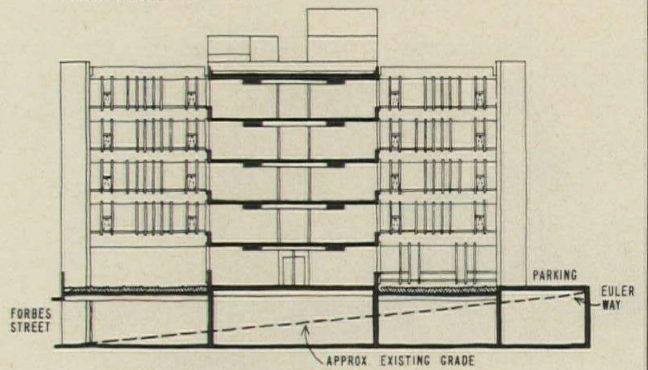
TYPICAL FLOOR



SECOND LEVEL



FIRST LEVEL





# Some current answers for urban schools

The countless problems besetting urban schools throughout the nation are increasing in scope, and often in gravity, to the point that more often than not, they are treated as "front page" news by daily and weekly journals. The cities themselves, and a vast array of research and study groups, are pursuing massive programs to analyze and alleviate troubled conditions—many, though not all, of which have to do with the architectural and environmental conditions of the schools. As yet, final answers or perfect solutions have not been achieved for most of these critical areas. However, constant progress is being made, and a small group of schools which offer some advance in thinking has been assembled for this study.

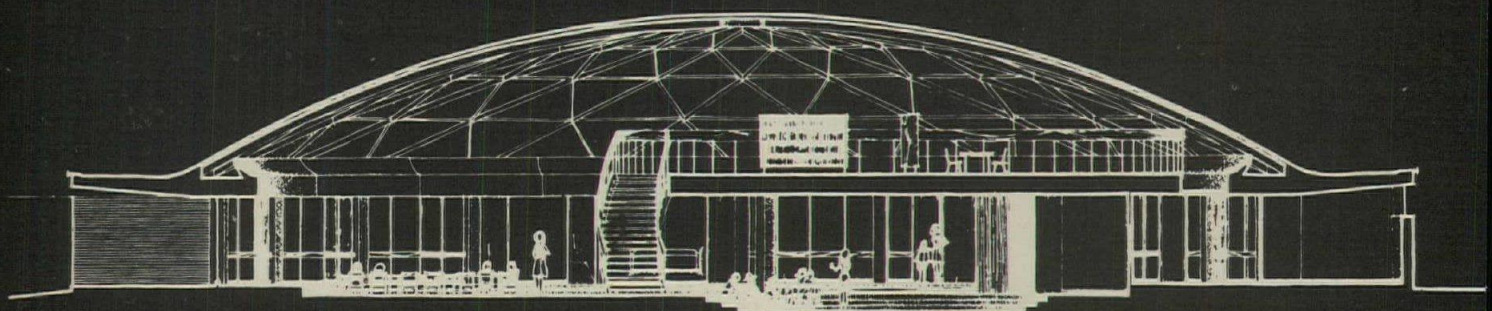
What about all the new teaching methods? They need a great amount of observation and study . . . and the new P.S. 219 in New York City (left and overleaf) has been designed with specific facilities for just this purpose. How does one cope with the problems of increasing bigness in schools, and the perpetual need for individual concern and small community belonging? Two approaches toward reconciling these opposites that are being tried by the cities of Chicago and Detroit are exemplified by the Maine Township High School South, and the New Eastern Senior High School.

And all the while, as one thinks of new construction, the older facilities are becoming outmoded, often deteriorated. Two schemes, one a master plan for additions, and one a total renovation, point up ways that these facilities can be updated into serviceable teaching plants. Of course, all existing schools are not worth the effort or expense of renovation. Frederick G. Frost Jr. & Associates, architects of the modernization scheme for New York City's Joseph H. Wade Junior High School, stress a series of factors to be considered before proposing to renovate a given building instead of demolition and replacement: "the age of the building, the condition of structural and mechanical systems, community need for continued and uninterrupted use of functions performed by the building, adaptability to new and future functions, and above all, the cost of renovation versus the cost of replacement." The two schools shown in this study were deemed worthy of retention. And finally, for the more remote future, some ideas are presented for possible interrelated education facilities in tomorrow's new towns.

I.P. photo by Richter







## The one-room school returns as dome for team teaching

One of the most interesting of the new urban public schools is this domed structure which provides a teaching environment free of interior walls, and where 150 children from kindergarten to second grade will advance through an ungraded program of instruction based on team teaching. The building was planned as a "satellite unit" to complement a nearby existing building for 300 K-2 pupils, and one for 650 pupils in grades 3-6. It also serves as a permanent facility for teacher training and research projects under the direction of Queens College.

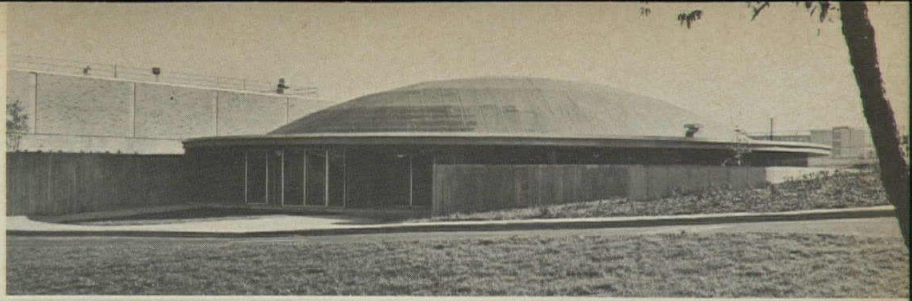
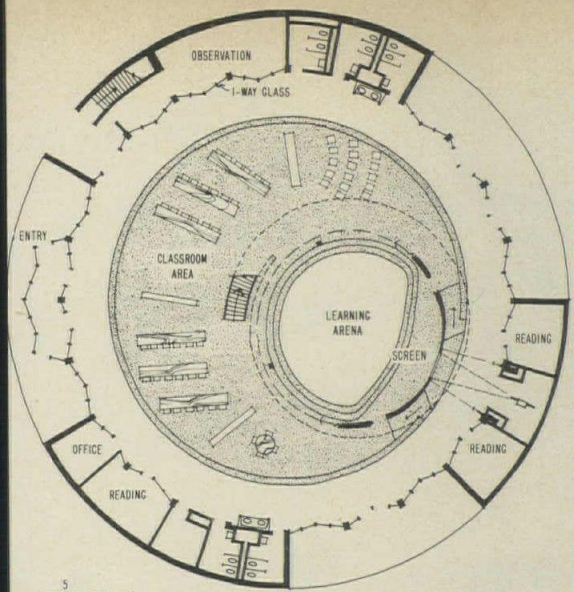
This return to the one-room school, which was achieved with some financial assistance by the Educational Facilities Laboratories, Inc., is proving a very workable scheme. The architects comment that, "with a sound absorption ceiling as well

as carpeting, there is no problem of sound disturbing the various learning groups . . . the one big space with its surrounding ancillary spaces for viewing and listening has real merit, and the teachers like the environment."

The structure has steel columns and a steel lamella-pattern dome with a fiber plank deck and concrete insulation, all exposed and painted. Exterior walls are face brick. Zoned air conditioning provides individual control, with air supplied through floor and sidewall grilles and registers; heating is by low-pressure steam supplied via a tunnel from outside.

THE PAUL KLAPPER SCHOOL (P.S. 219), Flushing, Queens, New York  
 Architect: Caudill Rowlett Scott; mechanical and structural engineers: Wald & Zigas; acoustical engineers: Bolt, Beranek & Newman; contractor: Planet Construction Corp.

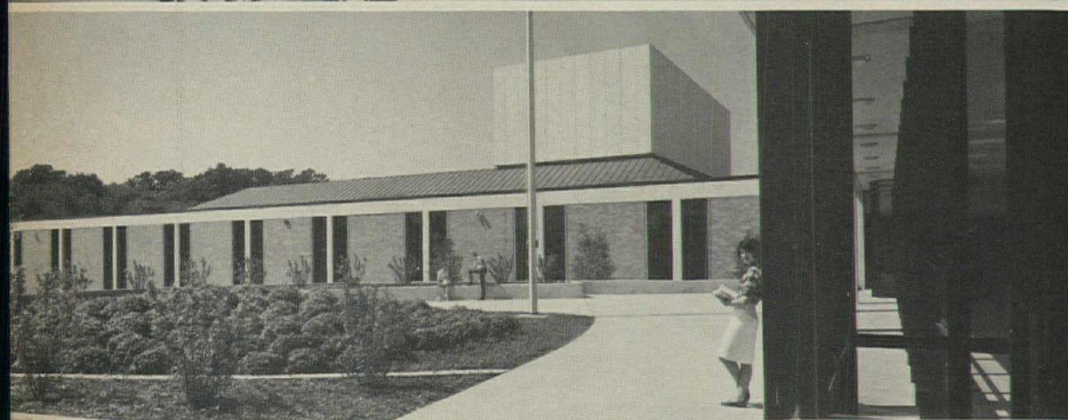
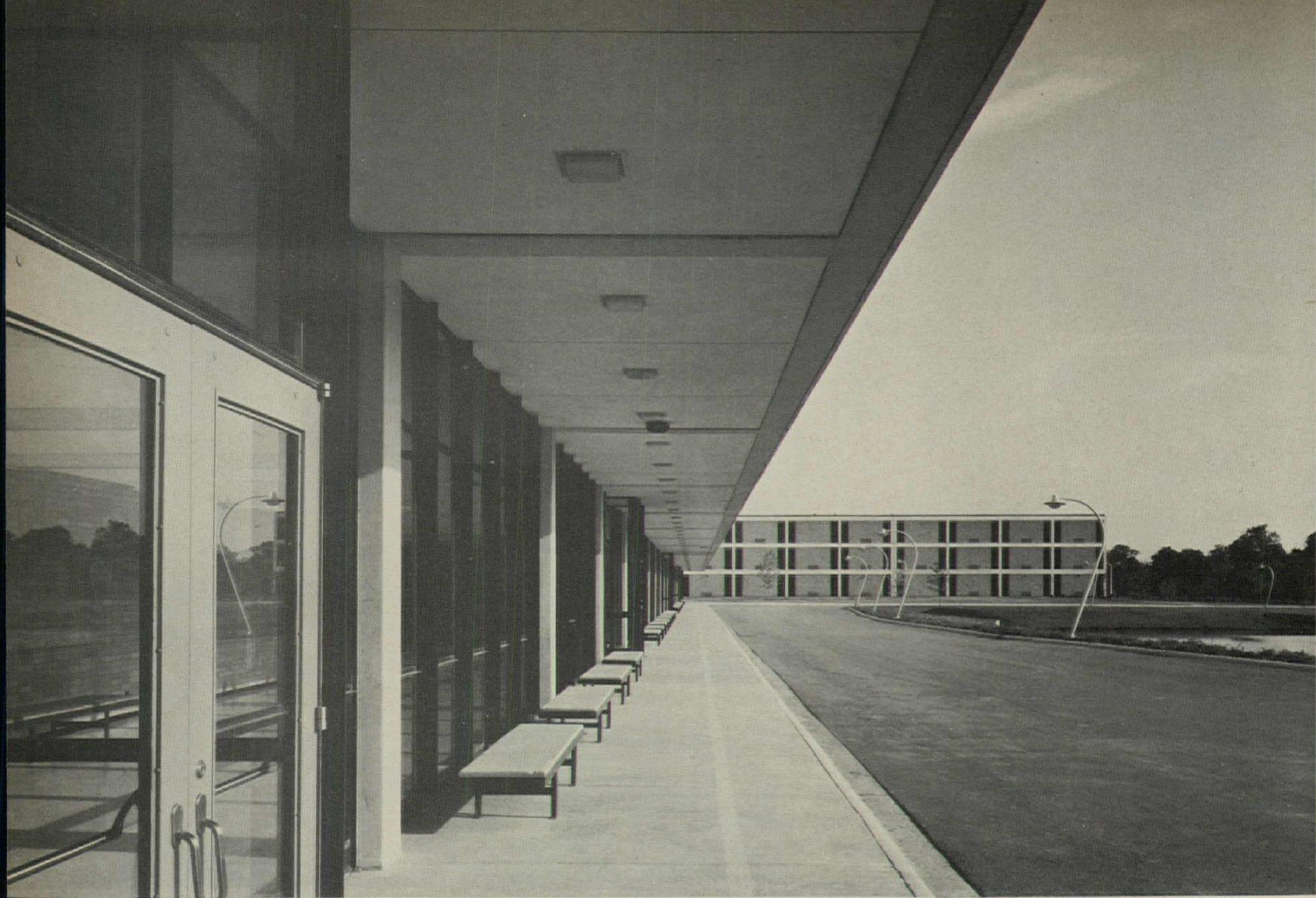




The big open space under the lamella dome in this satellite K-2 school can be sub-divided by informal dividers for class groups. All furniture is also movable for flexibility. Lead curtains are provided around the central "learning arena" for soundproofing when the area is used for noisy activities. Sound absorbing materials are also used on floors, ceiling and dividers. One-way windows let observers watch class instruction.







Flexibility for providing different-size teaching spaces, a lot of the latest audio-visual equipment, and provision for future changes in teaching methods and equipment are all planned into this new high school to help cope with inevitable developments. An exceptionally pleasant environment is also created, with an accent on the variety of spaces. This is especially true in the library area, which has the "houses" for groups of 300 students clustered around it to serve as home-base reading-study areas.

## A big comprehensive high school uses a new "300" plan

The problem of providing adequate individual attention for students in the big public school has long been a major concern. This, of course, is coupled with the paradox that the big school can be more efficiently and economically equipped to offer a much more extensive and intensive curriculum. One of the newer ideas to try to reconcile the best qualities of smallness with the best features of largeness is the "300" plan, used here in the new Maine South High School.

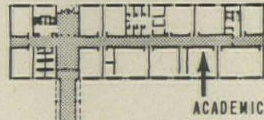
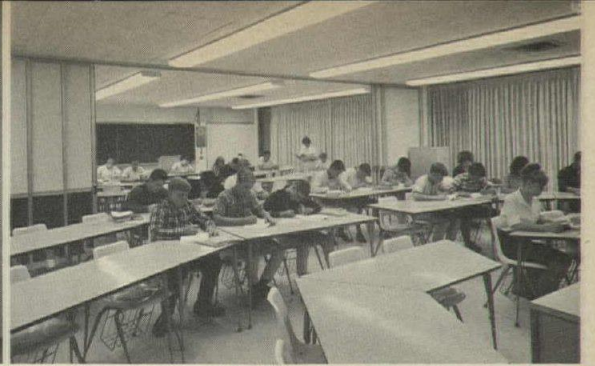
The "300" plan divides the entire student body into groups of about 300. Each group has a home base (the guidance unit) adjacent to the library, which provides the following facilities: 1) office for counselor; 2) seats and tables for the entire group; 3) good atmosphere for individual study; 4) conference rooms for committee meetings and seminars; 5) separate entrance

near unloading ramp; 6) storage for wraps and books; 7) facilities for students to meet to start the day; and 8) dining area served from a central kitchen. It is expected that a student may spend from 35 to 50 per cent of his time in this "house" area.

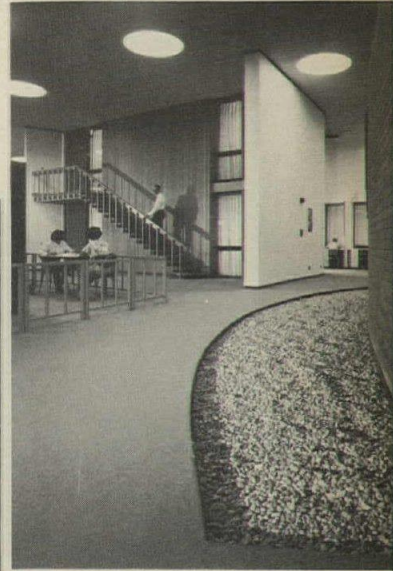
Maine Township (District 207), as so many other school districts around Chicago, is also wedded to the advantages of the large (eventually about 3,000 students) four-year school. Facilities for strong programs in five areas are provided: academic, science and business education; physical education; vocational training; performing arts; and student activities. The school size affords good equipment in each area.

MAINE TOWNSHIP HIGH SCHOOL SOUTH, Park Ridge, Illinois. Architects: Caudill Rowlett Scott; McCaughey, Erickson, Kristmann & Stillwaugh Inc.— associate architects; contractor: Mayfair Construction Co.

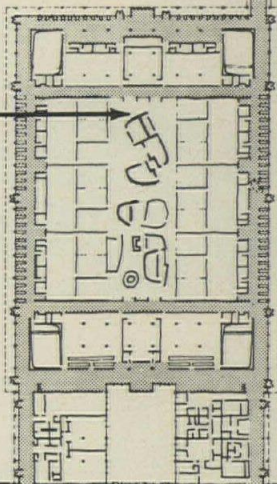




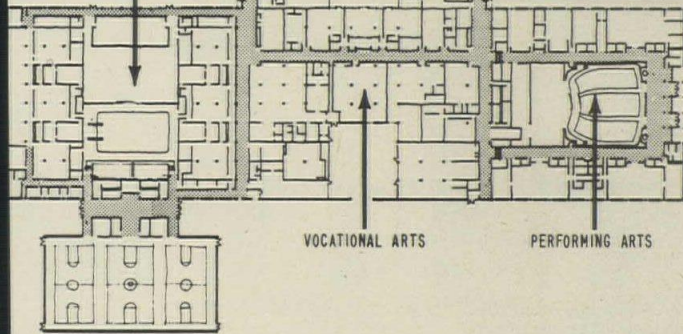
ACADEMIC



GUIDANCE CENTER & LIBRARY



PHYSICAL EDUCATION

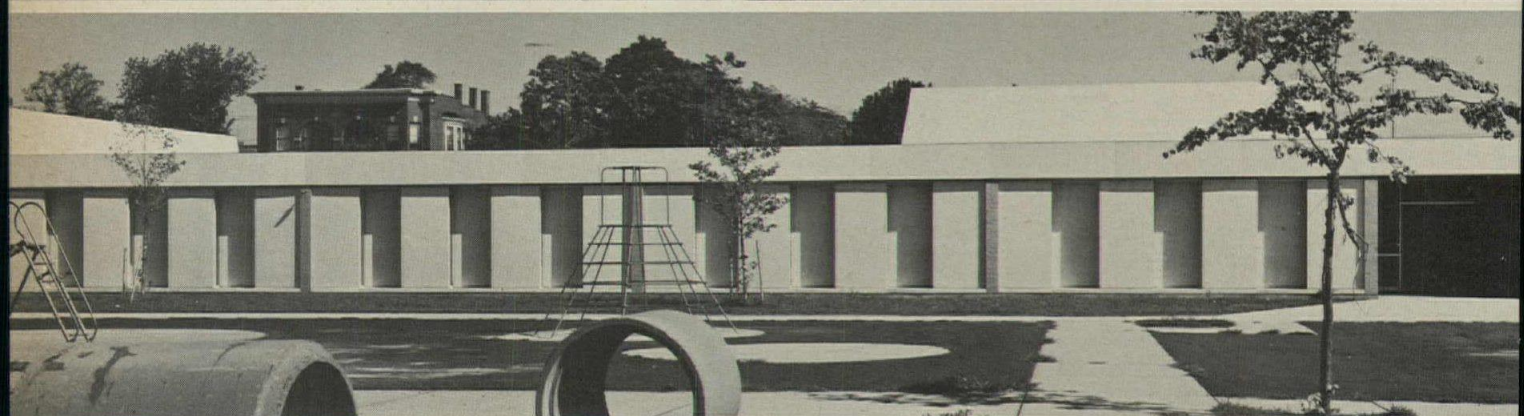
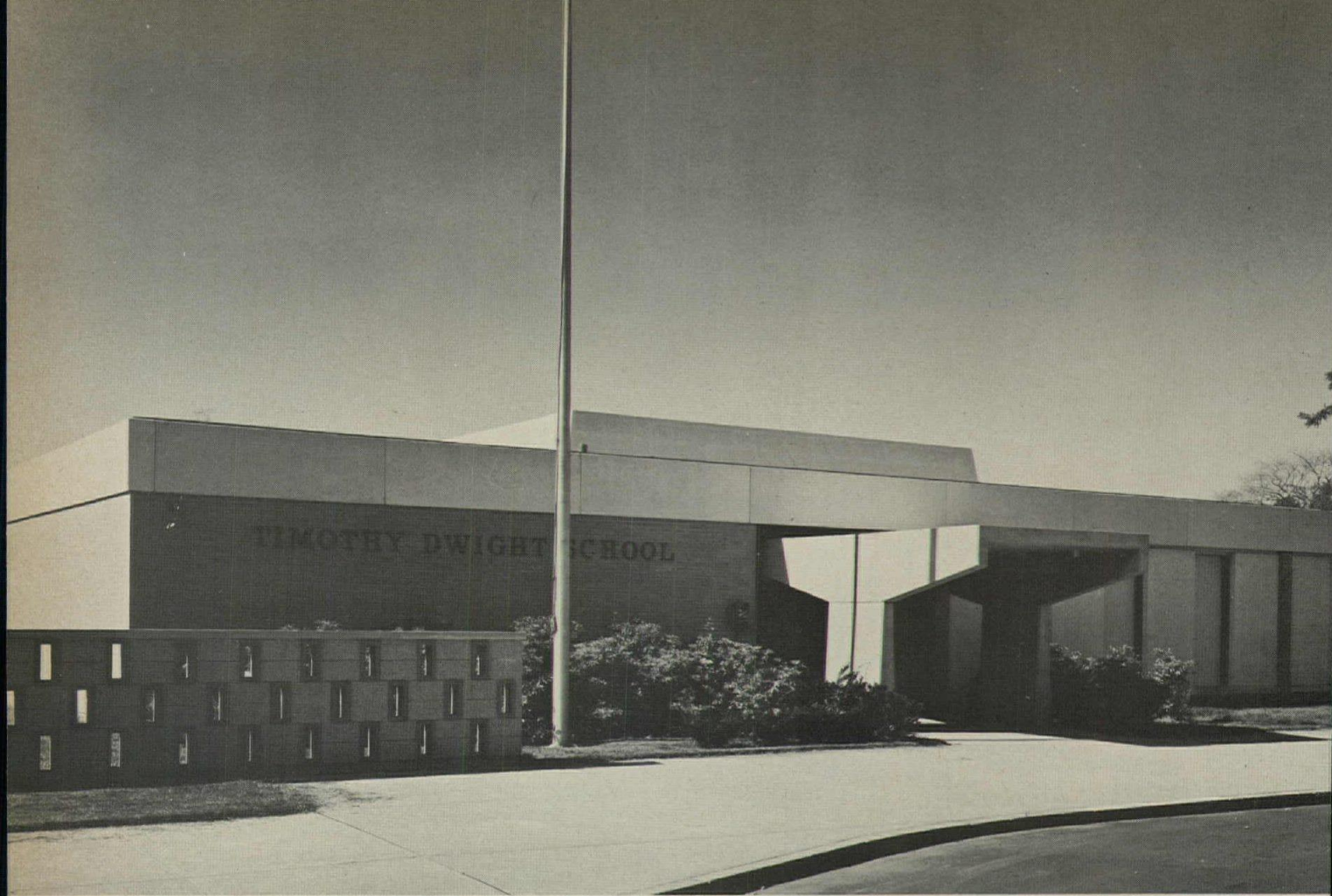


VOCATIONAL ARTS

PERFORMING ARTS







Joseph W. Molitor photos

## Privacy and quiet highlight K-4 school for urban renewal

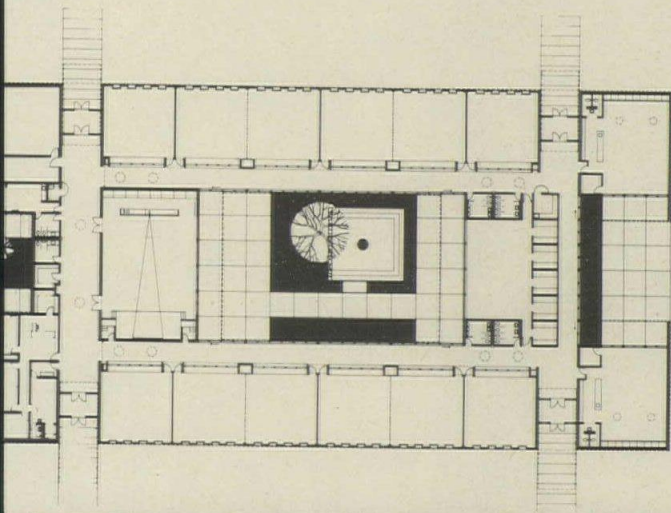
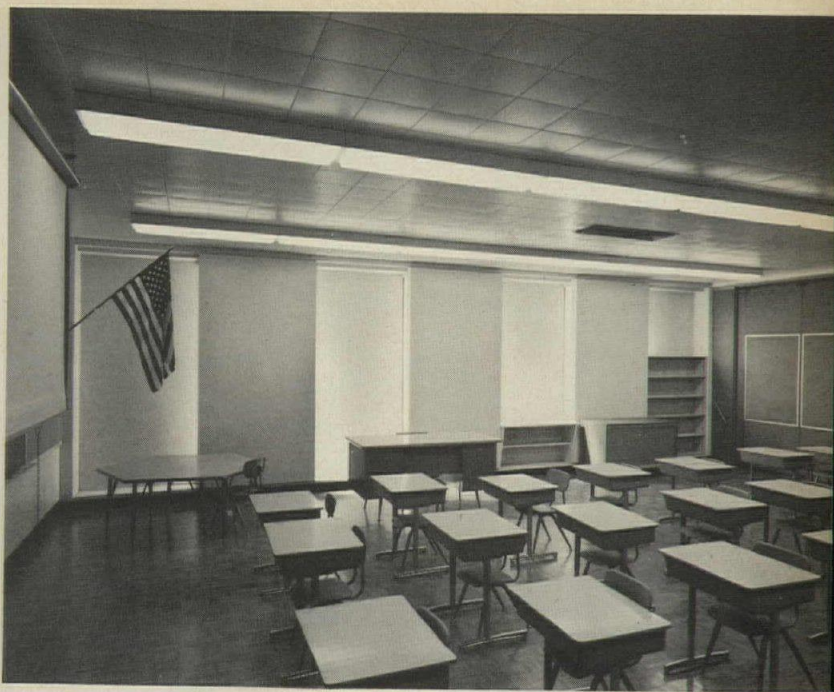
To provide the maximum protected playground area for this K-4 school in a densely populated residential and commercial redevelopment area in New Haven, it was decided to place the building close to the sidewalk and preserve a large open space at the back, away from the hazards of high-speed traffic. The resulting increase in the problems of privacy and city noise for the classrooms themselves led to the use of exterior walls formed by a series of flat, precast concrete panels, staggered eight inches apart. The openings left between the panels were filled by frosted glass panes set at right angles to the wall. Arthur De Salvo, Jr., of Eliot Noyes & Associates, comments that "the staggering provides natural protection for the glass, but still permits adequate light to enter the rooms. From the inside, there is always the sense of contact with the outdoors without

any of the problems mentioned. The panels are white and treated on the exterior with a course aggregate. The interior is smooth matte white for maximum light reflectance. All classrooms also have a generous strip of clear glass above the corridor wardrobes to obtain exposure to a central glass-walled courtyard."

The school is totally air conditioned, with all mechanical services in the ceiling: one system delivers fresh conditioned air to ducts and diffusers, another has coils which radiate through perforated metal ceiling panels.

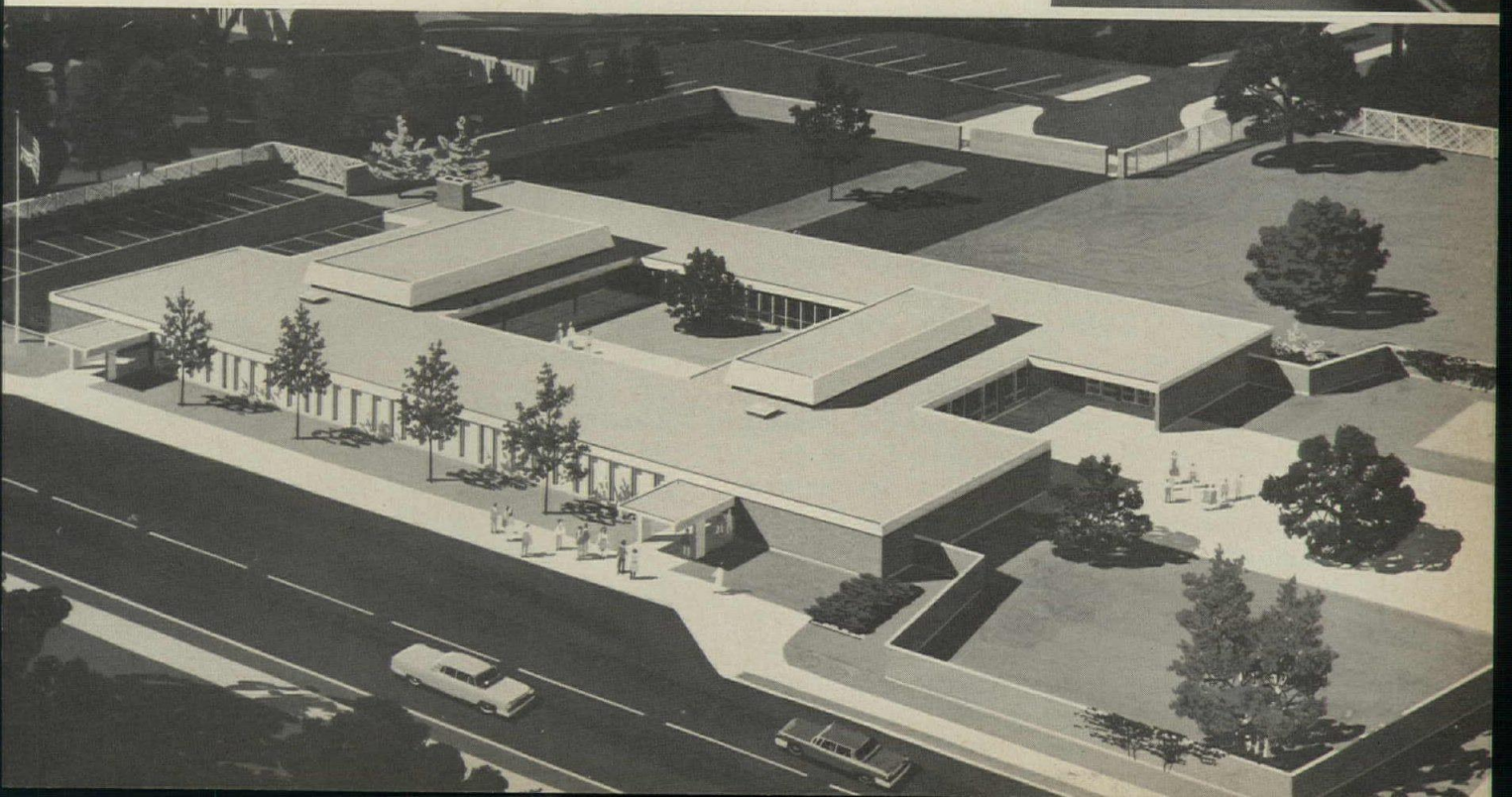
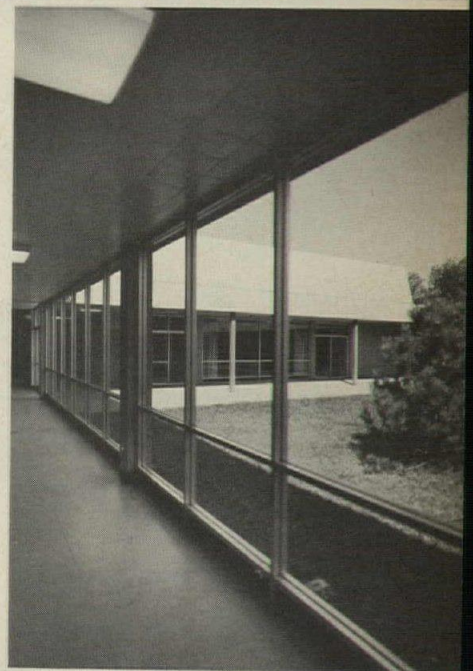
TIMOTHY DWIGHT SCHOOL, New Haven, Connecticut. Architects: *Schilling & Goldbecker*; *Eliot Noyes & Associates*—design consultants; mechanical and electrical engineers: *Hill & Harrigan*; contractor: *Giordano Construction Co.*; site and landscape architects: *Currier, Andersen & Geda.*





This neighborhood school is designed for 400 pupils, with 12 typical classrooms and two separate kindergarten rooms. In addition, there is a library-guidance area, a multi-purpose room, and an administrative suite. Eight of the classrooms can be converted into four large double rooms for special group teaching sessions. The kindergarten rooms are placed at one end of the building with their own outdoor court and two separate entrances.

At the center of the building is a large open courtyard, the size of seven classrooms, which provides good interior light, a private inner landscape, and a means of organizing the plan by clearly separating the functions and parts of the building. Special provision was made for safe sidewalk unloading by providing an extra service lane in front of the building.







Lens-Art phot

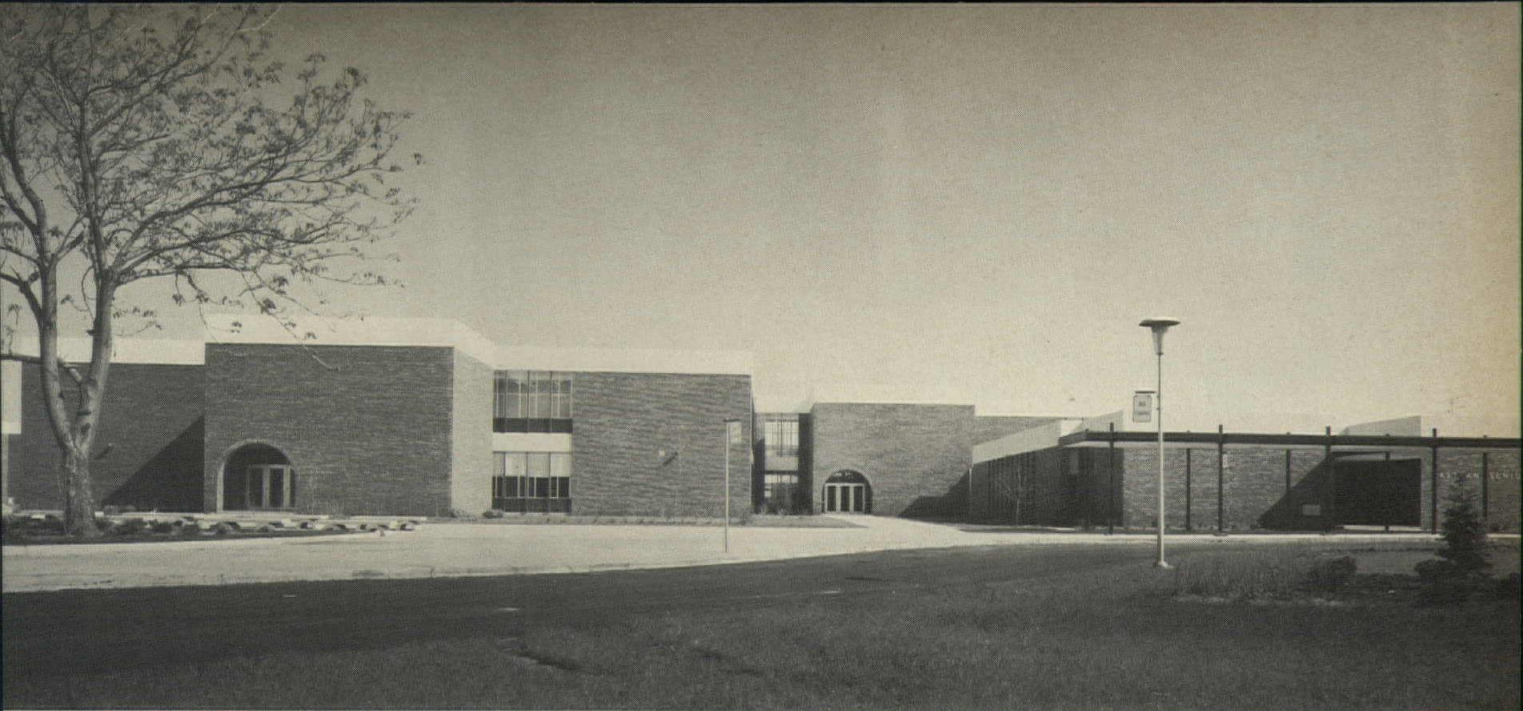
## Community action sets criteria for zoned high school

Detroit's new Eastern Senior High School was also planned and developed as part of an urban renewal area and—through support from the Ford Foundation—with maximum invited community participation. Two hundred citizens participated via various committees in developing the criteria for the new school: local social agencies, churches, individual citizens, business, industry, labor, Wayne State University, youth groups, city government, and the public school staff were all represented. The translation of citizen recommendations to educational specifications was achieved under the guidance of the School Housing Division of the Detroit Public Schools, and wound up as some 230 pages of criteria ranging from a social-ecological-economic analysis of the community to the specification of academic areas and functions for the new high school.

The architect found two elements of the program which became the basis for the physical expression of the building: these were function (the "house" concept) and compact site utilization. Although the program called for ultimately housing some 2,600 students, the desired close association between students, small groups, teachers, and counsellors suggested an organization of four "houses" of about 650 students each, with these individual pupils remaining together throughout the high school careers. The entire project is planned for two-stage construction, with the initial stage limited to 11 acres.

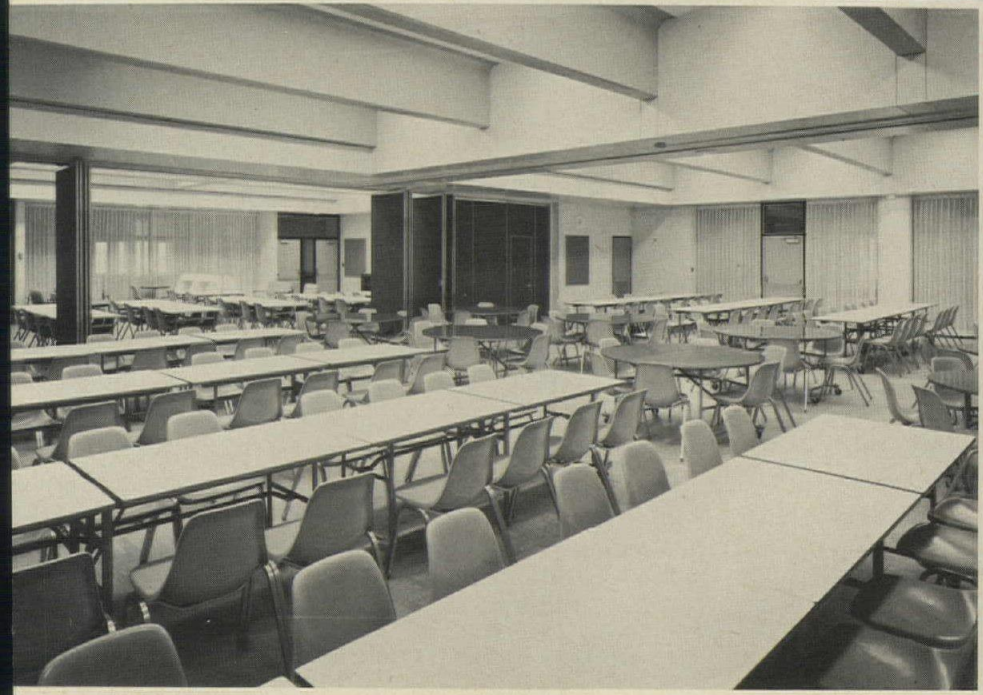
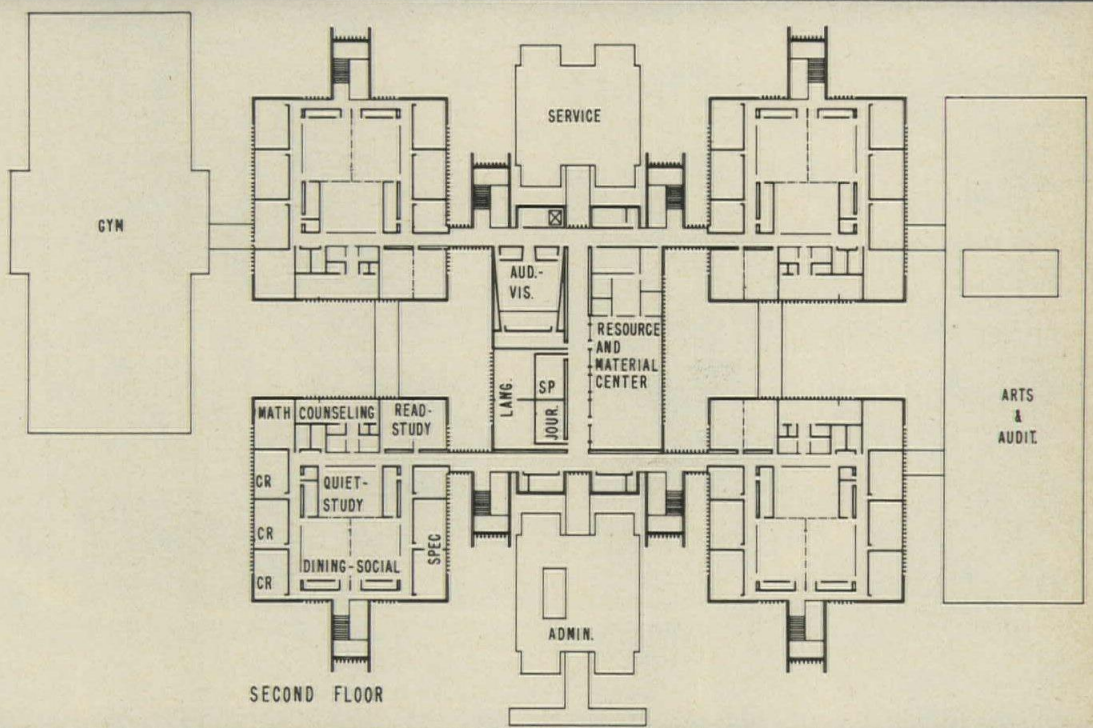
THE NEW EASTERN SENIOR HIGH SCHOOL, Detroit, Michigan. Architect: Linn Smith, Demiene, Kasprzak, Adams, Inc.; mechanical and electrical engineers: Hoyem, Basso & Adams; structural engineers: McClurg, McClurg, Mikle & Cooper; contractor: Practical Construction Co.



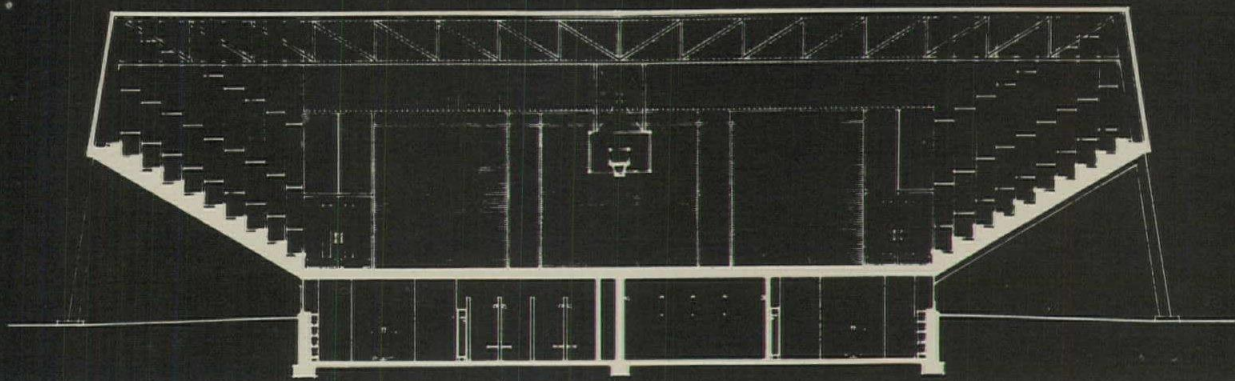


Each academic "house" is articulated as a separate building to clearly define its identity and to reduce the scale of the over-all project. The first floor areas have closer functional ties with the entire complex, with loop circulation connecting all elements. They house specialized teaching and service areas such as shop, homemaking, business and science. The second floor contains the regular and special classrooms of the house. These include study areas, counselling and teacher offices, conference space, and a dining-social area served by the central kitchen.

The first stage of construction, shown here, includes three of the houses, science rooms, audio-visual rooms, resource center, administration, gym and heating plant. A fourth "house" unit, pool, auditorium and arts and crafts wing will be added later.







## A gym initiates master plan to expand an old school

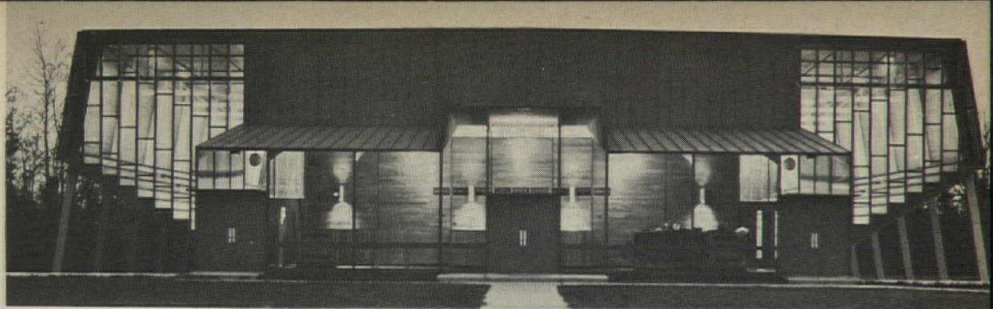
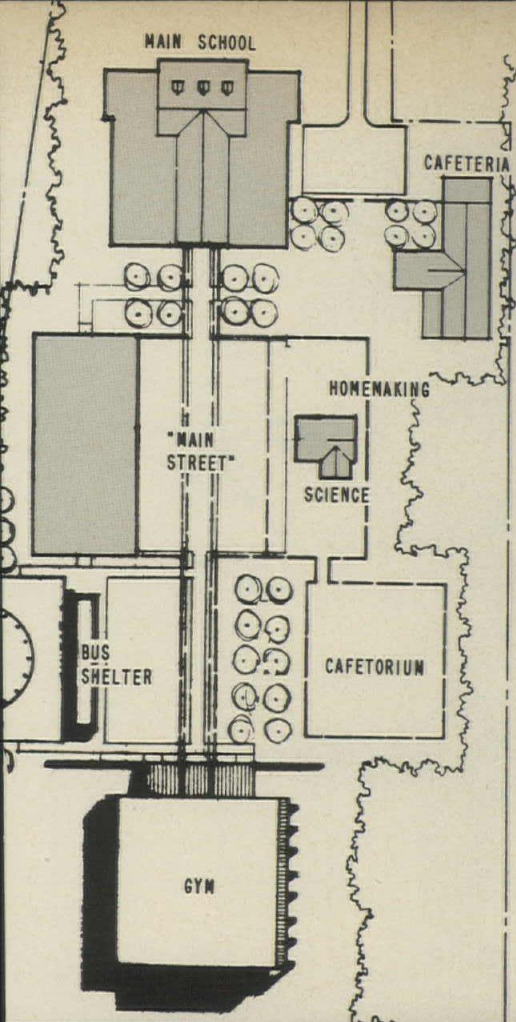
Although this is a school serving a rural county, its expansion problems and trend towards more community use of its facilities are parallel to those of its urban counterparts. As architects Cross and Adreon comment, "existing on the site is 'Old Main', a hoary brick building of imposing mass, and three disorganized additive buildings. The gymnasium illustrated is the first element in a new master plan for expansion. It is placed to the rear, on axis, and at a distance from 'Old Main'. Future and existing buildings between will be organized and tied in by a 'Main Street' element. The heavy traffic on the fronting highway led to reversing the approach to the school, so that a new bus shelter flanking the gym focuses attention on what will eventually be a formal entrance court for the night use.

"As the building's concept anticipated much civic and rec-

reational night use, effort went into making the gym festive and inviting; the building shifts from a solid in the daytime to a floating lantern at dusk, with its visible and illuminate occupants giving it extraordinary life. The daytime interior with patterns of light streaming in through the gray-glazed corners, is cheerful and bright enough to use with a minimum of artificial light." The frank, economical expression of the gym structure has produced an interesting architectural design; it was recently given an award of excellence by the American Institute of Steel Construction.

WASHINGTON & LEE HIGH SCHOOL GYMNASIUM, Montross, Virginia  
 Architects: Stevenson Flemer, Eason Cross, Harry Adreon, Associate Architects; structural engineer: Milton A. Gurewitz Associates; contractor: L. Mitchell.



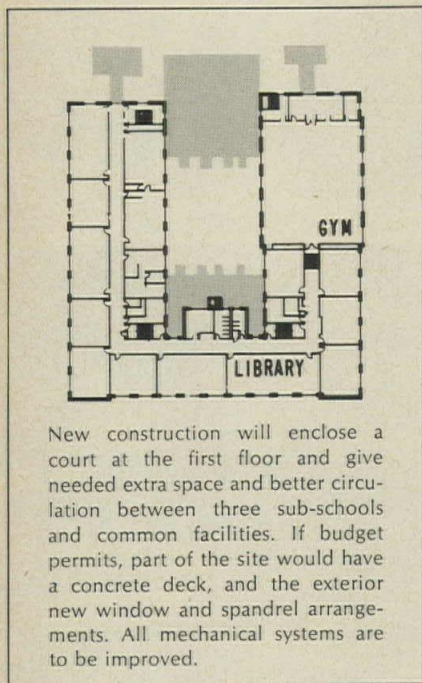
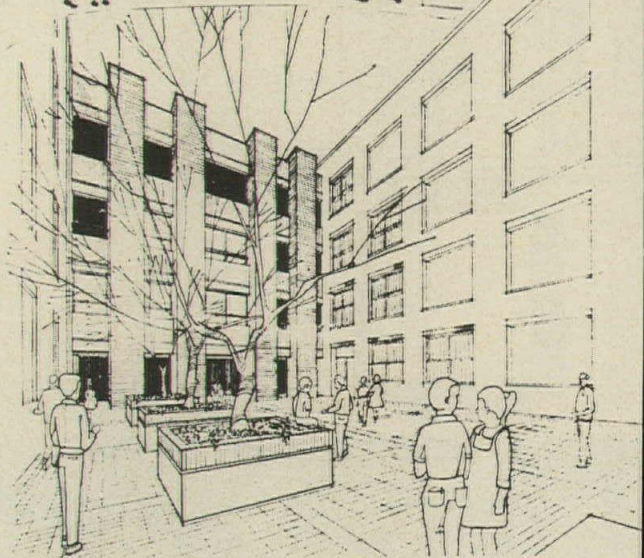
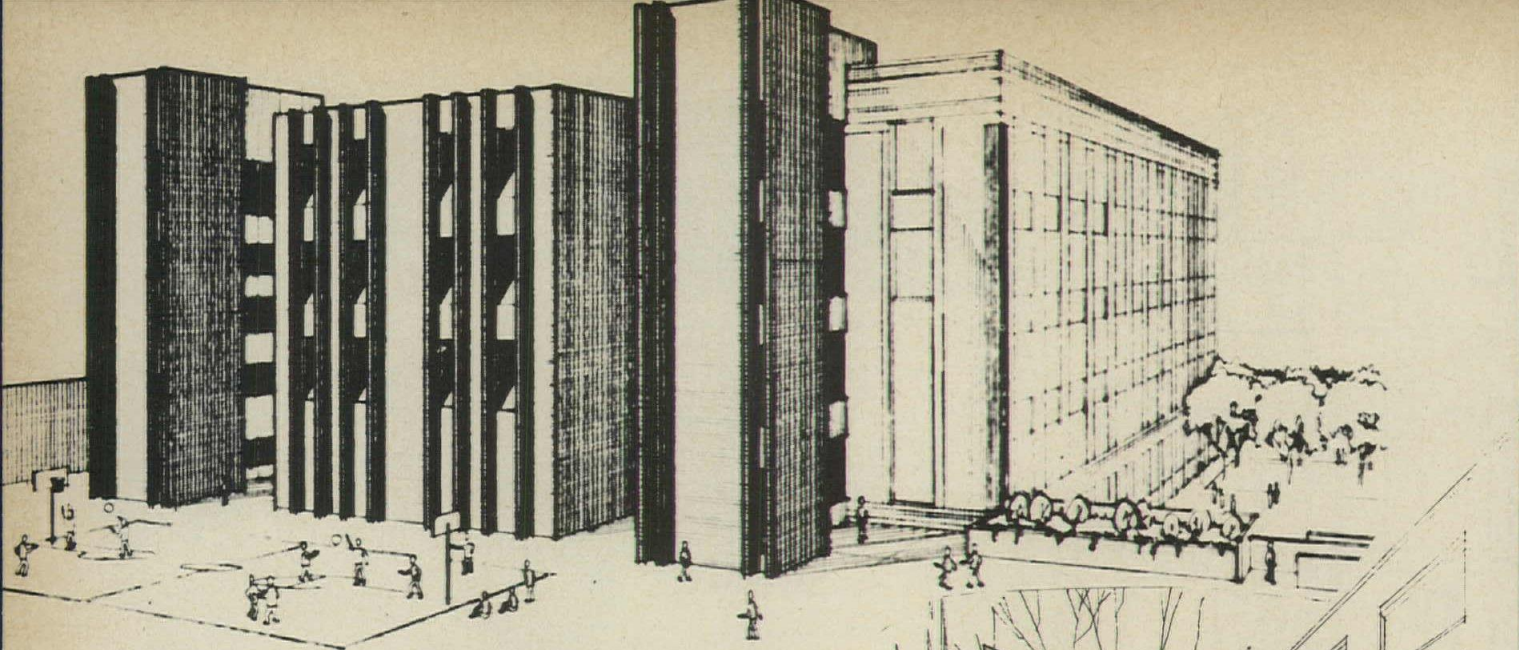


In the new master plan to expand the existing school, the gym is placed at the transition point between classrooms and playing fields. A slope in the ground level permits direct entrances to each floor of the building. It was designed as a small "coliseum" suitable for basketball tournaments, graduation exercises, dances, lectures—or any group community use but theater. The overhanging stands of fixed seats, reportedly built at one-fourth the cost of movable stands, gives the building its special character.

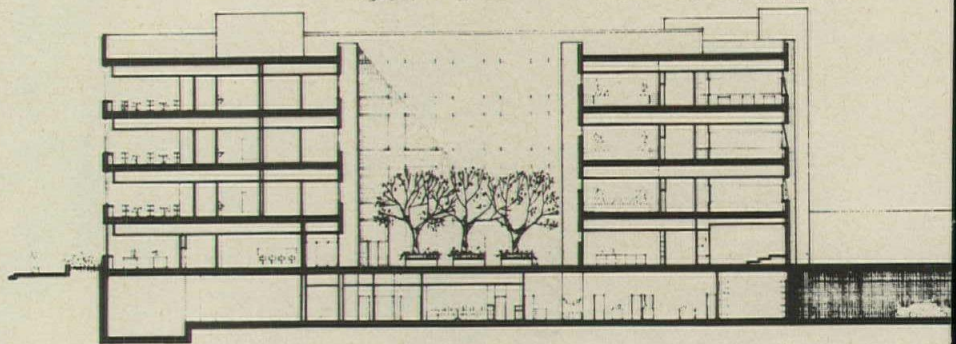
The steel structure has roof decking and interior walls of rough-sawn southern pine car decking; exterior roofing and siding are terne, which recalls the metal roofing of the old school, while a brick plinth repeats the existing walls. Precast concrete planks support the gym floor.







New construction will enclose a court at the first floor and give needed extra space and better circulation between three sub-schools and common facilities. If budget permits, part of the site would have a concrete deck, and the exterior new window and spandrel arrangements. All mechanical systems are to be improved.



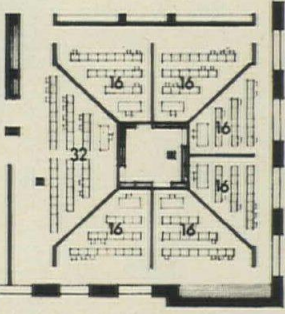
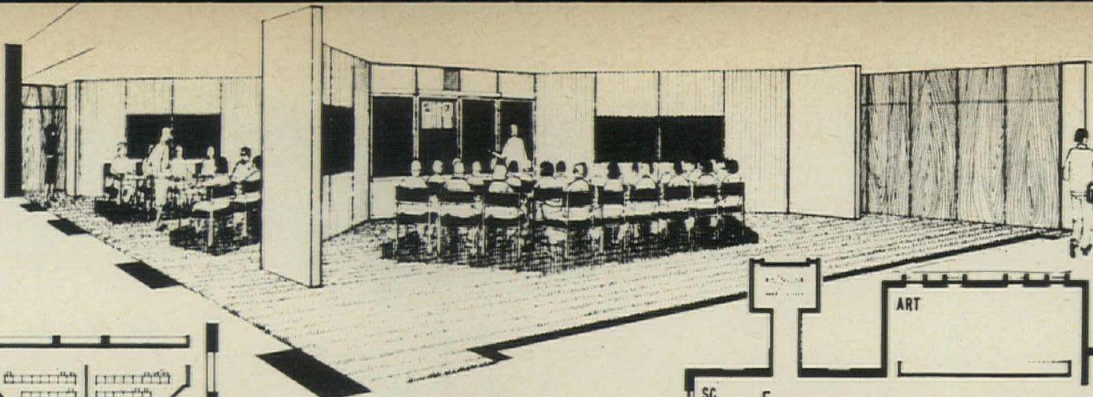
## Renovation scheme adapts old school for future

Recent winner of a New York City competition for the conversion of Joseph H. Wade Junior High School (P.S. No. 117—Bronx) to house an up-to-date intermediate school, Frederick G. Frost Jr. and Associates came up with the highly innovative yet budget-conscious thinking in the scheme shown here. The competition was sponsored by the Board of Education of the City of New York, in cooperation with the Research Council of the Great Cities Program for School Improvement. In addition to a money award, the first prize included the architectural contract for the modernization project. The competition was held as part of the Great Cities' "New Life for Old Schools" study under a grant from the Educational Facilities Laboratories.

The existing school is of that typical solid, stolid building type, with a double-loaded classroom, U-shaped plan, that

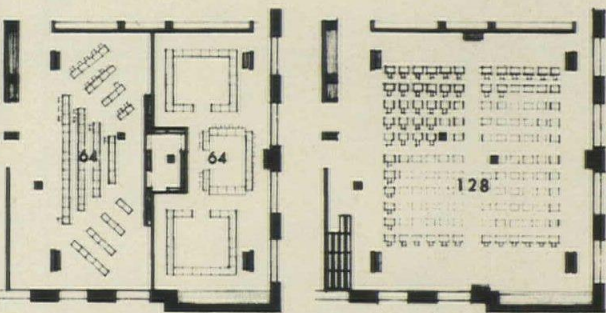
pervades our cities from coast-to-coast. In their approach to conversion, Frederick G. Frost Jr. & Associates came to a series of general and specific conclusions: "When a structure is designated for renovation, the extent of work to be done must, by necessity, become a matter of compromise between the ideal solution for the given set of requirements, and the funds available. A priority scale must be established; existing area adapted for future use as much as possible; new construction added to be used for new types of spaces where increased area can be justified. . . . The primary aim in renovating schools is to create conditions enabling future developments in the philosophy of teaching and study . . . and to permit flexibility. Blocks of spaces free of shafts, stairs and toilets must be created, with movable partitions, furniture and storage units



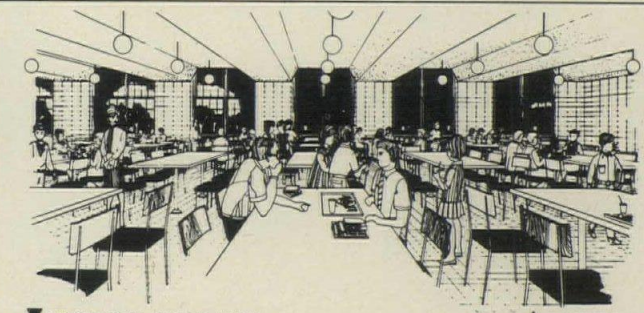
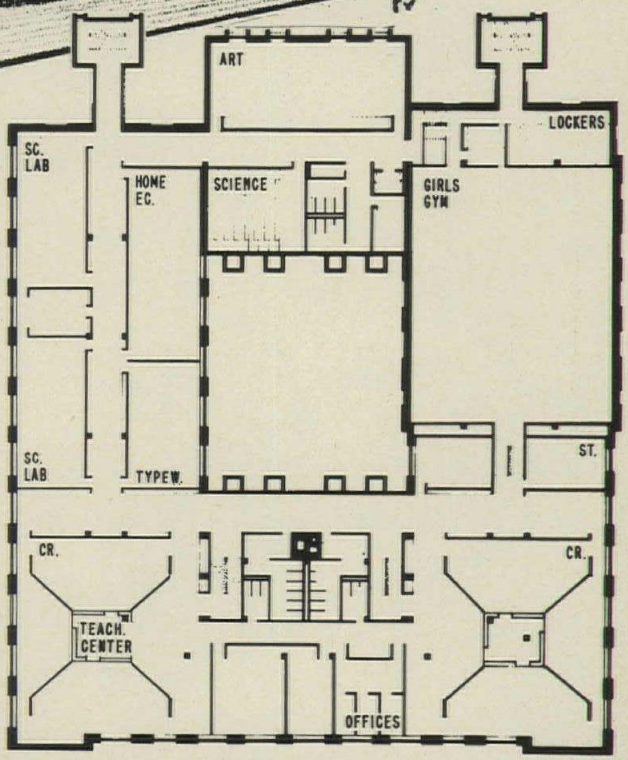


ALTERNATE CLASSROOM PLANS

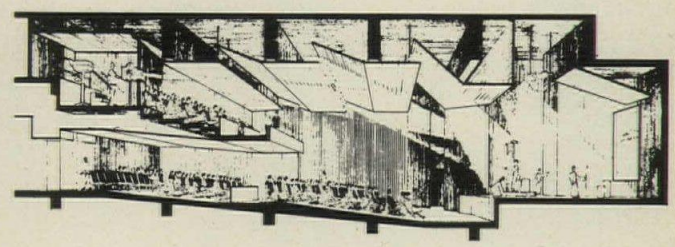
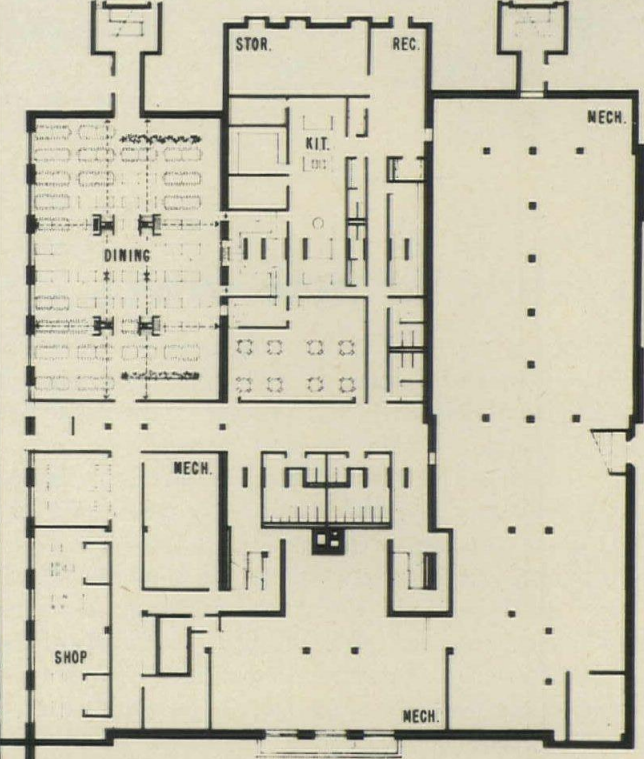
An entire wing of each floor will become a flexible space for study and teaching, surrounding a resource, guidance and planning center and will be subdivisible into a variety of areas for groups of 16 to 128 students. Movable storage units forming the spaces can be shifted as needed.



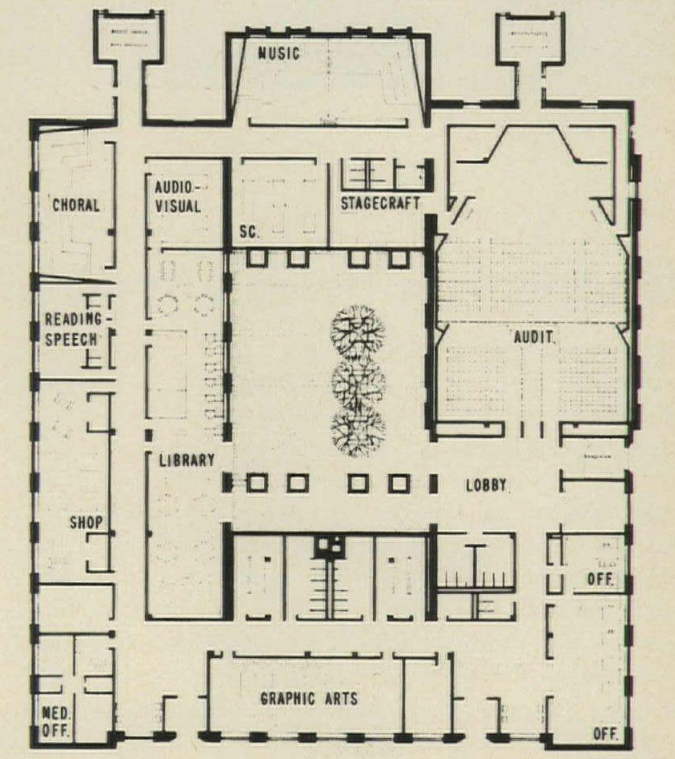
TYPICAL FLOOR PLAN



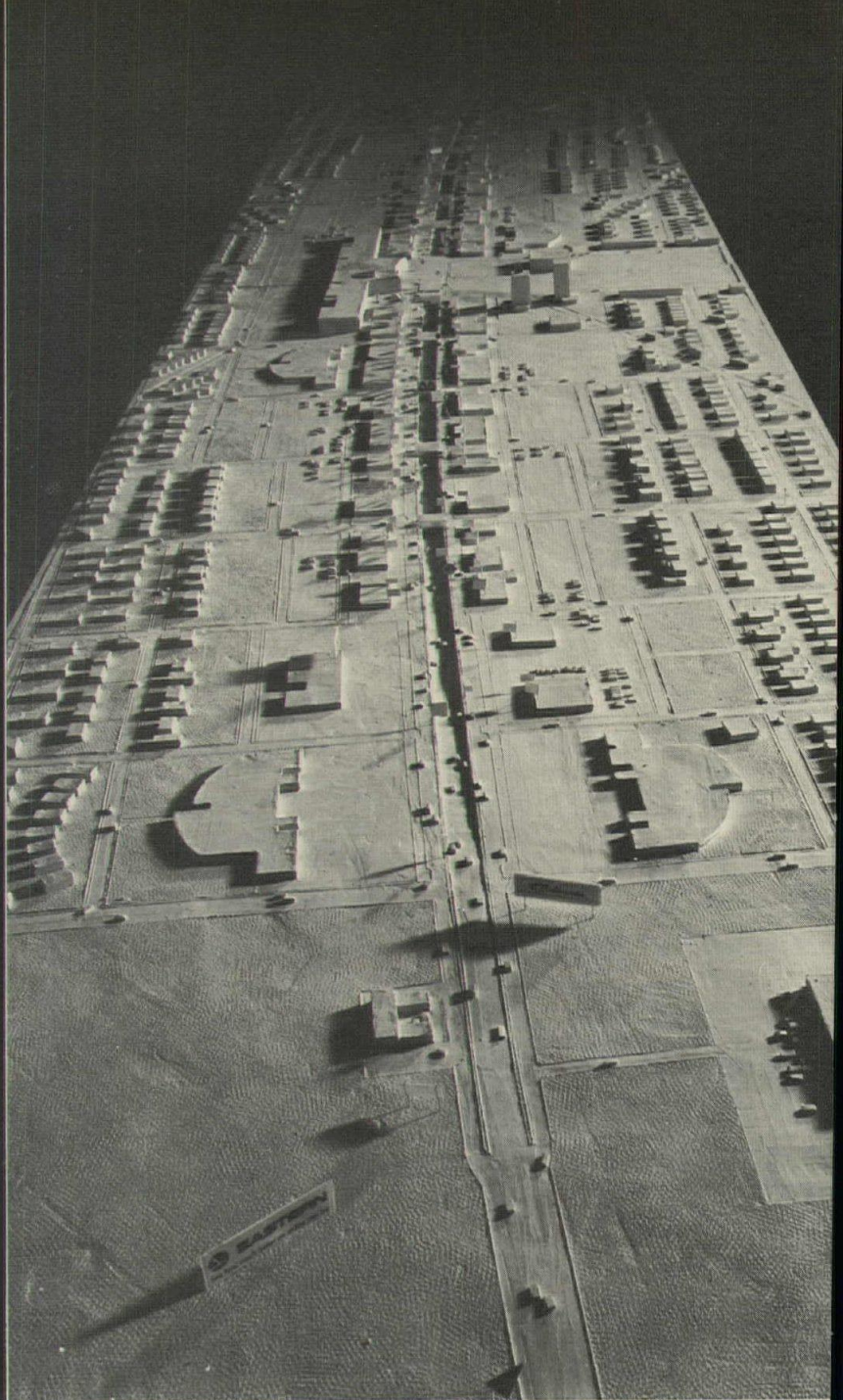
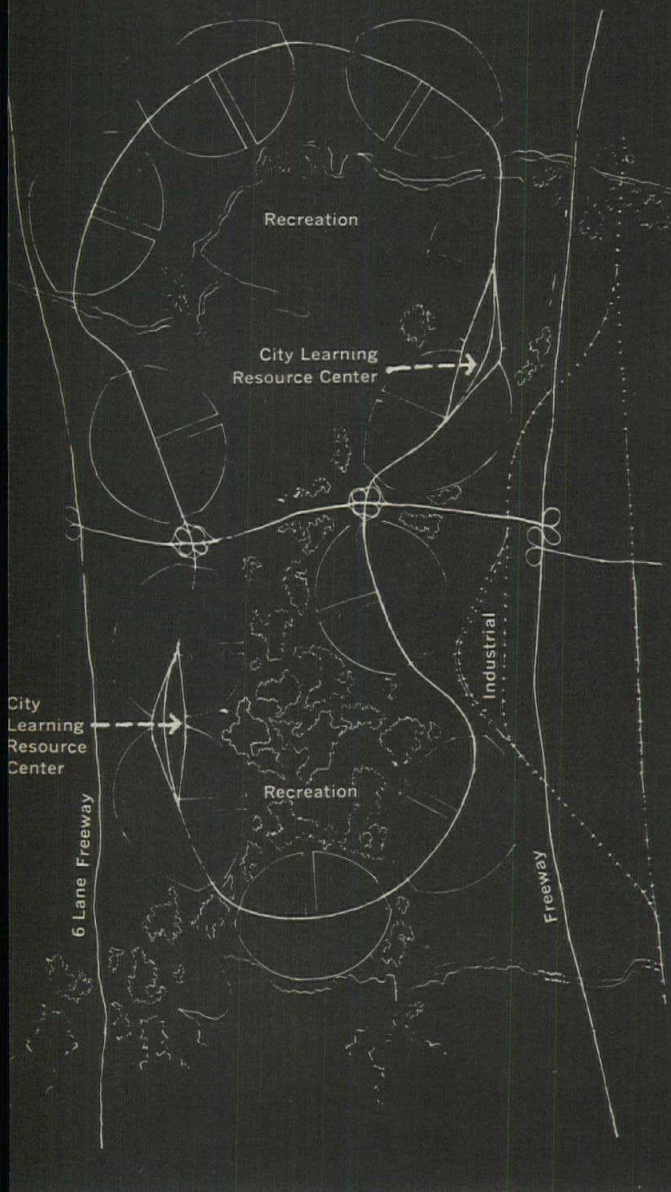
BASEMENT FLOOR PLAN      CAFETERIA



FIRST FLOOR PLAN      SECTION THROUGH AUDITORIUM







McCracken & Peel photo

## Schools can be interwoven into fabric of new towns

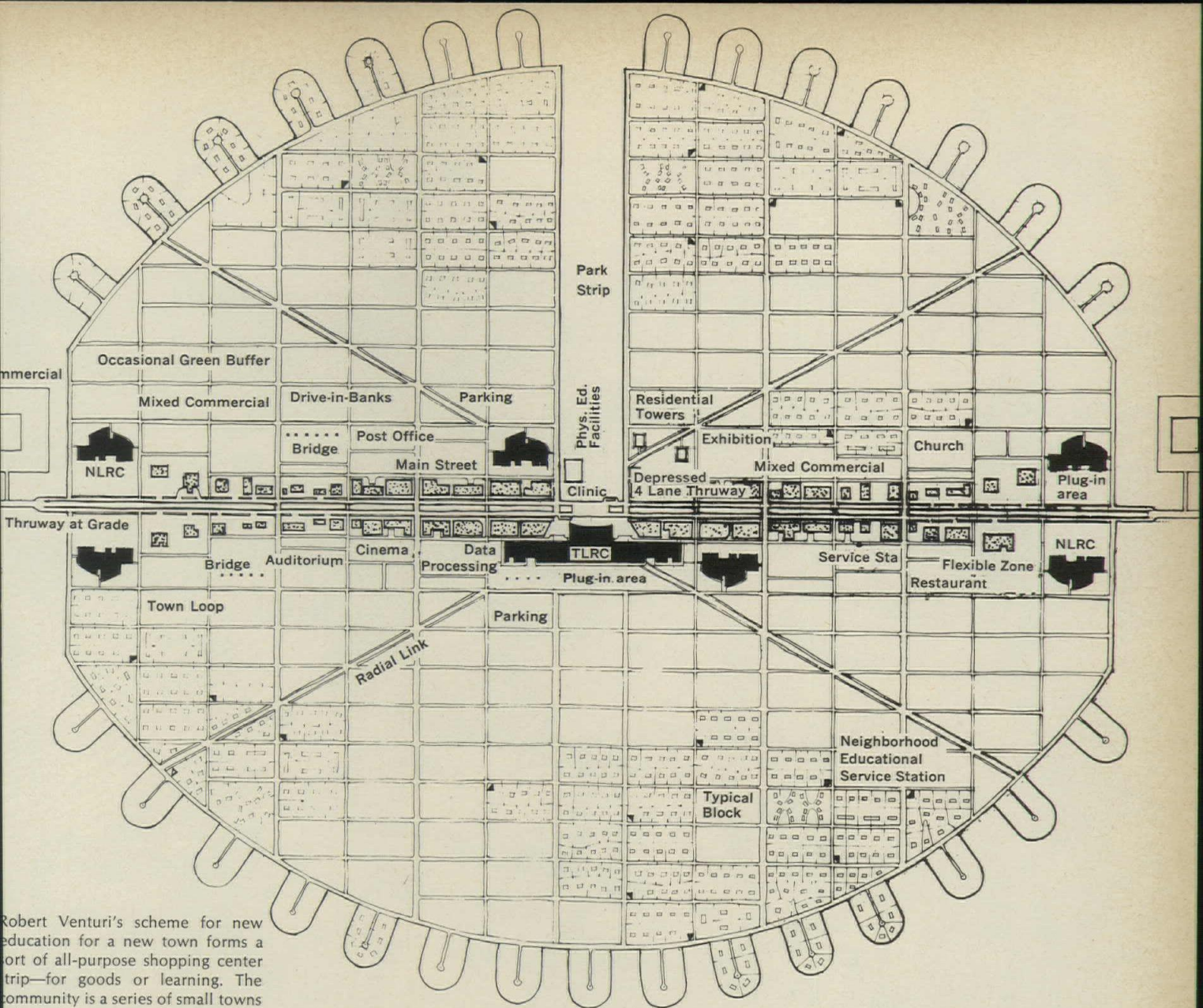
"If new towns are to be built from scratch, why should they be inhibited with old concepts of education?" This challenging question formed the basis for Rice Design Fete IV, a research-oriented work conference held in Houston in June.

From all over the U.S., six teams of architects, educators, consultants, and students of 12 schools of architecture came to design new systems of education and new facilities to house such systems. The project was sponsored by the Ford Foundation's Educational Facilities Laboratories, and held under the direction of Professor William T. Cannady. The six teams, each of which developed its own separate project, were headed by architects Charles Colbert, Paul Kennon, Niklaus Morgenthaler, Cedric Price, Robert Venturi and Thomas Vreeland.

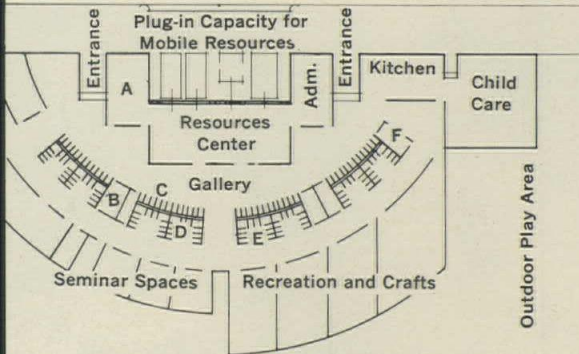
The concepts developed by the different teams proved as

uninhibited as the basic programmatic question—which was augmented by such queries as "Why must new towns be bound to the formerly inviolable limits of education—to traditional and arbitrary delineations of elementary schools, junior and senior high schools, to education that is restricted by the framework of the school, the hour of the day, the age of the student?" The responses tended to weave education, more or less packaged lessons, into all facets of daily life, part of town, and time of day. Colbert's team developed a sort of space-helmet "shoulder carrel" to receive audio-visual communications; Price and Vreeland used portable and demountable units, signs and busses; the most architectural of the approaches (shown here) were those of Kennon, with "a megabuilding", and Venturi, with "a mini-structure."



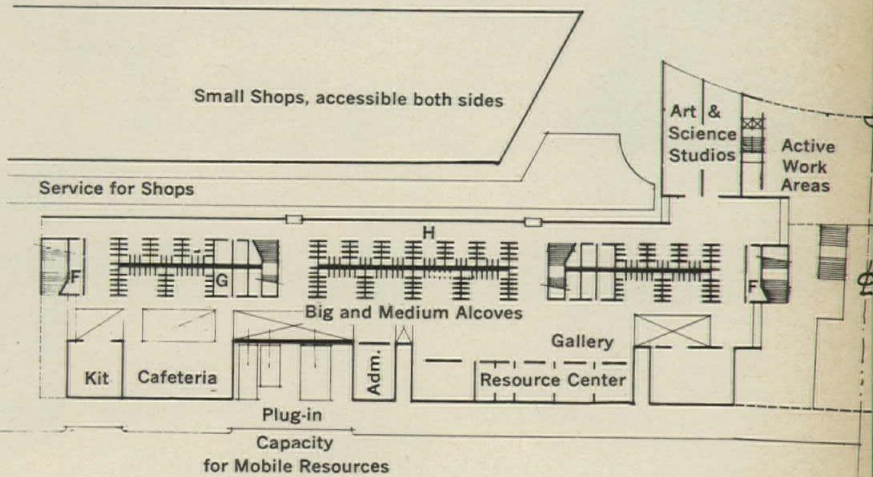


Robert Venturi's scheme for new education for a new town forms a sort of all-purpose shopping center trip—for goods or learning. The community is a series of small towns linked by a central expressway flanked by all schools, shops and offices. The schools, from "service stations" to "city centers" are described as "mini-versions" of commercial facilities.

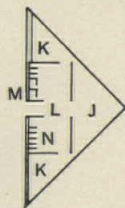


NLRC Neighborhood Learning Resource Center

- Resource Check-in Area
- Big Alcoves
- Carrels
- Computer-assisted Learning Carrels for 1 to 3 Students
- Medium Alcoves
- TPC: Teachers' Planning and Conference Room
- Niches
- Education Arcade—open 24 hours
- Computer-assisted Adult Reading/listening Alcoves



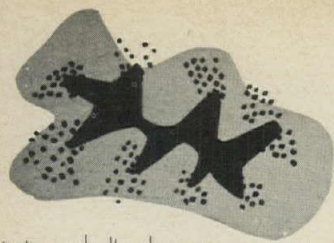
TLRC Town Learning Resource Center



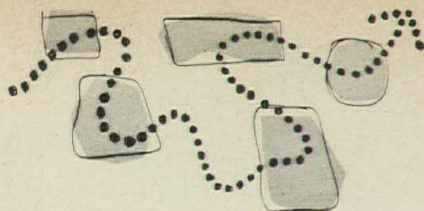
- J Meeting Room
- K Work Room
- L Lounge
- M Utility Core
- N Computer-based Learning Carrels

Neighborhood Educational Service Station

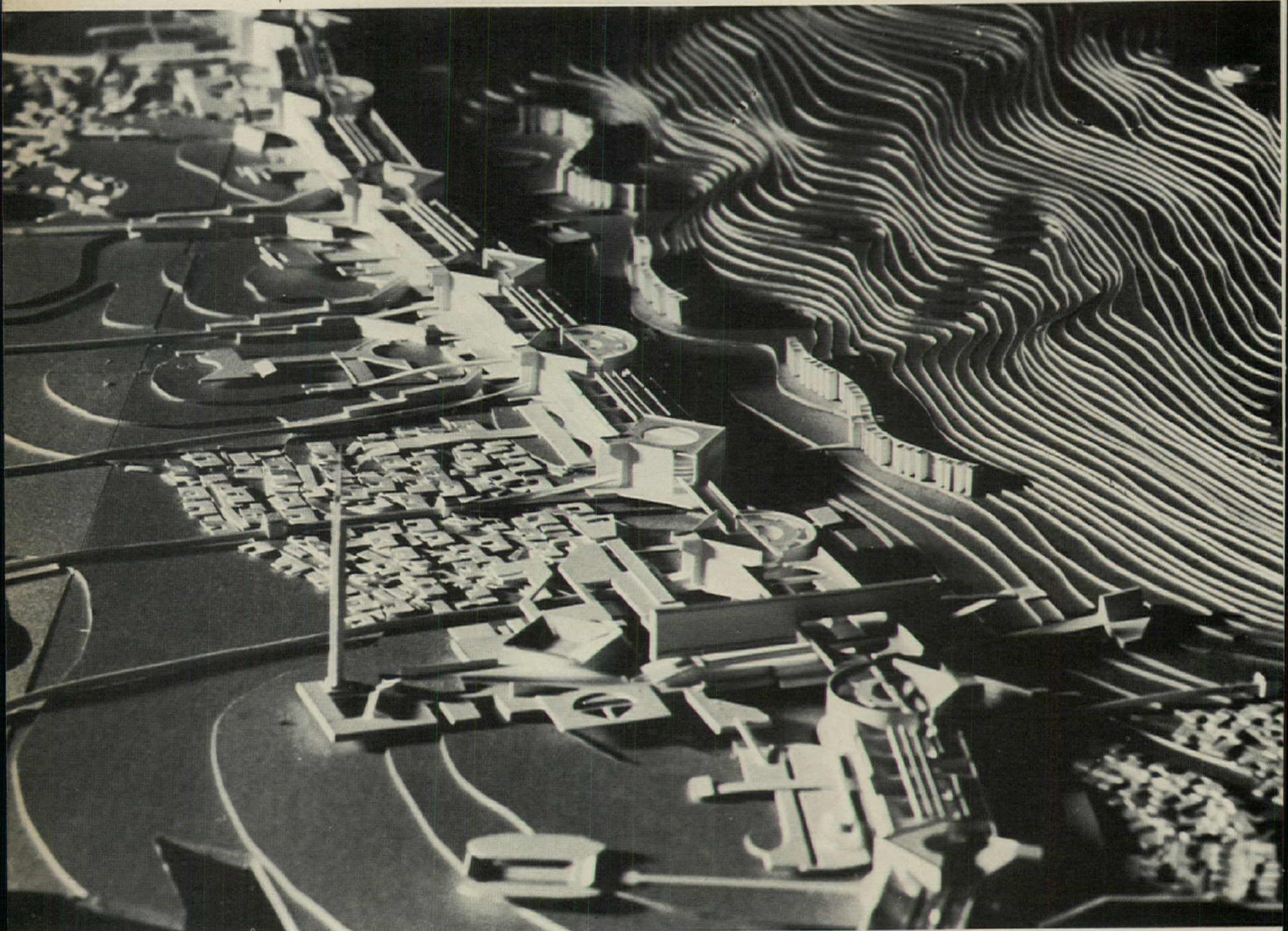
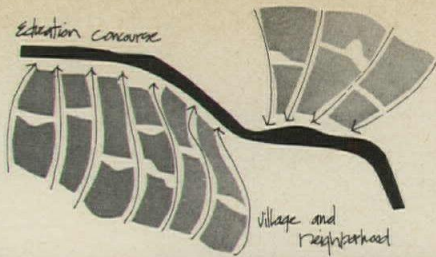




Education and the town are synonymous

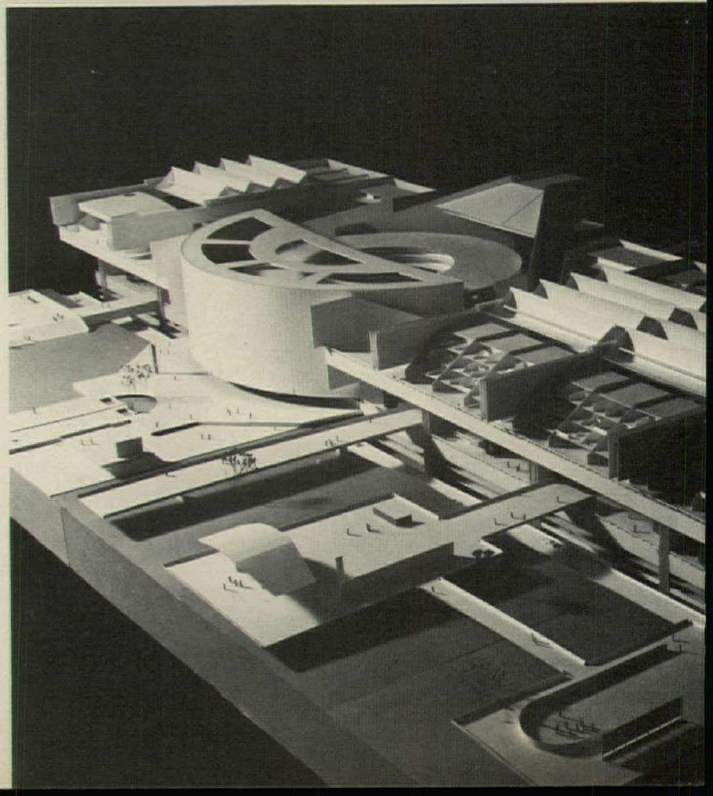
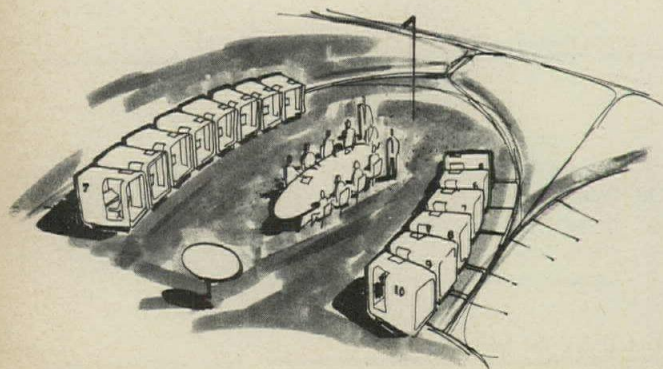


Movement through activities instead of past them



Paul Kennon also draws parallels from shopping centers for his scheme for learning in a new town, but from today's "super shopping malls" instead of the shopping strip. All educational facilities, from child care centers through university and continuing adult education, are mixed together through scramble zoning with shops, factories and community facilities to form a highly ordered "mega-structure". This

grand mix would occupy the upper level of an "education concourse" spine meandering through the town. Services and transport access would be on a lower level—and even here one would be tempted to delve into a little learning. The use of small "computerized carrel cars" for transportation would "allow citizens of all ages to learn while in transit", or gather at centers punctuating the concourse.





## Noise control in architecture: more engineering than art

In the short span of 20 years, architectural acoustics has become an important discipline in the building field. And during that time one aspect of architectural acoustics—control of noise—has become significantly more important in the design of every type of building, from the small house to the tallest skyscraper.

Control of noise has become more important for a series of reasons: There are more noise sources. All of us are more conscious of noise. We are now in a position to do more about noise. The reason is that the problems of noise, compounded by the increasing complexities of interior space and the use of lighter-weight constructions, have caused physicists, acoustical engineers and psychologists to study which kinds of sounds are annoying, and how these sounds can most practically be reduced in level or isolated. Further, engineering studies have led to new tools for design which are much more accurate in predicting noise effects.

While most architects and engineers need not get involved in the very complex analyses of noise and its control, a basic grounding in the new concepts of noise control and the design techniques available will help them more readily anticipate noise problems, "design out" some of these problems in the very early stages, work more effectively with acoustical consultants, and—perhaps most important of all—help them work with clients in developing an acceptable standard of noise control to work towards in the building design. For, as in most things, the benefits of greater and greater noise control must be balanced against costs.

Noise is defined as any undesired sound. Sound is noise only when it disturbs or annoys people, or, in some cases, creates a physical hazard, and can range from the barely perceptible drip of a faucet to the roar of a jet engine. Most noise is not physically harmful in the sense of damage to the ears, causing loss of hearing. It is said that sound levels below 85 decibels (db) for long exposures should not cause deafness. But sound-pressure levels in excess of 135 db, even for short periods, may cause permanent impairment of hearing.

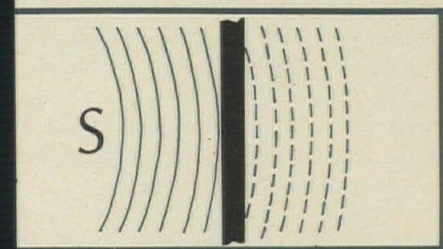
Obviously, noise has always been with us in some form or other. The difference between today and yesterday is that there are now many more sources of noise—such as mechanical equipment, business machines, etc.—and current

construction practices—use of lighter-weight materials, for example—potentially make noise more audible.

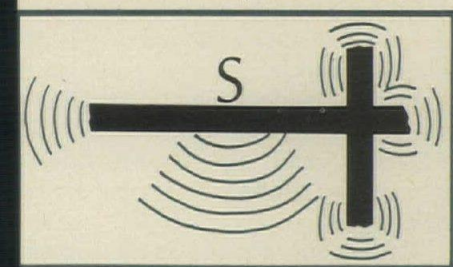
Fortunately, we know what to do to control noise. The techniques and materials are available. If, for instance, the architect designing an apartment building follows good practice recommendations of acousticians in regard to wall and floor constructions and mechanical equipment and plumbing, and uses common-sense planning in regard to room layout and door and window location, he will have done his best to avoid tenant dissatisfaction.

But, by the same token, there are a good many aspects to noise control in commercial and institutional buildings—and analysis for noise control may not be simple. When it comes to a building

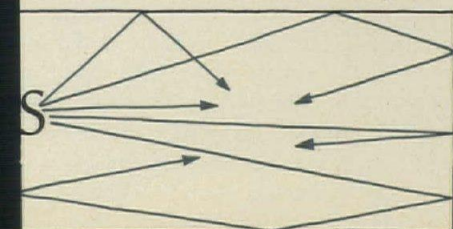
Airborne sound is reduced in intensity by the mass and damping characteristics of a wall.



The structure of a building will conduct and radiate sound induced by vibration or impact.

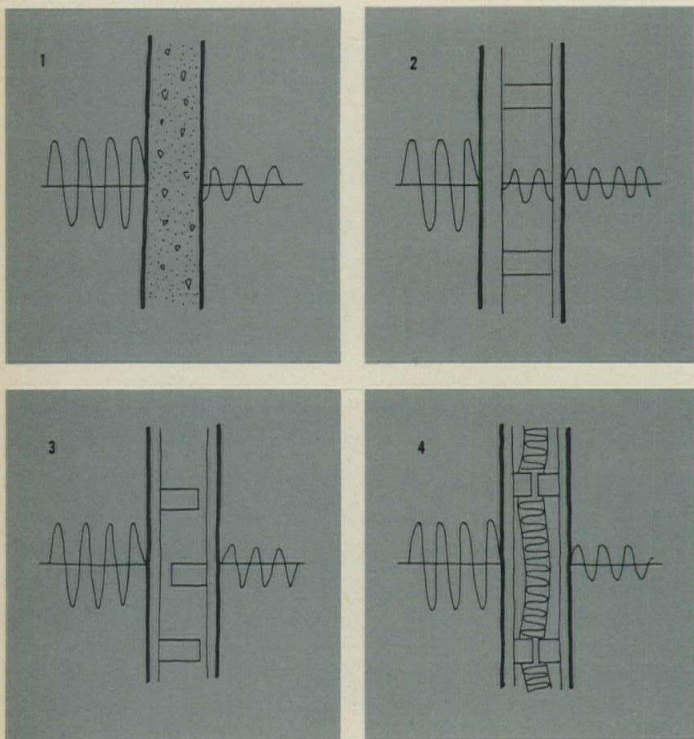


Degree of room reverberation is determined by boom volume and the amount of absorption.



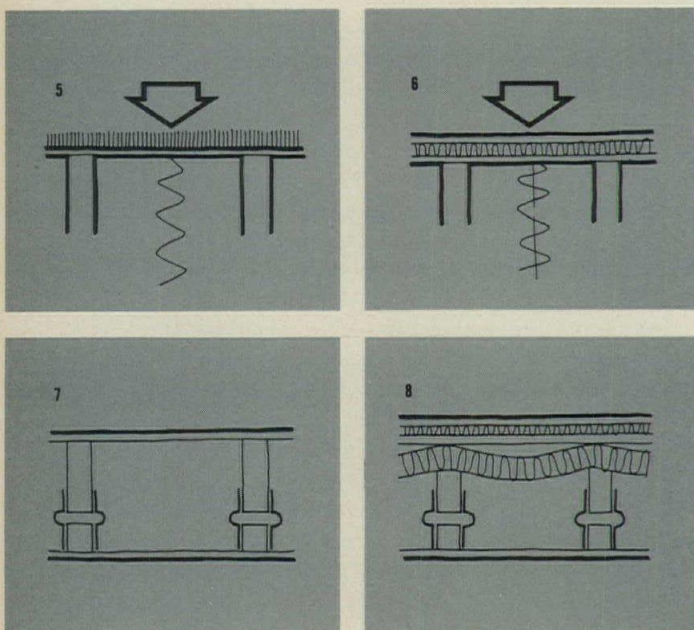


## "Unwanted sounds should be isolated by appropriate constructions; and background noise should not intrude"



Airborne noise can be attenuated by either heavy or lightweight constructions. 1. The heavier a homogenous wall, generally the more effective its sound isolation; however, doubling the weight increases transmission loss by only about 6 db. 2. Resilient construction helps reduce sound, such as resilient backing behind gypsum board or attachment by resilient clips or channels. 3. Discontinuous construction breaks the transmission path. 4. Sound-absorbing blankets plus spilt studs gives a 9 db improvement over a conventional stud and gypsum board partition.

Impact sound is attenuated by resilient materials and constructions. 5. Carpeting is most effective when underlaid with a felt pad. 6, 7. Resilient floor underlayment or attachment of gypsum board ceiling by means of resilient clips offer slight improvements over standard wood joist floor. 8. By current test standards, one of the most effective floors for impact comprises resilient floor underlayment, fibrous blanket insulation and resilient ceiling attachment.



such as a large high school, the noise control problem is a great deal more complex because of the much wider range of activities, and the wide variety of ways in which the various activity spaces may be arranged.

By and large, the more gross violations are now being corrected as a result of adverse consumer reaction, or through such regulatory devices as FHA Minimum Property Requirements and codes such as New York City's proposed building code.

### The beginnings of noise control: a study of reverberation

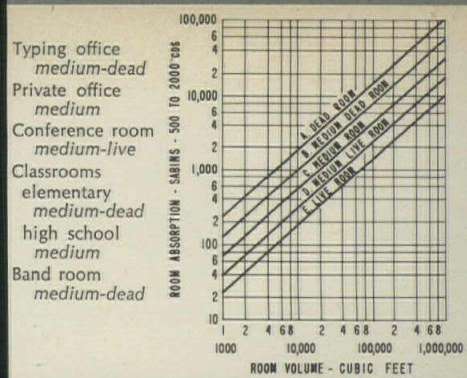
Noise control is fairly young as an engineering science. The transition from art to engineering science began just before World War II. In the beginning, and unfortunately even not too long ago, room acoustics was generally referred to as "acoustical correction," because this how it all started. Wallace Sabine, in his renowned work at the turn of the century in the lecture hall of the Fogg Museum at Harvard, developed his classic formula for sound absorption. The condition there was that the room was too "boomy" for speech and required sound absorption to reduce the reverberation time. Thus in the early days, absorptive materials were applied to large spaces such as lecture halls and courtrooms to reduce the reverberation so that people could hear better. (Frequently this was done to excess in the '30's.) Otherwise overlapping of speech sounds resulted in inferior intelligibility. After that, sound-absorptive materials (commonly referred to as acoustical materials) were employed to reduce noise levels within rooms—to take the edge off noise caused by voices, typewriters and footfalls.

### First, design the room itself for good hearing conditions

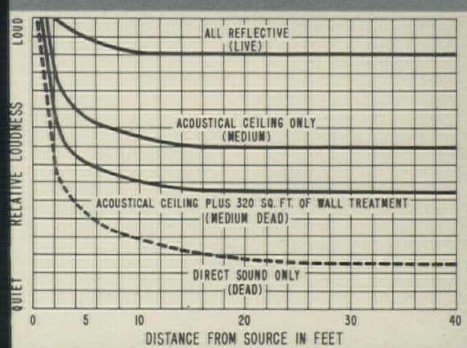
The basic goal in room acoustics is to preserve the sounds we want to hear and to exclude those we don't want to hear. We will be concerned in this article with work and living spaces such as offices, classrooms and apartments—large auditoriums for lecture and music and factory spaces are special engineering problems beyond the scope of any single study.

Before any consideration is given to the possibility of intruding sources of noise, the designer must first concern himself with whether the room surfaces—and to some extent the room shape—comprise a suitable acoustic environment for the activities that will occur in the room. In other words, neglecting the possibility of external noise, will we have optimum hearing conditions for speech, music, or whatever sounds we wish to hear? As has been pointed out by New-

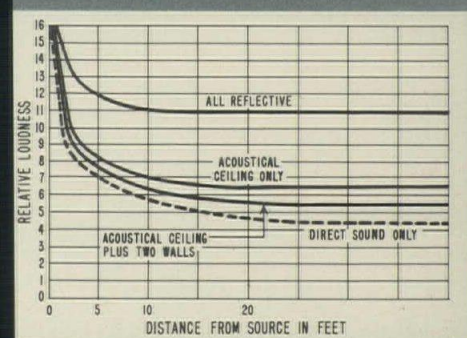




amount of absorption required for rooms of from little to considerable reverberation.



acoustical materials on the walls in addition to the ceiling decrease relative loudness of background noise over ceiling alone in a general office such as used for typing.



but much is gained in the small private office by adding absorption to two walls.

man and Cavanaugh\*, "... it may be pleasant to go from a reverberant space where this quality adds a sense of monumentality, to a dead space where perhaps communication is important, or where one may merely wish to sit down and read, or experience a feeling of enclosure and quiet..." These authors list the following attributes for an environment which is to have good hearing conditions: 1) it should be quiet; 2) desired sounds must be sufficiently loud; 3) sounds must be well distributed throughout the room; and 4) the reverberation time ( $T_r$ ) must be long enough to give proper blending of sounds, but short enough so that there is no excessive overlapping and confusion. (Reverberation time is the time in seconds for the sound level to drop 60 db after the sound

Time-Saver Standards, fourth edition, McGraw-Hill Book Company, 1966

source is stopped.) Recording and broadcast studios for speech require the shortest reverberation times—0.5 seconds, on the average, for the mid-frequency range of 500-1,000 cps. Classrooms should have a  $T_r$  of no less than 0.5 sec. and no more than 1.0 sec. Lecture and conference rooms might take a minimum of 0.6 sec. and a maximum of 1.4 sec. Reverberation time is directly proportional to the volume of the room and inversely proportional to the absorption. The formula is:  $T_r = 0.5 \frac{V}{A}$ , where  $V$  is the volume of the room in cubic feet and  $A$  is the absorption in sabins.  $A = \sum S_i \alpha_i + S_2 \alpha_2 + S_3 \alpha_3 \dots$  where  $S_1$  is the area of the surface whose absorption coefficient is  $\alpha_1$ ,  $S_2$  is the area of the surface whose absorption coefficient is  $\alpha_2$ , etc.

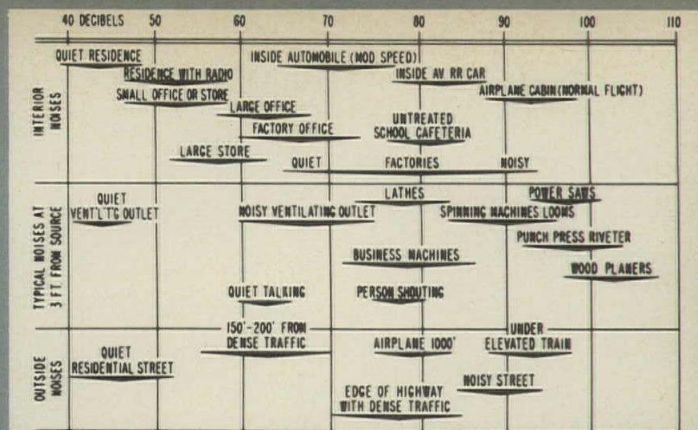
In addition to reducing the reverberation time, absorptive materials are

used to prevent echoes, if these cannot otherwise be avoided by proper shaping and disposition of surfaces and to prevent flutter in narrow rooms with parallel walls normally having hard surfaces.

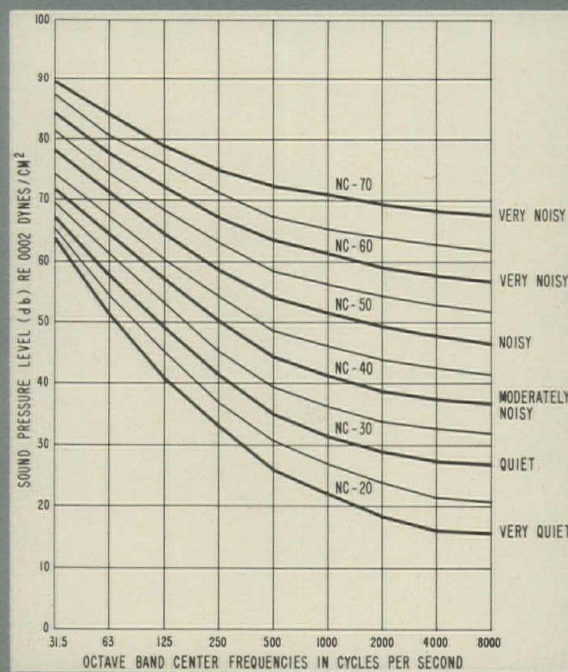
### Noise control in rooms for speech

Generally small rooms will be suitable for speech if the ceiling is treated with conventional acoustical materials, or if the room is carpeted or fitted with heavy drapes. For example, a 20 ft by 30 ft classroom will have an  $T_r$  of approximately 0.5 sec. if the ceiling is completely covered with an acoustical tile having a noise reduction coefficient of 0.75.

A common misunderstanding is that acoustical materials, themselves, reduce noise levels by a large amount. While one may get between 5 and 10 db of noise reduction by adding absorption to



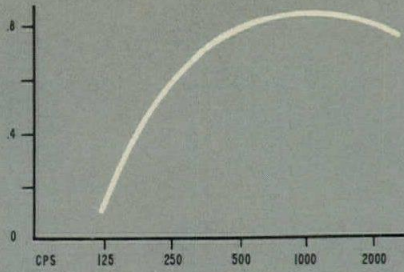
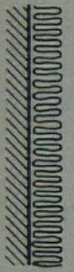
Typical examples of background noise levels from various noise sources. These are average ("single-number") sound levels obtained by A-scale readings on a sound-level meter. Generally it is safer to use sound-pressure levels of the noise measured by one-octave, half-octave or third-octave bands.



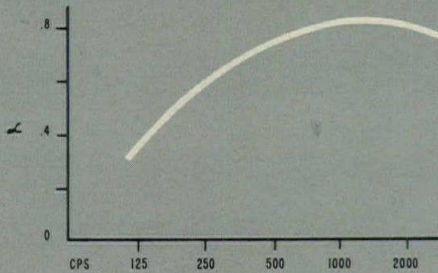
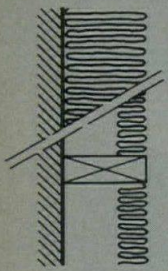
Permissible background criteria can be specified by means of these noise-criterion curves. They have been derived from field studies of speech interference levels (represented by the NC numbers listed on the curves.)



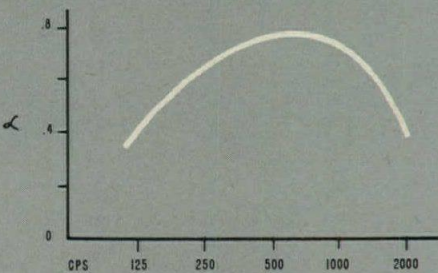
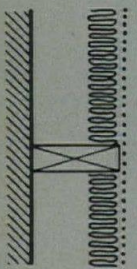
A. POROUS



THIN POROUS MATERIAL

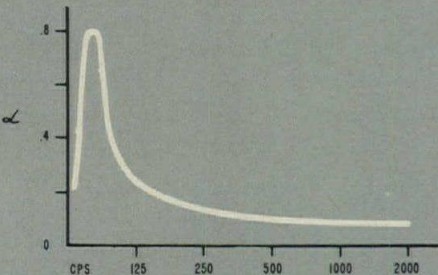
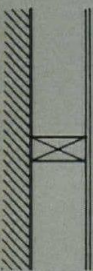


THICK POROUS MATERIAL OR THIN MATERIAL WITH AIRSPACE

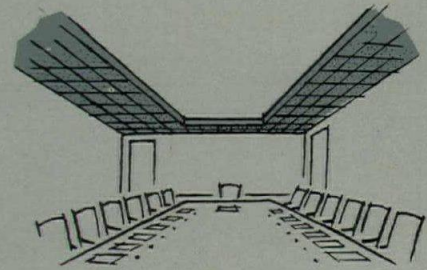
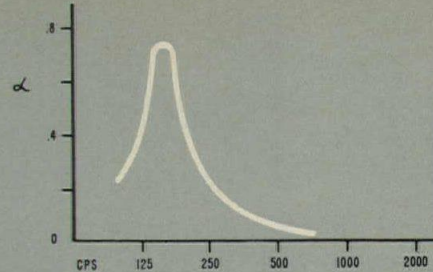
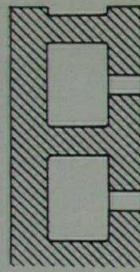


POROUS MATERIAL WITH PROTECTIVE PERFORATED FACING

B. VIBRATING PANEL



C. VOLUME RESONATOR



The range of sound-absorbing techniques is illustrated in the sections, with resulting performance in the graphs. Typical manufactured acoustical materials (tile and panels) have the characteristics shown for "thin porous material." They are more effective at the higher frequencies. Providing an air space behind a thin porous material increases low-frequency absorption. A perforated facing in front of porous material (say 1 in. fiber glass) will reflect higher frequencies, but this depends dimensions of the solid area. If the space between holes is 1 in., frequencies above 13,000 cps would be reflected. Large panels are good low frequency absorbers. The volume resonator shown has a narrow-band absorption. In a large conference room where only natural voice is to be used it is good practice to leave the center of the ceiling hard to reflect the sounds of speaker voices.

a room, it is very difficult to get more than 10 db. In the 20 ft by 30 ft classroom mentioned, adding the acoustical tile to the ceiling of the otherwise hard-surfaced room will effect a noise reduction of 4 db. An indication of what this means subjectively is given by the following: a 3-db change in level is barely perceptible; a 5-db change is perceptible; a 7-db change is clearly perceptible; a 10-db reduction would seem half as loud.

In some rooms, such as long conference rooms and lecture rooms in which only natural voice is used, it is desirable to leave the center portion of the ceiling a hard surface so that it will reflect back down to listeners. Absorptive material could be used around the perimeter of the ceiling and at the tops of the walls. Additional absorption can be obtained through carpeting and drapes. In lecture rooms more than 40 ft long, the end wall

should be treated with absorptive material to prevent the possibility of echoes.

If we assume that the room interior has been designed properly for good hearing conditions, then the two other conditions that have to be satisfied are: 1) the background noise level has to be low enough and of such character as to not interfere with desired sounds, and 2) the transmission of sound, either air-borne or structure-borne from surrounding spaces, should not either interfere with the hearing of desired sounds or cause annoyance due to its informational content.

Background sounds such as distant traffic, the blur of voices, or the whoosh of an air diffuser may be acceptable background noises because they are not intruding sounds, unless they are loud enough to interfere with conversation or otherwise are unduly distracting. Diffus-

er noise may be objectionable if it interferes with speech, or if the noise has noticeable pure tones in its spectrum—a high-pitched whistle, for example would be annoying.

The limitation on background noise for average conditions in typical spaces are prescribed by reference to a series of noise criterion curves developed by Leo Beranek on the basis of statistical studies of office workers. Noise ratings made by office workers were plotted against speech interference levels and loudness levels. Spaces involved included executive offices and conference rooms on the one hand, and stenographic pools and large drafting rooms on the other. The resulting speech interference level and loudness level criteria were then translated into a series of noise-criterion curves, NC-20 to NC-70. These curves take into account both the sound pres-



# Unwanted sounds can be shut out by means of sound barriers, and masked to varying degrees by background noise."

sure levels that interfere with speech and variation of ear response with frequency. (A 20-db sound at 1,000 cps would be equal in loudness to a 40-db sound at 200 cps.)

The NC numbers themselves represent speech-interference levels. The speech-interference level (SIL) is the arithmetic average of the readings in decibels in the three-octave frequency bands 600-1,200, 1,200-2,400, and 2,400-4,800. The resulting number in decibels is thus a guide to the interference of noise on speech since these represent the frequencies most important to speech articulation.

While it is feasible to exclude external sounds from a space to the extent that these sounds will be imperceptible to occupants, this degree of sound isolation generally is not only impractical, but also unnecessary. For example, most of the time speech sounds do not need to be reduced to inaudibility, but rather to the extent that, say, only 5 per cent or less of the words are understandable. In addition to the attenuation of sound through the room enclosure, there is the room background noise which will help mask speech sounds that do get through.

## What kinds of sound bother other people?

An acoustical environment can be designed far more precisely for a machine than for a human being. Parameters for a machine, such as sound levels and vibration, can be accurately specified. Not so for people, although statistical sampling allows prediction of degree of satisfaction fairly reliably in some areas of use—rooms for speech, for example. On the one hand, people want to be able to converse comfortably in the room they occupy. On the other hand they don't want to hear what people in adjacent rooms are saying (and they don't want people in adjacent rooms to hear what they are saying).

Much of the time it is the intelligence that sounds convey that is bothersome to people. This may range from the intelligibility of neighbors voices, to the noise of a flushing toilet, to the particular clicking noise of an identifiable person's heels.

Thus, the most difficult aspect of acoustical design for noise control is in anticipating and determining what kind of sounds are most likely to be annoying and what degree of satisfaction is demanded by the client.

Design for good hearing conditions

in ordinary rooms is straight-forward and easily accomplished if several parameters can be pinned down—such as the noise levels of activities in adjacent spaces and the background noise level to be anticipated in the room itself—which ordinarily will be that due to traffic, air diffusers, lighting ballasts and the like.

## Background noise can have plus values

Much of the time it is desirable to have a steady background noise to mask distracting sounds originating in the room. Background noise is useful in still another respect—it can mask sounds transmitted through the room enclosure. In effect, this means that, with a permissible level of background noise, the room-enclosing elements can be less effective as sound isolators by the amount of background noise allowed. Thus: If the minimum background noise to be expected in a space is 35 db at 500 cps and the activity in the adjacent room is producing 77 db at 500 cps, the wall separating the two spaces need have a transmission loss of not less than 77 minus 35 or 42 db at 500 cps.

## Sound between spaces follows the "weakest link"

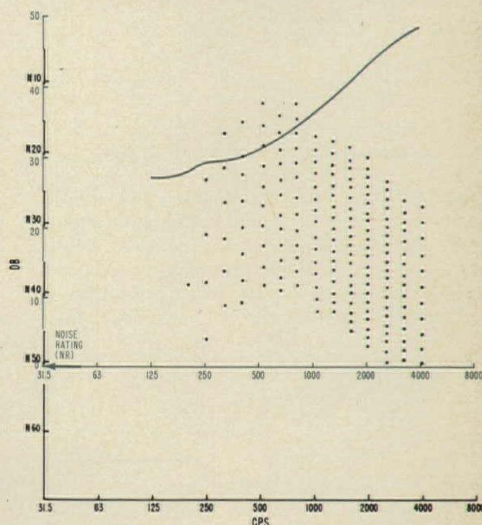
All routes that sound might take to enter one room from another must present the same or more resistance to the passage of sound than the principal route. The alternate routes are called "flanking" paths. Thus if the partition between two rooms must have a transmission loss of 40 db at a given frequency, then the path through the ceiling of the room which has the sound generator down through the ceiling of the room which is the sound receiver must also have a transmission loss of no less than 40 db if the partition is not be short-circuited.

The above examples do not actually give the true noise reduction (NR) between two spaces because the absorption of the receiving room has not been taken into account. If the rooms in question were, say, 20 ft by 30 ft classrooms, chances are the noise reduction (NR) between the classrooms employing a 40-db partition would be about 42 db.

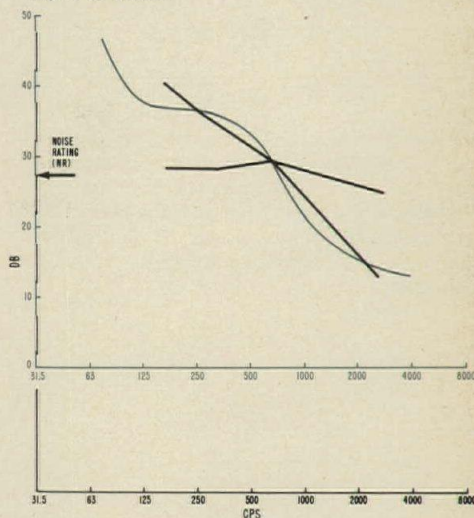
## How valid is the attempt to reduce TL values to single-number ratings?

As has already been mentioned, noise levels can be reduced by enclosing the noise source with sound-attenuating materials—in effect placing it in a separate room.

Speech articulation is represented by dots on this graph, developed by Bolt, Beranek and Newman as part of their speech privacy studies. The "N" number (noise reduction rating) is determined by placing transmission loss curve for a particular wall so that only 10 dots show above the line. This represents 0.05 articulation, or 80 per cent satisfaction.

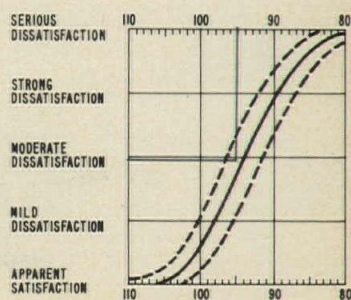


With the BBN speech privacy analysis, the background noise rating is found by placing curve of this noise (in this case of a diffuser) so that it matches a line corresponding to N (normal), L (low), M (mid-) or H (high) frequency. Rating is at arrow.

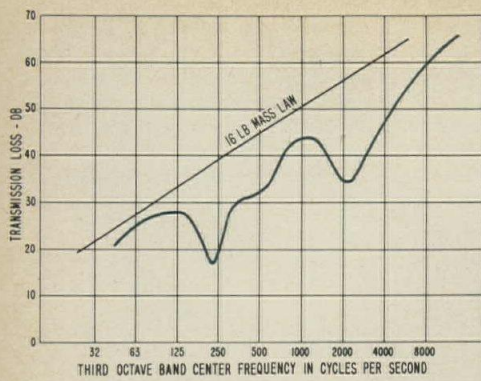


To determine degree of satisfaction, numbers are totaled for room floor area, loudness of speech, background noise rating, wall noise rating and client's privacy requirement.

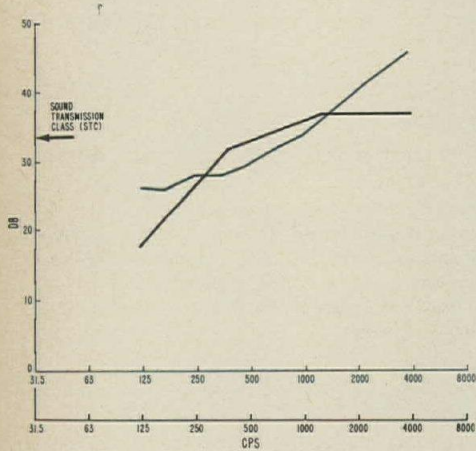
1. SOURCE ROOM		
a. FLOOR AREA	50 100 200 400 800 1600	5
b. SPEECH USE	LOUD RAISED CONVERSATION	6
2. DIFFUSER NOISE RATING	5 10 15	27
3. NOISE REDUCTION RATING		51
4. PRIVACY REQUIREMENT	CONFIDENTIAL NORMAL	6
TOTALS		75



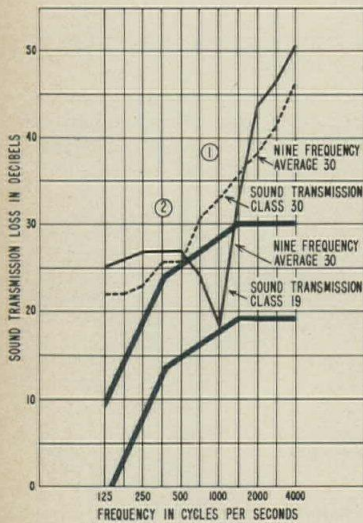




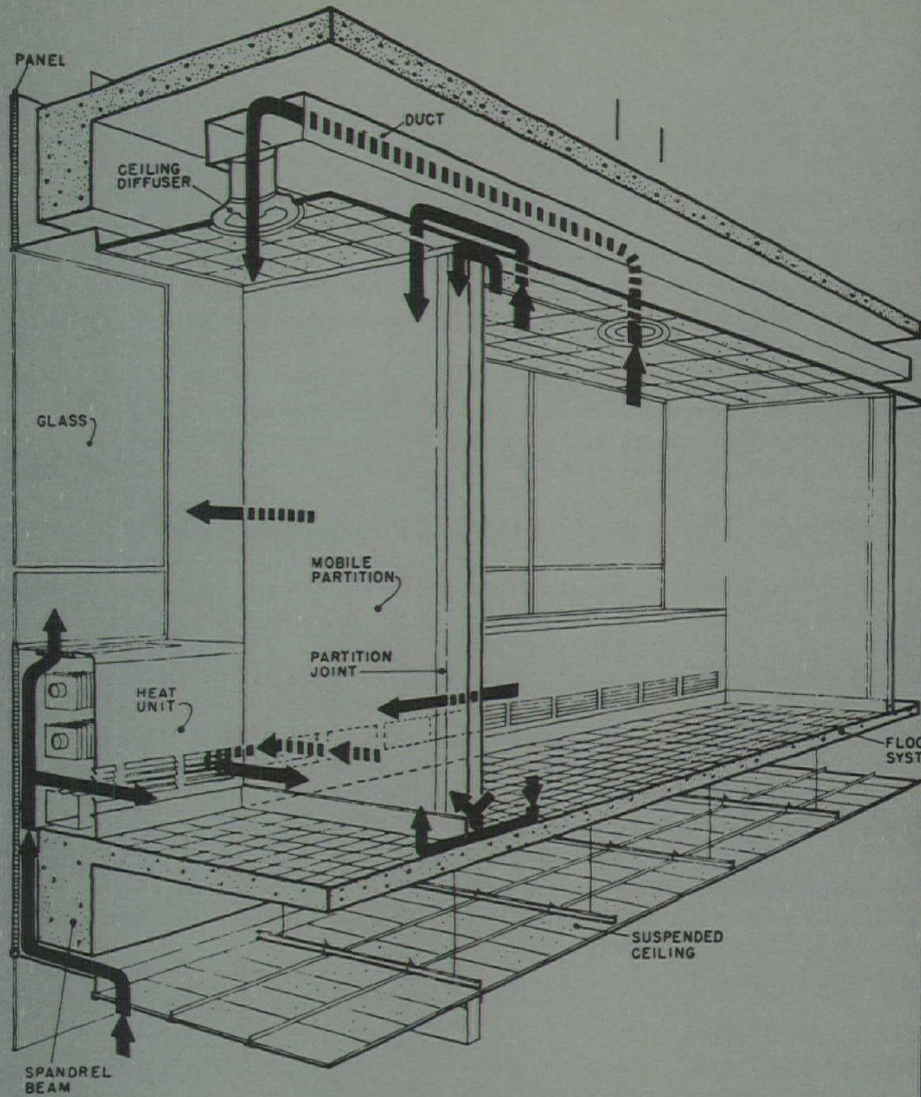
Mass law "says" that transmission loss should vary directly with frequency. But coincidence dips (when sound wave in air reinforces bending wave in the panel) result in more sound passing through at certain frequencies than is indicated by reference to the mass law curve.



The one-number rating system for transmission loss is found by means of the standard curve shown here. The TL curve cannot be more than 8 db below the standard at any one point; the total deficiency cannot exceed 32 db. The resulting number (opposite arrow) is the transmission class.

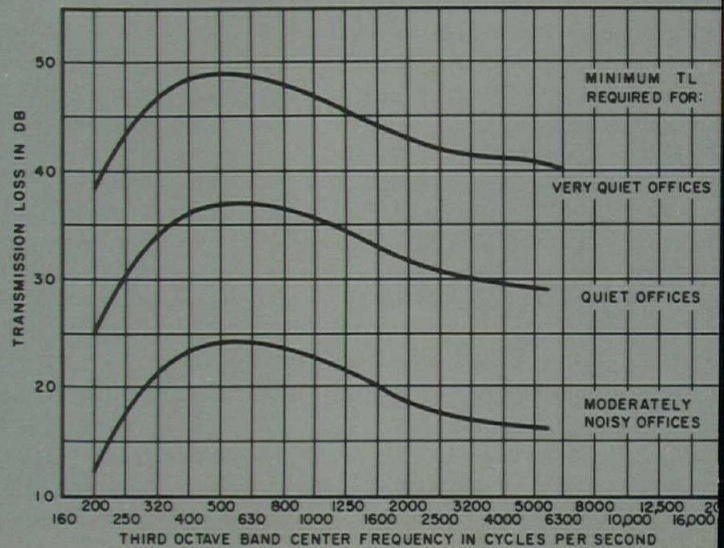


The error in using one-number transmission loss ratings based on the average of nine frequencies is shown. Although both curves will give an average TL of 30 db, curve 2 deep has a coincidence dip, giving it an STC of only 19, whereas curve 1 has an STC of 30 (see previous page for definition).



Flanking paths around, over and under a partition can diminish its effectiveness as a sound barrier. Partitions should be kept tight by gaskets or caulking and the joints should be sealed to prevent sound from leaking through cracks. Short-circuiting also is caused by sound leaks through ducts and through suspended ceilings. Acoustical lining of ducts will limit sound there. Ceiling transmission can be reduced by impervious sheet above tile, blanket insulation over it or by barriers from partition to under side of slab.

Approximate transmission loss criteria are given in this graph for offices of varying degrees of "quietness."





# Only recently have housing agencies done something about the annoyance of impact noise through floors."

The standard test for sound transmission loss of building partitions, ASTM 90-66T, requires that the minimum range of measurements be a series of contiguous third-octave bands with center frequencies from 125 to 4,000 cps. The reason for this is that these are the primary frequencies contributing to speech articulation. Actually frequencies below 200 cps have virtually no importance relative to speech.

Until a few years ago, test laboratories reported transmission loss of barriers as single numbers, being comprised of an average of the transmission losses of 11 half-octave intervals from 125 cps to 4,000 cps. More recently, the 1,414 and 2,828 cps bands were omitted giving "nine-frequency" average.

Even though a single-number rating obviously is much easier to deal with, the frequency-averaging approach has a serious defect: it is possible for two different constructions to have the same average TL loss even though one of the constructions may have poor performance at certain critical frequencies.

The reason for this is that stiff constructions—i.e., those with little internal damping—suffer significant dips in transmission loss at some frequency ranges. This dip for a given construction occurs in the same frequency range as the potentially offending noise, the construction will probably be a poor choice.

In general, the transmission loss of a given wall increases as the frequency of the impinging sound increases. Also, in general, materials of greater mass provide greater isolation than lighter materials. Stiffness of the more massive materials may offset the weight advantage due to dips in the TL curve.

The reason that some materials do not follow transmission loss indicated by mass law" theory is there may be frequency dips due to a phenomenon known as coincidence. The explanation as follows: The velocity of sound in a homogenous solid material increases with frequency. The velocity of sound in air at room temperature is constant. Where the velocity of sound in the solid coincides with the velocity of the sound in air, there is a coincidence dip. In effect, the sound wave in air and the bending wave of the panel reinforce one another, causing a dip in transmission loss which diminishes panel efficacy.

With certain types of materials, coincidence dip is mitigated by a principle known as "sound shear." An example

is one type of laminated glass having two or more thin layers of glass laminated to interlayers of soft plastic. Because the stiffness of the laminated glass is considerably reduced from the same thickness of solid glass, the velocity of sound in the laminated glass may never reach the velocity of sound in air. Thus if the sound waves do not coincide, there is no coincidence dip.

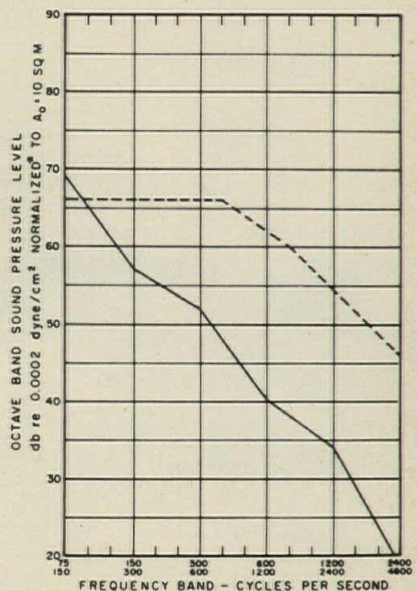
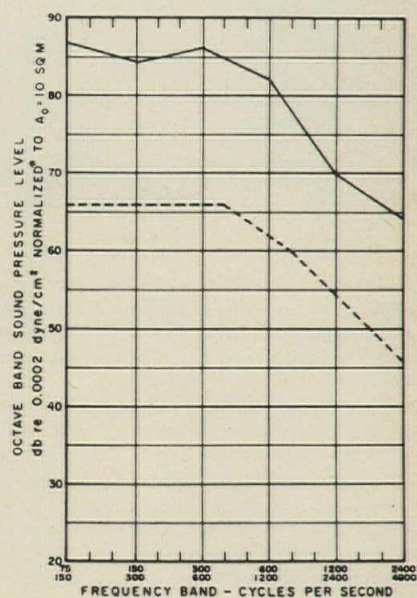
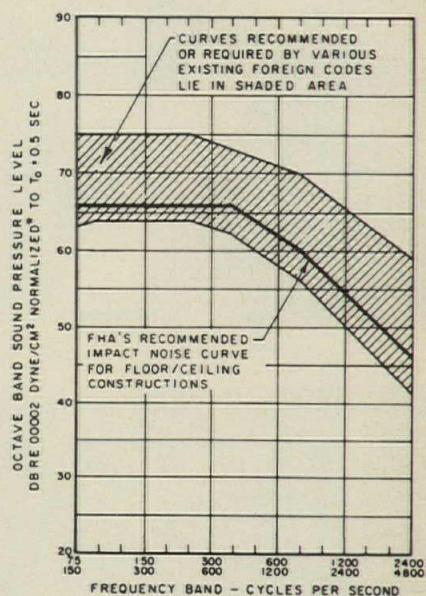
In order to avoid misleading information in one-number ratings, a procedure has been developed which classifies a partition according to a sound transmission class (STC). This procedure takes account of frequency dips. This is done by comparing the measured sound transmission loss curve for a construction with a hypothetical transmission loss curve of a shape roughly similar to the inverse of a noise criterion (NC) curve. In rating a particular construction the STC contour is shifted vertically relative to the test curve until the measured TL values fall below the STC contour to the extent that the sum of the deviations is not greater than 32 db and the maximum deviation is not more than 8 db.

The use of STC numbers for selecting constructions to resist air-borne sound is probably acceptable when the potentially offending noise is speech. Obviously it is risky to employ this procedure if the sound is a musical instrument or a hi-fi set, since the frequency content of these sounds will be above 4,000 cps.

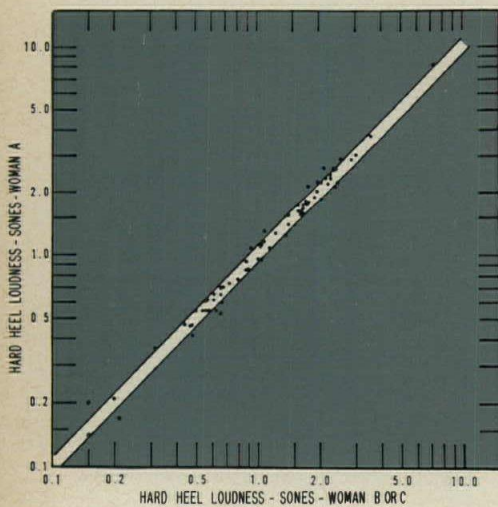
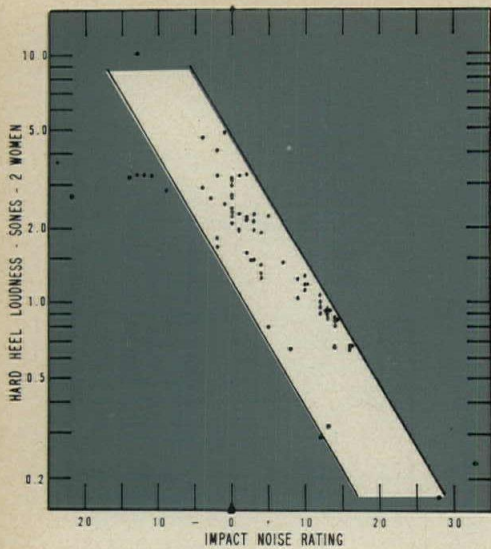
In the old days sound isolation was provided by the massive construction in common use. Some of the lightweight constructions used today are very poor for sound isolation—for example, the standard wood stud and gypsum board partition. But the sound-isolation proper-

FHA recommended an impact noise criterion four years ago roughly comparable to criteria of some European countries. The gray area in the top curve indicates the range of the foreign codes. The first standard on impact noise was issued in 1938. This involved the use of a tapping machine which has since been approved by the International Standards Organization. Some acousticians in the U.S. feel that this machine, though it is the test method used to determine FHA impact curves and therefore employed by testing labs here, does not give a true indication of the noise caused by heel impacts—the most prevalent type of annoyance due to impact in apartment buildings.

The second and third graphs show ratings for typical floor constructions. The second graph shows a standard wood floor which has an impact noise rating (INR) of -17. The third graph is of a wood joist floor covered by carpet and a foam pad. This improvement raises the floor to a +5 rating.







The argument against the tapping machine as a proper test for the impact rating of floors is illustrated in these two graphs. The top graph shows that for given loudness measurements (sones) in a test room below particular floor, there is a spread of about 11 in impact noise ratings. The graph below shows that impact noise caused by different women walking is substantially in the same range. The graphs are from a paper, "Impact-Noise Rating of Various Floors," by T. Mariner and H. W. W. Hehmann, Armstrong Cork Company, *The Journal of the Acoustical Society of America*, Vol. 41, No. 1, January 1967.

The I.S.O. tapping machine has five hammers, each dropping twice per second, giving an overall impact repetition rate of 10 per second.



ties can be improved somewhat by merely staggering the studs so that there is no through path from wall face to wall face. The partition can be improved even further by weaving a fibrous insulation blanket between the staggered studs. Use resilient board behind the gypsum board provides a very good sound-isolating partition.

### The whole is only as good as the sum of all the parts

The efficacy of a wall for sound attenuation can be considerably compromised if it is built sloppily or if it has a number of components such as doors and windows of lesser TL performance. For example, if a door occupies 20 per cent of a given wall and the door is 15 db lower in value than the wall, the effective TL of the composite wall will be reduced by 8 db. A hole has 0-db TL loss, thus a small opening can seriously deteriorate the value of a wall. An 1/8-in. crack the length of a 20-ft wall 10 ft high would deteriorate a 50-db wall by 20 db. While this might at first seem to be extreme, it is borne out by field experience. For example, United States Gypsum Company has shown that a partition installed carefully in the field will have an STC on the order of 5 db below laboratory test values; a partition installed routinely will have an STC from 10 to 15 db below laboratory test values.

### Absorption vs. attenuation

Earlier, factors were mentioned that aided sound attenuation through building panels. Strangely enough, many people still believe that a material good as a sound absorber is effective as a sound attenuator; whereas, in fact, the two characteristics are contradictory. A good sound absorber is generally porous, so that sound can move in and out of the material and lose some of its energy to friction, the energy being dissipated as heat. A sound attenuator, on the other hand, works either by being immobile—i.e., resisting the vibration of air by virtue of its mass—or by flexing and taking energy out of the vibrating air by damping (friction loss within the material itself) so that little vibrational energy is transmitted to contiguous components of the panel. Energy which is conducted can be further diminished by attaching sheet materials to structural supports by means of resilient clips or channels.

Porous sound absorptive materials are effective at medium to high frequencies, but not at low frequencies. Therefore, if low-frequency sound absorption is required it may be obtained by a vibrating panel or a volume resonator. This does not mean that a vibrating panel used as a partition by itself would be a

good sound attenuator because the vibration of the panel induced by a sound source on one side can create sound waves on the receiving side due to movement of the panel.

While a porous sound-absorptive material applied to the surface of a partition does not provide much added sound attenuation, sound absorptive material placed within the partition can improve transmission loss of a partition appreciably when the partition faces are reasonably separated from one another. For example, a couple of inches of blanket insulation added to a staggered stud partition can improve the sound transmission class of this partition by about 5 db.

### The importance of realistic testing for TL values

Laboratory transmission loss data for building components—such as fixed and movable partitions—may be misleading unless the installation of the sample being tested represents field conditions as closely as possible. Laboratory tests of small panel samples will generally give higher TL values than will be obtained in the field. Also if the sample is rigidly mounted in the lab, when the full-size unit is to be only semi-rigidly or resiliently mounted, as for example a door or a movable partition, the TL values, again, will be higher than can be obtained in the field. Beyond this, all of the components that are to comprise the partition should be included in the test, not just a portion of the partition, including structural components and gasketing. In addition, some acoustical engineers believe that NR values should be specified rather than TL values, because the NR value is what actually will be experienced in the listening room, even though the NR's will seldom be more than  $\pm 5$  db different than the TL's.

### A comprehensive method, and a short method for designing for speech privacy

As we noted earlier, most people (80 per cent) feel that their room is private if the articulation index (AI) is below 0.05. If the AI is less than 0.1 speech intelligibility is generally low. If the AI is above 0.6 intelligibility is high. Essentially, the AI is the ratio of syllables understood out of the total uttered. Thus, even though the AI for transmitting is 0.05, some speech may still be audible.

Several years ago, Bolt, Beranek and Newman, Inc. developed a method for selecting building components which would yield a predetermined degree of speech privacy. This study was sponsored by Owens-Corning Fiberglas and published as the *Speech Privacy Analyzer*. Basically, the Analyzer comprised a method for selecting room enclosure



## In the broad effort to fight noise, more attention is being given noise involved with air conditioning

components given: 1) a particular size of room; 2) relative loudness of speech; 3) background noise rating of the adjacent room; and 4) the relative privacy requirement. The basic elements of the speech privacy study can be used to predesign a room of a desired degree of satisfaction, or to determine probable satisfaction based on an already existing situation—no matter what the construction—as long as the transmission loss data of enclosure components is available from 200 cps to 4,000 cps and as long as sound pressure level data is available on adjacent room background noise whether it be from traffic, the air-conditioning system or the “buzz” of people and equipment in general office space.

While the Speech Privacy Analyzer in its final form was easy to use, its day-to-day utility was diminished by the fact that data for partitions and air-conditioning apparatus was limited in scope. Nonetheless, it is still possible to employ the basic approach as outlined in, “Speech Privacy in Buildings,” *Journal of the Acoustical Society of America*.\*

The basic steps in determining speech privacy according to the BBN method are shown in the illustrations on page 197. The two important things to determine from acoustical data are: 1) the noise reduction of the partition (or ceiling) in question; and 2) the noise rating of the background noise. The first of these two is determined by laying a field of dots on a transparent sheet representing speech articulation over the transmission loss data. The curve is placed so that only 10 dots show above the curve, which represents 0.05 speech articulation. The “N” number is then read at the arrow at the left.

The background noise, in this case of an air diffuser, is determined by placing a transparent overlay containing four basic curves for N (normal), L (low), M (mid-frequency) or H (high). The background noise is fitted to the nearest duplicate of these curves and the N number read at the arrow at the left.

Values are selected for source room floor area, speech use and privacy requirement. These figures are all added together and the total indicates that there will probably be mild dissatisfaction.

\*“Speech Privacy in Buildings,” by W. J. Vanagh, W. R. Farrell, P. W. Hirtle, and G. Watters of Bolt, Beranek and Newman, Inc., *The Journal of the Acoustical Society of America*, Vol. 34, No. 4, 475-492, April, 1962.

† R. W. Young is with the U. S. Naval Electronics Laboratory. Roger Benasutti and Hale Sabine are with Owens-Corning Fiberglas.

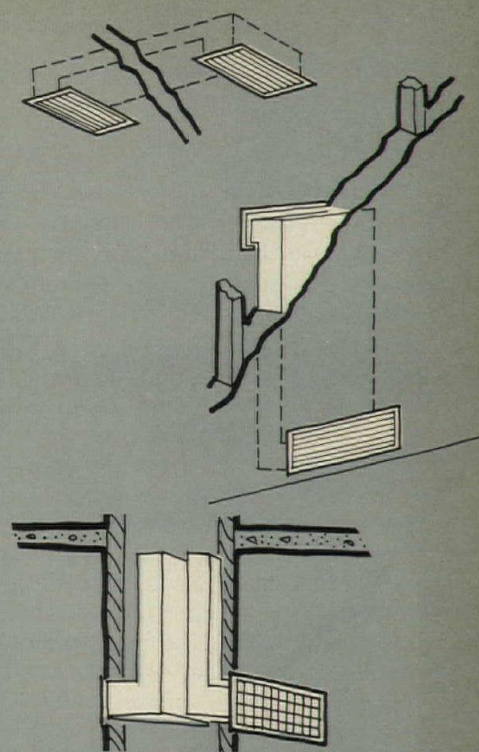
tion. The process, of course, could be worked in reverse.

A less-involved, less-comprehensive approach has been made for speech privacy in office buildings. Acoustical engineer Robert W. Young has shown that the sum of the NR of a partition and the background noise level, as measured on the A scale of a sound-level meter, gives a direct measure of speech privacy. Roger Benasutti and Hale J. Sabine † extended this approach even further via a field survey of sound transmission between 15 pairs of occupied offices. These authors concluded that when speech power is of a conversational level, a figure of  $STC + dB = 70$  appears adequate to provide complete speech inaudibility and a figure of 60 adequate to limit intelligibility to isolated words. For a raised voice, it was suggested that these figures be raised to 80 and 70, respectively. Benasutti and Sabine also concluded that a noise reduction of 35 STC is the highest that is obtained in typical office constructions, using drywall or metal partitions, suspended integral acoustical ceilings with continuous plenum, and ventilation slots opening directly into the plenum. Higher noise reductions up to 40 STC are obtained with plenum barriers, with absorptive blankets over the acoustical ceiling, or with ducted ceiling openings which are either acoustically lined or are long and circuitous.

### With floors, the attention has turned to impact noise

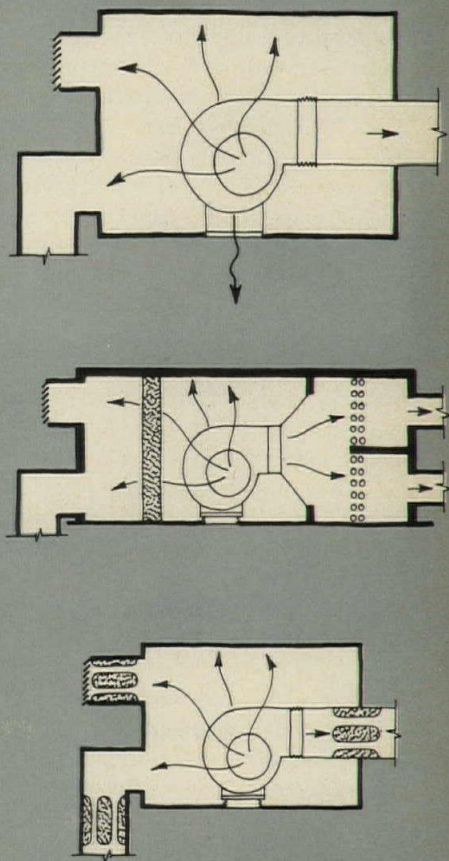
In an apartment building it is hard to say what sources of noise create the greatest annoyance—air-borne noise such as conversation, structure-borne noise such as that induced by a vibrating fan in direct contact with a floor, or the impact noise caused by objects, such as shoe heels, hitting the floor. Earliest attention was given to the first two sources. More recently, considerable publicity has been given, and study devoted, to the problem of impact noise. Actually the problem itself is readily solved, in a physical sense.

The seriousness of this problem is indicated by the fact that FHA has included recommended impact-noise performance ratings in its Minimum Property Standards. These impact noise ratings are arrived at by utilizing as an impact noise source a “standard” hammer machine approved by the International Standards Organization. This machine utilizes five drop hammers, each weighing 500 g, and each dropping 4 cm twice per second, giving an over-all impact rate of 10 per



To avoid the problem of noise “cross-contamination,” associated with air return and exhaust, prefabricated mufflers are available for application in ceilings, walls and doors. These prevent sound leaks from room to room.

Air-conditioning fans are a source of low-frequency noise which is readily transmitted through ducts or walls unless it is considered in the design. Noise radiating from the fan housing can be attenuated by heavy-enough equipment room walls, plus, sometimes, absorptive material. Fan noise can be reduced in ducts by lining ducts with absorptive material or by using prefabricated mufflers.





## "The new techniques for sound isolation are being rapidly assimilated."

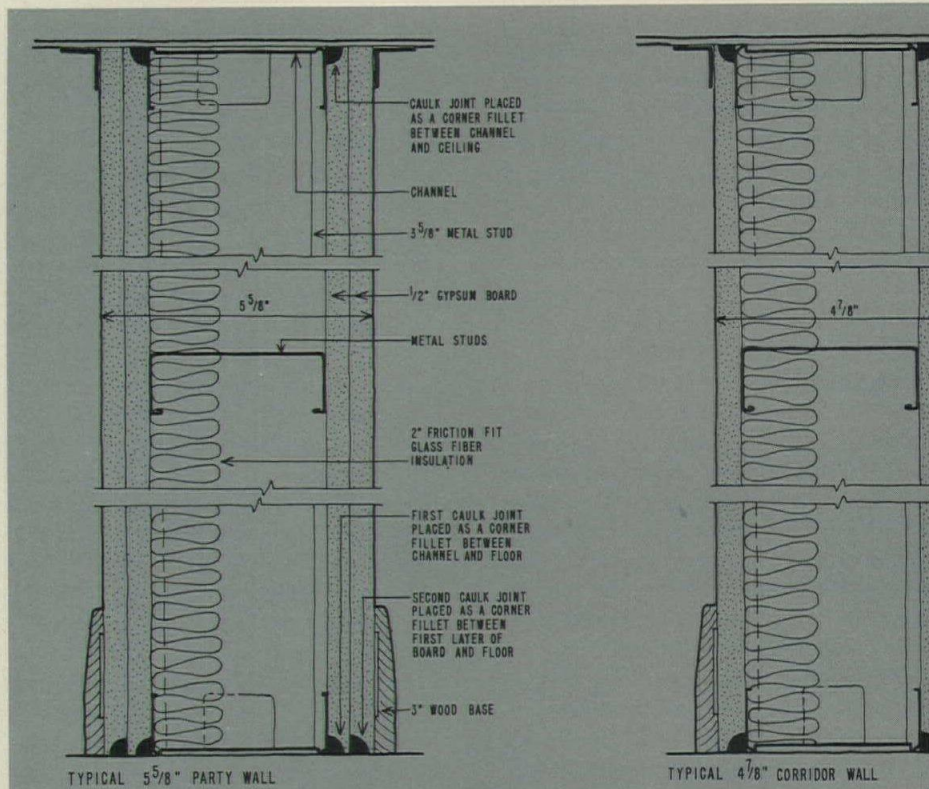
sec. The FHA impact noise rating (INR) is determined by comparing the sound pressure level of the impact noise in the room below with a specified requirement curve.

The difficulty is that the ISO impact hammer device is by no means universally accepted by acousticians as the proper approach to measuring impact noise. Some acousticians, among them Tom Mariner of Armstrong Cork Company, state that the ISO tapping machine does not come close to simulating the impact noise produced by a woman's sharp heels striking the floor. To prove it, Mariner and his associates compared computed loudness of transmitted walking noise with impact noise ratings of floors, based on the ISO standard tapping machine. They showed that, "a particular loudness of footfall noise can be obtained from floors differing by 11.5 units in INR; or, conversely, floors having the same INR may differ in loudness by a factor of almost four. Mariner believes that impact-noise-rating methods based on a hammer machine will fail to represent the relative merits of floor-ceiling systems for two reasons: 1) the impact produced by the hammer machine is much more severe than that of footfalls; and 2) many floor-ceiling systems are mechanically non-linear in response, i.e., it is not possible generally to compute the unknown response of a floor to walking from the known response of the hammer machine. Actually, the hammer machine was first used for subjective evaluation of noise produced by impact. But then in the late 30's, when a German standard on impact noise was issued, it was necessary to have hammer impacts loud enough to produce an easily measurable continuous noise. Also, harder impacts were used to get readings under "good" floors. But now better instrumentation is available such that the need for hard impacts from the tapping machine would seem to be no longer needed.

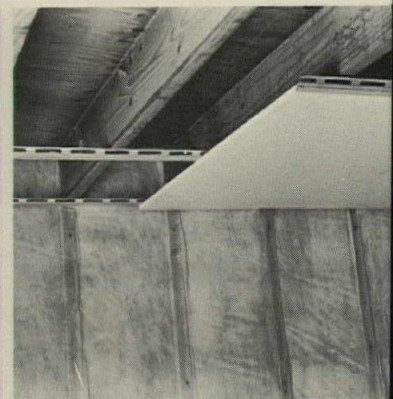
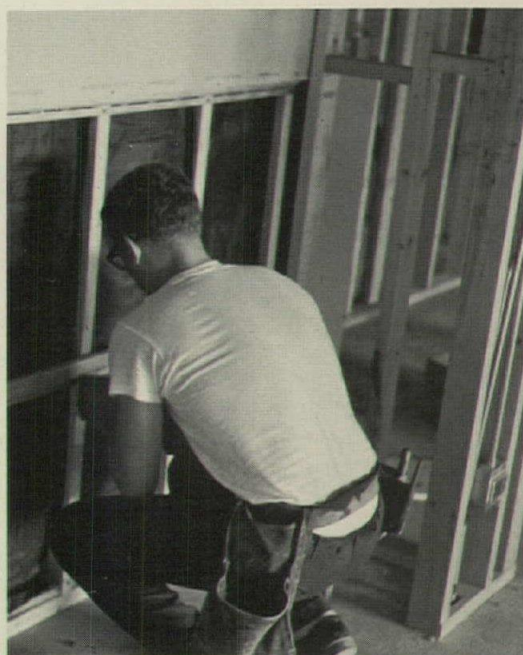
Thus for the last two years Armstrong Cork Company has been sponsoring research by Bolt, Beranek and Newman, Inc. which is expected to "lead to a test method which more accurately duplicated the sounds of actual footsteps."

### Check the air-conditioning system for potential noise problems

The tremendous expansion of mechanical equipment to serve the needs of air conditioning has brought with it its share of noise control problems, both air-borne



These are an architect's actual partition details for a multi-story apartment building in Chicago. Note that caulking is indicated for application under each sheet of the bottom edge of gypsum board, and also next to the channel at the ceiling. Reason given for the two caulking beads at the bottom is to "decouple" the gypsum board from the floor slab—although the primary purpose of the caulking is to avoid cracks, and, thus, sound leaks.



Left: Wall construction here uses resilient channels to support gypsum board and a 1 1/2-in. sound blanket. The STC is 50. Above: Gypsum board ceilings suspended by resilient runners attached to the joists helps cut impact noise. STC is 45 or better depending on flooring. Right: This is a partition of staggered wood studs with a blanket of fiber glass interwoven. The STC of such construction is 49.



#### STANDARD ACOUSTICAL TESTS

Sound Absorption of Acoustical Materials. American Society for Testing Materials (ASTM C423-66).

Sound Transmission Loss of Building Partitions. (ASTM E90-66T).

Ceiling Attenuation Factor (Acoustical Materials Association AMA-I-II-1963).

Field and Laboratory Measurements of Air-Borne and Impact Sound Transmission. International Standards Organization ISO 140).

Measurement of Sound Power Radiated from Heating, Refrigerating and Air-Conditioning Equipment. (American Society of Heating, Refrigerating and Air-Conditioning Engineers ASHRAE 36-62).

Method of Determining Sound Power Levels of Room Air Conditioners and other ductless Through-the-Wall Equipment. (ASHRAE 36A-63).

Method of Testing for Rating the Acoustic Performance of Air Control and Terminal Devices and Similar Equipment. (ASHRAE 36B-63).

Measurement of Room-to-Room Sound Transmission Through Plenum Air Systems. Air Diffusion Council AD-63).

#### ACOUSTICAL LABORATORIES

The following independent laboratories provide acoustical testing services. The numbers behind the organization names indicate which of the above tests they perform:

Cedar Knolls Acoustical Laboratories, Cedar Knolls, New Jersey. (1, 2, 3, 4, 5, 6, 8)

Geiger & Hamme, Inc., Ann Arbor, Michigan. (1, 2, 3)

Kodaras Acoustical Laboratories, Elmhurst, New York. (1, 2, 3, 4, 5, 6, 7, 8)

Riverbank Acoustical Laboratories, Geneva, Illinois. (1, 2)

and structure-borne. Some of these are relatively simply solved; others demand a rather sophisticated degree of engineering knowledge, particularly in the area of vibration isolation.

The prime sources of air-borne noise in air-conditioning systems are fans, duct turbulence, air control devices and outlets. Other components such as pumps, compressors, refrigeration machines and cooling towers also produce air-borne noise. For all but the latter, vibration will ordinarily be more of a problem than air-borne noise, because these components are generally housed in an equipment room that has fairly massive walls.

Duct-borne fan noise can be reduced—if natural losses are not sufficient—by employing a duct lining of absorptive material or through the use of packaged duct mufflers.

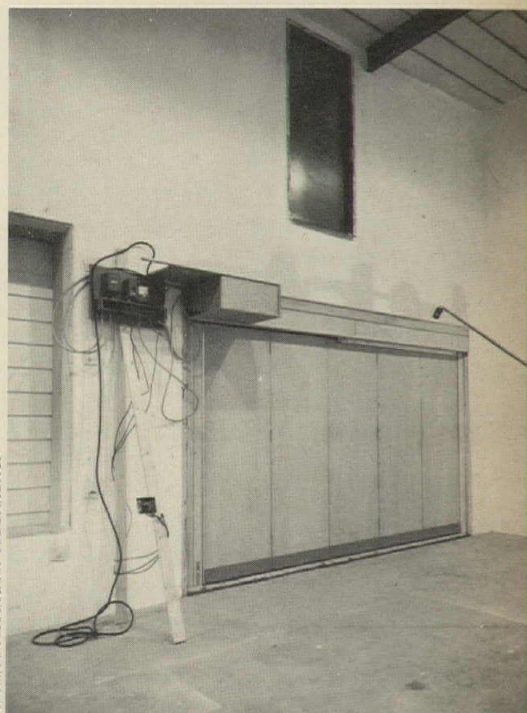
Turbulence noise in ducts results from high air velocities and sharp changes in air flow direction. Velocities in the neighborhood of 3,000 fpm can create serious noise problems if the ductwork is run directly above a lightweight ceiling; and velocities of 2,000 fpm can cause noise if turns in the duct run are too sharp, or if turns into branch ducts from risers are too sharp. High-velocity ducts as well as noisy parts of low-velocity ducts should be located in non-critical areas.

Noise of air outlets such as diffusers and grilles is kept within bound by not allowing velocity of the emerging air stream to exceed 400 fpm for slots of 1/2 in. width.

Mixing boxes and other air control devices frequently generate some middle- and high-frequency noise, which, in many cases, may be desirable to mask intruding sounds.

Fans and refrigeration compressors are major sources of vibration. While small fans and high-speed fans may require only conventional rubber-in-shear vibration isolators, large, slower fans will require steel springs used in series with ribbed rubber pads (to avoid transfer of the high frequency noise of the fan through the spring itself). A really large fan may require in addition the use of a concrete inertia block to increase the total mass.

One facet of vibration that would seem to bear further study is in connection with the interaction between equipment and building structures particularly those of light weight which have little resistance to vibrational effects.



Kodaras Acoustical Laboratories

Test lab used for measuring transmission loss of walls. Microphone oscillates to get average reading in the room. In this photo operable partition is shown in full-size test opening, to give realistic values.

#### SOME USEFUL REFERENCES ON NOISE CONTROL

*Architectural Acoustical Materials: Performance Data*, Bulletin No. XXVII 1967, Acoustical Materials Association, New York (1967).

*ASHRAE Guide*, Chapter on Sound Control, published periodically by the American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc., New York.

*Noise Reduction*, by L. L. Beranek, McGraw-Hill Book Company, Inc., New York, (1960).

*Solution to Noise Control Problems in the Construction of Houses, Apartments, Motels and Hotels*. Owens-Corning Fiberglas Corporation, New York.

*Time Saver Standards*, edited by John Hancock Callender. Section on Acoustics by Robert B. Newman and William J. Cavanaugh, McGraw-Hill Book Company, New York (1966).





## Glossary of noise control terms

**A-SCALE SOUND LEVEL (dba)**—The A-scale sound level is a quantity, in decibels, read from a standard sound-level meter switched to the weighting scale labeled "A". The A-scale discriminates against the lower frequencies to approximate the auditory sensitivity of the human ear at moderate sound levels.

**ARTICULATION INDEX (AI)**—The articulation index is a numerically calculated measure of the intelligibility of speech. It takes into account the limitations of the transmission path and the background noise. It can range in magnitude between 0 and 1.0.

**BACKGROUND NOISE**—Background noise is the total of all noise independent of the presence of the desired signal. For example, in a living room the desired signal may consist of speech from conversation or a television set. The background noise may come from room air conditioning, outside traffic, conversations in adjacent rooms, or other sources.

**DAMPING**—Damping is the dissipation of energy with time or distance. The term is generally applied to the attenuation of sound in a structure owing to the internal sound-dissipative materials.

**DEAD ROOM**—A dead room is a room that is characterized by an unusually large amount of sound absorption.

**DECIBEL**—The decibel is a logarithmic unit of measure of sound pressure (or power) calculated according to a formula. Zero on the decibel scale corresponds to a standardized reference pressure (0.0002 microbar) or sound power ( $10^{-12}$  watt).

**FREQUENCY**—The frequency of a sine wave is the number of times it repeats itself in each second. In acoustics, the unit of frequency is the cycle per second. In most European countries the cycle per second is called the hertz (Hz), and this term has recently been adopted in the United States.

**LEVEL**—In acoustics, the level of a quantity is the logarithm of the ratio of that quantity to a reference quantity of the same kind. The base of the logarithm is commonly 10. The reference quantity and the kind of level must be specified. The unit is generally the decibel. Sound pressure level in decibels uses a reference level of  $2.0 \times 10^{-4}$  microbar, which is the threshold of hearing. Zero level occurs when the sound pressure equals the reference pressure.

**LIVE ROOM**—A live room is a room that is characterized by an unusually small amount of sound absorption.

**LOUDNESS**—Loudness is the intensive attribute of an auditory sensation, in terms of which sounds may be ordered on a scale extending from "soft" to "loud".

**LOUDNESS LEVEL**—The loudness level of a sound, in phons, is numerically equal to the average sound-pressure level, in decibels, of a free-progressive sound wave of frequency 1,000 Hz, that, in a number of trials, is judged by listeners to be equally loud. Generally the sounds are presented to the listeners while they are facing the source.

**MASKING**—Masking is the process by which the threshold of audibility for one sound is raised by the presence of another (masking) sound.

**NC-CURVES (NOISE CRITERION CURVES) and NCA CURVES (NOISE-CRITERION-ALTERNATE CURVES)**—The NC curves are a series of criterion curves that portray sound-pressure levels for background noises which generally should not be exceeded in various human environments. The NCA curves permit higher sound-pressure levels at low frequencies than the NC curves, and are used generally only where a compromise caused by economic factors is necessary.

These terms have been adapted from, "Glossary of Terms Frequently Used Concerning Noise Pollution," compiled by Peter A. Franken, published by the American Institute of Physics.

**NOISE REDUCTION**—The noise reduction of a structural configuration is the difference in the sound-pressure levels, expressed in decibels, on either side of the configuration. Noise reduction is often the quantity of practical engineering interest, while transmission loss is a more basic quantity associated with the physical construction of the structure.

**OCTAVE BAND**—An octave band is a frequency band with lower and upper cut-off frequencies having a ratio of 2. The cut-off frequencies of 707 Hz (cps) and 1414 Hz define an octave band in common use.

**OVERALL SOUND-PRESSURE LEVEL**—The over-all sound-pressure level is the sound-pressure level measured in a broad frequency band covering the frequency range of interest. This band is often taken to extend from 25 Hz (cps) to 10,000 Hz.

**PHON**—The phon is the sound-pressure level of a 1,000 cps tone that sounds equal to the sound or noise being rated.

**REVERBERATION TIME**—The reverberation time of a room at a particular frequency is the time that would be required for the mean-square sound-pressure level, originally in a steady state, to decrease by 60 decibels after the source is stopped.

**SONE**—The measure of loudness. One sone is the loudness of a 1,000 cps tone which is 40 db above the threshold of hearing. Thus one sone equals 40 phons, two sones equals 50 phons, eight sones equals 60 phons.

**SOUND-ABSORPTION COEFFICIENT (ABSORPTION COEFFICIENT)**—The sound-absorbing ability of a surface is given in terms of a sound-absorption coefficient, designated by the symbol  $\alpha$ . This coefficient is defined as the fraction of incident sound energy absorbed or otherwise not reflected by the surface.

**SOUND-POWER LEVEL**—The sound-power level of a source, in decibels, is 10 times the logarithm to the base 10 of the ratio of the sound power radiated by the source to a standardized reference sound power. The reference power must be explicitly stated. (The international standard reference sound power is  $10^{-12}$  watt.)

**SOUND-PRESSURE LEVEL**—The sound-pressure level, in decibels, of a sound is 20 times the logarithm to the base ten of the ratio of the pressure of this sound to the reference pressure. The common reference pressure for acoustics in air is  $2.0 \times 10^{-4}$  microbar.

**SOUND TRANSMISSION COEFFICIENT**—The sound transmission coefficient of a structural configuration is the fraction of incident sound energy transmitted through it.

**SOUND TRANSMISSION LOSS (TRANSMISSION LOSS) (TL)**—The sound transmission loss of a structural configuration is a measure of sound isolation. Expressed in decibels, it is 10 times the logarithm to the base 10 of the reciprocal of the sound transmission coefficient of the configuration.

**SPEECH-INTERFERENCE LEVEL (SIL)**—The speech-interference level of a noise is a calculated quantity providing a guide to the effect of a noise on speech. The speech-interference level is the arithmetic average of the octave-band sound-pressure levels of the noise in the most important part of the speech frequency range. The levels in the three octave-frequency bands of 600-1,200 Hz (cps), 1,200-2,400 Hz and 2,400-4,800 Hz are commonly averaged to determine the speech-interference level.

**THIRD-OCTAVE BAND**—A third-octave band is a frequency band whose cut-off frequencies have a ratio of 2 1/3, which is approximately 1.26. The cut-off frequencies of 891 Hz (cps) and 1,123 Hz define a third-octave band in common use.





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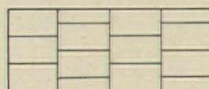
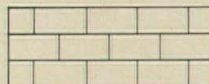
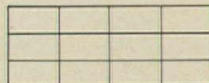
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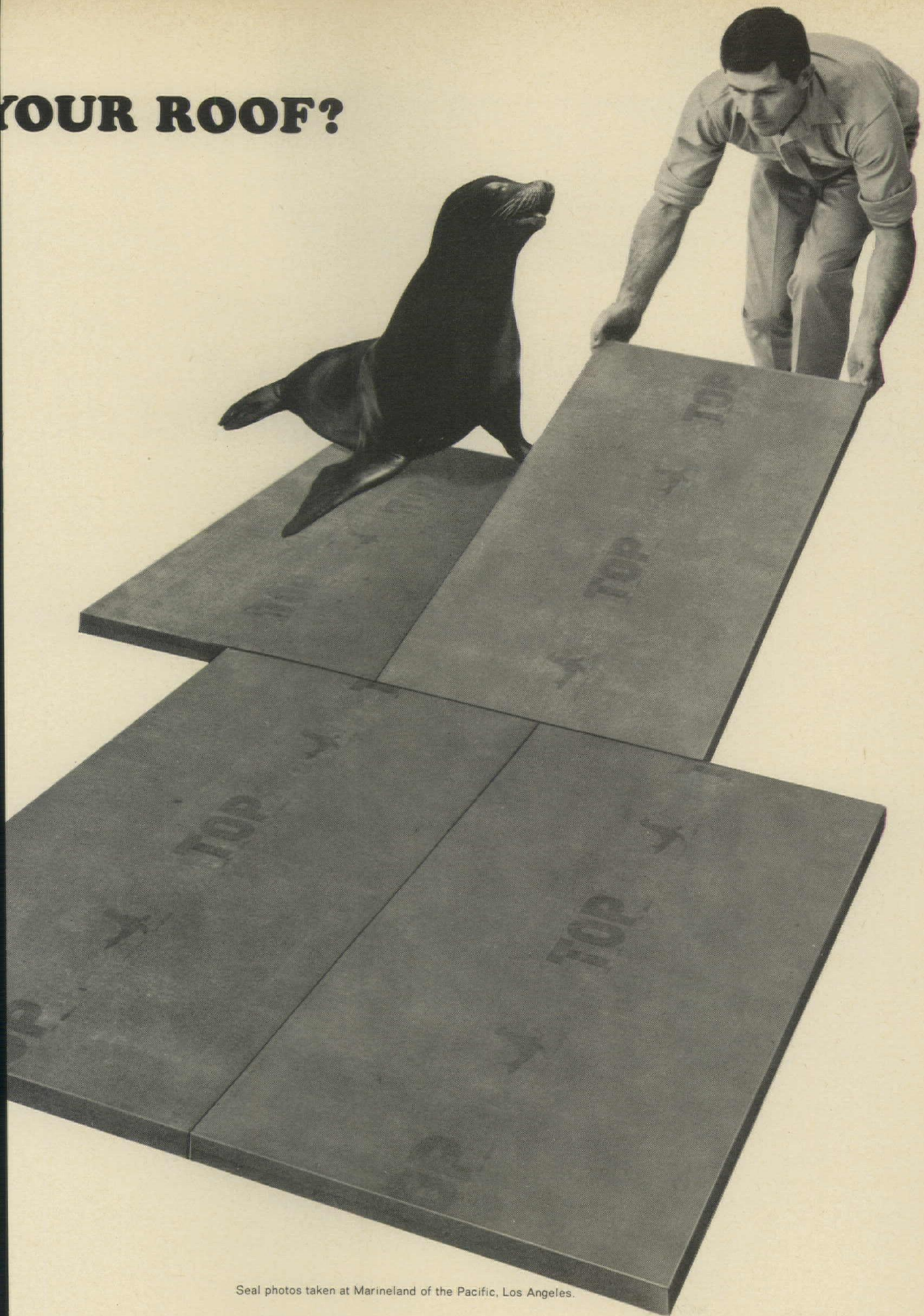
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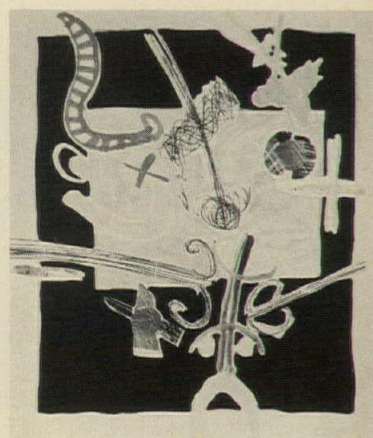
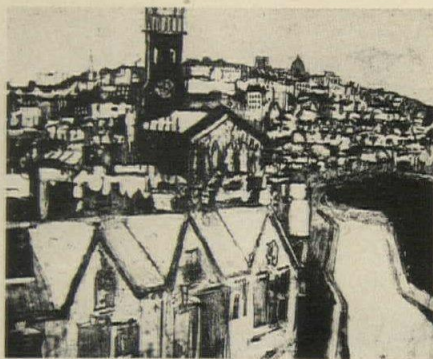
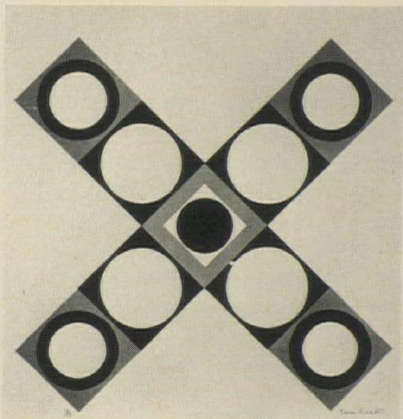
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zines in England; a black and white etching entitled *St. Marys Leeds* by Norman Ackroyd, who has instructed at several universities and colleges; and a colored lithograph with wild movement by Brian Elliott, who instructs, has had one man shows, and who has prints in the Victoria and Albert Museum in London. ■ London Arts, Inc., New York City.

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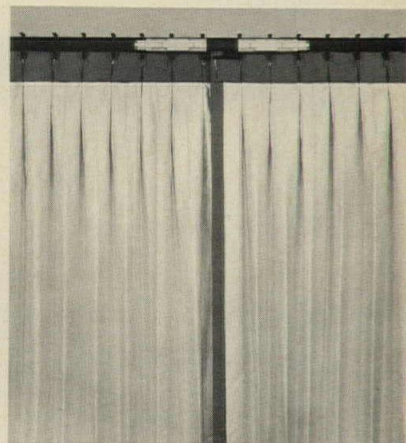
**PORTABLE DRYER** / A portable dryer that operates on any adequately wired 115-v outlet, weighs only 77 lbs, can be rolled about on casters, set on a counter, or hung on a wall, and requires no outside venting. The 28¼-in. high, 24-in. wide, 16½-in. deep dryer affords a complete air change every 1.7 sec. The *Porta-Dryer* will handle about half the load of a regular dryer. ■ The Maytag Company, Newton, Iowa.

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**HARDWOOD FLOORING** / *Wood Mosaic Vinyl*, a patterned hardwood flooring that can be used for all rooms, including commercial areas, consists of genuine hardwood veneer with a surface of tough vinyl sheeting and a backing of homogeneous vinyl. It is .090 in. thick, and comes in oak, walnut, cherry and other special-order species. There are five patterns. ■ Wood-Mosaic Corporation, Louisville, Ky.

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**POWER TRAVERSE ROD** / Shown is the back view of *Electrac*, the rod that opens or closes draperies at the flip of a switch. When the control switch is activated, a magnetic force field moves the capsules which act as master carriers for the drapery headings. In-wall wiring permits control of many draperies in any number of rooms from one central location. ■ Kirsch Company, Sturgis, Mich.

Circle 303 on inquiry card

more products on page 216



# OFFICE LITERATURE

For more information circle selected item numbers on Reader Service Inquiry Card, pages 315-316

**CIRCULAR STEEL FRAMING** / A 35-page technical report explains general principles in planning and design, and provides a design example including data and drawings for a high-rise structure. ■ United States Steel Corporation, Pittsburgh.\*

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**VAPOR BARRIER** / A 4-page brochure, with illustrations and specification details showing typical installation methods, describes *Asbestoseal*, a sheet-applied, semi-flexible membrane for foundation waterproofing. Its essentially inorganic composition promises to prevent deterioration. ■ The Philip Carey Manufacturing Company, Cincinnati.\*

Circle 401 on inquiry card

**ELASTOMERIC LIQUID ROOFING** / A 4-page bulletin gives complete physical properties and test standards of the *Neoprene* and *Hypalon* roofing system. ■ The Glidden Company, Wilmington, Del.\*

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**SEALANT INSPECTION AIDS** / A 6-page check-list aids field inspection of joint preparation and sealing. Its 4-page companion guide provides application and inspection recommendations. ■ Thiokol Chemical Corporation, Trenton.\*

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**PLASTIC GRILLWORK** / A variety of contemporary and classical designs of impact- and corrosion-resistant plastic are explained and illustrated in a 12-page brochure. The panels may be used as interior dividers or for exterior facade screening, sign backgrounds, or wall surfacing. Many colors and textures are available. ■ Harvey Design Workshop Inc., Lynbrook, N.Y.\*

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**NEW BED FRAMES** / A 28-page catalog shows a complete line. Included are the newest ball caster deluxe frames, wall bumpers, wall mounted dormitory bed headboards and headboard drilling instructions. ■ Harvard Manufacturing Company, Bedford Heights, Ohio.

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**WELDING MATERIALS GUIDE** / A newly-revised 64-page booklet, "Filler Metal Comparison Charts," contains listings from 87 companies with brand names and manufacturer's addresses listed in two indexes. The booklet promises to provide the most complete set of welding rod, electrode and brazing filler metal comparison charts published. \$3.50 plus handling charges. ■ American Welding Society, Technical Department, 345 East 47 St., N.Y., N.Y. 10017.

**FOLDING PARTITIONS** / Manually and electrically operated door and wall models in a wide selection of custom facing materials are described and illustrated in a 20-page color catalog. ■ Holcomb & Hoke Mfg. Co., Inc., Indianapolis.

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**ELECTRIC DUCT HEATERS** / The first half of a 24-page catalog provides a glossary, a description of uses and applications, code requirements, wiring diagrams, installation pointers and a sample specification. Remaining pages describe four series of duct heaters in a new line. ■ H. W. Tuttle & Company, Tecumseh, Mich.

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**FIREPLACES** / A 100-page book entitled "Successful Fireplaces—How to Build Them" contains over 400 photos, drawings and plans which illustrate contemporary, traditional, corner, three-way and see-through types and styles. Included also are recommendations for the prevention of common problems. \$1.00. ■ Building Products Division, The Donley Brothers Company, 13900 Miles Avenue, Cleveland, Ohio 44105.\*

**MOVABLE COMPONENT CLASSROOMS** / A 10-page brochure presents a system for combining double demountable and operable retractable steel walls demonstrating sound control performance, mechanical function and cost. Color photographs show how the walls incorporate instructional classroom tools. ■ The E. F. Hauserman Company, Cleveland.\*

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**AIR CONDITIONING** / Self-contained rooftop multi-zone packaged air conditioners designed for cooling from 15 to 30 tons, heating from 300 to 600 MBH and handling air from 4,000 to 13,500 CFM are described and illustrated in a 28-page engineering manual. Also included are a psychrometric chart, total heat table, unit operation sequence and controls. ■ Acme Industries, Inc., Jackson, Mich.

Circle 409 on inquiry card

**ACOUSTICS** / An 8-page technical publication describes the controlled acoustic environment at Colorado State University's Speech and Hearing Clinic, and emphasizes adaptable design features. Information on the sound suites, audiometric testing area, and reverberation chamber are provided. ■ Industrial Acoustics Company, Inc., Bronx, N.Y.

Circle 410 on inquiry card

**CONCRETE** / An 8-page progress report depicts the dramatic growth in use of concrete, both as an engineering and architectural material. Many design examples of the last decade are pictured. ■ Master Builders, Cleveland.\*

Circle 411 on inquiry card

**HARDBOARD SIDING** / A 24-page illustrated catalog shows 13 siding types and styles. Finishing and workability data and other hardboard products are listed as well. ■ Masonite, Chicago.\*

Circle 412 on inquiry card

**LATERAL FILES** / The theme of a 12-page brochure is the "simplification of floor planning, using Broadsides' basic 42-in. wide by 18-in.-deep module in 2-, 3-, 4- and 5-opening cabinets." ■ Steelcase Inc., Grand Rapids, Mich.\*

Circle 413 on inquiry card

**ARCHITECTURAL LOUVERS** / A 36-page catalog describes an extensive line of aluminum louvers for many air-handling requirements. ■ Construction Specialties, Inc., Cranford, N.J.\*

Circle 414 on inquiry card

\*Additional product information in Sweet's Architectural File

more literature on page 25



# Specify Pliolite based paints. The reasons are elementary.

Insist on masonry paint with a durable PLIOLITE® binder. And neither rain, snow, sleet, sun, salt, nor industrial fumes will ever cost your client a premature repaint job.

PLIOLITE synthetic resins are chemically inert. They resist alkalis in masonry that cause some paints to fail.

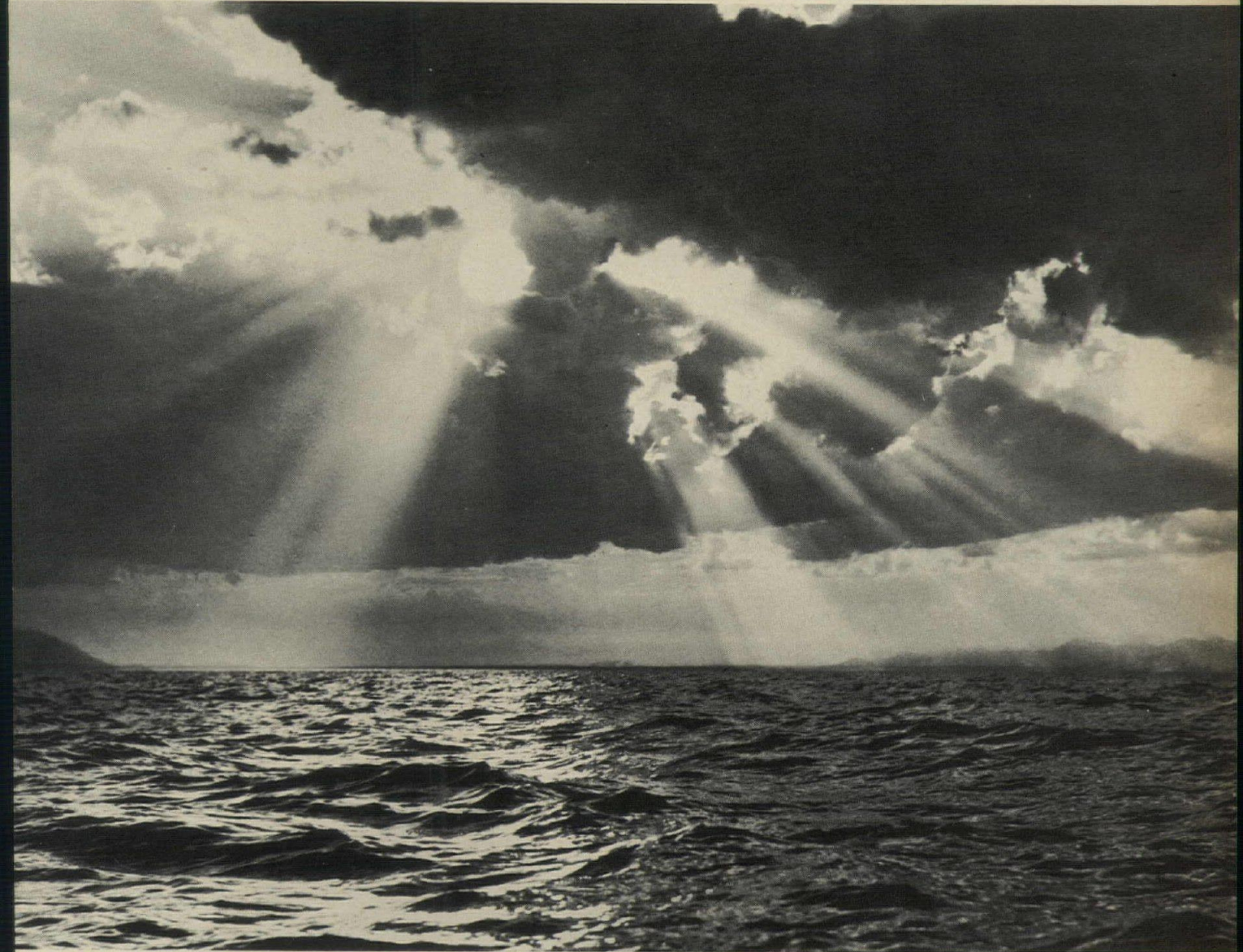
Paints based on PLIOLITE resins have proven their durability from the Norwegian subarctic to the Texas oil fields to a lighthouse in Maine. Our first test buildings are still going strong after 12 years on the Florida coast.

We'll say five years for most buildings under most conditions. That's

about twice as long as latex. That's about half as many repaintings.

There *is* one thing you can do about the weather. Write for our directory of paints with PLIOLITE binders.

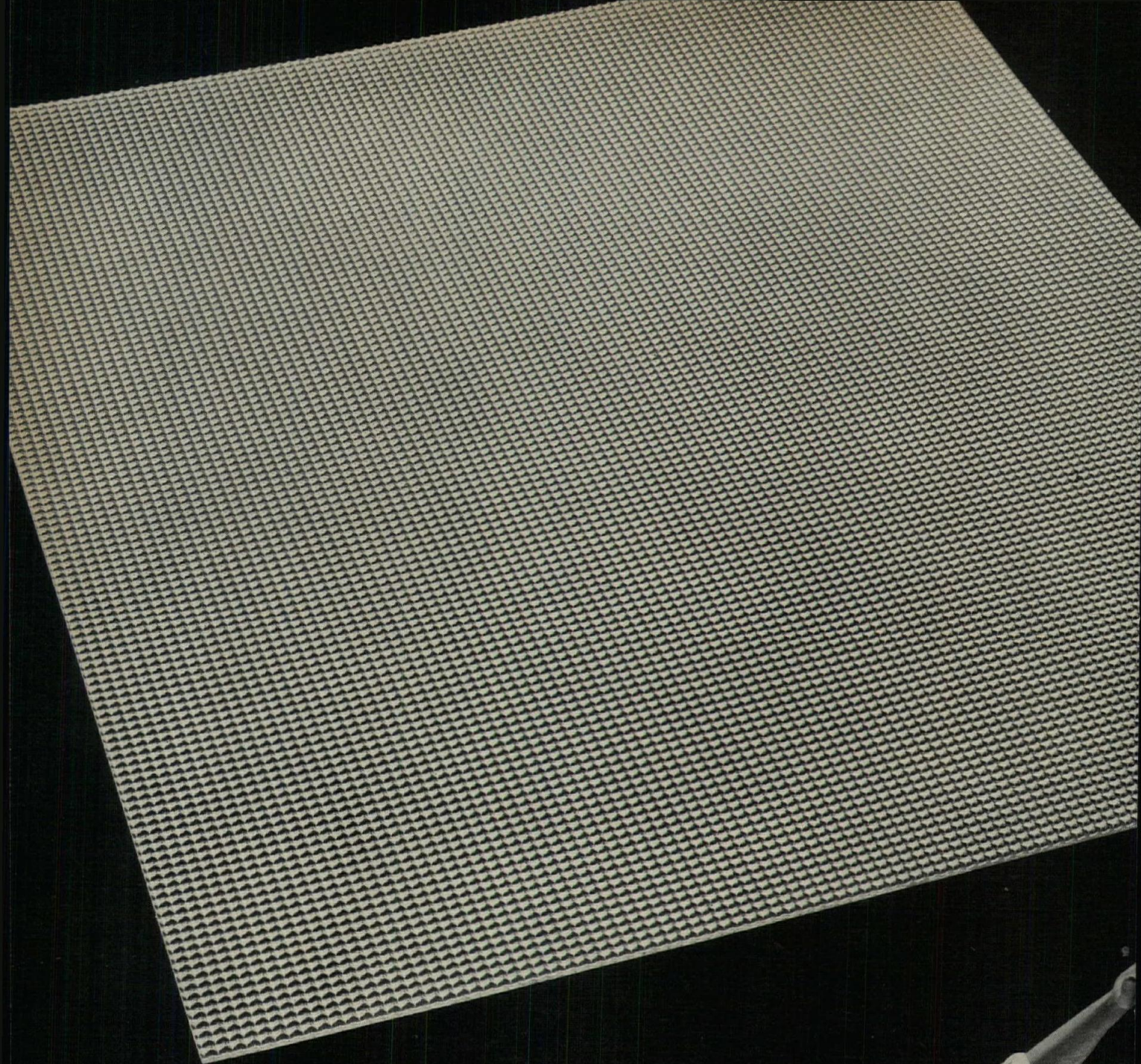
Goodyear, Chemical Data Center, Dept. J-84, Box 9115, Akron, Ohio 44305.



**GOOD YEAR**  
CHEMICALS

For more data, circle 90 on inquiry card





# That's a lot of Lighting!

**16 sq. ft. of sparkling  
K-15—the bold new  
KSH prismatic lens**

For king-size lighting, K-15 is the really new idea. It comes in 3 x 3 and 4 x 4. A strong .200" thick. With bold-look prisms  $\frac{3}{8}$ " square. Obviously, this new prismatic beauty makes those old dull pans passé. It costs less, too. So specify K-15 in polystyrene, Tedlar\* PVF or acrylic.

**KLITE**® K-S-H, INC. • 10091 MANCHESTER • ST. LOUIS, MO. 63122

\*DuPont TM for PVF Film







Illinois Bell Telephone Company  
Architect: Holabird & Root



United States Gypsum Company  
Architect: Perkins & Will



Associates Space  
Vaughan Walls Interiors  
Designer: Perkins & Will



Continental National American Group  
Architect: C. F. Murphy & Associates

Chicago's majestic skyline is continuing to improve with new, important buildings that require elegant interior partitions. Vaughan Walls are fully qualified for this assignment. Throughout the country Vaughan Walls offers the flexibility, performance and fine finishes in architectural wood veneers, vinyls and glass panels to meet any interior designer's requirement.

Vaughan Movable Walls Corp. — our licensed contractor in Chicago, located at 4500 West Armitage — has built over 15 lineal miles of Vaughan Walls in the buildings shown above. They have developed an enviable reputation for quality, service and integrity obtained from working closely with leading architects and building owners.

A key member of a network of Vaughan Walls Licensed Contractors, Vaughan Movable Walls Corp. of Chicago has been selected and trained for quality craftsmanship in Vaughan's specialized methods. With locally stocked aluminum components and the United States Gypsum Company's plants strategically located throughout the U.S.A. and Canada, Vaughan Walls are ready for your partition needs tomorrow.

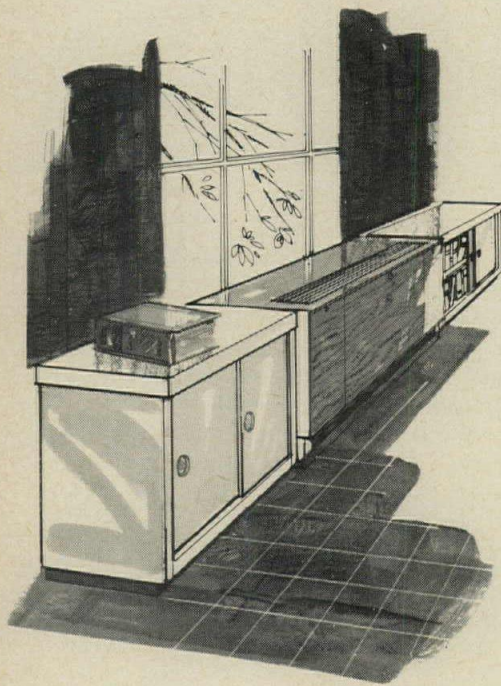
For a new full color brochure about interior walls write:

**VAUGHAN WALLS**<sup>®</sup>  
11681 San Vicente Blvd.  
Los Angeles, California 90049

For more data, circle 92 on inquiry card



# Every Modine unit ventilator gets whisper-tested



We make sure Modine Valedictorians won't be noisy intruders in schoolrooms.

Here in a soundproof booth on our production line, sensitive microphones listen carefully. Anything louder than a very soft purr and it flunks the test.

As a four-season unit ventilator, Valedictorian performs the full air conditioning function—or any part of it. Heating, cooling, ventilating, dehumidifying and filtering the air—it's as quiet in a classroom or library as it was back at the factory.

No hissing, humming, and groaning from Modine unit ventilators. Slow, smooth-running motors are cushioned

on resilient mountings. Blowers gently circulate fresh air. And thick insulation further deadens sound.

A built-in "weather center" controls Modine's unique full damper system. Sensitive alert to comfort needs, it responds instantly with fresh, filtered air at exactly the right temperature.

Not ready for complete air conditioning? Install Valedictorians for heating and ventilating only. Then add cooling later without spending a dime to convert the unit ventilators.

Either way, take a close look at Modine. And listen, too. Call your Modine representative or write: **1510 DeKoven Ave., Racine, Wis. 53401.**



## MODINE







continued from page 209



## most compact drink in town

Compare it! Haws wall-mounted HWTA is the neatest, most compact cooler on the market. You choose from Mist Gray baked enamel finish, or tan or gray vinyl cover panels. Perfect on any wall—any place. Write today for the colorful Haws Water Cooler Catalog.

Haws Drinking Faucet Company,  
1441 Fourth Street, Berkeley,  
California 94710.

21 1/16"

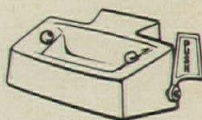
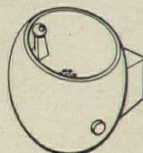
9 1/8"

15 3/4"

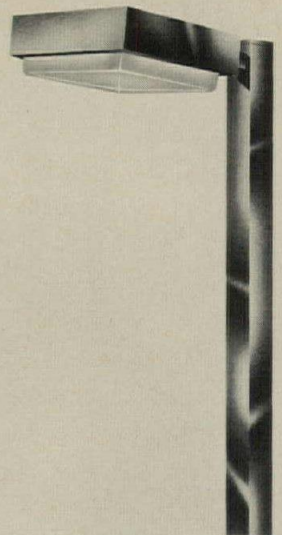


## WATER COOLERS

drinking fountains and faucets,  
emergency eye/face-wash  
fountains and drench showers,  
dental fountain/cuspidors  
and lab faucets



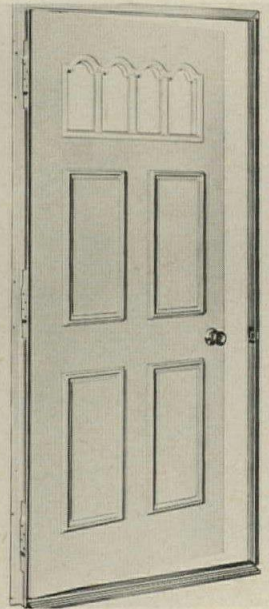
For more data, circle 94 on inquiry card



**SQUARE LUMINAIRE** / The H series consists of exterior units available from 100-watt to 1000-watt mercury and in either single or multiple head groups on 4-in. or 6 3/4-in. poles. All hardware is corrosion-resistant aluminum or stainless steel, completely sealed and fully gasketed.

▪ Quad Lighting, Inc., Chicago.

Circle 304 on inquiry card




**NON-WARP DOOR** / The Ever-Strait door promises not to stick, leak, or crack, and the high degree of insulation of the solid Dylite foam core keeps the metal door warm to the touch in cold weather. The door is especially recommended for remodeling. It comes pre-hung in a special adapter frame and the complete unit slips into the existing door opening. ▪ Pease Woodwork Company, Hamilton, Ohio.

Circle 305 on inquiry card

more products on page 224





# The reason we're introducing The Lobby Carpets.

Every foot that comes into an office has to go through the lobby. That's why we call our new carpets The Lobby Carpets. They can take even the busiest lobby and show less soil, less dirt, less wear than you'd believe possible. So they're not just for lobbies, but for offices, corridors, public rooms—anywhere a carpet has to take real punishment.

The reason The Lobby Carpets can take it is that they're all made with a pile of 100% Antron<sup>®</sup> nylon by DuPont. Antron is a kind of super-nylon. It's as tough as regular nylon. But far more soil resistant. Which means it shows far less dirt than any carpet fiber around.

And since it doesn't get dirty as fast, it needs cleaning less often. Which makes it more economical.

And because we really believe in The Lobby Carpets, we've introduced a whole line of them. Different pile heights. Different designs. Different colors. But they all have one thing in common. They're all priced right.

The Lobby Carpets by Lees—for places where anything else would be a dirty shame.

Any questions? A Lees contract carpet specialist will be glad to help. Just write Lees Carpets, Section 10B, Bridgeport, Pa. 19405.

**LEES**  
CARPETS

©1967 LEES CARPETS, BRIDGEPORT, PA., A DIVISION OF BURLINGTON INDUSTRIES.

For more data, circle 95 on inquiry card

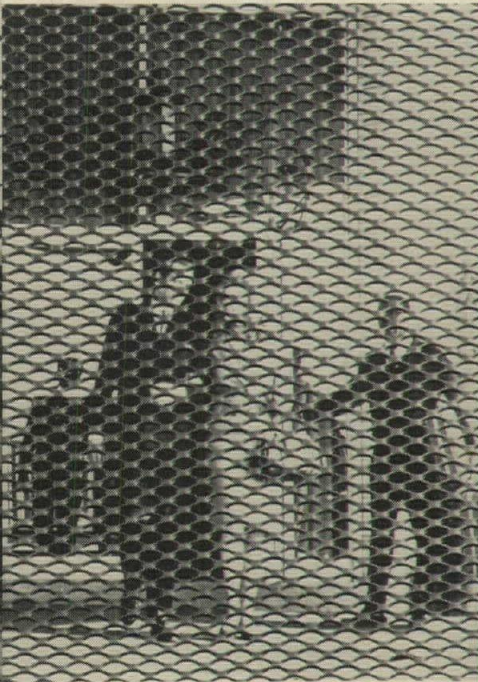


# Peekaboo

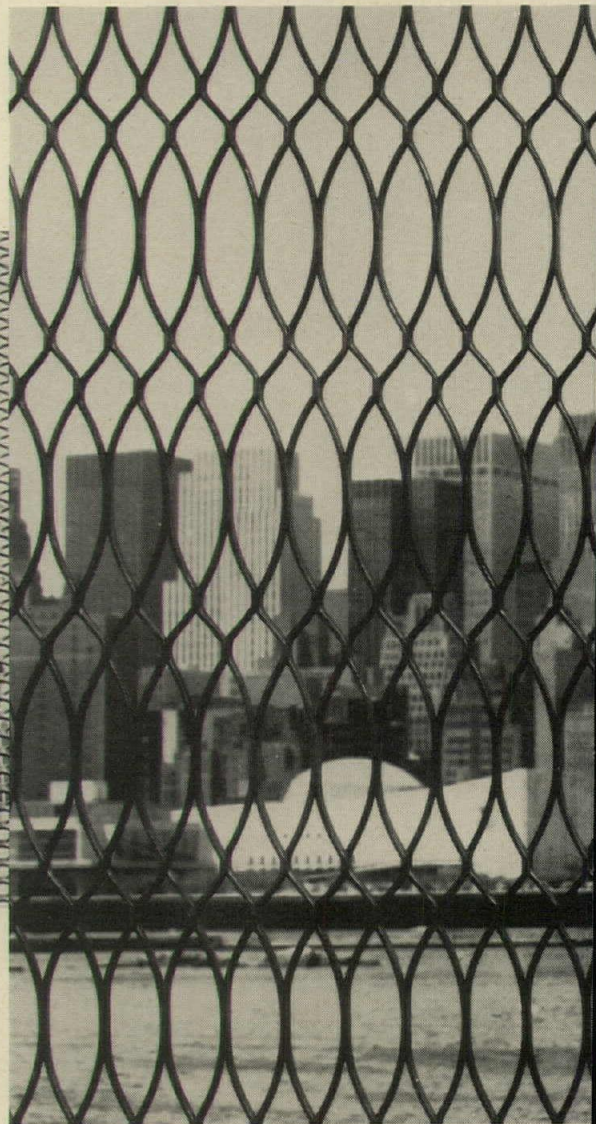
Peekaboo Parlor.



Peekaboo Portico.



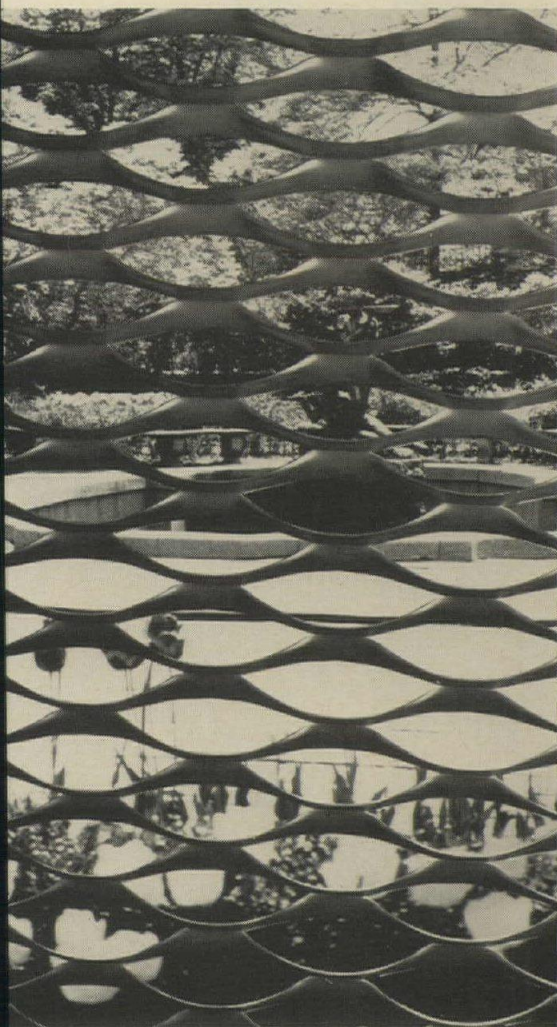
Peekaboo Panorama.



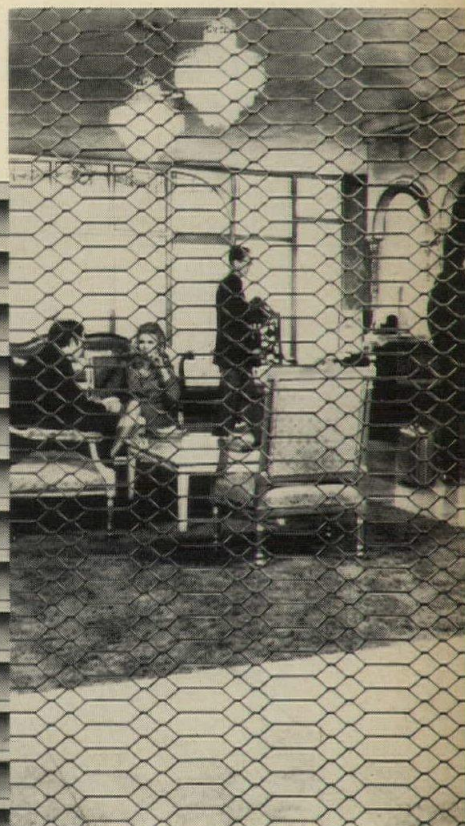


# Steel.

Peekaboo Pool.



Peekaboo Pub.



Peekaboo Privacy.



We're always asking if you've looked at Wheeling lately.  
Today's question: Have you looked *through* Wheeling lately? Please do.  
Observe the possibilities of Wheeling expanded steel mesh. This is eye-opening stuff.  
It's the paintable, bronzeable, laquerable, galvanizable, rubber-or-plastic-coatable steel of the future. You can see how all those perforations add versatility and visual appeal. What you can't see is how the same perforations make it lighter per foot, stronger per pound, and even more rigid than the original sheet of solid steel.  
But we'll be glad to explain. Write us for a comprehensive expanded steel catalog.  
You'll find there's more to our mesh than meets the eye.  
(Who'd have thought the next breakthrough in steel would be the hole?)

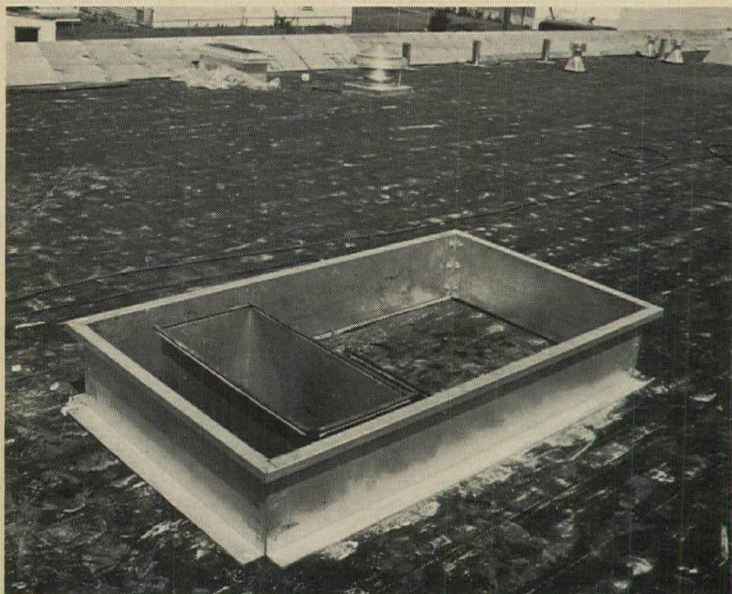
Have you looked at Wheeling lately?

**Wheeling**  
Wheeling Corrugating Co. Div. Wheeling Steel Corp.  
Wheeling, West Virginia

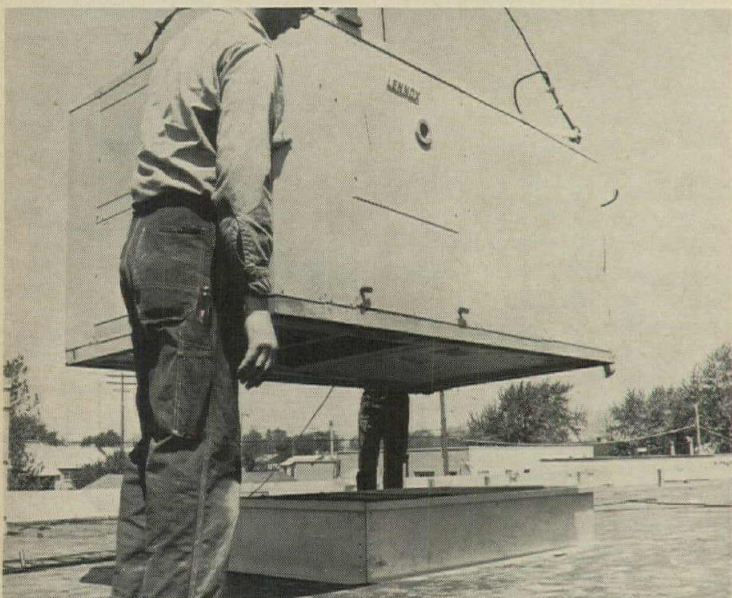
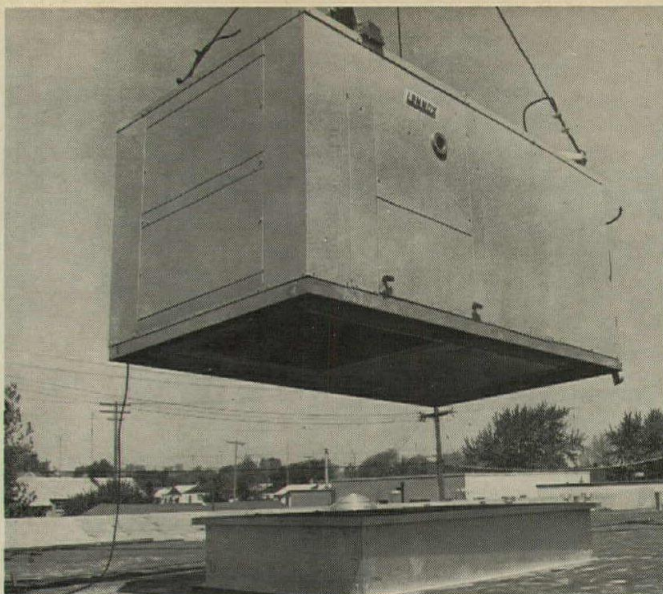
For more data, circle 96 on inquiry card



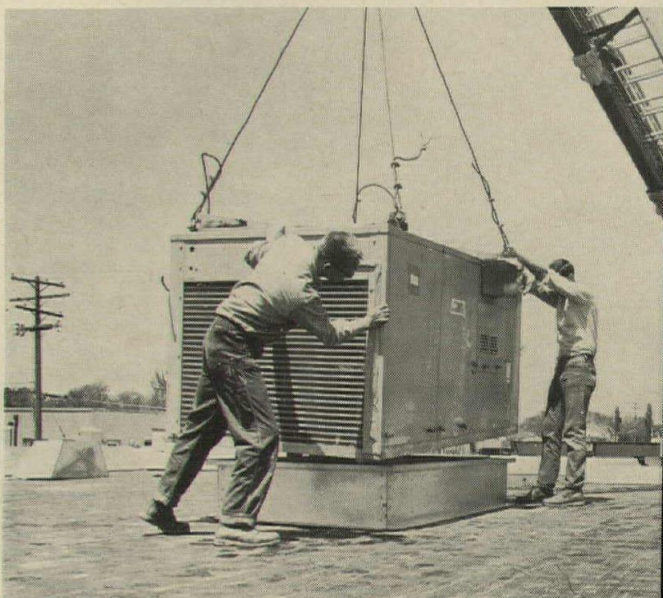
Easy installation begins with roof-mounting frame to be flashed in place.



All ducts pierce the roof within the frame.



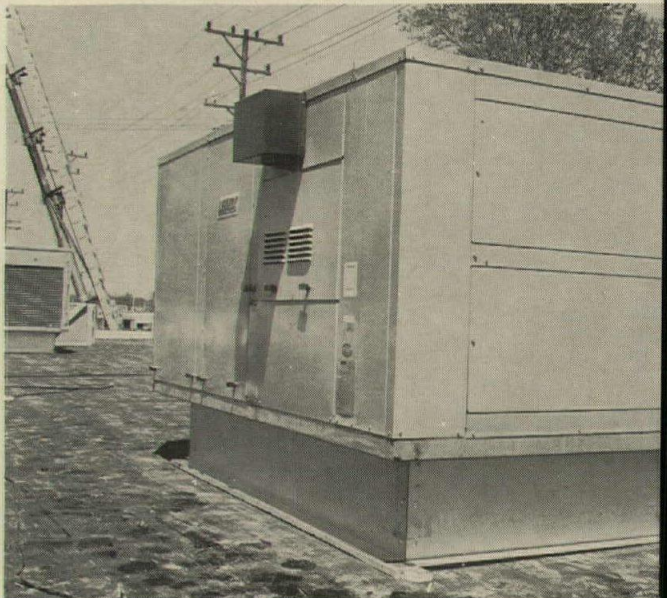
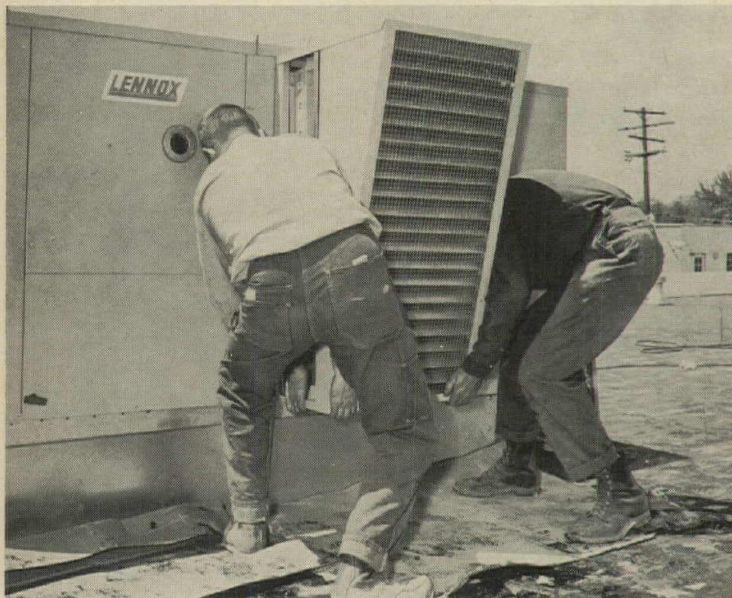
New single-zone system heats, cools, ventilates.



Long-life aluminized steel heat exchanger; non-corroding.

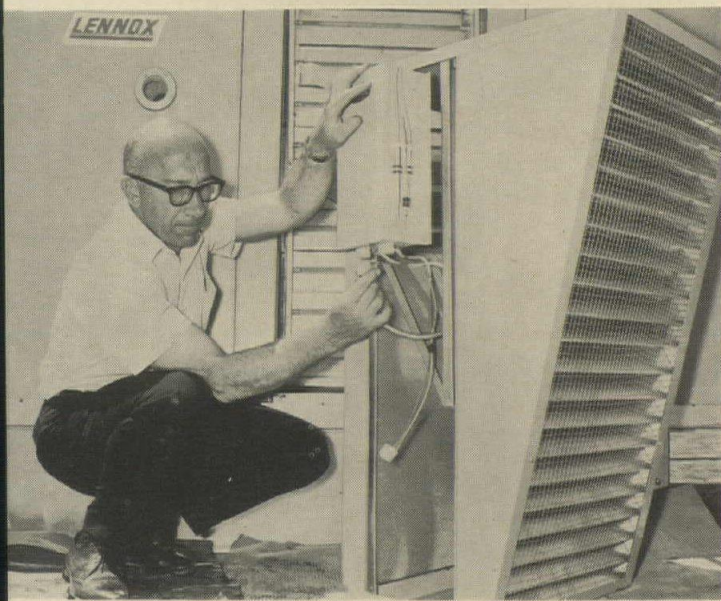
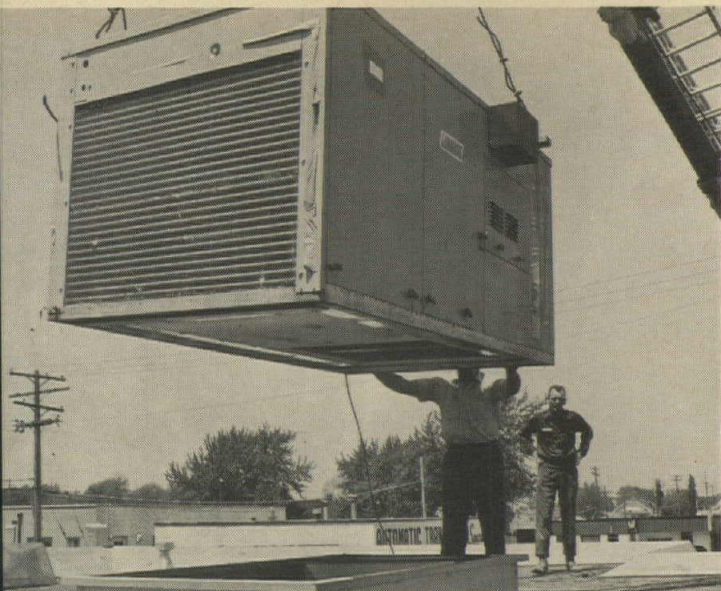
Optional POWER SAVER™ cools free with outside air below 57°F.

Commercial quality, factory-assembled; prewired and precharge





All-weather unit bolts to frame, needs no other sealing.



Simple "plug-in" connections for fresh air intake.

w-silhouette, inconspicuous unit. Also adapts to grade-level installation.



# from "hole-in-the-roof" to start-up (same day!)

## New Single-zone Lennox Comfort System goes hand-in-hand with Multiple-zone DMS

A compact, factory-assembled system, the new Lennox GCS3 is designed for ducted heating, cooling and ventilation of high-occupancy areas.

GCS3 combines gas heating with electric cooling, is available from 8 through 22 tons cooling and up to 500,000 Btuh heating. It can ventilate with 100% outside air when desired.

The GCS3 is an all-weather system, with a foolproof electric pilot and electronic safety controls.

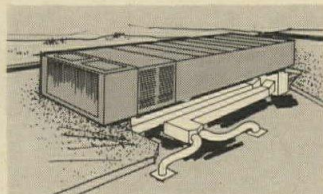
Normally roof-mounted, with bottom air discharge, the GCS3 converts quickly to side discharge for grade-level installation.

Here is Lennox single-source responsibility, in a complete factory-assembled system of commercial quality.

Where both single-zone and multiple-zone comfort control requirements exist, the new GCS3 can be combined with the Lennox DMS (Direct Multizone System).

Whatever your building — office, school, restaurant, plant, clinic, laboratory, apartment or other high-occupancy space — Lennox has the system (or combination of systems) for it.

For details, write Lennox Industries Inc., 105 S. 12th Avenue, Marshalltown, Iowa.



LENNOX DMS: Multizone rooftop companion to new single-zone Lennox GCS3.

**LENNOX**  
AIR CONDITIONING • HEATING

For more data, circle 97 on inquiry card



# the beautiful world of reinforced concrete is looking up

Twenty years ago, reinforced concrete building construction literally hugged the ground. Not any more. It's on the rise, reaching for the clouds. And the trend to taller, more beautiful buildings in reinforced concrete has just begun. Look at what has happened in just the past ten years.

One of the major reasons for this spectacular breakthrough is the new Grade 60 reinforcing steel. It has 50% greater yield strength. Helps designers achieve slimmer columns. Greater usable floor space. Reduced overall construction costs. Gives construction a material as versatile as the men's minds that design, engineer, and build with it. Beauty, utility, economy are all a part of the package.

If you have a building that's going up, ask your consulting engineer about the many benefits high-strength reinforcing steels offer in modern concrete building design. Do it soon.

700 ft.

600 ft.

1965  
1000 Lake Shore Plaza  
Chicago  
600 ft.

500 ft.

1958  
Executive House  
Chicago  
370 ft.

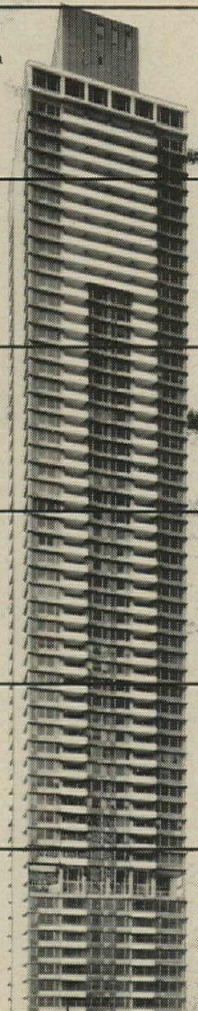
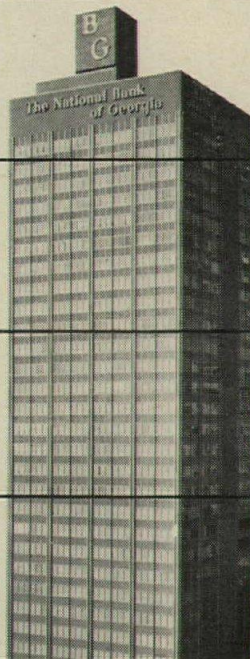
1961  
The National Bank of Georgia  
Atlanta  
390 ft.

400 ft.

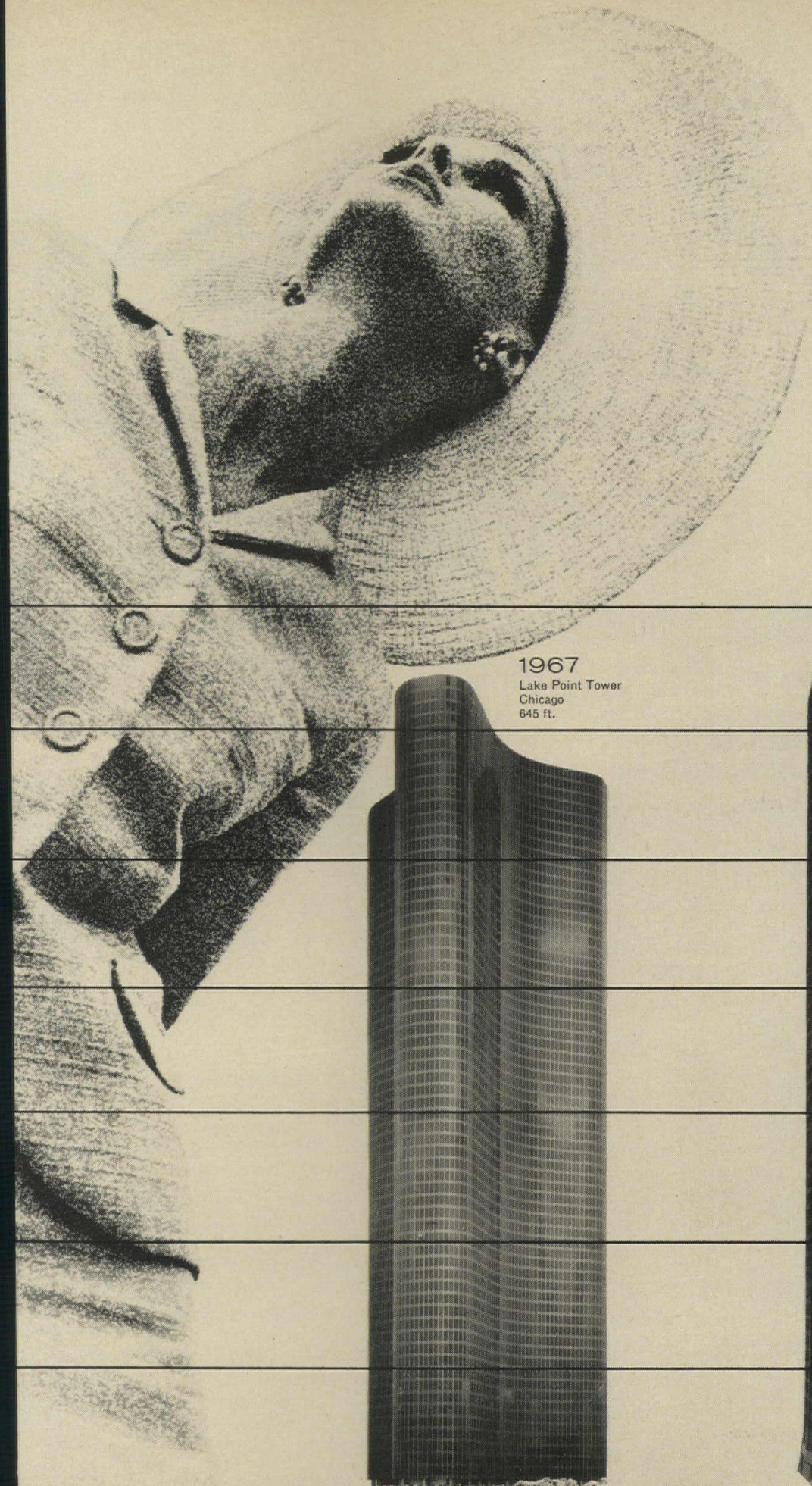
300 ft.

200 ft.

100 ft.

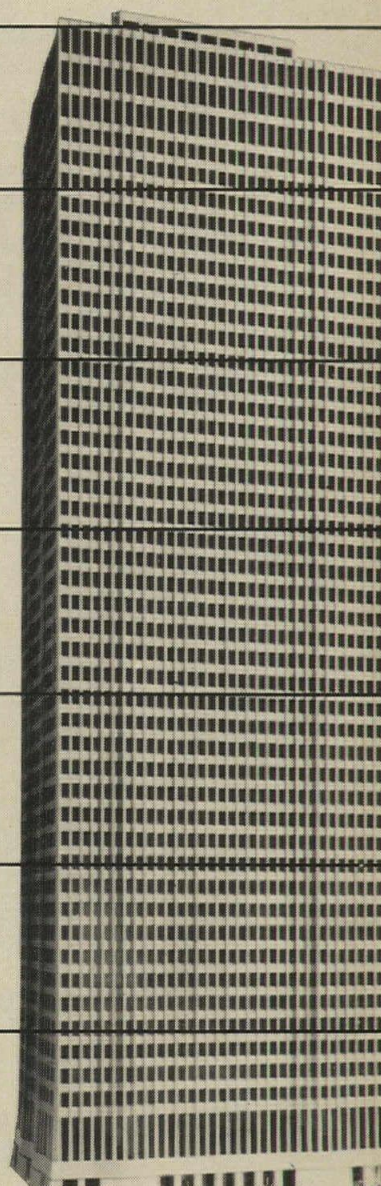
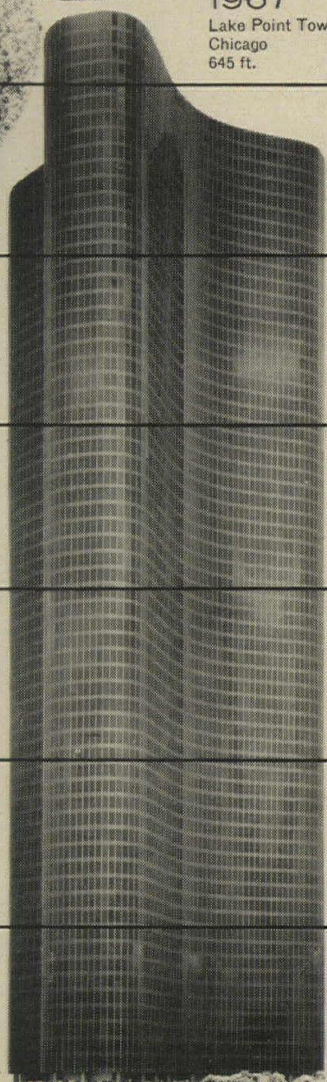






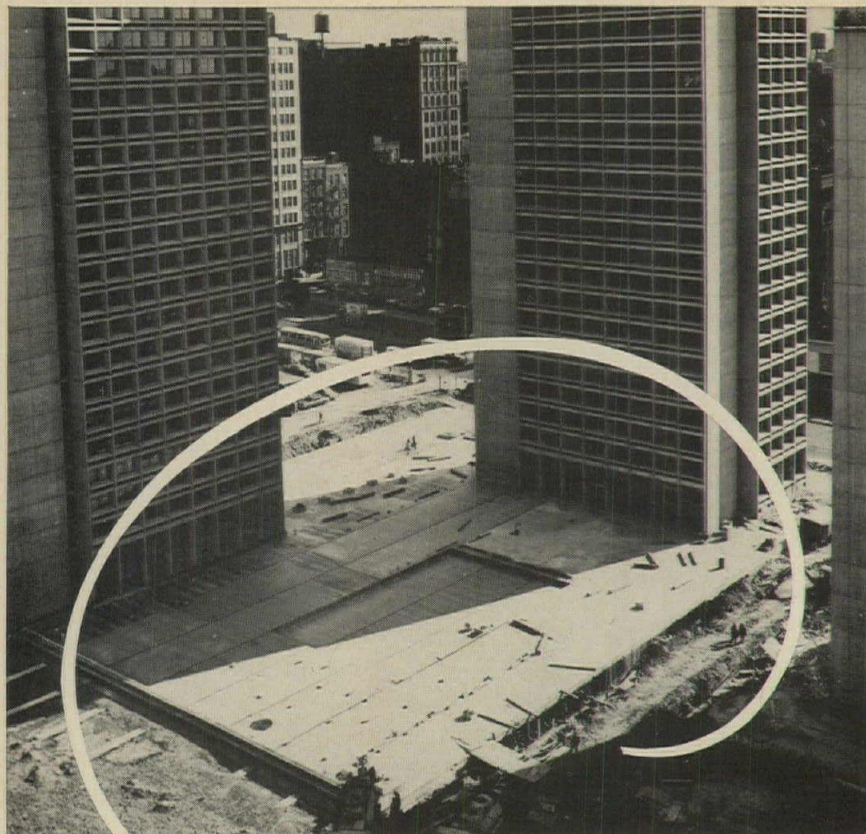
1969  
Shell Oil Bldg.  
Houston  
714 ft.

1967  
Lake Point Tower  
Chicago  
645 ft.





continued from page 216



## CARLISLE *Sure-Seal*

### RUBBER MEMBRANE SPECIFIED FOR ANOTHER TOUGH WATERPROOFING JOB

A leak-free, under-plaza garage was demanded to accommodate the tenants at New York University Village Towers.

Carlisle Sure-Seal Rubber Membrane was specified because it follows structural movement without damage . . . it is tear and abrasion resistant . . . it resists high hydrostatic pressure . . . it is immune to damage by soil chemicals, bacteria and aging . . . and, of course, it has excellent water impermeability.

But this is not new for Carlisle Sure-Seal Rubber Membrane. For over ten years it has been meeting rugged waterproofing demands.



### TECHNICAL AND FIELD SERVICE

This is Dick Kelley, one of the Carlisle team that lends practical assistance in the field. Dick is not a theoretical lab technician, but a waterproofing installer with many years of practical experience.

Technical and field assistance from design through estimating and installation is provided by Carlisle. For good results take advantage of this service, from start to finish.

Write for more information today.

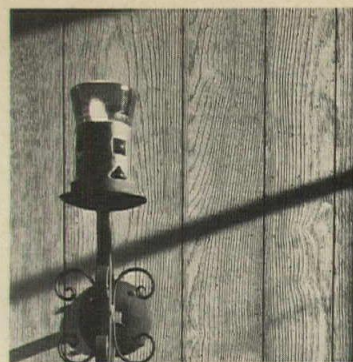
Special Products Department

**CARLISLE TIRE & RUBBER DIVISION**

Carlisle Corporation • Carlisle, Pennsylvania 17013

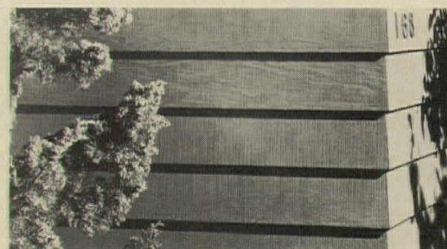


For more data, circle 98 on inquiry card



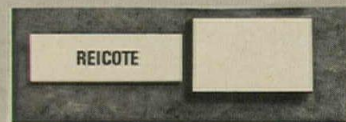
**WALL PANELING** / This antiqued reproduction of wormy chestnut planks is deeply embossed to provide a rugged, rough-textured, three-dimensional surface. The panels are available in 4-ft by 8-ft panels and are 5/16-in. thick. Panels are random-grooved vertically. ■ Armstrong Cork Company, Lancaster, Pa.

Circle 306 on inquiry card



**REDWOOD** / Prestained, rough textured redwood siding is available in a choice of patterns, color tones and textures (may be medium texture for interior and exterior applications, or extra coarse with better wearing characteristics in extreme climates). *Factrisawn* sidings require no job-site finishing: one side is machined smooth and the other is rough sawn for reversible surfacing. ■ Union Lumber Co., San Francisco.

Circle 307 on inquiry card



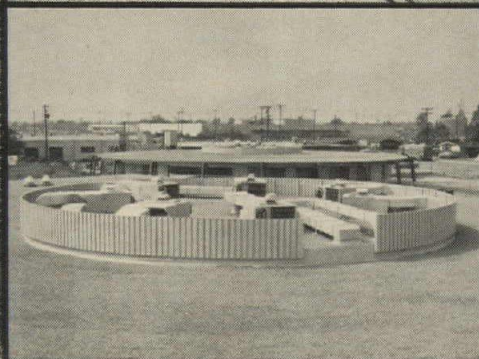
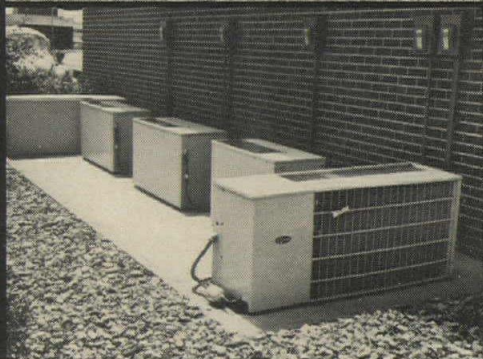
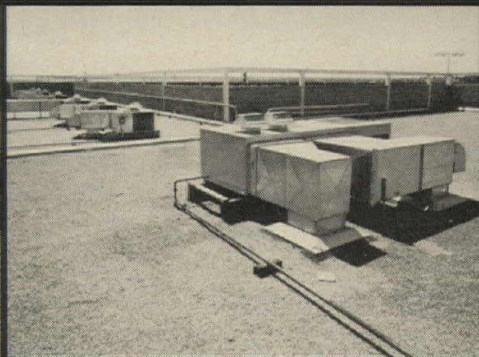
**BUILDING PANELS** / *Reicote*, made of a quality hardboard substrate and coated with a vitreous-hard, polyester gel finish, is tough, corrosion and weather resistant, and is suited for both interior and exterior applications. Surface finish on the panel is non-porous and unaffected by such substances as bleaches, coffee, lipstick, ink, and alcohol. The panel is available in a wide range of non-fading colors. ■ Reinforced Plastics Division Reichhold Chemicals, Inc., Cleveland.

Circle 308 on inquiry card

more products on page 228



# Day & Night air conditioning fits into your plans...



**as naturally as Night follows Day.** Inside, outside, high-rise or low, Day & Night air conditioning gives you a free choice—and a good solution to any environmental plan. Capacities from 1½ to 15 tons. Split systems, all-electric heat pumps, combination heating/cooling, gas-electric Duopacs or Packaged units. Units that fit wherever appearance, support and convenience indicate. Day & Night spans the plans, residential and commercial, with complete capability for comfort conditioning.



**DAY & NIGHT**  
MANUFACTURING COMPANY

855 Anaheim-Puente Road  
La Puente, California 91747

AR-2

STEP INSIDE...



Please send me complete information on your air conditioning and water heater capabilities.

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

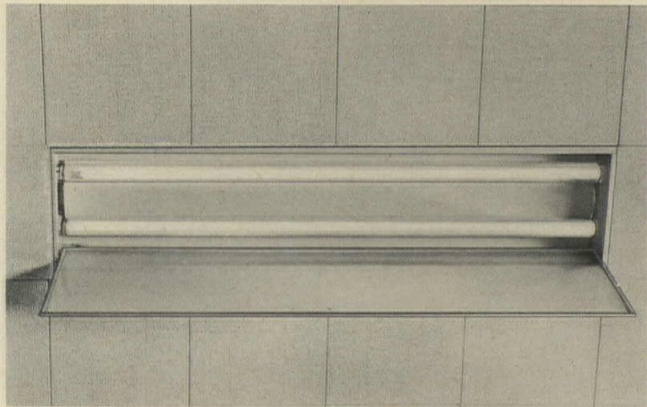
For more data, circle 99 on inquiry card



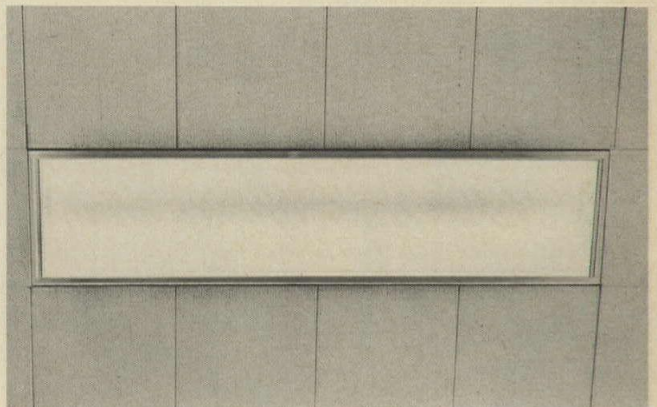
**CORNING  
INTRODUCES  
THE  
BONDED-  
FRAME  
GLASS  
LIGHTING  
PANEL**



## New steel-pin hinged frame for easier handling, installation and maintenance.



**OPEN:** there's the strength of a steel frame, bonded to the prismatic glass lens. Permits confident handling and quick installation. Its integral steel-pin hinge makes maintenance easy. Has built-in, lifetime vinyl sealer flaps to keep light in, dirt out. Best for air-handling fixtures, because lens remains firmly seated. Widest range of dimensions, too.



**SHUT:** you barely notice the mini-frame. You do notice the light transmission; up to 15% more light per energy dollar. And you do notice that glass can cut cleaning costs as much as 25%. Glass that won't yellow, sag, warp, burn, or attract dust.

Now, from Corning, you can have the most efficient and attractive material adaptable to any fixture. For complete details, write to Building Products Dept. 8510, Corning Glass Works, Corning, N.Y. 14830.

**CORNING**  
BUILDING PRODUCTS

*For more data, circle 100 on inquiry card*

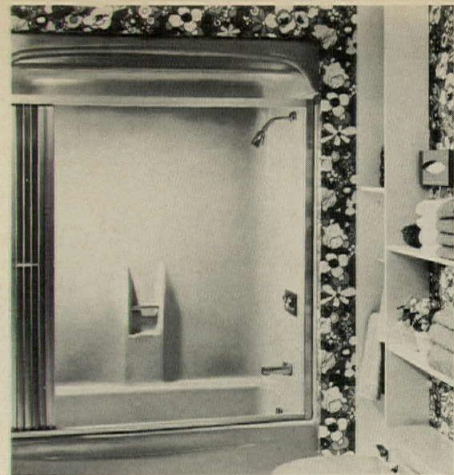


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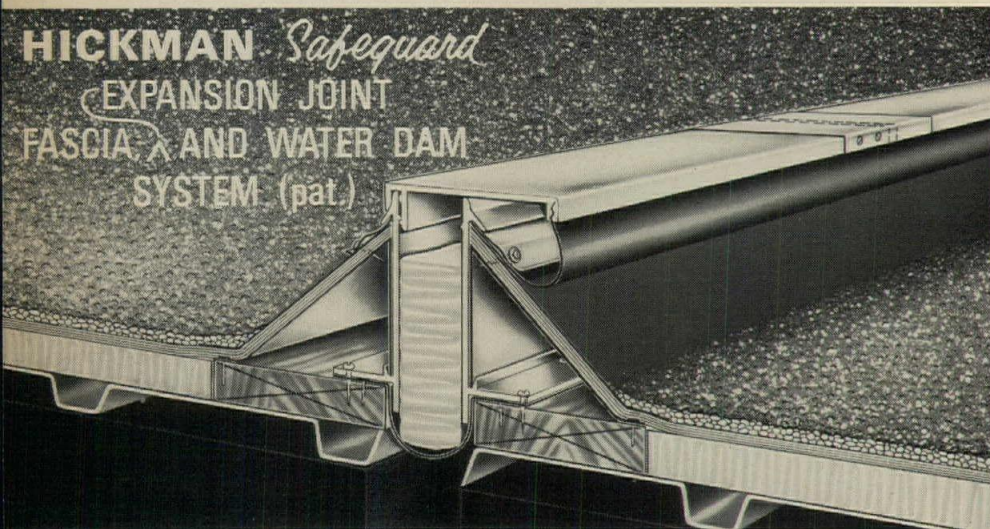
**SPA BATH /** A built-in whirlpool, tub the *Beauty Spa*, furnishes therapeutic water action and fits into the same area required for any five-foot recess tub. The tub, which comes factory assembled, includes four self-cleaning jets, circulating pump and drain and overflow which are connected ready for installation. ■ Briggs Manufacturing Co., Warren, Mich.  
Circle 309 on inquiry card

**ONE-PIECE BATH TUB AND WALLS /** This fiberglass unit features a full-width, five-foot recessed bathtub, 14½ in. high with



sculptured curve design on the tub front, and a back-wall vertical recess that houses a grab bar and soap dish. ■ Universal-Rundle Corporation, Chicago.  
Circle 310 on inquiry card

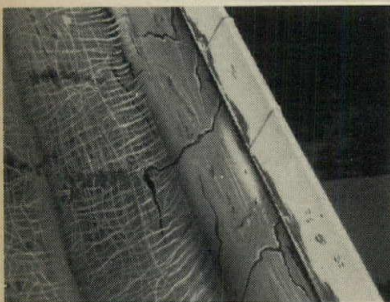
**HICKMAN Safeguard**  
**EXPANSION JOINT**  
**FASCIA AND WATER DAM**  
**SYSTEM (pat.)**



Water leakage at the expansion joint is prevented as shown by this cross section. A butyl rubber strip at bottom, from one roof section to the other, and a second strip from top of the cant, fastened into the cover section, move with the building to form positive, continuous seals. The extruded aluminum sides and related components, being free-floating, are independent of the thermal reaction between the galvanized

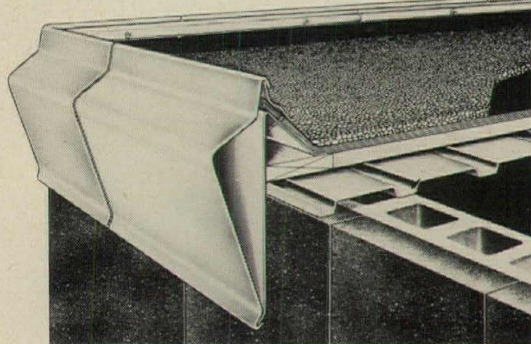
water dam and felts; this construction also insures that electrolytic action is negligible. All materials and parts are furnished; from end plugs to silicone sealant; from #10 cover-plate screws to the tool for clamping rubber strip into cover section. Transitions for eaves and junctions are factory fabricated to insure accurate matching of adjacent components of the fascia and expansion joint system.

**TO STOP ROOF LEAKS**  
**AT EAVES AND EXPANSION JOINTS**  
**See SWEET'S 21G-Hi**



**ROOF LEAKS!** They happen most at the eaves and expansion joints. They mean trouble for your owners —time consuming annoyances for you. To prevent roof leaks at these points, refer to the 8 pages of Hickman in Sweet's and you will understand how thermal cycling between the roofing felts and the metal water dams\* the main cause of these leaks, is neutralized and cracked felts avoided; also you will see why tar dripping and wall stains are averted.

This is a photo of a probable calamity for some client, it could have been prevented . . . The Hickman *safeguard* System stops felts from cracking because of thermal reaction, thus giving positive control of roof water at eaves (and expansion joints, if any). Please remember too, you have a selection of extruded aluminum fascia profiles in Kalcolors. Porcelain and Baked enamel (all with concealed cover plates). It is easy to combine utility and beauty.



H 10 Fascia Contour

\* Other than galvanized steel which has a thermal coefficient compatible with roofing felts when installed in 10' lengths to react independently.



**REFRIGERATOR-OVEN /** By setting a programmed master control panel on the *Gourmet Cooking Center*, food may be left under refrigeration, electrically cooked at a specific time, and kept warm when done. The center also contains a separate electronic oven for fast baking, a vented open-fire charcoal grill with electric rotisserie, four surface cooking elements with heat units embedded in glass, and two other surface units with hand-wrought copper tops. ■ Kelvinator Division, American Motors Corporation, Detroit.

Circle 311 on inquiry card



**HOME SOAP DISPENSER /** Liquid soap or hand lotion can be kept in an 8-ounce unbreakable reservoir bottle that is easy to refill. The spout and pump assembly simply lift up and out so that the bottle may be refilled from the top of the sink. ■ Moen, Standard Screw Company, Elyria, Ohio.

Circle 312 on inquiry card

more products on page 23

**W. P. HICKMAN COMPANY, INC.**

2520 INDUSTRIAL ROW. TROY, MICHIGAN 48084 PHONE (313) 549 8484



# What hospital operation cuts out noise?

*(The installation of Stevens Gulistan Carpet, of course.)*

The Mercy Hospital of San Diego, California, chose Stevens Gulistan® Carpet with good reason. The more than 7000 yards of *New Charter Oak*, a Stevens Gulistan commercial deep loop pile quality of Acrilan\* acrylic pile, provides many benefits. It cushions steps and hushes sounds, provides the peace and quiet and home-like comfort so welcome to patients and personnel. It provides non-slip safety. All this plus easy care and low maintenance costs. Ask for the complete Stevens Gulistan story, and see our catalogue in Sweet's Architectural File #11L, A.I.A. File 28.

## Stevens Gulistan Carpet

At Mercy Hospital, Stevens Gulistan Carpet of Acrilan offers many advantages. Architect Frank L. Hope & Associates, A.I.A., Contractor, Broadway Linoleum & Carpet. Carpet shown is 70% Acrilan acrylic, 30% modacrylic.

\*Reg. TM Monsanto's Textiles Division



Stevens Gulistan Carpet, J. P. Stevens & Co., Inc.  
295 Fifth Avenue, New York, N.Y. 10016

Please send me the whole story on how Stevens Gulistan Carpet contributes quiet, warmth, comfort and beauty at less cost to hospitals. Include free samples of Stevens Gulistan Carpet.

Name \_\_\_\_\_

Hospital \_\_\_\_\_

Position \_\_\_\_\_

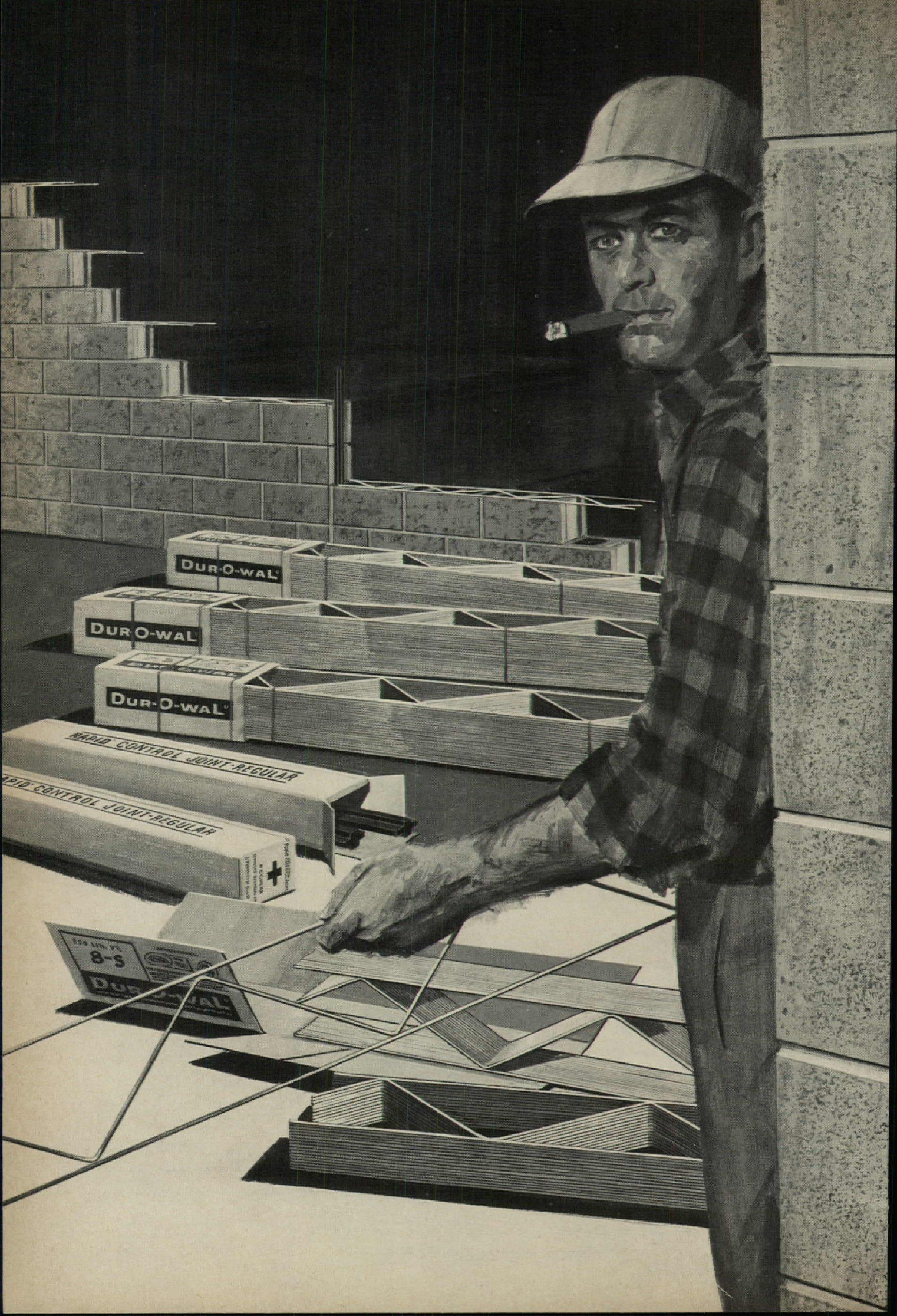
Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

AR-10-67

For more data, circle 102 on inquiry card





DUR-O-WAL

DUR-O-WAL

DUR-O-WAL

RAPID CONTROL JOINT-REGULAR

RAPID CONTROL JOINT-REGULAR

MADE IN CANADA  
REGISTERED TRADE MARK  
OF  
DUR-O-WAL MASONRY PRODUCTS CO.  
+  
DUR-O-WAL

8-5

DUR-O-WAL



# Guess who's just around the corner?

## US!

# You can get Dur-O-wal<sup>®</sup> wherever you get masonry

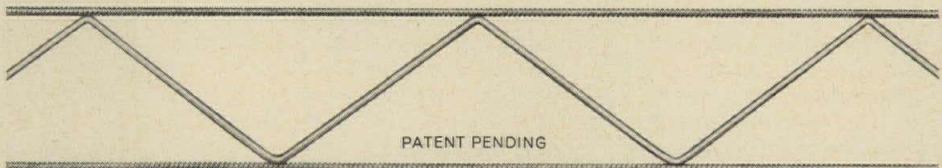
Masonry wall reinforcement is the kind of product that's no good "on order"—you need it on the job and on time.

Dur-O-wal truss masonry wall reinforcement is nationally distributed and is the most widely used.

And Dur-O-wal truss is the most versatile. You get a selection of more shapes and sizes applicable to single wythe, composite or cavity walls. Our eleven manufacturing plants are backed up by a network of thousands of dealers.

You can get Dur-O-wal truss where masonry is available.

Don't risk holding up jobs waiting for an off brand of reinforcement. Dur-O-wal got to be first in this business by being on hand and on time with the best. Write us for a bulletin of all our shapes, sizes and applications. Dur-O-wal, P. O. Box 368, Cedar Rapids, Iowa 52406.



# DUR-O-WAL<sup>®</sup>

THE ORIGINAL MASONRY WALL REINFORCEMENT WITH THE TRUSS DESIGN

**DUR-O-WAL MANUFACTURING PLANTS** • Cedar Rapids, Iowa, P.O. Box 368 • Syracuse, N. Y., P.O. Box 628 • Baltimore, Md., 4500 E. Lombard St. • Birmingham, Ala., P.O. Box 5446 • Aurora, Ill., 625 Crane St. • Pueblo, Colo., 29th and Court St. • Toledo, Ohio, 1678 Norwood Ave. • Mesa, Ariz., 213 So. Alma School Rd. • Seattle, Wash., 3310 Wallingford Ave. • Minneapolis, Minn., 2653 37th Ave. So. • Also manufactured in Canada.

For more data, circle 103 on inquiry card



continued from page 228



**FIXED SEATING** / In addition to increasing the seating capacity of a room, these units are said to reduce floor maintenance time and cost. The slim base makes vacuuming or sweeping possible without moving the seating. Available in four types of mountings and three types of seating units. ■ Brunswick Corporation, Kalamazoo, Mich.

Circle 313 on inquiry card

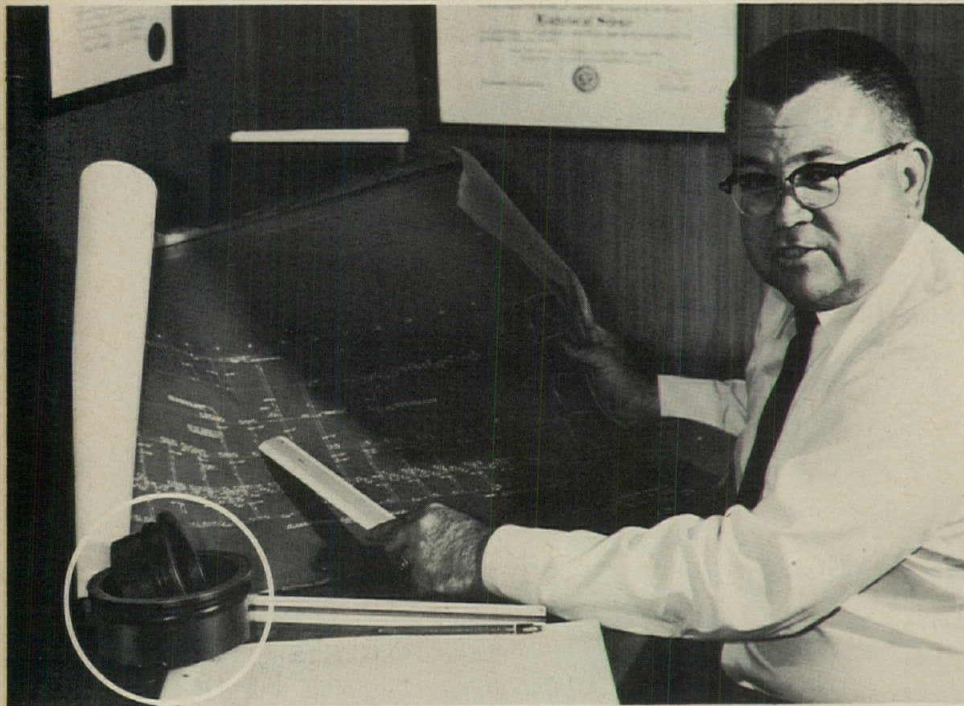
**DORMITORY FURNITURE** / A complete range of free-standing and built-in component units have incorporated specially-



designed features for a variety of dormitory needs. Special paneling material, Fiber-x, resists liquids, burns and scratches. All parts are removable and replaceable. ■ Royalmetal Corporation, New York City.

Circle 314 on inquiry card

## "Ty-Seal gaskets saved me more than 500 man hours on this job"



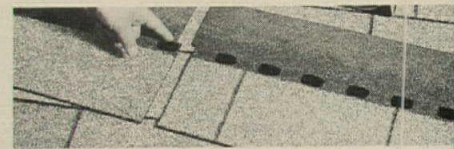
**THE MAN:** Robert E. Layton, Jr., Professional Mechanical Engineer and President of Layton Engineering Company, Tyler, Texas.

**THE PROJECT:** A recently finished 2 million dollar high school. Mr. Layton's firm installed the entire waste and drainage system. "I furnished Ty-Seal joint gaskets with Tyler pipe and fittings because

*I could actually reduce costs without cutting quality. I estimate Ty-Seal gaskets saved me more than 500 man hours on this job. This, coupled with the 50-year guarantee backing each gasket against failure, make Ty-Seal an outstanding product in my opinion." No wonder more and more architects and engineers are specifying Ty-Seal. Why not join them?*

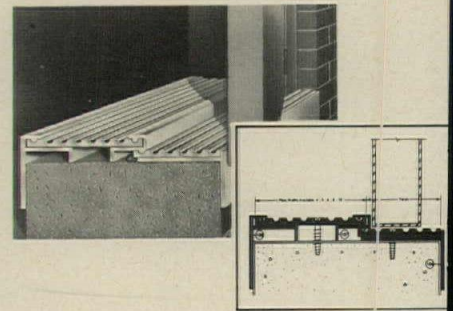
**TYLER PIPE INDUSTRIES**  
TYLER PIPE DIVISION, TYLER, TEXAS ■ WADE DIVISION, TYLER, TEXAS ■ EAST PENN DIVISION, MACUNGIE, PA.

For more data, circle 104 on inquiry card



**SELF-ALIGNING SHINGLE** / This double surfaced Jet shingle measures 12 in. by 36 in. and weighs approximately 238 lbs per square. The elimination of cut-outs provides unbroken continuity across the entire roof. The shingle includes thermoplastic dots to insure self-sealing and is factory-embossed at random along the exposed five-inch portion, producing vertical shadow lines. ■ Bird & Sons, East Walpole, Mass.

Circle 315 on inquiry card



**ROOF-EXIT SADDLES** / Aluminum bulkhead saddles in stock widths telescope or widen to fit all sill widths. Either plate may be specified to widths from 6 in. to 20 in. ■ Zero Weather Stripping Company, Inc., Bronx, N.Y.

Circle 316 on inquiry card

**ICE REMOVAL** / A system called Iceless may be used to keep ice and snow from forming on roofs and cornices. When temperature or humidity reach pre-set control points, electric heating cables or mats are automatically turned on. Automotive Information Service, Inc., Woodmere, N.Y.

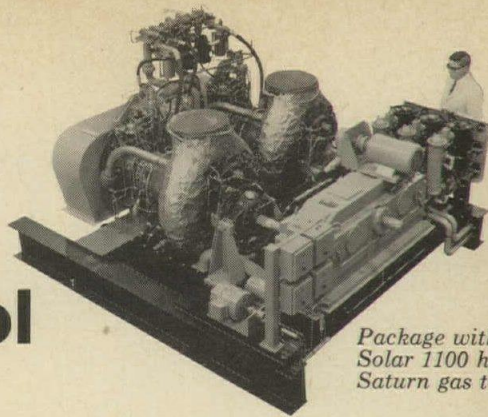
Circle 317 on inquiry card

more products on page 2

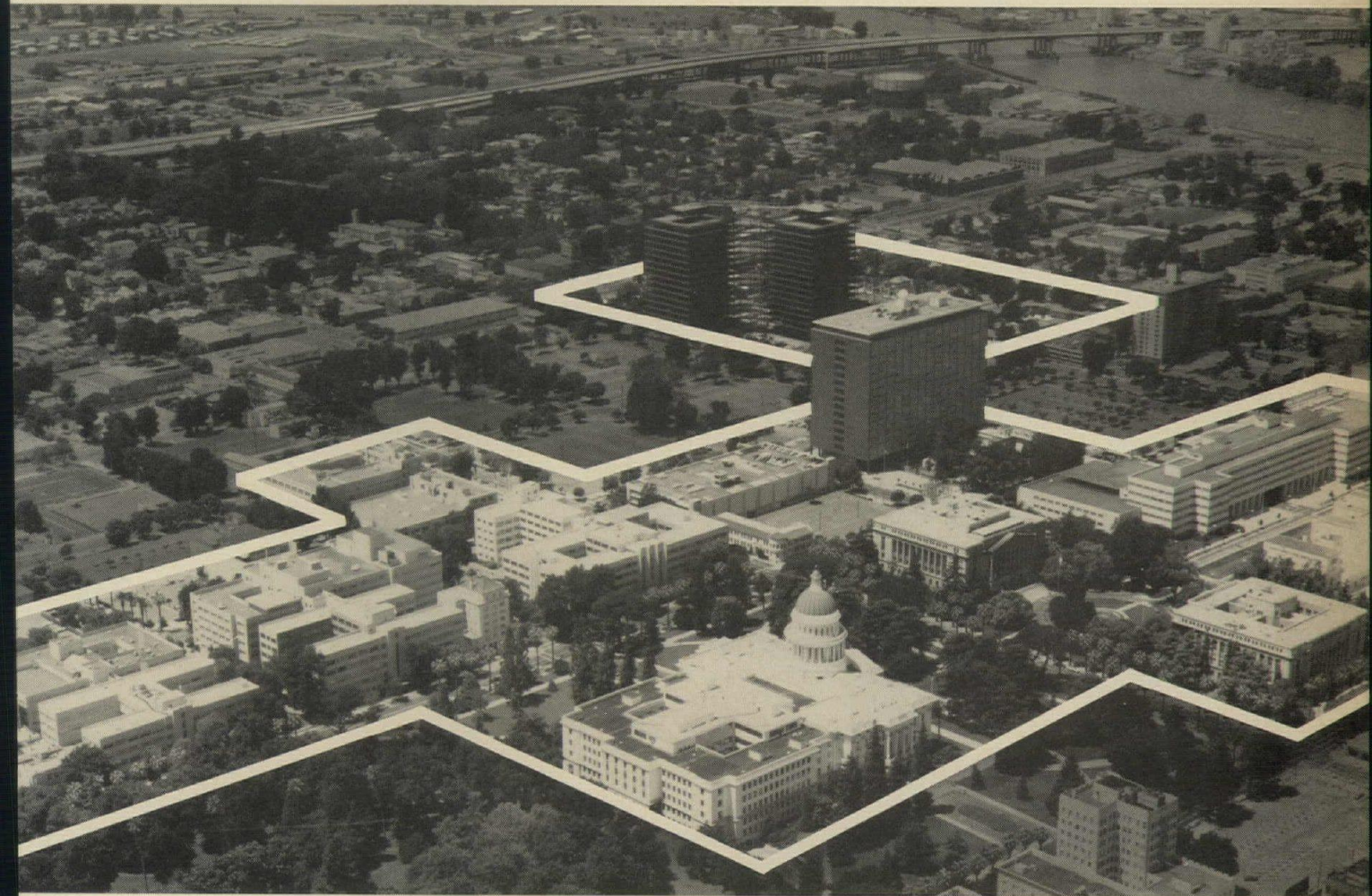


# Six Solar gas turbines air condition California's State Capitol

## (and 14 other State office buildings)



Package with dual  
Solar 1100 hp  
Saturn gas turbines



In one of the largest facility comfort conditioning applications using industrial gas turbines, six Solar 1100 hp *Saturn*<sup>®</sup> turbines will provide air-conditioning, heat and process steam for the State of California Capitol at Sacramento and 14 other major State office buildings.

Economy of operation was a major factor in the State's decision to build a central air-conditioning plant using gas turbines. The *Saturn* gas turbines will be mounted in dual-engine mechanical-drive packages, each providing 2200 hp through

a single gearbox. Each package will drive a refrigeration compressor with a capacity of 2100 tons. Since exhaust heat from the turbines will produce steam to drive an additional compressor, extremely high thermal efficiencies are expected. Contributing to further economies are: greatly reduced cost of installation because of light weight and small size . . . low cost of natural gas fuel . . . and minimal maintenance and operational manpower requirements.

If you need horsepower — for air conditioning, heating, lighting,

or total energy—you are urged to get the facts on how Solar industrial gas turbines can save you money. Hundreds of Solar *Saturn* gas turbines have proven their reliability during more than 2½ million hours of operation.

For further information, write: Solar, Department P-353, San Diego, California 92112.

**SOLAR**  
DIVISION OF INTERNATIONAL HARVESTER COMPANY

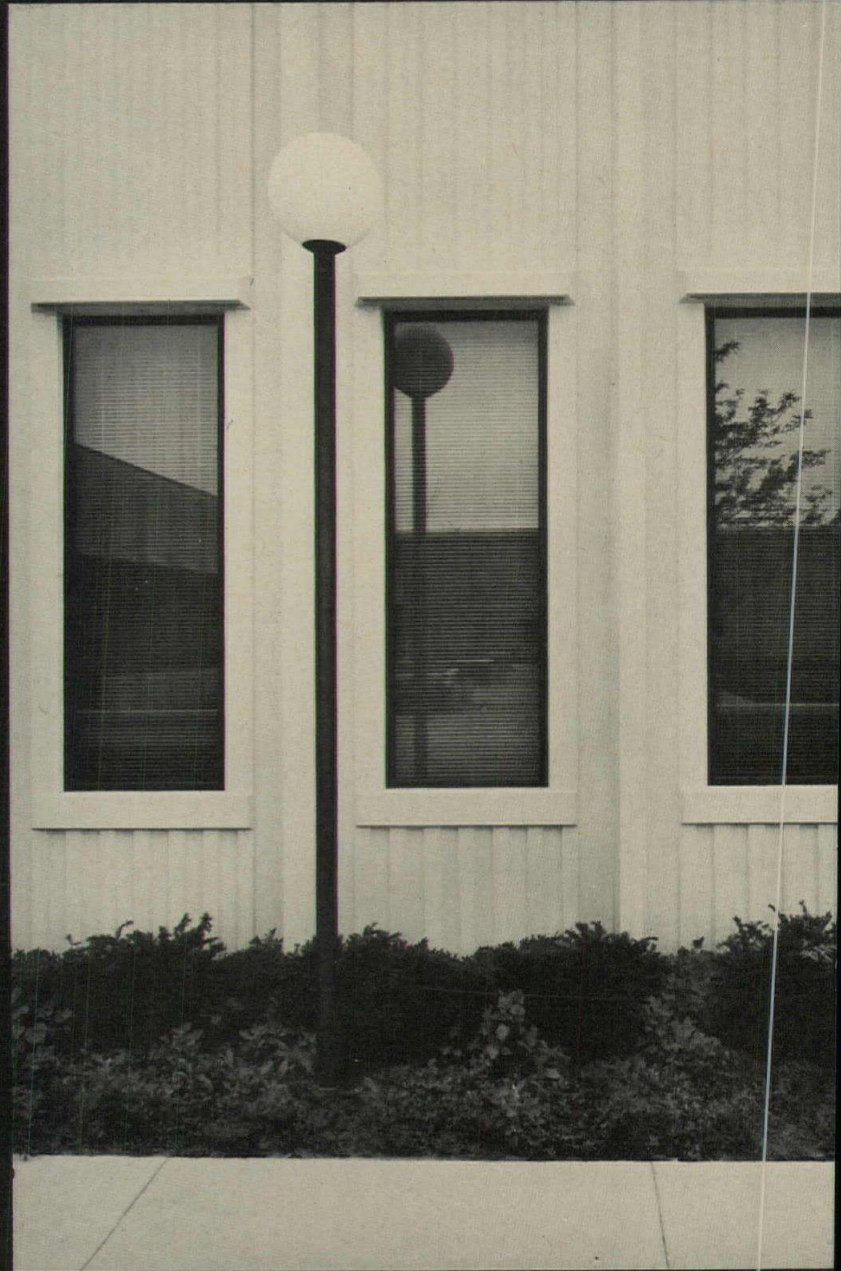
For more data, circle 105 on inquiry card

For more data, circle 106 on inquiry card



# THE ARCHITECT

HOW AN AGE-OLD ARGUMENT WAS RESOLVED

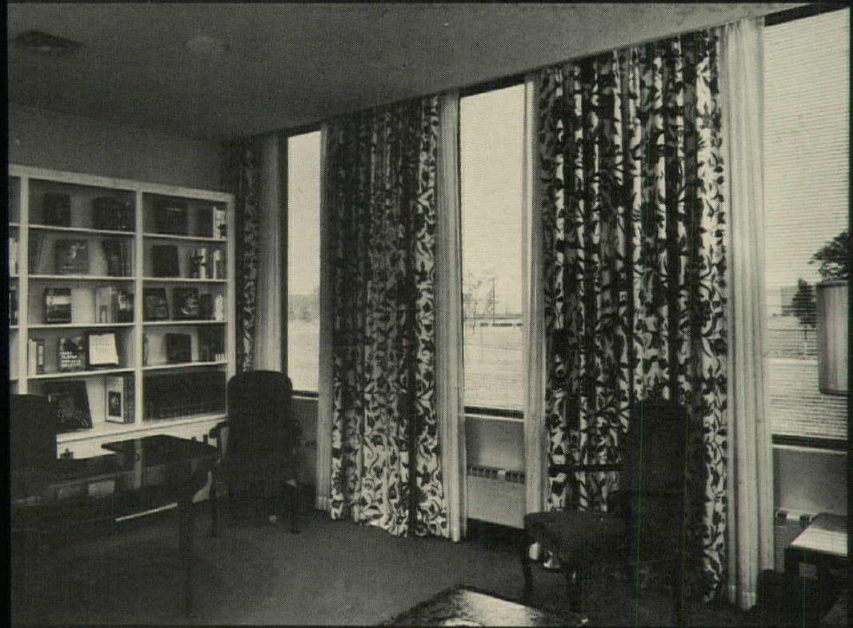


THE ARCHITECTS IN THE OFFICE OF ALFRED EASTON POOR WANTED A WINDOW COVERING THAT WOULD PRESERVE THE NEAT UNIFORMITY OF THE FACADE, AS WELL AS CONTROL LIGHT AND HEAT. THEY SPECIFIED THE 1-INCH-WIDE SLATS OF **LEVOLOR** RIVIERA VENETIAN BLINDS.



# vs. THE DESIGNER

THE SUBURBAN OFFICES OF A MAJOR PUBLISHER.



THE INTERIOR DESIGNERS WANTED A WINDOW COVERING THAT WOULD BLEND UNOBTUSIVELY WITH BOTH CONTEMPORARY AND TRADITIONAL OFFICE DECOR. THEY INSISTED ON THE "INVISIBLE" LADDERS AND MAGIC WAND FILTERS OF **LEVOLOR** RIVIERA VENETIAN BLINDS.

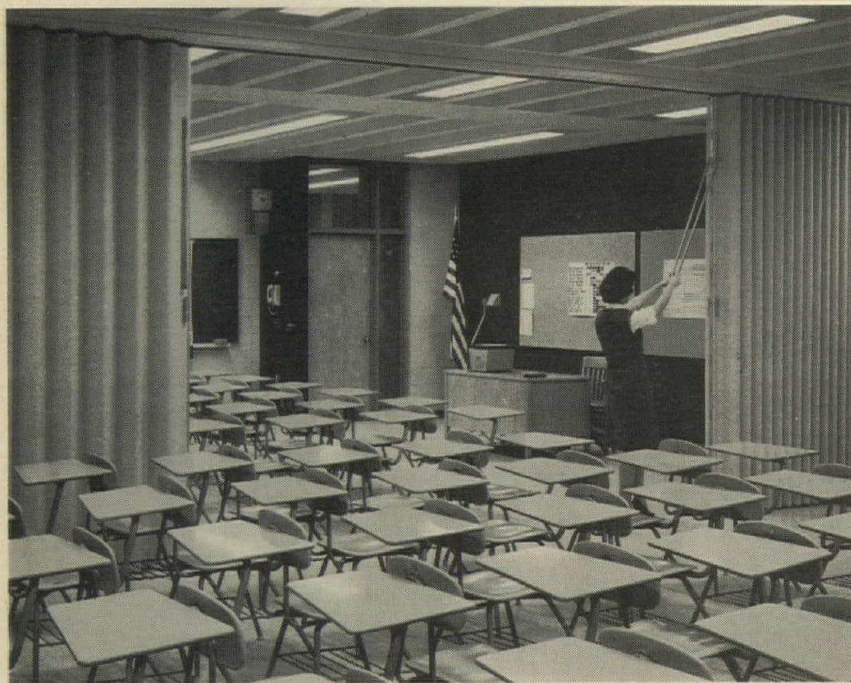
EVEN THE BUILDING MANAGER GOT INTO THE DISCUSSION. HE WANTED TO SAVE TIME, MONEY AND EFFORT ON THE INSTALLATION, SO HE HAD LIGHTWEIGHT RIVIERAS GLUED INTO PLACE INSTEAD OF USING CONVENTIONAL HARDWARE. NOT ONE HAS FALLEN.

FOR COMPLETE DETAILS ABOUT THE BLIND ARCHITECTS AND DESIGNERS AGREE ON, WRITE LEVOLOR LORENTZEN, INC., 720 MONROE STREET, HOBOKEN, N.J. 07030



continued from page 232

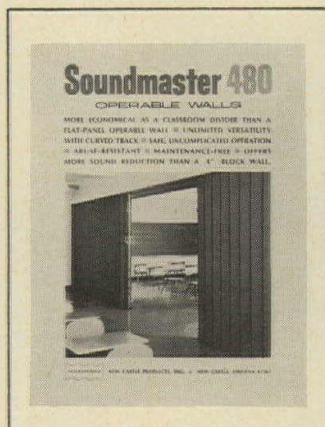
# soundmaster 480 operable wall provides more sound control than a 4" concrete block wall



Engineering assistance, detail tracing drawings, and precise installed cost data are available upon request from your local Modernfold Man . . . or write for the new Soundmaster 480 performance specifications brochure #1445.



**Modernfold Division**  
New Castle Products, Inc.  
Dept. A2107  
Box 310  
New Castle, Indiana 47362

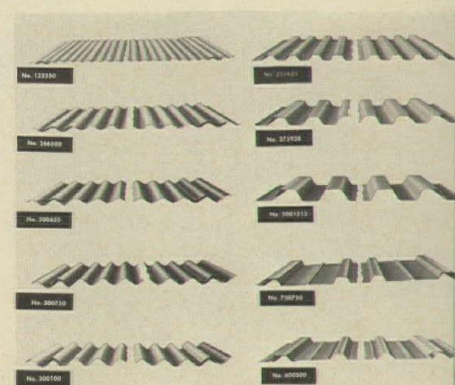


For more data, circle 107 on inquiry card



**SURFACE TOPPING** / Poradek looks like carpeting, is said to outwear concrete, and is recommended for commercial, institutional and residential buildings. This indoor-outdoor topping, a combination of colorful stone aggregates and epoxy, is impervious to wind, water, ice, extreme temperatures, sunlight, and all common corrosive chemicals. Suggested uses include walkways, patios, driveways, loading platforms, garages, pools and locker rooms, lobbies and entrances, and service and utility areas. ■ Porafloor, Inc., Woodside, N.Y.

Circle 318 on inquiry card



**STEEL PANELS** / Vinylife vinyl-coated galvanized steel panels are designed for roofing and siding on steel mills, factories, warehouses, chemical plants, paper mills, and commercial buildings. Panels are available in ten different configurations and in almost any color combination. Production procedures permit coating of metal panels after forming thereby insuring coated edges and uniform surface coating undamaged by roll formings. Vinylife is reported to have demonstrated perfect flexibility and adhesion through extreme temperature changes and superior resistance to impact, abrasion, staining, weathering and salt spray. ■ Glaros Products Inc., Pittsburgh.

Circle 319 on inquiry card



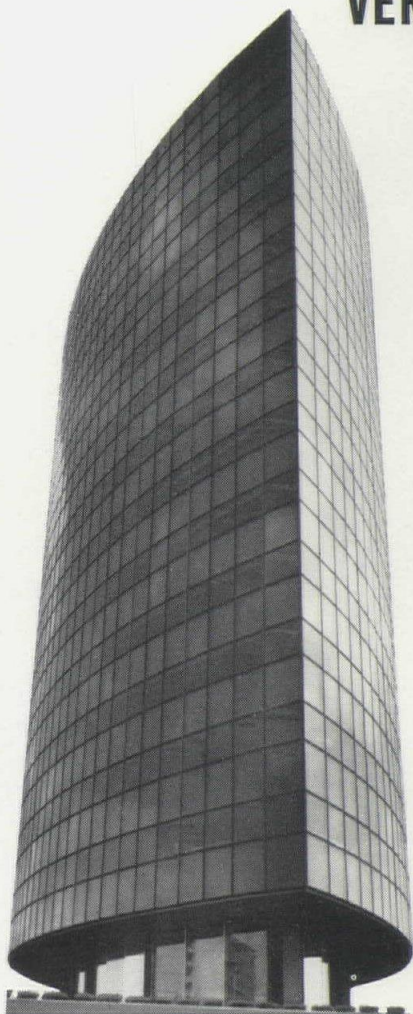
Planning an on-the-go office building? Specify a

# Recordlift

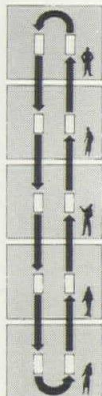
VERTICAL MAIL CONVEYOR BY



**Standard  
Conveyor**



Phoenix Mutual Life Insurance Co., Hartford, Conn. *Architect:* Harrison & Abramovitz. *Contractor:* George A. Fuller Co.



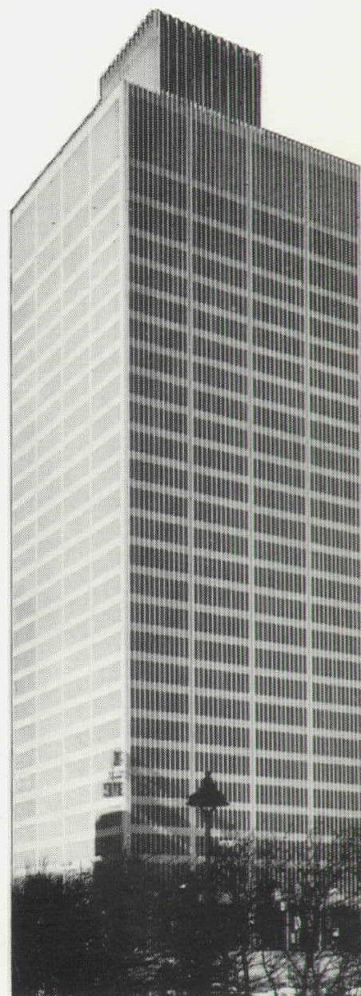
The ultra-modern office buildings seen here differ greatly in architectural style—yet they do have one thing in common to give them remarkable functional efficiency.

It's a STANDARD CONVEYOR *Recordlift* Vertical Mail Conveyor System, schematically illustrated at the left.

By providing fast, selective distribution of inter-floor mail and supplies, a *Recordlift* cuts operating costs by saving 100's of mailboy and messenger man-hours daily. Operation is completely automatic . . . all you do is load the container, set the address and *Recordlift* delivers. *Automatically.*

It's the *proven* way to solve office building distribution problems! Ideal for hospital use, too!

**Get details.** Write for new illustrated *Recordlift* Bulletin 153. Describes operation, shows various addressing systems, gives dimensional requirements. Standard Conveyor Company, 312-K Second St., North St. Paul, Minn. 55109.



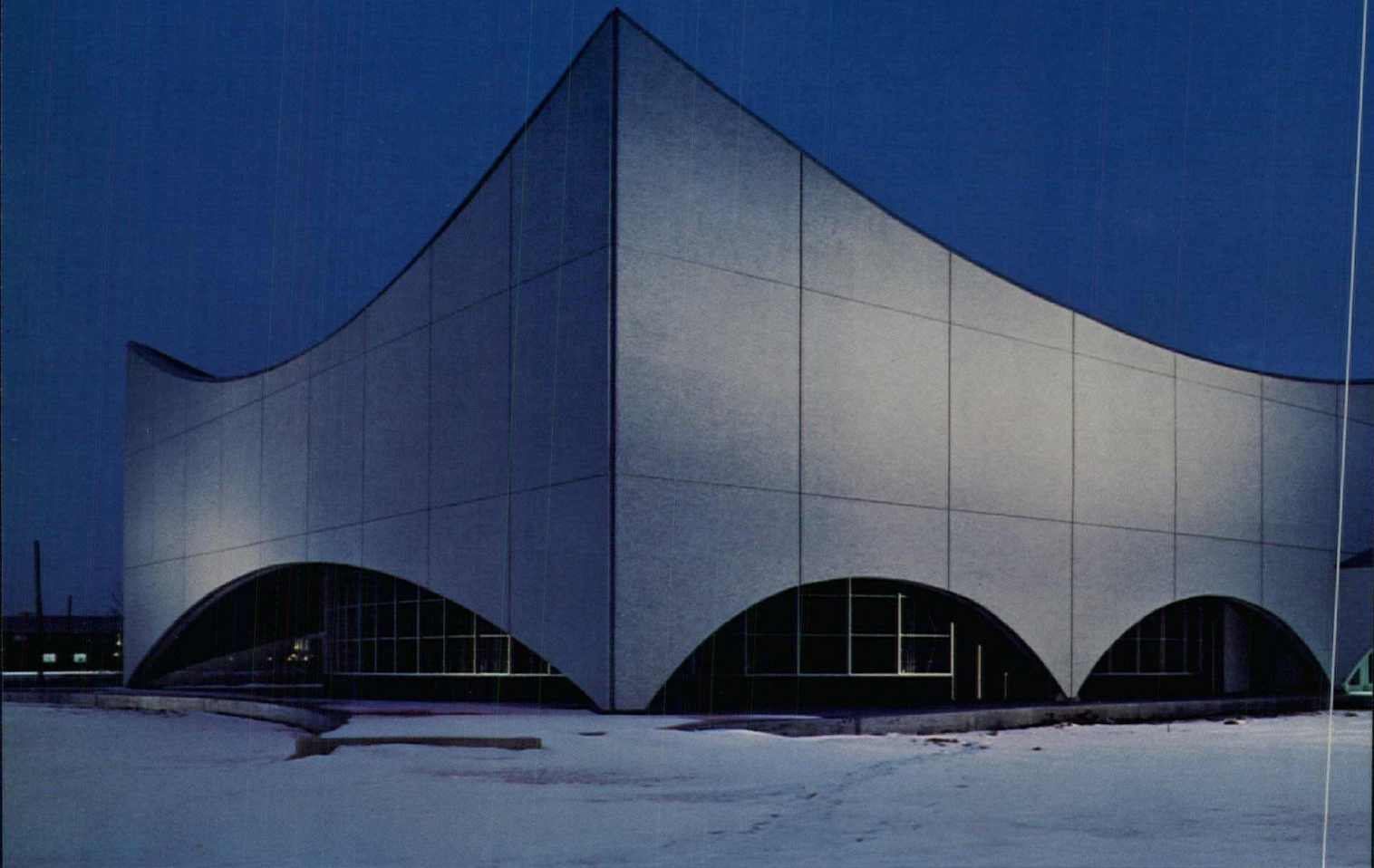
Michigan Consolidated Gas, Detroit, Mich. *Architect:* Minoru Yamasaki — Smith, Hinchman & Grylls. *Contractor:* Bryant & Detwiler Co.



Northwestern National Life Insurance Company, Minneapolis, Minn. *Architect:* Minoru Yamasaki & Associates. *Contractor:* George A. Fuller Co.

For more data, circle 118 on inquiry card





# Arched walls *enclose a circle of stained glass*

**Design of the column-free sanctuary made possible by a structural steel framing system**

Great spreading arches that form an outer structure around a circular wall of stained glass distinguish the new B'nai David Synagogue in Southfield, Mich., a suburb of Detroit.

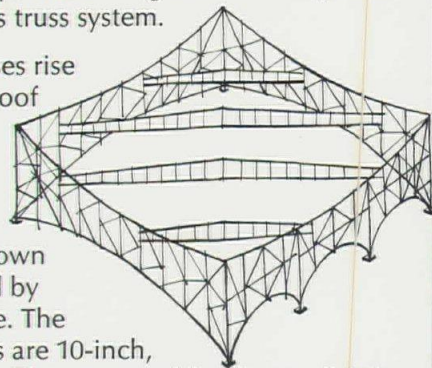
The recently completed synagogue is unique, not only from an appearance and historical standpoint, but also because of the unusual design concepts employed in its construction.

The design of the completely column-free sanctuary was made possible by a structural steel framing system devised by the project architect, Mr. Sidney Eisenshtat of Los Angeles, Calif., associate architects Havis-Glovinsky Associates of Detroit, and the structural engineering firm of McWilliam and Keckonen of Birmingham, Mich.

Four curved steel trusses, each 124 feet long and 44 feet high on the ends, form the four exterior arches of the new synagogue. The trusses are tied together by four main plate girders, two of which are 142 feet long and 7 feet deep. The ceiling and interior plaster walls hang from this truss system.

The deep steel trusses rise above the pitched roof of the sanctuary. The roof slope provides drainage.

The trusses were shipped knocked down and then assembled by field bolts at the site. The main truss members are 10-inch, wide-flange beams. The structural loads are distributed to concrete pedestals at the foot of each arch.



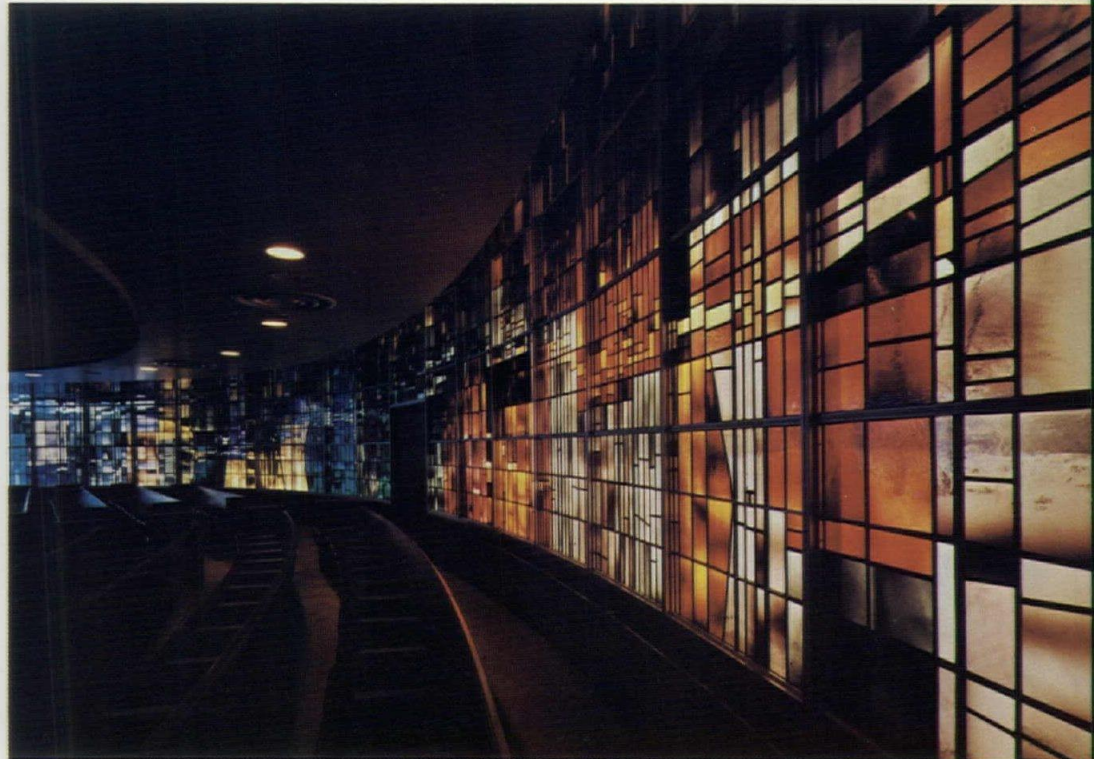
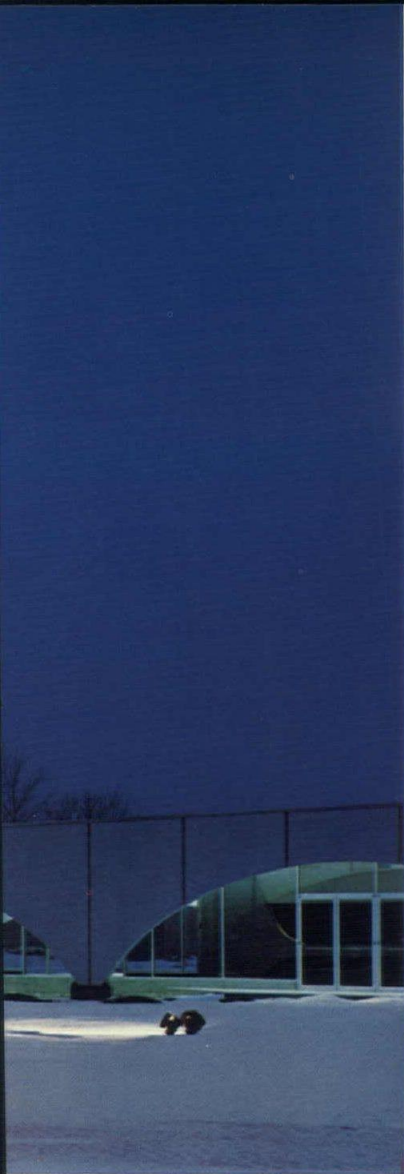
**BETHLEHEM STEEL**

BETHLEHEM STEEL CORPORATION, BETHLEHEM, PA.





The four rising points of the arches provide an allusion to the four horns of the altar of the original sanctuary in Jerusalem. While the outer arched walls form a diamond pattern, the sanctuary itself is circular in shape, with the seats placed in a horseshoe pattern around the bimah (altar area). This places worshippers in the last row of the 1,050-seat sanctuary never more than 17 rows, or 64 feet, away from the pulpit, creating an atmosphere of intimacy.



Circular glass wall, enclosing the sanctuary, consists of 70 windows whose colors bridge symbolically the path from Earth to Heaven.

Like giant arms reaching out from the altar two curved innerwalls rise to the ceiling which floats within them.



Steel Fabricator: Pelham Steel Co., Inc., Jackson, S.C. Steel Erector: Noreast Erectors, Inc., Detroit. General Contractor: Walter L. Couse & Co., Detroit. Bethlehem supplied 200 tons of structural steel.



*continued from page 210*

**SCHOOL WIRING** / Compiled for use as a permanent reference and wiring specification guide for the school market, a 22-page brochure has an index tab readable from either side, and is three-hole punched for filing in standard binders. ■ Harvey Hubbell, Incorporated, Bridgeport, Conn.

*Circle 415 on inquiry card*

**MASONRY WALL REINFORCEMENT** / An 11-page bulletin reviews an investigation of continuous metal ties in masonry wall

construction conducted at the IIT Research Institute. ■ Dur-o-wal National, Incorporated, Cedar Rapids, Iowa.\*

*Circle 416 on inquiry card*

**SUB-FLOORS** / Steel cellular sub-floors and open beam sub-floor sections are described and graphically illustrated in a revised, 20-page technical bulletin. The booklet highlights their application versatility and adaptability in meeting a broad range of building requirements. ■ The R. C. Mahon Company, Detroit.\*

*Circle 417 on inquiry card*

**PLYWOOD GRADES** / A guide describes briefly and gives examples of the most common uses of exterior and interior grades. Synopses of the principal changes from three old manufacturing standards to the new consolidated Product Standard PS 1-66 for Softwood plywood are included. ■ American Plywood Association, Tacoma, Wash.\*

*Circle 418 on inquiry card*

**CEDAR** / "Cedar's In Business" is an 8-page color booklet showing architectural examples of western red cedar in commercial structures. Included are examples of low-rise office buildings, apartment and town houses, convalescent centers, and retail and office buildings. ■ Western Red Cedar Lumber Assoc., Portland.\*

*Circle 419 on inquiry card*

**PLUMBING** / "New Fashion Ideas for Bathrooms" are described in a 31-page catalog illustrating design, layout and color schemes. Kitchen sink designs are also included in the full color catalog. ■ American Standard, New York City.\*

*Circle 420 on inquiry card*

**GLAZED STRUCTURES AND SKYLIGHTS** / A 12-page booklet provides three basic design systems for glass and acrylic overhead structures, flat and curved. ■ Ickes Braun Glasshouses, Inc., Aptakisic, Ill.

*Circle 421 on inquiry card*

**LIGHTING APPLICATION** / An 8-page illustrated brochure contains detailed data for lighting vertical surfaces and objects displayed on them. The brochure discusses the concept of vertical surface illumination versus general lighting requirements, and details specific considerations. ■ Lightolier, Jersey City, N.J.\*

*Circle 422 on inquiry card*

**STEEL CABLES** / "Tentative Criteria for Structural Applications of Steel Cables for Buildings," a 16-page brochure, and "A Bibliography of Selected Articles on Steel Cable in Building Design" are available. ■ American Iron and Steel Institute, New York City.

*Circle 423 on inquiry card*

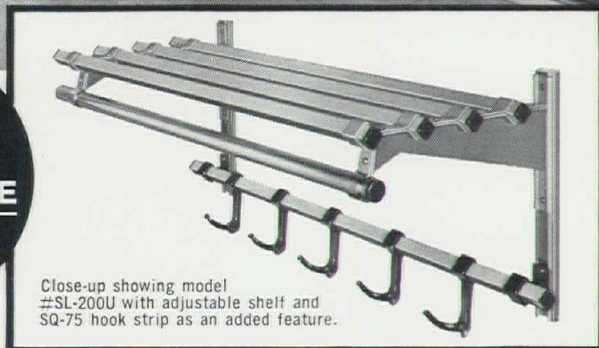
**STEEL SIDING** / A 4-page brochure describes two types of vinyl-protected corrugated steel siding, and explains how two-way corrosion control is achieved with the finish. ■ Manta Vin-Cor Steel Corporation, Chicago.

*Circle 424 on inquiry card*

\*Additional product information in Sweet's Architectural File

*more literature on page 259*

**STEEL  
ADJUSTABLE**



Close-up showing model #SL-200U with adjustable shelf and SQ-75 hook strip as an added feature.

## Schooline® WALLMOUNTED RACKS

Beautifully styled — permanently attractive colors — heavy duty steel components and built to your exact length and multiple shelf requirements. They meet your need as to height from hook or hanger to the floor, as well as spacing between shelves. Easy spacing adjustment is made possible by our unique U wallmounts. Colorful and durable double prong nylon hooks come with Shelf #SL-300U and are keyed over tubing to prevent rotating and spaced on 2nd and 4th tubes to allow ample coat space. Matching boot shelves are mounted off the floor for easy cleaning. Pat. Pend.

For complete information and specifications, write for Catalog SL-48.

© 1965 V.P. Co.

**VOGEL-PETERSON CO.** | "The Coat Rack People"  
ELMHURST, ILL.

For more data, circle 119 on inquiry card





continued from page 254

**STORAGE SYSTEMS** / A 16-page booklet is designed as a reference for storage systems planners. Over 60 illustrations show steel shelving, cabinets, bins, lockers, and shop equipment in various installations. ■ Penco Products, Inc., Oaks, Pa.\*

Circle 425 on inquiry card

**FOOD SERVICE PLANNING** / "The New Food Service Operation, Programming, Planning and Design Check List" covers many types of operations including restaurant, club, institutional and industrial. ■ Duke Manufacturing Company, St. Louis.\*

Circle 426 on inquiry card

**TILES** / A 4-page brochure contains information on ceramic tile and base trim with illustrations of application with resilient flooring, thin set and conventional ceramic installations. High-fired, vitreous china accessories are also shown. ■ Marshall Tiles, Inc., Marshall, Texas.

Circle 427 on inquiry card

**PARKING LOT DESIGN** / A 32-page plan book contains 14 basic parking plans, designs for any size area, and dimensions of 1967 cars. The book shows six types of wheel-stopping barriers. ■ Harris-Barrier, Inc., Indianapolis.

Circle 428 on inquiry card

**MOVABLE WALLS** / A bulletin describes a soundproof system that utilizes all directional ball-bearing ceiling trolleys to simplify track layout and storage arrangement and eliminate floor guides. ■ Industrial Acoustics Company, Inc., Bronx, N.Y.

Circle 429 on inquiry card

**ARCHITECTURAL LIGHTING** / A 32-page guide points out pertinent lighting information and suggests packaged lighting units for commercial, residential and industrial applications. ■ Pfaff & Kenhall, Newark, N.J.

Circle 430 on inquiry card

**LOCKERS** / Illustrations and information on the design, selection and purchase of athletic lockers—including lockers on wheels—are presented in an illustrated publication. \$1.50 postage paid. ■ DeGough Manufacturing Company, 9300 James Avenue South, Minneapolis, Minn.\*

**TUBING** / A 12-page catalog describes a complete line of solid and perforated

telescoping tubing. Included are design data, beam and column loads and application illustrations. ■ Unistrut Corporation, Wayne, Michigan.\*

Circle 431 on inquiry card

**LIGHTING** / A revised 36-page brochure describes a complete line of exterior mercury, fluorescent, filament, and quartz-iodine lamps. Other information covers ballasts, controls, adapters, brackets and poles. ■ General Electric Company, Schenectady, N.Y.\*

Circle 432 on inquiry card

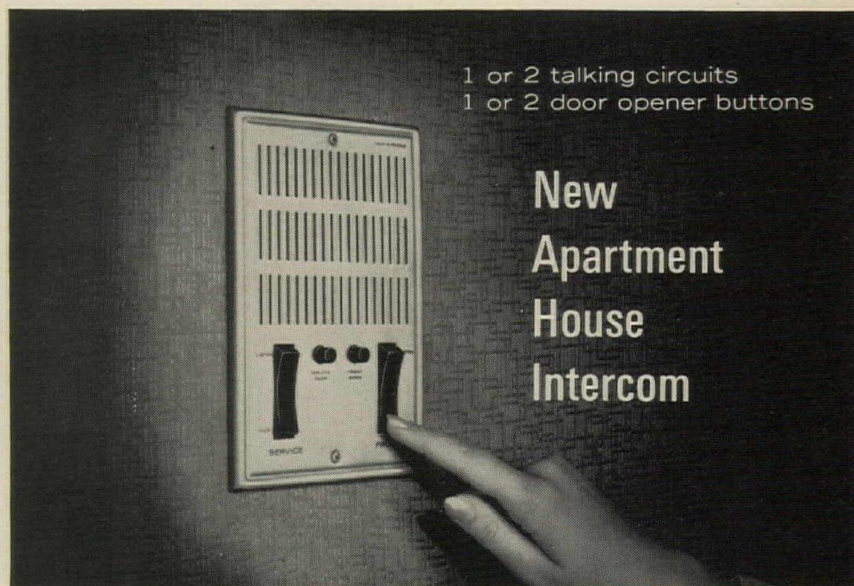
**ROOF DECK** / A standard load table with design criteria for Type "A" Deck includes 1-, 2- and 3-span condition for joist spacing from 5 ft to 8 ft-6 in. ■ Steel Deck Institute, Westchester, Ill.\*

Circle 433 on inquiry card

**COMMERCIAL, INDUSTRIAL LIGHTING** / Catalog shows a full line of equipment and accessories. ■ Good Manufacturing Co., Inc., Chicago.

Circle 434 on inquiry card

\*Additional product information in Sweet's Architectural File



1 or 2 talking circuits  
1 or 2 door opener buttons

New  
Apartment  
House  
Intercom

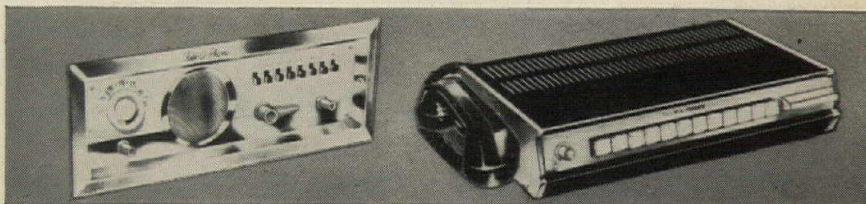
## New TALK-A-PHONE

Provides instant and direct 2-way conversation between any Apartment and Vestibule . . . Greater Performance with Exclusive Talk-A-Phone Features:

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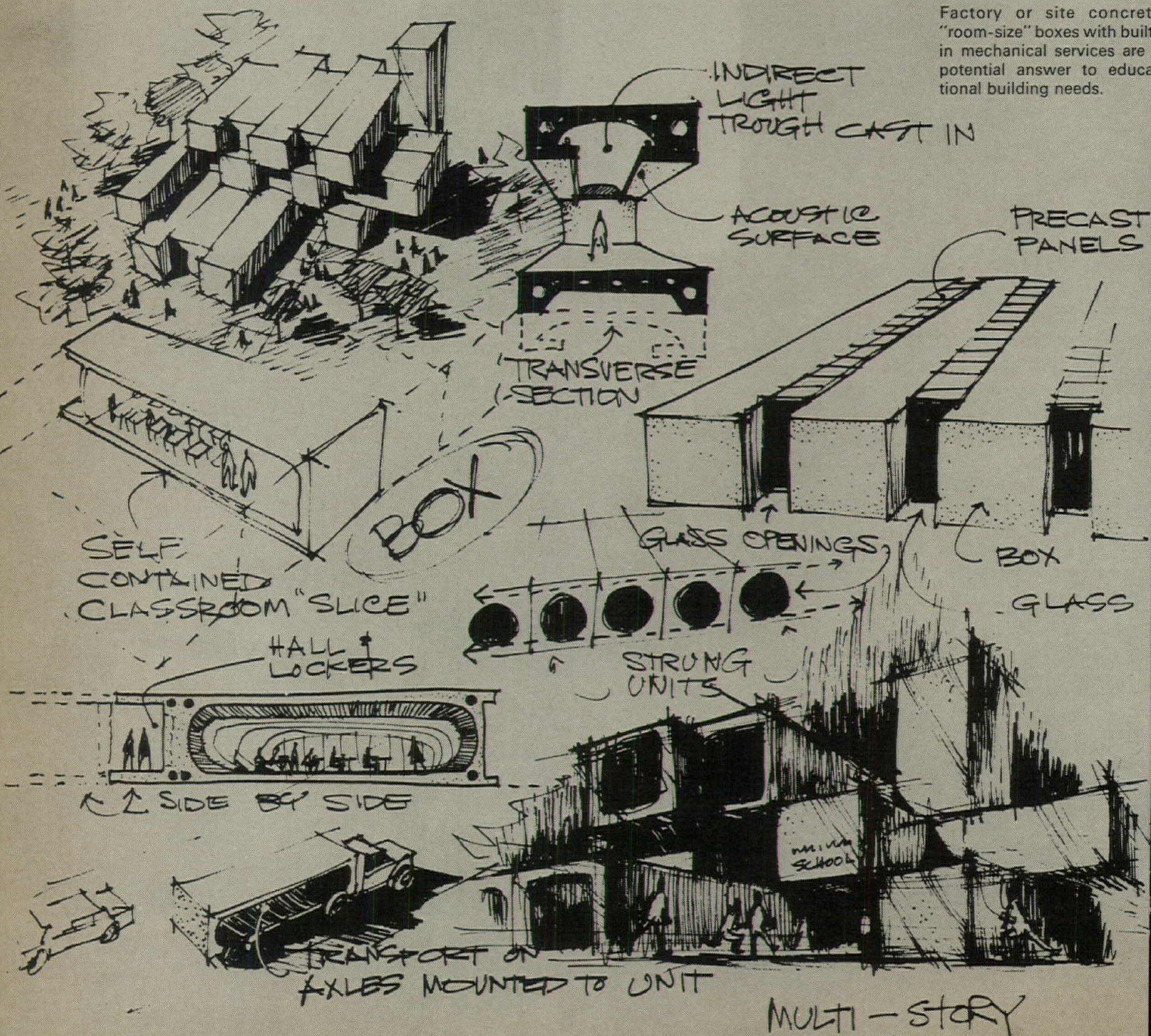
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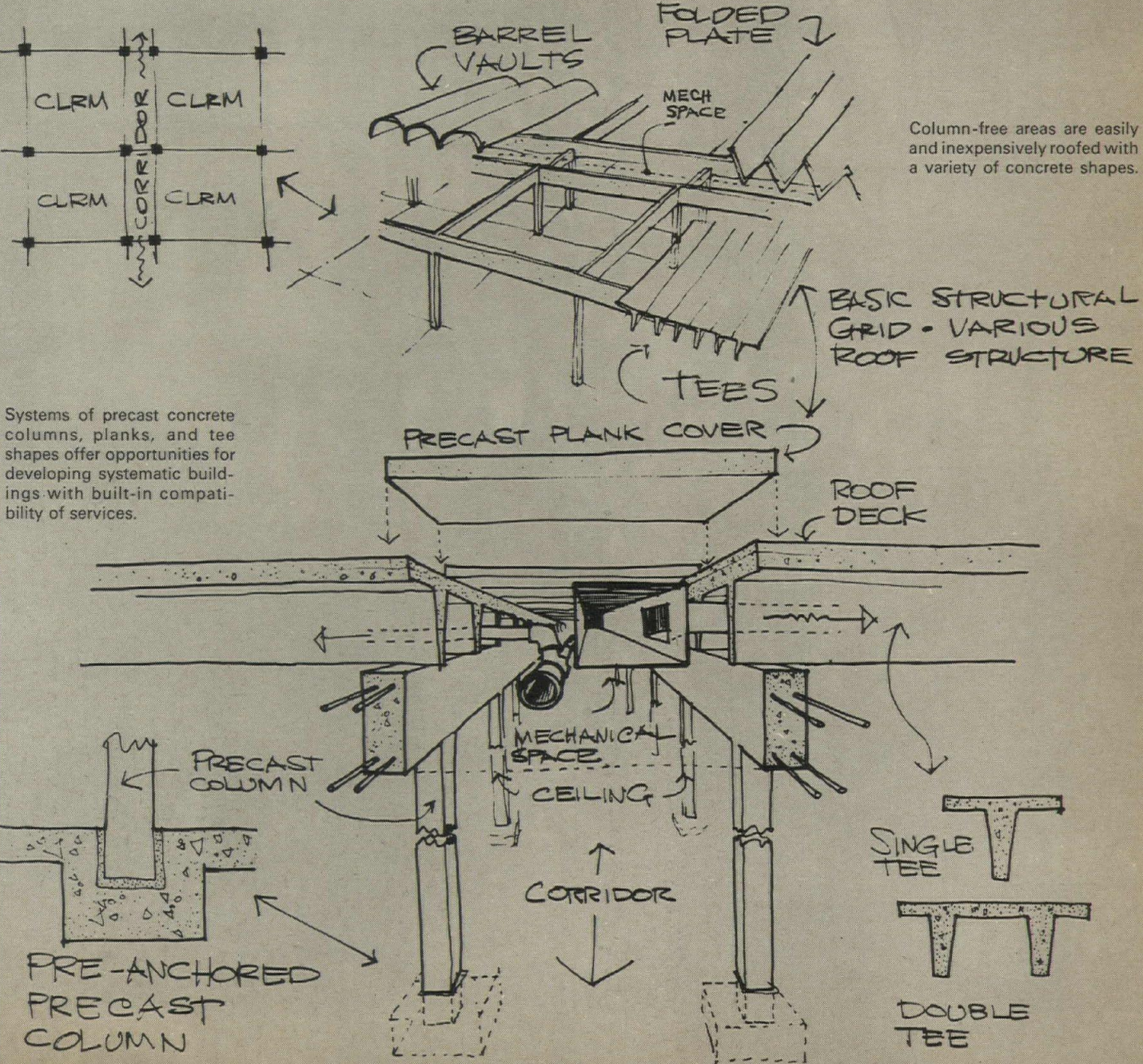


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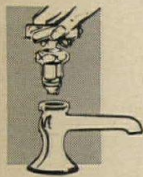
In further exploration of the systems building concept, you'll find PCA can help . . . through its technical literature and its nationwide staff of architects, engineers and specialists. Call the PCA office nearest you, or write for additional information. (U.S. and Canada only)

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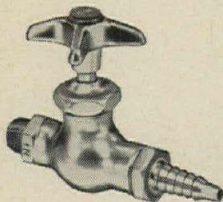


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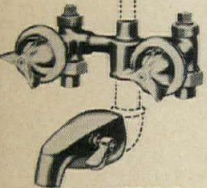


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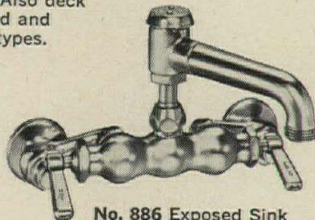


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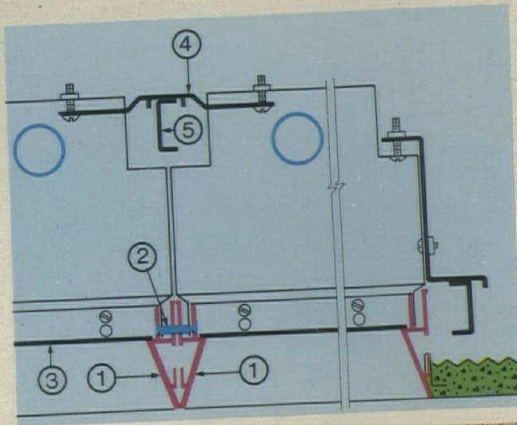
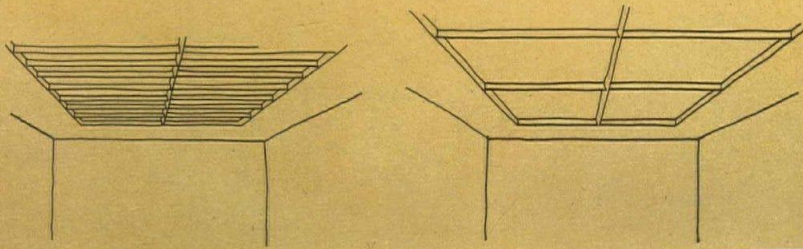
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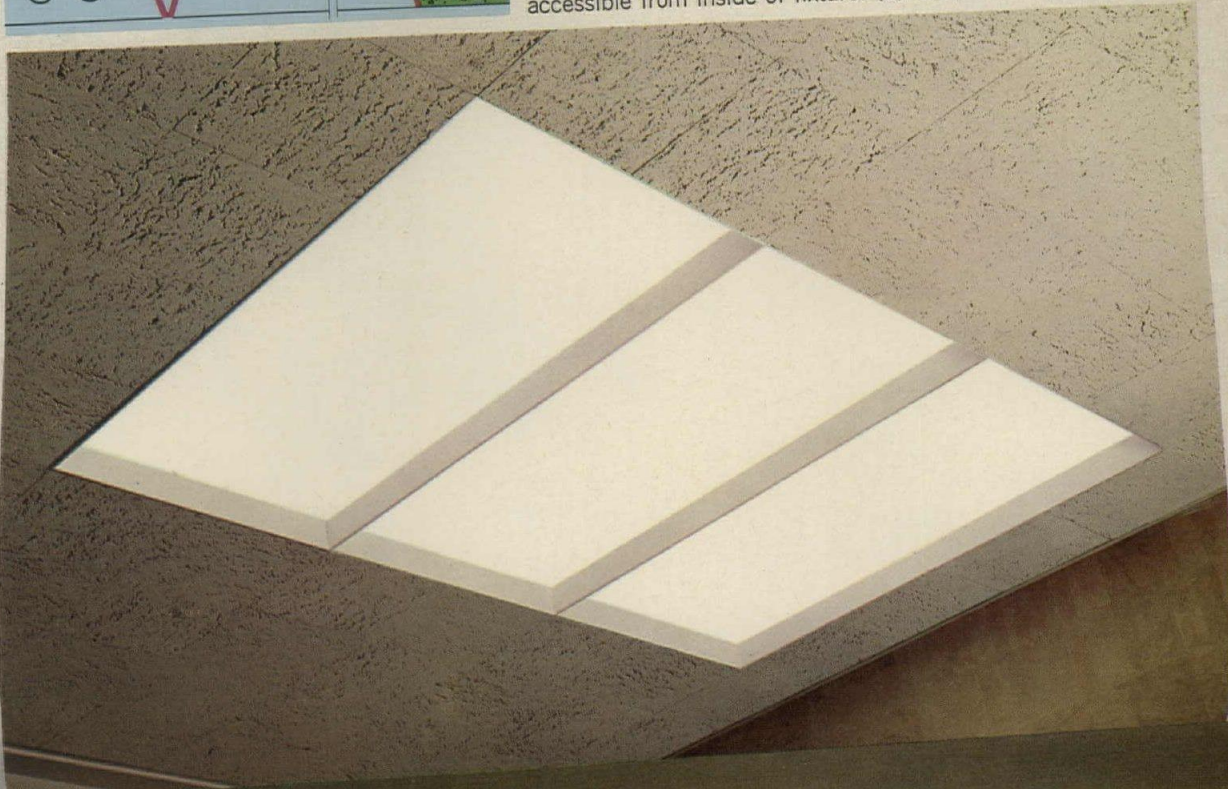
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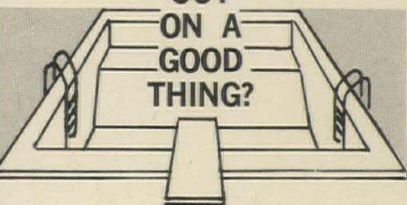


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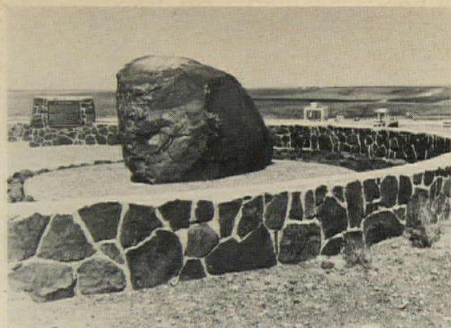
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**Indian memorial wins Army Engineers' award**

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Focal point of the memorial is a large boulder bearing ancient Indian inscriptions, which was taken from Snake River Canyon. The memorial commemorates the tribal burial grounds of five different Snake River Indian groups. It was designed by the staff of the Walla Walla Army Engineer District with technical assistance by Dr. Erna Gunther, anthropologist from the University of Washington.

Jury members were architects Roy F. Larson, Charles M. Nes, Jr. and George F. Pierce, Jr.

**Candidates sought for Brunner Scholarship Grant**

The annual competition for the \$6,000 Brunner Scholarship Grant has been announced by the New York Chapter of the American Institute of Architects.

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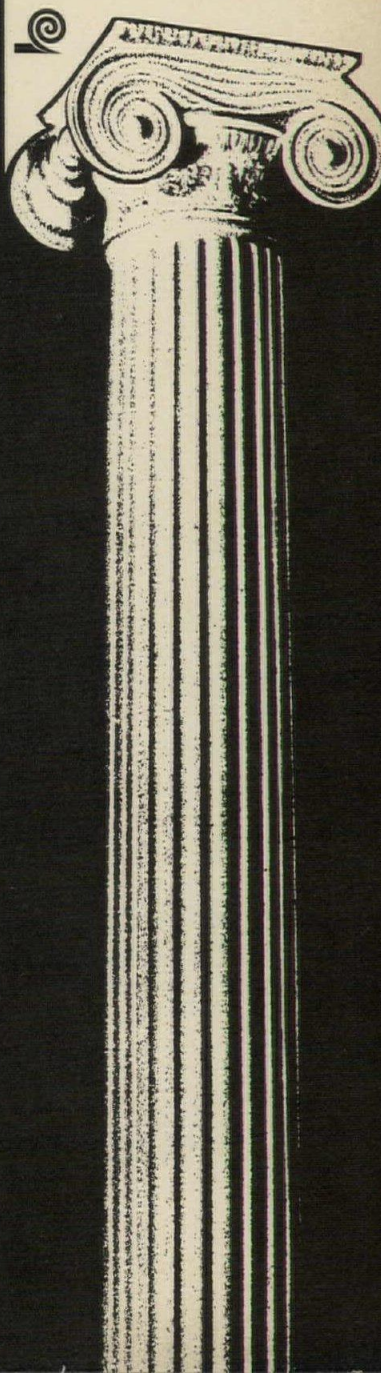
The award is given "for advanced study in some special field of architectural investigation which will most effectively contribute to the practice, teaching or knowledge of the art and science of architecture."

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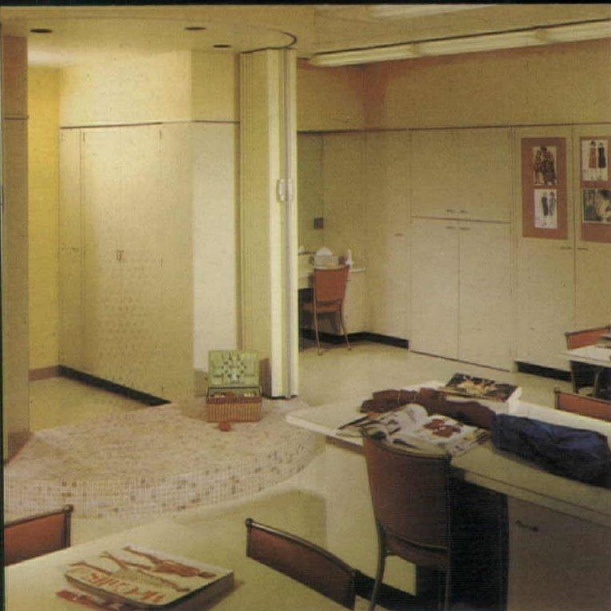
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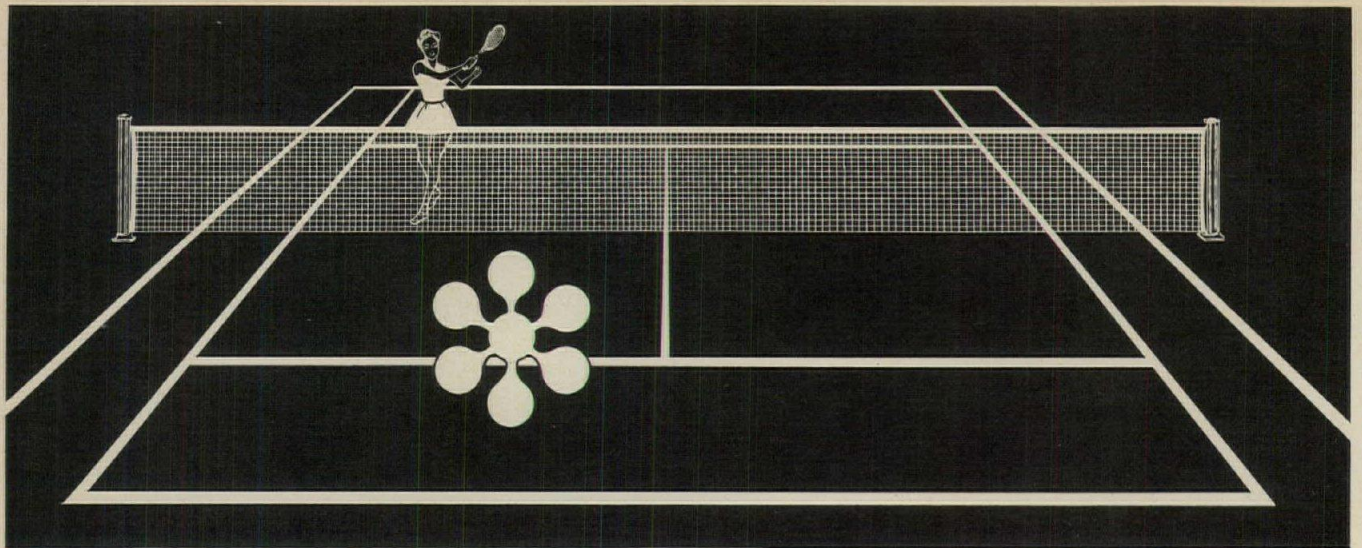
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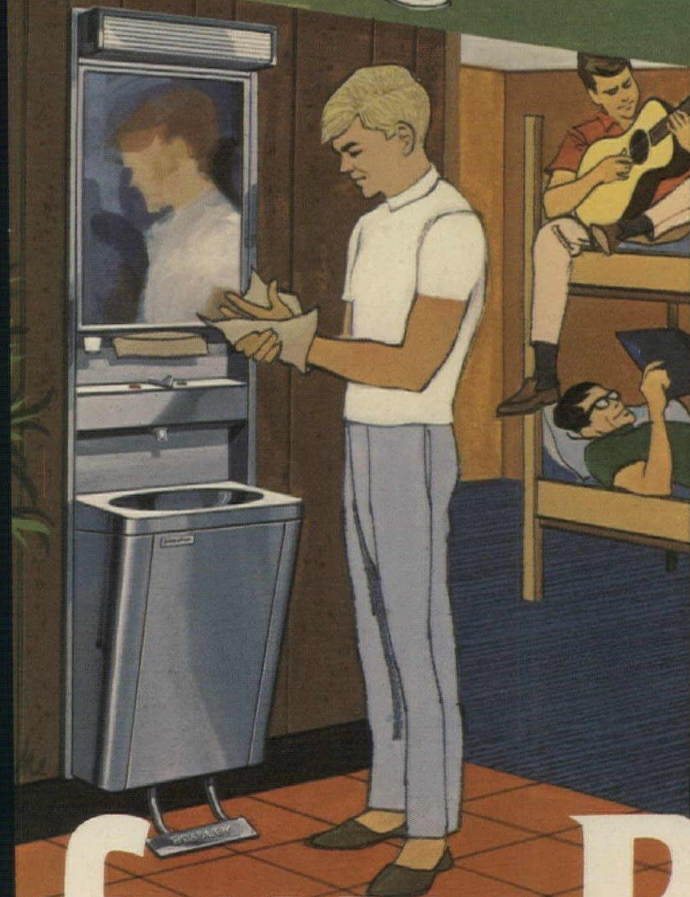
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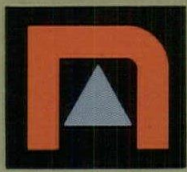
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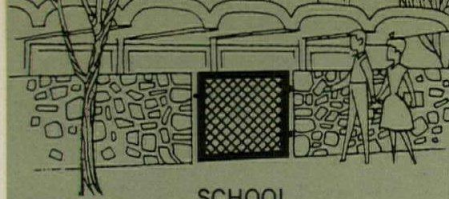
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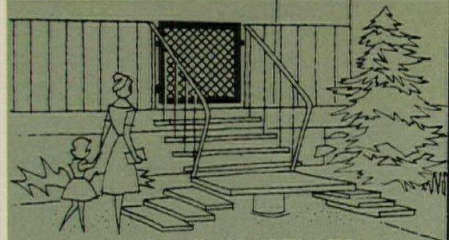
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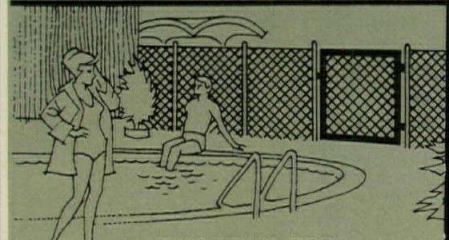
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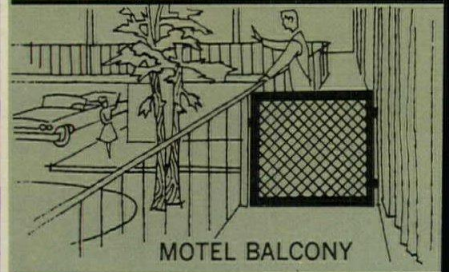
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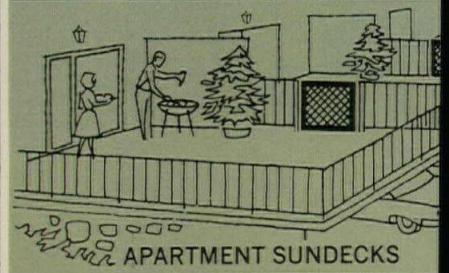
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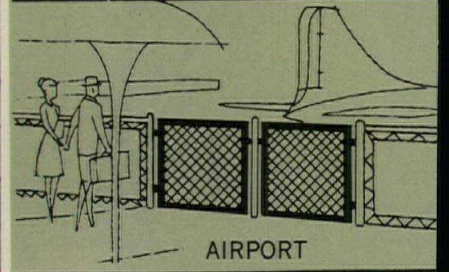
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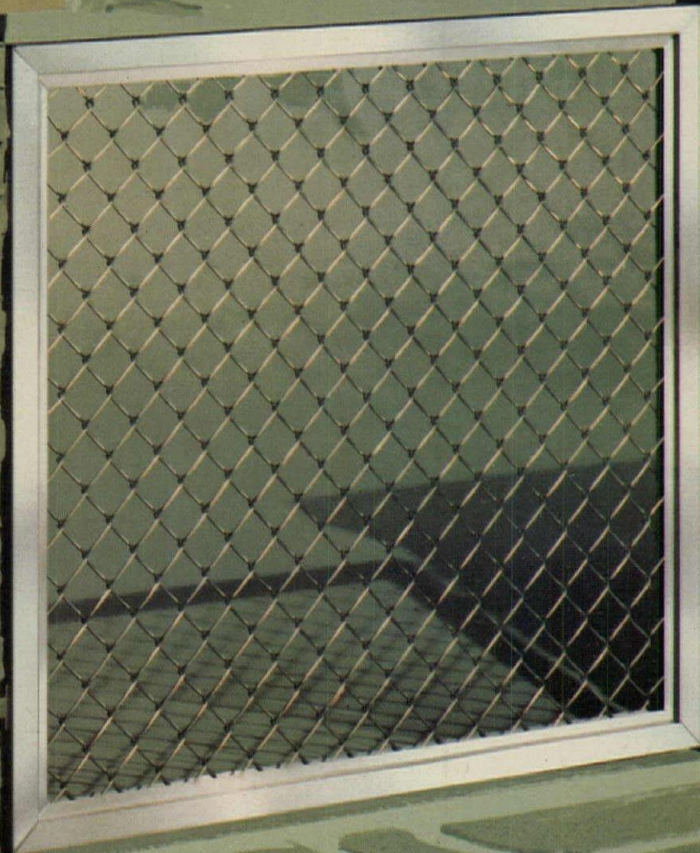
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Two new books help relate design and planning of "new towns" to research on the aspirations of a large segment of their potential populations—and find a gap big enough to lead them to a critique of the planning process

## The planning critique

**THE COMMUNITY BUILDERS.** By Edward P. Eichler and Marshall Kaplan. University of California Press, Berkeley, California 94720. 182 pp. \$5.50.

**THE LEVITTOWNERS.** By Herbert J. Gans. Pantheon Books, 457 Madison Avenue, New York, N.Y. 431 pp. \$7.95.

On the September 25 editorial page, New York Times architectural critic Ada Louise Huxtable discussed the recent transfer of Robert Simon's Reston to Gulf Oil Company. Gulf, already in for \$15 million, has sent a specialist to "see if [he] can make this thing work."

Fair to the big corporation, Mrs. Huxtable quotes the specialist's statement that Gulf has "patient" money; but she seems stung that he also says Gulf does not think Reston (or Gulf-Reston, Inc., as it should now be known) a particularly good investment. She lists the qualities Reston has and has sought to implement: "... a sensitive and extremely handsome small world and a way of life formed and molded with high art and sophistication by some of the country's best talents . . . town houses, cluster zoning, communal open land and amenity programs [achieved by] hard crusading for local reforms and bitter battles for financing."

*The Community Builders* and *The Levittowners* provide a background for understanding the event Mrs. Huxtable records and laments. Architects especially might ask what happened, since, as Mrs. Huxtable catalogues, Reston began with great architectural involvement and more of a design approach toward overcoming undesirable suburban characteristics than most new towns. On what grounds, then, did planning and design fail; or in strictest terms, did they fail at all?

*The Community Builders* and *The Levittowners*, perhaps to a great extent, answer that question. They both respond to the urban-development critique that has been heard from some time with a planning critique. It is interesting that this

latest insistence on a critique of city planning is being mounted by planners. Herbert Gans of Columbia University, who wrote *The Levittowners*, has a Ph.D. in city planning from the University of Pennsylvania. Marshall Kaplan has M.A. degrees in political science and planning. Edward Eichler has many credits, his latest as vice president of Reston, Inc.

Their books are appropriately reviewed together. Their data are complementary (Gans, sociological, northeastern; Eichler/Kaplan, financial, southwestern emphases, respectively). Nonetheless it is hard on these excellent books to be "lumped" and it must be made clear that they contain more and different things than this review can cover.

Eichler and Kaplan, authors of *The Community Builders*, stress that the new towns are springing from the urban-development critique. Physically, the critique of conventional subdivisions cites land waste and inadequate facilities; socially, it condemns the suburban mass man, saturated with pointless suburban activities, entertained by television, over-commuted and other-directed.

Eichler and Kaplan show, in their portraits of Robert Simon of Reston and James Rouse of Columbia, how two enlightened men interpreted the critique and sought to do something about it. The answer of Simon and Rouse, and others, was that of the architect and planner—a total, planned environment.

Though Eichler and Kaplan and Gans have different points of departure, their books converge to nearly identical conclusions: They feel that new town planning does not correspond with the demand for suburban housing as it exists, and that such planning may, if practiced widely, ultimately interfere with democratic concept by limiting choice of life styles and imposing the views of the educated planner and the upper-middle-class person on others.

Both books supply evidence that these "others"—the "average" homebuyers—may make a life-or-death financial

difference to the survival of new towns. From Eichler and Kaplan's analysis of the new town market and financial problems, it becomes clear that this important segment of the potential population of new towns was not adequately planned for. That is: The aspirations of these people were not sufficiently taken into account, leading planners and founders of new towns into basic assumptions that they did not test before committing large amounts of money.

According to Eichler and Kaplan, the two basic financial assumptions of the planners and founders are: 1) that rising incomes mean that a large enough segment of "average" homebuyers will pay more for a house in a planned, new-town environment, or even that 2) they will understand, and indirectly pay for, planning. Gans names the missing group of people—the "others"—as the lower middle class.

Eichler and Kaplan show that the biggest demand for housing in 1965 (one gathers most of their research was done in 1964-5) was in the \$17,000 to \$23,000 range, and that the lowest income to afford such homes was about \$8,000. But most new towns started out to have homes in the \$23,000 and above range.

Gans and Eichler and Kaplan, taken together, show that the desire of people in this lower-middle-income bracket is for the house. They buy its space and accommodations, not the community and its amenities or lack of them. (Gans, researching in 1958-60, recorded an income of at least \$6,500 to buy a Levitt home between \$11,000 and \$15,000—so given the five or seven years gap in research, groups discussed by the three are probably more similar than not.) Thus Levitt's simple maxim of "the most houses for the money" vindicated for his market.

This house-centered group saw planning, according to Eichler and Kaplan, as a device for enhancing and protecting the "class image" of their new town location, and for controlling house value

*continued on page 3*



# CEL-WAY

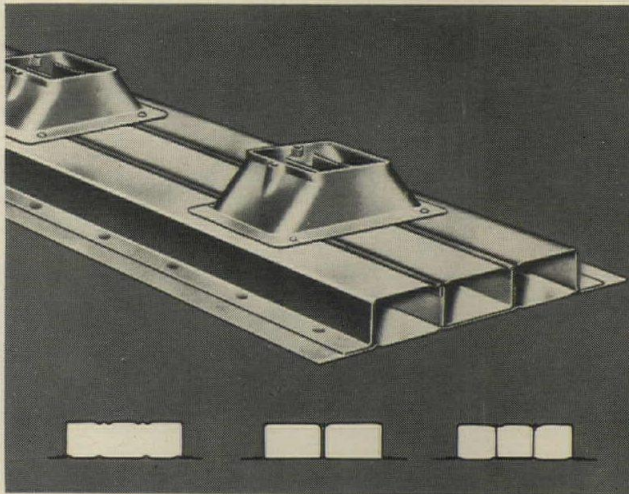
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Get complete information. See Sweet's File 1J/GR or write for Cel-Way product manual. Granco Steel Products Company, 6506 North Broadway, St. Louis, Mo. 63147. A subsidiary of Granite City Steel Co.



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IMAGINATION IN STEEL

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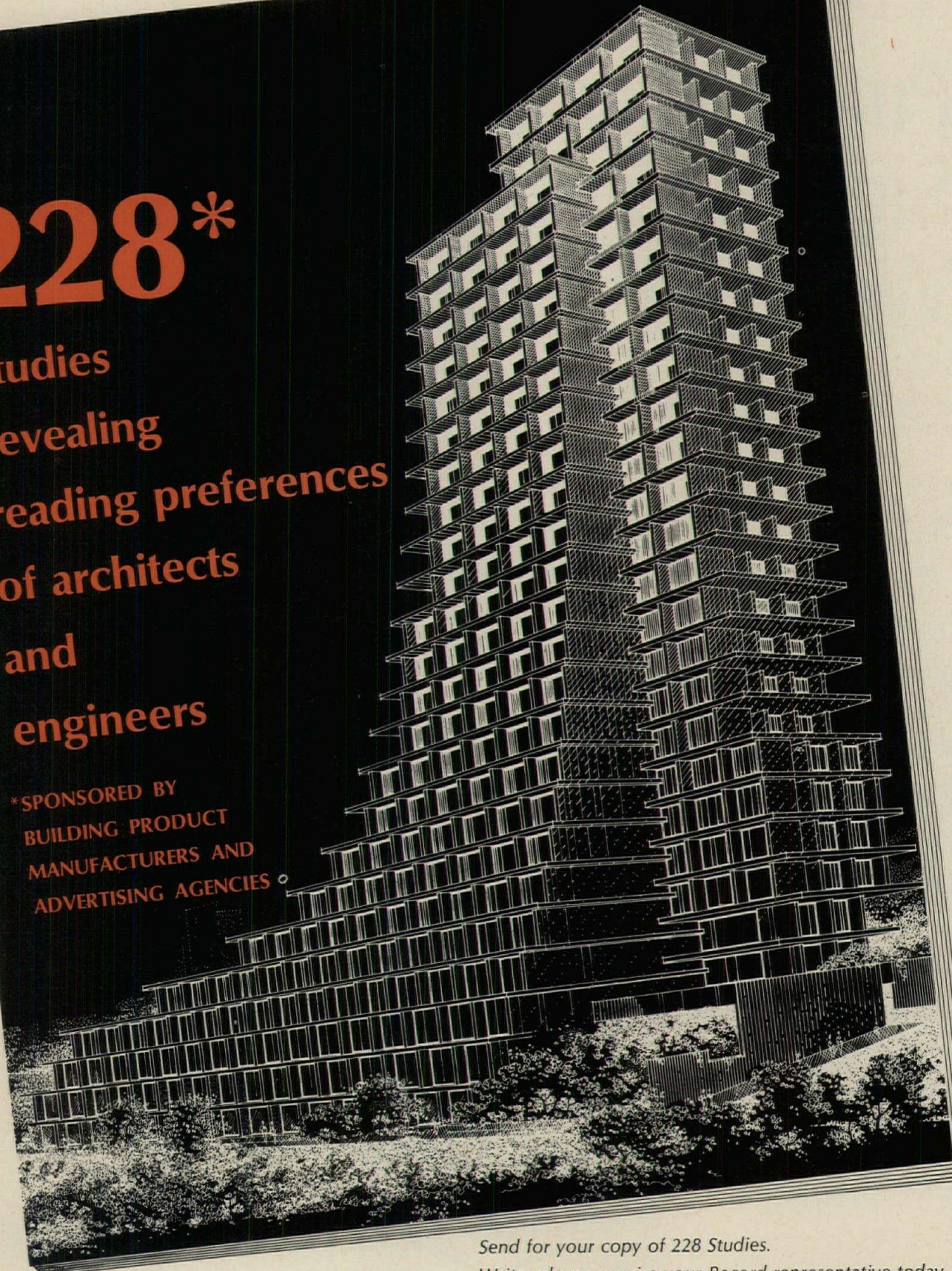


# New Folder Detail

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# Architects' Reading Preferences

In 210 out of 228 independently sponsored readership studies, architects and engineers have voted *Architectural Record* "preferred", "most helpful", or "most useful."

While the results of a single study may not provide a conclusive picture of reading habits, the steady pattern of preference for *Architectural Record* as expressed in 210 studies—comprising over 243,000 mail questionnaires and interviews over a period of three decades—surely deserves the close attention of every advertiser who seeks to place his architectural advertising on the basis of readership.

Especially significant is the fact that, since January 1966, architects have voted *Architectural Record* "preferred" in fifteen out of fifteen studies. Here are the results:

READERSHIP STUDIES—1966-August, 1967

	1st	2nd	3rd	4th	5th
<i>Architectural Record</i>	15				
A		14	1		
F			13	2	
& E N		1		6	9
A J			1	8	4

Equally significant is the fact that the *Record's* margin of leadership over the second place magazine has widened at the same time. In 1965 the margin of preference for the *Record* over the second place magazine was 19 per cent. In 1966, it was thirty-five per cent. In three recent independent readership studies, the *Record's* leadership over the second place magazine has widened to more than fifty per cent. Here are the results of these studies, in response to the question, "Which architectural magazine do you find most helpful in your work?"

	Wide-Lite Corp.	"Automatic" Sprinkler	Medusa Portland Cement Co.
<i>Architectural Record</i>	107	117	73
A	61	78	46
F	31	35	25
& E N	13	14	7
A J	9	19	18

## Why Architects and Engineers Prefer *Architectural Record*

Because the *Record* continually grows with the profession—improving its "helpfulness" whenever possible—such as the redesign of the magazine in 1966, the unique *Architectural Business* feature introduced last January, and the *Architectural Engineering Special Report*, unveiled in the July issue.

Because the *Record* has the largest editorial staff in the architectural field with 17 full-time editors.

Because *Record's* staff brings to its work over 250 years' background in architecture, journalism, engineering, teaching and the graphic arts.

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Because architects and engineers find the *Record* most helpful in their work, they spend more time with the *Record*, giving advertisers a better climate in which to tell their advertising story. And they are the **active** architects and engineers. Over 90 per cent of all architect-designed non-residential and large residential building is in the hands of *Record* subscribers.

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A MCGRAW-HILL MARKET-DIRECTED PUBLICATION



*continued from page 300*

Many said they planned to make little use of the facilities. Gans did not find that the "planning" that Levitt did incorporate into his effort had affected Levittowners' lives at all—for example, few identified with the school that was placed at the center of their neighborhoods.

Children-centered and house-centered, these young couples desire mostly an easy neighborly sociability, Gans finds. (Also see Clarence Stein's discussion of Radburn in *Toward New Towns for America*, published by M.I.T.) These

families also do not like row houses, research by the authors reveals. They maintain a preference for the single-family home above all. Further, they interpret the attempts of the community builder to place industry, garden apartments, row housing, stores, or even park-like office structures anywhere near them as a threat to their status—and will fight against such measures, which Eichler and Kaplan list as vital to help new towns financially.

Eichler and Kaplan further worry that, if the community builder of new towns seems to be breaking his apparent

early promise to higher-paying residents by later incorporating lower-income housing and industry, the builder will lose word-of-mouth advertising, the best kind. He might gain adverse word-of-mouth advertising.

In short, the list of qualities published by the Times critic matters to architects and planners, who are cosmopolitans; but not to a large segment of buyers—called locals by Gans—whose aspirations and needs were not consulted by planners. They may merely buy elsewhere other than in new towns endangering the entire new town idea. Mrs. Huxtable quotes the Gulf representative's aim as "good planning and design with economic feasibility" and says "to date the two are irreconcilable." Maybe Gulf Oil will have an answer. —Sidney Abbott

### Palladio

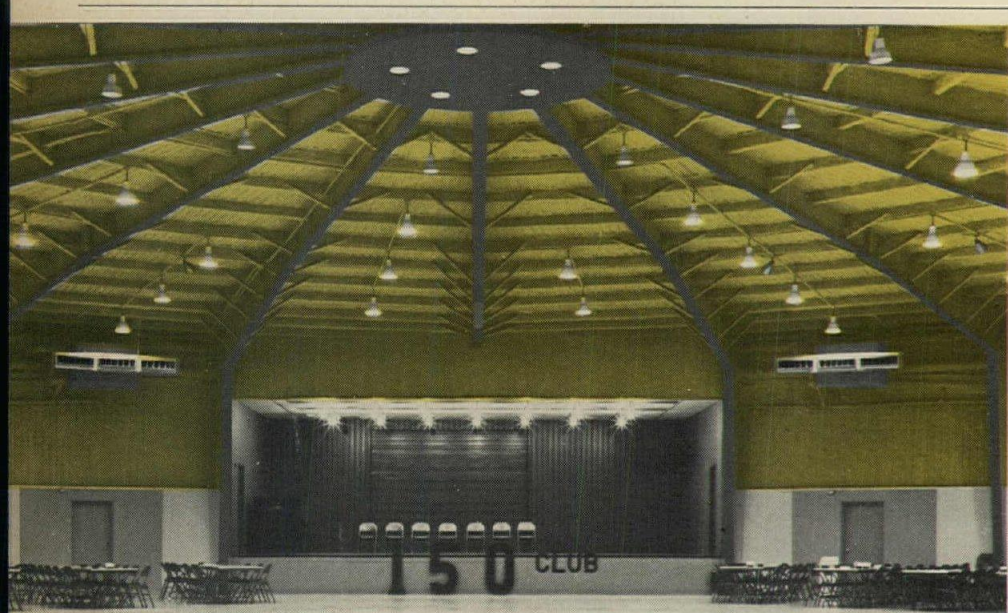
*PALLADIO'S VILLAS.* By James S. Ackerman. J. J. Augustin, Inc., Publisher, Locust Valley, New York. 79 pp., illus. \$5.00.

*Palladio's Villas*, originally written as a lecture by James Ackerman for New York University's Walter W. S. Cook Alumni Lecture series, is a welcome addition to the literature of one of Renaissance Italy's most well remembered architects. The book is a scholarly treatise with minutiae of scholarship appearing in the appendix, but the lecture itself makes lively and informative reading for the Palladio admiring layman as well.

Andrea Palladio sublimated his personality in aloof, serenely elegant buildings. The Palladian vogue swept into 17th Century England like fresh Mediterranean air. Inigo Jones, and in the next century Lord Burlington, returned from Italy with Palladio's treatises and drawings in hand. Grand tours of his villas became *de rigueur*, and for those who could not make the trip his *Quattro Libri* became the ersatz Baedeker to genteel domestic design. Indeed, in explaining Palladio's tremendous popularity, the author makes a crucial and McLuhanesque point: Palladio's architecture—modular, planar—was communicable, indeed enhanced, in print and line. Baroque—fluid, dynamic affirmative and possessive of space—would have been distorted by two dimensional reproduction, and was thus unexportable.

In the U.S. the Palladian style seemed to fit the bill for housing the plantation owner. Jefferson's visit to *La Rotonda*, Palladio's most famous villa, influenced Monticello's design. The style has survived to this day. At its worst, it has dried

*continued on page 301*



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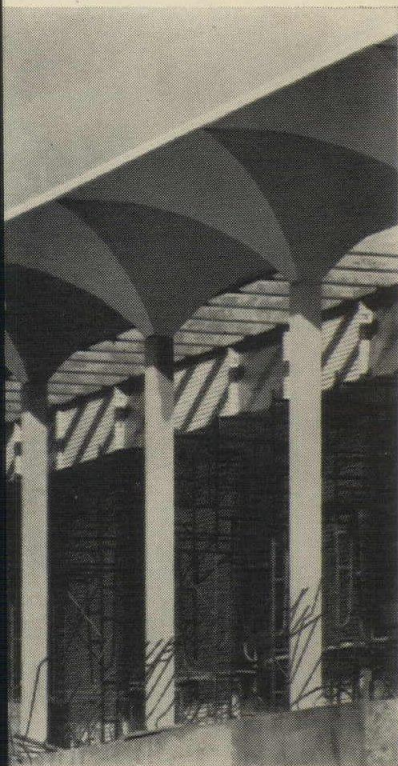


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REQUIRED READING

*continued from page 306*

up into academic pedantry; at its best, it can be discerned in the ordered elegance of the work of, for example, Yamasaki and Franzen. And Palladio's belief that principles of design arise from unchangeable natural laws has held timeless fascination.

For layman or architect, the study of Palladio's villas in this small but significant book offers cerebral respite from the contradictions of "roadtown," the complications of Times Square, and theories based on the elevation of accident and whim.

—Anne L. Buerger

**A bibliography on  
modern architecture**

**SOURCES OF MODERN ARCHITECTURE.** Edited by Dennis Sharp. George Wittenborn Inc., 1018 Madison Avenue, New York, N.Y. 10021. 56 pp., illus. Paperbound, \$4.75.

This bibliography is perhaps the most comprehensive one to date on the sources of modern architecture, including the architects, painters and critics. It will undoubtedly serve as an essential reference to the literature of the Modern Movement.

The bibliography first appeared in the *Architectural Association Journal* and its expanded form now has neat cross-reference along with some biography. More important though, is the fact that it is a selective list of more than 1,000 books and magazine articles concerned with the development of the Modern Movement. The entries are placed under sections devoted to either biography, subject—theory, Bauhaus, Art Nouveau, etc., or nation. However much a bibliography can reflect the personal taste of the author, this one does; however, it goes beyond the mere listing of the general works on modern architecture and theory.

**Books Received**

**BUILDING STRUCTURES PRIMER.** By James E. Ambrose. John Wiley & Sons, Inc., 605 Third Avenue, New York, N.Y. 10016. 121 pp., illus. \$7.95.

**THE FEDERAL BULLDOZER.** By Martin Anderson. McGraw-Hill Book Company, 330 West 42 Street, New York, N.Y. 10036. 272 pp., illus. Paperbound, \$2.45.

**CREATIVE DESIGN IN WALL HANGINGS.** By Lili Blumenau. Crown Publishers, Inc., 419 Park Avenue South, New York, N.Y. 10016. 270 pp., illus. \$6.95.

**CASTLES AND CHURCHES OF THE CRUSADING KINGDOM.** By T. S. R. Boase. Oxford University Press, 200 Madison Avenue, New York, N.Y. 10016. 121 pp., illus. \$17.50.

**A FUTURE FOR THE AGED.** By Frances Merchant Carp. University of Texas Press, Austin, Texas. 287 pp., illus. \$6.50.

**NATURAL RESOURCES: QUALITY AND QUANTITY.** Edited by S. V. Ciriacy-Wantrup and James J. Parsons. University of California Press, Berkeley, Calif. 217 pp., illus. \$6.50.

*continued on page 310*

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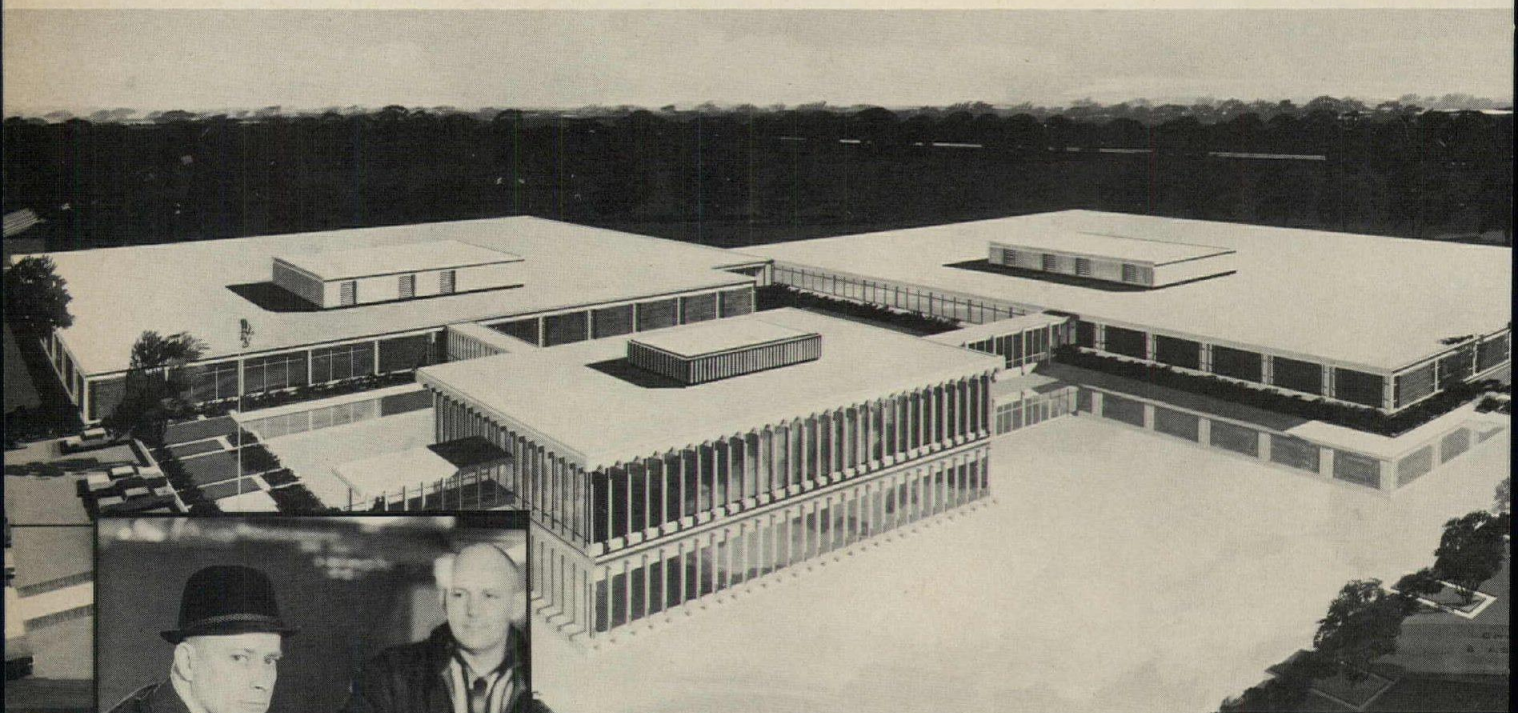
**306 E. HELLEN RD.**

**PALATINE, ILLINOIS**





## Is elevated flooring too costly for general construction



Architect Charles H. Harper (left) discusses floor installation with James Lawton, job foreman for general contractor, Joseph P. Jansen.

*No! Says Architect Charles H. Harper, who used nearly three acres of it in this giant complex for Globe-Union Inc.*

If you think of elevated flooring as a specialty item reserved for computer rooms, take a tip from Charles H. Harper, the Milwaukee architect who designed this 3-building research and administrative center for Globe-Union Inc. His plan called for 120,000 square feet of Weber elevated flooring, which Harper says netted out at about \$1 per square foot. (That's for finished flooring, about half of which was carpeted.)

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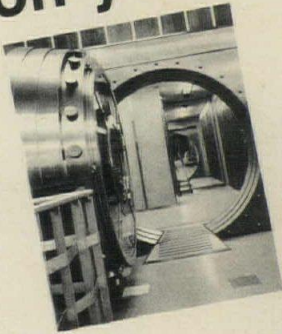
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continued from page 307

HANDBOOK OF FORMULAS FOR THE ANALYSIS OF COMPLEX FRAMES AND ARCHES. By G. S. Glushkov, I. R. Egorov and V. V. Ermolov. Daniel Davey & Co., Inc., 257 Park Avenue South, New York, N.Y. 351 pp., illus. \$15.75.

TRADEMARKS: 3X. Introduction by Franco Grignani. Wittenborn and Company, 1018 Madison Avenue, New York, N.Y. 10021. Paperbound, \$7.50.

YIELD-LINE ANALYSIS OF SLABS. By L. L. Jones and R. H. Wood. American Elsevier Publishing Company, Inc., 52 Vanderbilt Avenue, New York, N.Y. 10017. 405 pp., illus. \$15.75.

GRAPHIC HISTORY OF ARCHITECTURE. By John Mansbridge. The Viking Press, Inc., 625 Madison Avenue, New York, N.Y. 10022. 192 pp., illus. \$9.95.

MODERN SCHOOL SHOP PLANNING. Prakken Publications, Inc., Ann Arbor, Mich. 225 pp., illus. Paperbound, \$4.85.

PERSPECTIVES FOR ARCHITECTURE. By Georg Schaarwacher. Frederick A. Praeger, 111 Fourth Avenue, New York, N.Y. 10003. 119 pp., illus. \$10.00.

THE CHANGING APPEARANCE OF BUILDINGS. By R. B. White. British Information Service, 845 Third Avenue, New York, N.Y. 10022. 65 pp., illus. Paperbound, \$4.20.

CRANE HANDBOOK. Whiting Corporation, 15700 Lathrop Avenue, Harvey, Ill. 60426. 206 pp., illus. \$7.50.

URBAN RENEWAL: THE RECORD AND THE CONTROVERSY. Edited by James Q. Wilson. The M.I.T. Press, 50 Ames Street, Cambridge, Mass. 02142. 681 pp., illus. Paperbound, \$4.45.

A SPARK LIGHTED IN PORTLAND. By A. L. Todd. McGraw-Hill Book Company, 330 West 42nd St., New York, N. Y. 10036. 231 pp., illus. \$4.95.

EARLY NANTUCKET AND ITS WHALE HOUSES. By Henry Chandlee Forman. Hastings House, Publishers, Inc., 151 East Fiftieth St., New York, N. Y. 10022. 291 pp., illus. \$12.50.



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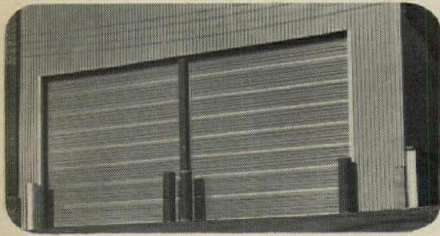


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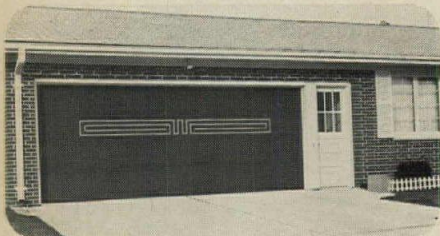
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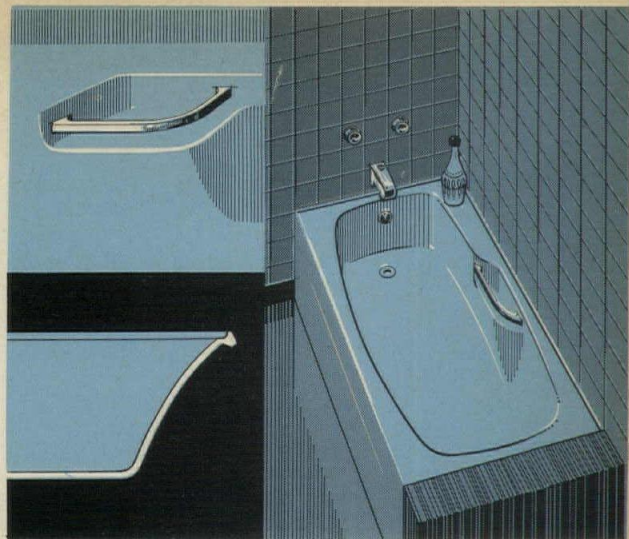
Offhand, how many people do you know whose ankles are as wide as their hips? Or whose backs are ironing-board flat? Whose arms hang below their knees? Probably the exact number of people who can get really comfortable in a bathtub-shaped bathtub.

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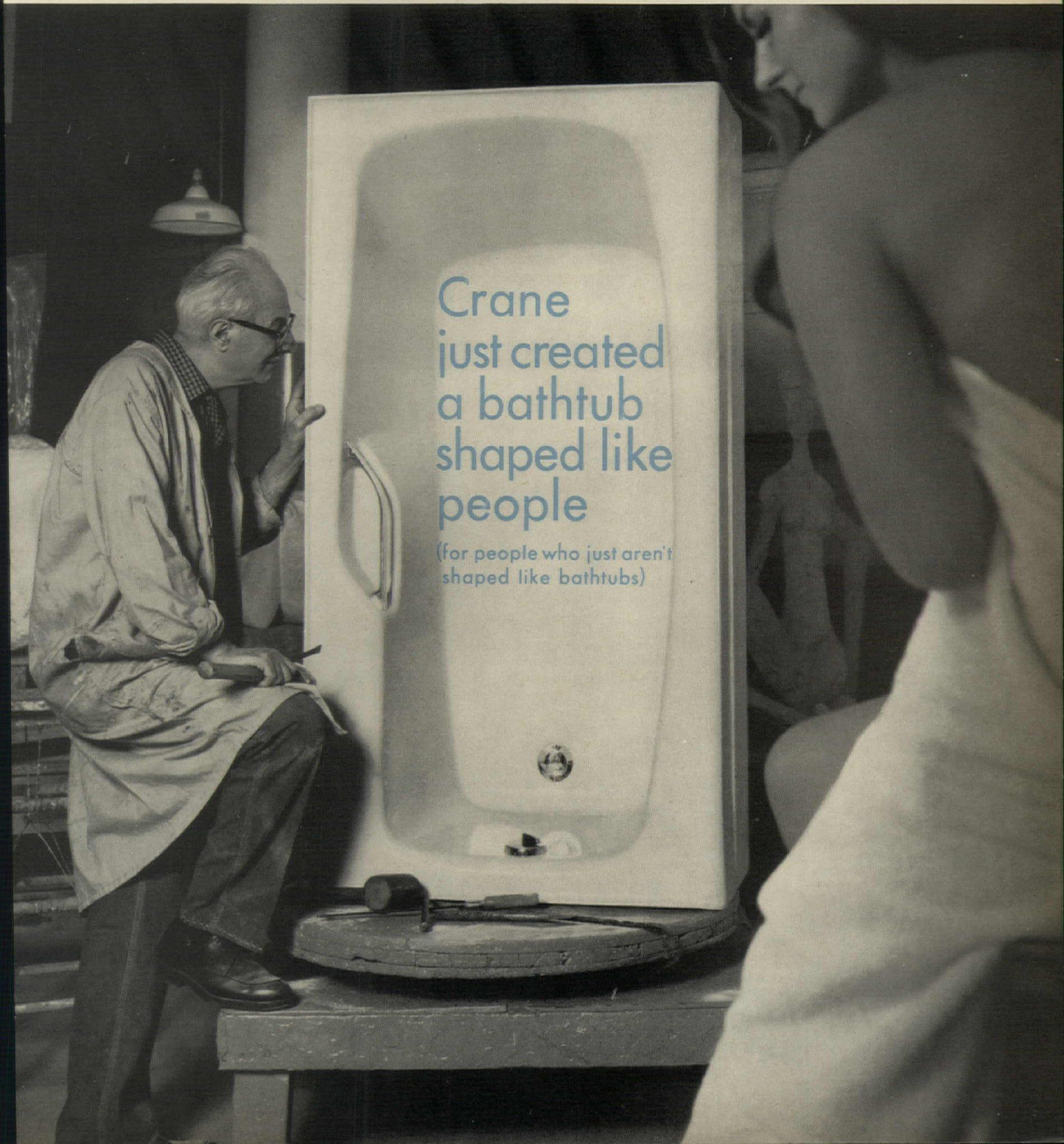
Before you design another bathroom, you owe it to yourself and to your clients to see The Empress bathtub. It's at home in any decor. For additional information write for Brochure ADJ-1984, Crane Co., Dept. 008, 4100 South Kedzie Avenue, Chicago, Illinois 60632.

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# ADVERTISING INDEX

Pre-filed catalogs of the manufacturers listed below are available in the 1967 Sweet's Catalog File as follows.

- A Architectural File (green)
- I Industrial Construction File (blue)
- L Light Construction File (yellow)

## A

Aerofin Corp.	244
Air Guide Corporation	45
Alcoa International	292
A Allen Mfg. Co., W. D.	301
Alma Desk Company	106
A-I Altec Lansing Corp.	112
A-I Aluminum Co. of America	2-3
I American Air Filter Co.	130-131
A-I American Bridge Division, USS	128-129
A-I American Cyanamid Co., Fibers Division	245
American Hot Dip Galvanizers Assn.	307
A American Olean Tile Company	80
A-I-L American Saint Gobain Corp.	12-13
American Smelting & Refining Co.	246
A-I American Standard, Plumbing & Heating Div.	33
A-I American Telephone & Telegraph Co.	95
Ames Company, W. R.	32-4
Anaconda American Brass Co.	85
A-L Andersen Corp.	279 to 282
A Anemostat Products Div., Dynamics Corp. of America	109
Architectural Record	304-305
A-I Armco Steel Corp.	64, 287
A-I-L Armstrong Cork Co.	237
A Art Metal, Inc.	66
A-L Automated Building Components, Inc.	205
A-L Azrock Floor Products	3rd Cover

## B

A Bally Case & Cooler, Inc.	90
Basalt Rock Co., Inc.	32-5
A Bayley Co., William	107
Behr Manning Company	91
A-I Bell Telephone System	95
Berven of California	126
A-I Bethlehem Steel Corp.	252-253
Bigelow-Sanford Carpet Co.	100
Birge Company, Inc.	77
A-I Borden Metal Products Co.	47
A-I Bradley Washfountain Co.	297

## C

A-I Carlisle Tire & Rubber Div., Carlisle Corp.	224
A Carpenter & Co., L. E.	86
A-I Carthage Marble Corp.	239-240
A-I Celotex Corp.	255 to 258
Challenger Lock & Hardware Div., Eaton Yale & Towne Inc.	97
Chicago Faucet Co.	262
Collins & Aikman	55
Concrete Reinforcing Steel Institute	222-223
A-I Cookson Co.	275
Copper Development Association, Inc.	54
A-I Cordley & Hayes	278
A Corning Glass Works	114 to 117, 226-227
A-L Crane Co.	311

## D

A Da-Lite Screen Co., Inc.	58
Davenport, A. C., & Son	307
Day & Night Mfg. Co.	225
A-L Delta Faucet Company	244
DeSoto Chemical Coatings, Inc.	15 to 17
A Dover Corp., Elevator Div.	208
A-I-L Dow Chemical Co.	127

A-I Duriron Co., Inc.	1
A-I-L Dur-O-Wal	230-231

## E

Eaton Yale & Towne Inc., Challenger Lock & Hardware Div.	97
A-I Eaton Yale & Towne Inc., Norton Door Closer Div.	30-31
Eljer Plumbingware Div., Wallace-Murray Corp.	56
Executone, Inc.	34

## F

Fidelity Management & Research Co.	244
Flintkote Co.	8

## G

A-I-L General Electric Co.	50-51, 79, 294
Georgia Marble Co.	98
Glynn-Johnson Corp.	92
A-L Goodrich Co., B. F.	108, 272
A-I Goodyear Tire & Rubber Co.	211
A-I Granco Steel Products Co.	302-303
A Grant Pulley & Hardware Corp.	18
Greenberg's Sons, M.	32-6
A-I GREFCO, Inc., Building Products Div.	206-207
A Guth Co., Edwin F.	314

## H

Hardwick & Magee Co.	76
A Hartmann-Sanders Co.	293
A Haughton Elevator Company	274
A Haws Drinking Faucet Company	216
A Hickman Co., W. P.	228
A-I Hillyard Chemical Co.	241
Holophane Co., Inc.	60-61
L Honeywell	101

## I

A-I-L Inland Steel Products Co.	309
International Nickel Co., Inc.	73
A ITT Nesbitt, Inc.	121 to 123

## J

A Jamison Door Co.	110
--------------------	-----

## K

A Kawneer Co.	242-243
A-I Kinnear Corp.	113
Knight, H. W. & Son, Inc.	262
A-I Kohler Company	25, 273
A Krueger Metal Products Co.	70
A K-S-H, Inc.	212

## L

Laclede Steel Co.	14
A LCN Closers, Inc.	124-125
A-I Lead Industries Assn., Inc.	267
Lees & Sons Co., James, Div. Burlington Ind.	217
A-L Lennox Industries, Inc.	220-221
A Levolor Lorentzen, Inc.	234-235
A-I-L Libbey-Owens-Ford Glass Co.	263 to 266
Lighting Products, Inc.	68
A Lightolier, Inc.	291

## M

A-I Mahon Co., R. C.	262B-262C
A Maintenance, Inc.	296

A-L Marlite Div., Masonite Corp.	71
McDonald Products Corp.	118
Medusa Portland Cement Co.	32
A-I-L 3M Company	72
A-I-L Mississippi Glass Co.	285-286
Modine Mfg. Co.	214-215
A Montgomery Elevator Co.	238
A Mosaic Tile Co.	271

## N

National Cellulose Corp.	306
A-I-L National Gypsum Co.	26-27
National Lead Co.	278
A New Castle Products, Inc.	236
Nichols Aluminum Co.	298
Norris Dispensers, Inc.	284
A-I Norton Door Closer Div., Eaton Yale & Towne Inc.	30-31

## O

A O'Brien Corp., The	274
A Otis Elevator Co.	99
A-I Overhead Door Corp.	22 to 24
A-I-L Owens-Corning Fiberglas Corp.	84

## P

A Panelfold Doors, Inc.	11
A Paragon Swimming Pool Co., Inc.	293
A Payne Company	32-1
A-L Pella Rolscreen Co.	249-250
A-I Pennsalt Chemicals Corp.	103
Phillips Fibers Corp.	67
A-I-L Pittsburgh Plate Glass Co.	288-289
Portland Cement Association	260-261
A-I-L Potlatch Forests, Inc.	7
Potter-Roemer, Inc.	70
L Powers Regulator Co.	262A
A-I Prestressed Concrete Institute	69

## R

A-I Raynor Mfg. Co.	46
A-L Red Cedar Shingle & Handsplit Shake Bureau	76
A Rixson, Inc.	137
Royalmetal Corp.	58, 59
A-I-L Ruberoid Co.	49

## S

A St. Charles Mfg. Co.	291
St. Joseph Lead Co., Metals Division	96
Schemenauer Mfg. Co.	247
A Schlage Lock Co.	268-269
Selck, Walter E., and Company	261
A Simmons Company	28-2
A-I-L Sisalkraft Div., St. Regis Paper Co.	7
A-I Sloan Valve Company	4th Cover
Soil Pipe Div., Tyler Pipe Industries	23
A-I Solar Div., International Harvester Co.	23
A Sonneborn Bldg. Prod., Inc., sub. DeSoto Chemical Coatings, Inc.	19 to 21
A Speakman Company	6
Square D Company	29
A-I Standard Conveyor Co.	25
A Steelcraft Mfg. Co.	62-6
A Stevens Gulistan Carpet, Div. J. P. Stevens & Co., Inc.	22
Stewart & Stevenson Services, Inc.	24
Sturgis Company	12
A Summitville Tiles, Inc.	28
Sweet's Catalog Service	37

## T

Talk-A-Phone Co.	25
A-I-L 3M Company	7
A Tile Council of America, Inc.	10



A Tremco Mfg. Co. ....	270
Tyler Refrigeration Div., Clark Equipment Co. ....	74

**U**

A Union Camp Corp., Honeycomb Div. ....	132
A-I United States Gypsum Co. ....	53
A-I United States Steel Corp. ....	111
A-I United States Steel Corp. (subs) .....	128-129, 276-277
A Universal Atlas Cement .....	276-277
A-L Uvalde Rock Asphalt Co. ....	3rd Cover

**V**

Vaughan Walls, Inc. ....	213
A-L Vectra Co., Div. of National Plastic Products Co., Inc. ....	2nd Cover
A Vogel-Peterson Co. ....	254
Vollrath Co. ....	37 to 39
A Von Duprin, Inc. ....	52

**W**

Wagner Mfg. Co. ....	310
Wakefield Lighting Div., Wakefield Corp., ITT .....	119
Water Saver Faucet Co. ....	70
A Weber Showcase & Fixture Co. ....	308
Wenger Corporation .....	102
Wheeler Reflector Co., Inc. ....	262D
A-I Wheeling Corrugating Co. ....	218-219
A-I Wonder Trussless Bldg., Inc. ....	284
Woodwork Corp. of America .....	57
A Wooster Products, Inc. ....	274

**Z**

A-I Zero Weather Stripping Co., Inc. ....	104
---	-----

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