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SOME THOUGHTS ON STARTING YOUR OWN PRACTICE

SPECIAL REPORT: THE SYSTEMS APPROACH TO AIR CONDITIONING

BUILDING TYPES STUDY: TALL OFFICE BUILDINGS—THE PROCESS OF DEVELOPMENT

FULL CONTENTS ON PAGES 4 AND 5

ARCHITECTURAL RECORD

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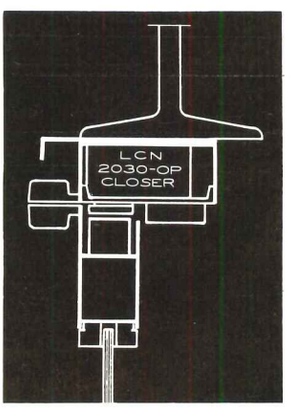

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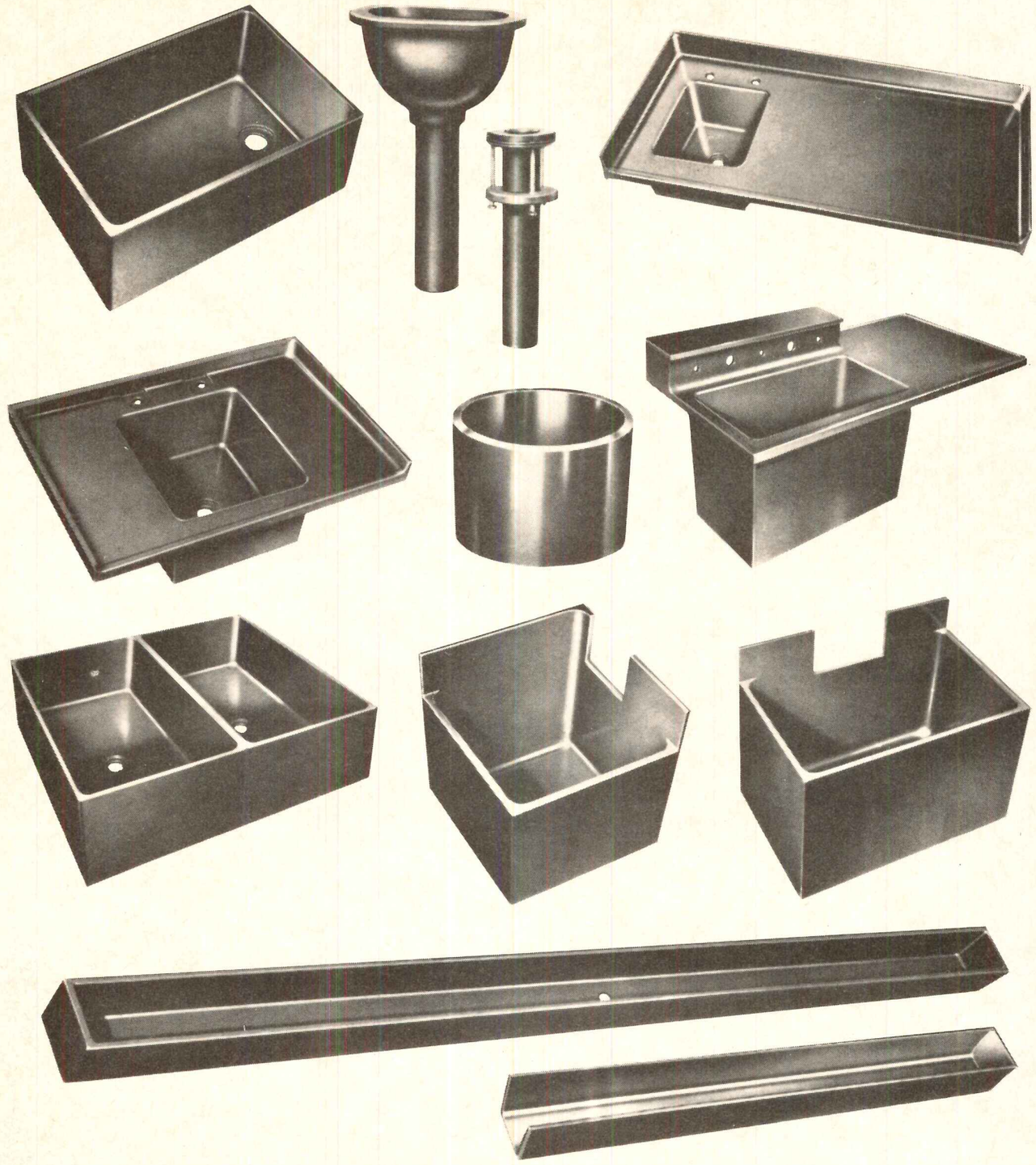

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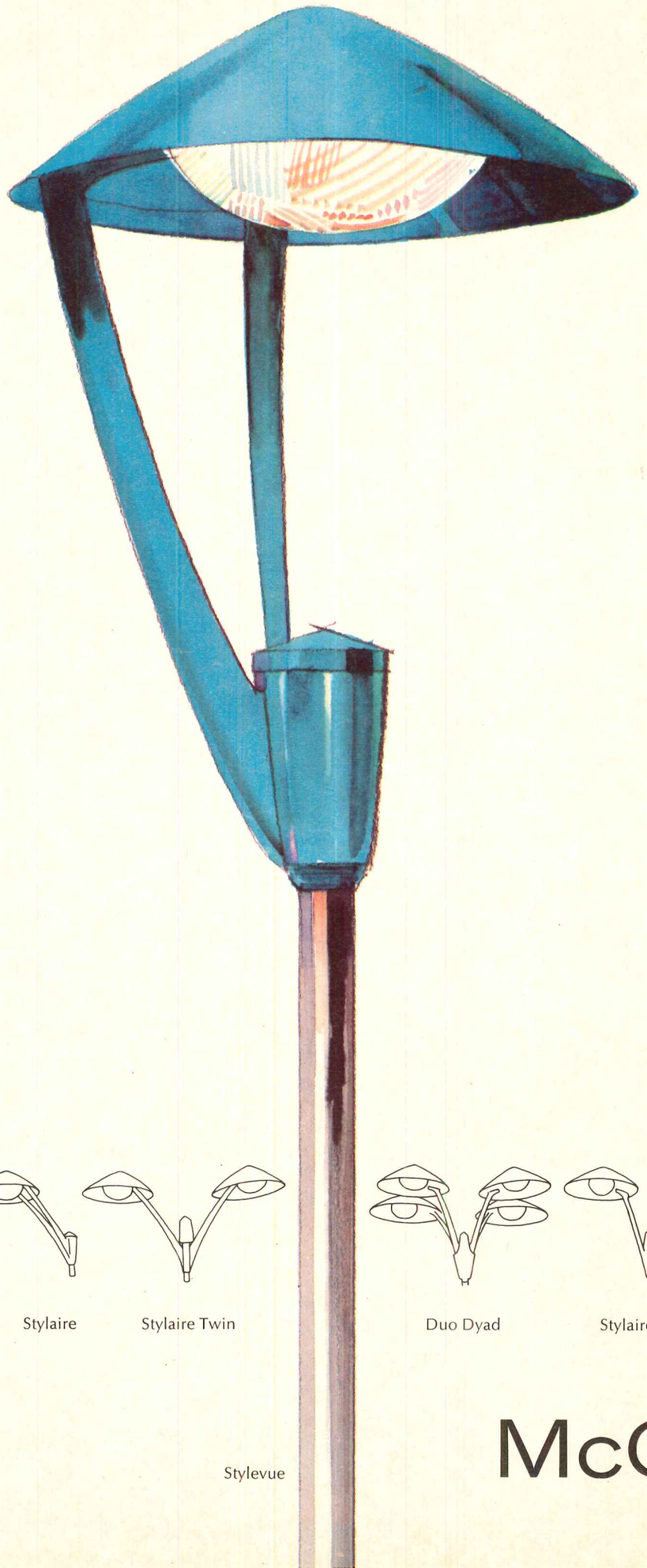

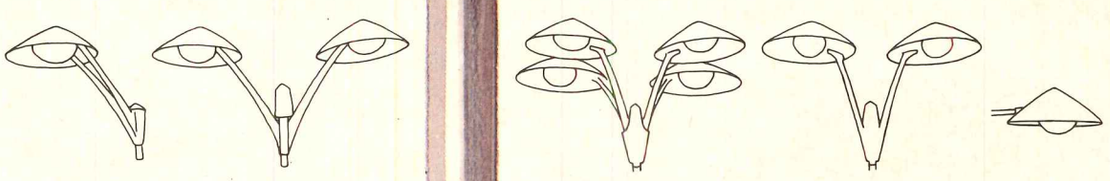

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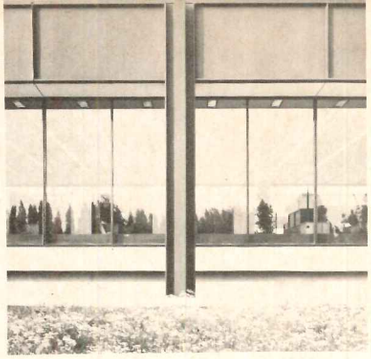

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Nottingham, England
Architects: Skidmore, Owings & Merrill
Photographer: © Ezra Stoller (ESTO)

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Hare photo

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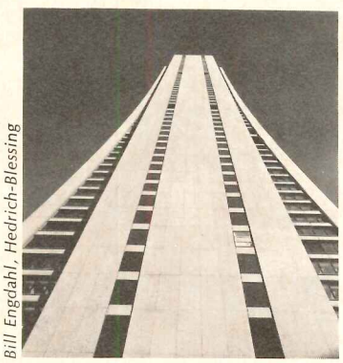

Bill Engdahl, Hedrich-Blessing

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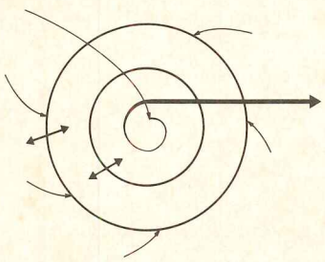

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COMING IN THE RECORD

A NEW CAPITOL FOR A NEW STATE

Featured next month will be the new capitol of the newest state in the union, Hawaii, for which a joint venture of John Carl Warnecke & Associates and Belt, Lemmon & Lo were architects. Dedicated last month with appropriately colorful ceremonies, the new and beautiful building reflects in its design both the unique blend of cultures in the island state and its growing role in the contemporary world.

CURRENT TRENDS IN COLLEGE PLANNING

Colleges and universities face the prospect of greatly increased student populations and of a diminishing amount of land available for development. The April Building Types Study will focus on recent examples of this increasingly dense planning and will include also a look at the impact of advanced technological teaching equipment on lecture halls.

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Vase of Chrysanthemums, Claude Monet, National Gallery of Art, Washington, D. C., Chester Dale Collection

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Quality environment: upon what principles do we proceed?

Not long ago I was invited to make a speech to the Norwalk (Connecticut) Association for Better Community Design. This group was formed some five years ago by a group of local residents in that once-factory town (population: 67,775) to try to raise the design quality of the schools being built, and to try to raise the quality of the urban redevelopment then (and still) being undertaken by the city.

As I sat down to think about what I would say to them, I found that I was full of examples of what was wrong with our environment in general and Norwalk's environment in particular. I could create a long list of how environments got that way (bureaucratic indifference, business indifference, public apathy, private ignorance), and was full of enthusiasms for the efforts of groups like the Norwalk ABCD to fight the good fight for environmental quality. But I was totally unable to suggest any specific goals for the "environmental quality" for which we are all searching.

A client can tell an architect that he wants a house with room for so many adults and so many children and such-and-so activities to cost not more than thus-and-such, not including land and fees. But a client cannot tell the architect what he wants the house to feel like and what he wants to feel like when he lives in it. Most clients bring along an "idea file" and clippings of houses they've liked. But does this really communicate? And if people cannot describe the houses they want, how do they describe the city they want?

In this issue (page 161) architect Benjamin Thompson offers a moving (and quite positive) description of the city he wants. But in general, as the National Commission on Urban Problems (Douglas Commission) points out in its just-issued report, "We are accustomed to defining 'quality' in negative terms. Non-slums, absence of transportation problems, better schools, etc. help to say what it is we do not want, or want improved, but they take their meaning from conditions that are 'bad.' There is no measure defined in relation to a 'good' place.

"Without a clear picture of urban quality, layman and lawmaker alike have no common goal by which to judge what we are building and rebuilding today. . . . [The British philosopher] Hume once wrote: 'I am uneasy to think I approve of one object and disapprove another; call one thing beautiful and another deformed; decide concerning truth and falsehood, reason and folly—without knowing upon what principles I proceed.' We are all uneasy today because we don't have principles that we all understand. And a world with fewer and fewer limitations on the possible makes it more and more difficult to develop principles that can be commonly understood. Once the man-made environment changed slowly; there was time to examine and get acquainted with and understand it. Today, man changes his world so quickly that he is almost put in the position of a man reading about reading while teaching himself to read. . . . When he tries to set up principles to guide him in evaluating his life in the city, in the home he shares with his family, in the place where he works, along those streets he traverses each day, he feels increasingly unsure of his judgments."

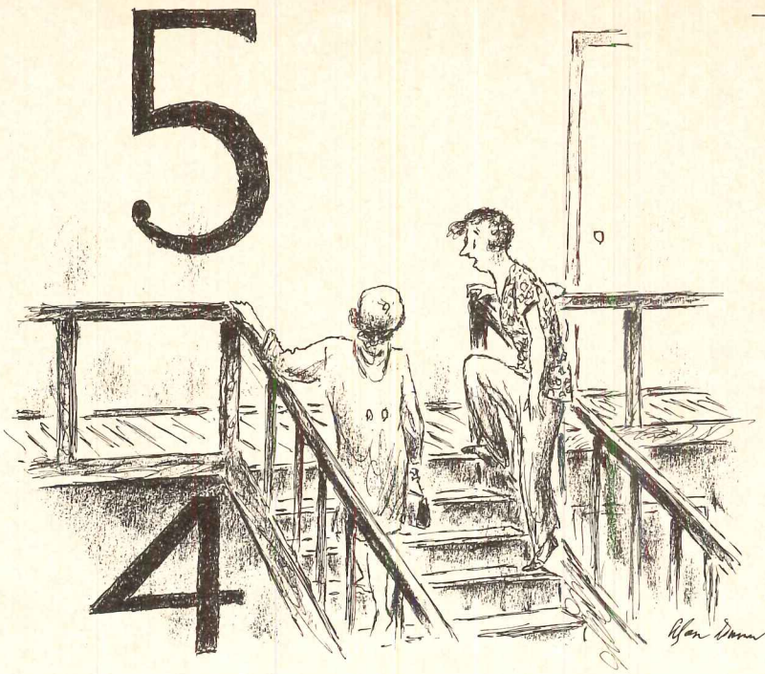
But a "clear picture" of urban quality is now just what we need. We have a new Federal government, now examining past failures and successes and judging what policies for city rebuilding to establish for the next years ahead. We have city governments across the land struggling with problems of anarchy on one hand and indifference and inadequate financing on the other. Even within the profession—and certainly between older (say over 30) practitioners and students—there is great disagreement over environmental goals.

When will we have the "clear picture" of urban quality? Probably never—at least with any of the same sense of assurance and accuracy as we can see *how many* units of new building we need. But how encouraging it is that—on every level from the august commissions of the Federal government to the small and often frustrated action groups of towns and cities across the country (like Norwalk's Association for Better Community Design)—there is a striving to establish not just *quantity* demands but *quality* demands. Quality of environment is being talked about as a goal. And there seems to be increasing understanding of the idea that the achievement of quality in environment depends on design. The Douglas report quotes Edmund Bacon that "given a clear vision of a 'design idea,' the multiplicity of wills that constitutes our contemporary democratic process can coalesce into positive, unified action on a scale large enough to change . . . the character of a city."

Right now, in Norwalk, the citizens (or at least a small part of them) are fighting (and sometimes winning) arguments over the quality of a school, or the design of a bridge, or the location of a community college. Some of the local architects have added their personal effort and professional stature to the effort. From such small battles is bound to come broader public awareness of the fact that the quality of environment does matter—and can be altered by public action. Each effort to improve design quality—to improve environment—whether on a very local, or the broadest possible, level helps set a new standard of quality—helps give the definition we need for "just what is a good environment?"

—*Walter F. Wagner, Jr.*

—Drawn for the RECORD by Alan Dunn



"As if I didn't know!"

More about quality design: from the Douglas Report

Perhaps the most impressive idea of the impressive Report of the National Commission on Urban Problems is its proposal for financing better design. The report says: "What we need most of all is working capital for *ideas*; that is, for *design*. There is a persistent belief that the design of buildings, as well as cities, is the easy part of the job, and that it involves nine parts inspiration and one part work. This belief is widely held because the United States has been the 'doer' of the world and has been impatient with the philosopher and the creative man who knows that creative ideas take time to develop. . . . [Until recently] the quality of the living space and the quality of the environment were ignored. If the market was good, money was made available to build. The great bulk of apartment building in the United States is still handled in this way. The FHA was manned by those familiar with the system, and change has come slowly. Neither the FHA nor the lending institutions have been staffed by men who believed that there was much that was basically wrong with American cities. They were not seeking, nor were they trained to seek, the new. . . ." The report suggests, then, that . . .

"A major part of the problem is lack of financing for design"

The report points out that "a major part of the problem is the complete lack of financing for design and development prior to construction. When working drawings are completed, the builder obtains a building permit, construction begins, and the first call on the mortgage can be made. Three-quarters of the architect's and engineer's work is completed. There is no financing for this major cash requirement. It is understandable that every developer seeks to minimize these costs. Yet, it is the first fourth of this three-fourths of the work—the design and development stage—that should be given the greatest amount of time and money. It is this stage that gets short-changed, although it is precisely this part of the work that produces buildings worth building and cities worth living in."

One fresh proposal: a Design Development Bank

Concludes the Douglas Report: "There are banks of all kinds for international development. It seems sound to apply this principle to design. The financial statements and net worth of those seeking loans would be very different from those required by a typical mortgage bank today. A private developer could ask for a loan. So could a city or town, a planning commission or school board, any individual or group legitimately involved in the development of cities and towns, or a portion of them.

"Let us assume that such a bank became an immediate success because it responded to a national desire to build a fine environment for every citizen. Let us assume, also, that this special bank began to acquire a new role and that it established major centers for the dissemination of information based on the analysis of all of the loans it granted and their effect on the urban environment.

"It might well happen that a building or a city that obtained a design loan and took full advantage of it would be in a favorable position. Its sponsors could borrow money for construction of a project because its careful and creative development could make it a sounder investment than those without design loans. The entire mortgage banking business and the allocation of government loans might change. The quality of the total environment demonstrated on the loan application would become as important in determining loans as the quantities that fill the mortgage analysts' pages today. It could be that a Design Development Bank record would become a marketable item, and that mortgages on Design Development Bank properties would become a new 'gilt-edged' investment.

"The way to build the American city we need now must involve the marketplace, and the marketplace is the entire United States. It is the architecture of the 'marketplace' that will make the fine cities and towns men know are possible to build today. A Design Development Bank could make this possible . . ."

And that idea, dear architects, seems to me to be an idea worth careful study and conscientious support.

The architecture is nice —but who did it?

The A.I.A. has just caused to be published a new version of its "what is an architect" brochure, suitable for distribution to interested members of the public, high school students who think they might want to be architects, and so on. Entitled "The architect, his profession, and his professional society," it is handsomely printed, quite elegantly written, and complete with some handsome photographs of buildings in a variety of current modes. But we couldn't help wondering around here what architects in particular (and the A.I.A. in general) would say if we credited the photographs as it is done in this booklet—viz., "Credits: Page 16."

To be sure, on page 16, as advertised, I learn that photo 1 is "Sea Ranch Swim & Tennis Club; Architects: MLTW/Moore Turnbull; Photographer: Morley Baer." And so on for each picture. But as a device for relating handsome design to the architects who create it, "credits on page 16" is not so good. Architects are important, A.I.A.

—*W.W.*

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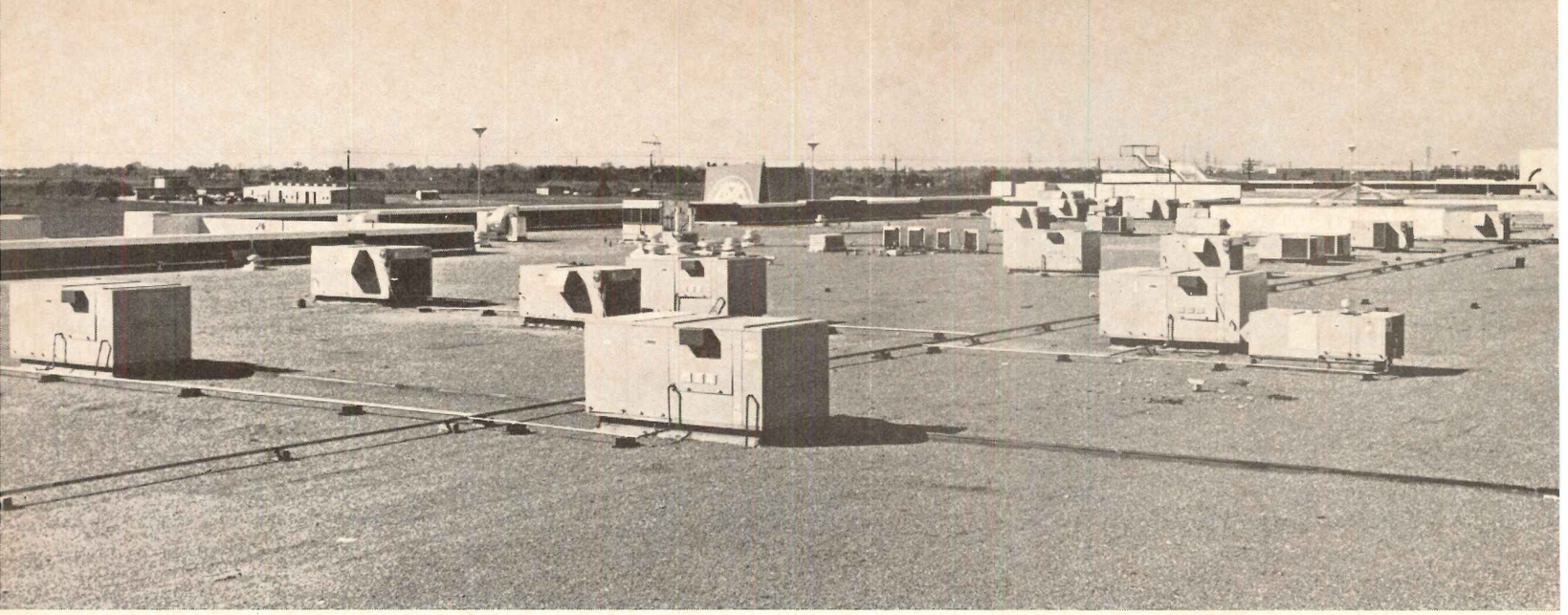
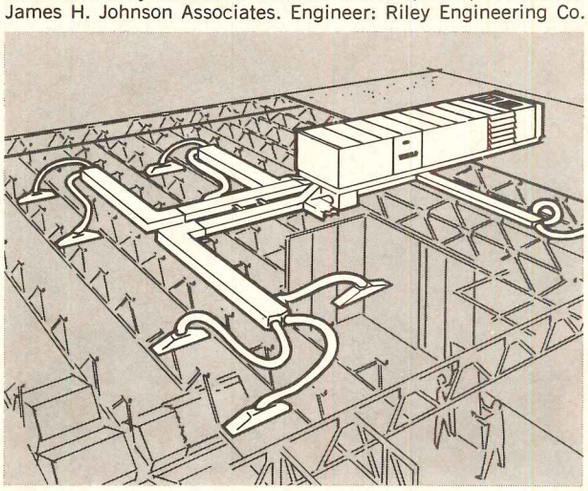
continued . . .

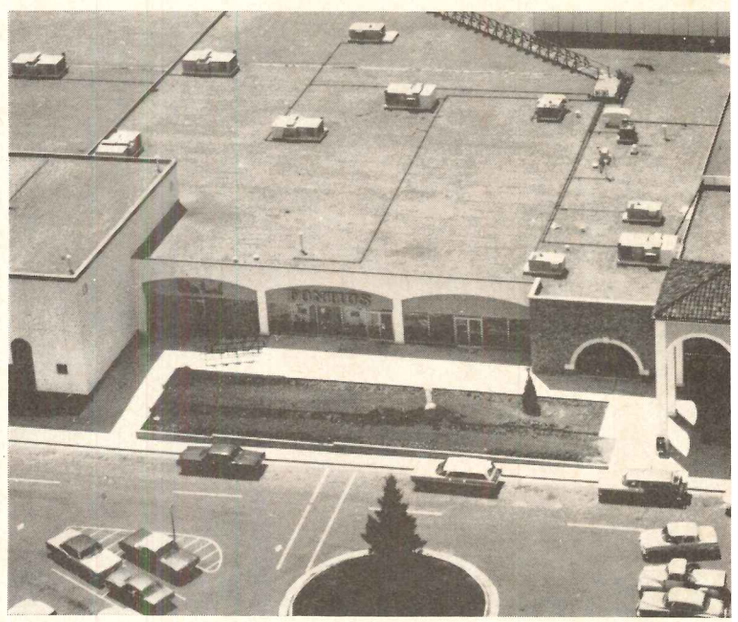
Almeda Mall and Northwest Mall, twin shopping centers in Houston, Texas. Lennox heating/air conditioning equipment hides unobtrusively on rooftop, serves 700,000 of the 1,400,000 sq. ft. total. Architects: Katzman and Associates, New York; Neuhouse and Taylor, Houston. Engineer: Herman Blum. Mechanical contractors: Way Engineering Co., Inc. (Almeda); Kerbow-Simmons, Inc. (Northwest). Developer: The Rouse Company.



Typical installation of Lennox single-zone combination gas heating/electric cooling system for large, undivided spaces. Also available for oil or electric heating. Installs on rooftop—or at grade level.

Year 'round comfort is provided in the 90-odd stores, restaurants and services in the colorful Villa Italia Shopping Center in Denver, Colorado. More than 100 Lennox rooftop units supply 800 tons of cooling, plus heating, required for this 800,000 sq. ft. center. Among these are Direct Multizone Systems with flexible ducts, for individually-controlled comfort zones (below). Architect: James H. Johnson Associates. Engineer: Riley Engineering Co.





continued...

year 'round shopping comfort

Nothing fits a modern shopping center's comfort requirements quite as well as Lennox modular systems. Economy and comfort—wed to freedom of design—are met easily by the unique flexibility of Lennox rooftop systems.

A Lennox modular system holds down initial costs for heating/air conditioning/ventilating. Among factors contributing to this low cost are the time-and-labor-saving roof mounting, with shortened duct runs and easily installed ceiling outlets. Additional savings are realized because Lennox modular systems require no additional assembly, wiring or testing. No expensive space-stealing equipment room is required, and the low-profile units need little or no rooftop enclosure to hide from view.

Another economy example: at Houston's new twin shopping centers, the Lennox mounting frame—flashed in place with roof – plus factory wiring and piping, saved $266 on installation cost of each of project's 218 units! (This figure was estimated by the mechanical, electrical and roofing contractors.)

The cost of air conditioning and heating with a Lennox modular system is predictable. On-site labor and other costs that run high and unpredictable with central systems are reduced to a minimum by the Lennox systems.

People comfort throughout the year is assured by the "micro-climates" of Lennox modular systems: whatever the types and ages of people . . . in any activity . . . and regardless of occupancy. In any weather. In sun or shade, wind or calm. And there are Lennox systems for single-zone control or multiple zones—each

Lacey, Washington's modern South Sound Shopping Center is heated and cooled by Lennox rooftop heat pumps. Stores, bakeries, music shops, drugstores, restaurants and malls are among the areas with high-occupancy problems. Here the simple-to-install, single-package heat pumps provide the "micro-climates" required for the varied comfort control zones. Architect: Robert T. Olson, A.I.A. Engineer: Robert W. Platt.

perfectly compatible with the other.

Lennox systems impose no design restrictions on you. And you can design for future growth with ease. Because these are unitary systems, building additions simply call for extra units.

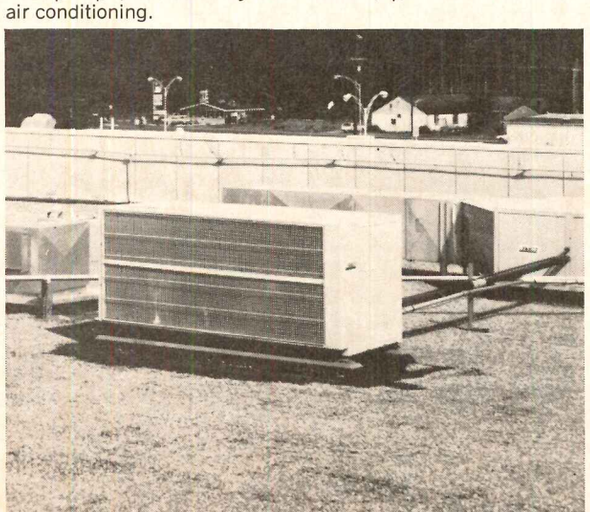
Lennox systems are factory assembled, wired and tested, including controls. This means a single-source responsibility: Lennox.

Before you plan a shopping center – or any other building – investigate the many reasons why Lennox should be your recommended choice. See Sweet's 29a/Le– or write Lennox Industries Inc., 492 South 12th Avenue, Marshalltown, Iowa 50158.

LENNOX
AIR CONDITIONING · HEATING

For more data, circle 8 on inquiry card

At South Sound Shopping Center, the architect provided screen to hide rooftop equipment. Total capacity 185 tons: 155 tons heat pump (with auxiliary duct heaters) plus 30 tons electric air conditioning.



RAGE RAGE AGAINST THE DYING OF THE LIGHT

To Dylan Thomas, light was life.

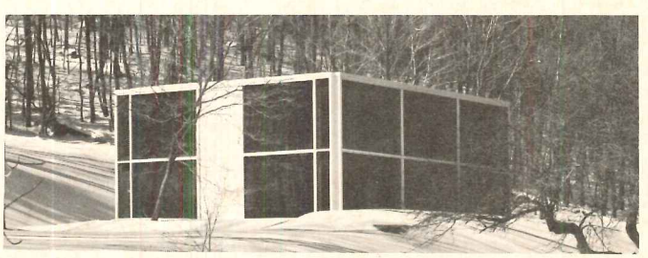
Not particularly surprising. Light is life to most people. Regardless of their discipline.

But nowhere is light more important than in architecture.
Natural light.
The aura of the outdoors, in.

That's why, after twenty years' experience with thousands of unique installations, we feel the *imaginative* use of WASCO Skydomes and Sky Windows is still at a beginning. Unlimited. Beckoning the creative designer. Promising those unusual custom installations that spring *from the ingenious use of standard applications, or from completely new concepts* pioneered by the mature architect.

You can use WASCO Skydomes and Sky Windows singly or in multiples. They can be flush-mounted, raised, domed, flat, pyramidal, rectangular, round, or square. You can create your own designs. You can plan your own light patterns. You can create a mood, or you can design a whole environment.

Some recent WASCO installations are shown on this page. Others, equally unique, are under construction.



What are your plans for the coming year?
Will you rage, rage?

OR ARE YOU ONE THAT WILL GO GENTLE?

For further information on WASCO Skydomes and Sky Windows refer to Sweet's Architectural File [22a/W] or write . . .

WASCO PRODUCTS, INC.
Wakefield, Massachusetts
LEADERS IN SKYDOMES & FLASHING
Regional Offices: Millbrae, California — Chicago, Illinois
Authorized Representatives in most major cities

For more data, circle 9 on inquiry card

This Kentile Floor is as posh as it's practical!

In Phoenix, Arizona, Rhodes is a department store renowned for the highest quality. In the goods it sells. In the décor that helps set them off. Six years ago, a floor of Kentile Architectural Marbles Vinyl Asbestos Tile was installed throughout this magnificent store. And today, as the unretouched photograph below indicates, this Kentile styling exclusive looks as beautiful as new! Big reason is the unique monochromatic design that flows through the entire thickness of every tile. Here's a thoroughly practical tile for any heavy-traffic area because it's greaseproof...resists scuff marks and stains...and is so economical to maintain. Architectural Marbles comes in 9 intriguing colors. If you'd like to see samples of the entire line, call your Kentile® Representative. Remember: Whatever your flooring needs, he's got the answer!

BROOKLYN, N.Y. 11215

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Scotch for people who know the difference.

We make Scotch for the hard-to-please. A Scotch with a difference. "Black & White." Smooth. Light. The one that sets the standards for all other Scotches. Tonight. "Black & White."

"BLACK & WHITE"
SCOTCH WHISKY

"Black & White" Scotch.

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For more data, circle 12 on inquiry card ▶

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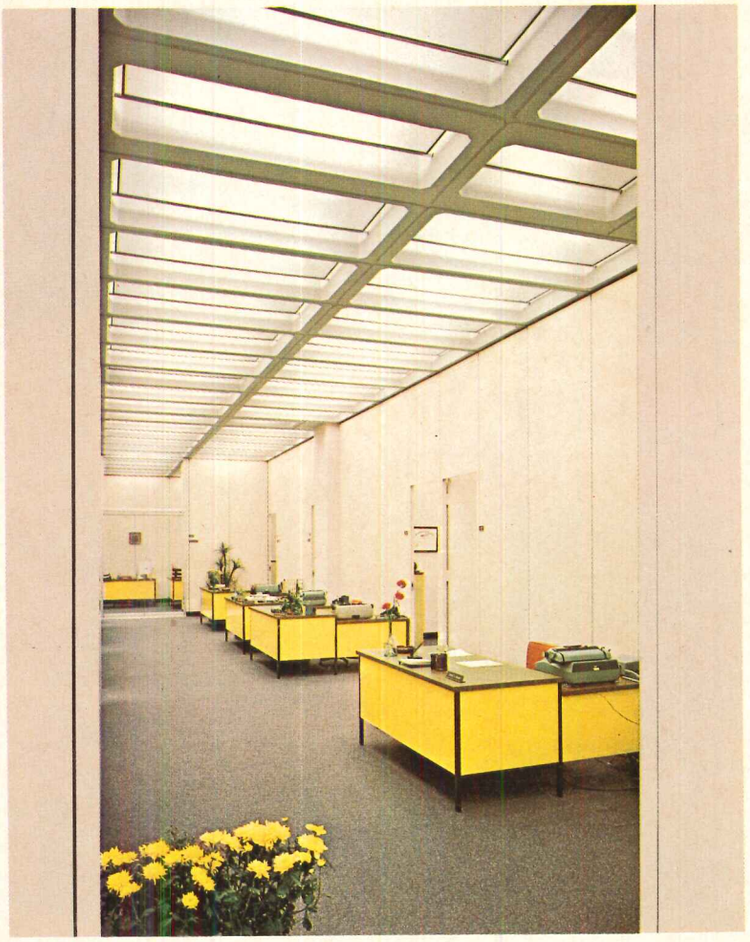

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I. M. PEI & PARTNERS ARCHITECTS • ARALDO A. COSSUTTA PARTNER IN CHARGE
THE GEORGE HYMAN CONSTRUCTION CO. BUILDERS • PHOTO BY EZRA STOLLER

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IF YOU THINK GLASS BLOCK STILL LOOKS LIKE THIS

YOU'D BETTER

For more data, circle 13 on inquiry card

Look at the exciting new patterns and striking sculptured effects available to you with today's glass block. This modern, versatile building material creates mood while providing many functional qualities.

Moxham National Bank in Johnstown, Pa., chose an open design of Chiaro II by Pittsburgh Corning for their new building. Chiaro adds an attractive, textured design to the front elevation and brightens the interior of a much-used conference room.

See some other imaginative ways people create dimensional wall effects with glass block (Intaglio, Argus®, Decora®, Essex®, and Vue® block). Write for our new catalog: Pittsburgh Corning Corporation, Dept. AR-29G, One Gateway Center, Pittsburgh, Pa. 15222. You'll be glad you looked again.

LOOK AGAIN

PITTSBURGH PC® CORNING

Goya Pecan

Whistler Elm

Longfellow Chestnut

Rembrandt Cherry

Weyerhaeuser Craftwall® paneling now available with a Class I flame spread rating.

The Class I flame spread rating lets you introduce the beauty of fine hardwood paneling in most critical commercial applications. And if Class II is what the codes demand, relax. The U. L. label for flame spread rating in the Class II range is now standard in our Weyerhaeuser Craftwall line.

Internal improvements are just part of the story on new Weyerhaeuser Craftwall. We also have made some sweeping style changes that let you select from a greater variety of species than ever, in 14 color tones and finish treatments.

That's with standard Craftwall.

Custom Craftwall is something else again — a whole new idea in paneling. It's the closest thing yet to architecturally matched hardwood. Now you can order Craftwall with no grooves at all. Or pick regular V-grooving. Or select any of five grooves from 1/4″ to 1″ wide. We can

Audubon Oak (custom grooved)

Van Gogh Paldao (custom grooved)

And you can custom design your own panels.

place the grooves in any combination or spacing arrangement your design scheme calls for.

Your local Weyerhaeuser Architectural Specialty Dealer has products and samples you can examine. In the meantime, we would be glad to provide all the technical details about our new 7/16″ Craftwall line, as well as the latest about our new 1/4″ Forestglo® and Muralwood® lines. Just send us the coupon.

For more data, circle 5 on inquiry card

To: Weyerhaeuser Company
Box B-5718, Tacoma, Wash. 98401

By all means, send me the facts about your new paneling lines.

Name_____

Firm_____

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Weyerhaeuser

Cabin Crafts Prescribes LesCare™ Carpet

(For The New Look in Health Care)

Medicenter needed a carpet that would meet unusually hard usage demands. It had to be tough. Powerfully stain resistant. With built-in good looks that stay that way longer with easy, inexpensive maintenance. Cabin Crafts prescribed LesCare carpet, a proven top performer in numerous contract situations.

LesCare carpet's densely tufted construction of solution dyed Acrilan® acrylic makes it highly stain resistant. Joseph Brooks, Medicenter's Assistant Vice President, Contract Service Division, comments: "We specified LesCare carpet for its exceptional wearability, ease of maintenance, beauty and moderate price."

LesCare carpet, available in 18 glowing colors, is just one of Cabin Crafts famous family of stain resistant carpets of solution dyed Acrilan. All are perfect for use in medical institutions as well as other contract installations.

Find out more about the impressive low maintenance costs of carpet as compared to tile; the important bacteriostatic advantages of carpet; safety factors inherent in carpet; acoustical benefits. Write us today for details.

Mail to: Advertising Manager,
WestPoint Pepperell, Carpet and Rug Division
Post Office Box 1208, Dalton, Georgia 30720

Name

Address

City State Zip

☐ Please send information regarding Cabin Crafts multi-purpose carpeting.

☐ Please have a Cabin Crafts contract representative call.

CABIN CRAFTS®

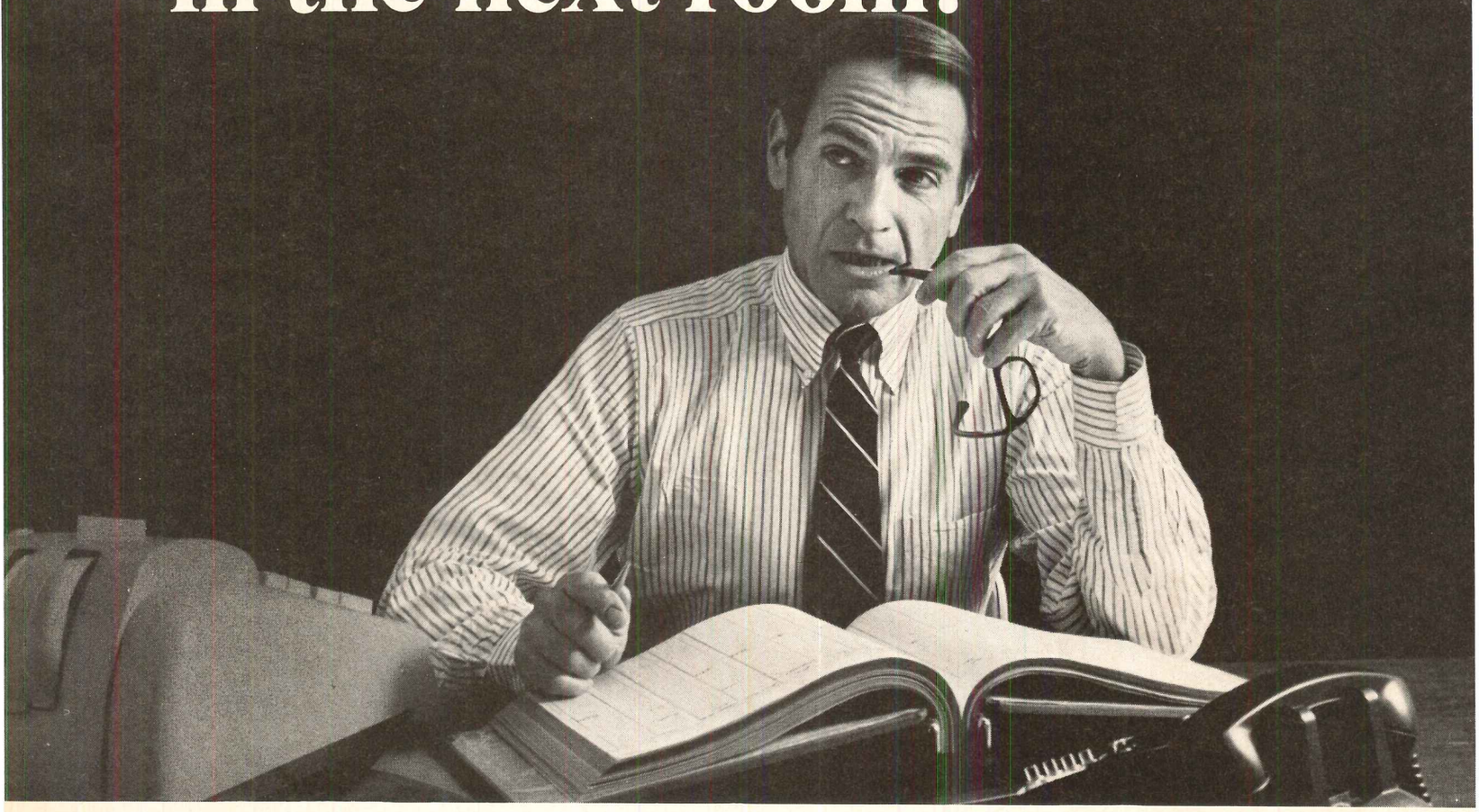
West Point Pepperell
Carpet and Rug Division
Dalton, Georgia 30720

Pictured: Patient's room and (insert) lounge in the new Medicenter in Phoenix, Arizona, featuring Cabin Crafts LesCare carpet. Medicenters of America, Inc. is a national complex of extended care facilities that provide convalescing patients with a comfortable, practical transition from hospital to home.

For more data, circle 14 on inquiry card

Monsanto
APPROVED FOR OUTDOOR USE

$1183 was spent to soundproof this office and you can hear a cough in the next room!



They forgot an Acoustilead plenum barrier.

Soundproof wall materials, plus expensive acoustical ceiling tiles, were specified to make this a noise-free office. These materials do the job . . . up to a point. That point is the plenum, the space between a partition top and the floor slab above it.

Sound waves flood over the partition virtually unimpeded if there is no acoustical plenum barrier. Ordinary sound barriers in a plenum are usually so full of leaks around ducts and pipes that noise still passes freely.

Gain Maximum Noise Reduction at Minimum Cost. The solution to this annoying problem is Asarco Acoustilead—sheet lead that's only 1/64-inch thick. Drape a curtain of Acoustilead from the floor slab above to the top of the partition and you stop penetration of all normal noise. There are no sound leaks because Acoustilead fits tightly around ducts and wires. It can be cut with scissors, easily bent by hand, and is installed in less time than other acoustical materials.

Acoustilead is the first material available for sound barriers in normal plenum areas, with an installed cost generally below $1.00 per square foot.

Help. Our brochure on Acoustilead shows why and how to install thin sheet lead. Send for it today. Sound Attenuation Department of Asarco.

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ASARCO

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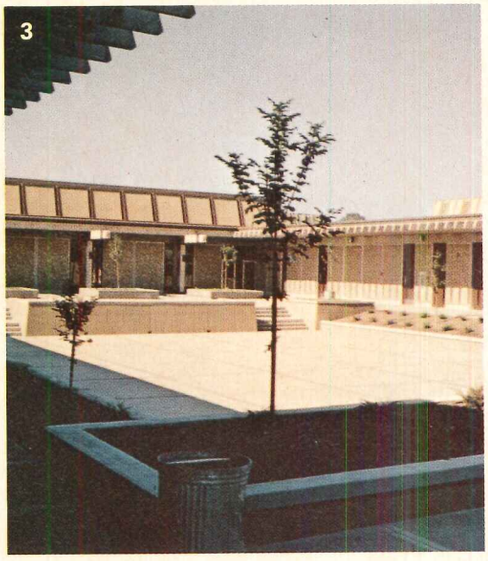

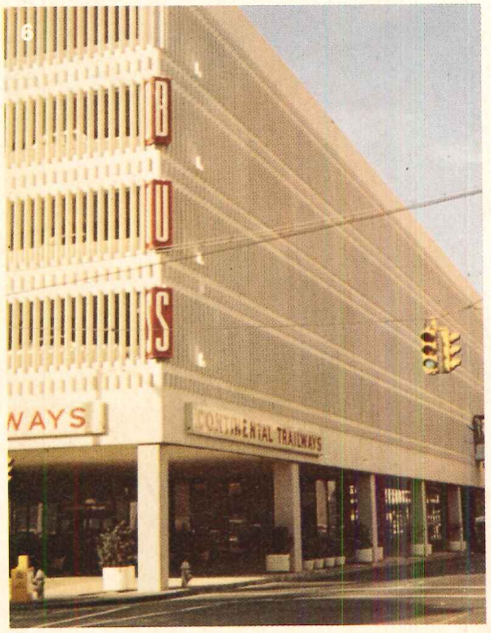

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Labor costs at the construction site continue to rise, and shortages of skilled manpower grow more acute. Yet the overriding need for economy *while maintaining high-quality standards* is universally recognized.

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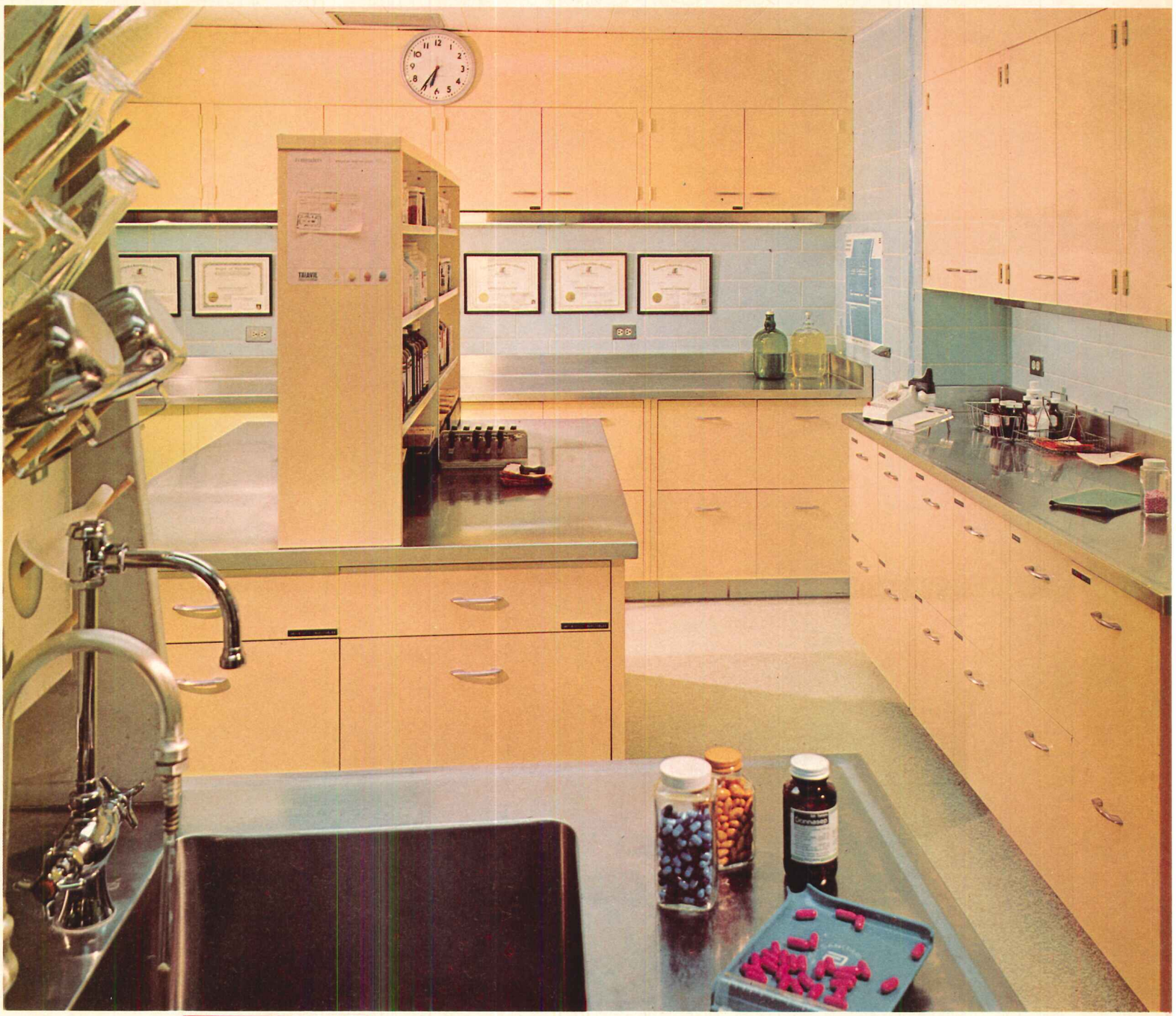

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Creativity has no limitations when you work with a St. Charles dealer-designer. He believes in giving people their own way—in *everything!* Concept, colors, materials, dimensions, textures—without you or your client having to make annoying concessions. He can also free you of numerous details and expedite your concept to completion—from the unique custom features you specify to the preferences (and even whims) of your client.

Space-saving storage wall dramatizes St. Charles design, planning, workmanship.

In this custom kitchen, rich antiqued cherry doors are accented by colorful textured cabinets.

CUSTOM KITCHENS

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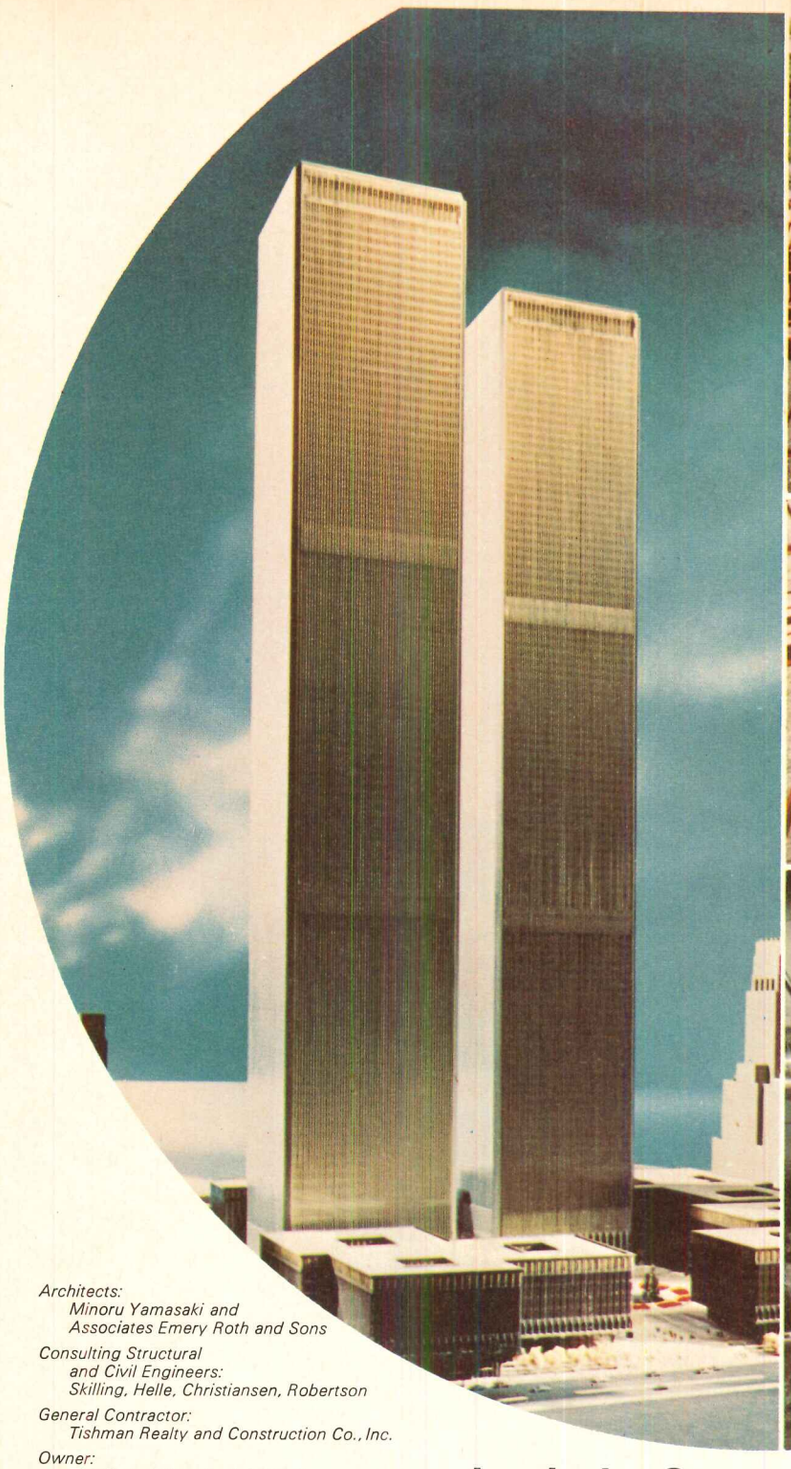

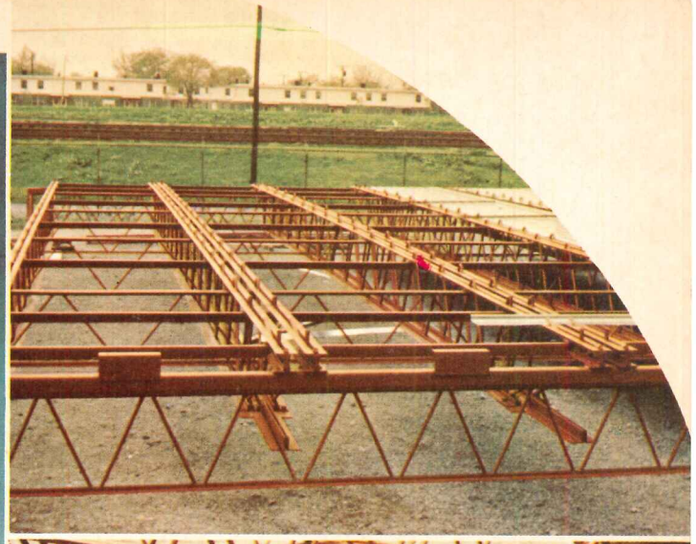

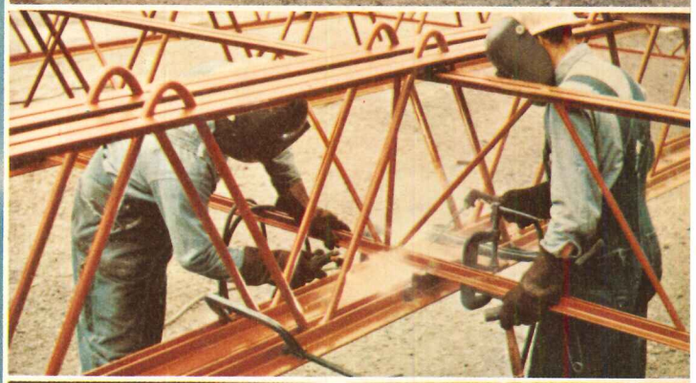

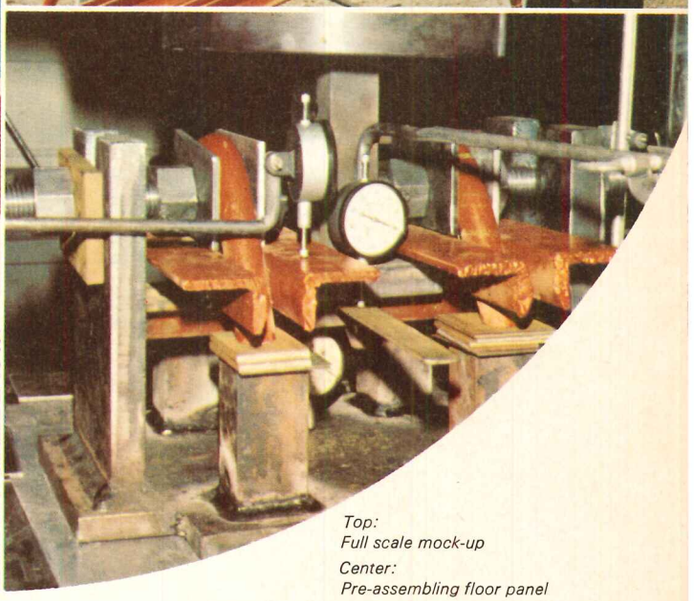

Architects:
Minoru Yamasaki and Associates Emery Roth and Sons

Consulting Structural and Civil Engineers:
Skilling, Helle, Christiansen, Robertson

General Contractor:
Tishman Realty and Construction Co., Inc.

Owner:
The Port of New York Authority

Top:
Full scale mock-up

Center:
Pre-assembling floor panel

Bottom:
Testing of components

Laclede Composite Trusses for the Floor System of the World's Tallest Buildings

Pioneering research and development on composite steel joists and concrete floor systems has culminated in the use of Laclede quality controlled welded trusses in the World Trade Center now being constructed by the Port of New York Authority in lower Manhattan. More than 25,000 tons of Laclede composite type trusses will be used in this $600,000,000 complex with its twin 110-story tower buildings. Laclede product development staff worked in close cooperation with the project's architects and engineers on the application of special resistance welded trusses for the composite floor design.

Tests on full scale truss components conducted at Laclede's laboratory and in the structural research laboratory of Washington University in St. Louis provided assurance that all design requirements are exceeded. Steel cells for in-floor electric and telephone service are incorporated in the composite system as a part of the 20′ x 60′ preassembled floor panels.

Send for your free copy of a new Composite Joist Catalogue.

Steel

LACLEDE STEEL COMPANY

Saint Louis, Missouri

Programmed for Progress in Modern Steelmaking

6854

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Designs by Ving Smith, A. I. D.

Have a wild idea in canvas!

Design with canvas and your imagination takes wing, while the cost stays happily down to earth. That's because standard hardware or welded pipe framing supplies all the structural support needed. The fabric is a sturdy weave of 100% cotton (8 to 15 ounces per yd. of 31″ width) treated for mildew and water resistance to weather any outdoor job. No wonder there's so much happening in canvas. Canvas solves so many problems. Ask your local canvas products manufacturer.

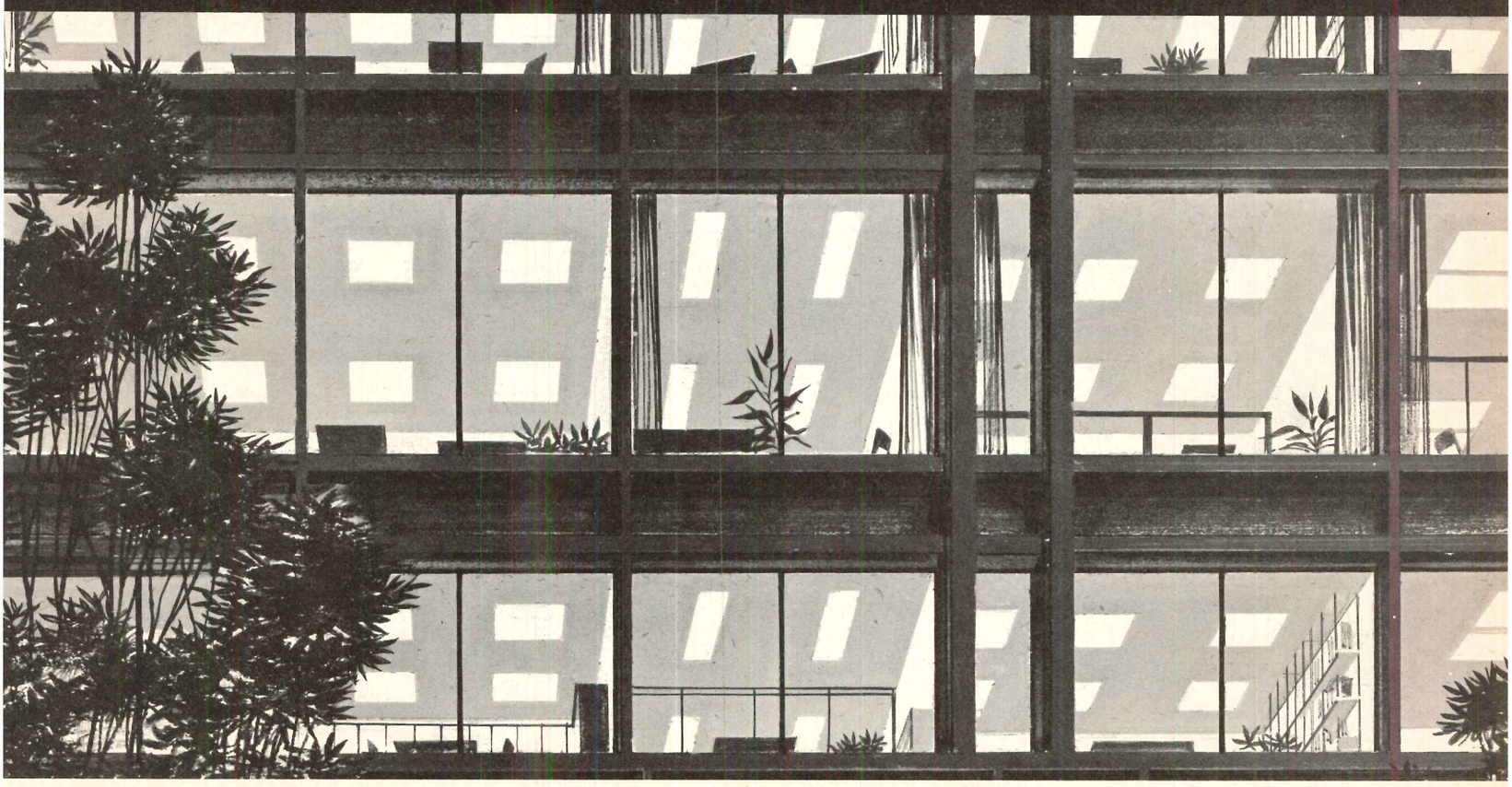
CANVAS AWNING INSTITUTE
(in cooperation with National Cotton Council and Cotton Producers Institute)
P. O. Box 12287-c, Memphis, Tennessee 38112

For more data, circle 19 on inquiry card

plaskolite is architectonic

plaskolite makes architectural, prismatic elements for lighting—to *your* shape, size or fixture requirements, in a variety of prism types.

For years **plaskolite** frameless, wraparound and panel prismatic lenses have been the vital light controllers in the best known complete fixtures. They still are. Now they are also being offered with all their high performance, economy and appearance characteristics, for direct architectural specification.



A special architectural data folder describing our extruded-embossed prismatic lenses will show why **plaskolite** belongs in your lighting specifications.

We would be pleased to send one to you.

plaskolite, Inc.

1770 Joyce Avenue, Columbus, Ohio 43219.

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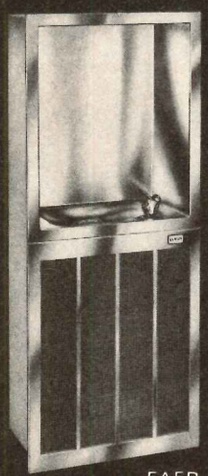
Service sinks
by
ELKAY®

MODEL E-23-185-20



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Designer-styled Water Coolers, Too!

Complete line for hospitals, schools, hotels, offices, stores. Write for details or see our listing in Sweet's Architectural File.

Heavy-gauge stainless steel takes toughest institutional usage!

Mops, buckets, or heavy utensils can never chip, crack, or stain Elkay's extra-rugged service sinks. They're built for a lifetime of trouble-free usage. Seamless construction leaves no corners or crevices to hide dirt. Extra-spacious compartment is crafted of 14 gauge nickel-bearing stainless steel.

And this is just one in an extensive line from Elkay . . . world's largest producer of standard and custom-made stainless steel sinks. Write today for complete catalog or see our listing in Sweet's Architectural File.

ELKAY®
Stainless Steel Sinks and Water Coolers

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see our catalog in Sweet's (S)

For more data, circle 28 on inquiry card

News in brief

The first joint International Convention of the A.I.A. and the Royal Architectural Institute of Canada will be held at the Palmer House Hotel in Chicago, June 22-26, 1969. For A.I.A., it will be the 101st annual convention; for R.A.I.C., the 61st. General chairman for the 1969 Convention is William J. Bachman, Hammond, Indiana. Under the theme "Focus Now," speakers will discuss professionalism, design, and technology, relating them to the action required of the architect in the urban crisis.

A seminar titled "A Review of European Experience with Innovation in the Building Industry" was presented by the Department of Commerce in cooperation with HUD. Without exception, the speakers (construction industry professionals from the United Kingdom, Denmark, Czechoslovakia, Italy and Canada) cited systems building as the innovation which had enabled their countries to increase goals for construction, particularly housing. Stress was on traditional products used in combination to form prefabricated building systems. Heavily debated, but effectively supported by Robert Platts, building consultant from Canada: "systems construction is not incompatible with good design."

The Department of Transportation has signed a contract with the firms of Arthur D. Little, Inc., Skidmore Owings & Merrill, Wilber Smith and Associates, and Real Estate Research Corporation to research and develop a formula for improving urban transportation. "It is an action program," said DOT Secretary John Volpe. "I personally will not be satisfied with the performance of the consultant teams until they, through their work, light the spark of community involvement in each of the participating cities. With five cities (Pittsburgh, Atlanta, Dallas, Denver and Seattle) sharing expertise, information, and development, the manufacturers of transit equipment will have delineated for them a much more positive market potential."

A report by the President's Committee on Urban Housing, chairman Edgar Kaiser, says tax incentives will help entice private industry into the low-income housing market, but they cannot substitute for direct Federal subsidies. "The existing system for developing Federally subsidized housing should and must be relied upon to do the job," the committee said. "If it should fail in the next few years, however, we recognize that it could well become necessary to turn to the Federal government as the houser of last resort for the nation's lower-income families."

The nation's largest steel producer announced creation of a division to formally move into real estate. It will be called United States Steel Realty Development. U.S. Steel is already involved in real estate ventures, including its 54-story office building going up in downtown New York, a 250-unit low cost housing project in Gary, Indiana, and a land development corporation in Los Angeles.

A study of low-cost housing has been launched by the University of Texas in East Austin, where 10 prototype homes are nearing completion on a two-acre tract of surplus Federal land. Operating with a $234,000 HUD grant, the study, "Austin-Oaks—'68," is aimed at developing guidelines for low-income housing, and will include intensive research of the engineering, architectural and sociological features of each home, as well as detailed cost analysis of construction and subsequent operation and maintenance.

"New Towns" is the subject to be examined at the Building Research Institute's Conference in Chicago, April 29 to May 1. Questions to be explored: Are America's new towns serving the functions for which they were planned? Are they sociologically valuable? Financially sound? When they do not work, whose fault is it? Other topics will be the techniques of land planning and development, construction and design, financing, selling, and leasing.

Increased voter reluctance to approve bond issues to finance school construction is indicated in a recent U.S. Office of Education publication. The report shows that 1,750 elections involving $3.7 billion in proposed bond issues for public elementary and secondary school construction were held in fiscal 1968. In 1,183 of these the voters approved issues totalling $2.3 billion. This is 10.2 per cent below the average for the previous 10 years.

Architects and consulting engineers discuss Federal legislation

March 19, A.I.A. President George Kassabaum opened the second annual Public Affairs conference held jointly by A.I.A. and C.E.C. Mr. Kassabaum's opening statement, "The public needs a champion. If we don't take positions on things, then who will," pointed out the A.I.A.'s concern with the architect as leader—a role that the architect must take as creator of the environment.

For the remainder of the day Congressmen and Senators spoke on bills and existing legislation pertaining to architects and consulting engineers.

Representative William Roth of Delaware in his speech, "Another Hoover Commission to Solve America's Grant-in-Aid Hodge Podge," pointed out that the large states and universities are getting the bulk of Federal aid by maintaining full-time staffs in Washington to keep up with new aid programs. "What is needed," said Roth, "is a *Program Information Act* to create a publication which gives a complete run-down on all available Federal aid. Then all states, counties and schools will have an equal chance. We also need another Hoover Commission to make Federal assistance more meaningful by ending overlapping and duplicated programs."

Senator Edward Gurney of Florida urged all present to support his bill to prohibit product boycotts by labor. Gurney said, "the hands of our architects, engineers, and builders have been effectively shackled by recent decisions of the Supreme Court. We have the ability to rocket past time zones, but in the homebuilding business, our courts have turned back the hands of the clock. They have decided that we must meet 21st century housing needs with 18th century building methods." Cited was the Supreme Court's controversial *Philadelphia Door* decision which upheld the right of a union to refuse to install prefitted wooden doors. Legislative insiders say Congress will view Gurney's bill as anti-labor, therefore giving it little chance of passing.

The conference wound up with Federal Contracts Attorney Gilbert Coneo giving a rousing speech on "The Federal Government as a Client." His covered points are found in a very helpful book entitled "Contracting with the Federal Government: A Primer for Architects and Engineers." Copies of this book are available from: PRIMER, Room 713, 1155 15th Street, N.W., Washington, D.C. 20005. Cost is $6.00.

The second day of the conference was spent with the 475 attending architects and engineers visiting their congressmen around Washington, for a first-hand check on legislation.

Awards to business for combating environmental ills

The first national awards recognizing the contributions being made today by private business toward the solution of public problems have been established by *Business Week*. The awards will be known as *The Business Week Awards for Business Citizenship*, and the McGraw-Hill publication is now soliciting nominations. The initial presentation will be made in October, according to John W. Gardner, chairman of the Urban Coalition and former Secretary of Health, Education and Welfare, who will serve the program as chairman of the Awards Committee.

The prime goal of the awards is four-fold: 1) to recognize those businesses making significant contributions toward the curing of environmental ills; 2) to recognize achievement by business in helping solve social problems; 3) to stimulate greater business involvement in the social area; 4) to provide an extensive fund of knowledge and means for information exchange.

The awards will consider private-sector ventures in two general areas:

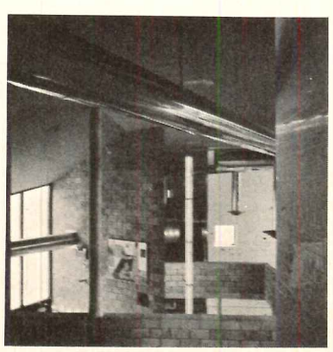
Physical environment: for activity in such fields as housing, transportation, pollution control, new communities, recreation, and other areas which better the physical environment in which men live. Or, for technological advances resulting in devices and techniques to improve and control environment.

Human resources: for activity in the interest of meeting such vital human needs as education, health, rehabilitation, employment; programs for youth; projects to improve race relations.

Two awards will be made in each of the above categories and, in addition, one special award will be made for:

Exceptional Leadership: to an individual who has done an exceptional service in directing the resources and abilities of private enterprise to the solution of public problems.

Nomination forms are available from the Business Week Awards Committee, 330 West 42 Street, New York, New York 10036. Final date for submission of nominations is June 30, 1969.



ARCHITECTURAL RECORD
3

Inadvertently the RECORD's March cover photograph was miscredited. The interior of the Robert S. Marx Theater was photographed by Norman McGrath.

Douglas Commission: Let's get some housing up

After almost two years of hearings and study, the National Commission on Urban Problems has filed a 1,500-page report to Congress which indicates only too plainly that very little low-income housing is going up.

The report's introduction is effectively summarized in its table of contents; in effect a summary of a summary.

Major points in that table:

Our big cities are hard-up, costs of local government are skyrocketing, and political representation for the poor in slums is almost non-existent.

Coping with metropolitan area problems is incredibly complex because of the proliferation of local governments, all with differing viewpoints, within those areas.

Poor nonwhites who have big families and are renters are most likely to live in substandard housing. But they are not alone. A third of our affluent nation—white and black—cannot afford adequate, non-subsidized housing today.

Zoning was intended to control land development, but fiscal considerations often distort it, leading to economic and racial exclusion.

We must develop a new system for codes and standards to free the building industry, manufacturers and planners from a maze of restrictions.

At the heart of the Commission's almost-150 recommendations is the realization that a) improving the environment will cost a lot of money; b) as a nation we can easily afford it and it is only a matter of priorities, and c) rearranging those priorities is simply a matter of political commitment.

Copies of the report can be purchased from the U.S. Government Printing Office, Washington, D.C. 20402, $4.50.

Trust fund is set up for fire victims' families

The death of 10 young people in the architectural offices of developer David Rosen & Associates was attributed to the victims' failure to call the New York City Fire Department immediately, and quickly leave the burning building by the stairs.

The fire, which fed on two gallons of rubber cement and a great deal of tracing paper, killed: David Carrol, Gordon Bloedel, Salvatore J. Caltabiano, Ronald Eisen, Kenneth Greene, Frank Meilan, Maurice Rockman, Pasqual Caferro, Arlene Shanbaum, and Carrol Quigly.

To help the families of the victims (14 children are involved) a trust fund has been set up by architect Bruce Cousins. Anyone wishing to contribute may send checks to: The Young Architects Memorial Fund, c/o Ingber & Klapper, Attorneys, Suite 611, 295 Madison Avenue, New York, New York 10017.

Commission of Fine Arts: Design review board for the National Capital

Few architects dispute the concept of design review—a force long fought for in order to upgrade the environment—but some (especially some who have had six months of hard design work shot down) have more personal, negative feelings about the manner in which specific review boards operate.

An example of this intellectual dichotomy lurks in the Commission of Fine Arts' turndown of the Mitchell/Giurgola design for A.I.A. Headquarters.

Some A.I.A. people wished to challenge the CFA, but the A.I.A., firmly committed to the concept of design review, instead stated that while "an appeal might be good therapy, it is possible that it could be made only at the cost of weakening the influence for development of an orderly environment of design review bodies everywhere." While the A.I.A. accepted the decision, some of the questions—pertaining to the CFA specifically—which arose then were quite valid. Can a seven-member commission be objective? Is seven the perfect number? Who should be on such a commission? Has the CFA worked for Washington in the past? What are its pluses, its negatives?

The CFA has been overseeing the architectural harmony of Washington since 1910, when President Taft created it to advise on the location of statues, fountains and monuments in public squares, streets and parks. But CFA's responsibilities grew quickly to its present status, to include: all of Washington's public buildings, private buildings facing public buildings in the area outlined in the map above, art placed in public spaces, preservation of Georgetown, and designs of coins, medals and insignias. The legal responsibilities are broad, but in effect the Commission of Fine Arts has little to do with the fine arts; most projects reviewed are designs for public and private buildings.

Having strictly advisory powers, the CFA's influence fluctuates. Much depends upon the political dexterity of its chairman and six members, as well as the favor of the President. The present chairman, painter William Walton, was appointed by President Kennedy in 1963, and reappointed for another four years by Lyndon Johnson in 1967. During the Kennedy years the CFA was a powerful force in shaping Washington's physical environment, a force which continued through the Johnson administration. Under the present administration no one can be sure.

Also appointed in 1963, architect Gordon Bunshaft has been one of the CFA's most outspoken members, and the member architects critical of CFA most often speak of, calling his decisions "frequently arbitrary." But viewed as a whole the buildings the CFA has reviewed since 1963 are clearly and well above average, and in some cases are this way because of the Commission's refusal to pass them in their original form.

An architect visiting the CFA, design in hand, for the first time, could get the impression that it is Mr. Bunshaft who makes the decisions—because Bunshaft's strong personality does seem to dominate the scene, and he is an articulate spokesman. But this is in the afternoon meeting with the architect and the press present. Actually, the designs are studied fully by all members of the commission during a closed meeting in the morning of the one day the CFA meets each month. In some months, when there are no submissions, the meetings are not held.

Because of the impossibility of dealing with all the projects arising in Georgetown (every detail, including a change in the color of an outside lantern, must be approved) a subcommission, staffed by local architects, was set up on a more frequent meeting-schedule.

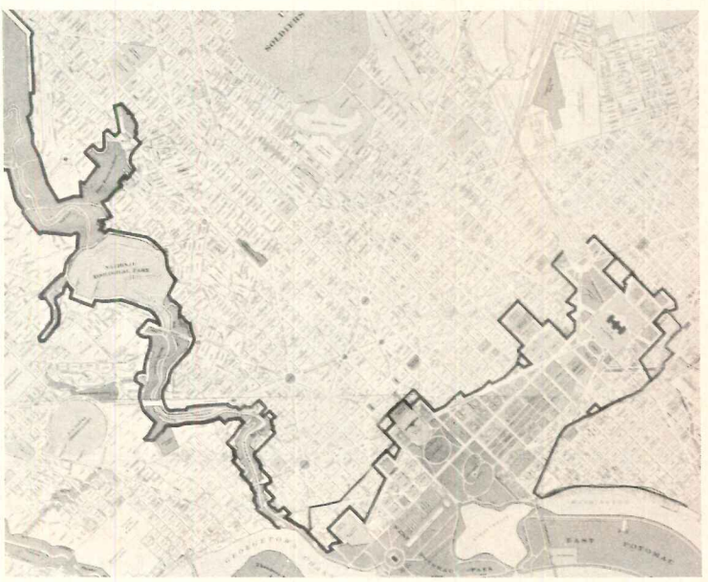
The CFA's seven members are appointed by the President. They are not paid during their four year term, but are compensated for expenses out of the Commission's $155,000 per year budget—the smallest budget for a Federal Commission.

One objection to the inclusion of practicing architects in the CFA's membership is possible conflicts of interest arising when a competitive firm brings a design in for review. An alternative would be to appoint only nonpracticing architects (for example, teachers), but this also has drawbacks. In the end much must depend upon the integrity of the individuals selected, at least as long as membership is on a voluntary basis. If it were not, and the government hired a staff, such highly qualified people as the present members—William Walton, Gordon Bunshaft, Chloethiel Smith, Hideo Sasaki, Kevin Roche, Aline Saarinen, John Walker—would be impossible to obtain. With artists of this caliber chosen from among diverse fields, hopefully the prejudices of an individual are not able to determine any decision of the whole, and the CFA can remain objective. Speaking of objective criteria, one CFA member said that the only truly objective criterion possible is "hold that cornice line," since building height is strictly controlled throughout Washington.

The CFA publishes a report of its activities every four years. In this way the public is informed about every project reviewed, and the action CFA took. It is also a way of informing the House Interior Affairs Committee, headed by Representative Julia Hansen, which allocates CFA funds.

Out of necessity, the CFA refrains from making specific recommendations on how to improve designs.

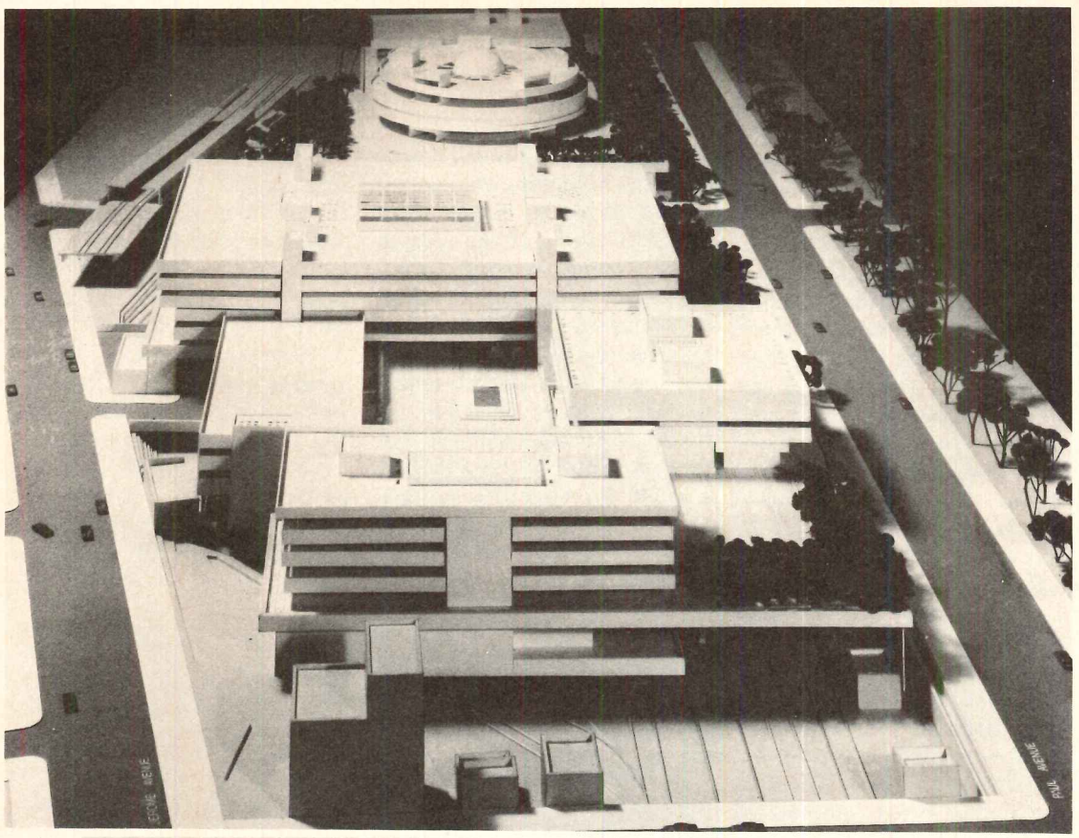
Architects who have designs turned down do have recourse to an appeal. They can appeal to their congressman to intercede with the Commission, or sponsor legislation in individual cases to circumvent the CFA. A few years ago, a group wanted a monument built to their favorite Czechoslovakian poet. The CFA, which feels Washington has enough statues in public parks, turned the design down. The group went to their Congressman who had legislation passed which overrode the power of the Commission. Happily, Congress is reticent to do this too often.



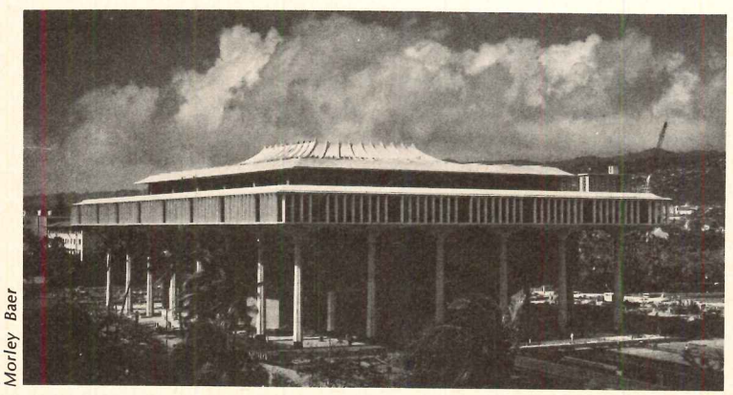
The legislation that covers the CFA's responsibilities is as specific as possible about design criteria. The Shipstead-Luce Act, which delineates the area of responsibility shown in the map, states, "a reasonable degree of control should be exercised over the architecture of public or private buildings . . . within the lines of good order, good taste, and with due regard to the public interest." The fundamental policy has been that no building should overshadow the dome of the capitol.

Another way of appealing a CFA decision would be to go to the Washington Building Commission and get a building permit, but in most cases this would be impossible since permits are issued on recommendation, purely advisory in nature, of the CFA.

Occasionally, other government agencies will use the CFA's expertise on projects outside CFA territory. —*Don Raney*

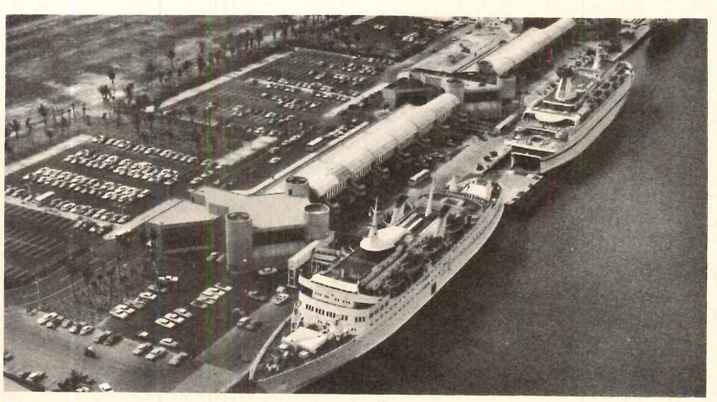


The Bronx Community College of The City University of New York will be located on the air-rights of one of New York City's subway yards, with the site divided by a boulevard. The $40-million solution, designed by deYoung & Moscowitz and Harry M. Prince & Associates with Benjamin Moscowitz, partner-in-charge, includes covering the tracks with a deck slab at street level and building a plaza 19 feet above that. The space between the two will be parking, mechanical, storage and service areas. A bridge, or open landscaped plaza, over the boulevard will connect the two sites. In the photo, the circular building at top is the dining hall and student center. Barely visible beyond that is the health and physical education building. Others include administration areas, classrooms and a library. The elevation shows the Engineering, Science & Administration Building. The complex is cast-in-place structural concrete with some precast elements.



Morley Baer

The Hawaii State Capitol, Honolulu, has opened one decade (almost to the day) after Hawaii became a state. The $22-million building—with offices and lanais opening to a great central court—was designed by John Carl Warnecke and Associates in joint venture with Belt, Lemmon and Lo (RECORD, June, 1961, page 153-156 and May, 1969).



Passenger terminal for cruise ships, Miami, will have five air-conditioned passenger modules, each containing restaurant facilities, a carpeted lounge, four large windows offering panoramic views, and an enclosed telescoping walkway to the ship. The $5-million concrete and glass terminal, with circular turrets, is designed by John Andrews.

The Bettman Archive

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A first look at the award-winners for 1969 Record Houses

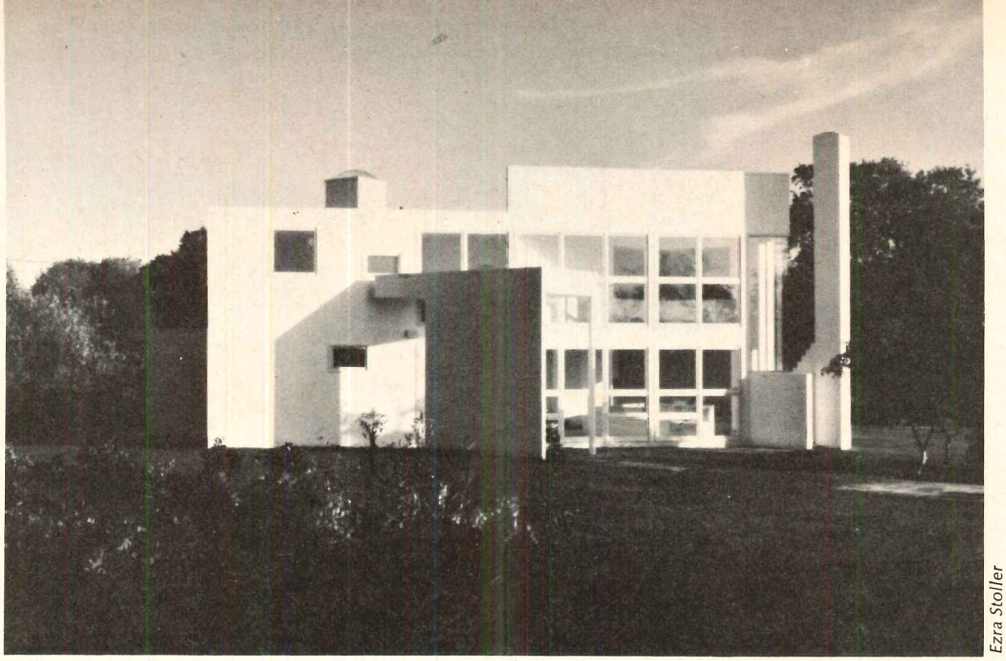
The editors of ARCHITECTURAL RECORD have announced that 20 architect-designed houses have been selected to receive the ARCHITECTURAL RECORD AWARD OF EXCELLENCE FOR HOUSE DESIGN. A certificate to each architect and owner will read: "Selected as a Record House for outstanding architectural excellence in planning and design and presented in RECORD HOUSES OF 1969 as one of the nation's most significant houses of the year."

The Record House awards were instituted in 1956 to document and stimulate creative, yet sound and livable, design, and with special interest given to the work of young architects. A second prime objective has been to help initiate greater interest and knowledge of good contemporary architecture among the general public, and especially among actual or potential architectural clients. Surveys indicate that these objectives have had substantial success.

With these current awards, selected from among hundreds recently built in the U.S., ARCHITECTURAL RECORD has premiated 293 houses in 36 states by 195 architects. On the new awards, Herbert L. Smith, Jr., editor-in-charge of RECORD HOUSES, comments, "This year's winners show an increasing and highly innovative concern with interior spatial development, as well as very effective efforts to make each house more compatible with its neighborhood."

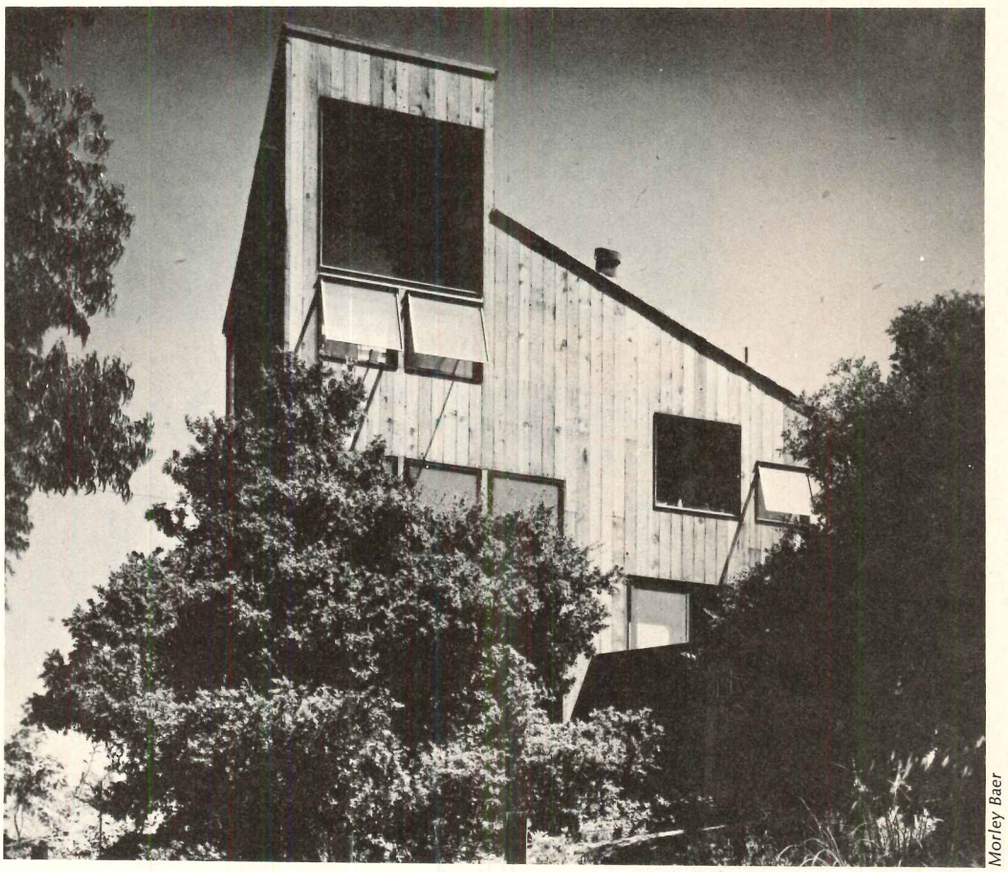
The award-winning houses will appear in the mid-May issue of ARCHITECTURAL RECORD. RECORD HOUSES OF 1969 will also be distributed to the 20,000 leading builders qualified by Sweet's to receive the Light Construction File, and, for the first time, to nearly 6,000 interior designers qualified to receive the new Sweet's Interior Design File. A bookstore edition, as usual, will be published by McGraw-Hill Book Company, and will be available to the public in early July.

Submissions for RECORD HOUSES of 1970 will be considered beginning in the fall.



Ezra Stoller

Hoffman house, East Hampton, New York. Architect: Richard Meier

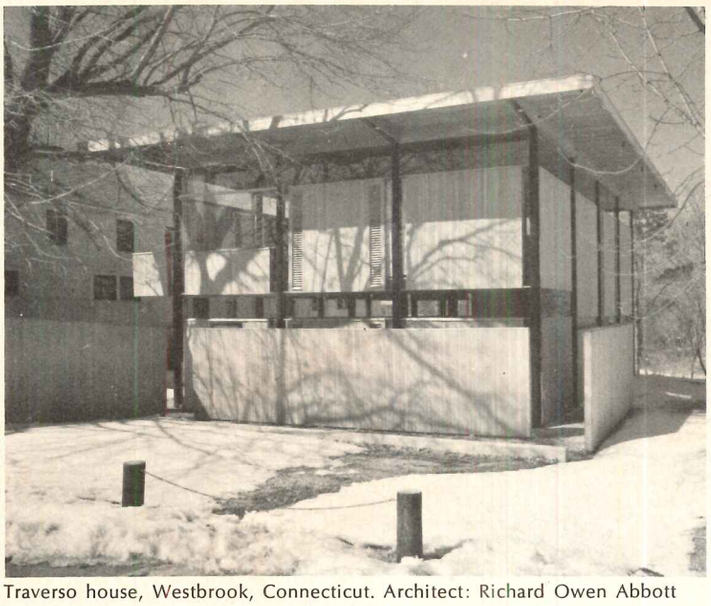


Morley Baer

McElrath House, Santa Cruz, California
Architects: MLTW/Moore Turnbull—William Turnbull, Jr., partner-in-charge

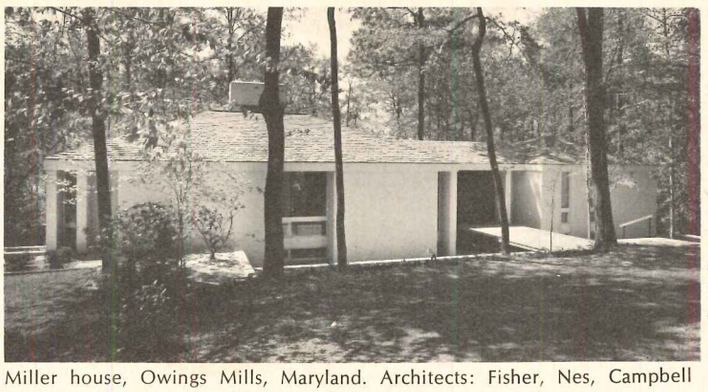
Dunbar house, Winhall, Vermont. Architect: Giovanni Pasanella

David Hirsch



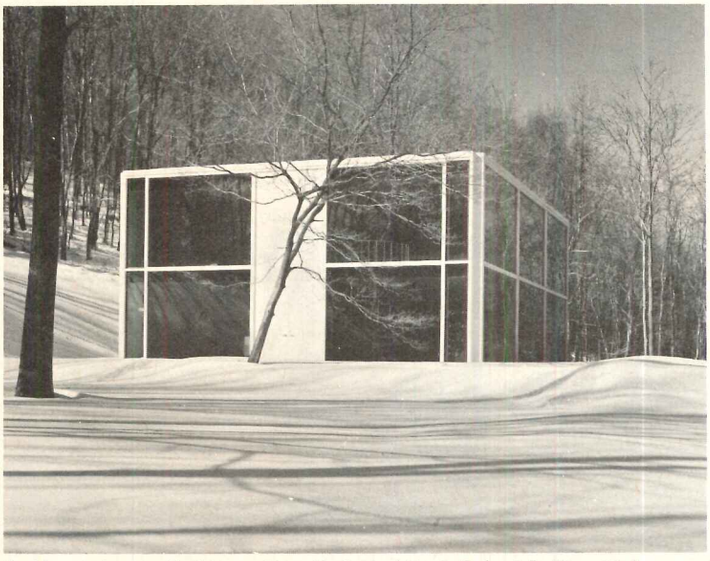
Norman McGrath

Traverso house, Westbrook, Connecticut. Architect: Richard Owen Abbott



Joseph Molitor

Miller house, Owings Mills, Maryland. Architects: Fisher, Nes, Campbell and Partners—Charles H. Richter, partner-in-charge



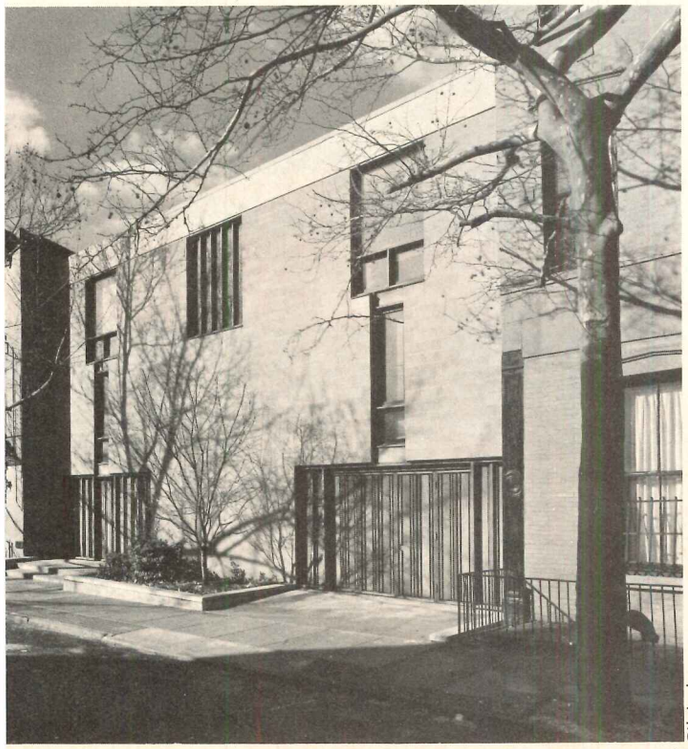
Joseph Molitor

Architect's house, Yorktown, New York. Architect: Robert E. Fitzpatrick

Joshua Friewald

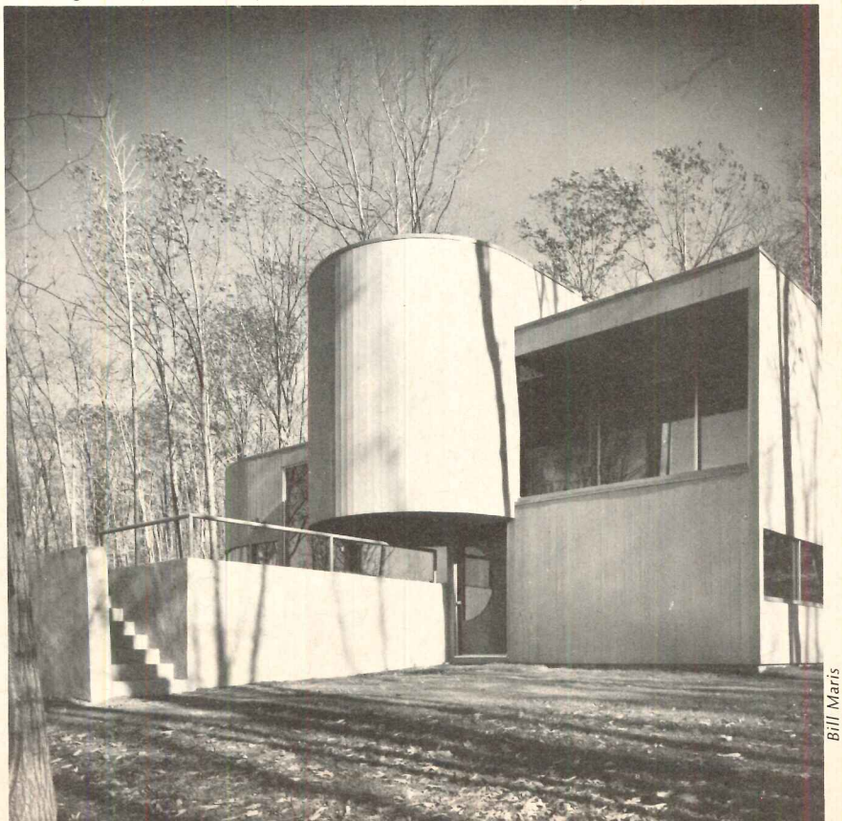
Architect Van der Ryn's house, Point Reyes, California
Architects: Hirshen & Van der Ryn

Garment townhouse, Brooklyn, New York
Architects: Joseph G. Merz and Mary L. Merz

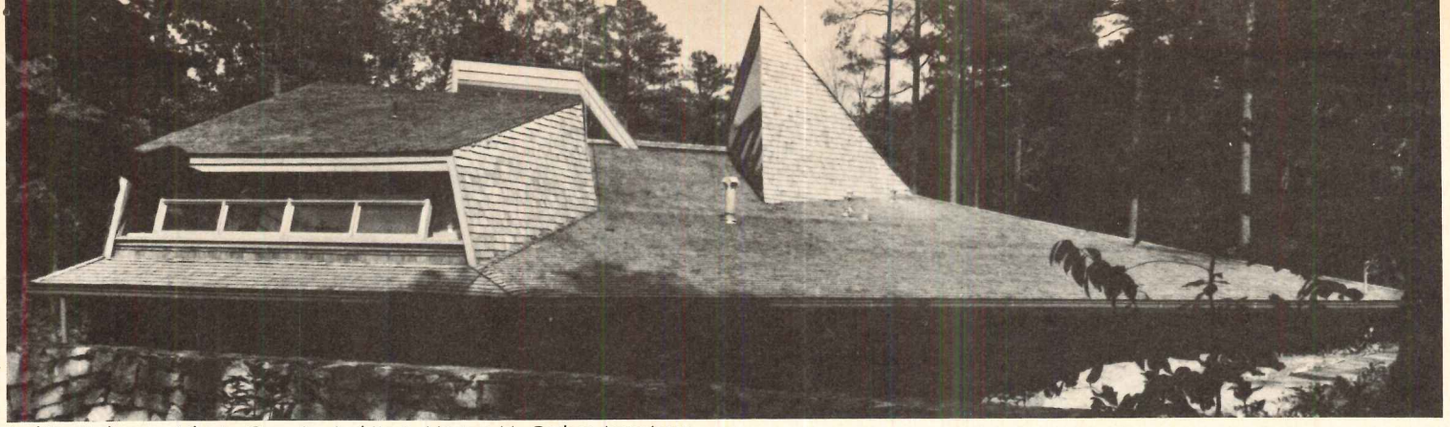


Gil Amiaga

Goldberg house, Manchester, Connecticut. Architects: Gwathmey & Henderson

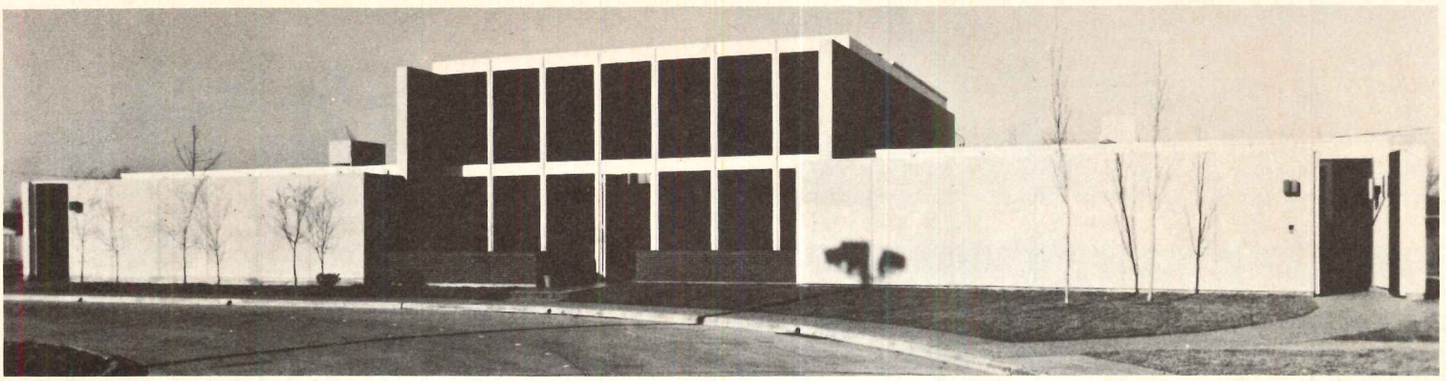


Bill Maris



Erven Jourdan

Architect's house, Atlanta, Georgia. Architect: Morton M. Gruber Associates



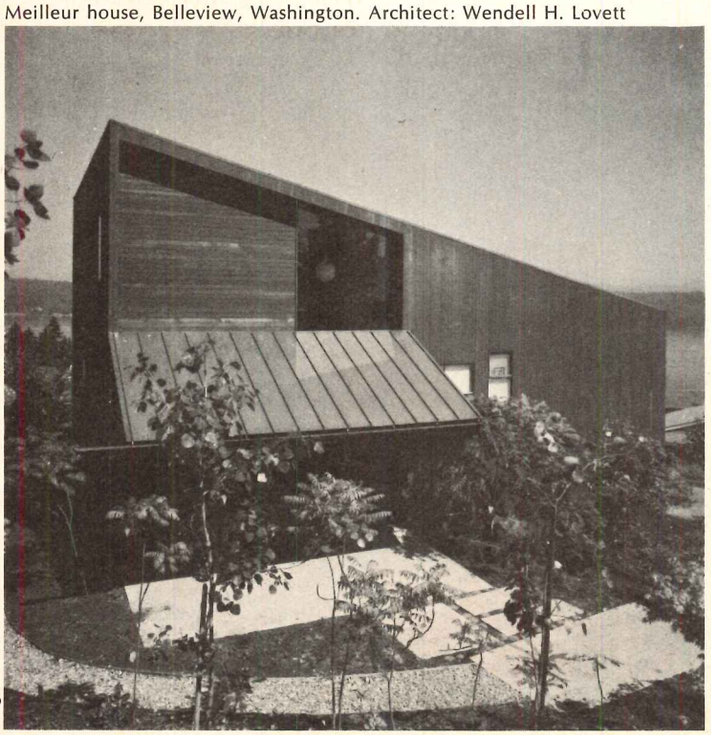
Jay Oistad

Three townhouses in Houston, Texas. Architects: Wilson, Morris, Crain & Anderson

Braselman house, New Orleans, Louisiana. Architect: James Lamantia

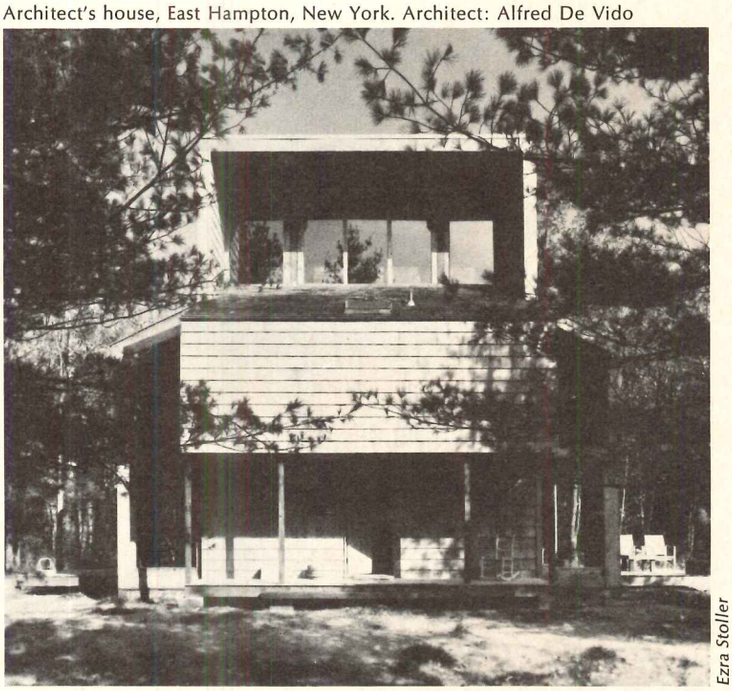
Frank Lotz Miller

Meilleur house, Belleview, Washington. Architect: Wendell H. Lovett



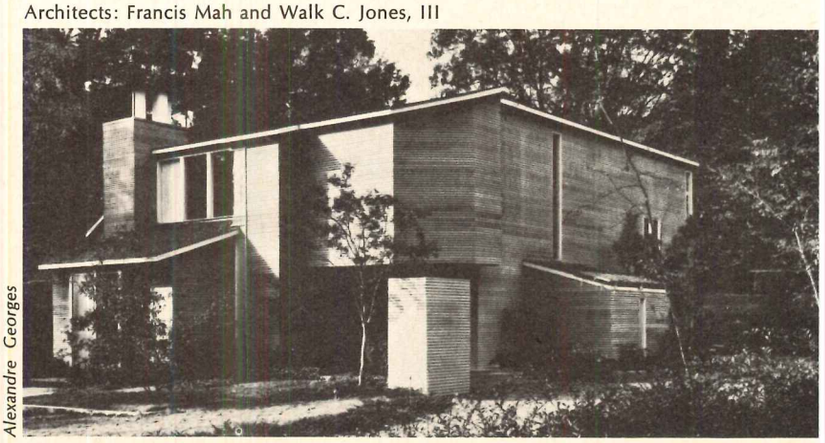
Hugh N. Stratford

Architect's house, East Hampton, New York. Architect: Alfred De Vido



Ezra Stoller

Markell house, Memphis, Tennessee
Architects: Francis Mah and Walk C. Jones, III



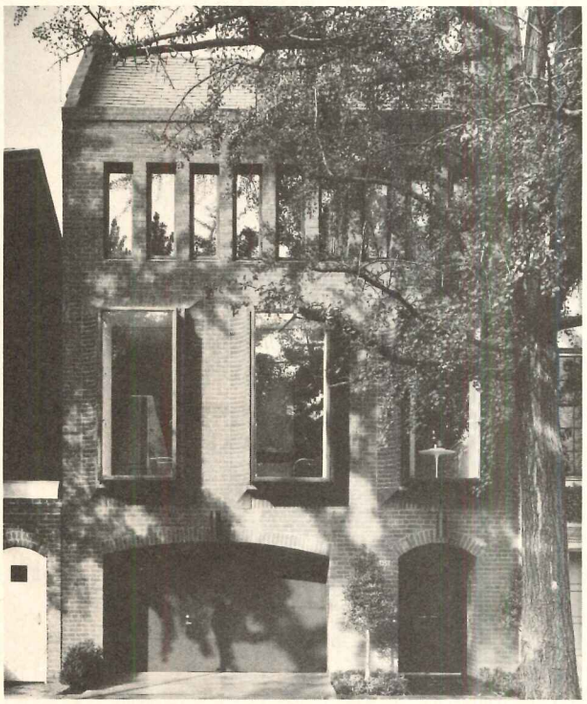
Alexandre Georges

Hedrich-Blessing

Weitz house, Des Moines, Iowa. Architect: John Bloodgood

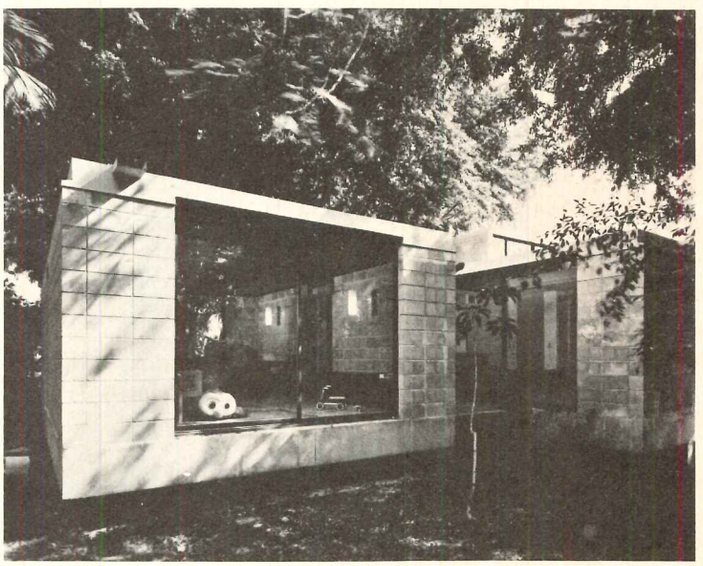
Phokion Karas

Lam house, Cotuit, Massachusetts. Architects: Erickson, Massey



Robert Lautman

Trentman townhouse, Washington, D.C.
Architect: Hugh Newell Jacobsen



Joseph Molitor

Weinberger house, Miami, Florida. Architect: Donald Singer

Gorman house, Amagansett, New York. Architects: Julian & Barbara Neski

Julian Neski

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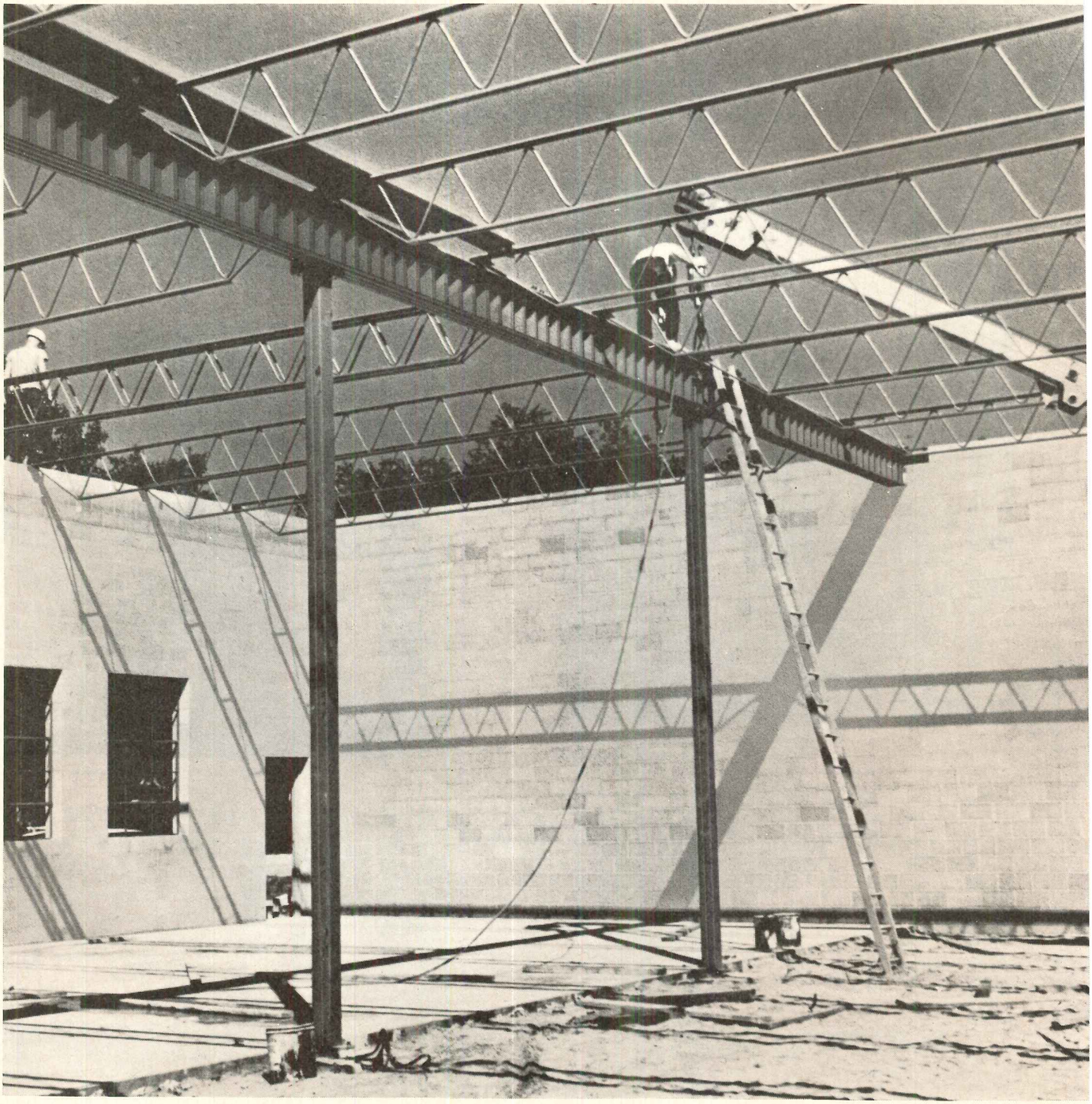
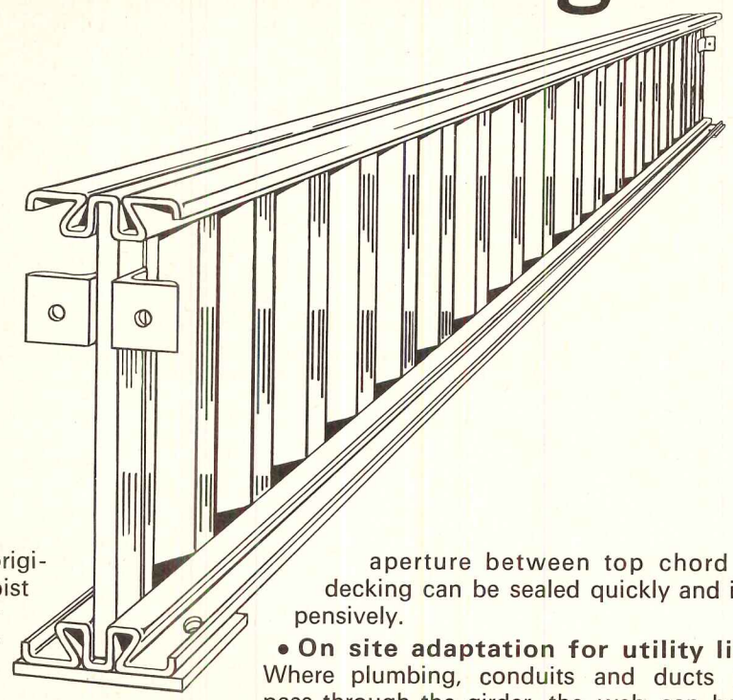


Modern buildings using the new PANLWEB girder can be found in your section of the country.
Northwest: West Coast Grocery Company Warehouse, Salem, Oregon. *Northeast:* Roger Brothers, Inc., Industrial Building #2, Hudson, New Hampshire. *Southwest:* U.S. Post Office, Odessa, Texas. *Southeast:* Gold Triangle Store (Division of Federated Department Stores), Coral Gables, Florida. *Midwest:* IGA Foodliner, Carrollton, Ohio.

engineered to save time, weight and building costs.



Macomber Incorporated, originator of the open-web joist and the V-LOK® Modular Component System, now brings you another advance in materials for building construction: the PANLWEB girder, designed to cut engineering time and reduce weight without sacrificing structural performance.

The PANLWEB girder consists basically of top and bottom flanges joined by a ribbed steel web. It is ideally suited for light-to-medium construction, such as warehouses, commercial and industrial buildings.

The PANLWEB girder offers you:

- **Earlier occupancy.** PANLWEB greatly reduces engineering time and gets your job into the shop faster for earlier delivery to the site. Point loadings are easily accommodated because of the continuous ribbed web.
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- **Simple installation.** Normal erection procedures may be followed.
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Reply to Percival Goodman

To reply to one's critics is a precarious job because any argument will be ascribed to a hurt ego. Since I am the owner of a rather imperturbable self-image, I accepted, after a spontaneous refusal, the invitation of the RECORD to risk a reply to Percival Goodman's review of my book *Matrix of Man* (see March 1969, p. 147). The objections raised by Mr. Goodman touch on some of the most basic issues of our time.

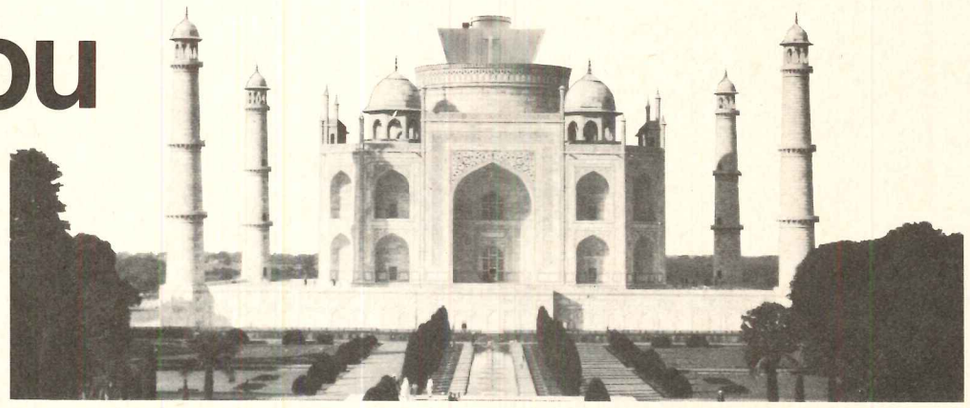
Architects, to put it mildly, are not intellectuals, and their ability to read deductively is limited. That Goodman is no exception becomes obvious from his arch reference to Brazilia and Urban Renewal as counter-proof of a metabolic urban renewal process, as if their exceptional failure in the historical process had not been amply described. The same goes for my definiton of "urban crisis" as NOT a unique contemporary phenomenon but a continuous state of tension between the—elaborately characterized—individual power drives and the communal organization that make a city. Most incomprehensible of all of Goodman's objections is that against my insistence on "stacked" density, whether in Siberia or Switzerland, to create an urban environment. If this inhibits, as he asserts, the human right to "a power of choice," then why does he have his students design superstacks on City Island and elsewhere, and why does he return each Sunday night from his prefabricated Island retreat to the rented stack space in New York?

The answer to this question is collective rather than personal. The Goodman Brothers, I, and eight million other people are, to employ ethological lingo, programed for city living. We have, over a period of many centuries, adapted to an urban environment which differs totally from the ethological adjustment of the rural inhabitant. You don't ask the crowds on the Lagoon or on Tompkins Square why they are relaxed and happy, or the mother with her baby carriage why she does not flee in panic. But isn't it rather, well, simplistic to mouth the standard accusations about "substandard dwelling units, filth and pollution, bad planning, crime, dope addiction and assorted hang-ups" without once asking the simple question why this sink of inequity is the dwelling place of a blind herd of death-bound lemmings? A brief sojourn to the statistical files in the New York Library would teach the Professor of Graduate Design that New York has an enviable vital statistics curve and a favorable employment index compared to other large cities; that it has more universities, libraries, museums, hospitals, beaches, than any other American city. Most decisive: it has the most polyglot multi-leveled population and the most diverse occupational specialization anywhere on earth. This is why people live in New York, why they have built cities through the millenniums, and why they put up with the obverse symptoms of high-density concentration under minimum law enforcement: crime, self-inflicted disease, brutal aggressiveness, parasitism, and corrupt administration. The keys to the city are opportunity and participation.

My book is intended to visualize these ingredients that go into a viable city, and to encourage those who teach, learn, and implement to follow in the development of their communities this urban programing inherent in the city dweller. To oppose this thesis with an outraged description of inadequate housing conditions on a French campus, and with a prayerful invocation of Krapotkin's Anarchism, seems a rather meaningless nonsequitur.

I ask consciously what millions of citizens expect subconsciously: that a city live up to its full potential, that it be all of a city, free of the shame and false trappings of fake "villages," "garden cities," or Model Cities. NEW YORK IS THE MOST COMPLETE CITY I KNOW. This is why I dedicated my book

Now you see it.



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to Manhattan, which aroused the ire not only of Percival Goodman. In fact, a lady interviewer on New York's own Municipal Broadcasting System wasted irretrievable time by scolding me for not praising San Francisco instead of her employer.

I share a certainty with this Island of Manhattan that long after the Goodmans have shouted their last impotent invective, men and women will still seek their destiny where the long adaptation process to urban conditions has made them fit to live.

Sibyl Moholy-Nagy

Hazards of unsafe wiring

We feel sure you will be pleased to learn that an important segment of the electrical manufacturing industry is highly pleased with your Mr. Robert Fischer's article in the December issue. "Makeshift Holes for Utilities Negate Floor Slab's Fire Resistance" represents an admirable grasp of a most difficult and significant subject. Your magazine is fortunate in having a man of Mr. Fischer's talents on the staff.

D. E. Wilbur, Chairman
F. W. Fork, Vice Chairman
National Electrical Manufacturers' Association

Salem Civic Center credits

May we express our appreciation for the item on the Salem Civic Center in the February issue. We have received a good deal of favorable comment.

We are disturbed, however, that the name of one of the principals of the joint venture, Don Richardson, A.I.A., was omitted. I hope you will be able to mention this.

James Payne
Payne & Settecase
Salem, Oregon

Monuments to the designers?

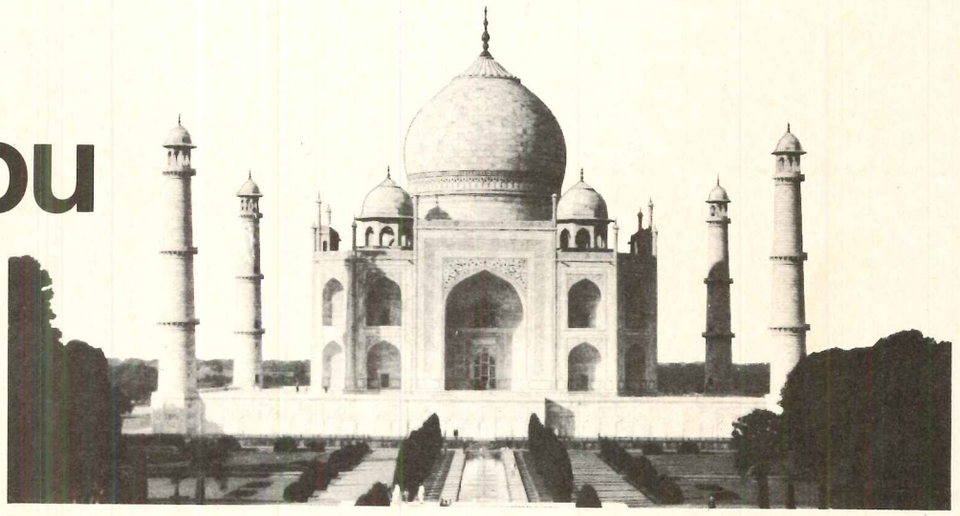
Only now, I had a chance to study your January issue praising the projected middle-income housing in New York City. But should not a professional magazine have pointed out the grieveous inadequacies in many of the apartment layouts? The walk-through living rooms which serve as traffic areas for the apartment and as eating space as well, make it impossible for the mother to ever keep this room clean; the dark kitchenettes, far away from any window where this same mother has to spend her time (these people do not have maids); the entrance into the kitchenette, thus eliminating the foyers of the maligned present housing which are so useful as additional living space for a family (now the living room becomes the foyer); the many gloomy, practically windowless rooms, without cross ventilation, looking out at projecting wings of the same building or onto interior courts which make their reappearance, a return to the apartment blocks of early century Central Europe. The money spent for crenelation of buildings and interesting projections could better have gone into central air conditioning in New York's climate.

The complete subjugation of plan and economics to exterior design is, of course, part of the complete reversal that took place in architecture in the last fifteen years. While it may be appropriate for monumental buildings, it seems out of place in middle-income housing. As a matter of fact, this approach has held up for three years any construction of this kind of housing in the city, and the rents are now at $40 to $50 a room, far beyond the reach of the people for whom the program was intended and shrugged off in the article as acceptance of new costs." As all the projects are still on paper, cost will go up higher yet before they are built.

In the face of the shortage of decent housing, to provide monuments to the designers instead of liveable apartments for people at reasonable cost seems a rather cynical "let them eat cake" approach indeed.

Gerhard J. Graupe
New York, New York

Now you don't.



It kind of makes you wonder. What's under the Taj Mahal's dome?

Nothing, as far as we know.

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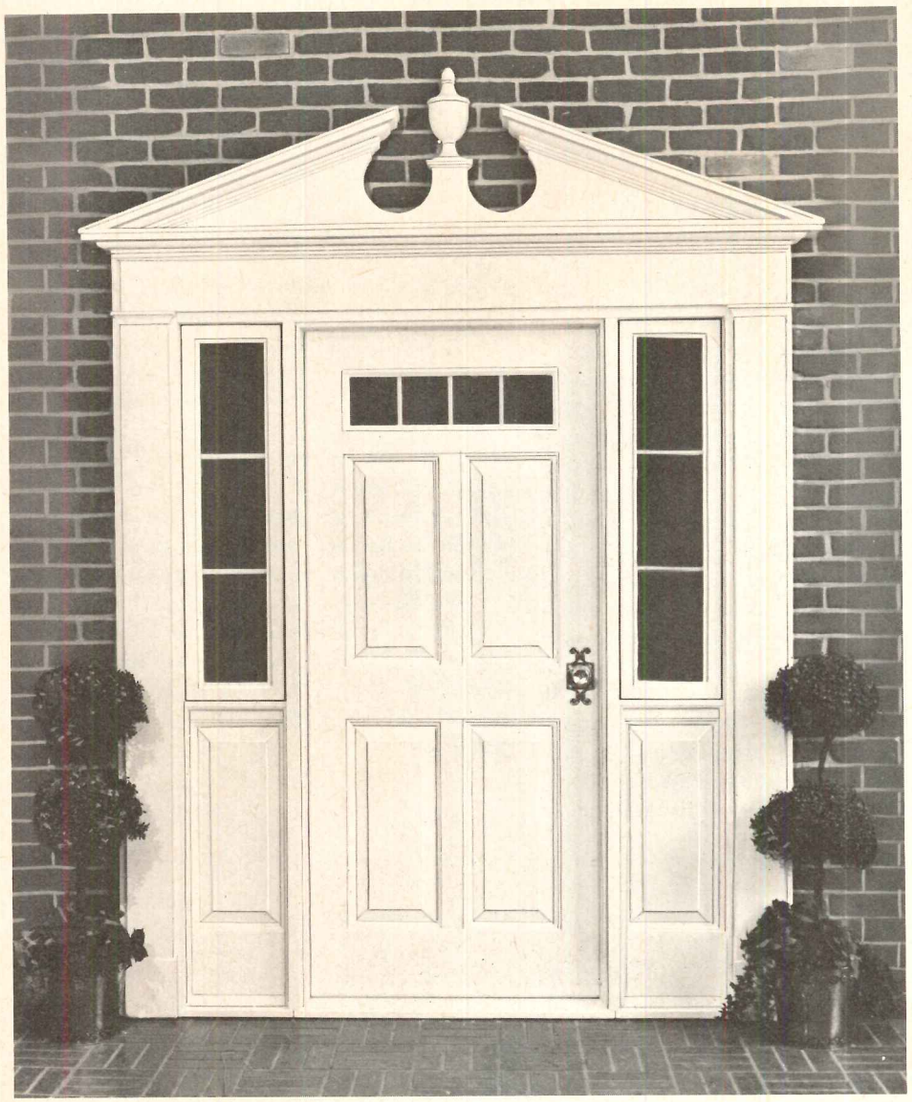
The power of attraction .....



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the Entrance with the Insulated Door

The only traditional things about a CARADCO Doorway are its air of authenticity and its elegant good looks. No sense of counterfeit from these doors: High-rise panels, a full 1¾" thick, produce shadow magic that re-creates the sculptured look of true colonials . . . the impression of hand craftsmanship. Entrance proportions are scaled with an eye to the past, so that the entrance has all the grace and charm of its prototype, with many design variations possible.

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EASTERN ASSEMBLY PLANT
Pemberton, New Jersey

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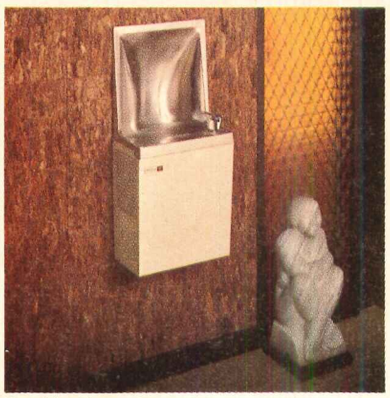
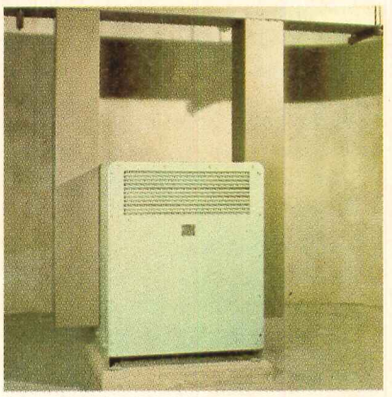


Good-looking water coolers

Modern indoor and outdoor lighting fixtures



Advance-design transformers

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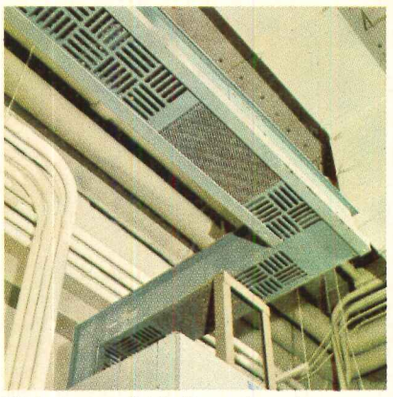
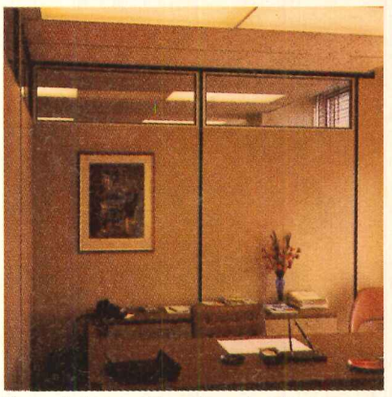
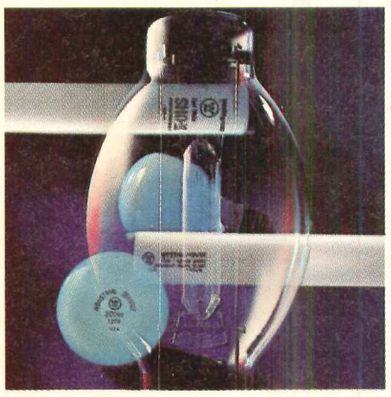


Efficient power distribution equipment

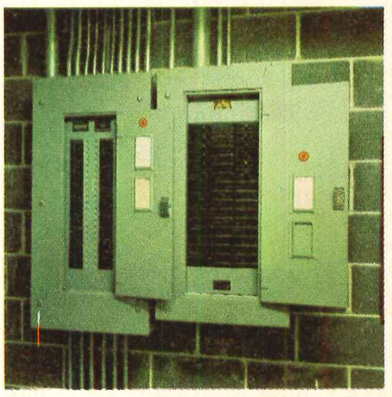


Convenient moveable walls and partitions



Lamps for every need

Elevators, electric stairways to move people



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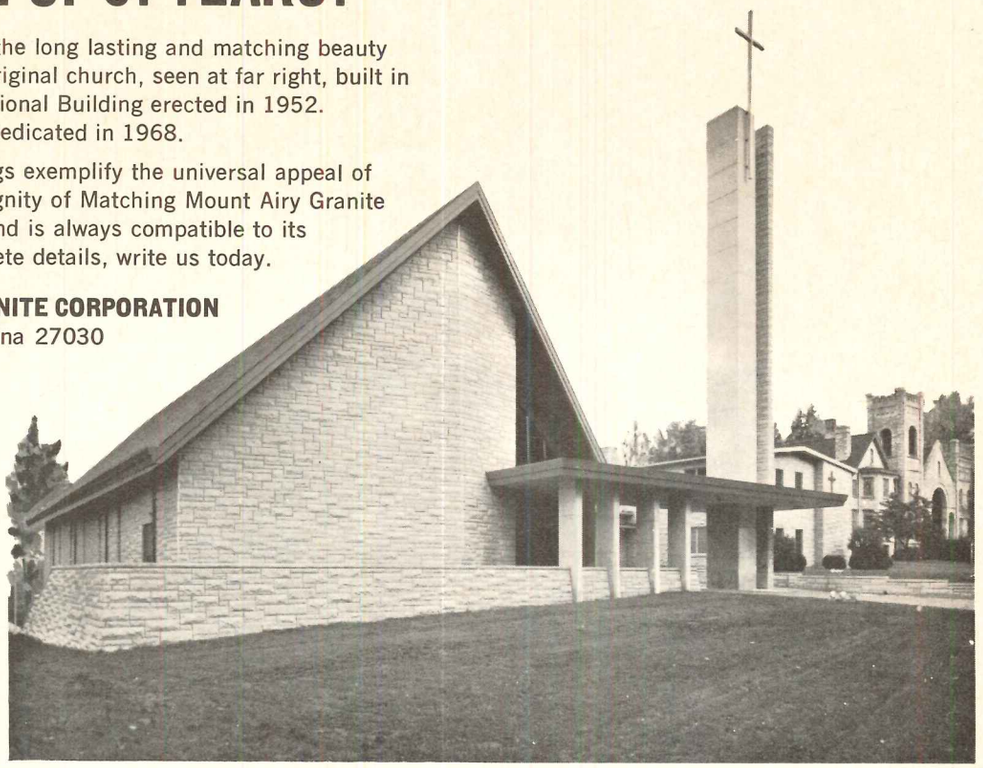

First Baptist Church, Mount Airy, N. C. Architects: Wilber, Kendick, Workman and Warren, Charlotte, N. C. Contractor: Hugh G. Strickland, Inc., Winston-Salem, N. C.

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See the complete EPCO line in Arch. file #16e-En and Lt. Const. file 7b-En. Mirror frames in Arch. file 25e-En and Lt. Const. file 12d-En.

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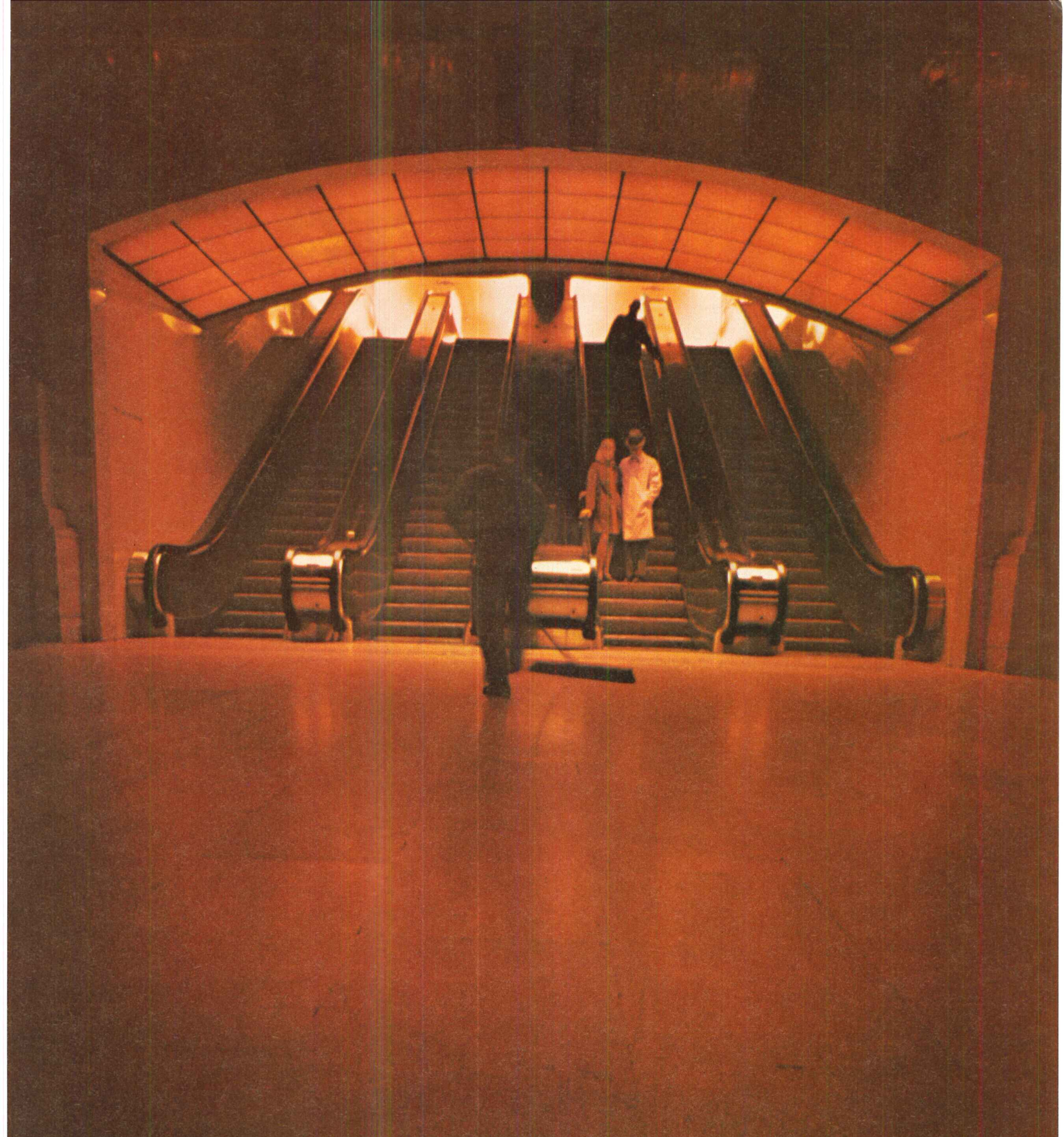

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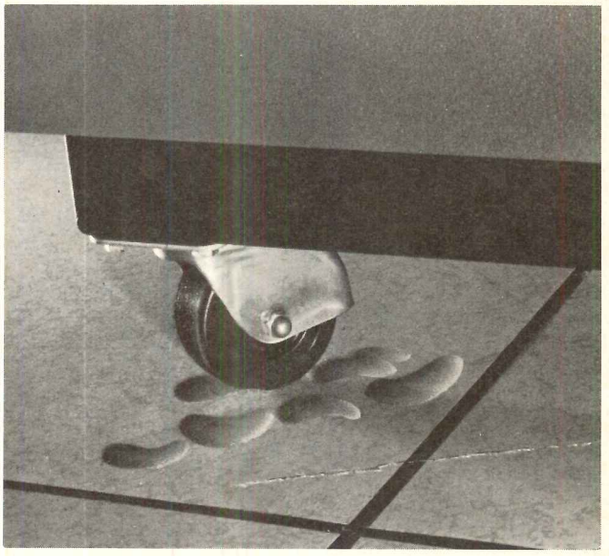
Westinghouse 40 watt T-12 fluorescent. Your agent-distributor has it.

To help you build it better...superior fluorescent lighting.

there are dimples... and dimples



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Almost any raised floor looks great new, but how will it stand up under use?

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OFFICE NOTES

OFFICES OPENED

C. Robert Abele, A.I.A. and **Donald H. Forfar, A.I.A.** have opened an office for the practice of architecture at 464 South Dixie Highway, Miami, Florida.

Ken Babits has opened an office for the practice of architecture at 19 Landing Meadow Road, Smithtown, New York.

Beyer-Blinder Associates has opened an office for the practice of architecture at 31 Union Square West, New York City.

Clarence Krusinski and Associates has opened an architectural office at 10 South LaSalle Street, Chicago.

Roger K. Lewis, Architect, has recently opened an office for architecture and planning at 430 Georgetown Building, 2233 Wisconsin Ave., N.W., Washington, D.C.

Robert G. Werden & Associates, Inc., consulting engineers, has opened a branch office at 110 West State Street, Trenton.

Wilsey & Ham, engineering, planning and architectural firm, has opened a new office in Seattle.

Daniel G. Winklosky, A.I.A. has recently established practice as an architect and city planner at 215 South Elm Street, High Point, North Carolina.

NEW FIRMS, FIRM CHANGES

Marvin I. Adleman, A.S.L.A. and **Leonard G. Siegel, A.I.A.** have established a new firm, **Adleman, Siegel & Associates, Environmental Designers** for the comprehensive professional practice of architecture, landscape architecture, planning and urban design. The firm's address is 605 Liberty Trust Building, Philadelphia.

David R. Johnson, Richard C. Reece, Spiros G. Pantazi, and **Robert Y. C. Hsiung** have become partners of the Boston firm, **Anderson Beckwith and Haible Architects.**

Stuart Long—Joseph Appelt & Associates has changed its name to **Joseph Appelt & Associates.** The firm's address remains 960 Scribner Ave., N.W., Grand Rapids, Michigan.

William F. Whitby, Jr. has become a partner in the State College, Pennsylvania, firm of **Kennedy-Basom-Grieco, A.I.A.,** and the firm is now known as **Architects and Engineers Collaborative.**

Au, Cutting, Smith and Associates, Architects and Planning Consultants of Honolulu have named **Robert Imada** and **Donald E. Hartwell** as associates.

Caudill Rowlett Scott of Houston and New York has elected the following as associates: **Donald C. Axon; Andrew Belschner; William T. Cannady; Edith A. Cherry; Lee J. Enright; Alvin Eppes; Robert Hendrickson; Thomas A. Hooker; Paul A. Kiel; Chalmers G. Long, Jr.; Frederick A. Preiss; Dale J. Ruckstuhl; Francis G. Whitcomb** and **William Wright, Jr.**

Dalton—Dalton Associates and **Robert A. Little and Associates** have merged under the firm name of **Dalton—Dalton—Little,** with offices in Cleveland.

Stanley M. Cole, A.I.A. has been appointed managing partner of **Alexander Ewing & Associates,** Philadelphia architectural, engineering and planning firm.

Charles Deakin has joined the architectural affiliate of **Connell Associates, Inc., Consulting Engineers** of Miami and Orlando, Florida, as assistant supervisor of the firm's architectural department.

The office of **J. B. Baldino, Architect** has announced the advancement of **Louis DiGregorio** as associate architect.

Warren A. Dixon and **Harold W. Brown** have formed a partnership under the firm name of **Dixon and Brown, A.I.A., Architects** at 315 North Kimball Street, Mitchell, South Dakota.

John F. Barnaby, P.E., David Kanter and **George Polimeros, P.E.** are now associates of the New York consulting engineering firm, **Fred S. Dubin Associates.**

Richard E. Engberg and **Robert P. Shanks** have announced a partnership for

the practice of architecture and engineering. The new firm, **Engberg/Shanks,** maintains offices at 233 Jefferson Building, Peoria, Illinois.

George M. Ewing Company, Philadelphia, Washington, D.C. and Maplewood, New Jersey architects, planners and engineers, has announced the appointment of engineer **Frank Danella, Jr.** and **Ronald A. Knabb, Jr., A.I.A.** as associates. **George T. Szabo, Jr., A.I.A.** has recently joined the firm's Philadelphia office.

Norman D. Kurtz has joined **Peter Flack, Consulting Engineers.** The new firm, **Flack & Kurtz Consulting Engineers,** is at 29 West 38th Street, New York.

Gilbert, Forsberg, Diekmann, Schmidt, Civil and Structural Engineers, is now operating under the name of **GFDS Engineers,** 1620 Montgomery Street, San Francisco.

Ben E. Graves has joined the staff of New York-based **Educational Facilities Laboratories** as consultant and director of **New Life for Old Schools Project,** located at 20 North Wacker Drive, Chicago.

James M. Glave, A.I.A., William C. Newman, A.I.A., and **Samuel A. Anderson III, A.I.A.** have formed a new partnership for the practice of architecture, **Glave Newman Anderson.**

Wallace B. Berger, A.I.A., David Eng, A.I.A., Samuel Posner and **Richard C. Keller, R.A.** are now associates of **Gruzen & Partners,** New York City.

A new firm, **Richard W. Hobbs Associates,** has recently opened, with offices at 907 Pine Street, Seattle.

Emil C. Hach is now a partner of **R. M. Gensert Associates, Structural Engineers** of Cleveland and Pittsburgh.

Clifford Hanssen is now an associate in the San Francisco firm, **Neill Smith and Associates.**

James R. Johnson has recently been admitted as a principal of **Griffin, Mynatt & Kaatz, Inc., Architects,** Knoxville, Tennessee.

Walter H. Kilham, Jr., F.A.I.A., Robert M. Beder, A.I.A. and **Philip M. Chu, A.I.A.** announce the change of the firm name, **O'Connor and Kilham, Architects** to **Kilham Beder & Chu, Architects. Robert B. O'Connor, F.A.I.A.** continues as consultant to the firm, New York City.

Donald S. Van Etten, A.I.A. and **Michael Newman, A.I.A.** are now partners of **Lashmit Brown and Pollock Architects and Engineers,** Winston-Salem, North Carolina.

The merger of two California architectural firms, **Leach & Kehoe** and **James Ticer & Associates,** has recently been announced. The new firm, **Leach, Kehoe, Ticer, & Associates, A.I.A.,** has offices at 522 North "A" Street, Oxnard, California and 266 Mobil Avenue, Camarillo, California.

Andrew R. Ewing is now a vice president, and **Edwin W. Fairweather** is now director of development, at **Charles Luckman Associates** of New York.

The Detroit firm, **Meathe, Kessler and Associates, Inc., Architects** has changed its firm name to **William Kessler and Associates, Inc., Architects,** following the resignation of **Philip J. Meathe, A.I.A.** Mr. Meathe is now with **Smith, Hinchman & Grylls,** Detroit, as executive vice-president.

Gerald Gurland and **Carl Meinhardt** have recently become associates with the New York firm, **Richard Meier, Architect.**

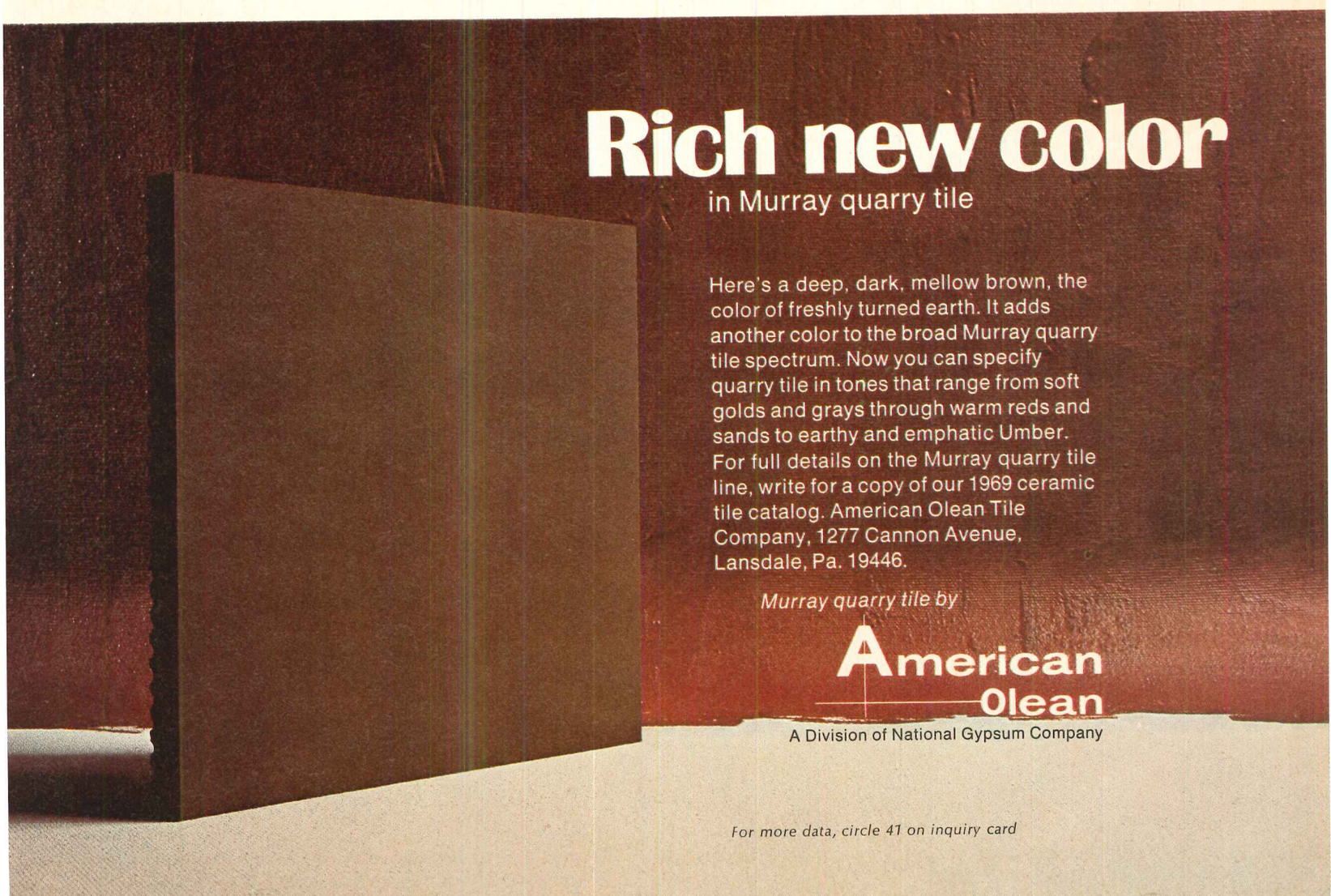
Roger C. Mellem, A.I.A. is now an associate of **Metcalf and Associates, Architects and Engineers,** Washington, D.C.

George, Miles & Buhr, Salisbury, Maryland architectural and engineering firm, recently announced the admission of **George K. Miles, P.E.** as engineering associate.

F. Kempton Mooney has been appointed as an associate of the Atlanta architectural and engineering firm, **Stevens & Wilkinson.**

Robert Mosher and **Roy Drew** recently announced that **William J. Watson, A.I.A.** has joined them in the practice of architecture. The new firm, **Mosher, Drew, Watson & Associates,** is located at 1255 Coast Boulevard, La Jolla, California.

continued on page 67



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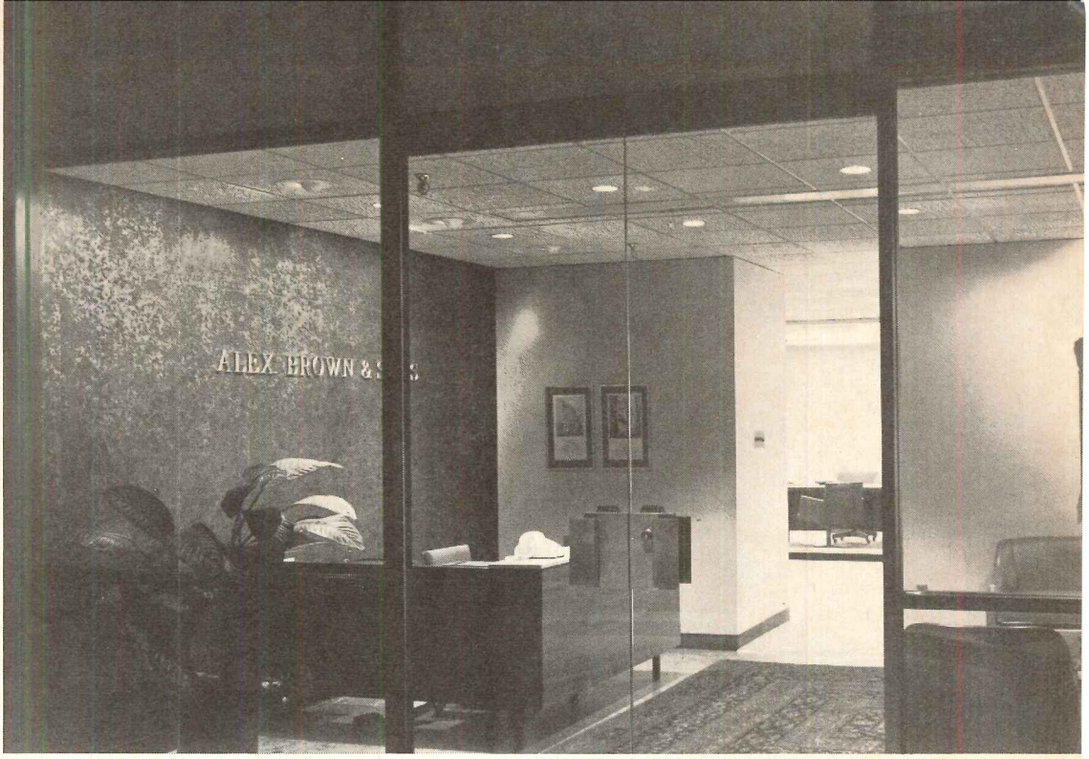
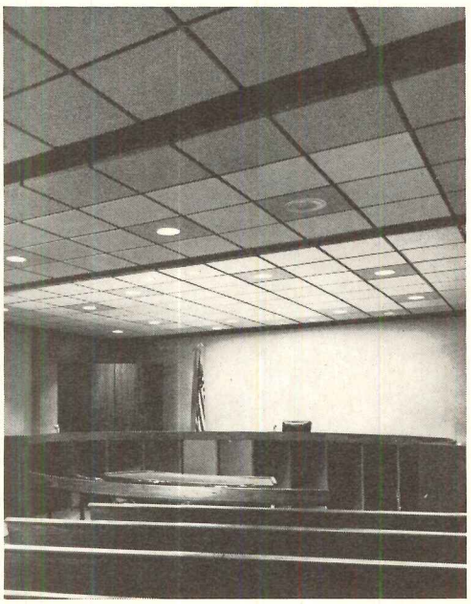
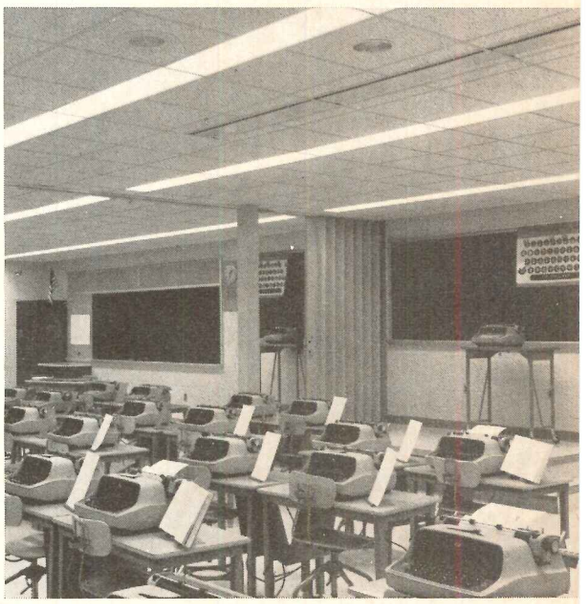
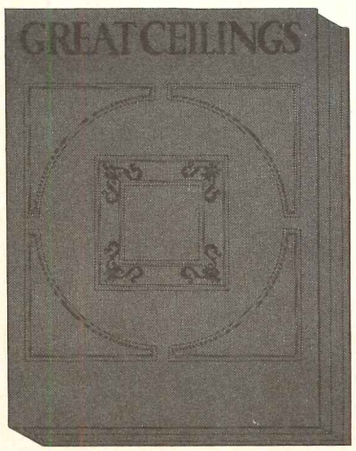
Air conditioning that puts no ceiling on imagination*









*Bound to entice the imagination—Carrier's new Architect's Portfolio includes a dozen of the world's "Great Ceilings" suitable for framing.

Carrier's Moduline® variable volume air terminals are designed to give you freedom of design . . . to enhance rather than hinder your personal hallmark.

A showcase of what architects have accomplished in ceiling design with the Carrier Moduline is now available in a new portfolio entitled "Great Ceilings."

This handsomely bound reference book includes a variety of installations such as a school, hospital, municipal building, service center, and office buildings. Some are completely new, others are add-ons and/or renovations.

A new 7-minute companion film on the Carrier Moduline is also available for private showings. It clearly describes the unique features of this new unit and illustrates a variety of design-provoking ceilings. The name is the same, "Great Ceilings."

Registered architects who write in on their letterheads will receive a copy of the "Great Ceilings" portfolio and may also schedule a showing of the film.

Write today to William Heck, Product Manager, Carrier Air Conditioning Company, Carrier Parkway, Syracuse, New York 13201.

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THE PROBLEM SOLVER...

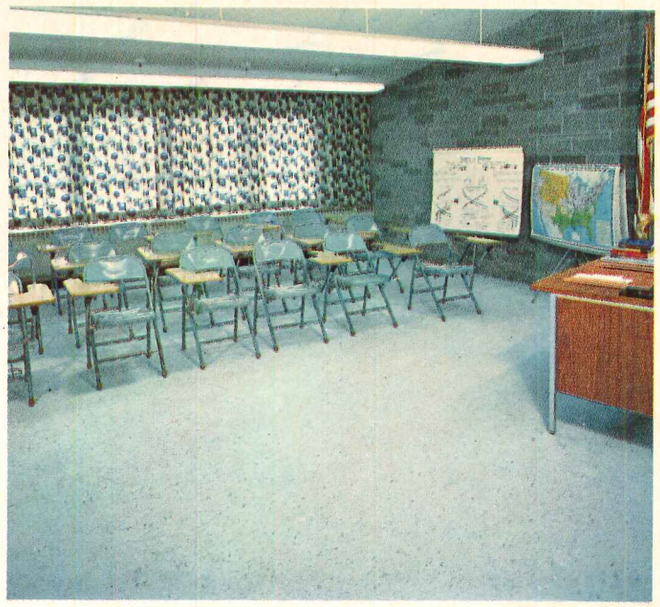
...IN THE SCHOOLROOM
WHERE UNIQUE NEW CARPET SQUARES
GET AN "A+" IN REDUCING MAINTENANCE COSTS

SADDLE RIVER COUNTRY DAY SCHOOL BEFORE THE PROBLEM SOLVER ENROLLED

Linoleum was on the floor. Hard. Cold. Slippery. Required sweeping, mopping, and buffing. Expensive to maintain.

But the idea to carpet the school with conventional carpeting was quickly rejected. It just wouldn't last!

Then came The Problem Solver with new Heugatile loose-laid carpet squares. Soft. Warm. Quiet. Totally interchangeable, too! Rotate the squares to equalize wear, and the entire carpet stays young-looking for years and years. Heugatile banishes ugly traffic paths for good!



A TEST INSTALLATION SOON PROVED HEUGATILE THE ANSWER!

This is the busy hallway in The Saddle River Country Day School, Saddle River, N.J., where the Heugatile test installation was made. It proved so successful that additional Heugatile was subsequently ordered.

Headmaster Ogilvie writes:

"I have never written a fan letter before, but at this time I am impelled to do so . . . (to tell you) . . . how enthusiastic we are. Previous hard-surface flooring required a minimum of 12 hours janitor's time per week . . . maintenance time has been cut to 2 hours per week . . . a saving of $29.75 per week. In addition, the carpeting always looks neat and clean. Students take pride in the appearance of their building, and work to keep it clean . . ."

Tell the Problem Solver your floor-covering problem!

Write a brief letter—100 words or less—describing a flooring problem that could not be solved by conventional carpeting. If your problem is selected to be featured in future advertising, your Heugatile carpeting will be installed free of charge. Tell us your carpeting problem today! Address: The Problem Solver, Van Heugten U.S.A. Inc., 185 Sumner Avenue, Kenilworth, New Jersey 07033.

See Heugatile specifications in Sweet's 1969 Architectural and Interior Design Files.

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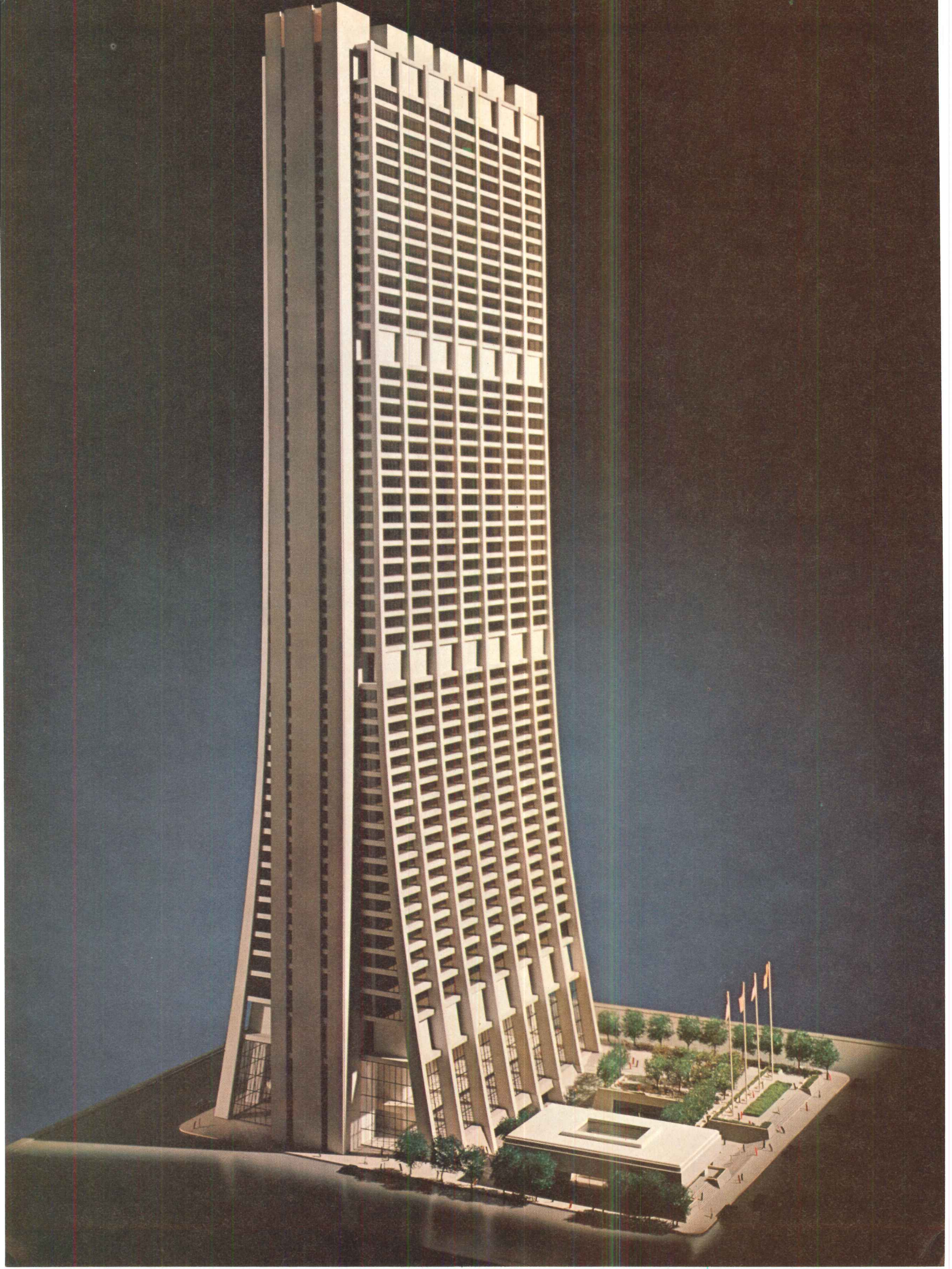

Chicago's First National Bank built PPG Performance Glass into its HVAC system

And took a big chunk out of heating and cooling costs.

PPG's *Solarbronze*® *Twindow*® not only saved money on original equipment—it has a major role in reducing annual operating costs for Chicago's One First National Plaza. The extraordinary insulating properties of *Twindow* glass greatly increase the cost efficiency of the building's unusual all-electric heat-recovery HVAC system.

The complex cooling system recovers heat from the building's interior lighting system by drawing warm air from occupied spaces and cooling it with chilled-water equipment to produce the desired temperature level. Because *Solarbronze* Plate Glass tends to minimize solar radiant heat energy and the double thickness of *Twindow* glass reduces the conducted heat gain, the amount of chilled water required by the HVAC system is reduced. This efficiency results in important annual operating cost savings to the bank.

Other factors influenced the selection of *Solarbronze Twindow.* Its double thickness of glass permitted desired humidity levels (30-40%) to be maintained without condensation on interior glass surfaces. Heat-strengthened *Solarbronze Twindow* also met strength requirements—50-psf wind loadings in this case—and its color harmonized with the bronze tone of exterior metals.

The various PPG Performance Glasses help realize significant savings in original mechanical equipment costs, reduce brightness, aid in temperature control or reflect like a mirror to enhance exterior design.

Contact a PPG architectural rep for technical data or write: PPG Industries, One Gateway Center, Pittsburgh, Pa.

Architects and Engineers:
The First National Bank Architects
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PPG is Chemicals, Minerals, Fiber Glass, Paints and Glass. So far.

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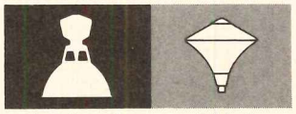
General Electric luminaires light all outdoors...

...and shine in plants as well.

GENERAL ELECTRIC LIGHTING



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continued from page 57

Hugh E. Mulholland has joined the planning and architectural firm, **William L. Pereira & Associates,** as director of engineering in Los Angeles.

Neri & Sit, Inc., Architects and Engineers and **PACE Associates, Inc.** have recently merged. The new firm is known as **PACE Associates, Inc.,** and is located at 35 East Wacker Drive, Chicago.

Five associates of **Murphy and Mackey Architects, Inc.** have been elected vice presidents: **D. Robert Downey, A.I.A., Harry B. Richman, A.I.A., Theodore J. Wofford, A.I.A., Donald J. McMahon** and **Keith B. Underwood, A.I.A.**

Malcolm L. Nietz has been elected to the board of directors of **Ellerbe Architects.**

The Los Angeles-based firm of **Dan Saxon Palmer A.I.A. & Associates** has appointed **Roy C. Shacter** and **Elvin Riley** as associates.

Stewart E. Duval has been appointed chief architect of **The Perkins & Will Partnership's** Washington, D.C. office.

Robert J. Perry has joined the Los Angeles-based firm of **Arbogast Jones Theiss Associates.**

Thomas C. Pratt & Associates, Architects, announces that associates of the firm, **Alvin F. Schafer** and **William D. Slowik,** have been admitted to partnership. The firm continues architectural practice under the new name **Pratt Schafer Slowik,** Pittsburgh.

A new firm has been formed under the name of **Sylvia Reay, A.I.A.,** and is located at 1088 Keith Avenue, Berkeley, California.

Mrs. Jacob Rietsema has joined the **James S. Minges & Associates, Inc.** consulting engineering firm of Farmington, Conn.

Ritchie Associates, Inc., Chestnut Hill, Massachusetts architects and engineers, announce the election of **William J. Mello, Jr., A.I.A.** and **Albert J. Platt** as vice presidents of the corporation.

Martin Lovett & Associates, Consulting Engineers has announced the admission of **Alan H. Rozman, P.E.** as a partner in the New York City firm.

Samborn, Steketee, Otis and Evans, has announced the addition of four new partners: **J. R. Fernandez** and **Francis L. McAuliffe, Jr.,** engineers, and **Gordon E. Lewis** and **Byron L. West,** architects.

Two Cleveland firms have merged to form **Schafer, Flynn, van Dijk and Dalton, Grimm, Johnson, Architects.**

Maxwell L. Saul, A.I.A., C.S.I., Architect, announces the dissolution of the partnership of **Hatami, Saul and Associates** and the continuance of the architectural practice under the new name **Maxwell I. Saul and Associates, Architects** at 1036 Grant Street, Denver.

The firm of **Schwarz & Van Hoefen** is now known as **Schwarz & Henmi Architects.** Partners of the firm are **Arthur W. Schwarz, A.I.A.** and **Richard T. Henmi, A.I.A.**

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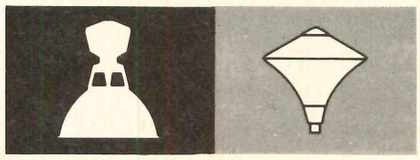
GENERAL ELECTRIC LIGHTING



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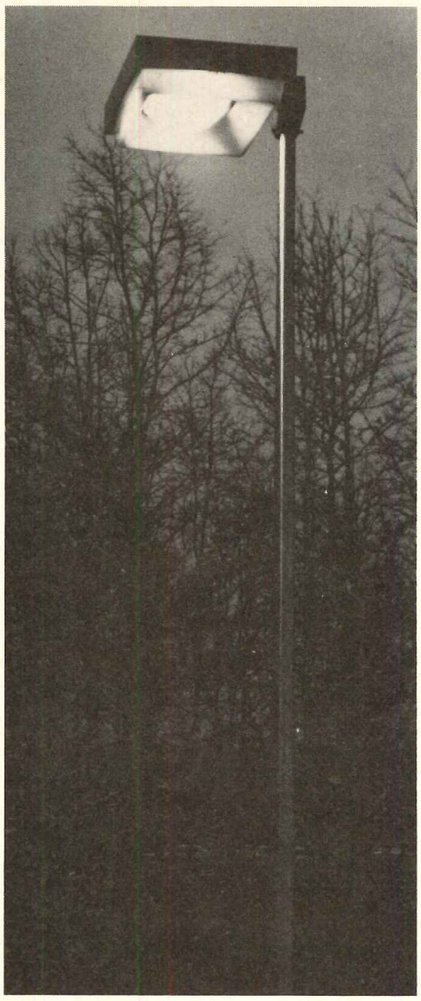

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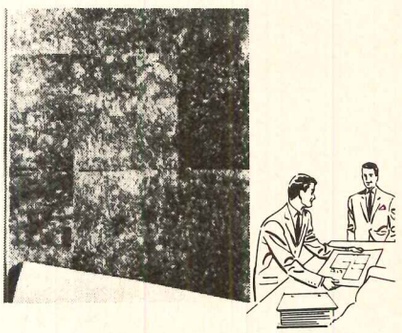
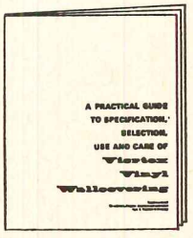


Write today for our helpful booklet: "A Practical Guide to Specification, Selection and Use of Vinyl Wallcoverings."



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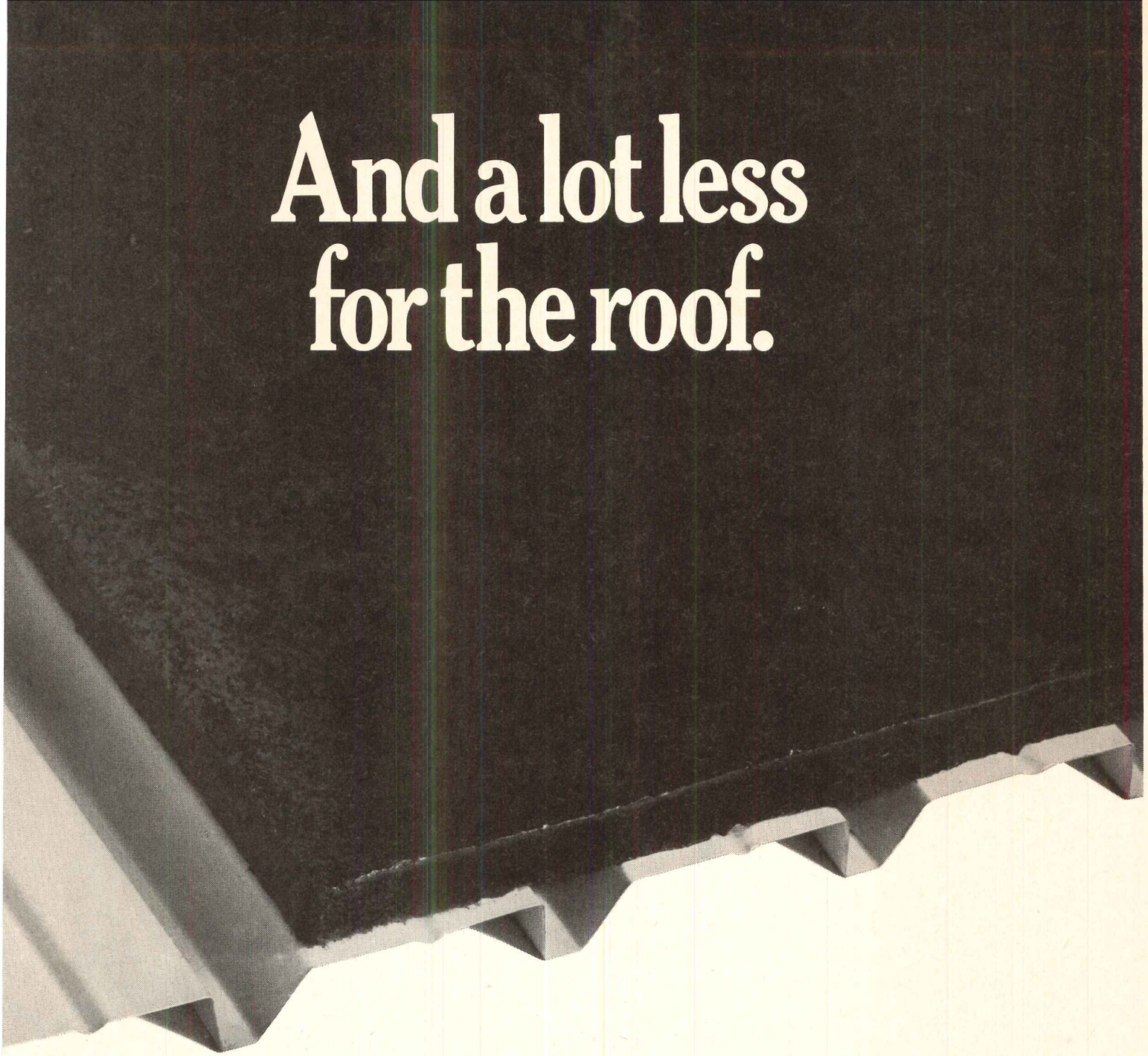

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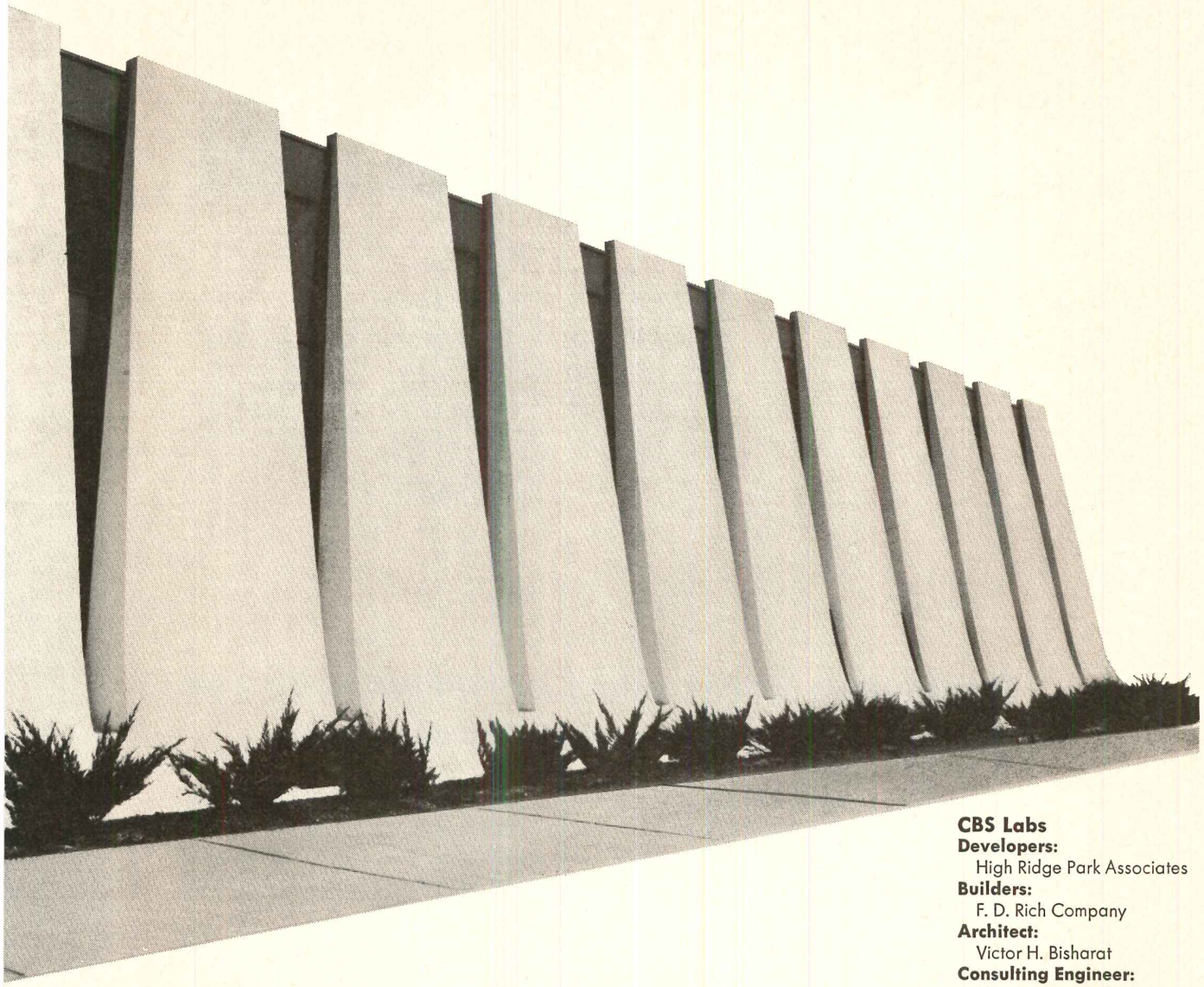
CBS LABS: Free-flowing design. Engineered for savings with heat-by-light.

Start with a striking architectural design. Add one of the most practical environmental control systems available today, and what do you have? The new CBS Laboratories research and development center in Stamford, Connecticut. A 2.75 million dollar structure, containing 80,000 square feet of floor space. Engineering cost analyses proved heat-by-light to be the most economical system for the CBS project.

The heat-by-light concept utilizes modern heat-transfer fixtures to capture up to 85% of light-generated heat. Some of this heat is used to maintain desired temperature in interior areas, with the rest channeled to offset heat loss at building perimeters. So it's almost like getting heat free.

All-Electric systems eliminate the need for boiler rooms, flues, fuel storage and handling. Result: greater design freedom for architects; substantial savings for owners. And that's not all! Because an All-Electric system requires less supervision, maintenance costs are significantly lowered.

The ultimate in design flexibility. At practical cost. You can be sure of both with All-Electric design. For information on heat-by-light, or any other All-Electric system, contact your electric light and power company. They'll be happy to shed more light on the matter.



CBS Labs
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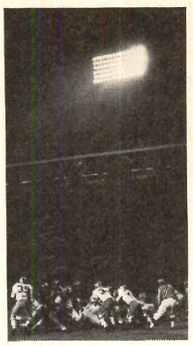
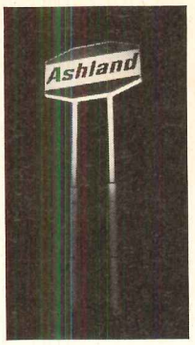


for your stadium...

Compact light source, precise beam control and good color rendition mark **Super Sportsliter** performance for color TV illumination of Georgia Tech Stadium.



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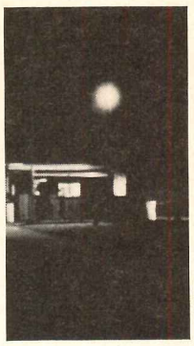
"Fine Tuning"—in a range of 0 to 7° vernier adjustment, precise beam control and superior beam efficiency make the **Super Sportsliter** popular, and preferred, for low cost high-brilliance signboard illumination.



...or for your security

Steber **Super Sportsliters** monitor 17 miles of security fencing for U.S. Marine patrols at Guantanamo Bay Naval Base.

Precision controlled candlepower for brilliant, powerful illumination

Whether you're relighting Georgia Tech's Stadium for color TV transmission or miles of security fence at Guantanamo Bay, Steber's new Super Sportsliter will deliver more brilliance and more precise beam control than any floodlight in its class.

It's the only high performance floodlight on the market available in NEMA 2, 3, 4, and 5 beam spreads. And, in beam efficiency, Steber photometrics exceed NEMA standards in every beam spread.

Of course the price is competitive—in any beam spread and any line voltage. But, more important, Super Sportsliters are designed so that you'll use fewer of them and save on installation, operating and power costs, too.

Call or write Steber for the story on Super Sportsliter. Ask for a SHOW and SELL lighting demonstration and for the services of your Steber Lighting Expert. Write: **Steber Division, Pyle-National Company, 1334 N. Kostner Ave., Chicago, Ill. 60651.**

Steber Lighting by **Pyle-National**

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SS-169

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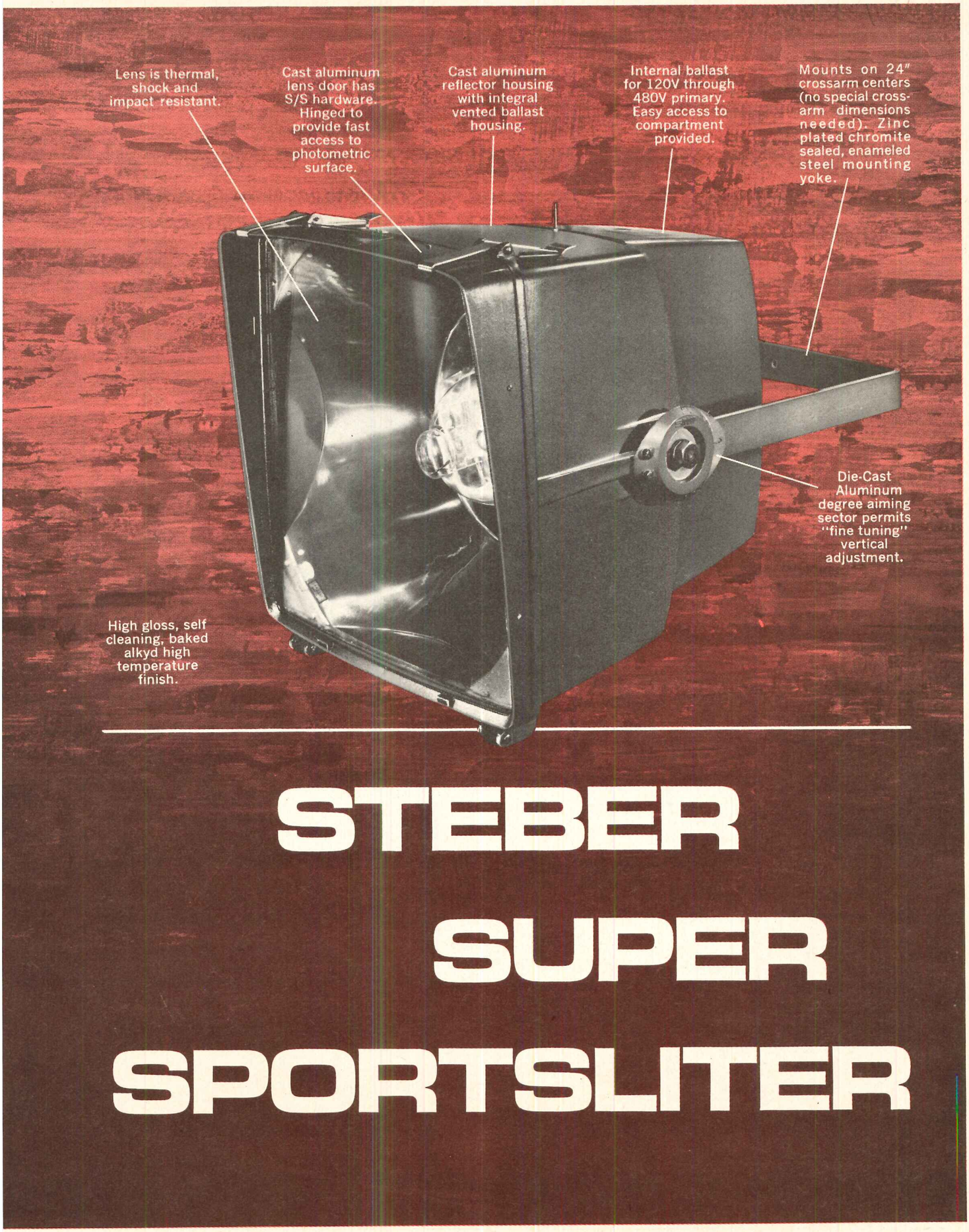
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Mounts on 24" crossarm centers (no special crossarm dimensions needed). Zinc plated chromite sealed, enameled steel mounting yoke.
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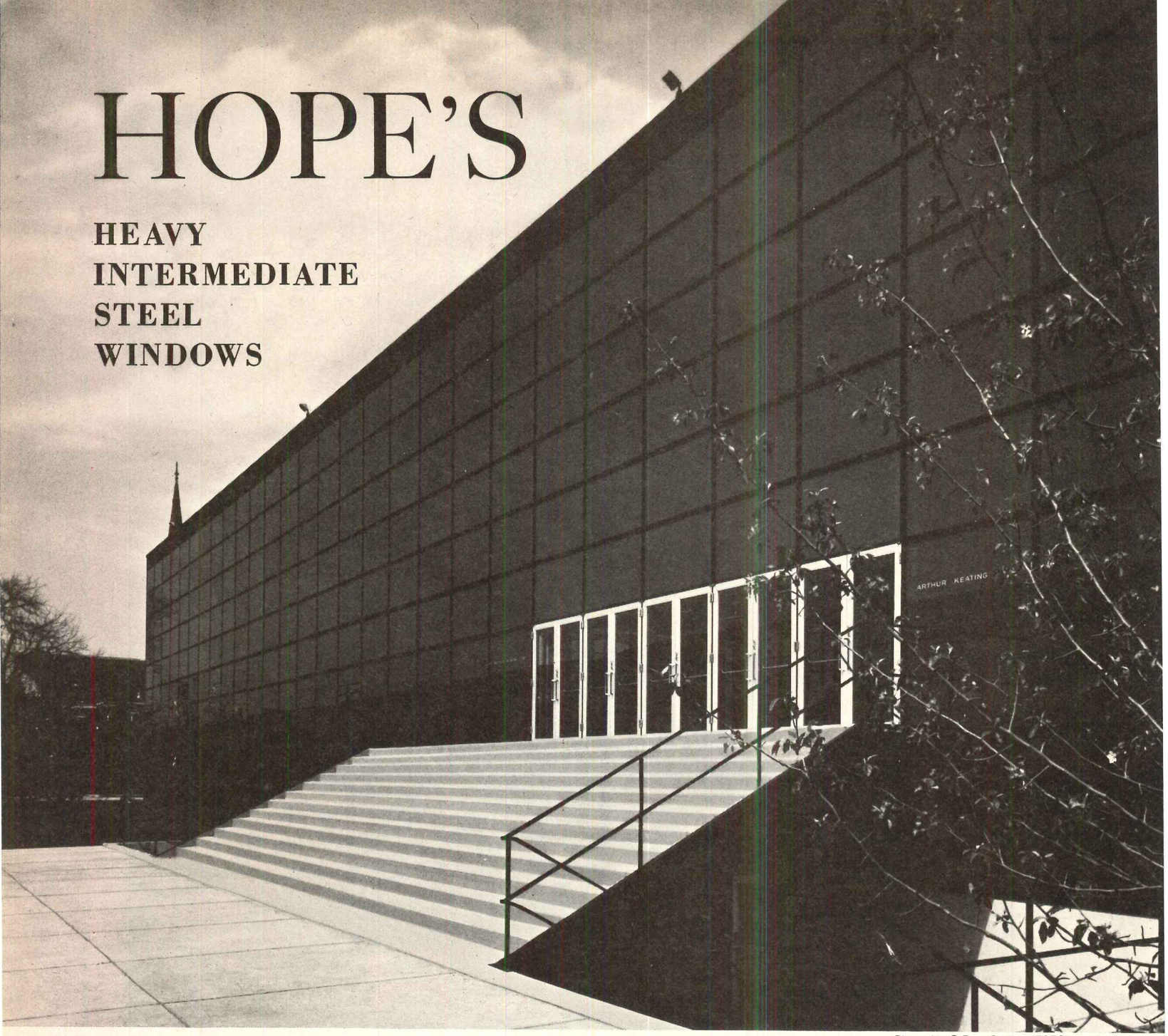

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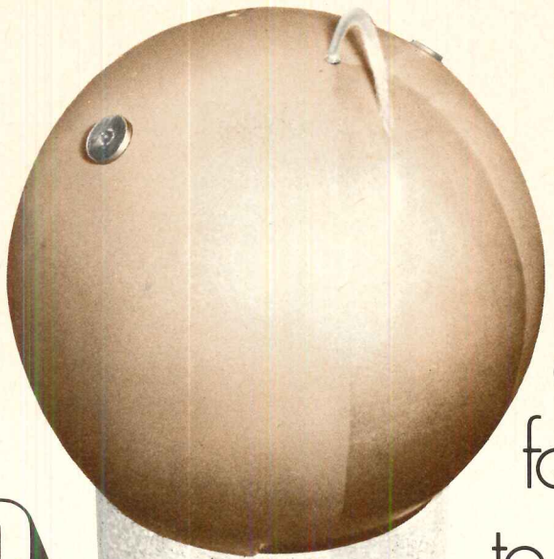

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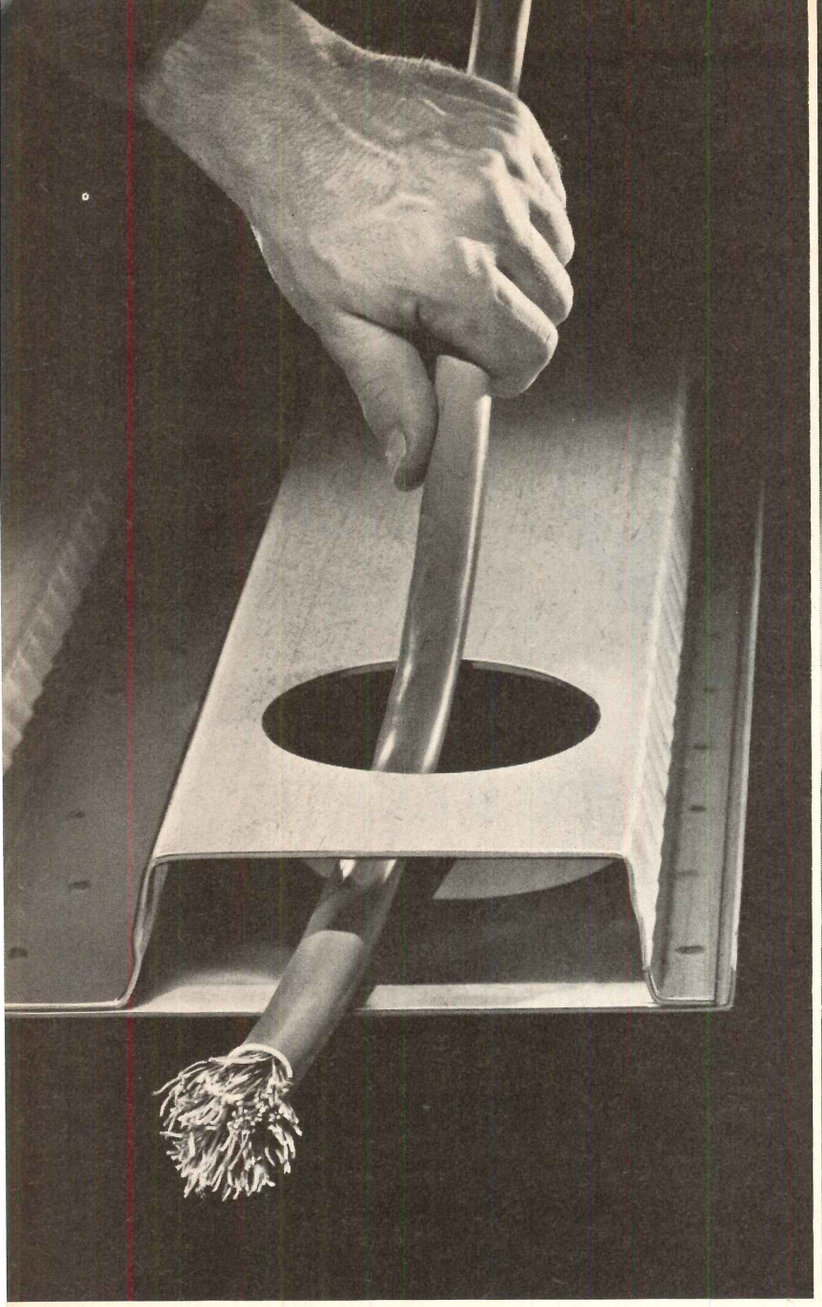

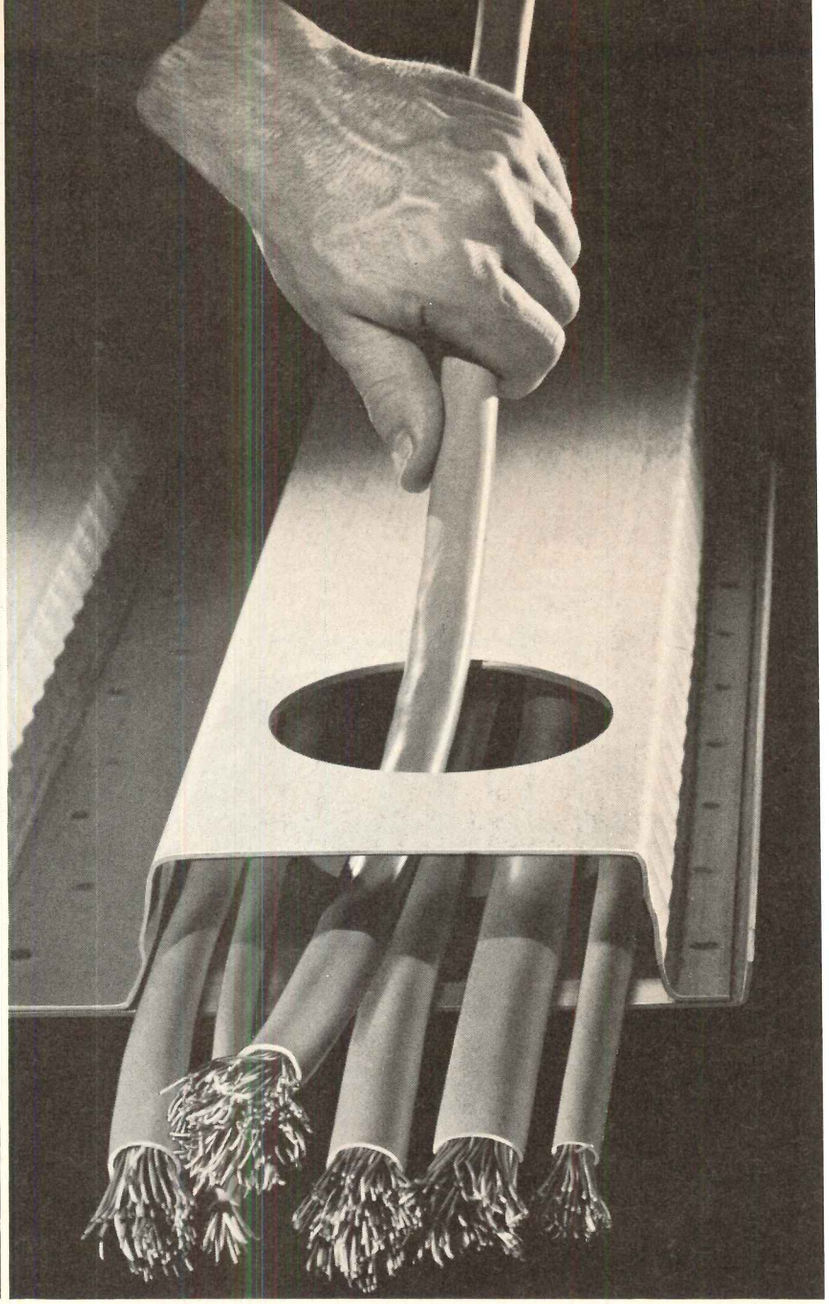

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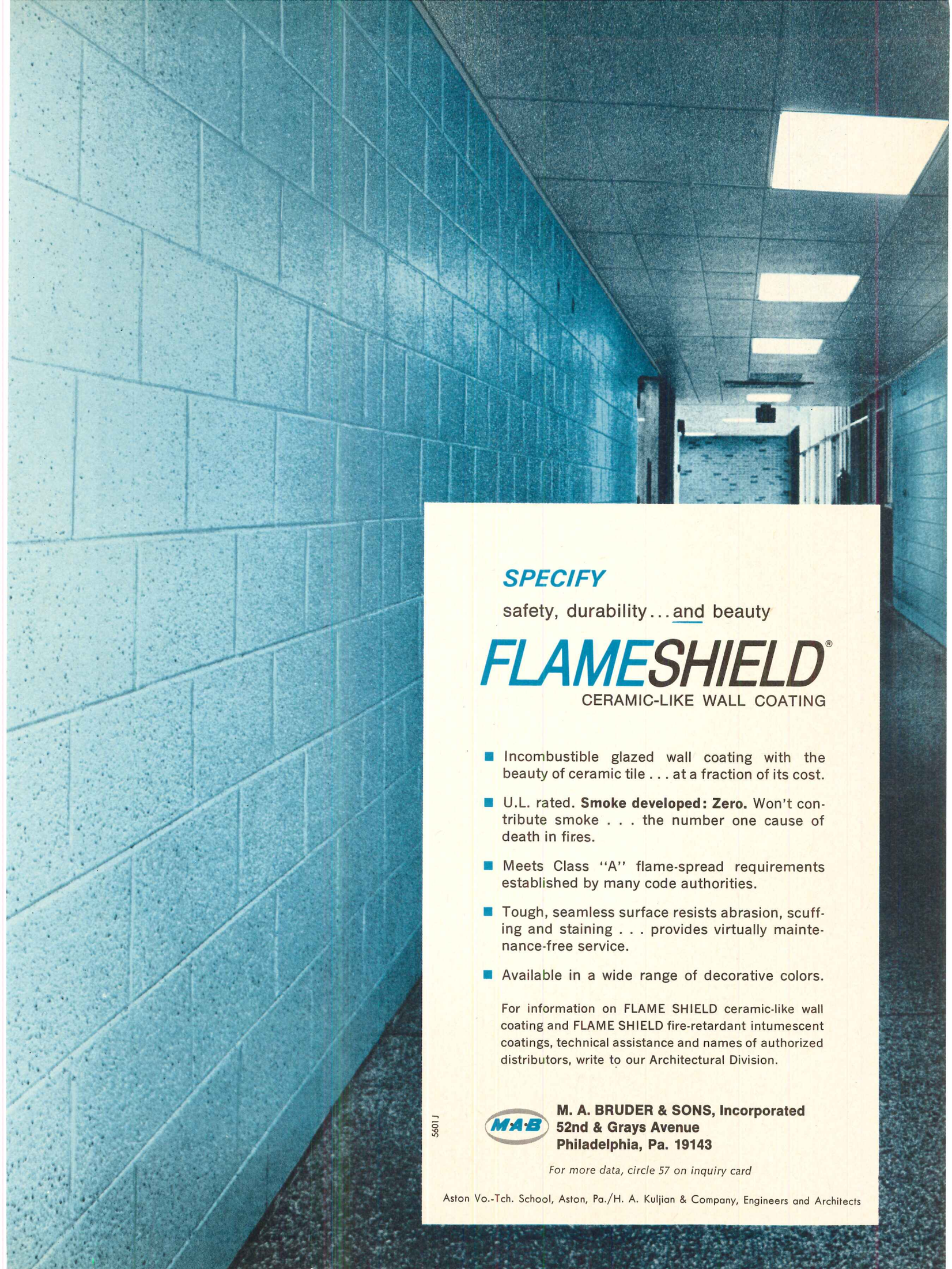

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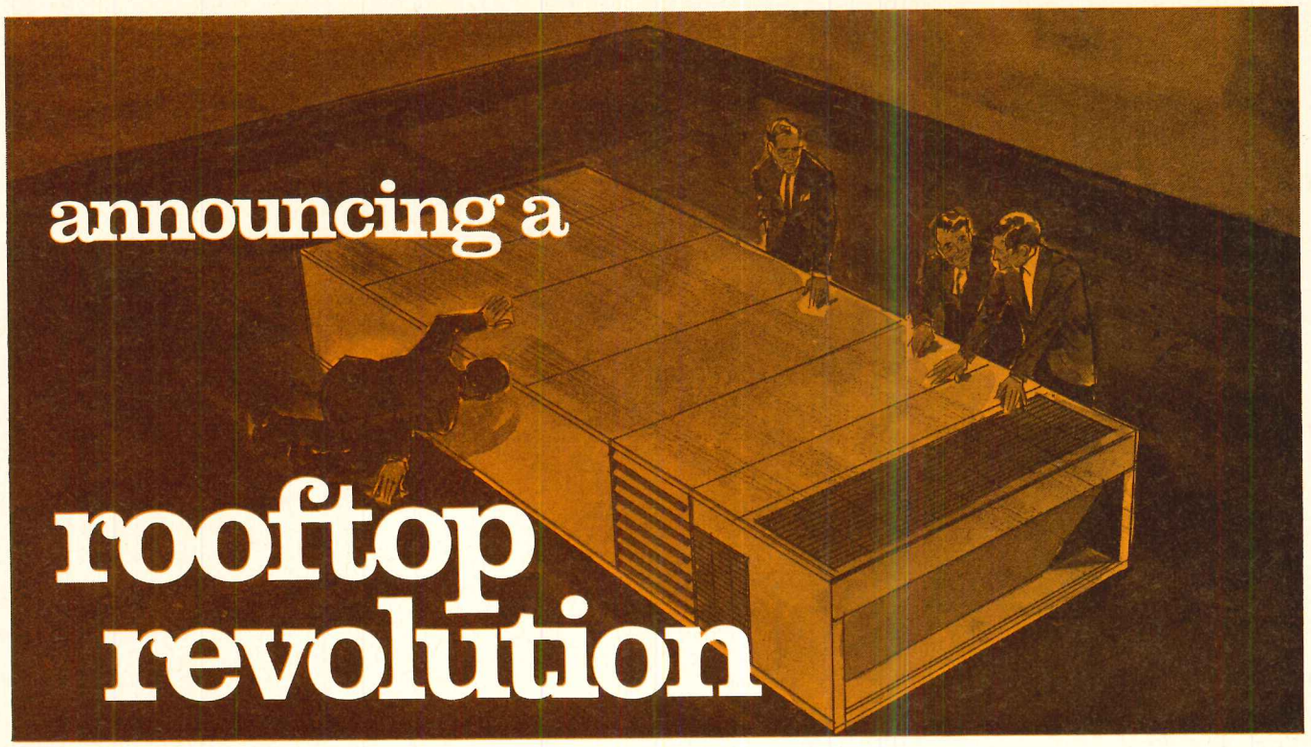

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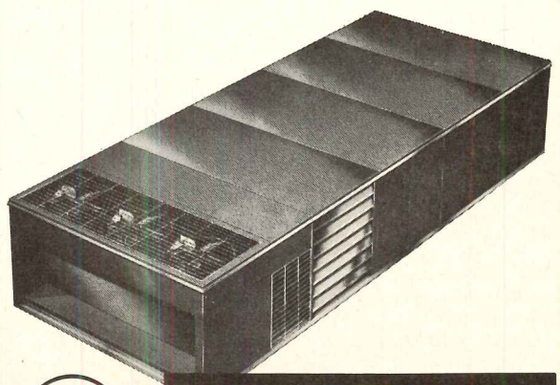

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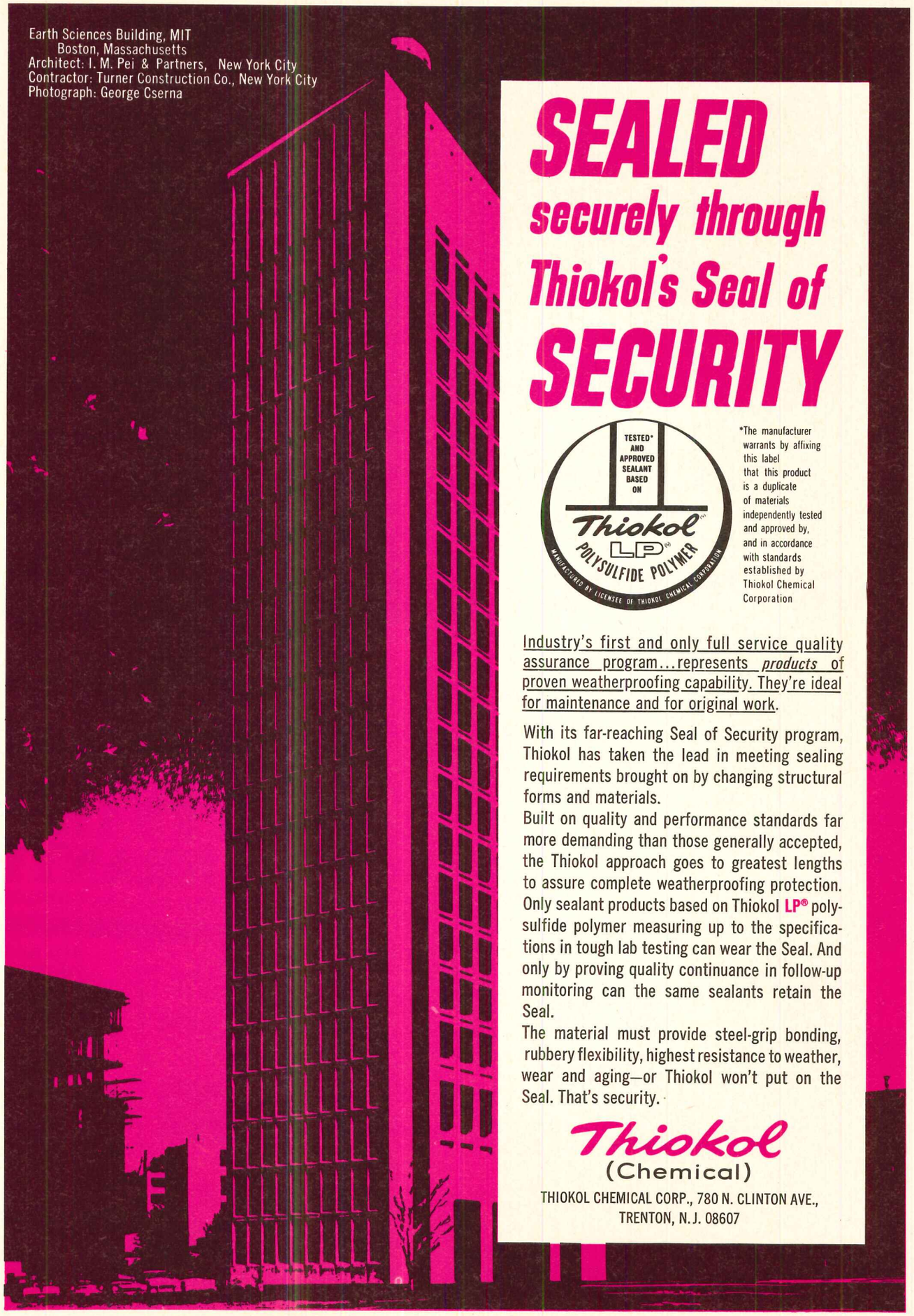

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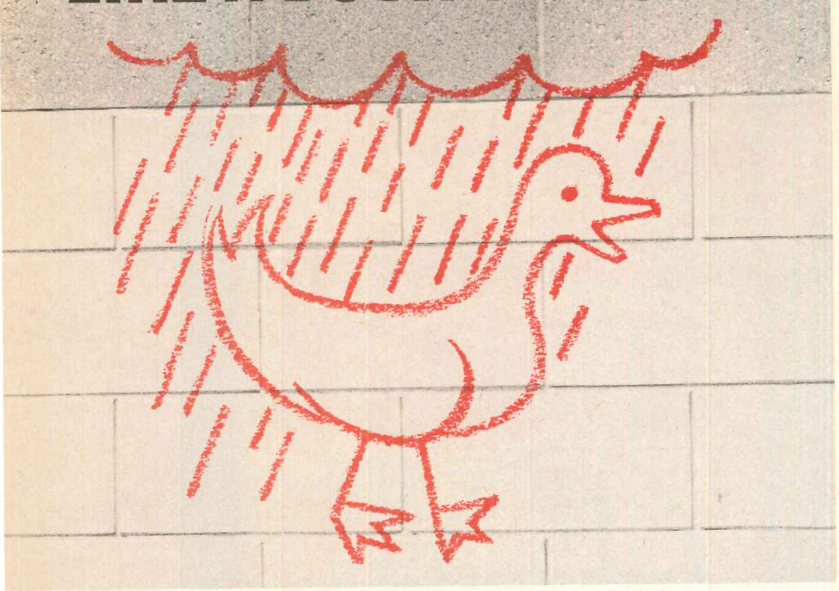

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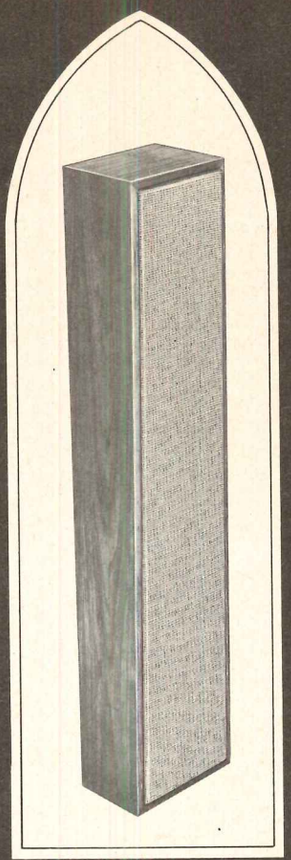

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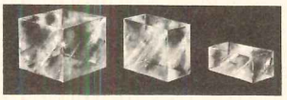

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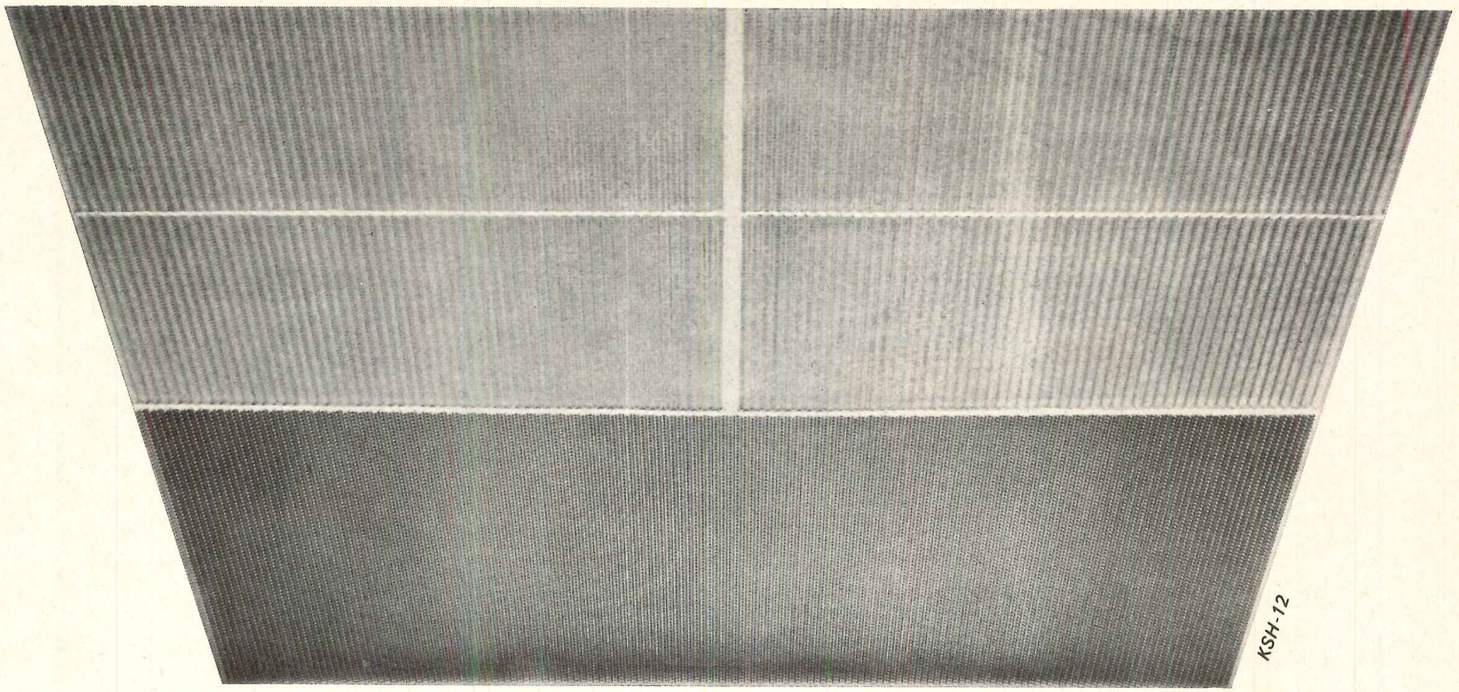

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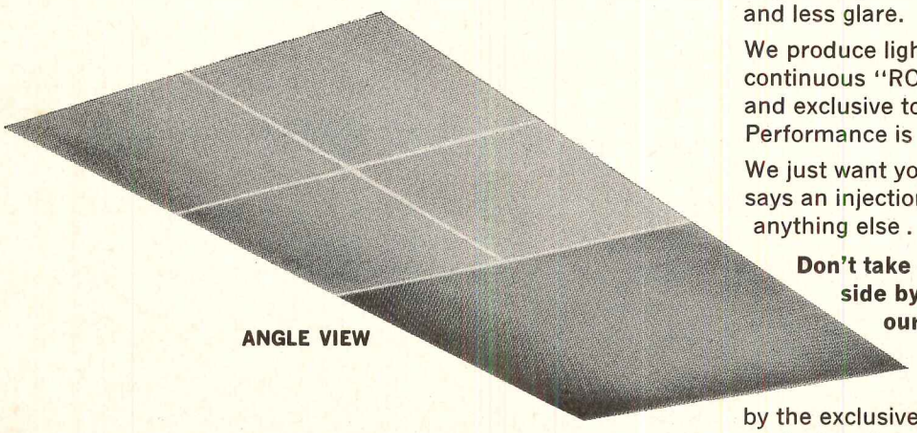

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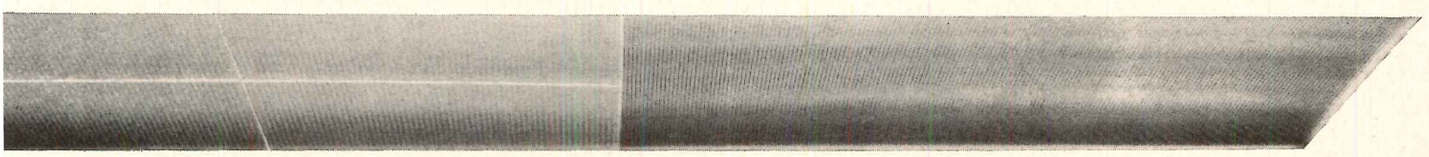

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Delayed fees: curse of the funding process

Delayed payment of fees is causing distress in many architects' offices. Even long-established offices of proven competence are forced to take emergency measures to survive the interval between the commission and any substantial payment of fee—sometimes delayed until long after completion of working drawings. This is especially true of jobs that are highly speculative and heavily mortgaged, including Federally-financed housing and urban renewal projects. Clients for these types of buildings very often make only token payments of the architect's fee until mortgage money is available; and usually the proposed design must be virtually complete before the lender makes the first payment.

One eminently competent architect, who prefers to remain anonymous, describes the situation as follows:

Seventy-five per cent of an architect's services are completed before the owner obtains the first mortgage draw and construction starts. Since there is no financing available to the owner for a particular project until the construction documents are completed, the owner must use other sources for funds. Understandably, he does not want to tie up capital during the years (many years in the case of government-insured or financed projects, particularly in urban renewal areas) required to get a project financed and under construction. Therefore, he wants to pay out as little money as possible during this period for architectural services. Yet he must have these services before he can obtain his financing and start to build.

The architect is forced into the role of banker

During the development period, the architect must pay monthly salaries and overhead in order to provide the services. Thus, a vicious circle has developed wherein the architect is forced to finance the client for a high percentage of this service, yet he has no source of capital except his profession.

Meanwhile, the architect's pre-tax income as a percent of gross receipts has been shown (in the A.I.A. report *The Economics of Architectural Practice*) to be about one third of the average in 1950. Salaries, consultants' fees and all indirect expenses have risen much more rapidly than construction costs—and the majority of fees are still based on a long-established percentage of construction costs. At the same time, services are more complex, there are new problems involving risk and liability, and there are many other problems. Not the least of these is the rapid increase in taxes over the past decade.

The responsible professional architect (without a private income from other sources) faces certain hardship—if not bankruptcy—in order to finance his services until the client gets his mortgage draw. Present conditions require hundreds of thousands of dollars to be carried in accounts receivable by any architect doing major work—particularly in housing, urban renewal and other large urban projects.

Yet these are precisely the projects that must be served today. At the very time that everyone is talking "good design," many of the professionals trained to accomplish this (and within strict budgets) are approaching a breaking point. Only those who can finance their services get the work, and clients are increasingly frank about this. They are quick to wrath if the architect has to bring up the desperate problems of getting paid, and they make it clear that next time they'll get someone "more reasonable."

Some clients procrastinate others drag their feet

Some of these clients sign A.I.A. agreements calling for monthly payments to the architect—and then they just don't pay for months and months. When the architect requests even partial payment, such owners typically respond with familiar excuses for not paying just now. These excuses range from the patently flimsy to the grossly unfair.

Other owners spend months and months having their lawyers "review" the A.I.A. agreement—a standard document that any competent lawyer could "review" in an hour. They say that their letter agreement is okay—so why bother with all of this when (in the case of FHA) "you have to sign their agreement anyway." In the meantime, they pay "on account" amounts now and then, but these rarely cover costs.

Still others want a schedule of payments with a "holdback" of at least one third "until FHA closing" or some other "signing" that activates the financing. The architect who agrees to this must insist on a firm date for payment of the one third after completion of the contract documents or he will spend an even longer period waiting to be paid.

The architect's recourse—a study in frustration

What does the harassed architect do about his fees? 1) He sends monthly statements month after month and finally in desperation, writes or telephones the client—usually, at best, with a few "on account" responses. 2) He borrows from the few "Peters" who pay their accounts and pays for the "Pauls" projects. Since there are very few "Peter" accounts and most of them small, this doesn't help much. 3) As the end of a month draws near, he goes to his bank with a list of accounts receivable. Banks take a dim view of these so he puts up his house (if he is lucky enough to own one) as collateral. This produces only enough to pay costs for a few more weeks. 4) Just as he is about to go down the third time, a sizable project finally staggers to the finish line—and the mortgage draw pays the long-delayed fees for work completed months before. The architect races back to his office, writes checks to all the creditors he can, puts enough aside to pay for a month's cost, pays the bank as little as it will accept, and goes back to the drawing board hoping that other clients will pay soon.

But they don't. Holdbacks and just plain delay in payment on more than 20 projects put accounts receivable for this particular architect at $408,270.47, although some projects have been completed for several months. This situation requires an extraordinary effort to solve.

The architect goes to the bank, but he already owes them as much as he could borrow last time. The bank recommends that the architect write the clients for pay-

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ment and that they forward all future checks payable directly to the bank until this "new situation is solved." The architect owes a large part of the most recent receivables to engineers who have similar problems.

Each client has a separate problem and it appears that each expects the architect to survive from other clients until it is convenient for him to pay. It is interesting that only one of this architect's clients was ever a bad debt (a small amount—under $1,000). All the rest paid—eventually. It just happens that nowadays most clients are very "eventual." Taxes and interest on borrowed money eat up any chance for profit out of the slim margin of pre-tax income theoretically possible after costs.

Unless owners can borrow the money to pay for the architect's development services instead of trying to use the architects' nonexistent capital, professional architects without very large private incomes won't be able to survive.

Pre-qualified bidders preferred on complex jobs

In a laudable effort to unify application and processing procedures for Federally-supported construction programs, the Department of Health, Education & Welfare appointed an inter-agency committee to examine some 30-odd construction support programs administered by five different agencies within HEW. Some apprehension was engendered in certain quarters by a preliminary recommendation that seemed to favor a uniform system of publicly advertised bidding, whereby all "responsible" contractors would be eligible to bid on all projects, and the award would have to go to the lowest bidder.

Apprehension was especially evident in those quarters where the special competence of pre-qualified contractors had been an important factor in the control of ultimate costs. The special attributes of hospitals and research facilities, for example, had been shown over many years of practice to gain substantial advantage in quality and cost from the know-how of qualified contractors. The result has been that about one-half of the Hill-Burton hospital projects have been bid, at owners' option, by selected lists of three or more pre-qualified bidders per project. The history of those not so selectively bid (most of them publicly-held projects where open bidding was a requirement) has been marked by costly errors, delays, and extras.

The case for selective bidding is by no means a universally compelling one for many of the more conventional types of construction in most HEW programs. Indeed, public advertising for bids on publicly financed work might logically be preferred —under conventional conditions.

Any approach to unified procedures is complicated by the fact that the enabling legislation and the amount of Federal support authorized have been different for each program. Some programs provide for 90 per cent or more support in grants or mortgage insurance for the structures proposed. This means that the Federal involvement penetrates deeply into the ownership of such projects.

Federal administrators and custodians of public funds are only too well aware that, at least for simpler types of buildings which may be rapidly brought to completion, the open bidding process may have advantages. Some of these, it might be averred, have to do with ease of explanation rather than expedition, but the stated policy objective of "maximum competition among qualified bidders" can scarcely be impugned.

In the Hill-Burton program, however, the applicant for support puts up at least two-thirds of the total cost of the institution, and the processes of funding and construction usually involve long periods of time and a more critical degree of expertise on the part of owners, architects and contractors regarding local conditions and job requirements. Furthermore, the options of the Hill-Burton applicant reasonably carry more weight as design and construction controls on the simple basis of their own involvement. Through the options and experience of independent owners, the selective bidding process has developed over the 22 years of the Hill-Burton program as a workable mode of increasing efficiency and controlling costs, so far, without a record of any scandal or malfeasance. Therefore, while the option for selective bidding remains open, suggestions to proscribe it by requiring some undefined *justification by the applicant and agreement by the agency that it is necessary* are causing some apprehension among architects and prospective owners.

There are two additional complications in the approaches of any unifying effort to the present support programs. One is the fact that some projects may be getting Federal money from four or more agency sources. For example, a university-affiliated hospital may be supported not only by Hill-Burton for the acute care facilities of the institution, but also by special funds for research laboratories, nursing schools, mental health facilities, libraries, dormitories, etc. Thus the need for simplification is an urgent one that will be met—not by hasty fiat, but by exactly the kind of review it is getting now in order to avoid costly over-simplification.

A second complication could be injected by a proposal that bidding alternates be listed by applicants in the order of importance of their consideration. From the client's point of view, this poses a severe problem, because usually he does not know the order of cost advantages until the alternates have been bid. The order of preference, therefore, may change after bids come in. Furthermore, in the publicly advertised bidding process, the low bid on each alternate may be submitted by a different contractor—a result that obviously complicates the process.

Investment homework, prelude to urban excellence

When architects complain that their profession does not command the eminence it deserves in the investment building world, there is a definite reason for their misgivings. Unlike bankers, developers and all other groups involved in investment construction, the architect often fails to address or even to comprehend the investor's primary and necessary objective: profit.

So says Lathrop Douglass in a recent review of some 20 years of practice in that demanding arena. Mr. Douglass is a designer of many commercial centers, urban and otherwise, and is currently president of the New York Chapter of A.I.A.

"Far too often the architect is bypassed altogether because of his failure to think honestly along economic lines and in the language of his collaborators in the enterprise," Douglass said. When the investor decides that the architect's schemes and "flowing spaces" will not make him any money, he calls in men who understand his interests (construction managers?) and they show him how it can be done. The architect may be allowed to make the working drawings.

"The projects invariably suffer as a result. Our cities are filled with skyscrapers badly planned from the point of view of city development, ultimately failures because of the short-sightedness of the investor's advisors. The environs are filled with obsolescent apartment houses that block progress and make the city ugly and ill-adapted to the needs of its inhabitants."

The remedy for all these tragedies is basic to the architect's training and way of thinking. But to retain leadership and promote sound long-range values, he must back up esthetic goals with an economically sound presentation. Otherwise, says Douglass, "the evils of our cities will continue to multiply regardless of all the fervent writings of the profession which, in the cold analysis of the business world, too often do not pass the profit test."

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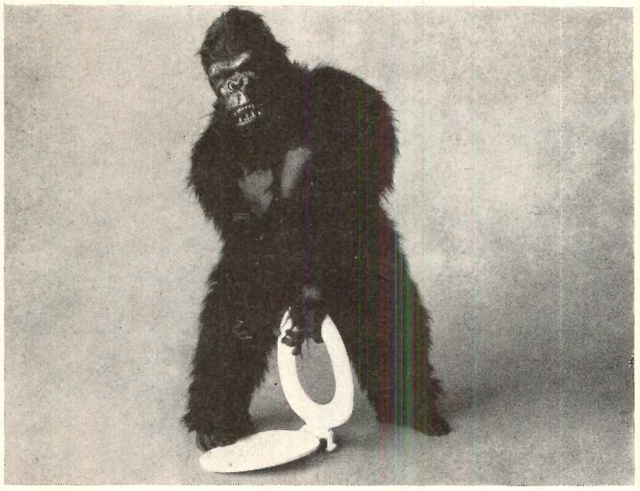

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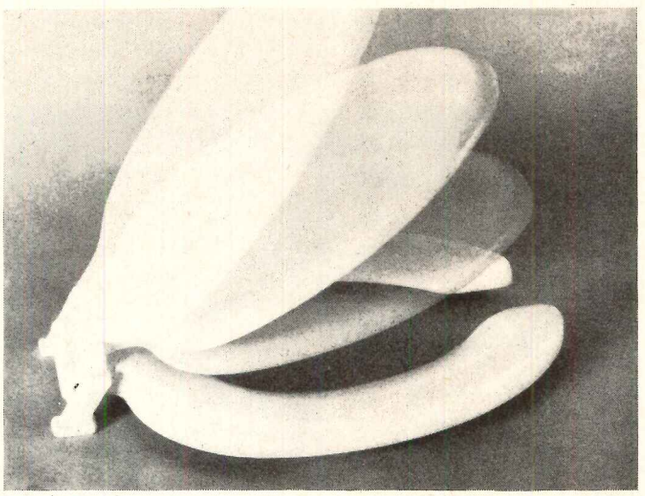
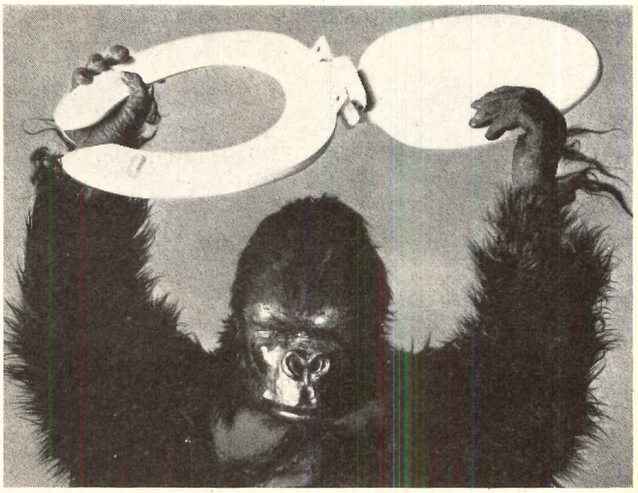


BANG! CRASH! BANG! BANG! BANG! Can any seat survive such torturous treatment?



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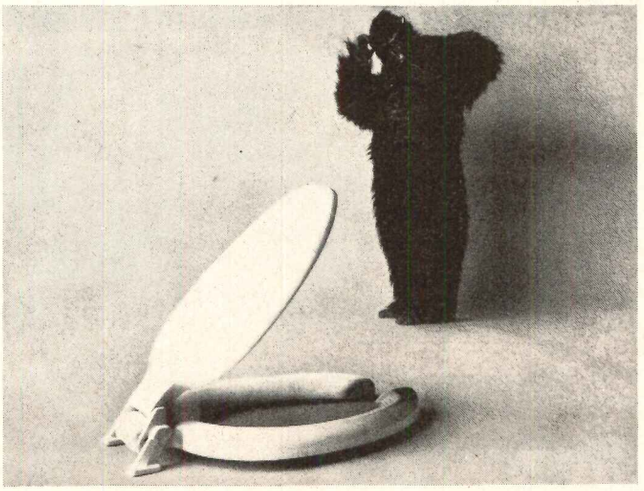

Note the cover on the seat? It's a Church exclusive in the commercial and institutional field. We've got round seats, elongated, closed and open-front seats—and all made of high-impact polystyrene! Your choice of four different hinge styles, too—check, self-sustaining, regular or our unique eccentric hinge. No matter what kind of seat you need, Church has it.

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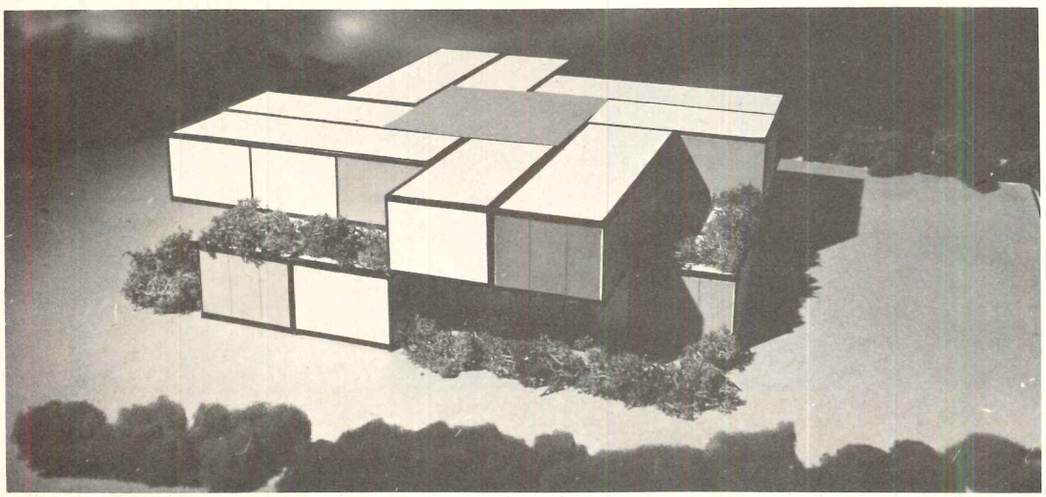
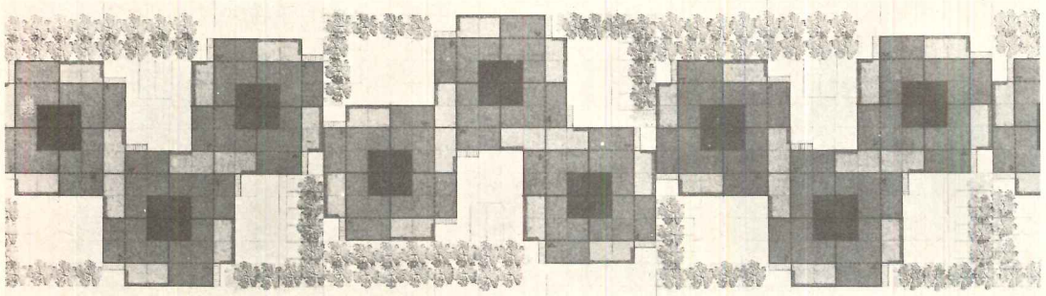
Success formula: ability, adaptability and enterprise

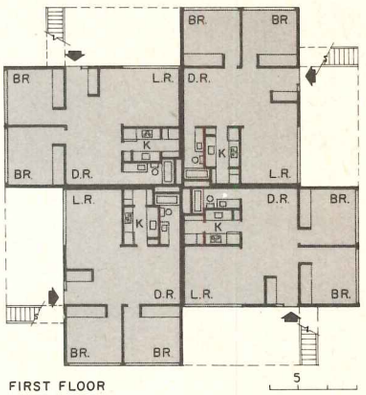
The enterprise of a young architectural firm will join forces with a wholly private Negro enterprise to up-grade Detroit's inner city. Architects Ziegelman and Ziegelman have adapted their well-known "instant bank" in a stacked configuration to provide low-income housing. The client is an organization called Accord, operated by a board of 12 of the community's black businessmen with five white businessmen acting as advisors. Accord, having successfully launched an initial phase of rehabilitating existing apartment buildings for re-sale as condominiums, is now entering a second phase with the development of pre-built new housing. A two-story prototype of eight units (shown below) will be built first, and Accord is acquiring land to build about 200 units, which also will be sold to occupants.

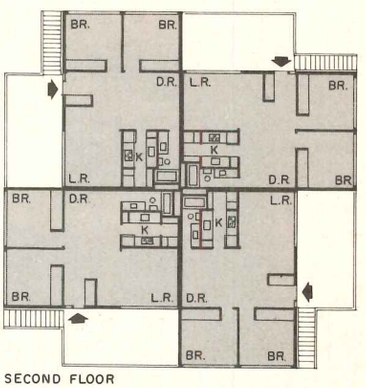
Development of the basic prefabricated module began in 1964 when the Birmingham, Michigan, Bank of the Commonwealth wanted to test new branch locations housed in a structure that was movable and inexpensive but of permanent quality, rather than the trailer-like structures then in common use for that purpose.

The Ziegelman solution was to control cost and quality by building the completed modules in one location using standard components and assembly-line techniques. Two or three 12-by-8-by-37-foot modules for each branch bank could then be trans-

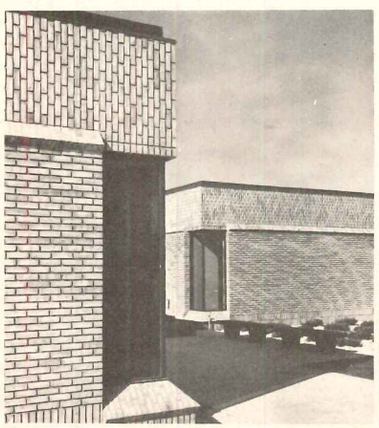


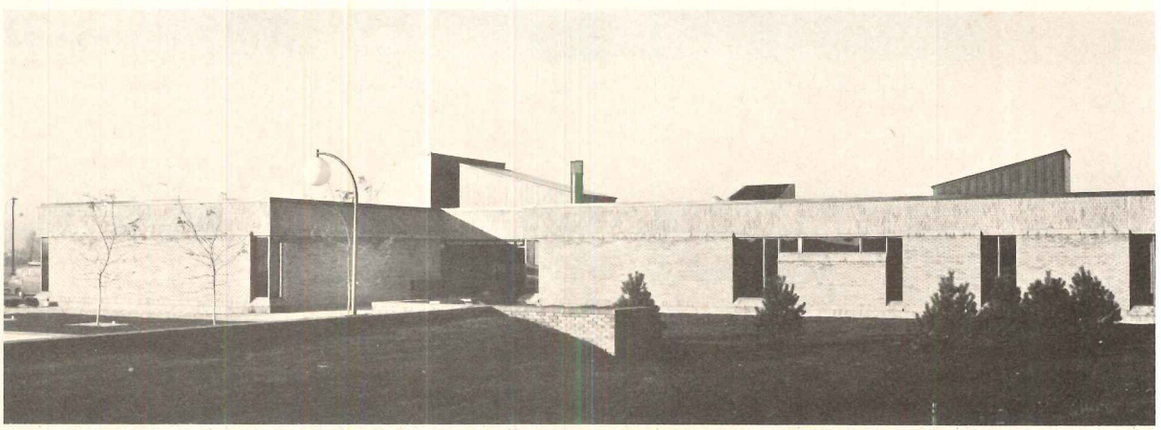






Sixteen of the Ziegelman and Ziegelman "instant bank" modules make eight two-bedroom apartments, above, for Detroit's inner city. Grouped plumbing cores and off-site fabrication keep costs low. Original three-unit branch bank is opposite, above, with a seven-unit lecture hall at far right.





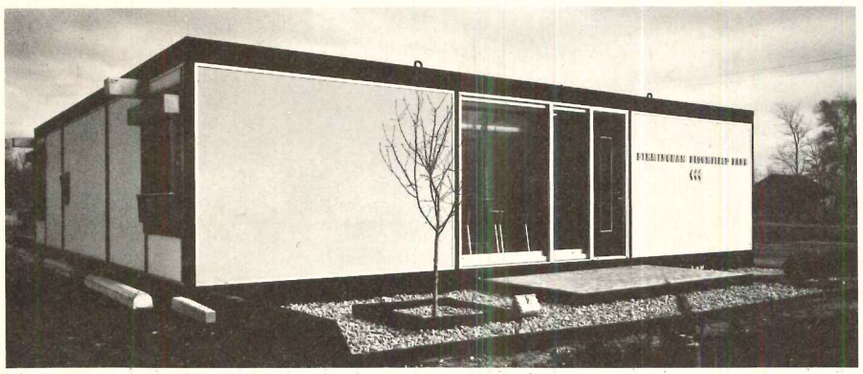
ported by truck to any location in the region. Each module is a rigid tubular steel frame with all interior and exterior finishes, insulation and glazing installed. It can be placed in position by crane and needs no bracing for handling. The design has won two awards from the steel industry: one from A.I.S.C. in 1966 and one from A.I.S.I. in March of this year. And the Ziegelman brothers, Norman H. (36) and Robert L. (32) have continued manufacture and adaptation of the module as a profitable support for their growing practice.

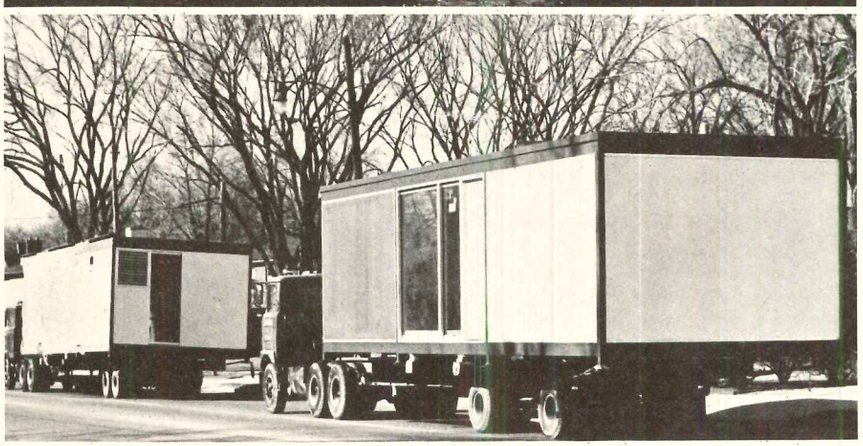
Awards and enterprise have rather exceptionally marked the brief history of the independent practice of these two post-graduates of the Birmingham-Bloomfield offices of Saarinen and Yamasaki. The award-gathering started—as did the first moves toward independent practice—in 1962, when the brothers' entry in the Boston City Hall competition won honorable mention. That was the year Norman stayed on in Saarinen's Bloomfield office (virtually the last remaining employe after the firm's move to Connecticut) to phase out the Yale dormitory job. Robert had previously left Saarinen, worked a year with Yamasaki, toured Europe and returned in 1962 to help with the City Hall and the new practice.

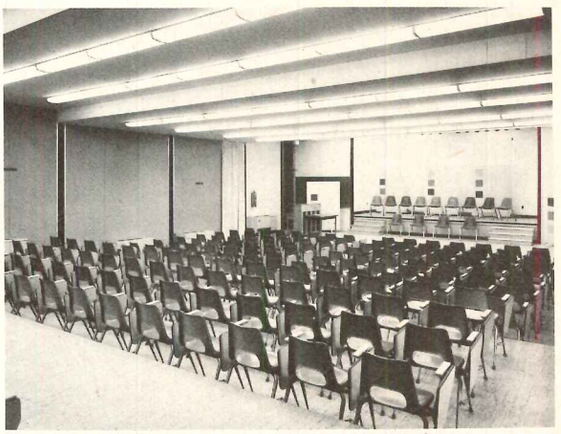
Another award, perhaps more representative than the instant bank in demonstrating the design thrust of the firm, was the 1968 honor award of the Michigan Society of Architects for their down-to-the-frame remodeling of the Birmingham-Bloomfield Bank. The brothers are quick to point out, however, that the visible differences between the instant and the permanent banks reflect a basic consistency in architectural approaches to each problem—a constant search for appropriate methods and materials that is intensified, or certainly not diluted, by increasing stringency of the budget. The instant bank, they say, represents more development research and analysis of unfamiliar cost factors than most conventional commissions. Only the do-it-yourself enterprise of manufacture made it financially successful.

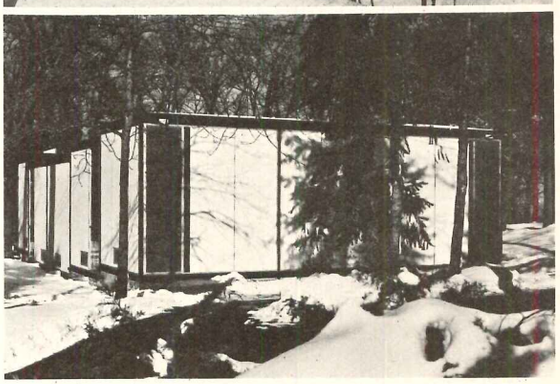
Having started their practice with almost no capital and no prospects, Ziegelman and Ziegelman had to make enterprise a way of life. In order to get their first office space for $25 a month rent, they agreed to renovate the building it occupied. Early experience working with their contractor father stood them in good stead for that exercise. No one knocked on their new door offering commissions—indeed, things got so bad they called on their contracting experience again and submitted the low bid to construct a cleaning plant designed by another architect. They made money on it, but were saved for architecture by a few houses and a model study for a pre-fab panel house. They designed and built an apartment house which they still own.

The real break came when Don Parsons, youthful chairman of the Bank of the Commonwealth, wanted a young firm to respond to lively plans for the future. A scant sampling of the Ziegelman diversity is shown below. Soon to be completed will be their own new office building.

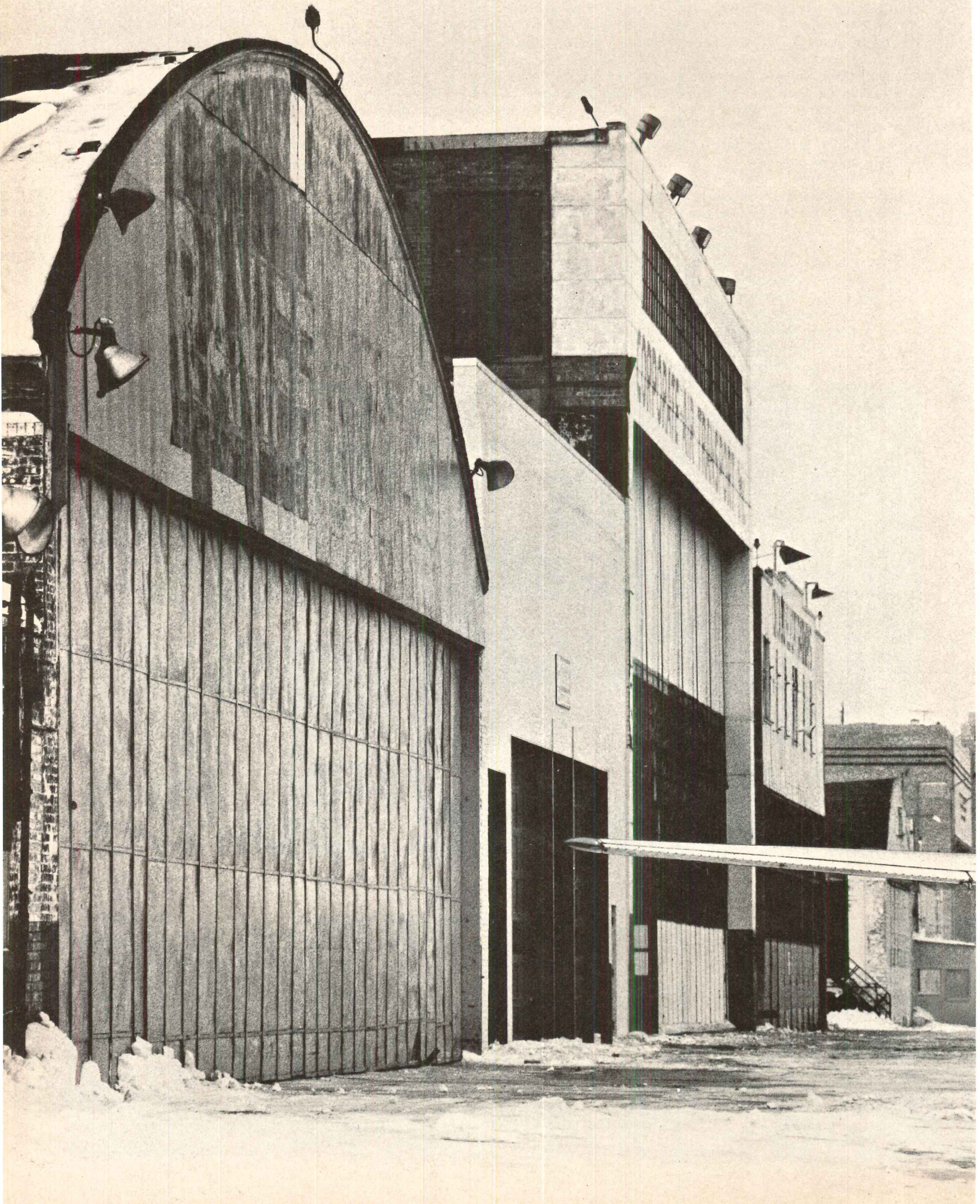








Design scope of this young office is underscored below. From opposite, left, are: detail and exterior of a computer center for the Industrial State Bank of Kalamazoo, the M.S.A. award-winning remodeling of the Birmingham-Bloomfield bank, and a theme-setting interior for a chain of law offices.



The old neighborhood will never be the same.

This could be the beginning of the end. For airplane hangars as we know them—boxes, big and ugly and wasteful of space.

They're on their way out, because of a man who looks like a college professor. He wears tweedy suits and smokes a pipe and—what do you know, he is a college professor. Charles R. Hutton is his name, Professor of Construction Technology at Purdue.

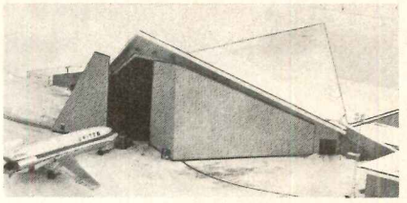
Way back in 1963, he had an idea. Why not build a hyperbolic paraboloid out of steel? As an architectural design, the H.P. was nothing particularly new. But building one of steel—that was unheard of.

The projected advantages of such a structure were obvious and many. A steel hyperbolic paraboloid could be erected quickly, its cost would be low, and its weight far less than for an H.P. built with conventional materials. It would be a dream for schools, theatres, shopping centers. Maybe even airplane hangars.

To prove that the theory could work, Professor Hutton knew he'd need time and support and money. So he took his idea to Inland Steel. And there, he got all three.

Today, six years later, the world's first hyperbolic paraboloid jet airplane hangar has been completed at Wold-Chamberlain Field in Minneapolis. It provides overnight maintenance facilities for United Air Lines Boeing 727's and DC-8's. And what a superb structure it is! Measuring 165 feet long on one side, 125 feet long on the other side and 185 feet wide. Soaring majestically 65 feet into the air. And made almost entirely of Inland-produced steel, like INX-50 high strength steel.

The engineers chose INX-50 because it was the perfect way to reduce the hangar's weight, without a corresponding reduction in all-important yield strength.



It's precisely because of the availability of high-strength steels like INX, that such imaginative structures as the H.P. have become possible. Inland's other high-strength steels are doing their part, too, to modernize the face of America. COR-TEN, TRI-STEEL®, HI-STEEL®, HI-MAN® steels—all are being used more and more to solve construction problems and make new architecture a new reality.

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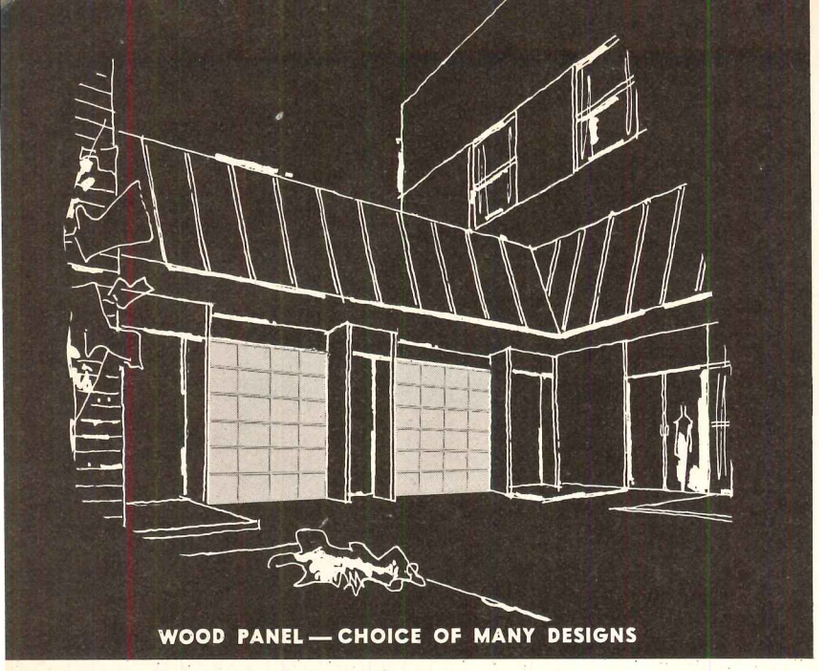
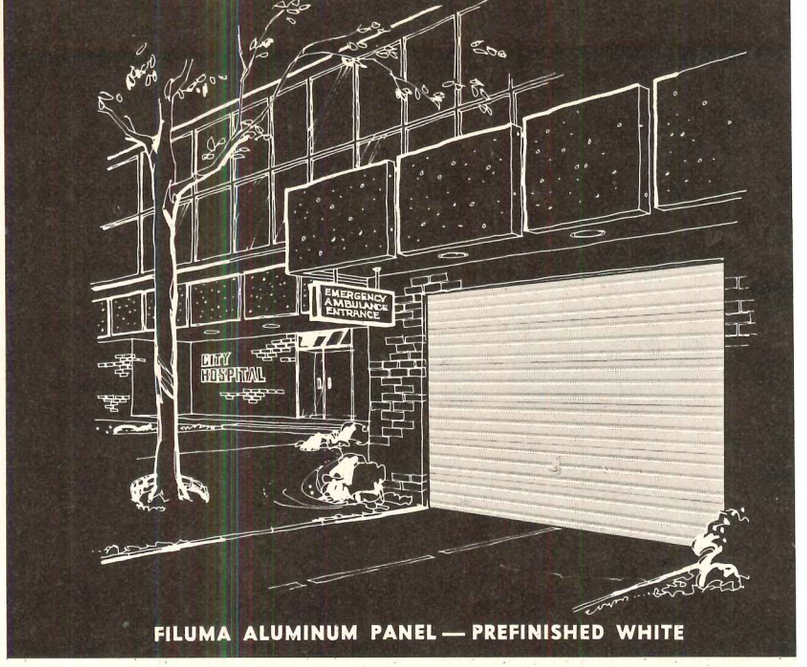
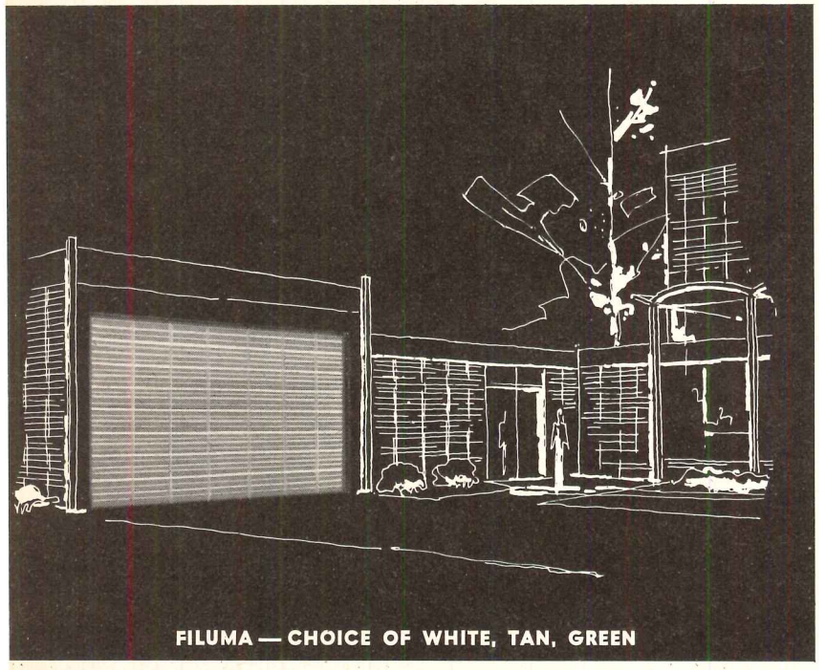


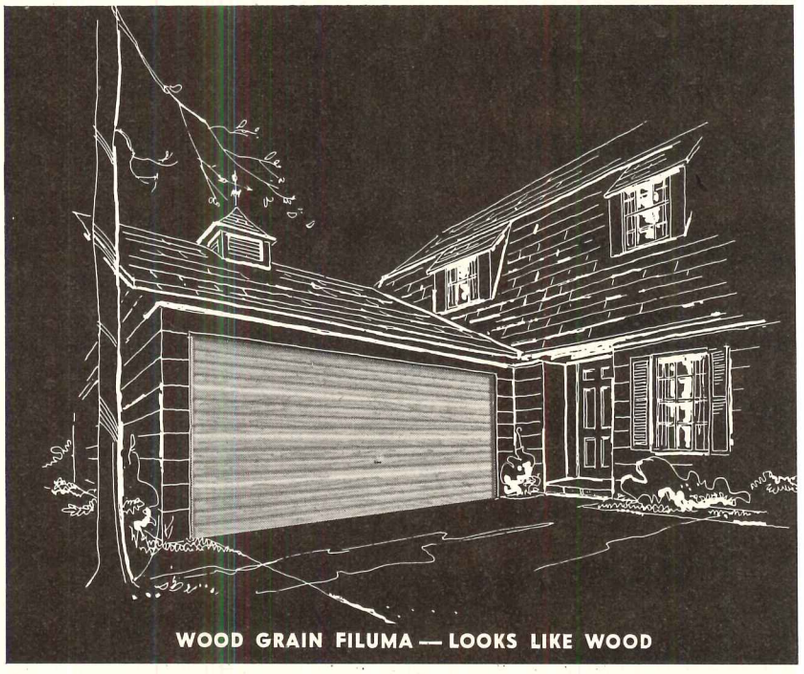
WOOD PANEL — CHOICE OF MANY DESIGNS



FILUMA ALUMINUM PANEL — PREFINISHED WHITE



FILUMA — CHOICE OF WHITE, TAN, GREEN



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* U.S. Patent Nos. 194094, 414699, 3169612

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CURRENT TRENDS IN CONSTRUCTION

Robert M. Young
Senior Economist
McGraw-Hill Information Systems Company

Big cities and big projects

It's no secret that the bulk of architect-designed building takes place in the cities, and that a large share of this is concentrated in just a few important metropolitan areas. What may not be so well known is that important shifts have been taking place in the degree of concentration *within* these areas. A number of formerly medium-sized cities have achieved major status in recent years, and they are becoming increasingly competitive with the largest cities for the construction dollar.

As recently as 1960, the five major construction markets—New York, Chicago, Los Angeles, San Francisco and Philadelphia—accounted for 30 per cent of all architect-designed building (nonresidential plus apartments) in the country. By 1968, the share of the five top markets (Boston had replaced Philadelphia) had dropped to only 22 per cent. Meanwhile, the next 15 areas had increased their proportion of total construction of these types of buildings from 18 to over 21 per cent. While the value of new building in the top five was increasing less than 50 per cent, contract values in the next 15 cities jumped over 130 per cent. As a result, even after accounting for higher costs, the 1968 volume of construction in at least five smaller cities exceeded that of fifth-ranked Philadelphia in 1960, while the volume of building in 18th-ranked Ft. Lauderdale in 1968 topped that of ninth-ranked Detroit in 1960.

A look at the burgeoning skylines of the "big five" cities may appear to belie these statistics. All of them are currently enjoying or have recently experienced the strongest surge of new office construction in their histories. At the same time, however, the smaller cities have shared in this boom and garnered an increasing amount of store, school, hospital and government building projects to serve their faster-growing populations.

The most dramatic shift has taken place in apartment building. In 1960, the five major areas accounted for *over half* the value of all apartment houses built in the country. By 1968, this share had been reduced to less than *one quarter*. The next 15 cities increased their share of the apartment market from 22 to 30 per cent. The proportion of apartment contracts let in the rest of the nation, including non-metropolitan areas, jumped from 25 per cent in 1960 to almost 50 percent in 1968. These trends mirror the widespread acceptance of apartment living throughout the nation, as improved planning and design heighten the convenience and desirability of this type of habitation.

The concentration of architect-designed building in big cities has been an established fact for a long time. A somewhat newer development is the increasing importance of *large* construction projects in the growth in valuation of a number of building types.

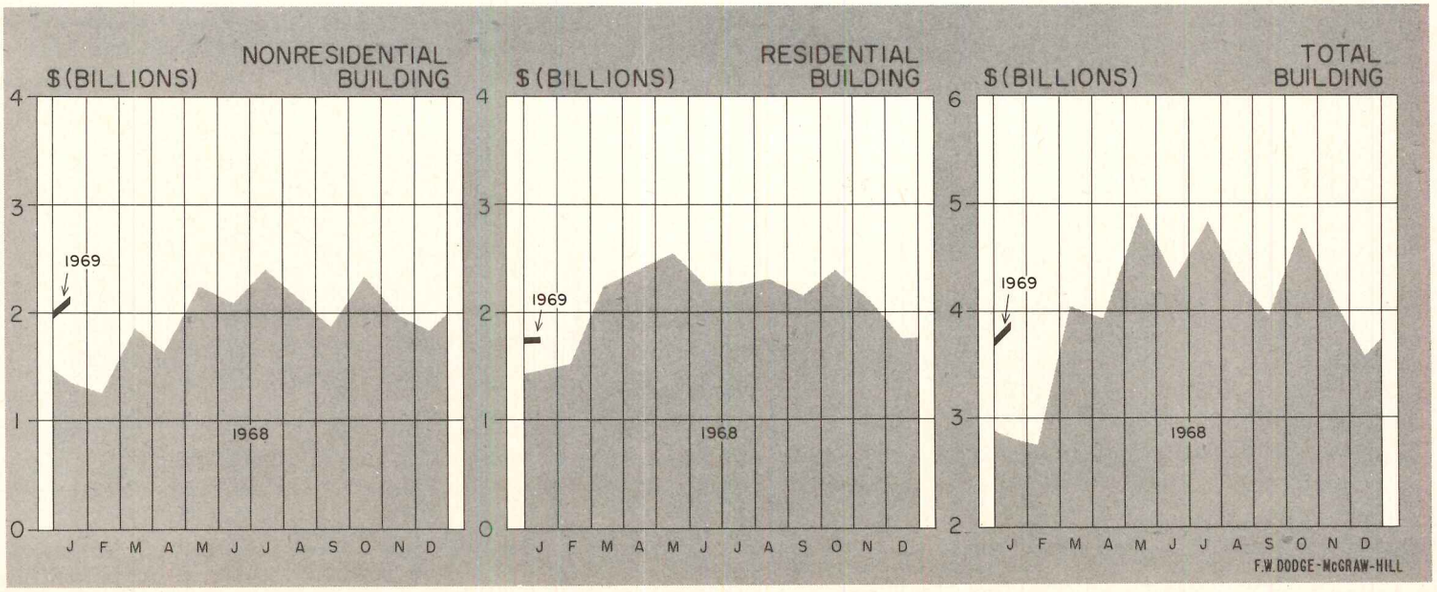
In 1968, 41 building projects, each in excess of $25 million, were valued at over one and three quarters billion dollars. This compares with only 28 such projects in 1967, with a total value of only $1.1 billion. At the beginning of the decade, there were only 13 projects valued at over $20 million, with a total value of just over a half billion dollars.

The trend toward larger buildings is especially strong in commercial construction. The 32 major office buildings contracted in the last two years, with a total valuation of $1.2 billion, exceeded both the number and value for the previous seven years combined. Major store building, valued at a quarter of a billion dollars in 1968, matched the total value of large projects in this category for the previous ten years.

Large projects have been more common in manufacturing. Nevertheless, a spurt of new petrochemical projects pushed the value of such buildings to $1.1 billion in 1967-68, a figure that topped the combined total for the six previous years.

In part, the recent upsurge in large building projects reflects the growth of large companies, either internally or through mergers, which require larger, one-location sites for efficient operations. Increased ability to attract investment funds has also played an important role. Finally, improved building methods and the economies of single-site construction have contributed to this trend.

Building activity: monthly contract tabulations



INDEXES AND INDICATORS

William H. Edgerton
Manager Dodge Building Cost Services
McGraw-Hill Information Systems Company

APRIL 1969 BUILDING COST INDEXES

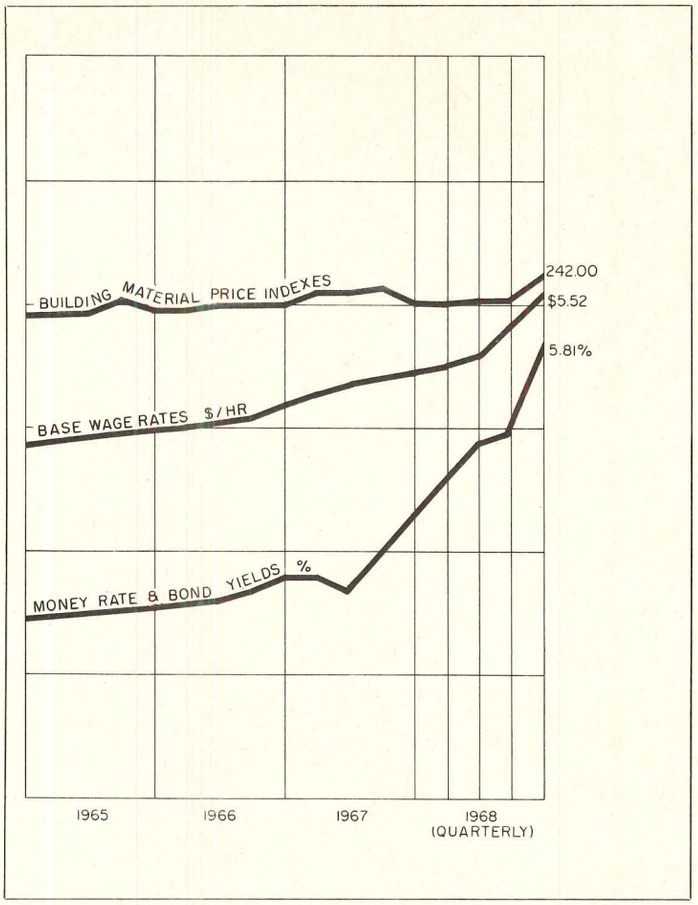
1941 averages for each city = 100.0

Metropolitan area	Cost differential	Current Dow Index residential	Current Dow Index non-res.	% change year ago res. & non-res.
U.S. Average	8.6	300.7	320.3	+4.59
Atlanta	7.4	348.3	369.4	+5.53
Baltimore	7.9	298.5	317.5	+2.97
Birmingham	7.4	272.4	292.9	+3.73
Boston	8.4	266.8	282.4	+3.42
Chicago	8.9	328.9	345.9	+3.46
Cincinnati	9.1	296.0	314.6	+6.48
Cleveland	9.8	320.3	340.4	+5.97
Dallas	7.7	281.3	290.5	+5.62
Denver	8.2	302.2	321.2	+4.10
Detroit	9.4	315.4	331.1	+5.82
Kansas City	8.3	269.6	285.3	+5.20
Los Angeles	8.4	303.0	331.5	+3.88
Miami	8.5	299.1	314.0	+5.76
Minneapolis	8.7	296.1	314.7	+3.67
New Orleans	8.0	273.6	289.9	+5.65
New York	10.0	309.7	333.1	+2.97
Philadelphia	8.6	294.0	308.7	+3.99
Pittsburgh	9.2	283.2	301.1	+5.12
St. Louis	9.1	294.0	311.5	+4.60
San Francisco	8.7	389.0	425.7	+4.97
Seattle	8.5	272.5	304.5	+3.60

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÷10.00=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



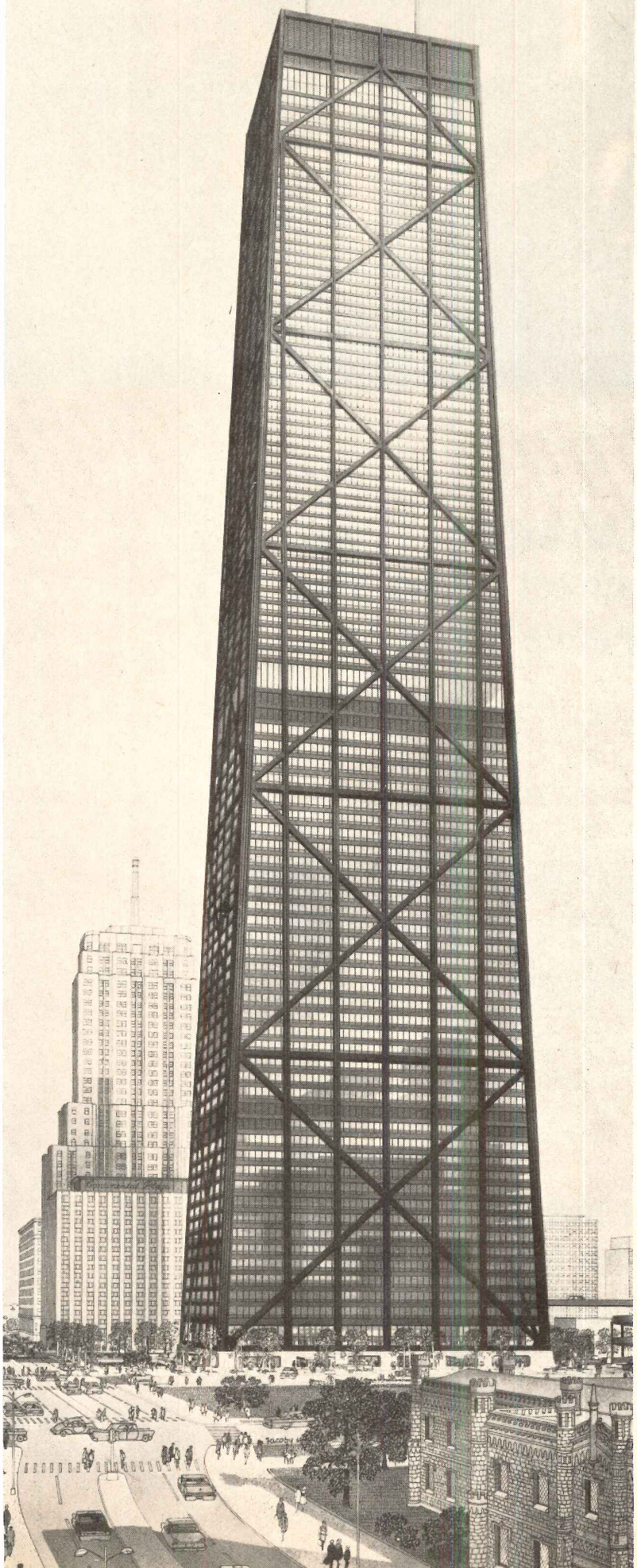
HISTORICAL BUILDING COST INDEXES—AVERAGE OF ALL BUILDING TYPES, 21 CITIES

1941 average for each city = 100.00

Metropolitan area	1960	1961	1962	1963	1964	1965	1966	1967 (Quarterly) 1st	2nd	3rd	4th	1968 (Quarterly) 1st	2nd	3rd	4th
U.S. Average	213.5	264.6	266.8	273.4	279.3	284.9	286.6	292.7	293.7	295.5	297.5	301.5	302.6	309.3	314.9
Atlanta	223.5	294.7	298.2	305.7	313.7	321.5	329.8	332.4	333.4	334.6	335.7	345.6	346.7	352.3	364.2
Baltimore	213.3	269.9	271.8	275.5	280.6	285.7	290.9	290.4	291.5	294.9	295.8	302.9	304.1	307.9	311.4
Birmingham	208.1	249.9	250.0	256.3	260.9	265.6	270.7	272.9	274.0	273.8	274.7	278.5	279.5	283.6	288.4
Boston	199.0	237.5	239.8	244.1	252.1	257.8	262.0	262.9	263.9	264.8	265.7	269.3	270.3	276.3	278.2
Chicago	231.2	289.9	292.0	301.0	306.6	311.7	320.4	320.4	321.3	327.3	328.4	329.4	330.0	338.7	340.4
Cincinnati	207.7	257.6	258.8	263.9	269.5	274.0	278.3	278.7	279.6	287.3	288.2	291.4	292.5	301.8	309.8
Cleveland	220.7	265.7	268.5	275.8	283.0	292.3	300.7	300.0	301.3	302.6	303.7	316.5	318.3	330.7	334.9
Dallas	221.9	244.7	246.9	253.0	256.4	260.8	266.9	267.6	268.5	269.5	270.4	272.3	273.4	281.0	287.2
Denver	211.8	270.9	274.9	282.5	287.3	294.0	297.5	297.6	298.5	304.0	305.1	304.9	306.0	311.7	317.0
Detroit	197.8	264.7	265.9	272.2	277.7	284.7	296.9	298.0	299.1	300.1	301.2	309.2	310.4	315.5	326.8
Kansas City	213.3	237.1	240.1	247.8	250.5	256.4	261.0	260.8	261.9	263.4	264.3	267.5	268.5	277.2	281.0
Los Angeles	210.3	274.3	276.3	282.5	288.2	297.1	302.7	303.6	304.7	309.0	310.1	312.0	313.1	319.3	323.7
Miami	199.4	259.1	260.3	269.3	274.4	277.5	284.0	283.4	284.2	285.2	286.1	293.1	294.3	304.5	309.6
Minneapolis	213.5	267.9	269.0	275.3	282.4	285.0	289.4	292.0	293.1	299.2	300.2	300.0	301.0	309.0	310.6
New Orleans	207.1	244.7	245.1	248.3	249.9	256.3	259.8	262.3	263.4	266.7	267.6	270.6	271.6	273.9	285.5
New York	207.4	270.8	276.0	282.3	289.4	297.1	304.0	309.4	310.6	312.5	313.6	315.9	317.0	320.6	324.9
Philadelphia	228.3	265.4	265.2	271.2	275.2	280.8	286.6	287.1	288.1	292.8	293.7	293.3	294.2	300.9	304.6
Pittsburgh	204.0	250.9	251.8	258.2	263.8	267.0	271.7	272.2	273.1	274.1	275.0	293.0	284.2	291.3	297.0
St. Louis	213.1	256.9	255.4	263.4	272.1	280.9	288.3	290.3	291.3	292.3	293.2	293.7	294.7	303.6	306.8
San Francisco	266.4	337.4	343.3	352.4	365.4	368.6	386.0	388.1	389.2	389.6	390.8	396.4	398.0	401.9	415.6
Seattle	191.8	247.0	252.5	260.6	266.6	268.9	275.0	276.5	277.5	282.6	283.5	286.2	287.2	291.6	296.1

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.

Another example of AAF environmental control



100 stories of clean air in Chicago's John Hancock Center

...All by AAF

Chicago's John Hancock Center—now under construction—will be the second largest building in the world.

Two types of air filters have been selected to meet the multi-million cfm needs of Chicago's newest landmark. Engineers and architects determined that the specific, yet varying clean air requirements of this giant skyscraper could most efficiently be met with AAF Roll-O-Matics and Roll-O-Paks.

AAF makes *all types* of filters to meet the diversified needs of the nation's largest and most complex buildings. AAF's full line solves the problem of getting optimum correlation of filter performance, cost, efficiency and maintenance requirements.

Contact your local AAF representative for additional information. Or write: Robert Moore, American Air Filter Company, Inc., 389 Central Avenue, Louisville, Kentucky 40208.

AAF American Air Filter
BETTER AIR IS OUR BUSINESS

Architects & Engineers: Skidmore, Owings & Merrill, Chicago. Contractors: R. B. Hayward Co. and Universal Sheet Metal Corporation. Owner-Developer: John Hancock Mutual Life Insurance Company.

For more data, circle 67 on inquiry card ➧

Contract Carpet in 3 easy steps

From Sears America's largest buyer, seller and installer of carpet.

1 Get the help of an expert. If you're not an expert in contract carpet, you need the help of someone who is.

2 Even if you are an expert, get all the help you can from a supplier who can provide total service.

3 Make sure your supplier is someone who will stay with the job from initial specifications to final installation and beyond.

For an immediate appointment with a Sears Contract Carpet Specialist, fill out this coupon and mail today.

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Att. Ken Jeffris Dept. 637

☐ Please have Sears Contract Carpet Specialist contact me.
☐ Please send me more information about Sears Contract Carpet service.

Name_____

Firm Name_____

Address_____ Bus. Phone_____

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1

Sears has 162 experts . . . one of them only a quick telephone call away from you. All those strange-sounding carpet *terms* . . . and all those *fibers*. There's no question of it. You need *help* in finding your way through this thicket of different weaves, fibers, terms.

Fortunately you don't have to be an expert yourself. What *you* should know is where to *find* the answers. And that's where Sears, Roebuck and Co. can help. Sears has America's largest trained staff in contract . . . to give you the *right* answers *when you need* them.

2

Total service at Sears includes help with specs through final installation, plus widest choice of colors and patterns in the industry.

Sears buys, sells and installs more carpet than anyone else. How's that for total service? Any carpet, tile or sheet goods in *any* Sears store is available to contract buyers. Imagine—a choice of every fiber and weave, a choice of 838 in-stock colors, an almost *unlimited* choice of custom colors!

In addition, Sears has a complete design-consultant service through which you may specify any item for any assignment, including entire rooms.

3

Sears assures a representative on the scene until the job is done to the satisfaction of you, your client—and Sears.

This is not an idle promise. Sears stands behind what it sells!

Next time, get the *right* answers *when you need* them. See your Sears Contract Carpet Specialist. As close as a phone call away.

Sears Contract Carpet Specialists.
Call the man with the answers.

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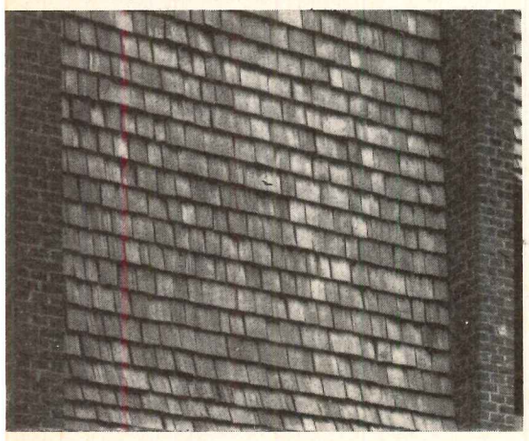

A bank in North Carolina's legendary hill country.

Architects: Freeman-White Associates.

Their material: Red cedar handsplit shakes.

Certi-Split Handsplit/Resawn Shakes, 18″ x ¾″ x 1¼″, with 8″ to the weather.

Nestle a bank in country as beautiful as the Blue Ridge foothills of North Carolina and you need a material with character enough to add to the historic setting.

Red cedar handsplit shakes provide a natural solution. And one just as practical as it is beautiful.

That's because an exterior of cedar shakes stays looking good — snowfall or sunshine, year-in and year-out. Cedar ages gradually, naturally, offering outstanding appearance, complete weather protection and freedom from maintenance as it does.

Red cedar's distinctive texture patterns and rich, earthy colors are perfect used in combination with other materials, too. See for yourself. Next time to capture the mood you're after, specify the real thing: Certi-Split handsplit shakes. For more information, see our Sweet's catalog listing. Or write: 5510 White Building, Seattle, Washington 98101. (In Canada: 1477 West Pender St., Vancouver 5, B.C., Canada.)

THE CROWNING TOUCH OF QUALITY · RED CEDAR SHINGLES & HANDSPLIT SHAKES ·

Red Cedar Shingle & Handsplit Shake Bureau

One of a series presented by members of the American Wood Council.

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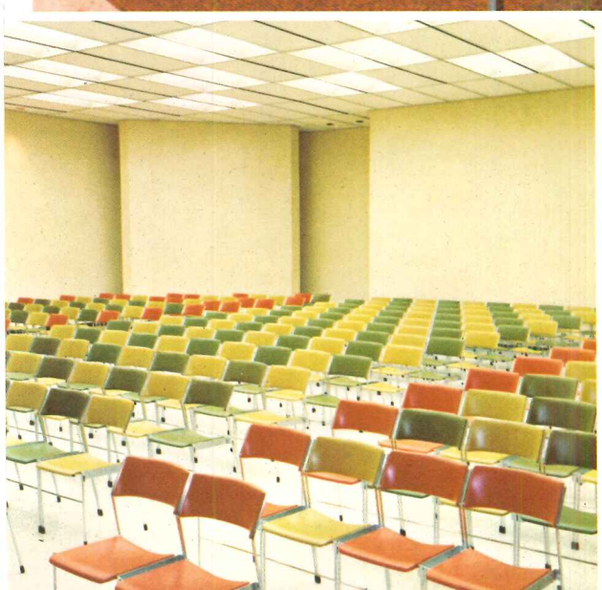
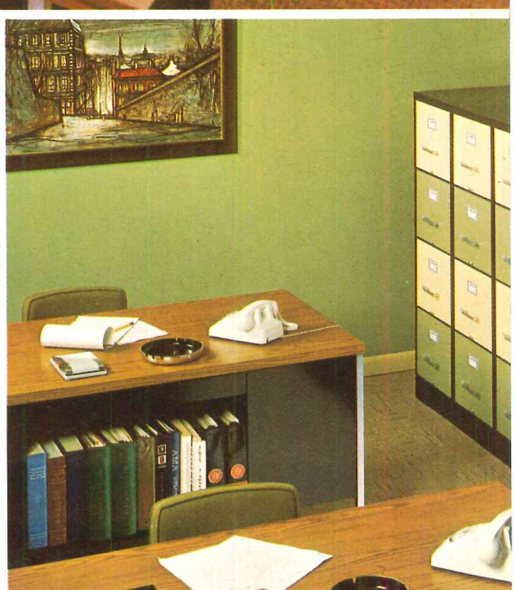
Desks that are highly functional and durable. Filing units for every office need. Lounge furniture that is handsome, yet strong. Utility seating that stands up to wear and is comfortable.

And the entire Cosco line is moderately priced.

For complete information on Cosco furniture for every office need, request the "Architect's Package" when you write Hamilton Cosco, Department AR-49, Gallatin, Tennessee.





A window for all seasons...
Therm-O-Proof insulating glass

Through Boston's bitter cold or sweltering heat, Therm-O-Proof insulating glass dramatically reduces roomside condensation and also minimizes heat loss in this electrically heated Residence Group of the Children's Hospital Medical Center.

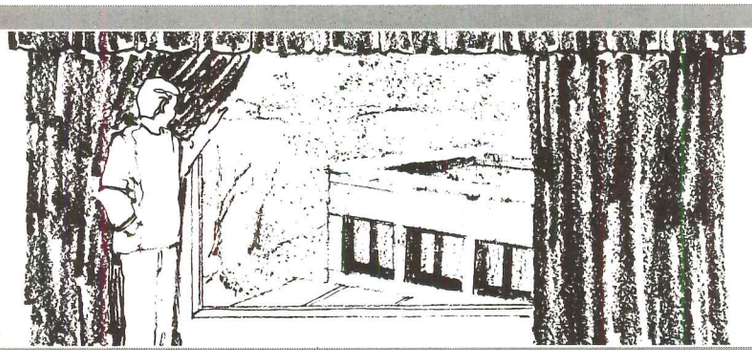
The Architects Collaborative, Inc. of Cambridge designed this highrise as a home for the hospital staff . . . and insulating units allow the use of greater glass areas so the residents' view is unobstructed the year 'round.

To meet "all-season" requirements, Thermoproof fabricated nearly 2000 units in 20 different sizes using combinations of two lites of 3/16" sheet and/or two lites of 1/4" plate—both with a 1/2" air space.

Therm-O-Proof insulating glass—made more ways to fit more ideas.

Full color insert in Sweets 4a/Th

Insulating glass by Thermoproof Glass Company
subsidiary of Shatterproof Glass Corporation
4815 Cabot Avenue, Detroit, Michigan 48210



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BAPTISTRIES, SPIRES, LIGHTING by *Wiedemann*

BAPTISTRIES Originator of the fiberglass baptistry . . . and leading baptistry specialist. Over 150 shapes and sizes of baptistries available.

SPIRES In unit-molded fiberglass for extra strength and durability.

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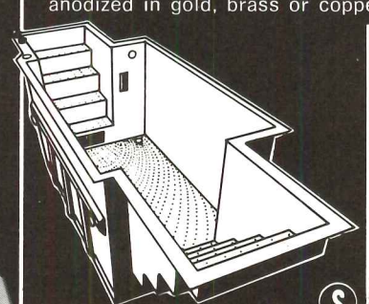

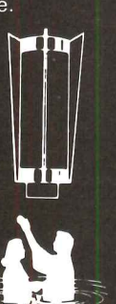

Write for free information kit. See Sweet's Architectural File.

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Don't let your client down after the building is up...

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Knight will cast 3-dimensional *letters in solid bronze, brass or aluminum. Select from a wide variety of sizes, type faces and finishes. Or we'll create new letters, company trademarks, to your design.*

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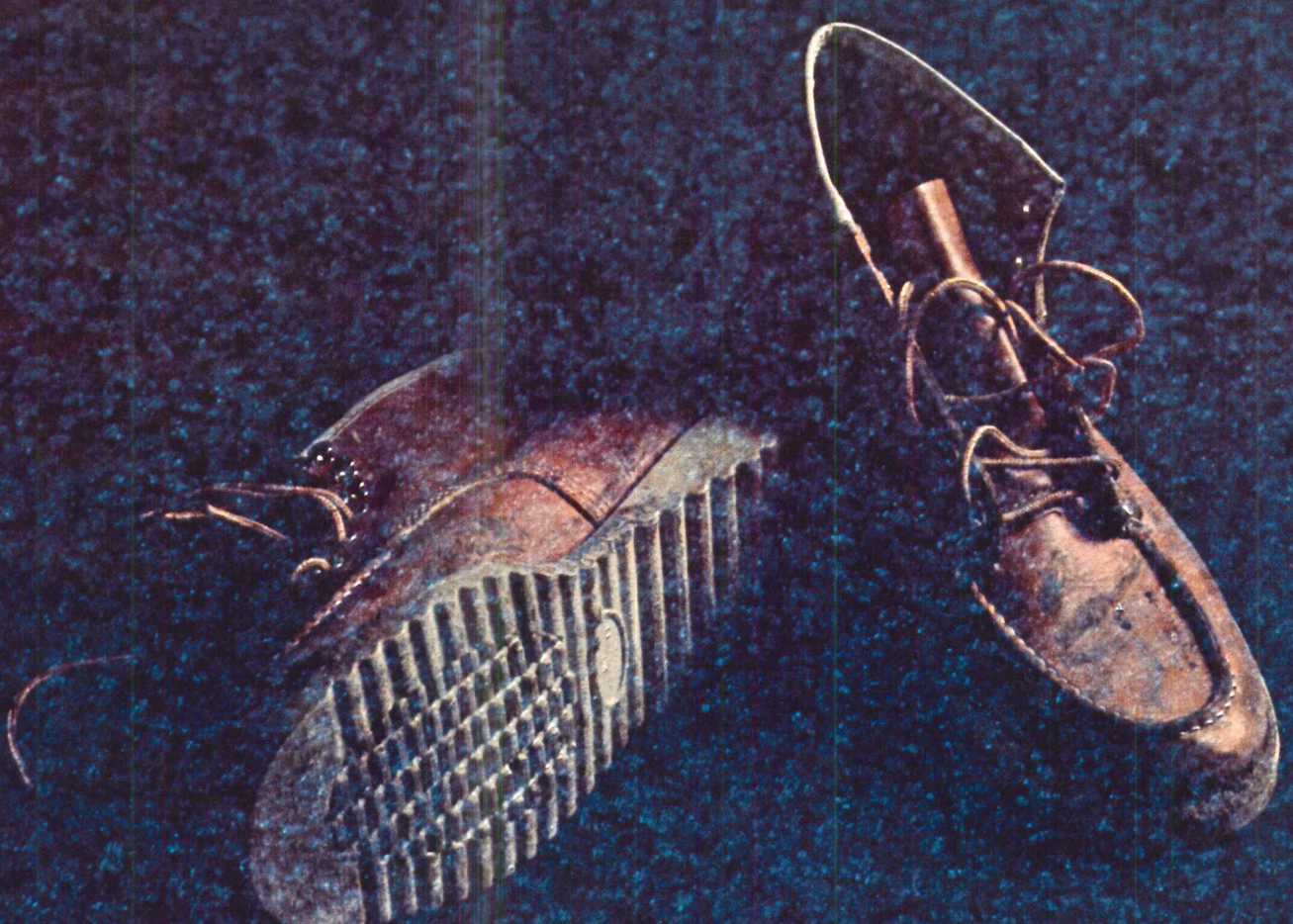
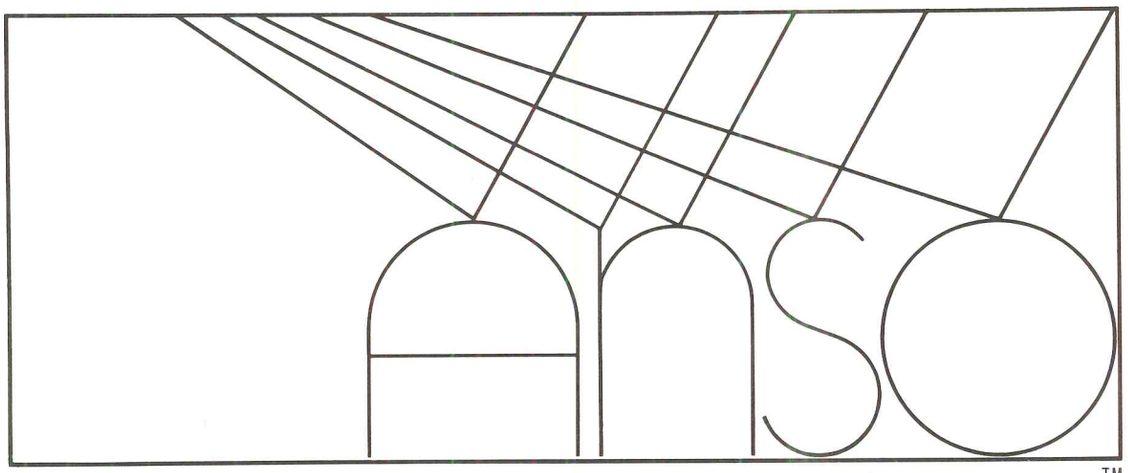
Allied Chemical announces the carpet fiber that makes dirt seem to disappear.

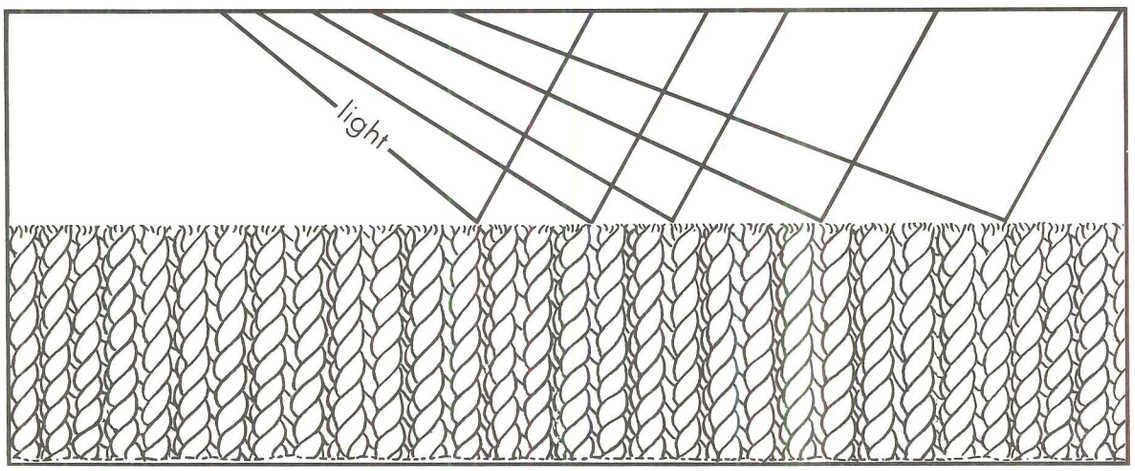




The nylon fiber that makes dirt seem to disappear.™

Why ANSO™ nylon? Because ANSO does strange things with light . . . turns it around, reflects the color and texture of the carpet but not the common dirt a carpet has to live with. ANSO is specially engineered to resist ugly soiling and extreme wear, that's why it's so perfect for commercial carpeting. ANSO offers the same rich colors, high durability, and low maintenance that have already made carpeting of A.C.E.® (Allied Chemical Engineered) nylon a recognized leader in commercial carpet fibers. ANSO costs more but it's worth it, because ANSO looks new ..... longer.

Allied Chemical



RACE SPACE.

The Everson Museum is only one of the distinguished new buildings throughout America and Europe in which you will find The Race/JG Theatre Seat, designed by Peter Dickinson. For a complete list of installations and brochure, write J G Furniture Company, Inc., Quakertown, Penna. 18951.

JG

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We interrupt this monsoon with the Pittco Seventy-Five Rainscreen.

Pittco's new Seventy-Five Curtain Wall system is designed for water-shy tenants. It's the curtain wall that won't leak. The rainscreen system combats leaks and drips with a proved pressure equalization principle. It specializes in monsoons, but also disarms blizzards and squalls.

The Seventy-Five Curtain Wall isn't just talented, it's beautiful too. Each of the five anodized aluminum colors is coordinated with Pittco® entrance systems and storefront metals. The Seventy-Five Curtain Wall accommodates any standard thickness of glass or spandrel. And lets you design an elegant building at an artless price.

You save expensive days of glazing and erection with interior-glazed Seventy-Five Curtain Wall. A controlled-pressure glazing system cushions and seals glass tightly between neoprene strips to minimize breakage. No more expensive fooling around.

The Seventy-Five Curtain Wall system has all the credentials, too. Passed all the requirements of NAAMM Tests A, B, C-1 and C-2, for instance.

The new Seventy-Five Curtain Wall has fully eclipsed the competition. For details on the talented beautiful inexpensive rainscreen, write: Pittco Architectural Metals, Box 930, Kokomo, Indiana 46901.

PPG INDUSTRIES

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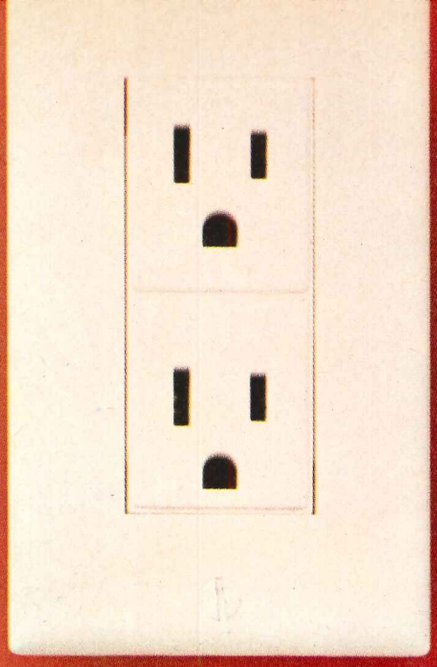
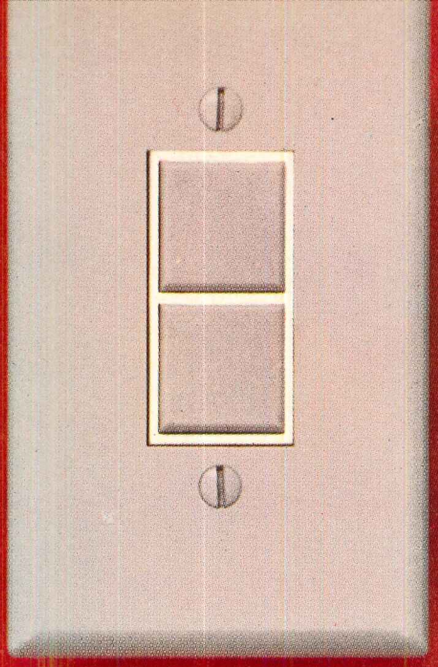
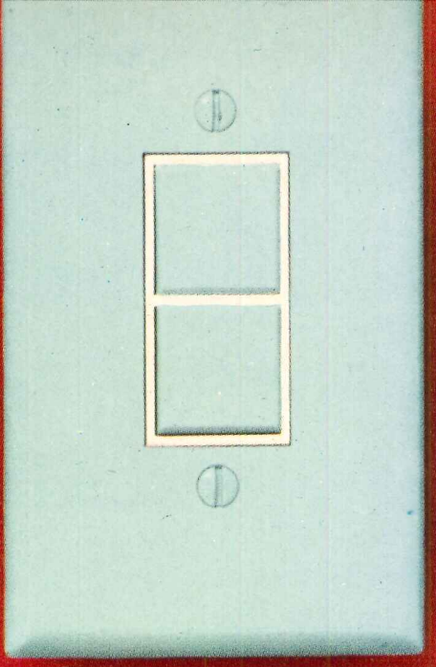

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There's never been styling like this before. Dynamic. Elegant. With the class and distinction that architects and interior designers revel in.

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Is Centura's beauty only skin deep? Not on your life. Built in behind the wallplates are top Specification-Grade engineering and construction. So good, in fact, that Centura is backed by Leviton's unprecedented 25-Year Guarantee of Performance. Listed by UL and CSA, of course.

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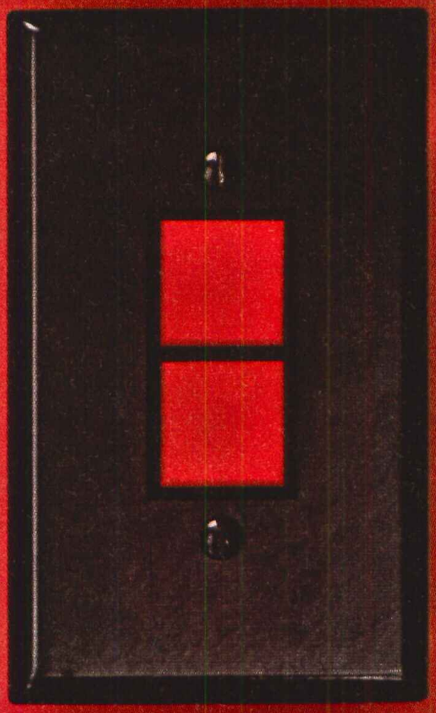

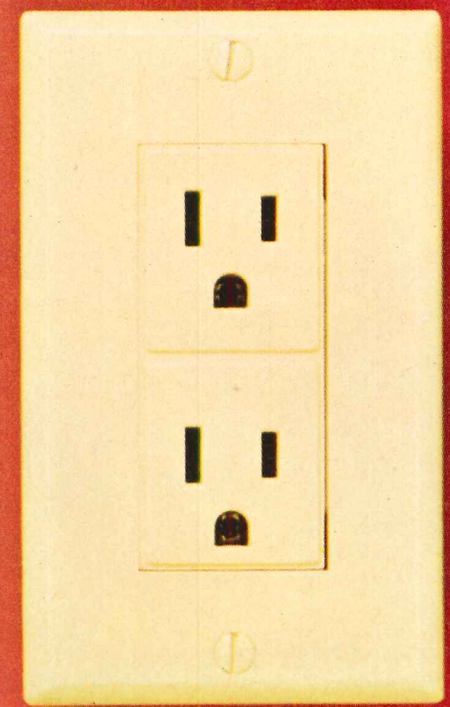
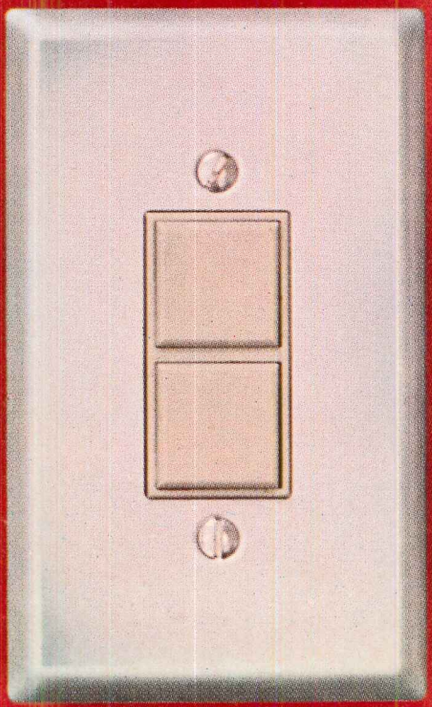
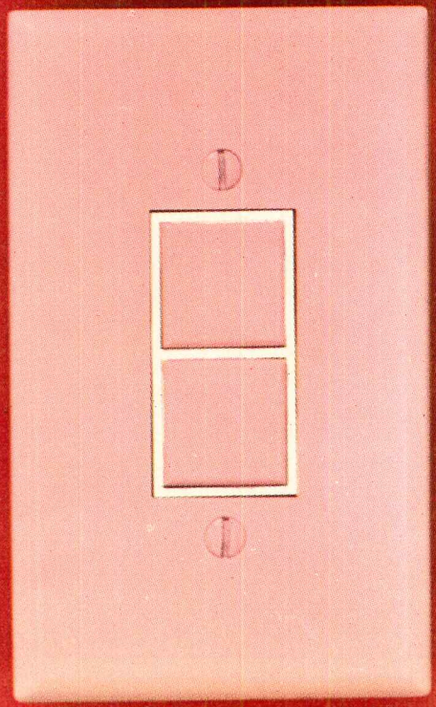

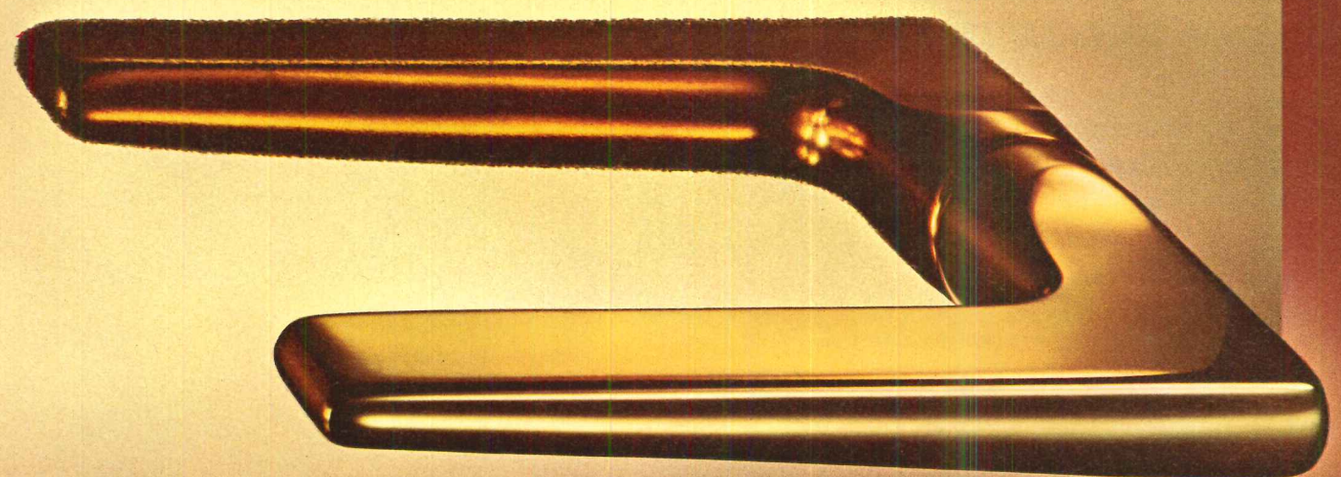

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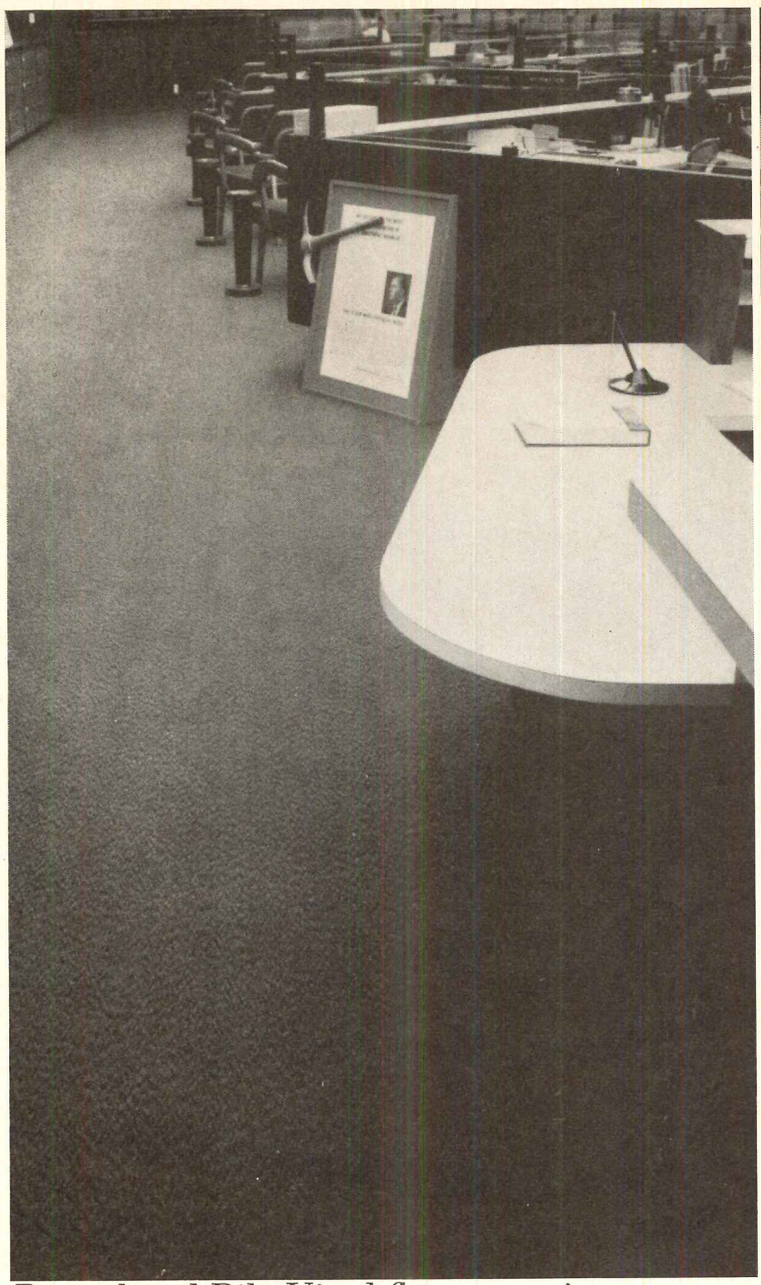

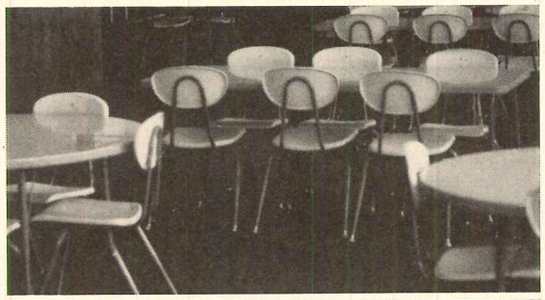

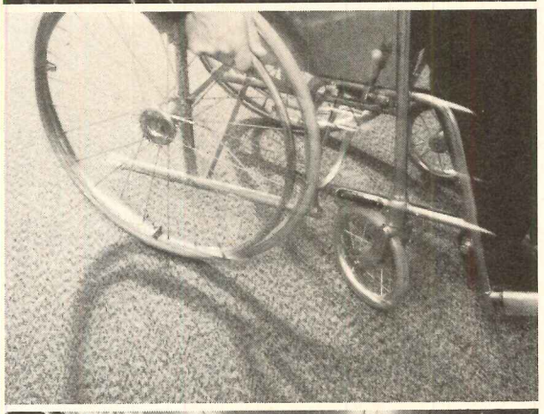

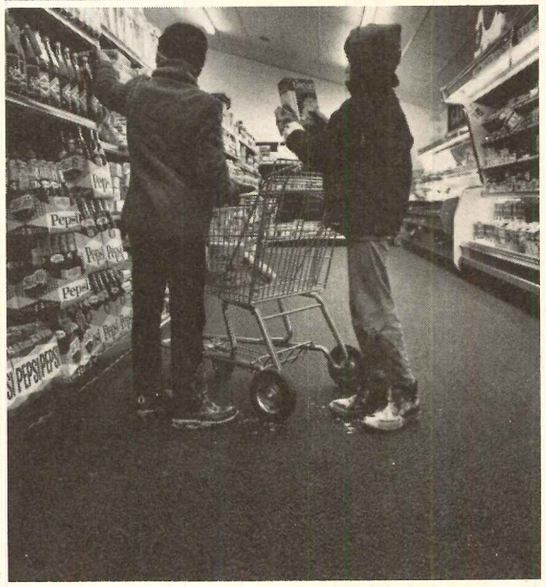

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Office proof, school proof, hospital proof, store proof, etc. proof.

If it weren't for Powerbond™ Pile Vinyl's outstanding durability, low maintenance, excellent sound deadening properties, sure footedness, beauty and general superiority for use in any high traffic area, we could stop right here about what has helped push Powerbond Pile Vinyl into such wide acceptance.

But. There is more.

Behind its beauty (24 matchless colors and 3 textures) there's extraordinary ruggedness, abrasion resistant and resilience. No scuffs, traffic patterns to show. And spike heels can't spike it. No buckling. No rippling. The pile is so dense, spills, dust and dirt stay on the surface. It can take just about anything anyone can dish out.

And in back of that is our famous 5-year wear guarantee.

You see, it's the only floor covering that combines the luxury of a super-dense pile with all the inherent practicality of vinyl. (We fuse the two together using several layers of vinyl. Because there's nothing better than vinyl for ultimate stability.)

Now, we both know nothing's perfect. So, about repairs. Astonishingly simple. And seams don't show.

There are a few "almost-likes" but nothing exactly like Powerbond Pile Vinyl. Which is what you'd expect from something that has set the standard for floor covering.

Please send me more information and swatches. 71

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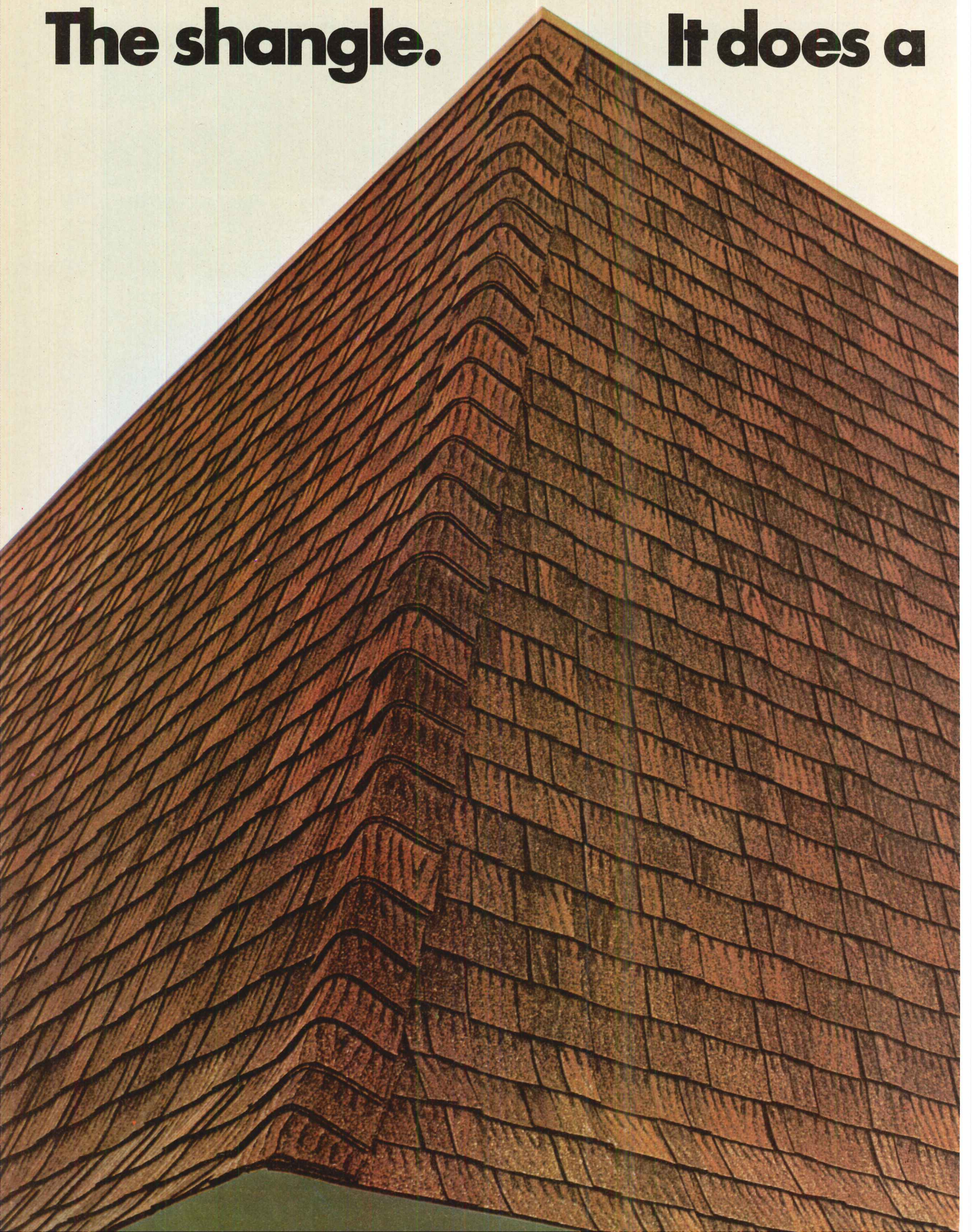
The shangle. It does a



lot more than cover the roof.

The deep sculptured beauty of our Hallmark shingle, the one almost everyone calls "The shangle," is adding a new beauty and excitement to dwellings with mansard and peaked roofs.

And it's no wonder.

"The shangle" is an entirely new concept in roofing products. It combines the deep sculptured beauty of the finest wood shake and the lasting durability that only an asphalt shingle can offer. That means it won't rot, warp, shrink or split and it's fire safe.

Available in pewter gray, bronzed brown and golden tan, "The shangle" lets you make the roof as attractive as the rest of the dwelling.

For complete information, see your Sweet's file or write:

Certain-teed Products Corporation, Ardmore, Pa. 19003. Manufacturers and distributors of roofing shingles, built-up roofing, fiberboard sheathing, fiber glass home insulation, and acoustical ceiling products.

CERTAINTEED

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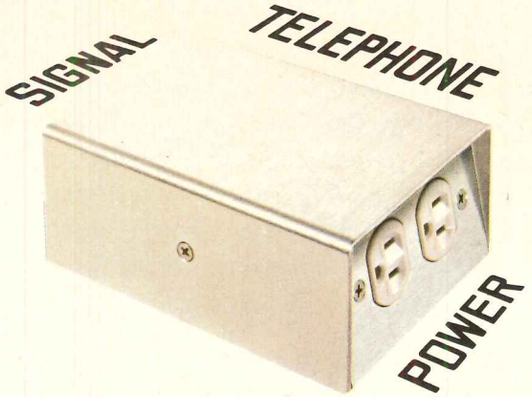
Mayfair Park, Birmingham, Alabama
Architect: Joseph Kott A.I.A.
Builder: Mayfair Construction Company

CEL-WAY® *The in-floor electrical distribution system for every need!*



Cel-Way in-floor electrification adapts itself to the whole spectrum of architectural ideas and construction techniques: high rise, low rise, concrete frame, steel frame, interior landscaping.

Here is *system* in the pure sense of the word. All electrical services—telephone, power, signal—are neatly sandwiched into a single slender floor slab. This floor fitting and in-floor electric cell system accommodates itself to any building module. It meets all electrical requirements for the present, and anticipates changed or expanded needs for the future. It's the perfect antidote for building obsolescence.

Here is *economy*, with labor savings as much as 50% in some cases. Single, dual or triple electrical cells can be supplied in long lengths—up to 30′; new trench header design saves field labor over other types of feeding systems; electric, signal and telephone services can be supplied through a single easy-to-install floor fitting.

Here is *versatility* which opens the way to innovations never before possible, like supplying partitions with all three electrical services through a single entrance.

For the complete Cel-Way story, including construction and installation details, specifications and other data, check Sweet's 1e/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.

IMAGINATION IN STEEL GRANCO® Steel

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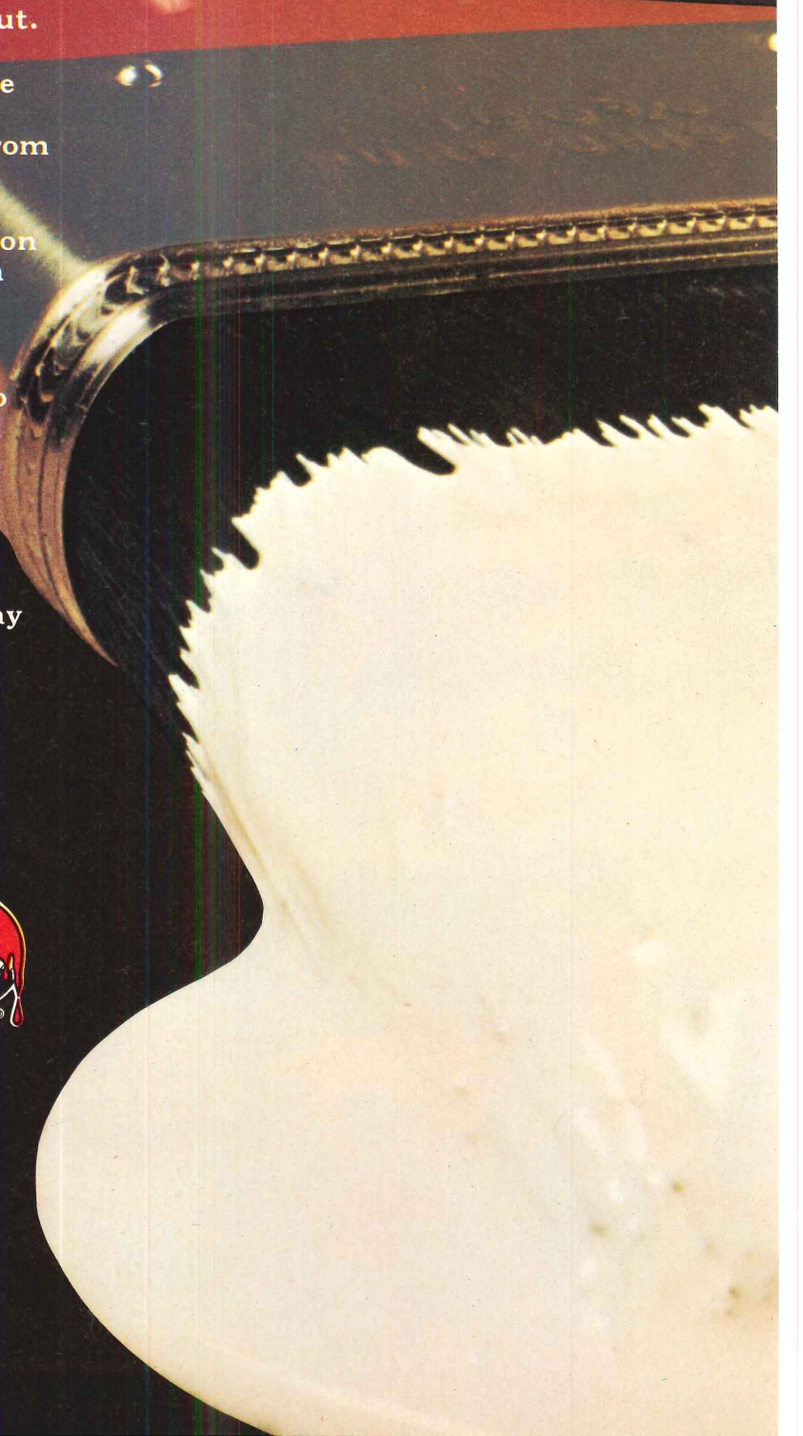
How to save paint brush.



Paint on protection against fire? You can do it with Kem Gard™ Fire Retardant Latex Paint.

It won't fireproof. But it will give any surface extra protection in the event fire breaks out.

You see, Kem Gard actually retards the spread of flame and smoke. And the delay can give you the time you need for bringing fire fighting equipment to the scene—and evacuating people from the building.

Here's how it works: Kem Gard puffs up and forms a barrier of foam, acting as an insulation to the combustible surface underneath. The foam doesn't extinguish the fire, but it keeps it from spreading.

Tests by Underwriters' Laboratories, Inc. show Kem Gard's flame spread rating of from 0 to 25 fulfills the Class A requirement of the National Fire Protection Association. In fact, no other U-L listed Class A coating has been tested over such a variety of surfaces!

Kem Gard Fire Retardant Latex Paint requires no special equipment, technique or experience to use. It can be applied by brush, spray or roller without fire hazard during application. And pleasant pastels can be achieved by using Kem® tinting colors.

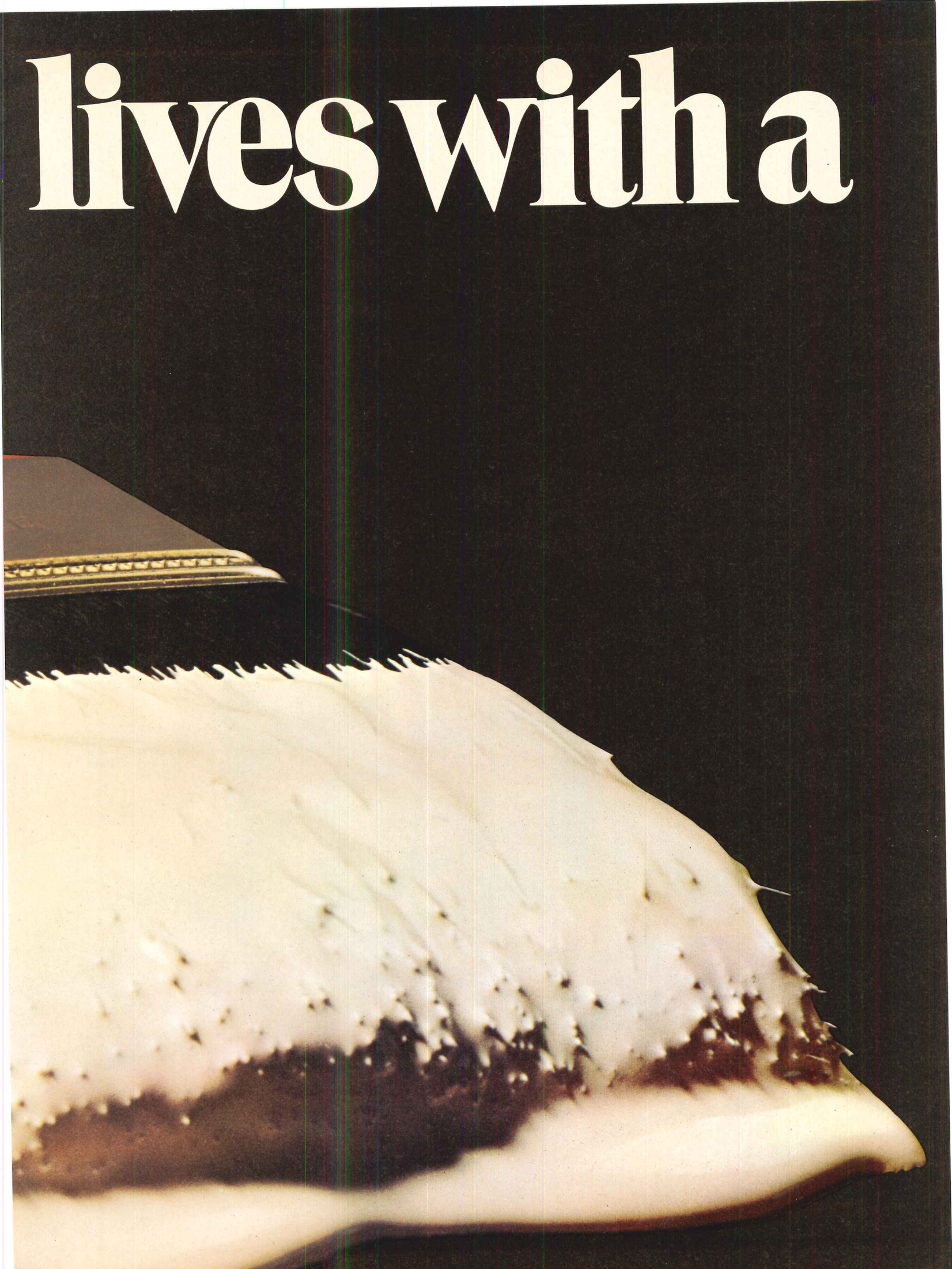
So if you're painting a school, hospital, plant, church, office, hotel, apartment building, even a home, consider Kem Gard.

We call Kem Gard a paint. But you may wind up calling it a lifesaver.

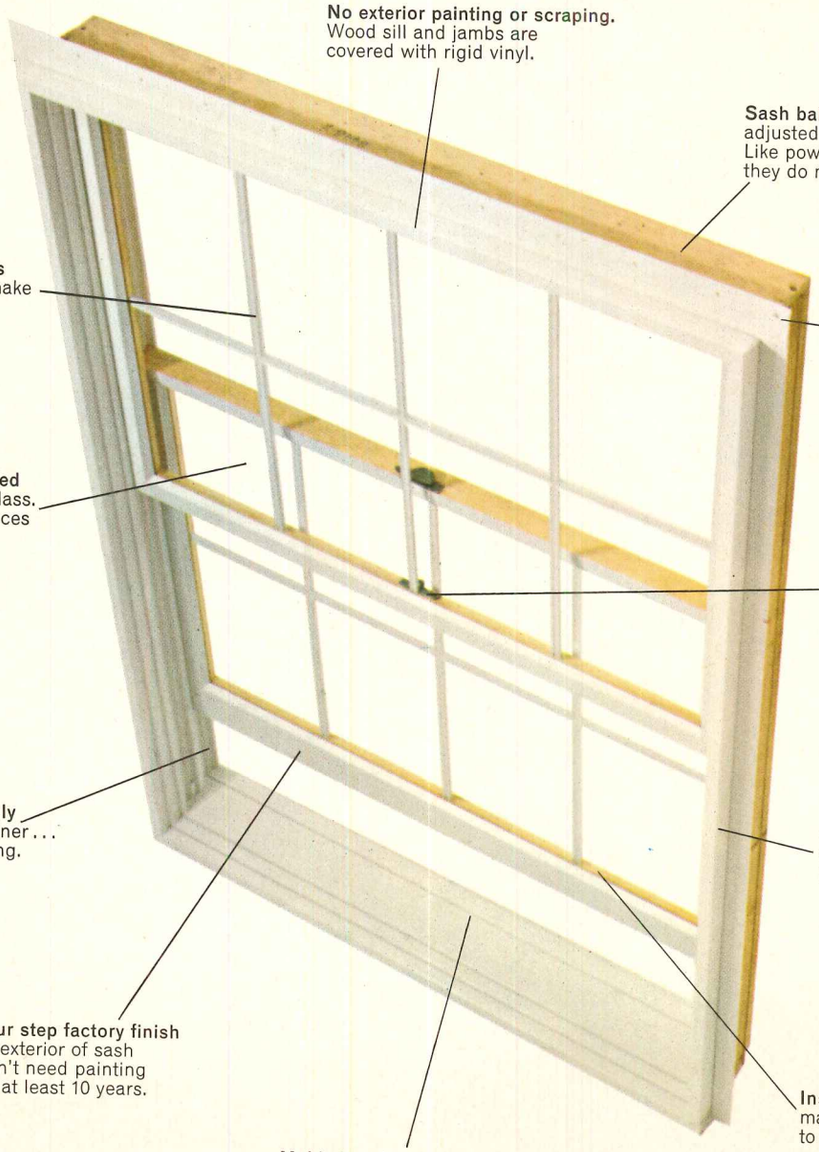
For information, circle inquiry card or write for free brochure. The Sherwin-Williams Co., Architectural Service Department, 101 Prospect Avenue, N.W., Cleveland, Ohio 44101.

THE SHERWIN-WILLIAMS CO.

lives with a



Now, no exterior Perma-Shield Narroline



For more data, circle 81 on inquiry card

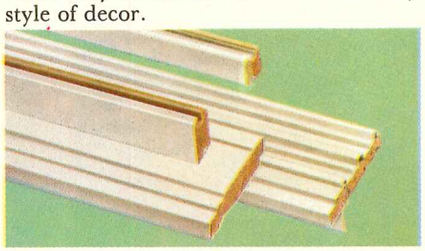
on-site painting with these Windows from Andersen.

Perma-Shield® Narroline™ won't need painting for at least 10 years

Meet the only modern, traditional window. It incorporates the best of modern materials technology without sacrificing the traditional window form that's been popular since Paul Revere's day. Starting with the classic, double-hung form, Andersen has designed the most maintenance-free window possible at a reasonable cost.

All surfaces exposed to the weather, except the sash, have a core of warm, stable wood, and a surface of rigid, weatherproof vinyl about 30 mils thick. (That's not just a coating, but a vinyl sheath* about as thick as the cardboard backing on a writing tablet.)

The wood sash is protected by a 4-step factory-finishing process* that won't chip, crack or peel . . . won't require painting for *at least* 10 years. On the interior, the wood may be finished to blend with any style of decor.



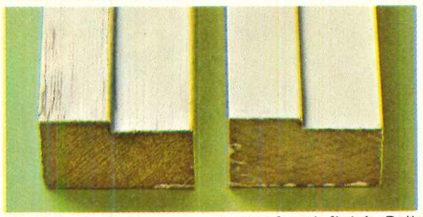
No exterior painting, no storm windows.

Welded, insulating glass is the most popular glazing option with Perma-Shield Narroline. And with it, owners can look forward to years of easy living—without the back breaking job of changing storm windows, without the usual painting or puttying every 4 or 5 years.

Still, no real cost premium.

As we've said, Perma-Shield Narroline Windows require no exterior on-site finishing. Builders across the country now pay up to $10 per window for a professional painter to put the outside finish coats on an *ordinary* double-hung window. Add the clean-up costs to that, and you know why there's little, if any, additional cost to homebuyers for the low maintenance advantages of Andersen Perma-Shield Narroline.

*Patents pending



Exposure tests prove superiority of sash finish. Both samples have been exposed to sun and weather the same length of time, yet look at how the conventional paint at left is cracking and flaking, while the Perma-Shield Narroline finish is still smooth. It still looks good. Still protects the wood.

In the next 5 to 10 years, exterior on-site finishing will become a thing of the past. Keep up with this trend to pre-finished, low-maintenance exteriors with Andersen Perma-Shield Narroline Windows.

For literature on the only modern, traditional window, just mail the coupon.

AR-49

Andersen Corporation
Bayport, Minnesota 55003

☐ Please send complete Perma-Shield Narroline literature.

☐ I'd like a Perma-Shield Narroline demonstration in my office. Have a distributor call me for an appointment.

NAME_____

TITLE_____

FIRM_____

ADDRESS_____

_____

PHONE_____

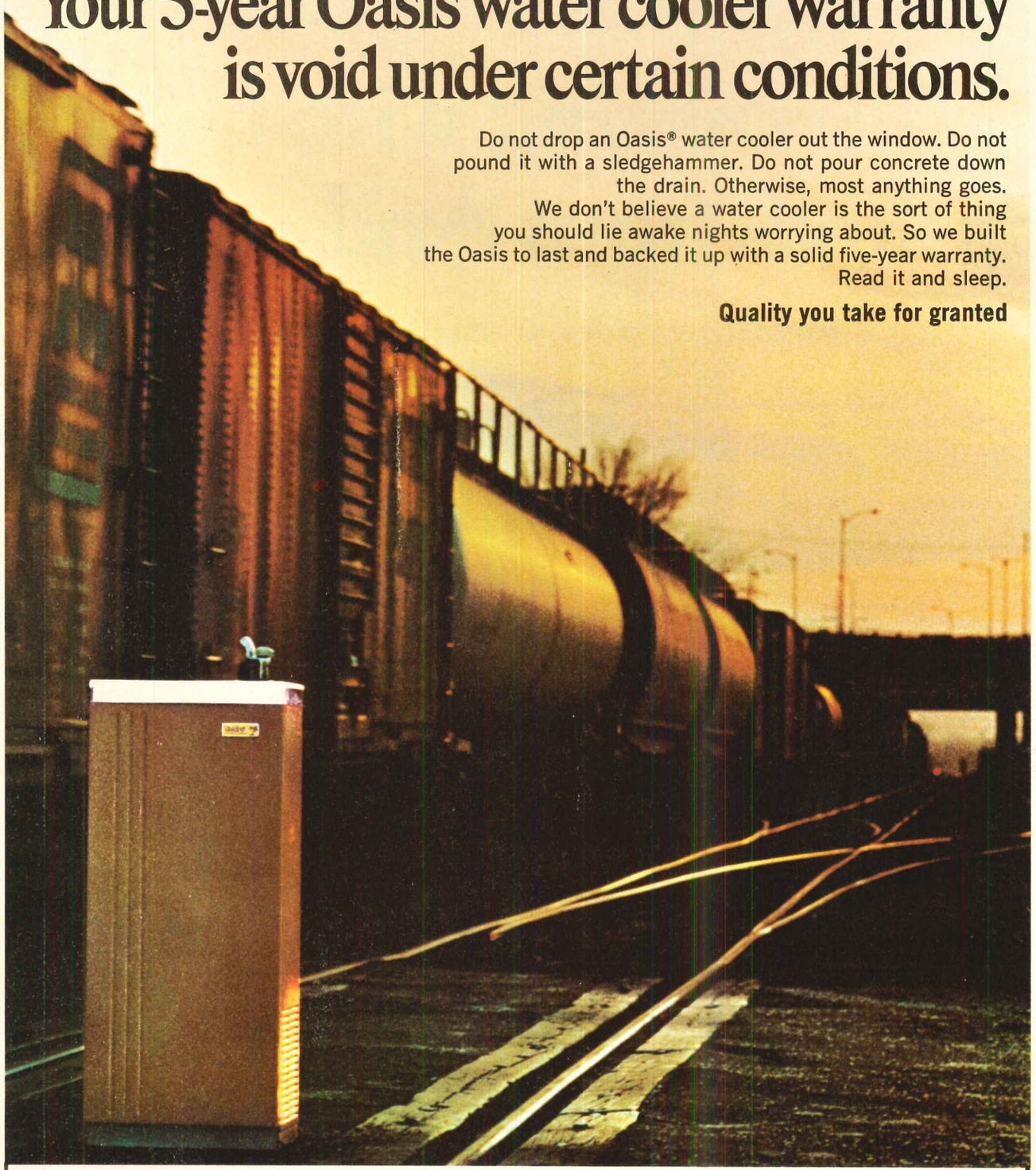
CITY_____

STATE_____ ZIP_____

Andersen Windowalls™

Only the rich can afford poor windows.

Your 5-year Oasis water cooler warranty is void under certain conditions.



Do not drop an Oasis® water cooler out the window. Do not pound it with a sledgehammer. Do not pour concrete down the drain. Otherwise, most anything goes.
We don't believe a water cooler is the sort of thing you should lie awake nights worrying about. So we built the Oasis to last and backed it up with a solid five-year warranty. Read it and sleep.

Quality you take for granted

Oasis Five-Year Warranty

EBCO MANUFACTURING COMPANY warrants this entire water cooler to be free from defects in material and workmanship under normal use and service for a period of FIVE YEARS from date of original installation. Ebco's obligation shall be limited to repairing or replacing any defective part which Ebco's examination discloses to be defective in material and workmanship and under the conditions as hereafter stated.

The complete water cooler should be returned to the factory, if any of the following parts fail:

1. Any part of the hermetically sealed refrigeration system.
2. Cooling tank and coil assembly.
3. Precooler assembly.
4. Any water leak in the insulated upper half of the cabinet.

A complete water cooler should NOT be returned to the factory for the repair of a water leak at one of the top plumbing fittings.

Any of the replaceable parts that fail during warranty, should be removed and returned separately to the factory. Examples of these parts are as follows:

Cold control, fan motor assembly, starting relay, overload, hot or cold faucet, water regulating valve, bubbler valve body assembly and any other removable parts. A bubbler valve body assembly may NOT be returned to the factory for replacement under this warranty due to stoppage, limed up condition or leaking due to improper adjustment. This warranty does NOT apply to any part which has been subjected to accident, alteration, abuse or misuse, nor does it provide for service calls to make adjustments, remove water stoppages, delime Hot or Cold models or other attention required by the water cooler, except as herein stated.

This Five-Year Warranty includes freight or postage (not express) within the continental limits of the United States of America and Canada and is in lieu of all other warranties and obligations.

OASIS® WATER COOLERS • HUMIDIFIERS • DEHUMIDIFIERS

See Sweet's, or write
Dept. AR-18, 265 North Hamilton Rd.
Columbus, Ohio 43213

For more data, circle 82 on inquiry card

Butler County
Community Junior College
El Dorado, Kansas

Architects: Schaefer-Schirmer
& Eflin

Roof: Designer Early American
by Ludowici-Celadon Co.

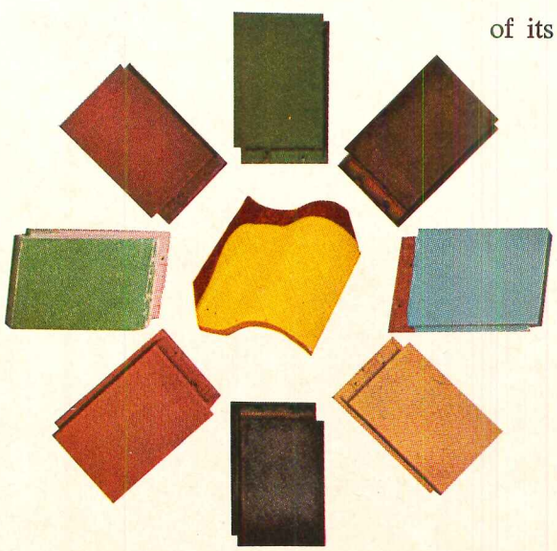
Award-winning Architects Choose

Ludowici Clay Roofing Tile...

The roofs of these graceful college buildings are the focal point of attention—provide distinctive styling that set the pattern for the overall structural design.

Award winning architects prefer Ludowici Roofing Tile because of its versatile beauty—its practical durability and non-fading colors.

Varied patterns, colors and surfaces offer an unlimited choice of roof styling in hard-burned clay—all architecturally sound and with award-winning quality of design.



WIDE SELECTION OF OTHER PATTERNS,
TEXTURES & COLORS

For additional information write or phone:

LUDOWICI-CELADON COMPANY

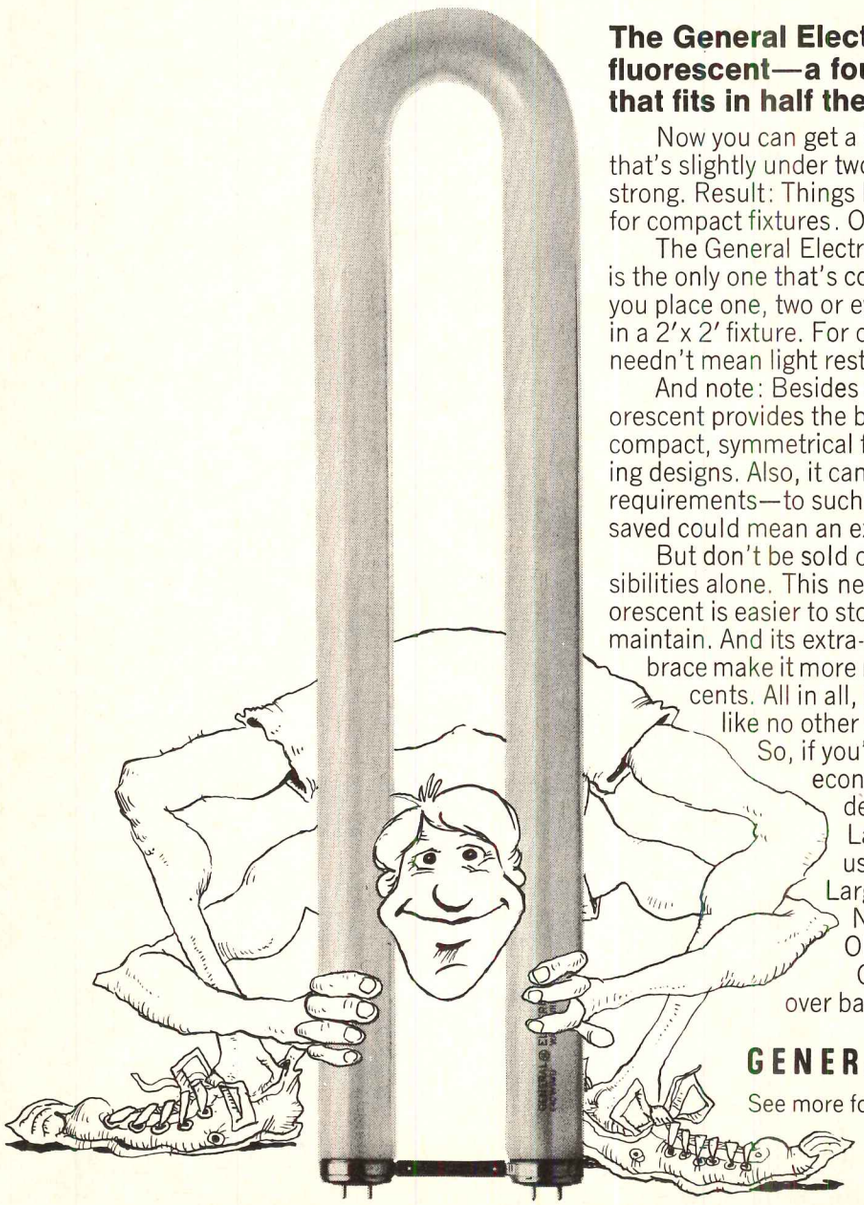
75 East Wacker Drive • Chicago, Illinois 60601

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

UNIFORM SYSTEM
Division No. 7

For more data, circle 83 on inquiry card

This new fluorescent will bend over backwards to solve space problems.



The General Electric Mod-U-Line* fluorescent—a four-foot fluorescent that fits in half the space.

Now you can get a four-foot fluorescent that's slightly under two feet long. And 40 watts strong. Result: Things have never looked better for compact fixtures. Or brighter.

The General Electric Mod-U-Line fluorescent is the only one that's compact enough to let you place one, two or even three 40-watt lamps in a 2′ x 2′ fixture. For once, space restrictions needn't mean light restriction.

And note: Besides extra light, our new fluorescent provides the brightest answer for very compact, symmetrical fixtures for modular ceiling designs. Also, it can reduce ceiling headroom requirements—to such an extent that the space saved could mean an extra floor on a skyscraper.

But don't be sold on its exciting design possibilities alone. This new GE Mod-U-Line fluorescent is easier to store, handle, install and maintain. And its extra-thick glass plus a cross brace make it more rugged than most fluorescents. All in all, it will curb lighting costs like no other two-foot lamp.

So, if you're interested in a new economical twist in lighting design, see your GE Large Lamp Agent. Or write to us: General Electric Co., Large Lamp Dept., C-810, Nela Park, Cleveland, Ohio 44112.

Of course, we'll bend over backwards to help you.

GENERAL ELECTRIC

See more for your dollar with GE lamps.

*TRADEMARK OF THE GENERAL ELECTRIC CO. MADE IN WEST GERMANY.

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For more data, circle 85 on inquiry card

Prefab

Put a Bally Λ Walk-In Cooler/Freezer in the kitchen. Be ready for the leisure crowd seeking new adventures in dining. Bally Walk-Ins operating at temperatures from 35° cooling to -40° freezing provide the facilities to plan and prepare excitable and profitable menus in advance. Learn about many other important features from our 32-page booklet and urethane wall sample.

There's an evolution in the kitchen

Bally

Bally Case & Cooler, Inc.
Dept. AR-4, Bally, Pa. 19503

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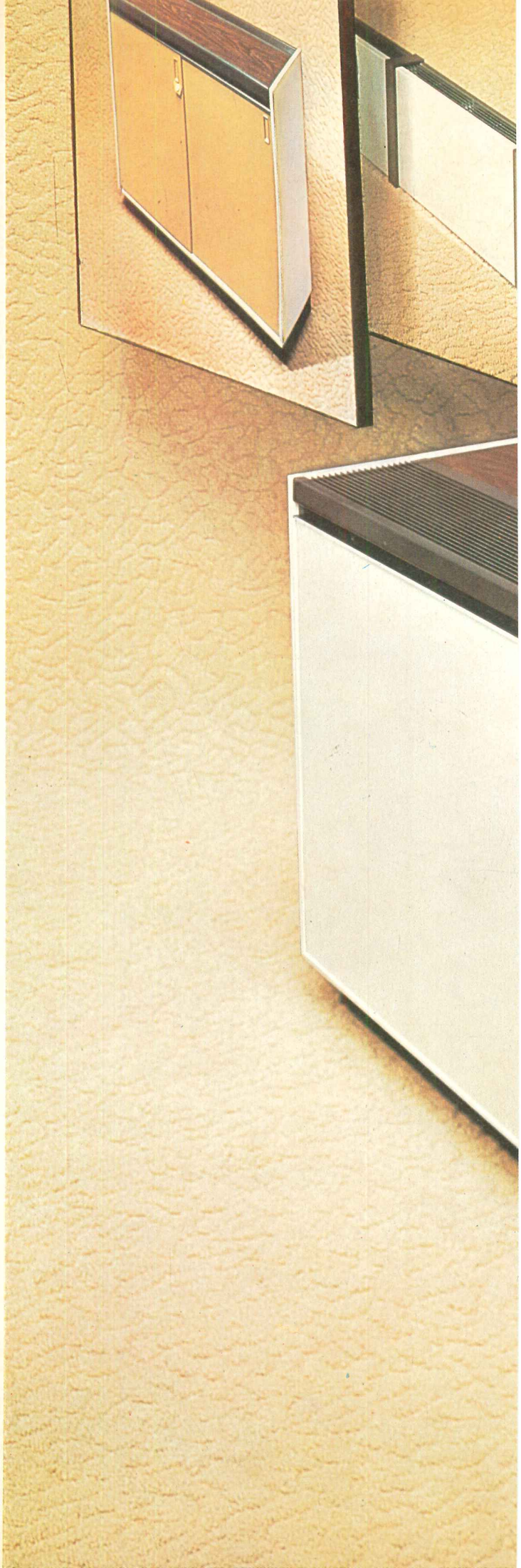
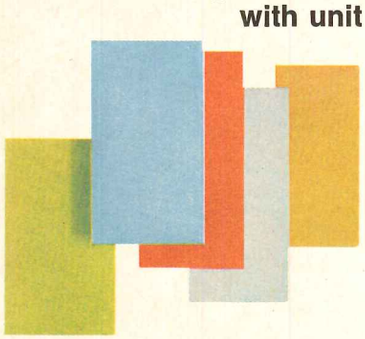
the quiet design



introducing a new freedom of classroom styling with unit ventilators and accessories



The AAF/Herman Nelson quiet design gives you greater styling freedom in the classroom than you've ever had before. First, our new earth-tone colors are quiet: tones that easily blend into the room environment; don't intrude into it. Unit ventilators are offered as standard in soft beige with a choice of toppings. Next, the lines are quiet. No large shiny metal areas or exposed fasteners. The sleek wall-hugging design visually stretches space. And last, as always, Herman Nelson unit ventilators function quietly for the life of the building. Thousands of classrooms offer proof of the quality that has made this classroom environmental control equipment first choice of value-conscious school planners since 1917. Write for new Bulletin 600 A36, "A Climate for Learning." Or see your AAF/Herman Nelson representative. American Air Filter Company, Inc., 389 Central Ave., Louisville, Kentucky 40208.

AAF **Herman Nelson**
SCHOOL PRODUCTS DIVISION

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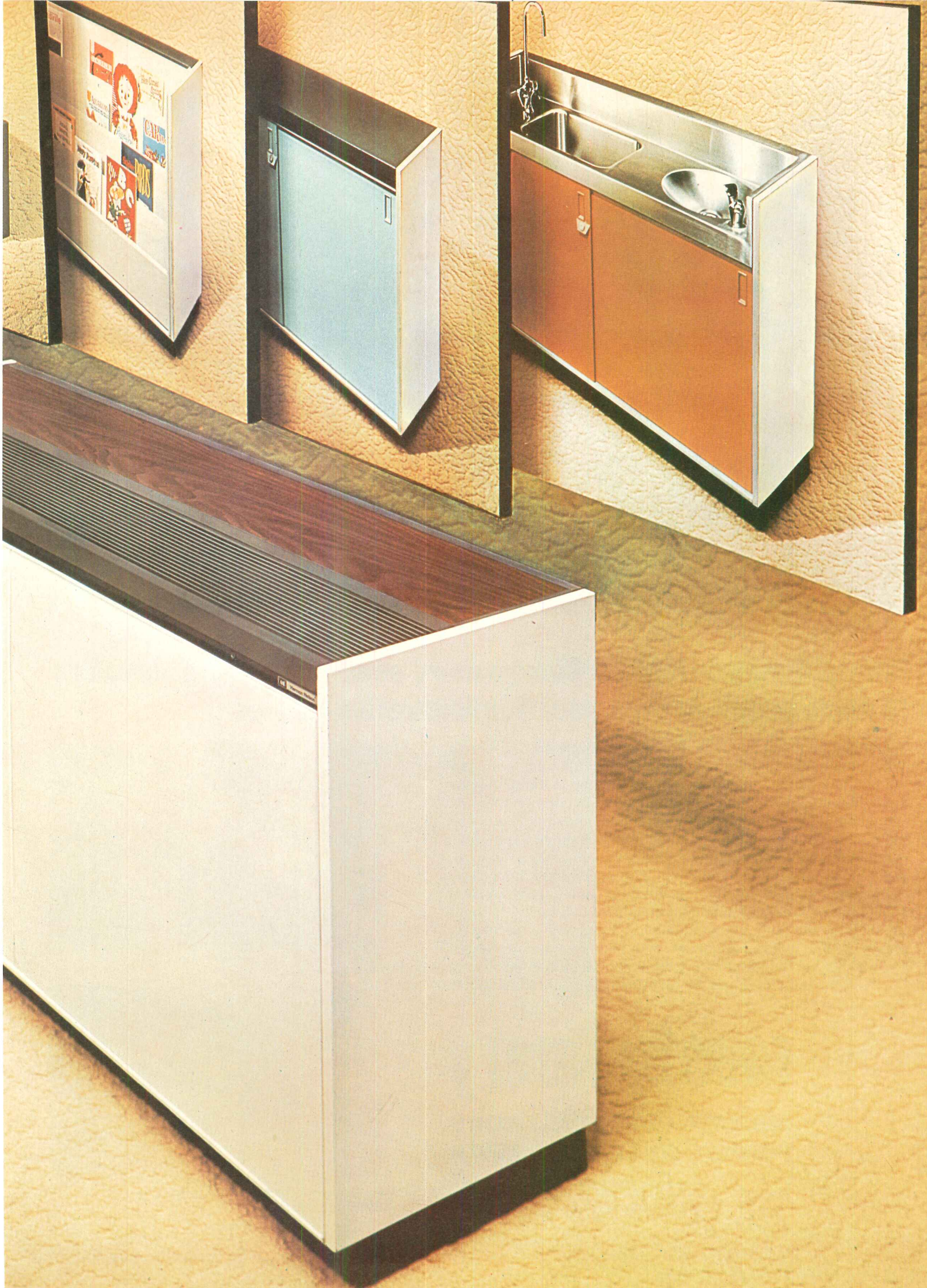

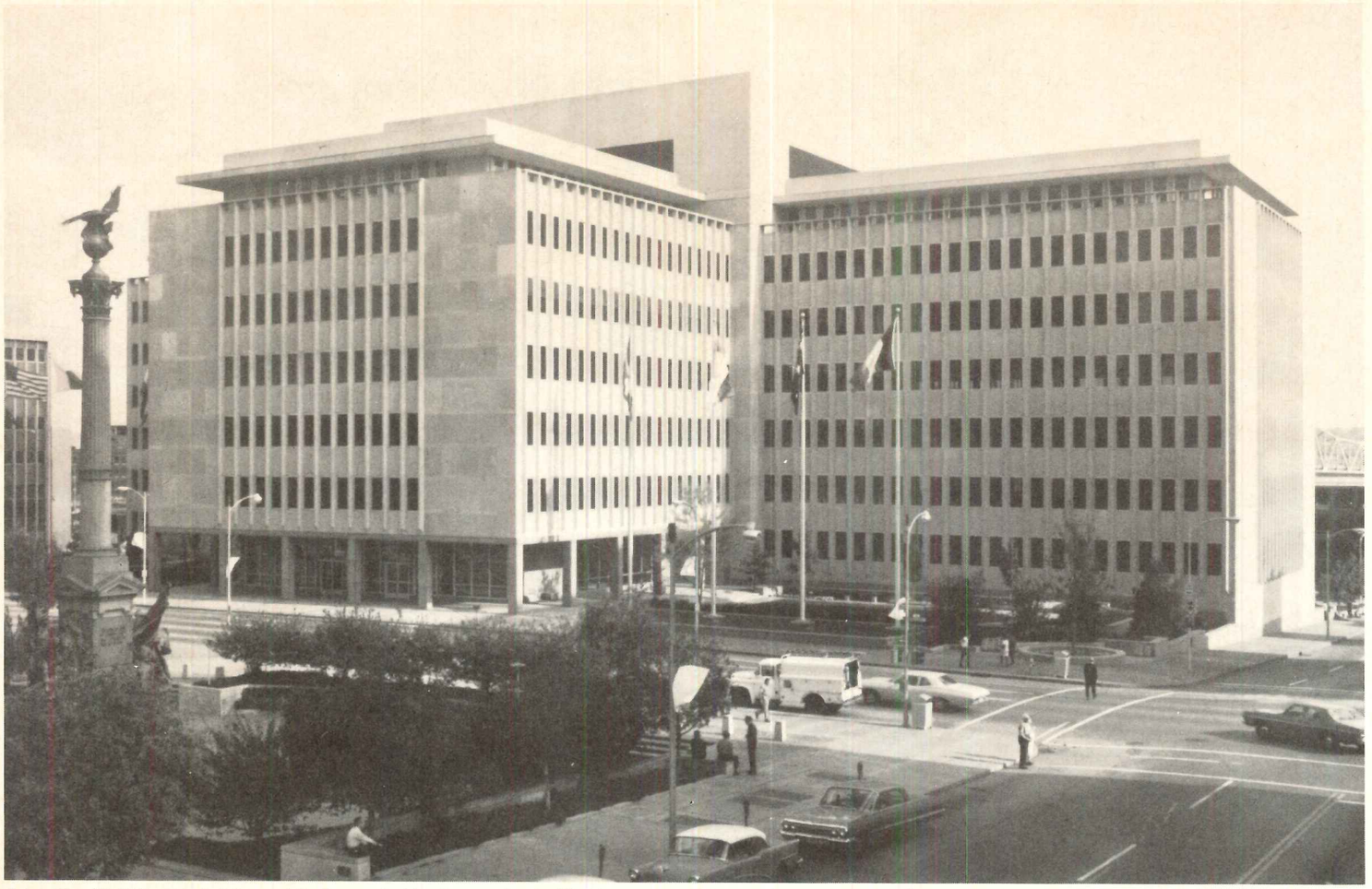

Caterpillar Administration Building and Employees Parking Garage, Peoria, Illinois.

Architect: Smith, Smith, Haines, Lundberg & Waehler; New York.
Contractor: Huber, Hunt & Nichols, Inc.; Indianapolis.

Caterpillar specified 24 Montgomery escalators and 3 elevators to move people in their new Administrative Center.

Caterpillar proved a new idea: **escalators** provide the most rapid, long-term-economical vertical transportation within the new Caterpillar Administration Building and Employees Parking Garage. Three high speed Montgomery passenger and service elevators also serve the building. However, the vast majority of inter-floor traffic is carried by a battery of 16 Montgomery two-steps-level escalators in the Administration Building core and by 8 Montgomery escalators in the Employees Parking Garage. This unusual application of high-rise office escalators provides many benefits: instant traffic flow; minimum space requirement for the elevator plant, and greater efficiency of elevators by optionally locking out certain floors; elimination of an additional stairway; increased staff efficiency; and lower long term costs Caterpillar Administration Building and Employees Parking Garage — with creative new ideas in moving people.

Sixteen Montgomery two-steps-level escalators in the core of the main building.

Express service to upper floors is provided by two high speed Montgomery elevators.

montgomery®

ELEVATORS/ESCALATORS
POWER WALKS & RAMPS

Montgomery Elevator Company, Moline, Illinois 61265
Montgomery Elevator, Ltd., Toronto, Canada
Offices in principal cities of North America

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Stop building sponge walls

Specify masonry fill-coats with PLIOLITE resins, for deep-down protection against rain and moisture.

Masonry soaks up water like a sponge. Soaks up expensive paint, too.

What can you do about it? Use fill-coats with Goodyear PLIOLITE® resins. They fill up the holes in masonry, forming a flat, nonporous shield that locks out moisture—and won't blot up paint. Your clients will need less paint to cover the same area. PLIOLITE-based fill-coats save on repainting, too—because fill-coated surfaces provide a more uniform base for better adhesion.

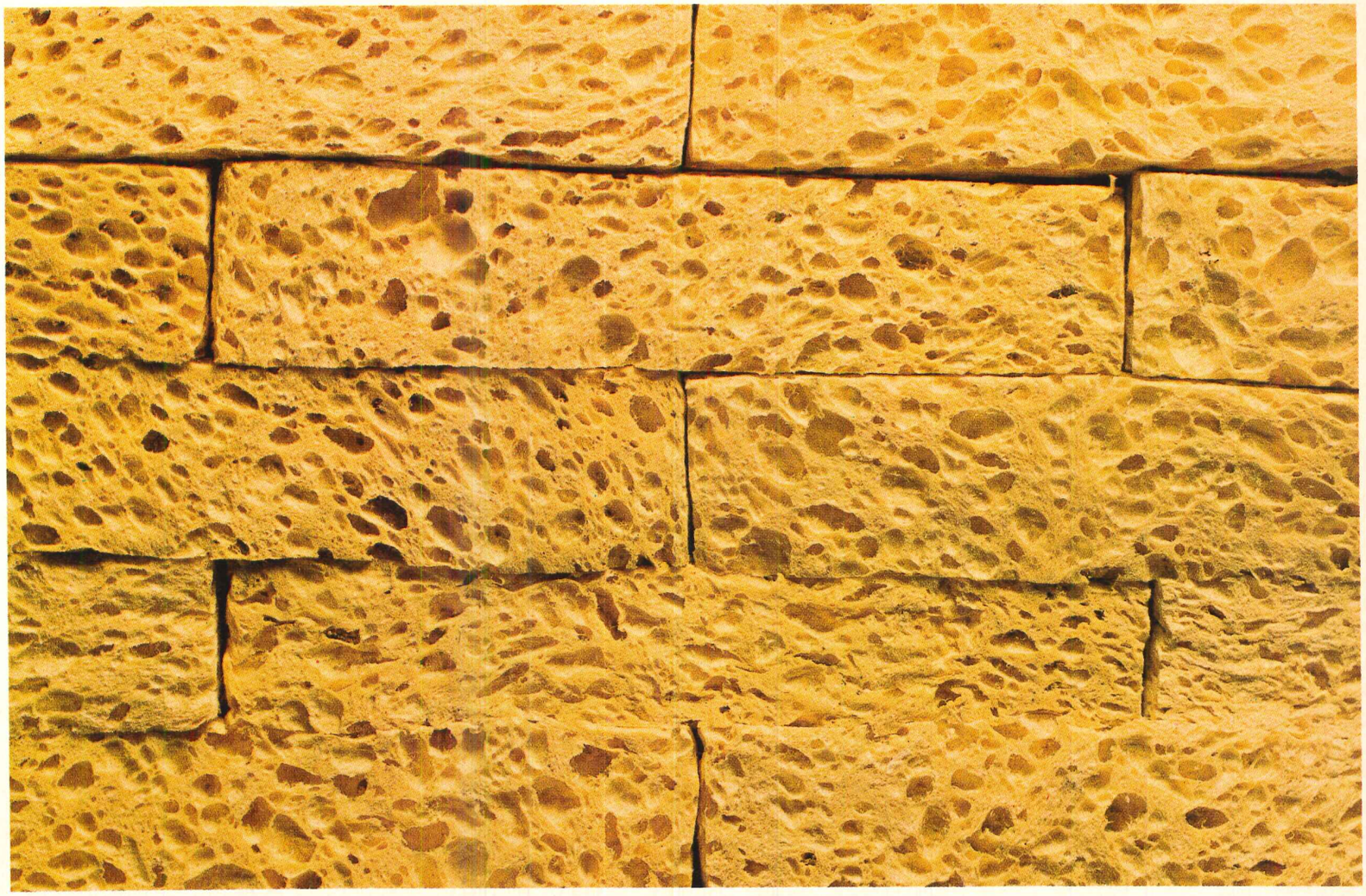
And these fill-coats are the only ones to meet Federal Specification TT-F-001-098. They successfully block wind-driven spray at the equivalent of 98 mph for eight hours.

PLIOLITE-based fill-coats are better in every way. They resist heat, cold and sun—as well as moisture and rain. They give you the most complete all-weather protection you can get for cinder block, concrete or stucco.

Don't be satisfied with surface coatings. Go all the way to full protection.

Specify fill-coats with Goodyear PLIOLITE resins.

For information, write Goodyear Chemical Data Center, Dept. **D-84**, Box 9115, Akron, Ohio 44305.



GOODYEAR
CHEMICALS

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It takes our kind of experience to build our kind of doors.

And your kind of imagination to utilize them to their optimum potential.

More and more creative architects are discovering more and more ways to use The "OVERHEAD DOOR" to improve their designs—improve them functionally, economically, and esthetically.

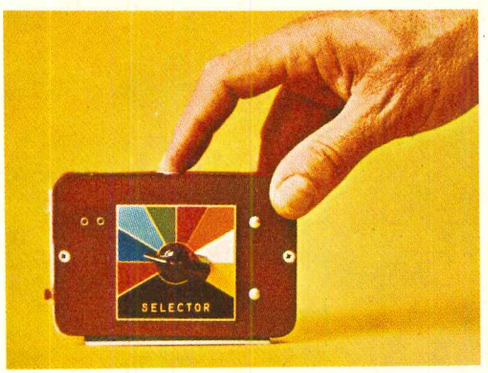
You can do the same.

The "OVERHEAD DOOR" is available to you in just about every material, size, and style. You name the kind of door you need, and if we don't have it in stock, we'll build it for you. And build it *right.* (We've built over eight million doors since 1921, so we're pretty much in practice.)

If your design calls for an electrically operated door—or doors—we have architectural consultants and engineers at the ready to help you determine the right electric operator to do the best job.

You can always specify The "OVERHEAD DOOR" with total confidence. Our nationwide network of factory-trained distributors install and service every door they sell. They also issue a full one-year warranty on all parts and workmanship.

Your nearby Overhead Door distributor is listed in the *white* pages of your phone book. Give him a ring . . . and an opportunity to explain why the phrase "or equal" is fast disappearing from door specs all over America.



Fully transistorized, portable transmitter with color-coded selector, controls up to 8 doors individually by radio control.

Nationwide
Sales • Installation • Service

THE "OVERHEAD DOOR" TRADE MARK
SINCE *the original* 1921

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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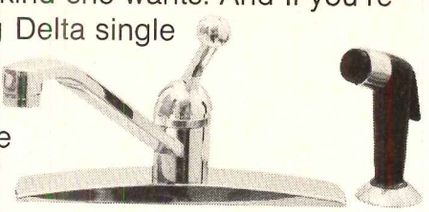
Plumbing is woman's work.

After all, who really handles a faucet the most during a day? Dirty dishes, dirty kids, dirty diapers . . . you know who.

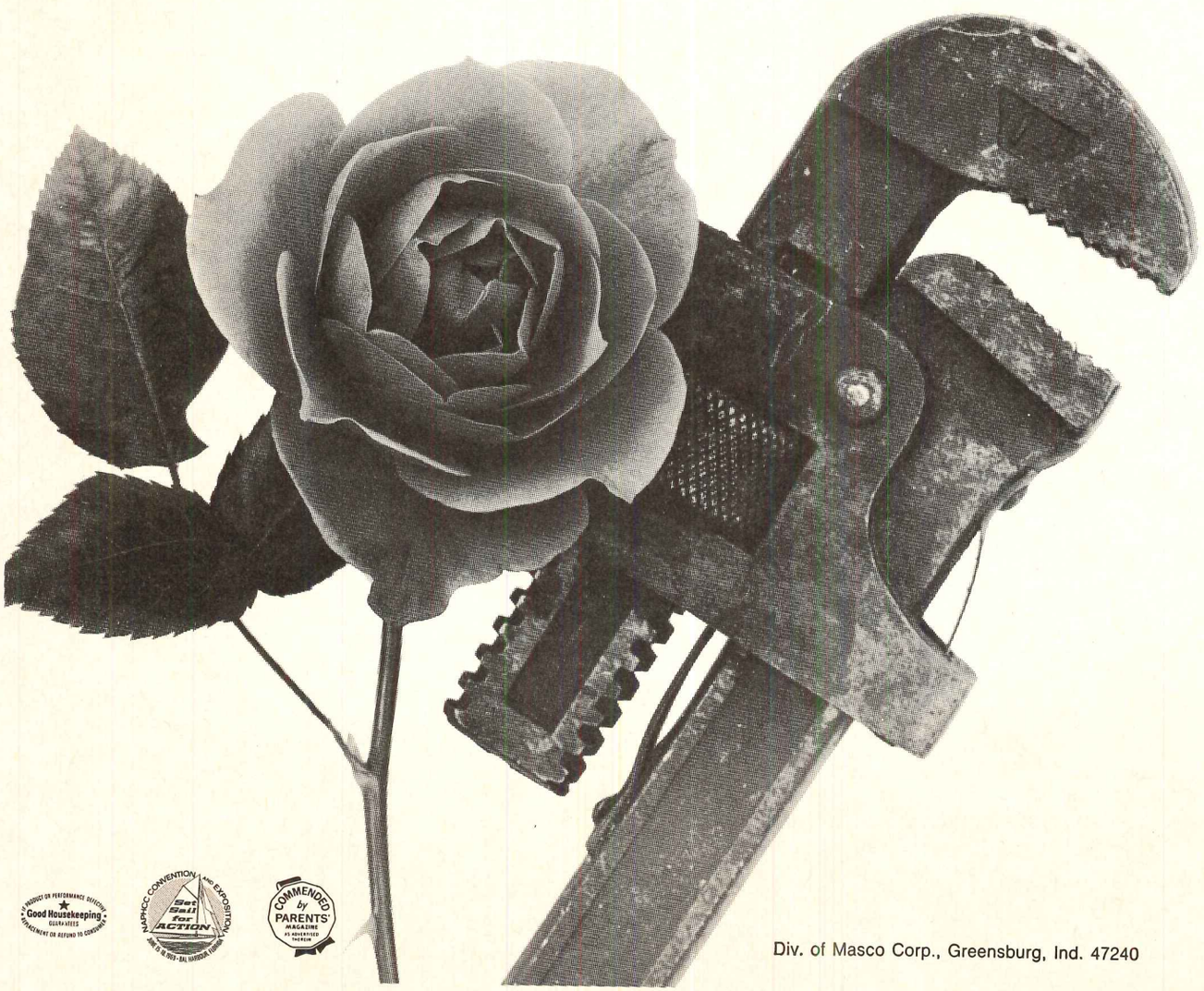
She already knows how pretty Delta faucets are. And right now, we're telling her how good they are. That with only one moving part, Delta faucets are not likely to come apart midway through a dirty kid.

Since the housewife uses a faucet the most, we figure she'll have plenty to say about what kind she wants. And if you're not carrying Delta single handle ball faucets . . . she won't be saying it to you.



DELTA FAUCET

A work of art made to be handled.



Good Housekeeping

NAPHCC Convention and Exposition Set Sail for Action

Commended by Parents Magazine

Div. of Masco Corp., Greensburg, Ind. 47240

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Now, cushioned carpet baseboard won't scuff, streak, scratch!

You can't beat the system!

CCC developed Modu/Base as part of its carpet systems so the same carpet that goes on your floor replaces your baseboard, saves on installation and maintenance and makes the installation complete. It's ideal for stores, schools, offices, supermarkets—any place where wheels roll, feet scuff or chairs bump. You get Modu/Base because CCC offers a system—not a product. The system to suit your needs exactly. That's how Modu/Base and a lot of other things happened. Find us in the Yellow Pages or mail this coupon.

Modu/Base™ by CCC

It's what you expect from CCC—world's largest manufacturer of commercial and institutional carpet systems

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Commercial Carpet Corporation
10 West 33rd Street,
New York, New York 10001 Dept. AR-4

Attention: Mr. Walter Brooks

☐ Please send a brochure on Modu/Base carpet systems.

☐ Please have a CCC consultant contact me.

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Title_____ Phone_____

Organization_____

Address_____

City_____ State_____ Zip_____

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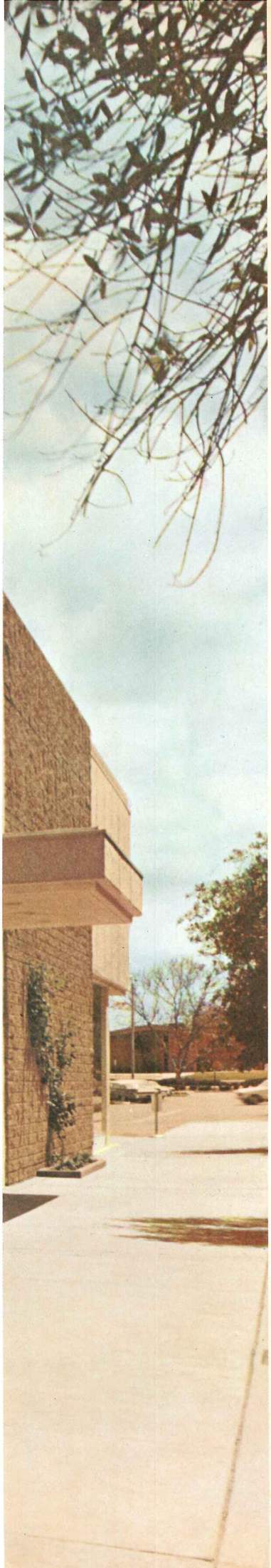

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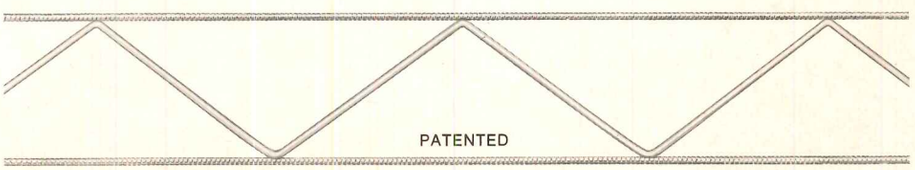
Specify Dur-O-waL® Truss masonry wall reinforcement

Masonry walls are more beautiful, more versatile than ever. And more numerous. Close to 700 million dollars' worth this year. That's a lot of masonry walls. And you can protect nearly every one of them with a Dur-O-waL "life insurance" policy.

All kinds of walls, too—single wythe, cavity or composite. Dur-O-waL Truss not only controls cracking, but also ties wythes in cavity and composite walls. All this from one product.

Dur-O-waL stands back of the policy with material approvals from many national and local code organizations.

Specify the original. Specify the best. Take out a Dur-O-waL life insurance policy on masonry walls. Need evidence? Write Dur-O-waL, P.O. Box 368, Cedar Rapids, Iowa 52406.



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THE ORIGINAL MASONRY WALL REINFORCEMENT WITH THE TRUSS DESIGN

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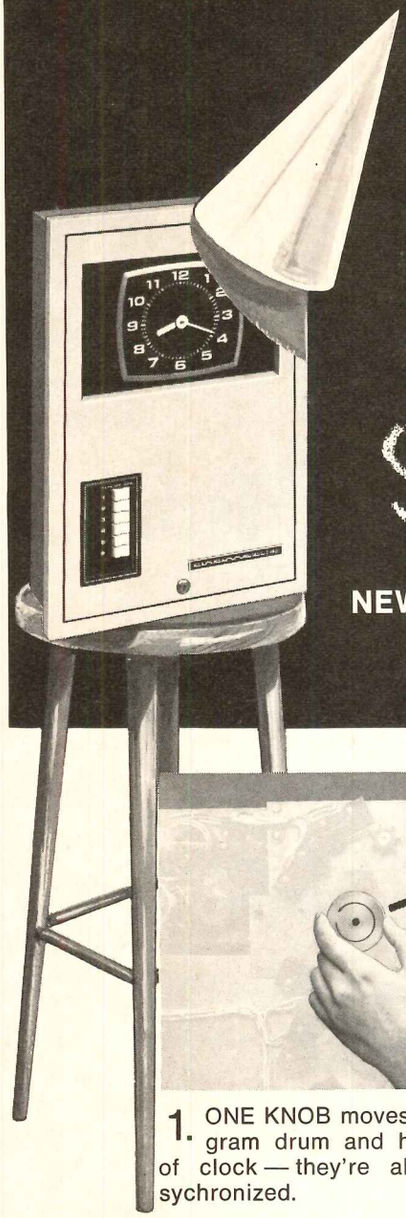
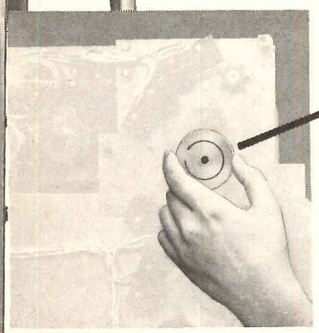
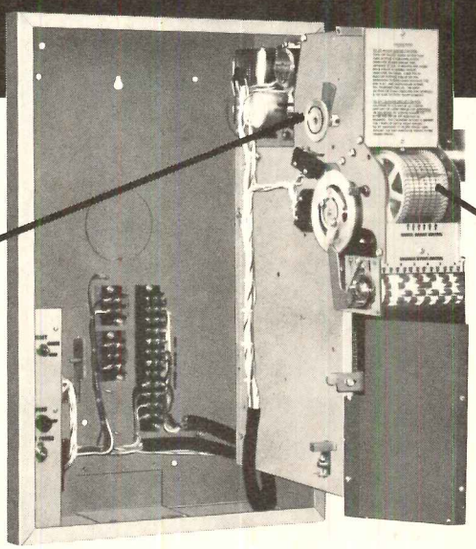
Simple Simon COULD SET ANY SCHOOL ON SCHEDULE!

NEW CINCINNATI MASTER CLOCK/PROGRAM CONTROL

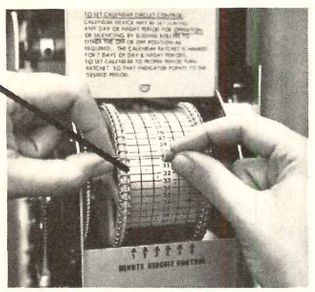




1. ONE KNOB moves program drum and hands of clock — they're always sychronized.



Swing-out trunnion mount simplifies programming, maintenance and installation.



2. CHAIN-OF-COMMAND Programming. *No tools!* Simply link minute through chain with reusable pin where you want signal—slip a signal roller on pin to schedule(s) desired.

Easiest-to-set, most dependable Central Control System for Schools

• Keeps up to 100 classroom clocks on time, without relays or boosters • Sounds up to 1400 signals/day per each of 6 individually calendared circuits—handy push-button silencing too! • Facilitates control of lights, heating, ventilators, lawn sprinklers, security flood lamps, etc. • Two-wired system with hourly and 12-hour supervision

Write for new literature or phone local representative . . . listed in Yellow Pages under "Time Recorders".

cincinnati TIME RECORDER CO.

1758 CENTRAL AVENUE • CINCINNATI, OHIO

For more data, circle 93 on inquiry card

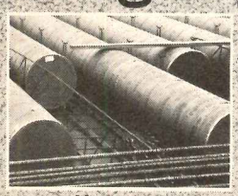
Series 8100

Char Bronze. Warm. Mellow. New, and needed. Framing the richness of wood, the Char Bronze finish softens a crisp, architectural design. This variation on a classic may well become a classic itself. The versatile Alma Series 8100 is also available with either Char Chrome or mirror chrome; in walnut, rosewood and teak. The options are yours; so are the opportunities.

alma

See the Alma Series 8100 in our showrooms in High Point and Chicago (Space 1140, Merchandise Mart). For a full-color brochure illustrating this and several other Alma Series, write Alma Desk Co., **Dept. AR-92,** Box 271, High Point, N.C. 27261.

Air can give you freedom if you know how to use it.



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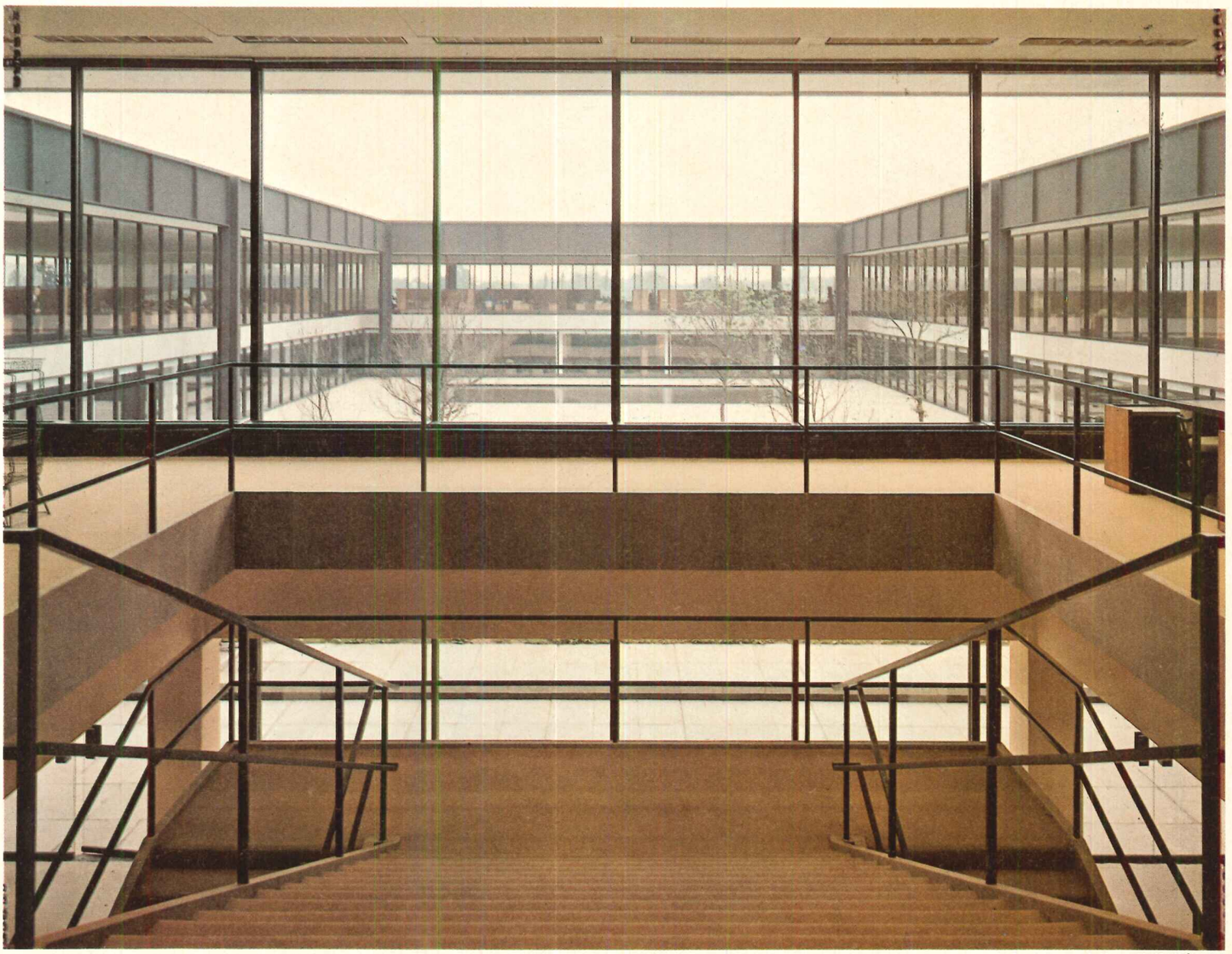
ORDERED OPENNESS FOR CORPORATE OFFICES

In this boldly elegant headquarters building for an English pharmaceutical firm, Skidmore, Owings & Merrill (Chicago), with London architects York Rosenberg Mardall, temper with discipline the freedom of plan organization demanded by a company in rapid transit from quill age to computer age. Within the open spaces provided for ready response to predictably unpredictable shifts in office needs, SOM partner Bruce Graham has imposed order by painstaking coordination and detailing of all building elements—from a structure which matches spans to the degree of flexibility desired, to a furniture-partition system whose movable, interchangeable parts assure that changes in office layout can, in practice, be made without accompanying disruptive changes in the over-all environmental envelope.



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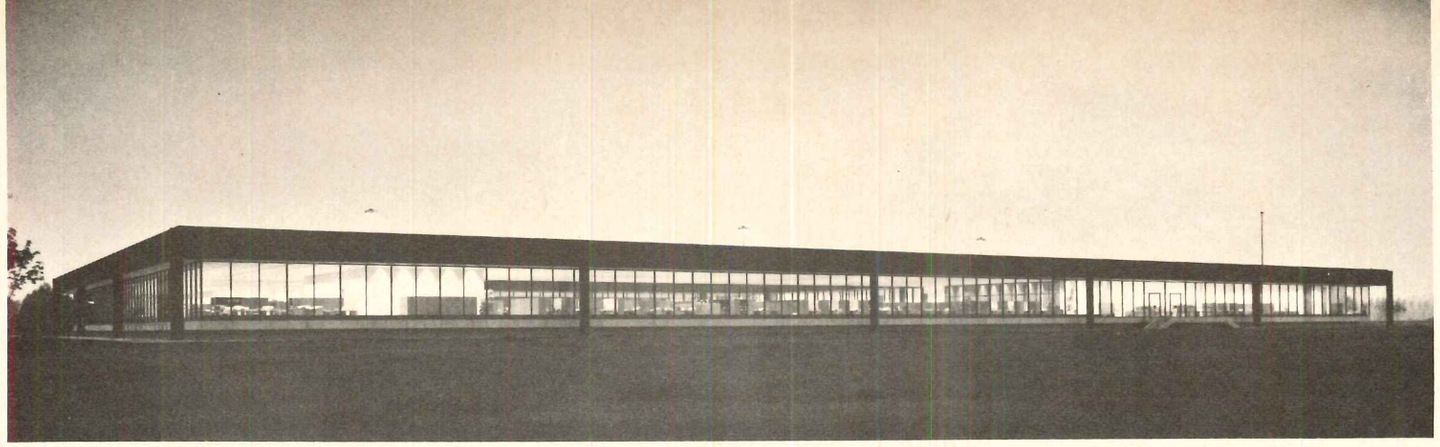
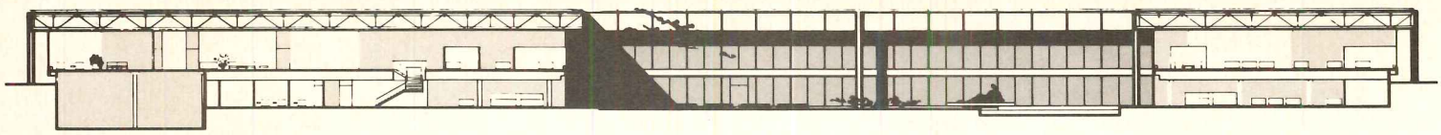
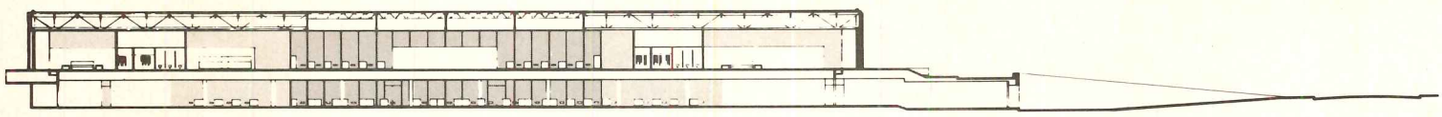
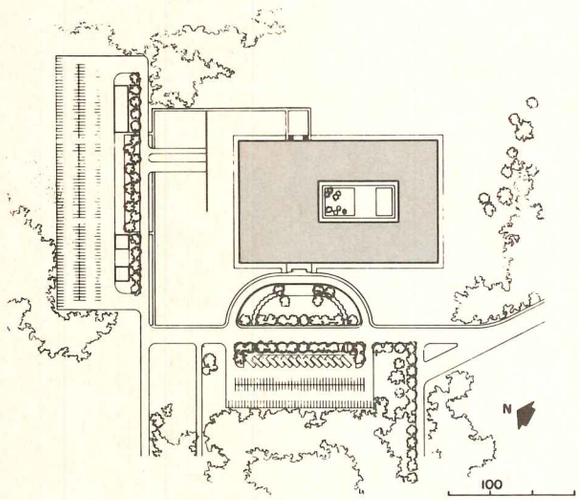
In keeping with the Boots Pure Drug Company's dual plan requirement for readily mutable space allowing maximum flexibility in the layout of individual departments, plus more conventional spaces for relatively static functions, office areas are disposed on two levels around a sunken central courtyard (above). Wholly open, column-free space is concentrated on the upper, first-floor level, while the below-grade main floor, which receives natural light from the interior court, houses fixed facilities and those requiring only limited possibilities for rearrangement.

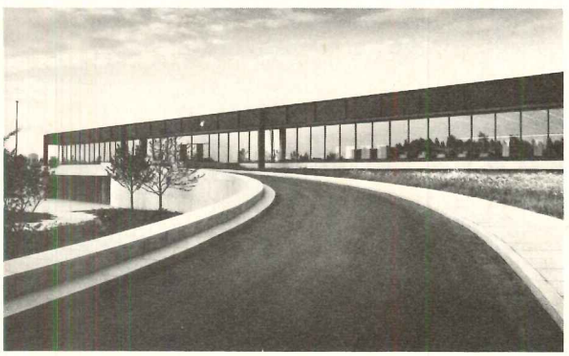


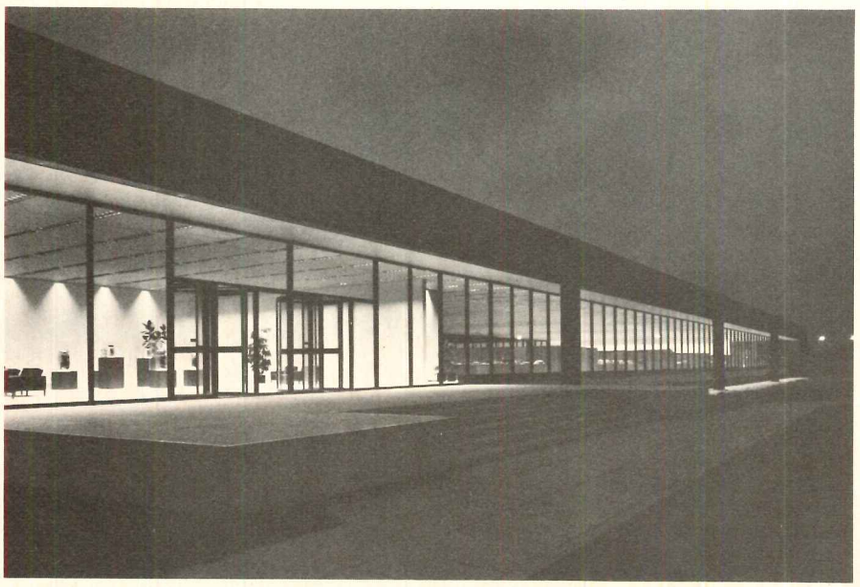


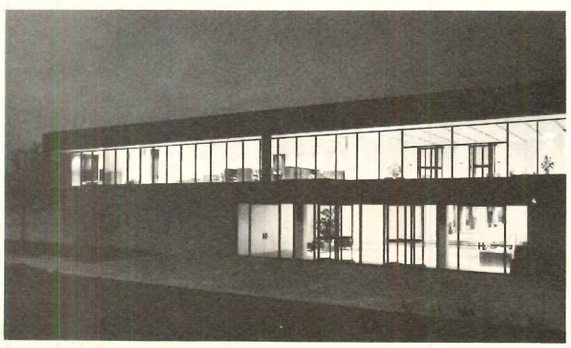


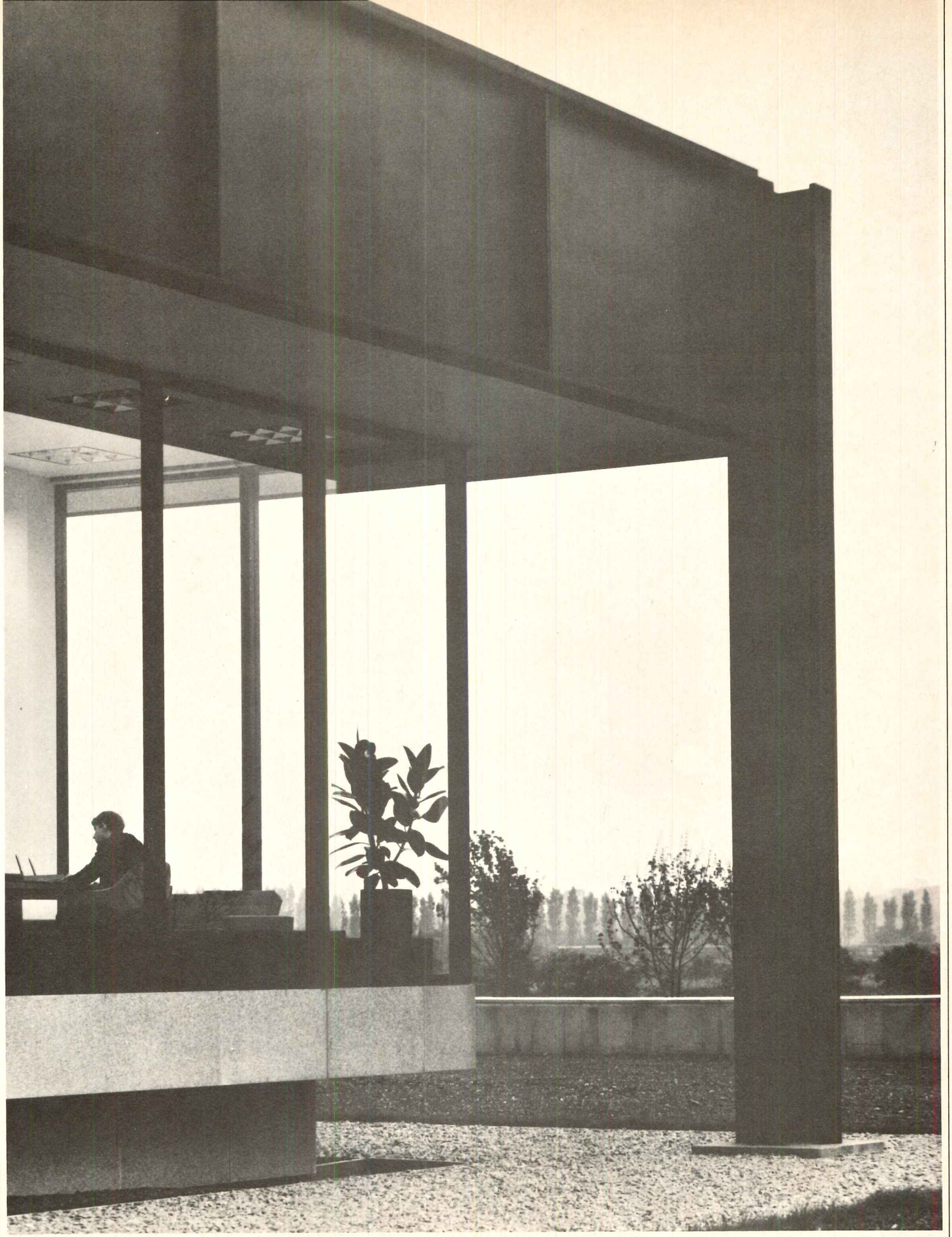


Though two-storied, the building reads from the outside as a low-slung, single-story mass. Soil from excavation was graded up around the concrete-walled main floor so that only the first floor emerges from the ground. Visually scaling down the 480- by 288-foot mass to compatibility with its meadowland setting, this solution also conforms to the practical plan requirements of the building, and the structure devised to meet them. The below-grade main floor, needing less flexibility, is reinforced concrete with relatively small (24-foot) column bays within the perimeter retaining wall, while the upper floor owes its 120,000 square feet of unimpeded space to steel columns and girders with 96-foot clear spans. Only at the main entrance are both floors open to the outside, allowing employes to enter and leave the building at the level where they work. Thus, most vertical traffic circulates on the exterior, and the need for vertical access within the building is kept to a minimum.

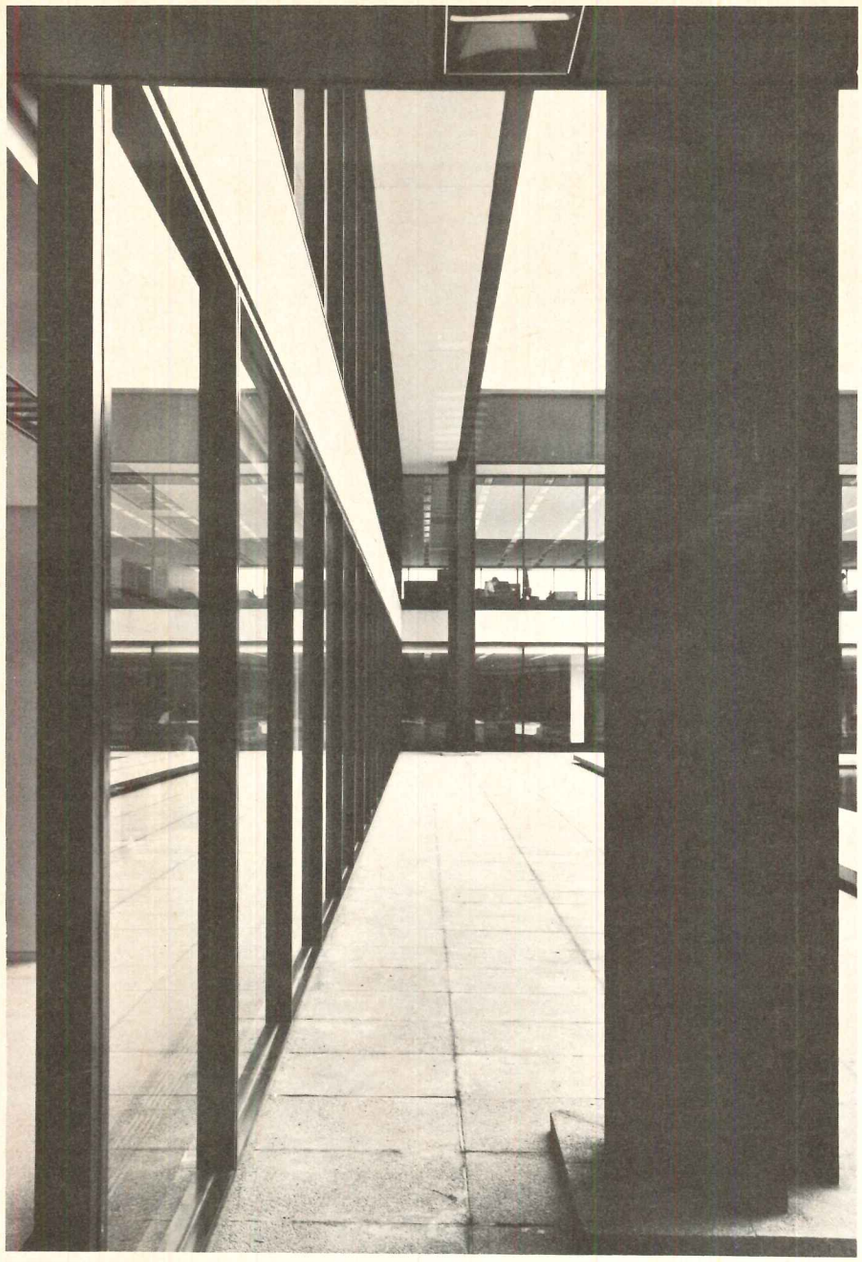


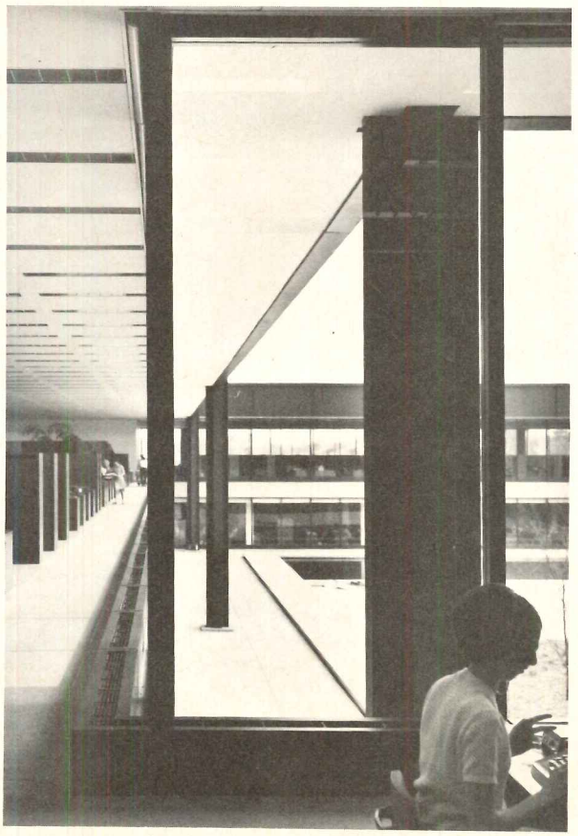


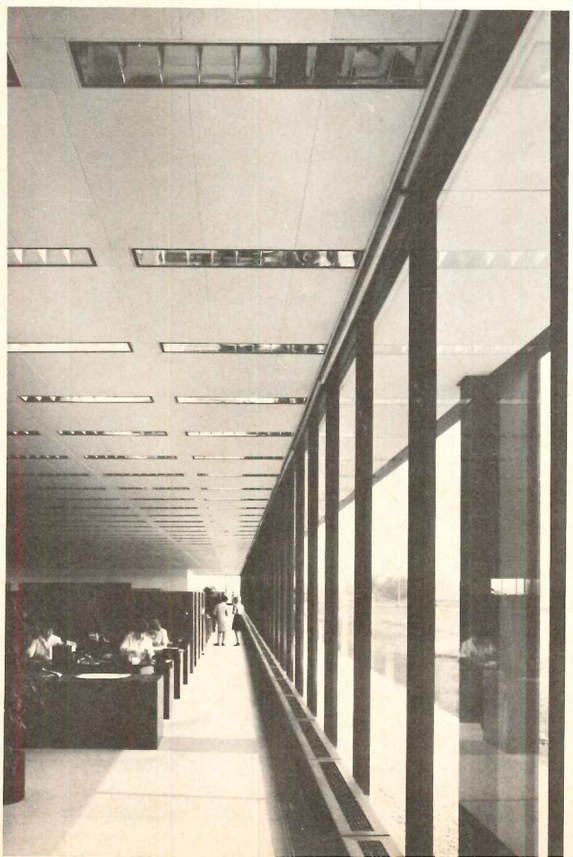




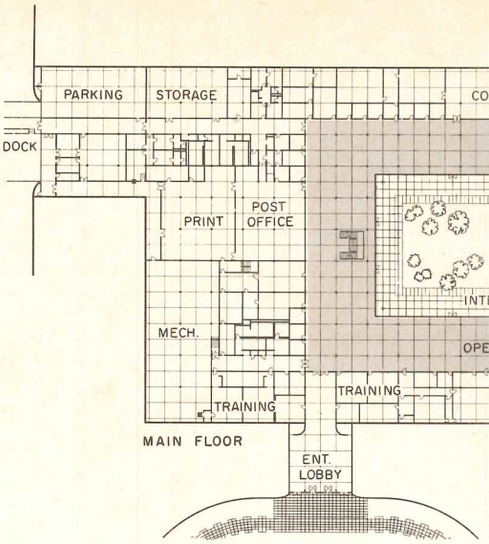
Rising some 2½ feet above grade, the visible upper portion of the main-floor retaining wall forms a recessed base for the open first-floor level, which is enclosed by a crisply detailed bronze-anodized aluminum window wall with spandrels that repeat the pale gray granite used for the entrance steps. The freestanding structural frame is of black-painted steel, with cruciform columns shaped for unambiguous definition at building corners, and proportioned (at 30 inches across) to support visually as well as actually the massive (6-foot, 3-inch) girders required to bridge the 96-foot bays.

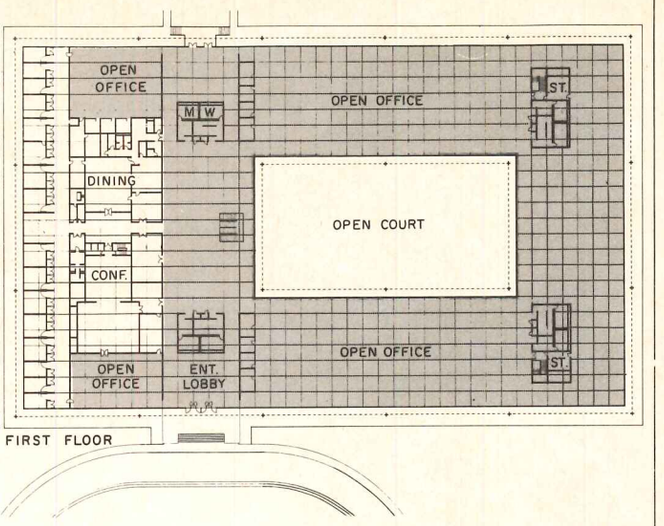




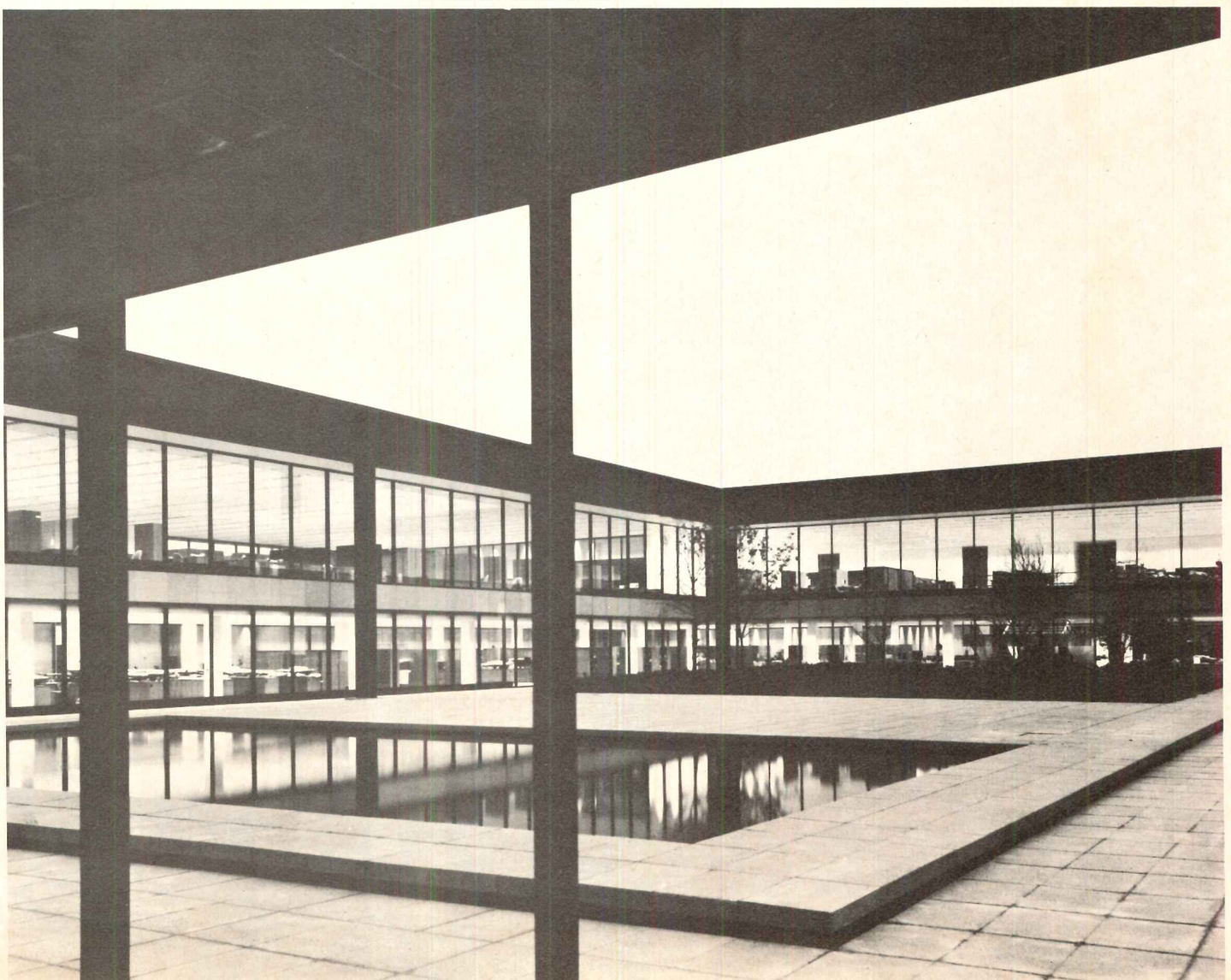


The central courtyard functions on the most prosaic level as a light well—and, because of its 100- by 200-foot expanse, also reinforces the building's pervasively open quality, affording workers stationed in "interior" areas the same sense of space-extended enjoyed by their counterparts with views to the outside landscape (left). While fully reflecting the building's formidable size and almost equally formidable precision of finish, the court is yet an urbanely human space, livened by the play of natural elements —the water of the reflecting pool, the greenery of the planted area—and by the color and movement of people glimpsed behind its transparent enclosure.

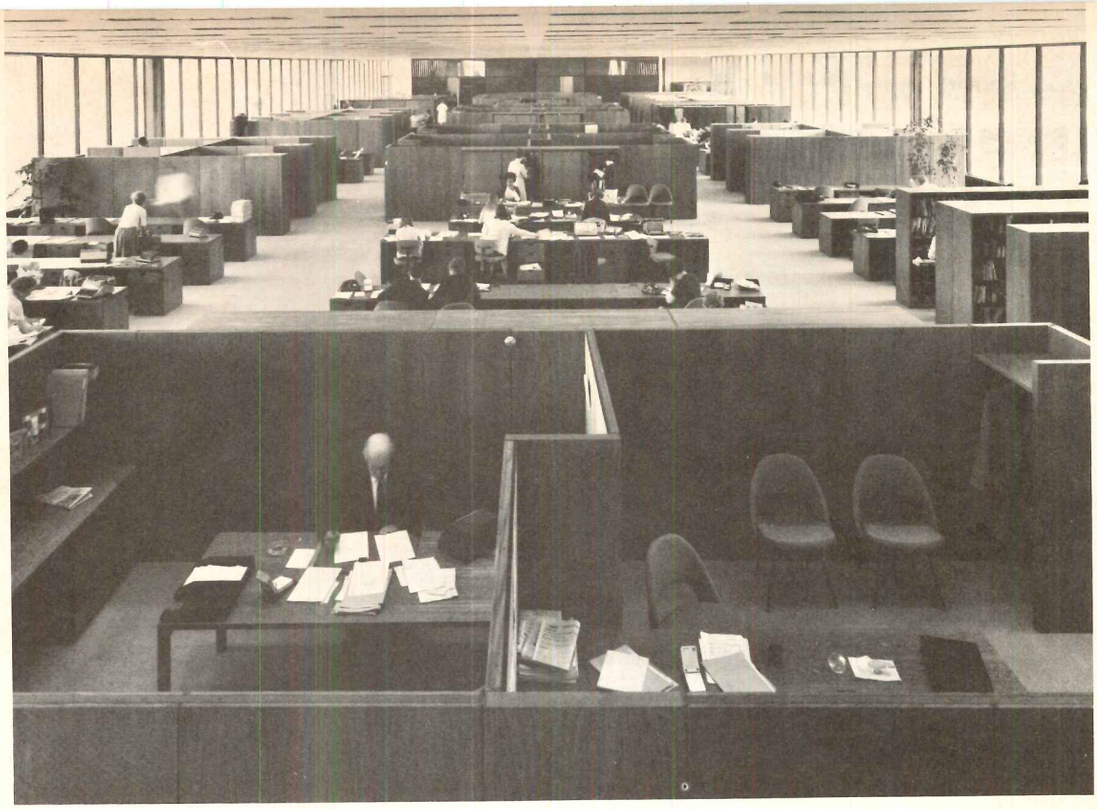




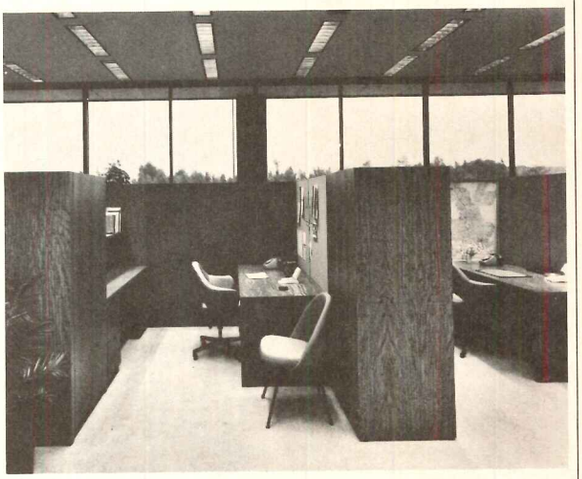
On the column-free first floor, open space (gray tone) is broken only by fixed service elements (stairs, toilets and cloakrooms). Executive offices, the only conventional offices in the building, lie along the north wall, separated from the rest of the floor by such support facilities as private dining and board rooms. Specialized functions (data processing, training, conference, printing, postal, and storage facilities, and mechanical space) that need little flexibility and no outside exposure are ranged around the perimeter of the below-grade main floor; office areas requiring more latitude in layout, as well as light and view, are concentrated in the open space around the central court.



Entrance to main floor lobby (above) introduces the restrained use of warmly neutral colors and textures, and the sense of uncluttered space, that distinguish the building's interiors—all designed by the architects. *Café au lait* carpeting and richly grained natural oak finishes are used throughout, with additional, still subtle, color lent by bronze-tinted-glass office partitions, which admit light while assuring a measure of acoustic privacy.



The 5-foot, 8-inch-high natural oak carrels which replace standard office cubicles in all open areas may be three-sided (right) or four-sided, depending on the occupants' need for privacy and/or wall space. Made up of interchangeable components, carrels, like unpartitioned work stations, may be dismantled and rearranged at will to meet changing departmental needs—but always within a discipline established by the architects in advance and in absentia.



Alternate placement of work stations within the open plan is gently but effectively controlled by the need to conform to the pre-set pattern dictated by an underfloor grid of power and telephone raceways. This feeds required services to desktop outlets through access panels built into pedestal units.

a strong, dynamic office can grow. It is possible to do a series of houses well and gain a reputation quickly. This, in itself, is a very valuable thing. But it should not be the ultimate goal. So, therefore, if you are working in a responsible position for another firm, and suddenly you have a house to do, do it on your kitchen table while continuing to work for your present employer until such time as you have access to a project of slightly greater magnitude.

It is important here, however, to indicate that there is no good time or best time to go into business for yourself. There are only a series of better times. As soon as you have a reasonably big job, a job that is really going to happen, then is a good time to hang out your shingle. One thing here is extremely important. As you leave your present employer, do not leave him in the lurch if you can help it. Because your present employer, if he is like most architects, will not begrudge you the fact that you are going into business and may someday offer potential competition, but rather, may be helpful in sending to you commissions that he considers too small for his office to handle. So good relations with your existing employer may be very valuable. But the most important rule about setting up your own office with that first job is to go after the second job before you finish the first, because it is really not the first job that is the source of problems in most architectural offices. It is the failure to get the second.

Now comes the most important question. Why start your own office? There is no why, really. There is a certain excitement, a certain challenge of having an office of your own. It is the same kind of mysterious euphoria that infects mountain climbers and glider pilots. If you have it, it is almost impossible to describe. And it is certainly impossible to communicate to someone who does not have it.

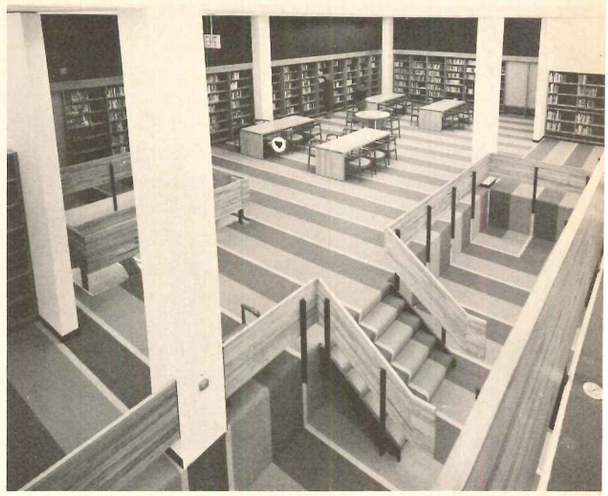
But one aspect of why is important, and that is when you start out in business as an architect, you should have a goal as to what it is you are trying to achieve. One goal of course, is self-expression in terms of design. But architecture today is not limited to design. It is not simply the merging of forms in pleasant proportions producing interior and exterior spaces. And for the architect who seeks to establish his own practice only to interpret his particular stylistic form of architecture, great problems may be in store. For architecture today deals not only with the molding of space and the creating of an environment, but with the problems of complexity, not in the specific sense, but in the

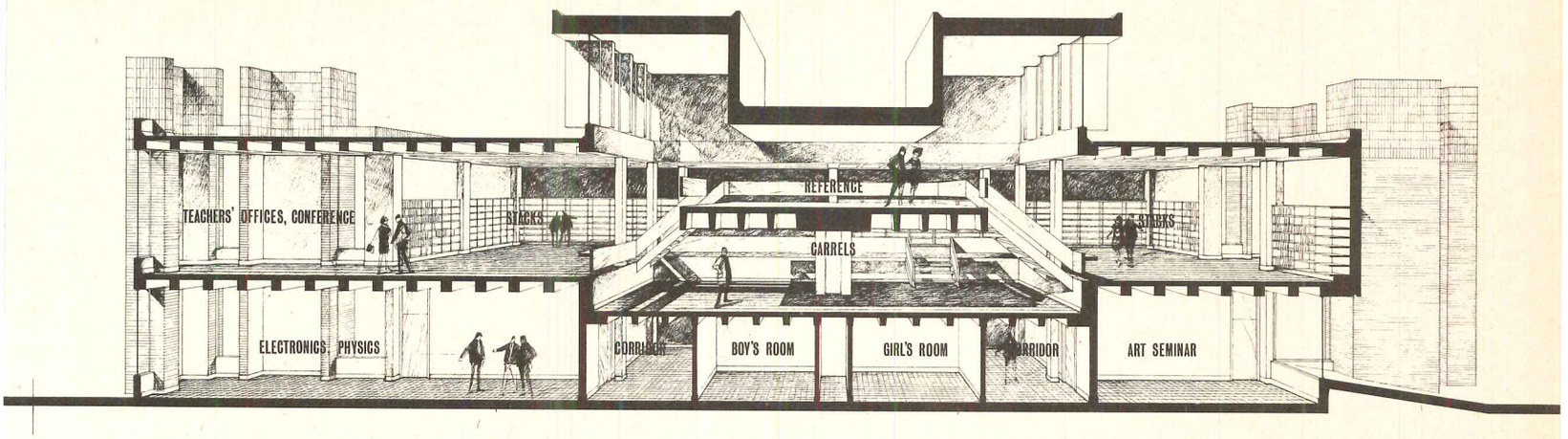
1 **THE WESTON SENIOR HIGH SCHOOL LIBRARY-CLASSROOM** addition in Weston, Massachusetts was designed as a joint venture by Davies, Wolf & Flansburgh Associated Architects. It is a two-story structure designed as a 33,000-volume/250-student library and ten-classroom addition to the existing high school. The library provides carrel/study spaces for 100 students, teachers' offices, an audio-visual area, table seating for 150 students and a centrally-located reference level. To accommodate an increasingly sophisticated science and industrial arts program, new flexible preparation and individual project areas have been included.

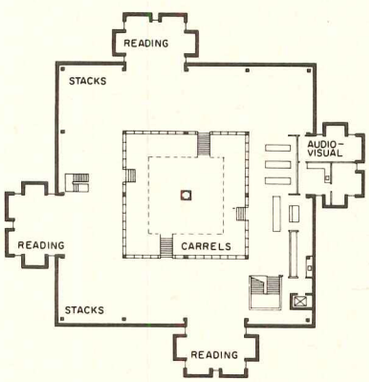
Louis Reens photos

The architectural massing of the new addition balances the main elements of the existing school. The second-floor library has three levels on one large floor. There is a main reading-stack level, a lower carrel level which can be supervised from the main desk of the library, and a reference level above the carrel level that puts all reference volumes within 75 feet of every student in the library. The library expansion to 50,000 volumes will be accomplished within the same physical form by moving the teachers' offices to the lower floor interchangeable classrooms. The new science and shop facilities are located in a one-story wing adjacent to existing comparable facilities. This major addition is also planned to allow for a third-phase classroom expansion.

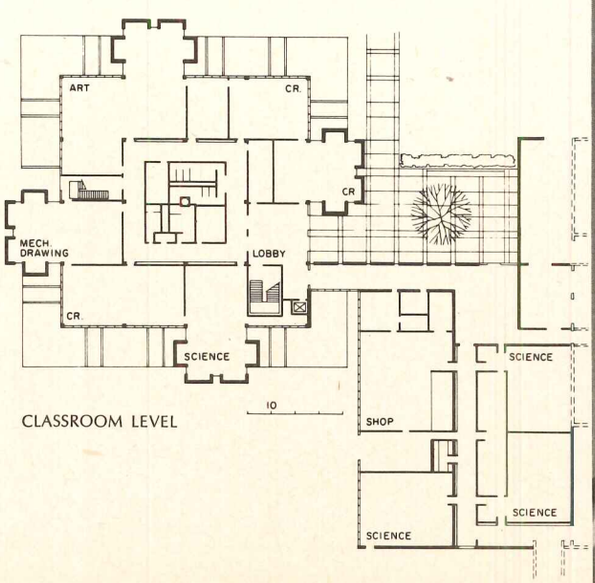
The two-story part of the addition is a reinforced concrete structure, exposed and painted on the interior. The interior lighting and acoustical treatment is integral with the structure. The single-story part of the addition and all skylights are structural steel frame construction. The exterior masonry is a water struck brick which blends with existing brick. The interior masonry walls are unpainted lightweight pumice concrete block. The flooring in the corridors is quarry tile with vinyl asbestos tile in the classrooms. Heating is from the existing hot water system with the addition of a new boiler. The library and teachers' offices are air-conditioned for year-round use. Total cost of the building, excluding site but including built-in equipment, was $931,000. Site cost was approximately $120,000.



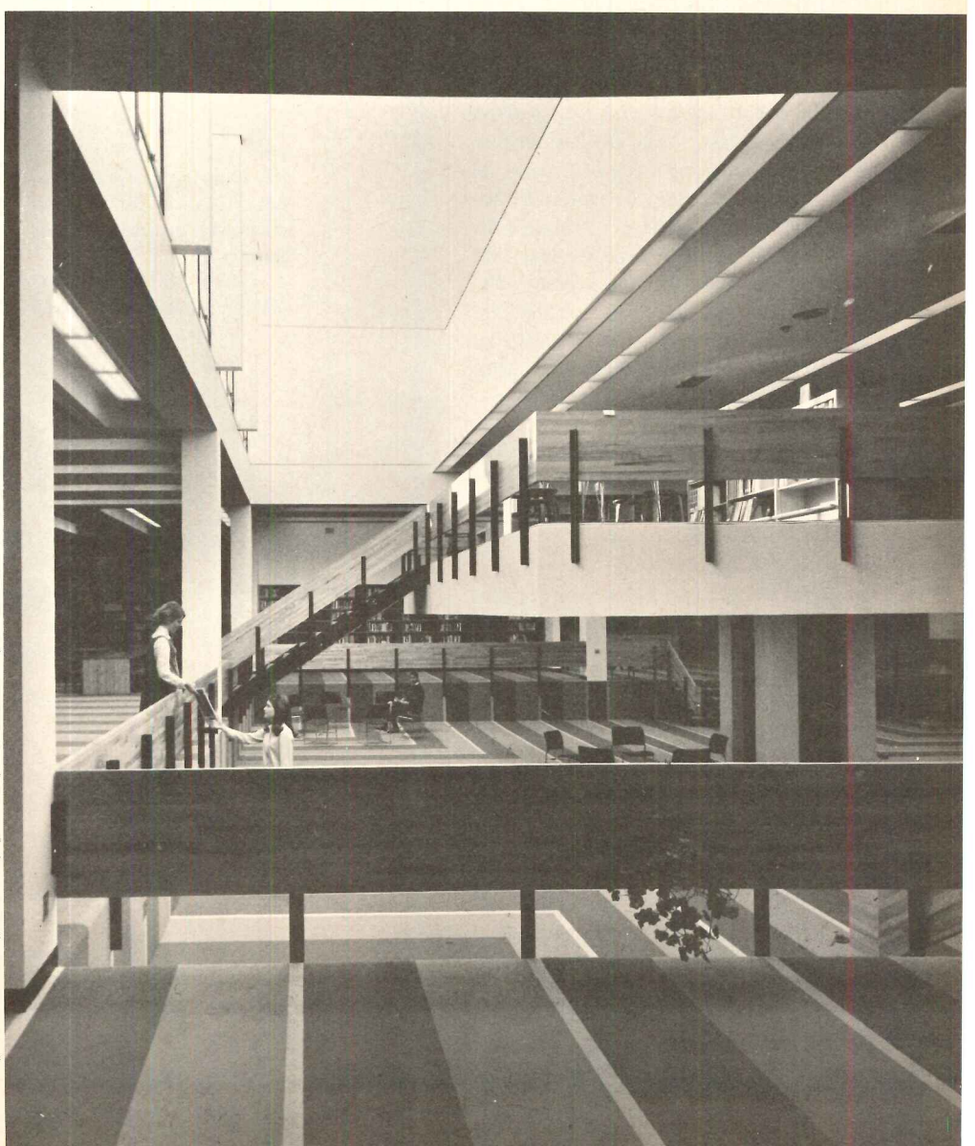




LIBRARY LEVEL



CLASSROOM LEVEL



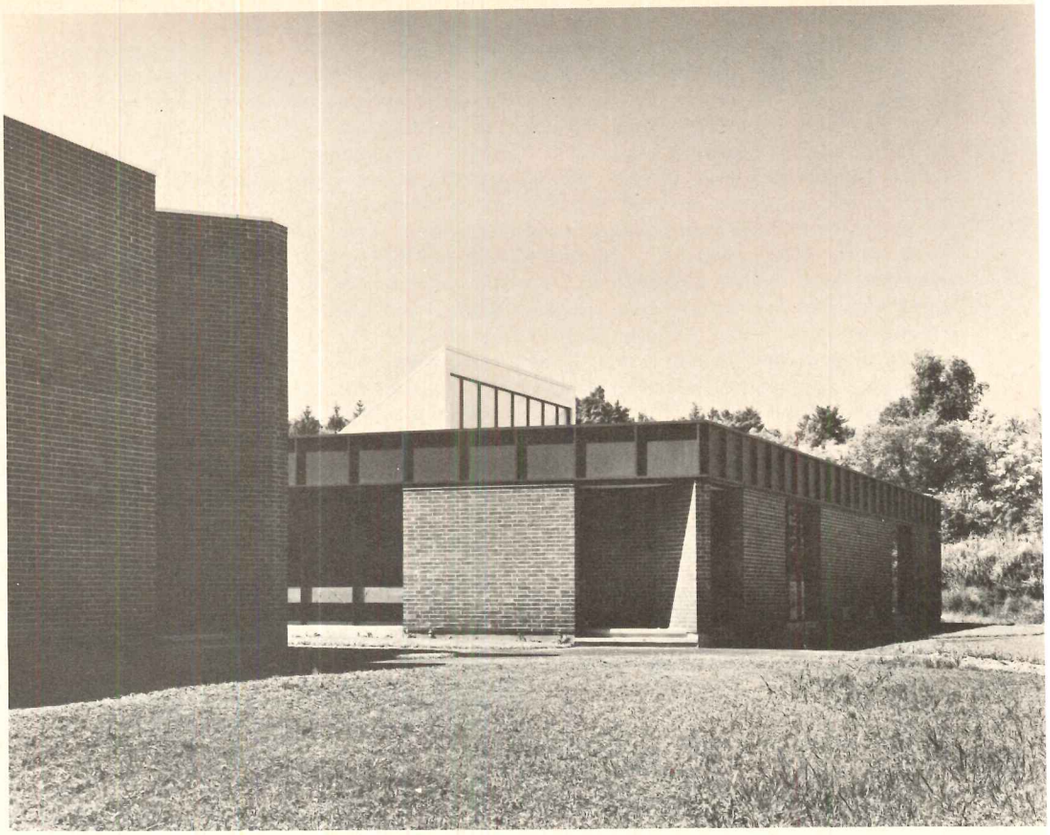
general sense. Architecture today does not acknowledge a simple monument, but rather evaluates a building based on its relationship to its surrounding environment, not in the eclectic compromise of emulating surrounding styles, but rather in the human sense, in the way it embraces the people that create the environment that it shares. In this regard, architecture has passed from visual problem solving to the world of social and economic problem solving, a world that most architects must approach with some care.

In many of our schools today, there is a great concern about the relevancy of the architecture that we have been practicing for the past twenty or twenty-five years. This is a legitimate concern, for in far too many cases we have been awarding prizes for pleasant visual non-solution of problems.

If we bear in mind the role of the program in today's architecture, and the role of the need to incorporate many complex ideas, ideas which are often pulling in contradictory directions, then we can see how an architectural office can be established. For the practice of architecture today is as much decision-making and problem-solving as it is the abstract world of esthetics. But to return to the central question—How do you find the client who will invite you to function on this level? How do you obtain a project other than a house that is given to you by a friend? The field of educational buildings is a good place to start. This is an area of continually recurring needs, with great attraction for the architect whose professional skill is his main attribute, and whose contacts with the business world are somewhat limited. Often a group of young architects, combined in joint venture, have a good chance of getting that first school.

Being interviewed for a school immediately forces the architect to contemplate the basic philosophy of the contemporary practice of architecture. He is being interviewed for a specific school and he is being asked to solve a specific problem. There has always been a concern on the part of the A.I.A. that an architect should not work for nothing—that is do free drawing or sketches—in order to obtain a job. We are not suggesting for a moment that the architect offer free advice. However, there is a very basic need for the architect to put the level of advice he will offer clearly in perspective. That means that when you are being interviewed for a school, it is important to know what the town's educational problem is. Is it the replacement of an existing elementary school too venerable to be renovated?

Louis Keens

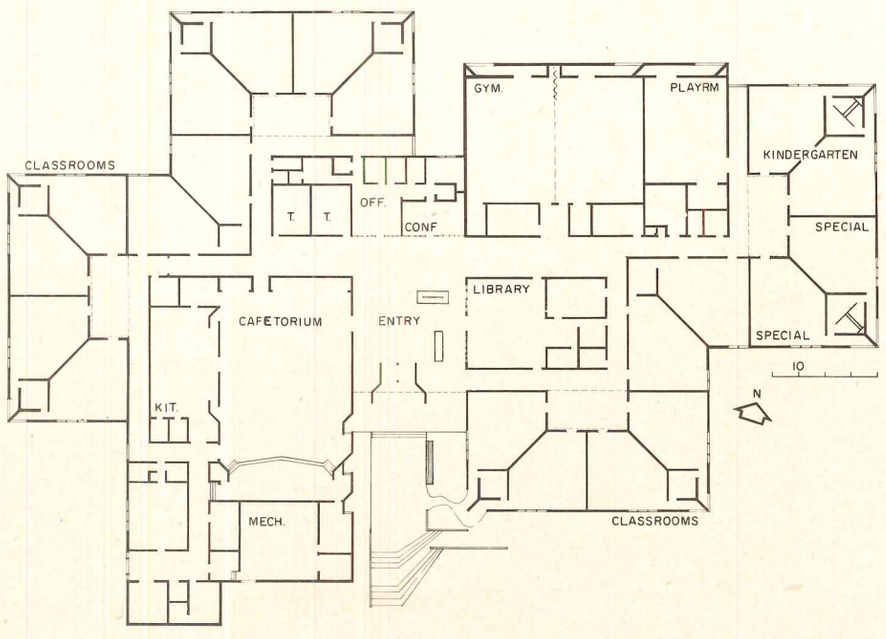


2

THE ACTON ELEMENTARY SCHOOL in Acton, Massachusetts is a one-story structure composed of four basic classroom clusters each consisting of four classroom units of unusual size and shape. These clusters interconnect by means of paired classroom units. Designed to provide better teaching spaces, the cluster plan provides 45 linear feet of wall space per classroom instead of the customary 25.

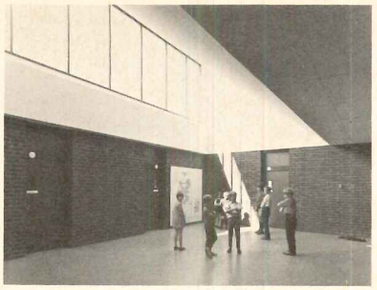
Each of the four main clusters opens upon its own small foyer, which Flansburgh calls an "identity space." These spaces are lit by skylights. Paired 30-student classrooms can be expanded into a single 75-student area. The plan permits teachers to share office, storage and teaching facilities, increasing their opportunities to communicate with one another and plan in advance.

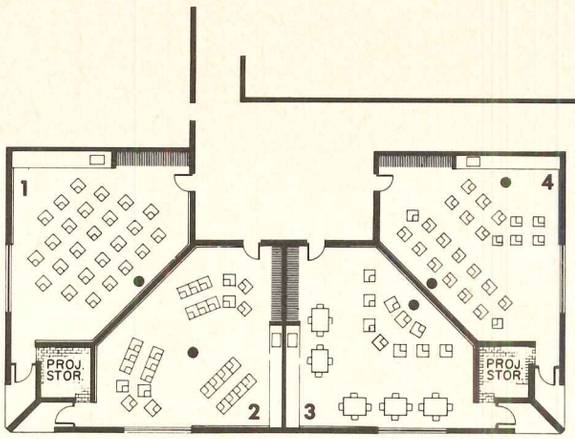
The building accommodates 600 students from kindergarten through the sixth grade and provides, in addition to its 20 classrooms, a library, cafeteria-auditorium and gym. The structural system proved extremely economical. The exterior steel columns are spaced 16 feet on center in a repetitive system that allowed all bar joists to be the same size. Exterior walls are of brick with fascias of aluminum and asbestos panels. Total cost of this 57,000 gross square foot building, including built-in-equipment but excluding furniture and site cost, was $1,012,350.



The classroom will function effectively for total class instruction, small group instruction and work on student projects. Storage adjacent to the classrooms will protect school equipment and student projects.

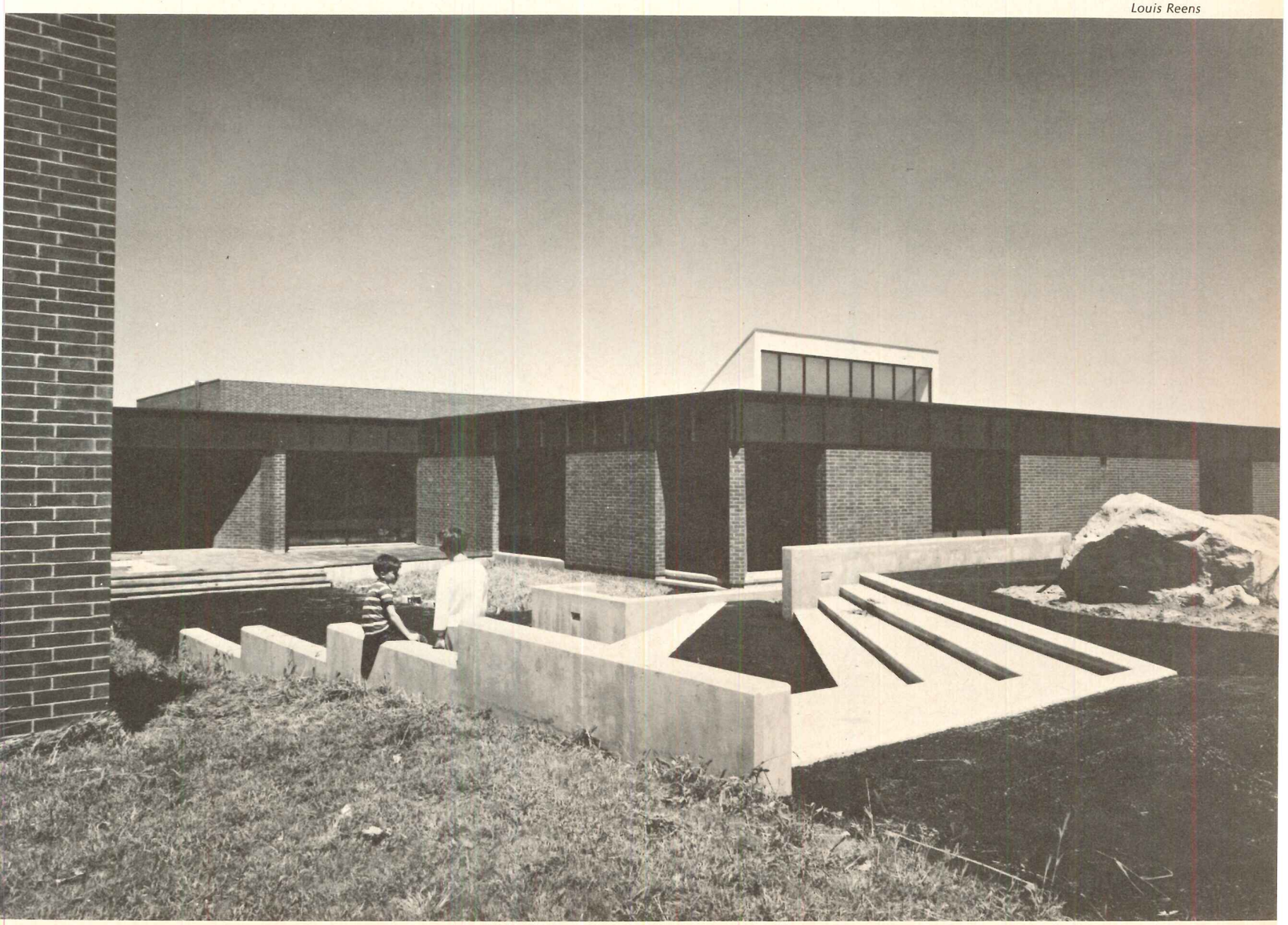
This concept minimizes interior circulation space and allows easy access to outside for play and emergencies and close proximity to the cafeteria-auditorium, library, and gymnasium.





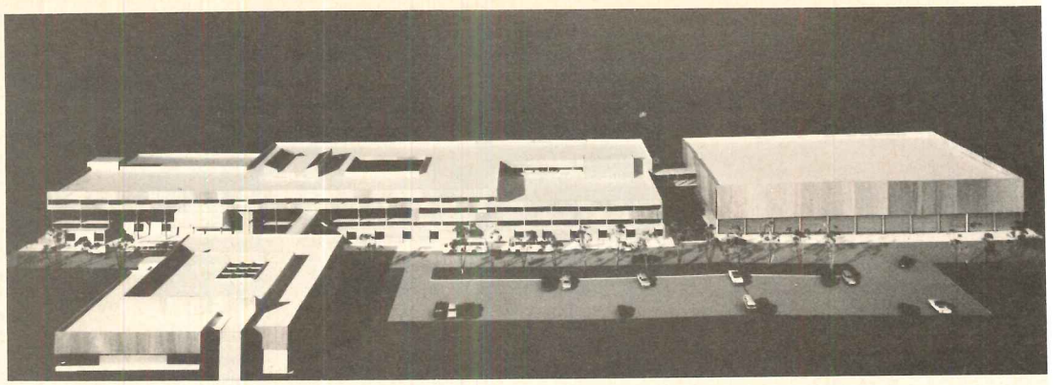
TYPICAL CLASSROOM CLUSTER

Louis Reens



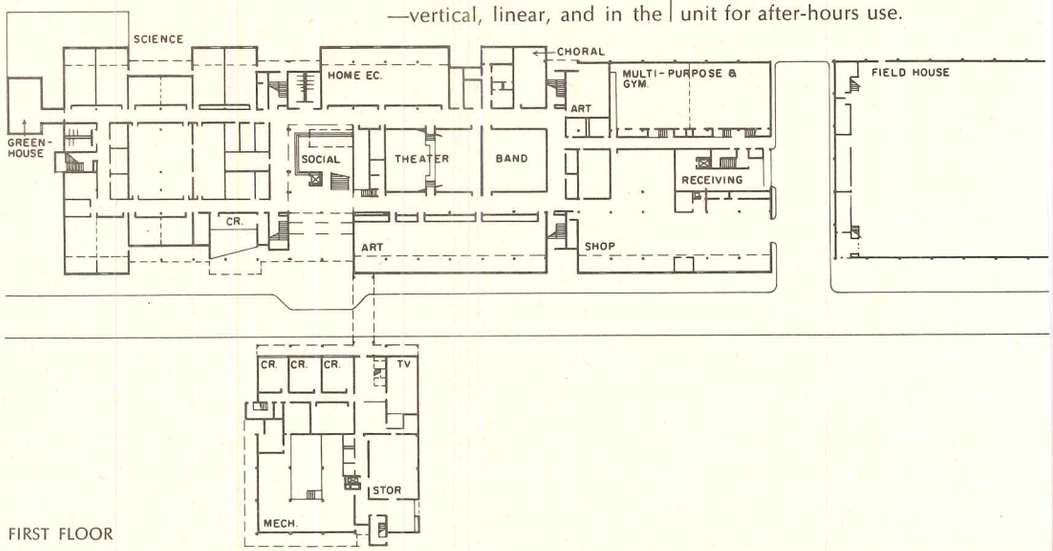
Is it the need to build a new elementary school for a growing population? Is it the need to build a secondary school? What is the educational philosophy of the community? It is important for the architect to come to his interview with the ability to deal with such specific questions. For in selecting an architect, although the community will to some extent weigh your previous experience, it is in essence saying "How would you handle our problem?" And it is concerning *their* problem that they wish their answers. You may receive half an hour or an hour's exposure to the committee. In that period of time, it is important that you communicate how you would approach the solution of *their* problem. The needs of the school committee are frequently quite specific, but also they are frequently quite diffuse: It is important to know which in each case. The work that you show should be directed toward their particular problem with enough other examples to give some depth to your presentation. It is always helpful to leave a brochure of your work with the committee to give them a longer time to absorb it. Most important, bear in mind the needs of the committeeman. He is not interested in carrying outsized working drawings or 2 x 2 inch slides. What he is interested in seeing is something he can look at in the light of day and can easily carry under his arm.

It is also important to consider "what the client should do until the architect comes." Once you have gotten the job, it is very important that your client participate in the process and that your method of operation be clear to him. In other words, what you are doing should be stated to him at the outset. Organize your presentations to him so he sees what his role is. Your client, by and large, will be interested in exactly what it is you are doing. The world of mystical architecture is no longer with us. Most clients are relatively educated and will understand when you talk about esthetics, and you in turn must understand what they are talking about when they talk about economics. Today the world of professional responsibility is important. This means that when a client says he wishes to spend $750,000, he will not overwhelm you with praise if the project comes in at $1,200,000. It has nothing to do with whether he has the money or not, but rather with how much he proposes to spend on the particular project. This means that there is a requirement, a role which you as architect must play, in which at particular stages of the game no matter how painful it is you must say to your client, "This is how much it is going to cost, and it is going

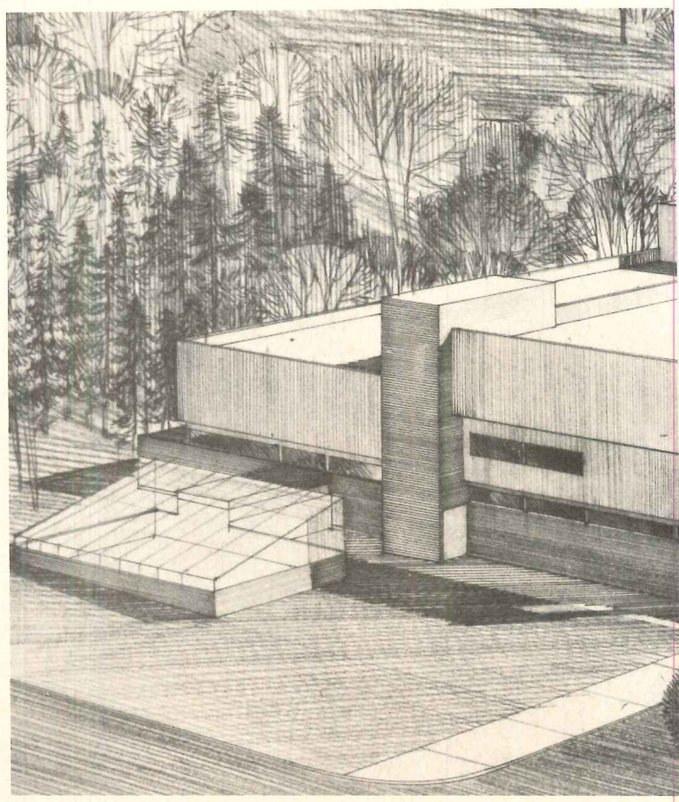


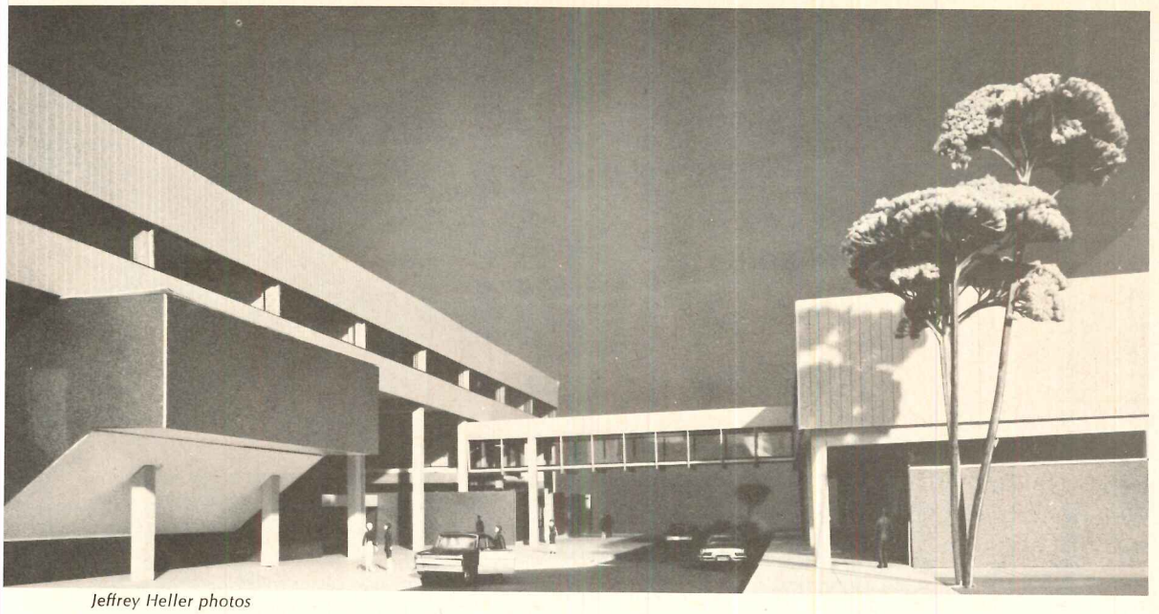
3

THE WILTON SENIOR HIGH SCHOOL IN WILTON, CONNECTICUT is a joint venture of Earl R. Flansburgh and Associates and Schofield and Colgan in Nyack, New York. The basic element of the plan is a classroom unit that can be subdivided into groups of 7, 15, 25, 30, 40, 50 and 80 students. It has been designed for three levels of expansion —vertical, linear, and in the form of out-buildings. Those studies requiring high ceilings are located on the first floor. Most of the interchangeable teaching units shown in plan (opposite page, right) are located on the third level. The resource center, connected by bridge to the main element, has been designed as a separate unit for after-hours use.

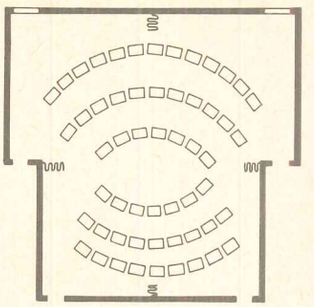


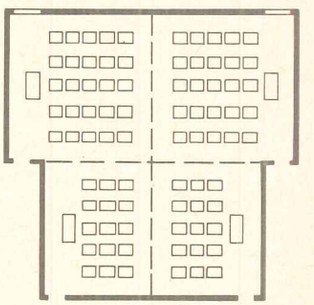
FIRST FLOOR



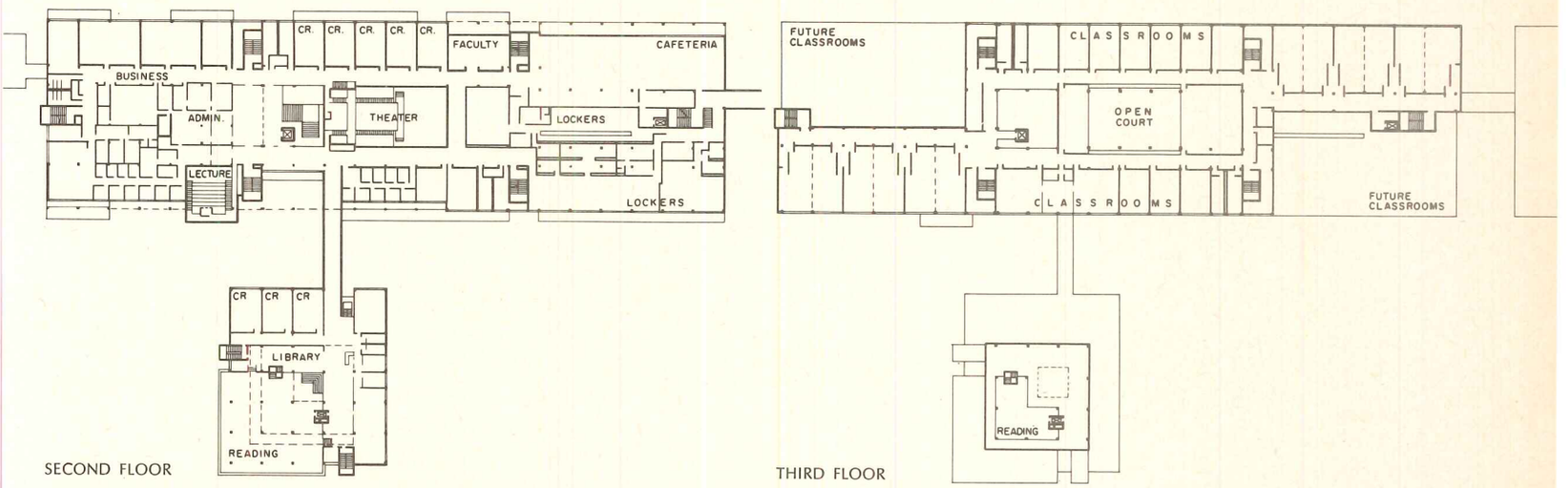


Jeffrey Heller photos



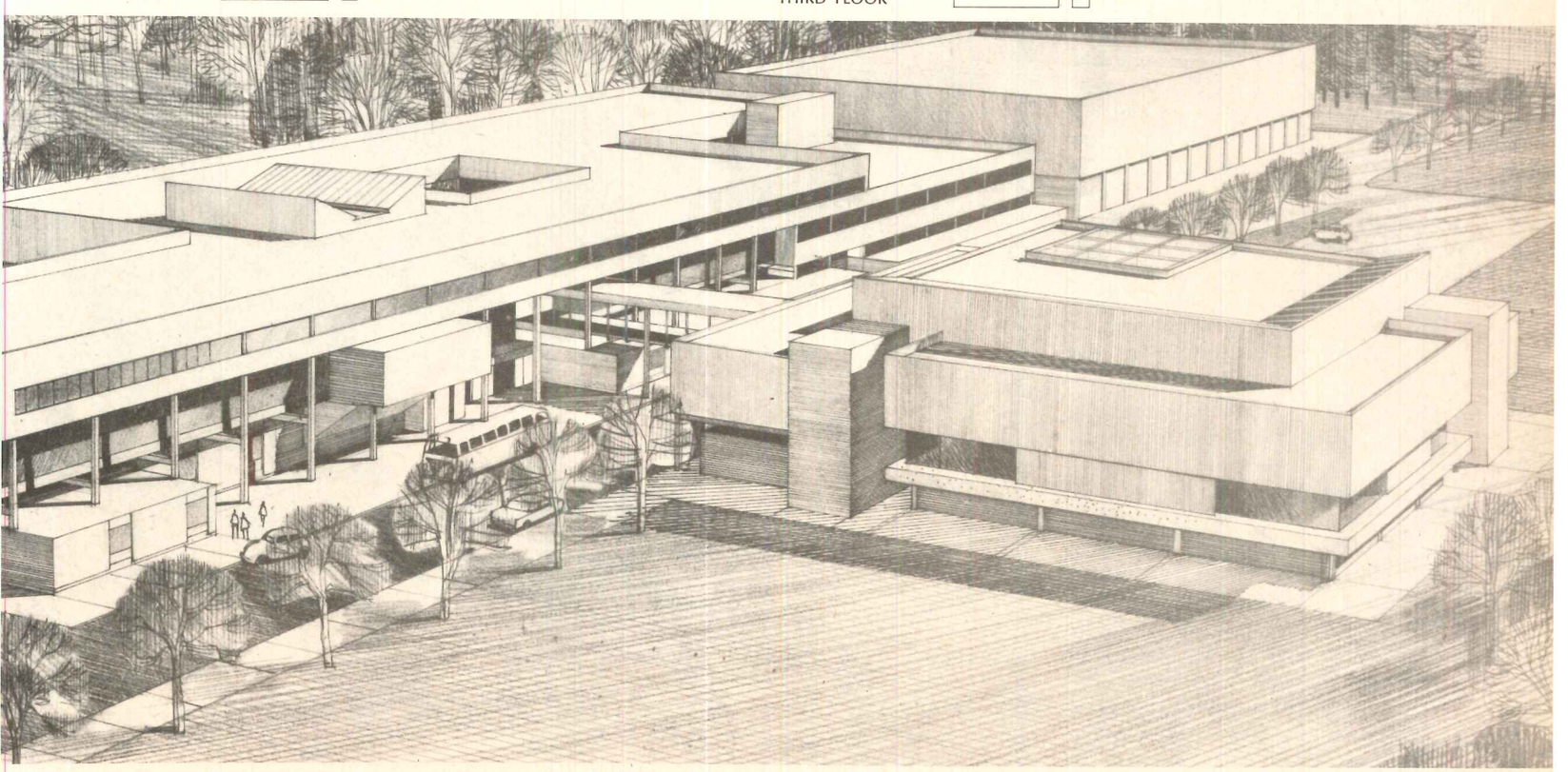


TYPICAL CLASSROOM



SECOND FLOOR

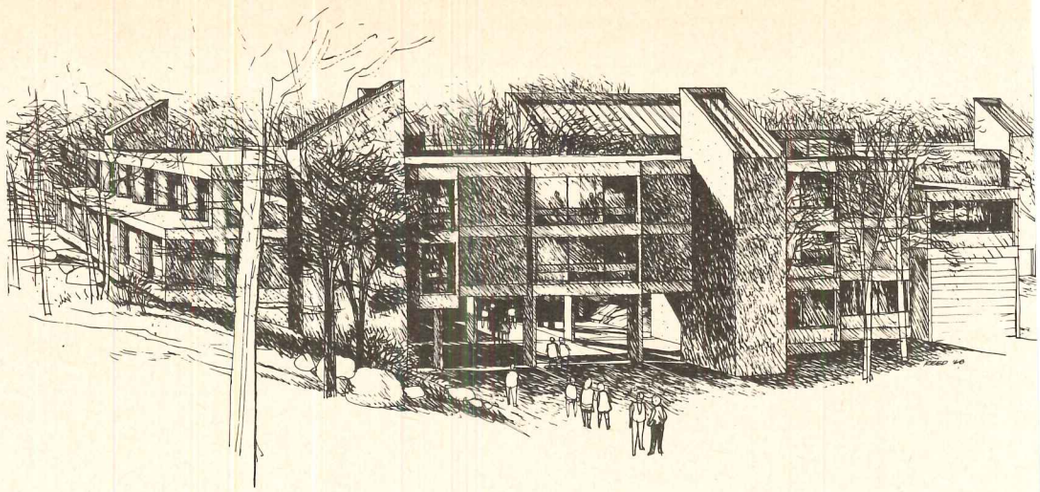
THIRD FLOOR



to cost you 'x' number of dollars more than you anticipated." You must be prepared for the client to say, "Well, that's too much" and then redesign it so it can be accommodated within the budget, or to say to the client, "It is not possible to build what you want for the amount of money that you wish to spend, so therefore, we propose that you either cut your requirements or increase the budget." Now, this may sound like a harsh or difficult thing to say. It is, for the first two or three times. After that time, it becomes part of your professional stance. And it is important. Most clients are reasonable, and they will accept the fact that they cannot buy the moon, provided that they are told about it at a time that is not inconvenient for them to learn the information.

The next step has to do with design. There is a real need, in designing public buildings today, to deal with what you might call economy of form. That means that it is not possible in most public projects to have a vast, unlimited amount of money or a vast, unlimited amount of architectural expression. Therefore, you must select, with considerable care, those areas where you wish to invest the client's money in special effects, because there are only a few places where you can do this. The design should enhance these particular places of accent. The industrialized building becomes important and details become important, for the simplest project frequently is disastrously dealt with when the details are done in a complex fashion inappropriate to the over-all design.

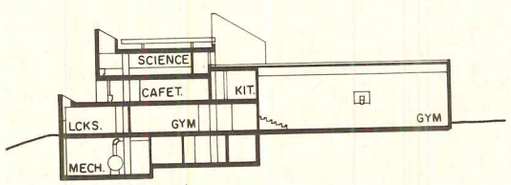
When the building is finally done, if you have conducted realistic estimates at various stages, you will discover when you bid the project and it comes in at the price that it is supposed to, that suddenly your client is much more impressed with you than you ever thought would be possible. This makes relations in the future much more pleasant. If you do nothing else in your first buildings, work very hard towards the objective of having the cost of the building and its budget bear some relationship to each other. It is possible to build a firm on the strong base of professional responsibility. Building on a prima donna, esthetic approach is no longer really a relevant approach. Most clients, as I mentioned before, are sophisticated. Most clients are interested in knowing what you are doing and most clients are particularly valuable during the program phase if you spend enough time trying to get to know what the program is. The client will appreciate the time spent. Further, he will allow you to do what he has hired you to do if you spend time trying to know what it is he wants you to do in



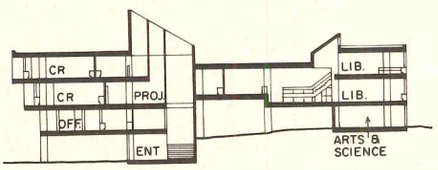
4 **THE PARK SCHOOL IN BROOKLINE,** Massachusetts, has been designed as a 450-student private day school. Each grade level will be restricted to 15 students or less, although paired classrooms will become single larger spaces for the instruction of combined groups.

The site for this semi-urban school consists of a wooded hilltop with rock outcroppings overlooking a level meadow to be used for parking and playing fields. The school was designed to be constructed on the hilltop over and among the rock outcroppings. The solution places elements between the rocks, or raises them on pilotis. Building elements are arranged along circulation spines which expand into skylit stairwells and project areas. The plan is library-centered. Each division of grade levels has its own identity, teachers' offices, project spaces and outside play areas. The theater, gymnasium and library have been designed for evening as well as daytime use.

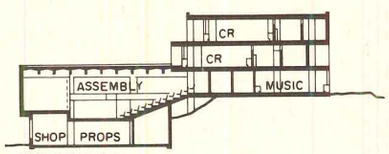
To be of concrete frame construction with cavity walls, the school is expected to cost $2,700,000.



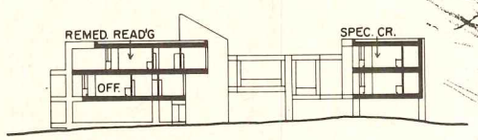
SECTION A-A



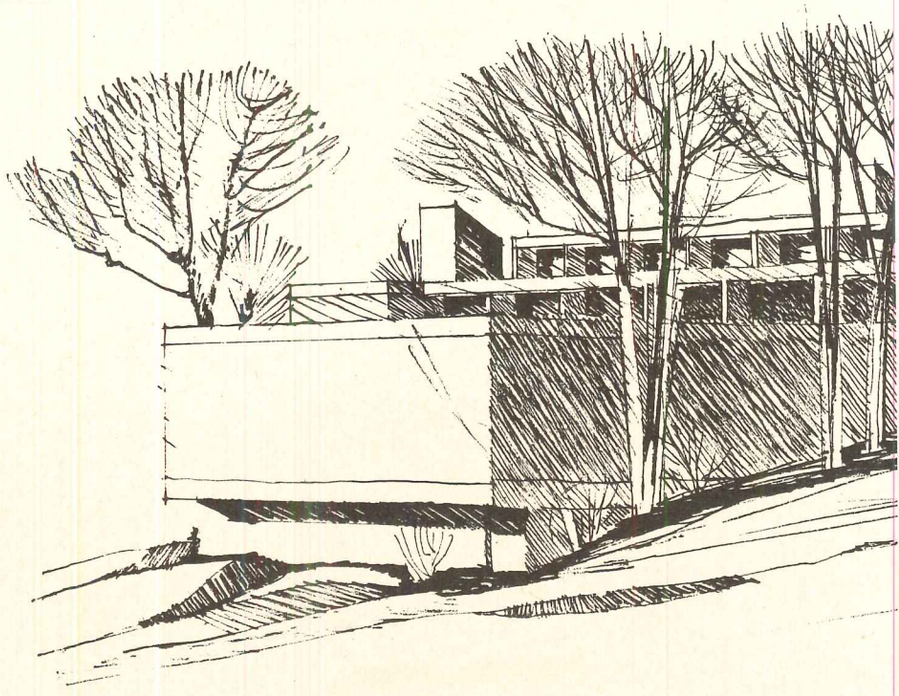
SECTION C-C

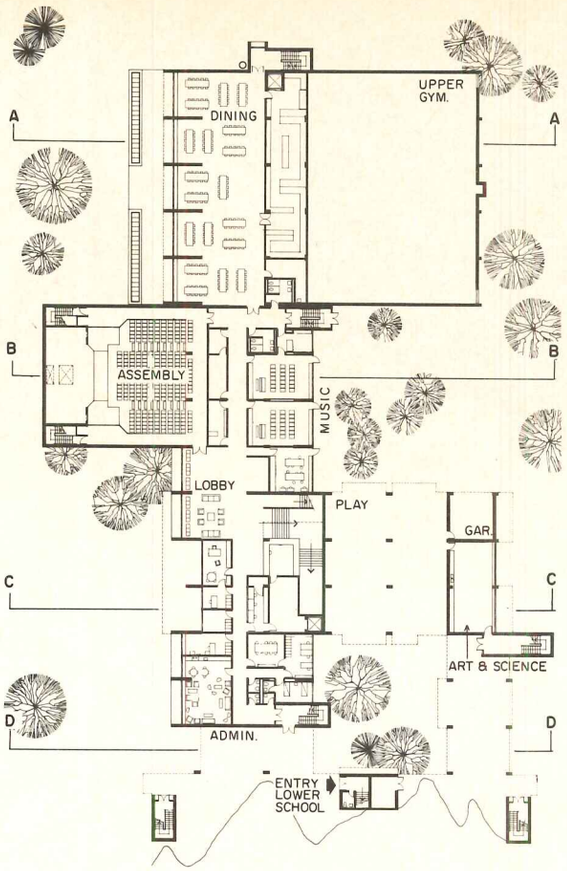


SECTION B-B

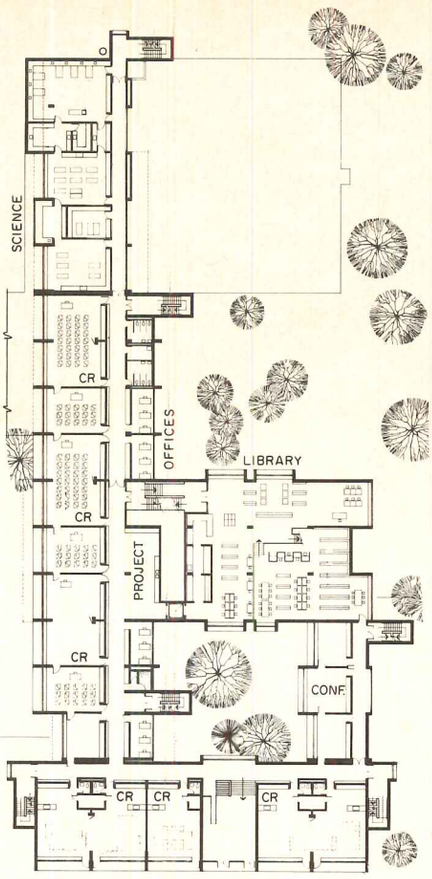


SECTION D-D

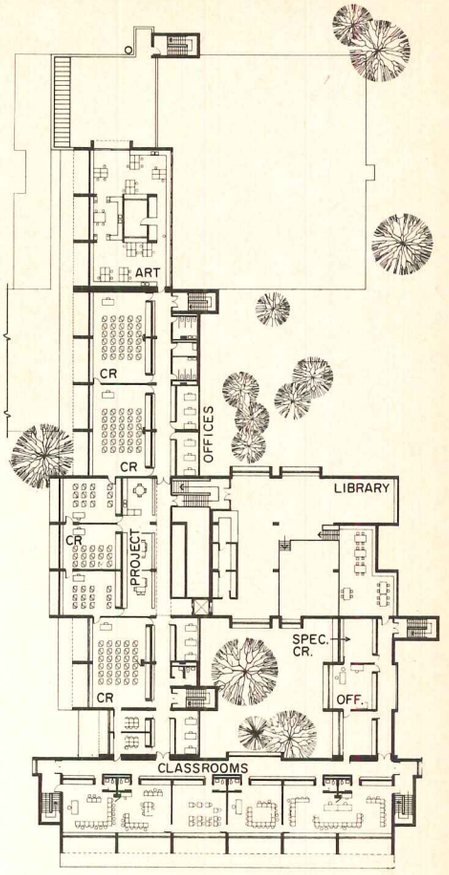




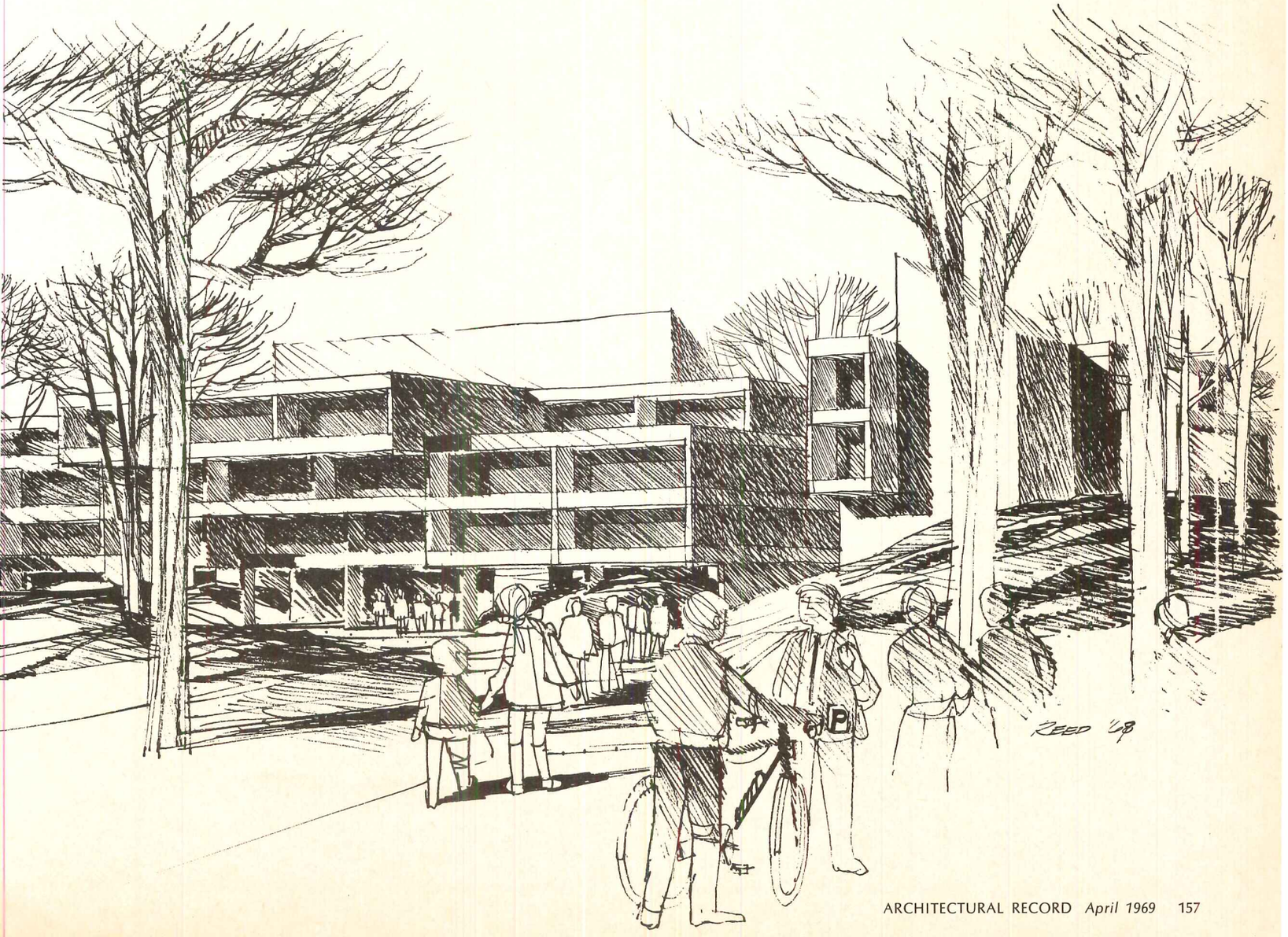
LOWER FLOOR



MIDDLE FLOOR



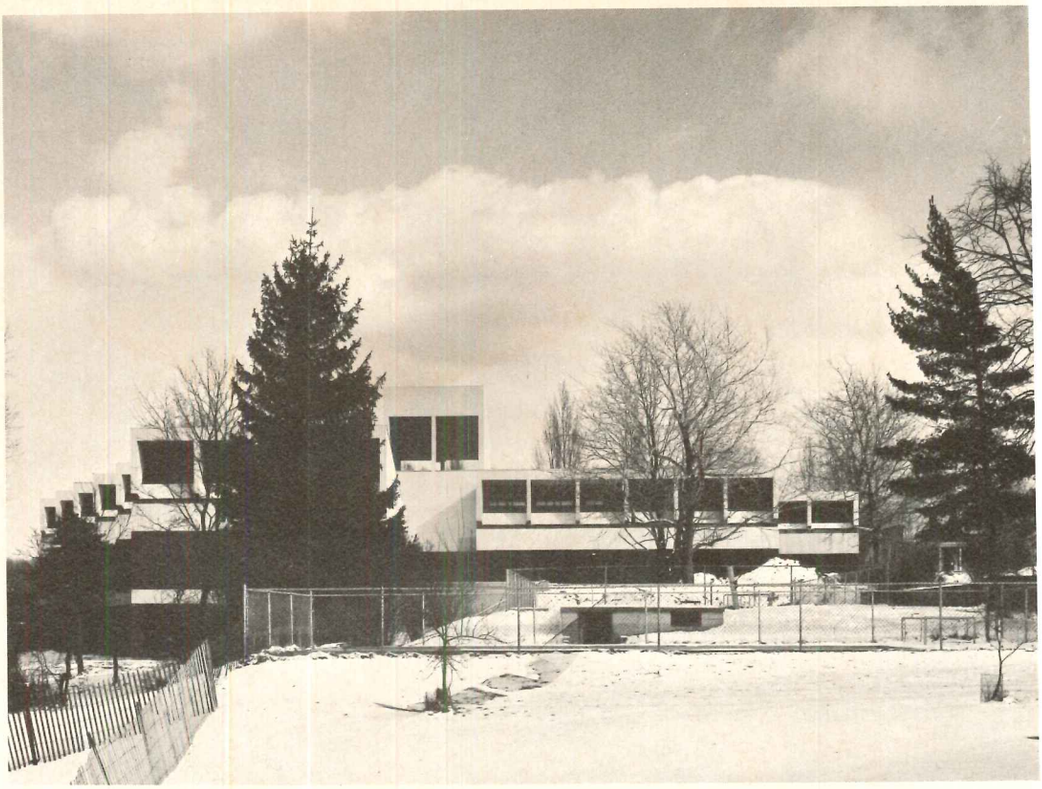
UPPER FLOOR



a rather precise form. Knowledge of the program is really a double-edged sword. If you have it, you can use it to your own advantage in terms of generating the kinds of architecture you would like to generate. But secondly, you understand what it is you are being asked to accomplish.

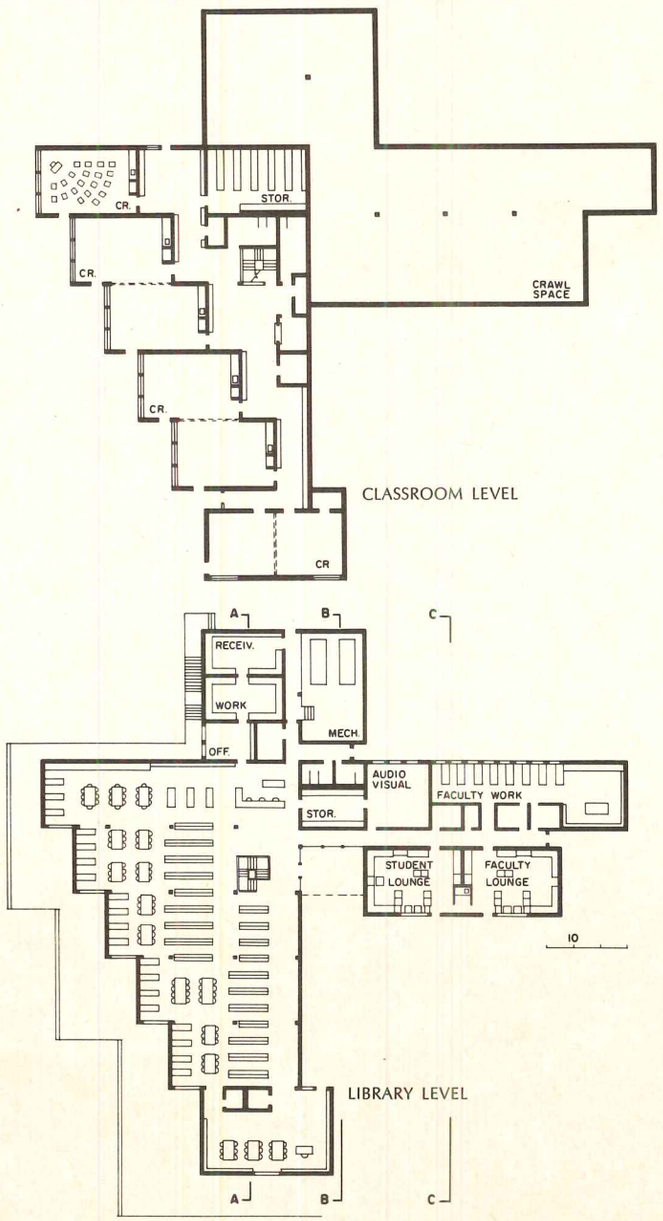
I use the words professional responsibility. This is important because we are no longer in the world of clients who wish us to reproduce Greek temples or Gothic cathedrals. Contemporary architecture, which has been very readily accepted, is indeed the vocabulary of the land. Therefore, the excuse that the "client wouldn't allow me to do it" is by and large not as valid an excuse today as it once was. It also may mean that the architect didn't try hard enough. It also may mean the architect did not try to explain to the client what he was trying to do or that he was not willing to deal with the problem intensively enough to convince the client.

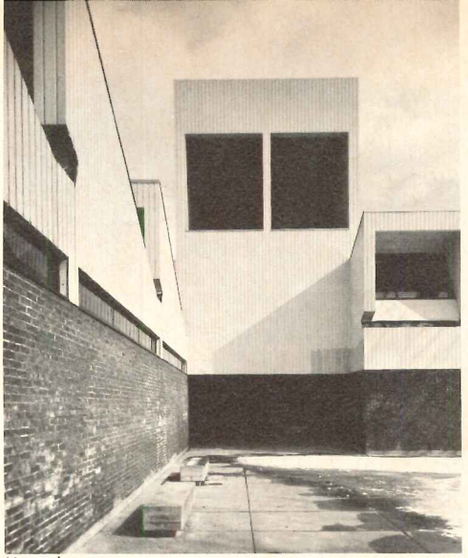
In architecture there is a continual question about what to do about failure—a project that does not advance, a client who does not pay, etc. There is very little you can do about a project that does not advance. For a client who does not pay, the solution to the problem is to sign a contract for every project, no matter how large or small. If the client is unwilling to accept a contract the chances are also good that he may be unwilling to pay when a bill is presented. But there is also a problem about what to do about success, because you may very well discover that not only have you done all the things that you set out to do in your initial buildings, but that you have done them well enough that you are suddenly faced with the problem of several conditions. Success has ruined the architecture of more than one office. It is important to control the growth as much as it is important to control the quality of your architecture. A number of years ago, when exposed to a brief encounter with military science, I read a military book that indicated that one man can effectively control seven other people. I don't know what the current thinking in management is, but I think this system may very well be a good guide—that as your office grows it is also very important to make sure that its ability to manage itself grows with it. Whether your office structure is a partnership, a collaborative, or a sole proprietorship, as it grows it will still need people in responsible positions. The choice of these is as critical to your success as your ability to solve that first problem. Suddenly you have grown. Suddenly you are at a point where you are faced with the delirious possibility of having more work than you can possibly



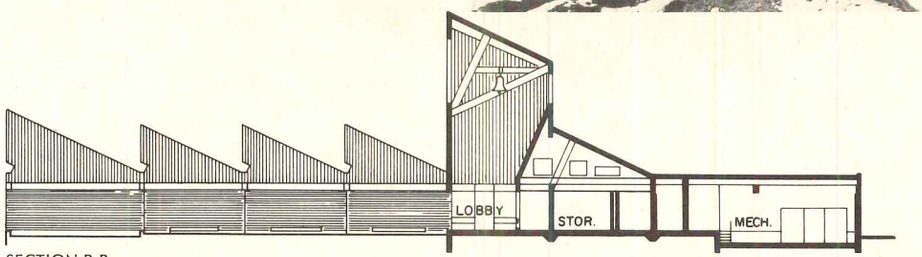
5 **A LIBRARY CLASSROOM BUILDING FOR THE PARK SCHOOL OF BUFFALO** is the first stage of the school's new master plan. The existing campus buildings are small and constructed either of wood or brick. The library-resource center serves students from ages 3 to 18 with space for 40,000 volumes and complete audio-visual resources. In addition are seven classrooms, faculty preparation areas and faculty and student lounges.

The library was designed to allow any child access to all the stacks. The library roof is composed of repetitive skylight bays that reflect the small scale of the campus. An entry forecourt is dominated by a bell tower (opposite page top) and two large oaks.

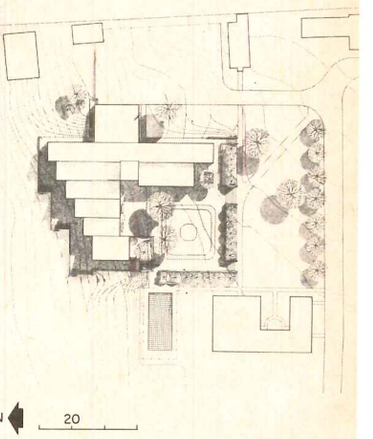




Hare photos



SECTION B-B



do. This is a very serious problem for it is very difficult to make a reputation but it is possible to undo a good portion of it with a single bad building. Therefore, it may very well be better to do one less project and do all the ones that you are doing well, than to take on more work than it is possible for you to handle.

Oh yes, one final thought. You may have worked for an architectural firm on an eight hour a day basis. When you have a firm of your own, the eight hour day will look as obsolete as a steam motor car. Because having a firm of your own is a 12, 14 sometimes 16 hour a day mistress. Extremely demanding, always requiring your attention. And if you are unwilling to work long hours to establish your own office, chances are very good that you won't succeed.

WESTON SENIOR HIGH SCHOOL ADDITION, Weston, Massachusetts. Architects: *Davies, Wolf & Flansburgh* associated architects; structural engineers: *Souza and True;* mechanical and electrical engineers: *Francis Associates;* landscape architects: *Mason & Frey;* acoustical consultants: *Bolt, Beranek & Newman;* general contractor: *Sewell and Smith Co. and T. & B. Construction Co.*

SPRUCE STREET ELEMENTARY SCHOOL, Acton, Massachusetts. Owner: *Town of Acton —William O'Connell, superintendent of Schools.* Architects: *Earl R. Flansburgh and Associates—design team: Earl R. Flansburgh and Charles Rolando, associate;* structural engineers: *William Le Messurier & Associates;* mechanical and electrical engineers: *Francis Associates;* landscape: *Mason & Frey;* food consultant: *Food Facilities Design Group;* acoustical consultant: *Bolt, Beranek and Newman, Inc.;* general contractor: *A. E. Pasquale & Sons, Inc.*

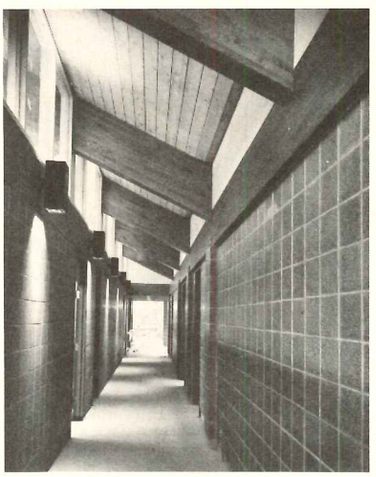
WILTON SENIOR HIGH SCHOOL ADDITION, Wilton, Connecticut. Architects: *Schofield and Colgan;* associated architects: *Earl R. Flansburgh and Associates—design team: Earl R. Flansburgh, Hugh C. Browning, associate, Robert H. Schofield;* structural engineers: *Zorab Vosganian;* mechanical and electrical engineers: *Kallen and Lemelson;* landscape architects: *A. E. Bye and Associates;* food consultant: *Flambert and Flambert, Inc;* acoustical consultant: *Bolt, Beranek and Newman, Inc.*

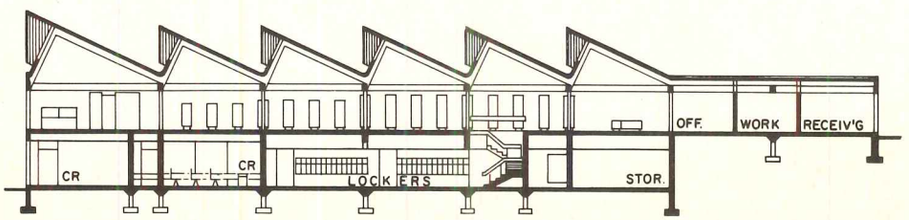
PARK SCHOOL, Brookline, Massachusetts. Architects: *Earl R. Flansburgh and Associates —design team: Earl R. Flansburgh, Dennis J. Becker, associate, Douglas H. Flockhart, Stanley C. Hutchinson;* structural engineers: *Souza and True;* mechanical and electrical engineers: *Shooshanian Engineering, Inc;* landscape architects: *Mason and Frey;* food consultant: *Crabtree, Dawson and Michaels.*

THE PARK SCHOOL OF BUFFALO, Snyder, N.Y. Architects: *Lyman, Baldwin & Castle;* associated architects: *Earl R. Flansburgh & Associates—design team: Earl R. Flansburgh, Peter Castle, Donald A. Reed, associate;* structural engineers: *McKaig, Bahler & Rupley;* mechanical and electrical engineers: *Wilson, Klaes, Brocker;* general contractor: *George Hermann.*

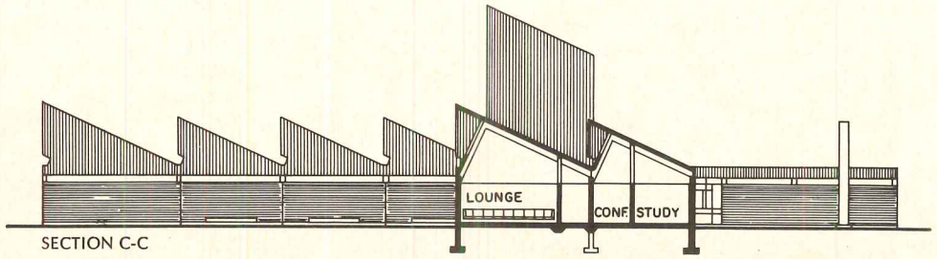
Hare photos

The exterior walls of the Park School of Buffalo are of brick 8 feet high to the cornice line. Above the cornice line is rough-sawn 6 inch vertical ship-lap painted board siding. The interior walls are of exposed pumice block to the 8 foot line with exterior siding or glass above. The roof is of laminated wood with exposed wood decking. Windows are of solar bronze glass in dark duranotic aluminum frames. The library floor is carpeted throughout. Other floors are of vinyl asbestos tile.





SECTION A-A



SECTION C-C

Visual squalor, social disorder or A new vision of the "City of Man"

by Benjamin Thompson

Whenever the total environment becomes meaningless and violent, so do the actions of men. This chaos we see around us like a rising plague is a clash of races, classes and generations. I suspect it is not so much a question of age or color as a new kind of class war—a war mainly about values.

The various factions have in common the grievance of being deprived classes of citizens, each deprived in a somewhat different way. The young feel put down by any Establishment—how they react depends if they are rich or poor, black or white, moderate or militant. Likewise, Negro (and white) handling of white oppression varies with age and status; but fundamentally these various economic and racial groups form and re-group along changing lines, like soccer players attacking a goal. When the goal line is defended harder, the offense smashes again. Student rioters are clubbed by policemen to demonstrate who has the power. Negroes burn their tenements in tragic acts of self-destruction, frustration.

I happen to believe that the goal is basically the same for all sides: Liberation of spirit from an oppression so huge and monolithic that few residents of the Establishment have identified it at all.

Above the din, a few observers comment that the issue is really "middle-class values." This at least helps to describe conditions that are basically the fault of all of us, although we tend to blame it on the nefarious "power structure" that runs our cities, dispensing welfare as well as privilege. Certainly those with the power to spend, to tear down and build, to create schools, housing and roads, have continually imposed the hollow world of supermarkets, canned music and deodorant on everyone in their path—and a clean, white, affluent middle-class world is equally alien to a southern Negro, an Idaho farm youth or a Brooklyn boy. Each of them wants dignity, a job and a vote, but each finds these things must be bought as part of a total package of "Great American Aspirations." If he buys them, they degrade and destroy his own values and offer little in return.

Now there are many other possible explanations for the actions of rebels today, ranging from technology to toilet training. I would like to tie them up in one explanation that strikes me as overriding: *The disintegrating quality of modern environment.* I see environment as a very personal experience to millions of men every day of their lives, full of connections not only to social action but to the very biological roots of man. These connections, if we understood them better, might help us out of this accelerating class war.

Environment extends far beyond the city—it is our whole perceived world, natural and man-made, inside and out, good and bad. Environment envelopes us; it is what the eye sees and the spirit senses. It is impossible to escape its impact.

We walk on crowded, treeless streets, work out our lives in impersonal buildings—many without window or view. We travel underground, wait in

Benjamin Thompson is a practicing architect in Cambridge, Massachusetts, where he has had his own office since 1966. He had practiced for twenty years with The Architects Collaborative, of which in 1946 he was one of the eight founding partners. From 1963 to 1967 he was chairman of the Department of Architecture of the Harvard Graduate School of Design, and his continuing avocation is visual education: leading people to see what they see. His Design Research, Inc. is a unique merchandising experiment—a kind of lively contemporary version of the old general store—which started in Cambridge and now has branches in New York and San Francisco as well. This article is adapted from his 1968 Centennial lecture at Wayne State University.

subway tunnels that smell of loneliness and violence. We eat in greasy plastic snackshops under pallid light which turns us green. Sometimes we escape to the special restaurant for the extravagance of candlelight and intimate mood. The privileged flee on week ends to a countryside that each day becomes more distant; the masses left behind must wait until spring to flock to the receding parks and riverbanks to worship the wash of warm sun.

"Environment both affects and teaches us. . . It is a formative learning experience second only to family relationships. . ."

The urban environment invades all our senses: the gassy hiss of buses "turned off" in restless sleep; the jumble of wires and harassing road signs; stagnant city air and garish red neon on blinding night streets, masking out the cries for help to which we no longer respond. We escape, if only in dreams, to feel the moist spring soil underfoot and touch the clear mountain streams.

"If we razed all the identifiable slums . . . we would be left with a possibly worse disaster area . . . the vast middle-class slum created by business and bureaucratic indifference. And sustained by public insensitivity. . ."

Make no mistake—this is no romantic lament for the picturesque, for a return to nineteenth century Utopian wildernesses. The growing negativeness of environment matters profoundly in our current troubled world. We know that in our bones—but what is there to do about it?

It is reassuring that a group of perceptual psychologists, neurologists and biochemists have now begun to measure the damages of what is called "sensory deprivation and restriction." The motives of this group were originally military, intended to pinpoint man's reactions to brainwashing and survival in outer space. In some enlightened future time, the scientists will apply their findings to the more pressing problems of the human race. However, significant facts can right now be extracted from their studies to confirm the damaging effects of the modern world on the human brain and nervous system. We can see from their work that isolating the senses —shutting them off from normal contact with outside stimulation—creates anxiety, confusion and, finally, irrational behavior. The scientists have shown that *sensory monotony* inhibits the workings of the higher brain, and that chaos (too many disorganized sensations) shuts down the brain system to preserve its equilibrium. Most important, the research tells us that *sensory variety* (the opposite of both monotony and chaos) is a biological need as real as hunger.

"Everything we build must inject the affirmative values human beings need as much as food . . . the pleasure of tactile and visual things, assurance of physical security and freedom, variety of stimulating impressions and experience. . ."

Bearing this out from another direction, Dr. Kreck at Berkeley has reported detailed experiments revealing the deficient brain development of rats raised in a confined, unstimulating environment. These were compared to the larger brain and memory capacity of control animals exposed to varied and activity-inducing surroundings. (It is an experiment that has been conducted on a grand scale in our public schools for decades, but has not been considered "measurable" because the little brains could not be cut out and dissected for comparison.) Dr. Linus Pauling and others have recently reported on the effects of chemical imbalance on mental and emotional disorder. This seems to be an even more basic way of measuring what is actually happening inside the body, in the electrochemical responses of the nervous system as man encounters his world.

In light of recent events—murder, assassination and riots around the world—there is no time to wait for more grim examples: the urban environment is more important than a matter of "taste," more than a side issue of political expediency or economic reform. I contend that it is urgent to consider and evaluate environment as the central physical expression of social and human values: an expression that physically *touches* our psycho-physical well-being and thus concerns our whole social equilibrium.

For environment both *affects* and *teaches* us. It is a formative learning experience second only to family relationships. And with each level of physical deterioration around us, we are further de-sensitized until caught in a rapidly descending spiral, leading to the depths of sub-human violence.

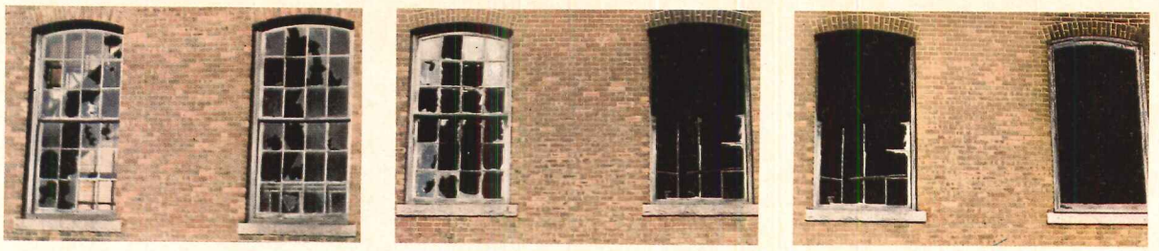
Today's environment displays our deeper social values as if on giant billboards: "BOREDOM, DRABNESS, SQUALOR, CONFUSION, OVERSCALE . . . LIFE IS NO FUN . . . PLEASURE IS FORBIDDEN . . . NO LEFT TURN, NO RIGHT TURN . . . KEEP OUT . . . KEEP OFF THE GRASS (if you can find any)."

Now I don't mean that the problem is slums. Slum clearance alone will not solve the problem. If we razed all the identifiable slums in major cities, we would be left with a possibly worse disaster area. Perhaps then we could really see it—the vast middle-class slum created by business and bureaucratic indifference, and sustained by public insensitivity. Because it is technically clean and new, this middle-class slum is worse than the others—an overscaled psychological ghetto, whose inhabitants are disadvantaged and culturally deprived in the truest sense.

I speak of housing developments that segregate the elderly and the unprosperous, of cultural centers in pretentious heaps in the centers of cities. I mean long shopping strips barely visible beyond seas of cars, block-long office complexes without windows at street level, and every building that isolates groups and functions, destroying the infinite variety and interaction of life . . . surprise, action, intimacy, poetry, contact between people, warmth and confusion . . . the lovely unpredictability of life.

It is ironic that many positive values exist in the slums we destroy—the west end of Boston, parts of Greenwich Village, the outdoor markets, the waterfronts. Instead of understanding and building on this natural life we disrupt it: alienate the people, and hand them back a sterile version of life that belongs to no one—just the de-personalized remains of middle-class life, blindly imposed.

Look at schools as a microcosm of the city. They are the most crucial environments we are creating today, complex communities with many of the same interactions as the city. Furthermore, they are the training ground for later life, or strife. Children spend one hundred and eighty days a year, seven hours a day, for twelve to twenty years, in school buildings. It is there that they get the real message about the values of the adult Establishment. One might suspect they are being consciously tu-



tored in good reasons for rebellion.

Jonathan Kozol has documented the terrifying social "death at an early age" of children in a hostile, crumbling ghetto school; many aspects of the problem are not confined to Negroes. Edgar Friedenberg has written trenchant and depressing portraits of the modern American high school—a place of monotony, regimentation, authoritarian practices and insensitivity to the rights of the individual. He describes schools in which the teenager is at the mercy of clanging bells, rules without due process, ignorance of his problems, and restriction of movement. The typical high school, old *or* new, is a physical expression of these attitudes: It does not seem built for people, much less children. It is about as inviting as a Dickens-era mill. There's no place to sit, no place to talk in private, no place to go, to be, no way to escape . . . except to drop out.

From this daily brush with physical alienation, more than from anything taught in the classroom, students learn the important lesson: School is a plot of the Establishment, certainly not for their generation. They also learn the pressures and expectations that really separate social classes—these quiet distinctions permeate our educational system, whether with Negroes teaching Negro slum children, whites teaching Indians, or middle-class schoolmarms teaching average city children. Students learn not from what is said, but from the hostile quality of their physical and psychological encounters that degrade self-belief and dignity.

Viewed this way, the school environment is crucially important in the cynical generation gap that is part of the present disorder. For the school is the central contact point between generations. It is the statement of adult values, again like a billboard, that speaks with compassion and understanding of young ideals and concerns—or does it say we don't have the time to consider any other way? It seems indicative of the official state of mind that the report of the Commission on Civil Disorders placed great stress on the corrective role of "better education" with no specific reference to design or school environment, or the internal attitudes of ghetto schools as such.

This is not to say that a well-designed school or campus can change everything. But it can do a lot to improve a child's subliminal reception of a message right now extremely negative. A crisp modern building with long corridors and great, efficient asphalt yards won't do it. Neither will a stylish, windowless garrison that is safe from the assaults of the surrounding community. School must be as exciting as education is exciting, and what comes first—chicken or egg—is really unimportant. The building can be as varied and colorful as a personal relationship. Above all, it must have intimate scale and a sense of freedom—to look outside, to move about, to choose where and when to study, to think independently, to find one's special meaning and involvement in a place where life is really lived—whether school, city or home.

Now these values are no different from those we should expect in every building we put up—private dwellings, commercial centers, housing developments or industrial "parks." Each bears a responsibility for affecting people—inside and outside. Each piece of construction must counter the current massive assault on human sensibility from overscale, monotony, chaos and personal isolation. If we are going to reverse those trends, everything we build must inject the affirmative values human beings need as much as food—the pleasure of tactile and visual things, assurance of physical security and freedom, variety of stimulating impressions and experience. Above all, there must be some kind of contact with the changing seasons, with nature and natural light. For the earth and its cycles are the basis of all life and man's inner stability and orientation *requires* direct and visual contact.

"It is not just legal rights that are missing, but environmental freedom and psychic nourishment. . ."

Without these affirmative sensory contacts, man becomes upset, disoriented, blind and at war with his own nature. His deepest instincts of survival make him shut down, run away or fight back like a cornered animal.

The Commission on Civil Disorders has warned us that disorders may be predicted in proportion to public awareness of how much has *not* been done. I would add this: It is not just legal rights that are missing, but environmental freedom and psychic nourishment. Action for its own sake—like slum clearance—is no help unless it transforms positive values into felt experience. For the solely *material* goals of the Great Society—wages, housing, leisure, even genuine social equality—are only temporary fillings in cavities that will continue to decay until we recognize the deeper need. *It is the quality and dignity of life that people are really fighting for.*

Must we do the whole job of social renovation *twice* in order to learn and believe this?

In order to get the quality of life that mankind needs, I am convinced that we must face (among other things) the question of visual education. There is a dramatic role for schools and universities in solving our environmentally-imposed mass visual illiteracy by skilled conscious means. The education of vision, along with all the emotions, will have to precede the achievement of a better environment. I include architects and planners as well as educators in that statement. They all must discover their eyes and hands, tongues, noses and ears, and become real participants in the inner life of the men for whom they design and teach. We need radical new approaches for developing this awareness—not simply "literacy" of vision, but deeper visual understanding. You might call it *seeing with the heart.*

"The education of vision, along with all the emotions, will have to precede the achievement of a better environment. . . You might call it seeing with the heart. . ."

Designers and planners with that kind of compassion should be able to create the city the "rioters" are subliminally crying for, a city where the doomed are freed to act and grow. We urgently need models of this positive environment—for the young, the poor . . . for everyone to see. We need to see rising before us real evidence of man's ability to act posi-

tively: Not just to remove what is wrong, but to supply what is missing.

What would my ideal city be like? I begin by thinking of all the places I choose to go when I have free time to travel. I realize that masses of Americans engage in a kind of "environmental design" when they fly off to the cities of Europe, the sands of the tropics, or the mountains of Mexico. These places revive us by providing precisely the visual nourishment that is lacking where we live and work. (They are largely foreign places if only because those societies have moved less quickly to destroy the values that have made them civilized after centuries of human effort.)

So I list my favorite city places. . . . Venice for the layers of intriguing movement, the parade of gondolas providing such mundane services as food delivery and garabage removal in a day and night pageant of color and action. . . . The river-edge walks along the Seine, where you can fish in the heart of Paris while traffic clogs the bridges overhead. . . . The fresh green squares of London, where people and squirrels stop to sprawl and chatter and make love. . . . The street markets of Lausanne, where people buy fish and flowers and cheese and enjoy the visual feast of a fair. I know a factory in Helsinki that is right on the lively, unspoiled harbor, surrounded by dancing light reflecting in the clear water. I have admired the rebuilt center of Montreal, with its new underground subway system and shopping arcades, giving people a pleasant place to gather night and day during the endless Canadian winter.

Two other images come to mind. First, Copenhagen with its Tivoli Gardens, possibly the ultimate combination of action and serenity with something for everyone. There are quiet benches amid seasonal displays of flowers. There are amusement areas, theater, puppets and refreshments for every purse. Tivoli beautifully combines most of what we are missing in the modern city. For if a city is not *just* a park, it could *work* like a park. I think of the great possibilities set forth at Expo '67, which was really a city experiment of infinite variety, with levels of movement by water, land and airborne monorail. Expo came close to being a walking city. Wherever you walked there was something to see, wherever you sat there was rich action and fun to reflect on.

And why shouldn't a city be fair? Distilling all the qualities common to these appealing places, I find that the biological and esthetic requirements are simple and well-known. Interestingly, they also provide the antidotes to the sensory monotony and chaos that the scientists warn about. The humane city could have them all:

¶ Return to human scale in many variations (the basic measure being what we see and feel five to twenty feet off the ground).

¶ Contact with growing things and changing seasons, as well as the modulations of light from morning until dark.

¶ Orientation to water, whether through use of lakes and river fronts or man-made pools and fountains.

¶ Passive and active involvement in the social action around us.

¶ Visual comprehension of the processes that sustain the city and its people.

¶ Variety of form and organization that does not impose one way of acting, living or feeling—i.e., true freedom of choice for individual values to prevail.

Composing these fragments into a montage, I find that my design for the "City of Man" would be an intimate city by day and a radiant city by night. Its pedestrian streets and minirails would move at many levels through and around buildings, from below street level to the twentieth floor. Transportation and service networks would be not only conveniently separate but beautiful and colorful to see and to sense. Terraces and landscaped rooftops would be designed for maximum enjoyment of outdoor space and view. Housing would take the form of small, diversely scaled communities interspersed throughout the city with places to meet and things to do. It is assumed that apartments would provide esthetics and privacy for the diversity of family living which minimum space standards do not consider. As in Rockefeller Center or on the Left Bank, there would be dancing and skating and painting or fishing for people to watch, as they walked along watching you. Like Paris, it would be a pleasure to walk to work along any boulevard or side street past a mixture of shops, stands, bakeries, showrooms, arcades and architecture. And like Rome, art, sculpture and architecture would mix unselfconsciously. Like Boston and San Francisco—our most admired American cities—there would be careful control of the prevailing low scale and sunny openness, using hillsides, harbors and riverbanks for exciting vistas and direct recreational enjoyment.

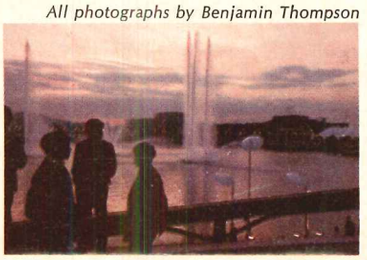
"We urgently need models of this positive environment . . . for everyone to see . . . real evidence of man's ability to act positively . . . not just to remove what is wrong, but to supply what is missing. . ."

The intimate city, of course, is many small cities within the whole. Each has a character appropriate to the people choosing that neighborhood and each preserves a sense of nature so that every city dweller will participate in the yearly celebration of spring grass. The city then is no longer a prison from which to flee, but a prism aglow with a million different lives, pocket parks, street corner life, everyday amenities such as handy telephones and lavatories, safe street crossings, personal transportation, places to rest your feet. All this has been said . . . . what is necessary is merely a working model.

"The city then is no longer a prison from which to flee, but a prism aglow with a million different lives. . ."

A few years ago America spent and lost millions of dollars to build and then tear down on a site the size of a city a world's fair intended to demonstrate cultural and commercial leadership. Despite its many shortcomings, it served to show how fast we can move at full urban scale if the motivation is there. When we put the same speed, money and effort into designing a city that dignifies the lives of all men, groups and peoples—by providing the stimulations and fulfillments that unite them all—then we may see evolving a nation of naturally civilized men.

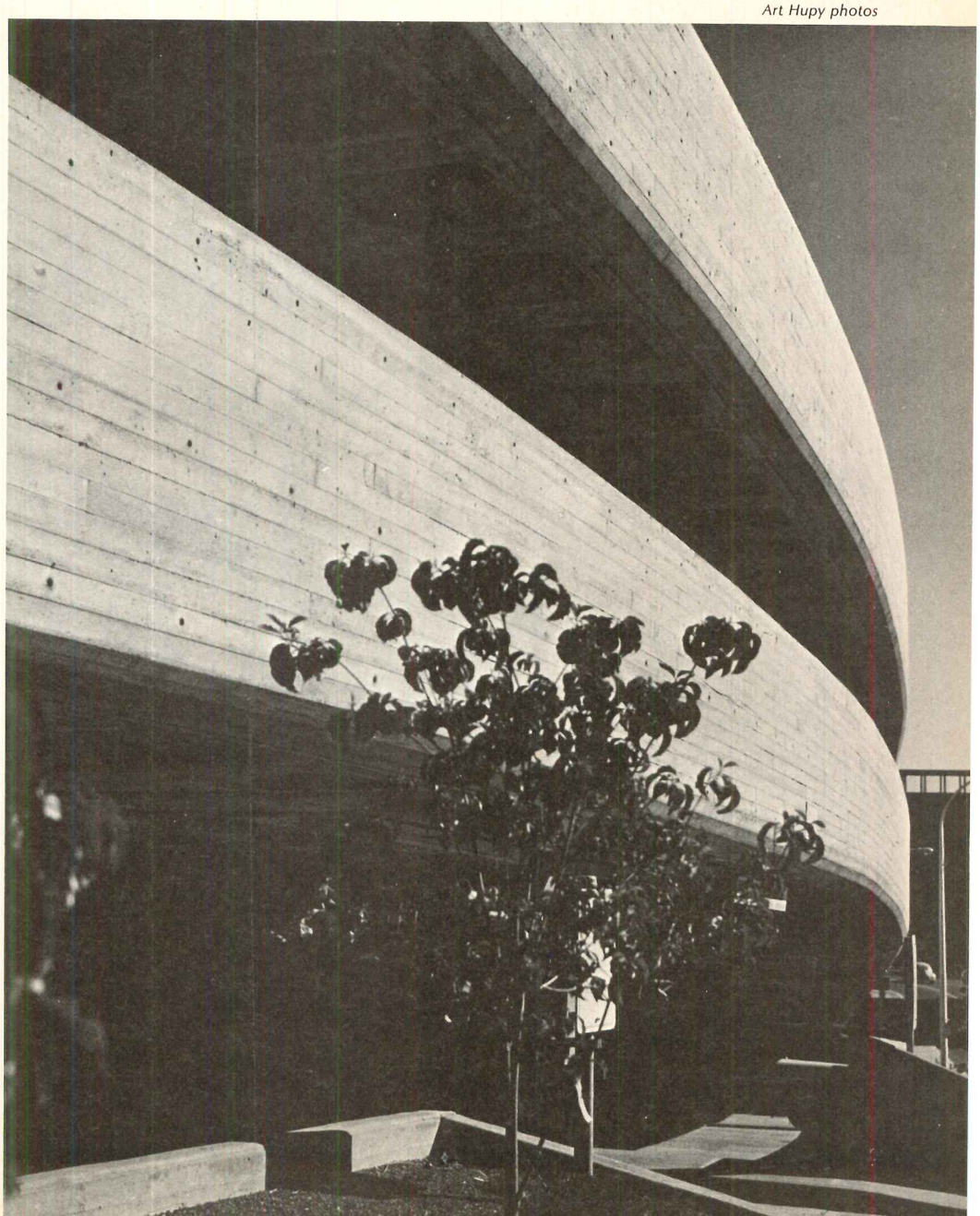
All photographs by Benjamin Thompson



GARAGES ON CITY STREETS

These four parking structures—three for urban college campuses, one for a governmental and commercial area—suggest that off-street storage of automobiles can be done in structures that contribute strong and handsome design elements to city streets.

Art Hupy photos

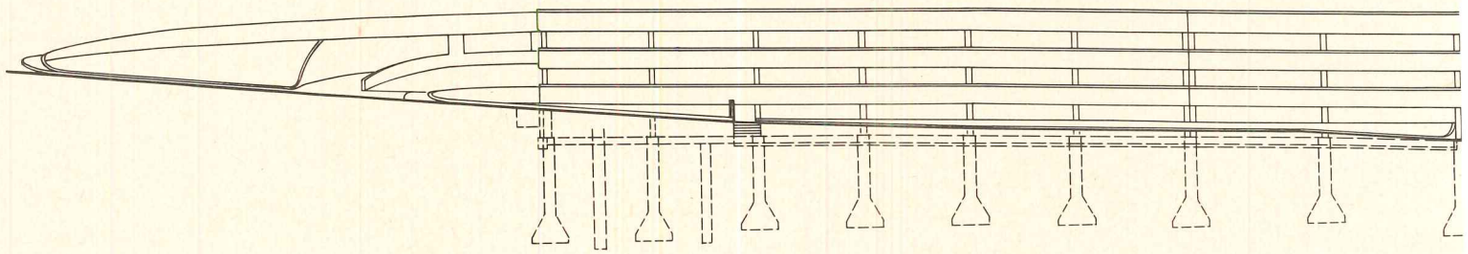


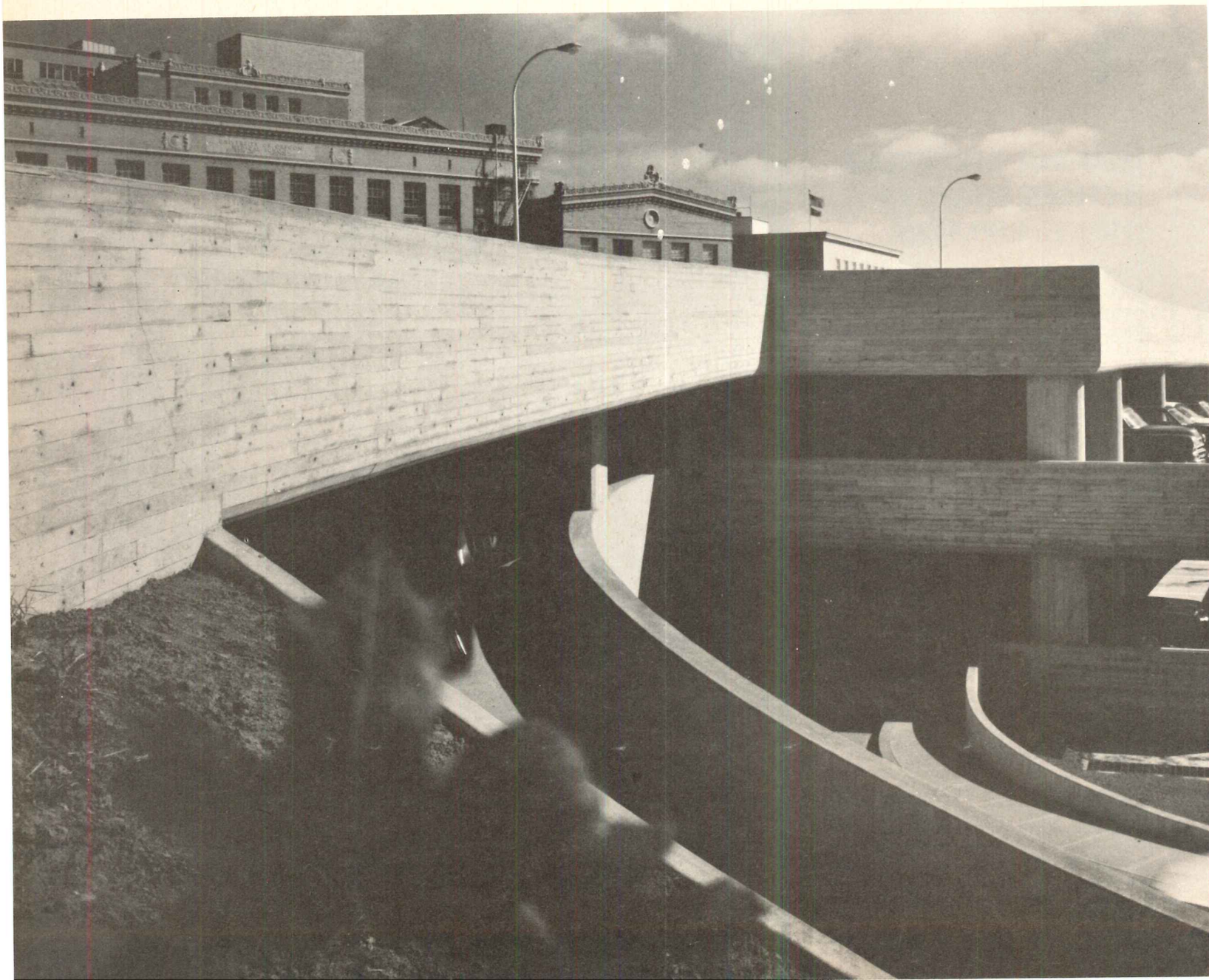
1

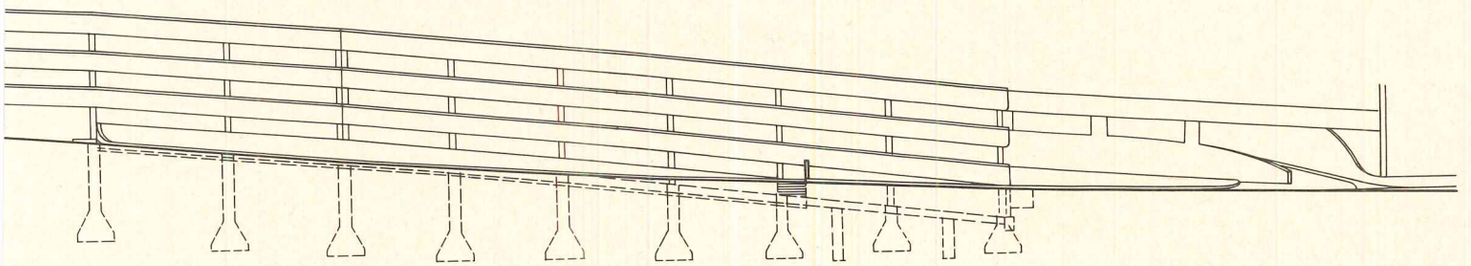
GARAGE STRUCTURE ECHOES SHAPE OF HILL IT REPLACES

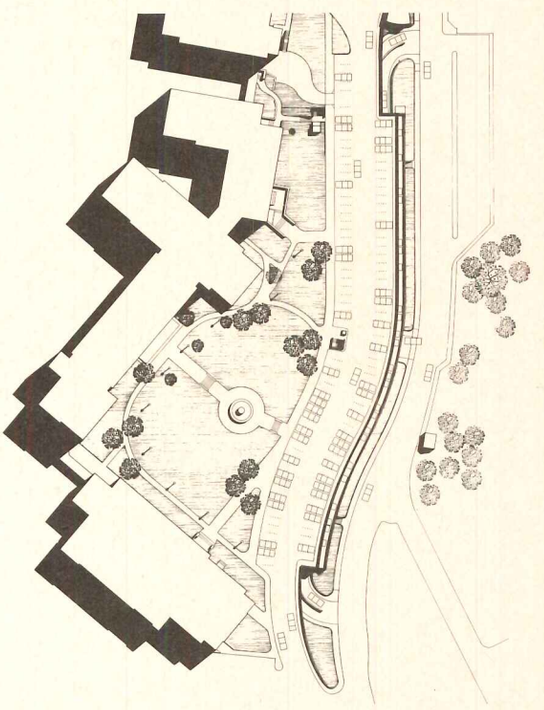
The sinuous lines and stepped profile of this handsome garage structure on the campus of the University of Oregon Medical School, in the western hills above the city of Portland, recall the contours of the hill which the building replaces. The limited size and steep hillside site of the campus offered few possibilities for location of a garage structure, and the hillside selected for its relation to the buildings it served had to be removed to provide for the building. The advantage of proximity, and the fact that the site could not be used for any other type of building, offset the unit cost per car, higher than usual for an above-grade structure. The plan follows the existing traffic pattern of the campus road, and provides three points of entry and exit. The four floors of parking (three are covered, the fourth is a roof deck) are reached by ramp. The structure is of reinforced concrete, poured-in-place and untreated after removal of forms.

PARKING STRUCTURE, UNIVERSITY OF OREGON MEDICAL SCHOOL, Portland, Oregon. Architects: *Wolff Zimmer Gunsul Frasca Ritter;* structural engineers: *Cooper & Rose Associates;* mechanical engineer: *Thomas E. Taylor;* electrical engineers: *Grant Kelley & Associates;* soils engineers: *Dames & Moore;* contractor: *Contractors, Inc.*

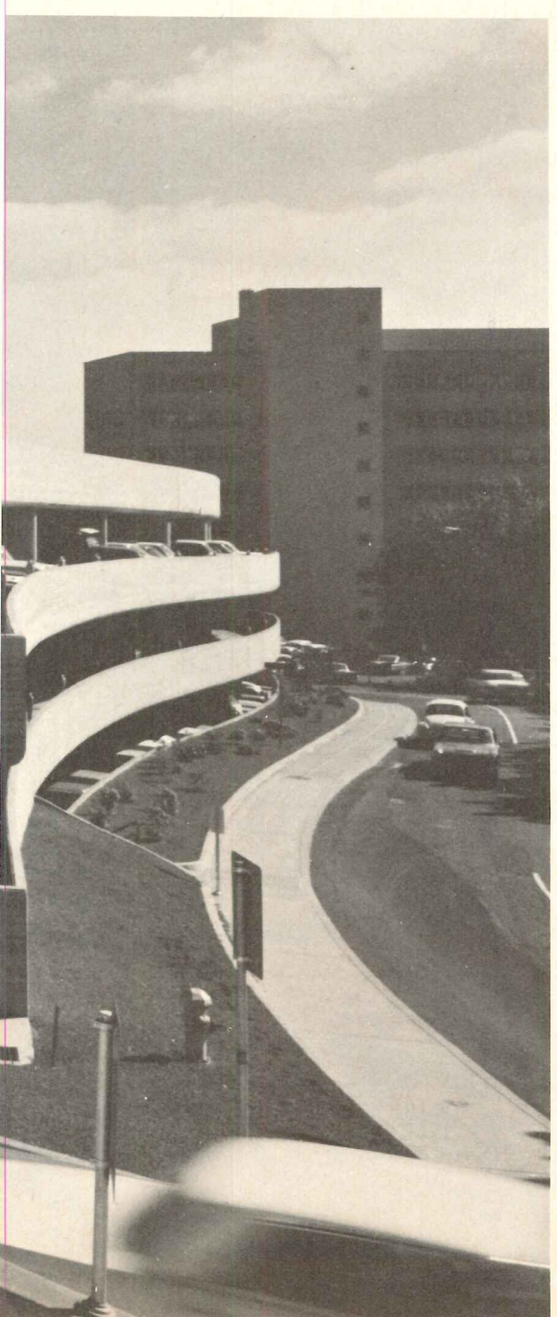


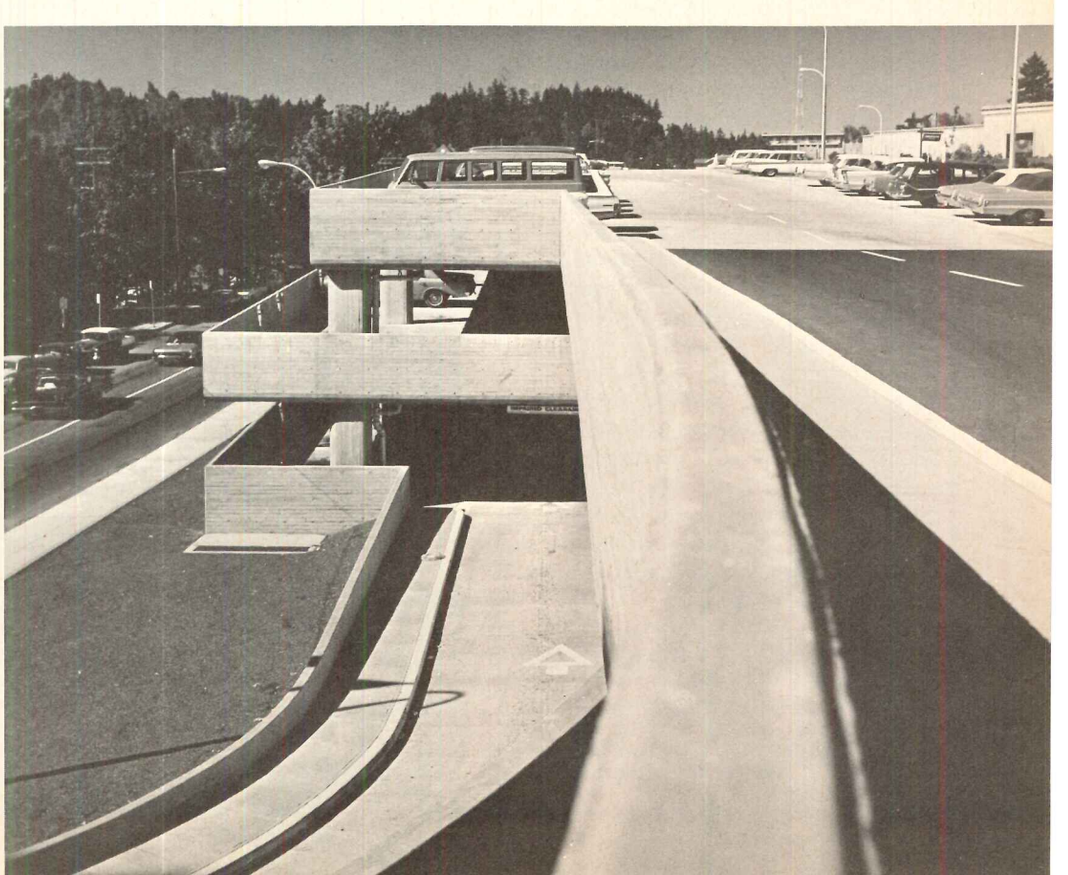






Building sites on the medical school campus in Portland's west hills are few and difficult. Here, a site was created by removing a hillside. The esthetic effect of placing a building where a natural hill slope had been was an important element in the design. The resulting structure follows the original contour of the hill, provides four levels of parking in floors whose curving cantilevers minimize the alteration, and contributes handsomely to the visual appearance of the campus.



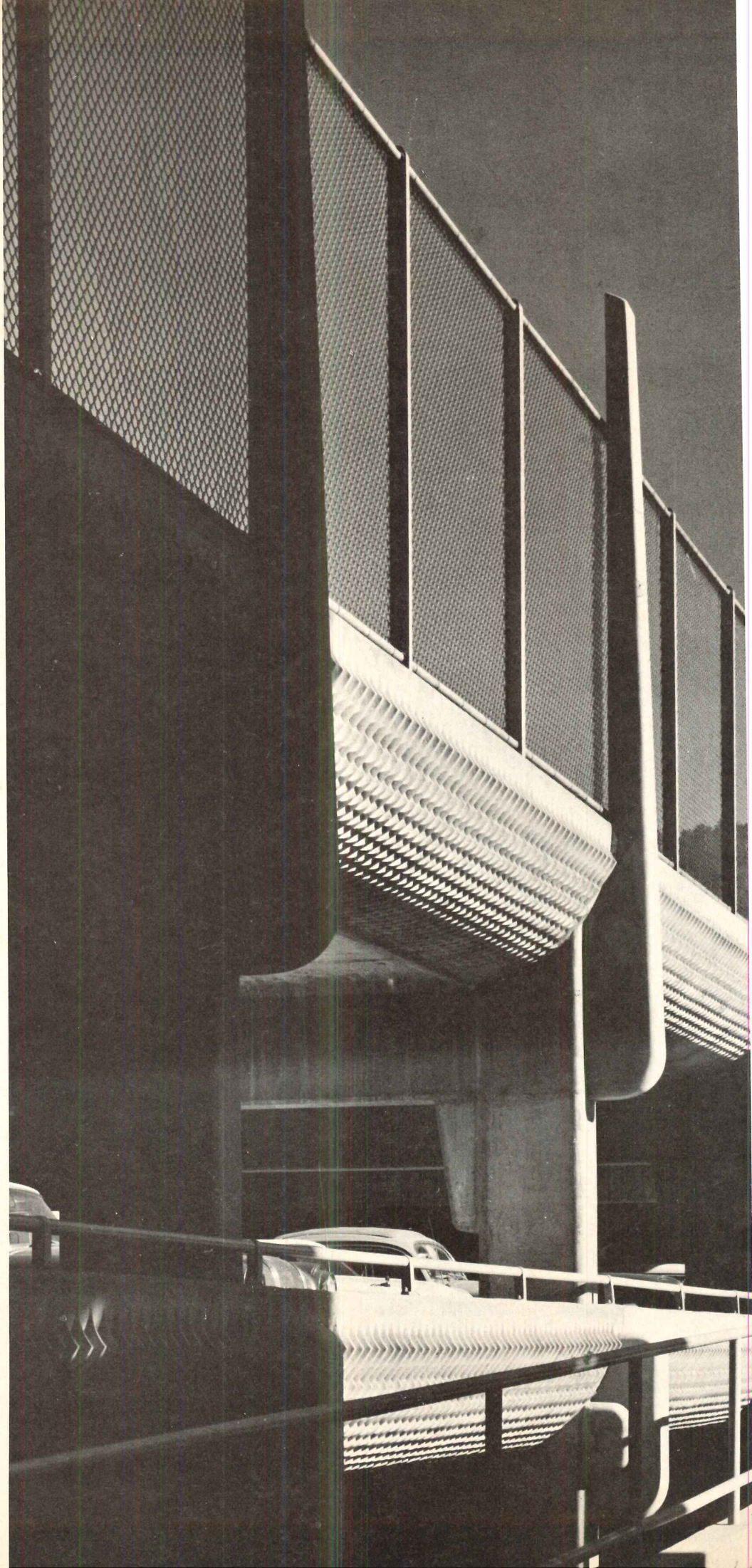


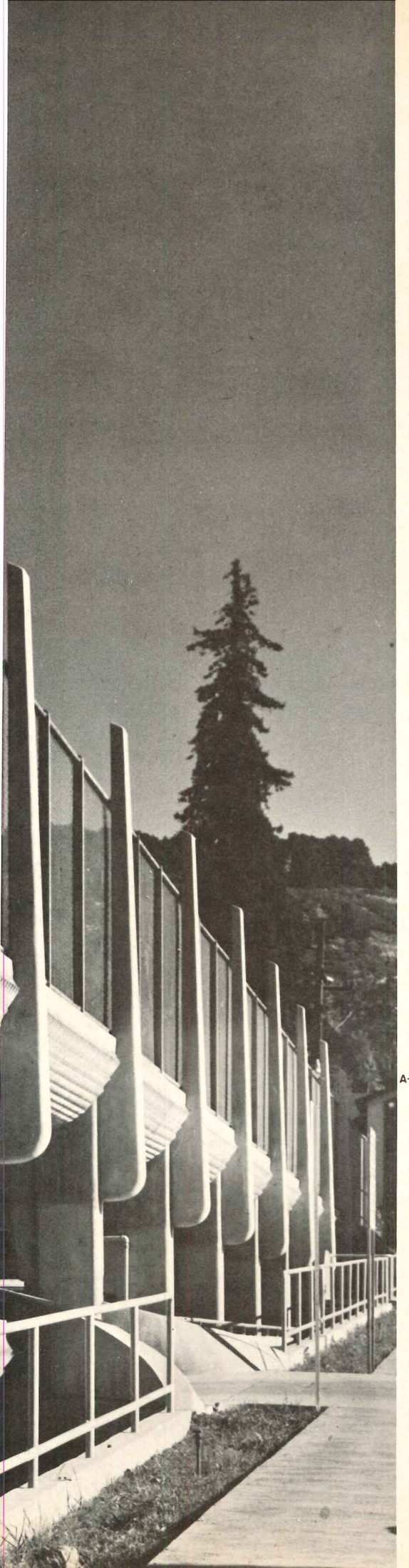
2

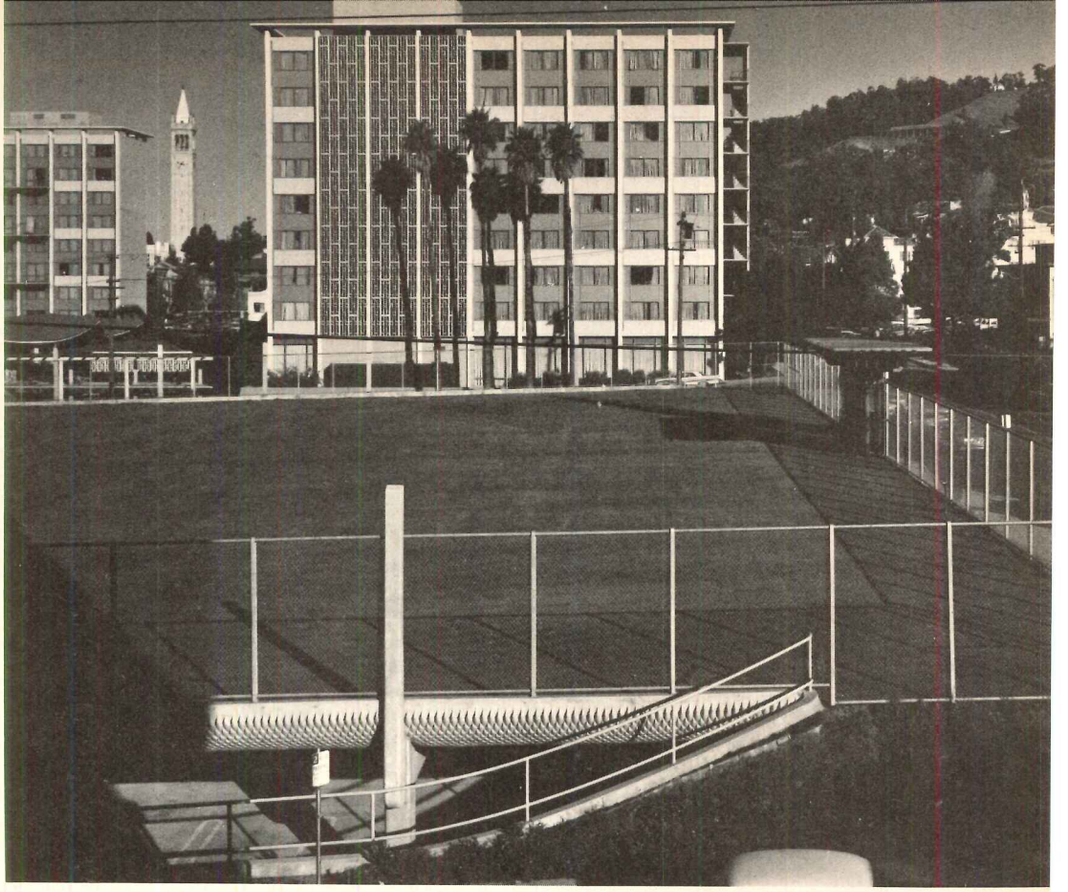
GARAGE ROOF DOUBLES AS TURFED PLAYFIELD

This unusual combination of parking garage and playfield serves students in the eight adjacent multi-story residence halls of the University of California in Berkeley. The curved, faceted concrete parapets which cover the anchorages for the roof and floor structure, and the modeled posts which rise from the structural columns to hold the playfield fence, are handsome and striking elements in the urban complex formed by the halls and garage. The structure is on a sloping site surrounded on three sides by city streets, permitting street-level access to both parking floors and eliminating the need for ramps. Use of a prestressed structure with long spans provides column-free parking space and made possible the combination of uses. The roof structure is of prestressed concrete; no membrane was needed to make the roof watertight. The roof is covered with 18 inches of earth for turfing. The structure was built at a cost of $5 per square foot.

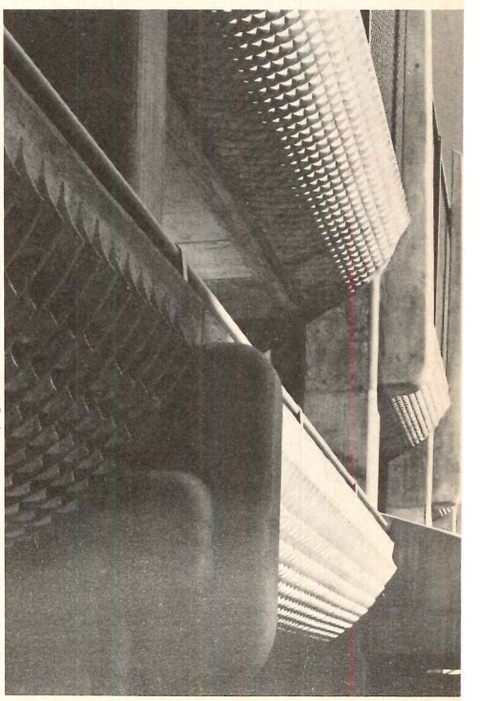
PARKING STRUCTURE D, UNIVERSITY OF CALIFORNIA, Berkeley, California. Architects: *Anshen & Allen;* structural engineers: *T. Y. Lin, Kulka, Yang & Associates;* mechanical and electrical engineers: *G. L. Gendler & Associates;* contractor: *F. P. Lathrop Construction Company.*



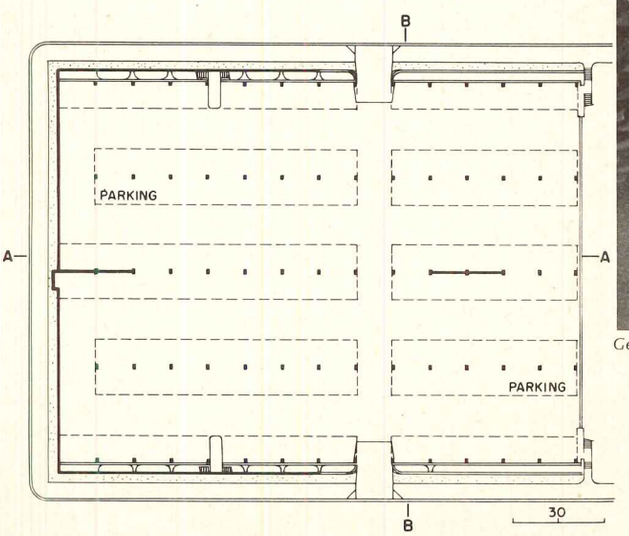


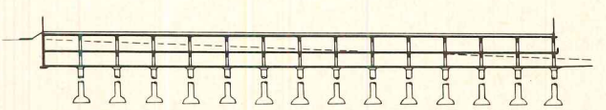


By superimposing a playfield on a parking garage, as here in Berkeley, land is conserved, open space is provided, and needed services are located adjacent to the users. Structural design using prestressed concrete made this feasible, but to convince the owners of the economy of this structural solution, the building was competely designed as a conventional poured-in-place structure and for partly precast, prestressed construction. Alternate bids were taken, with four out of five contractors submitting lower bids for prestressed design.

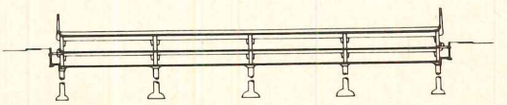


George Knight photos





SECTION A-A



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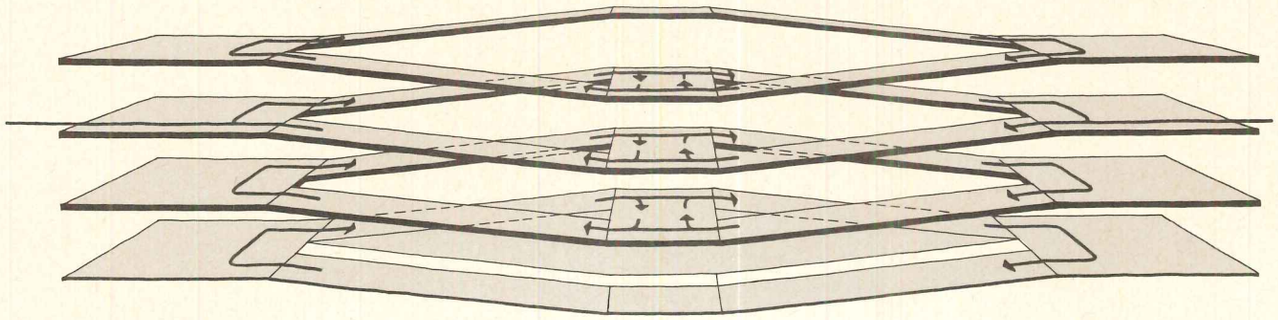


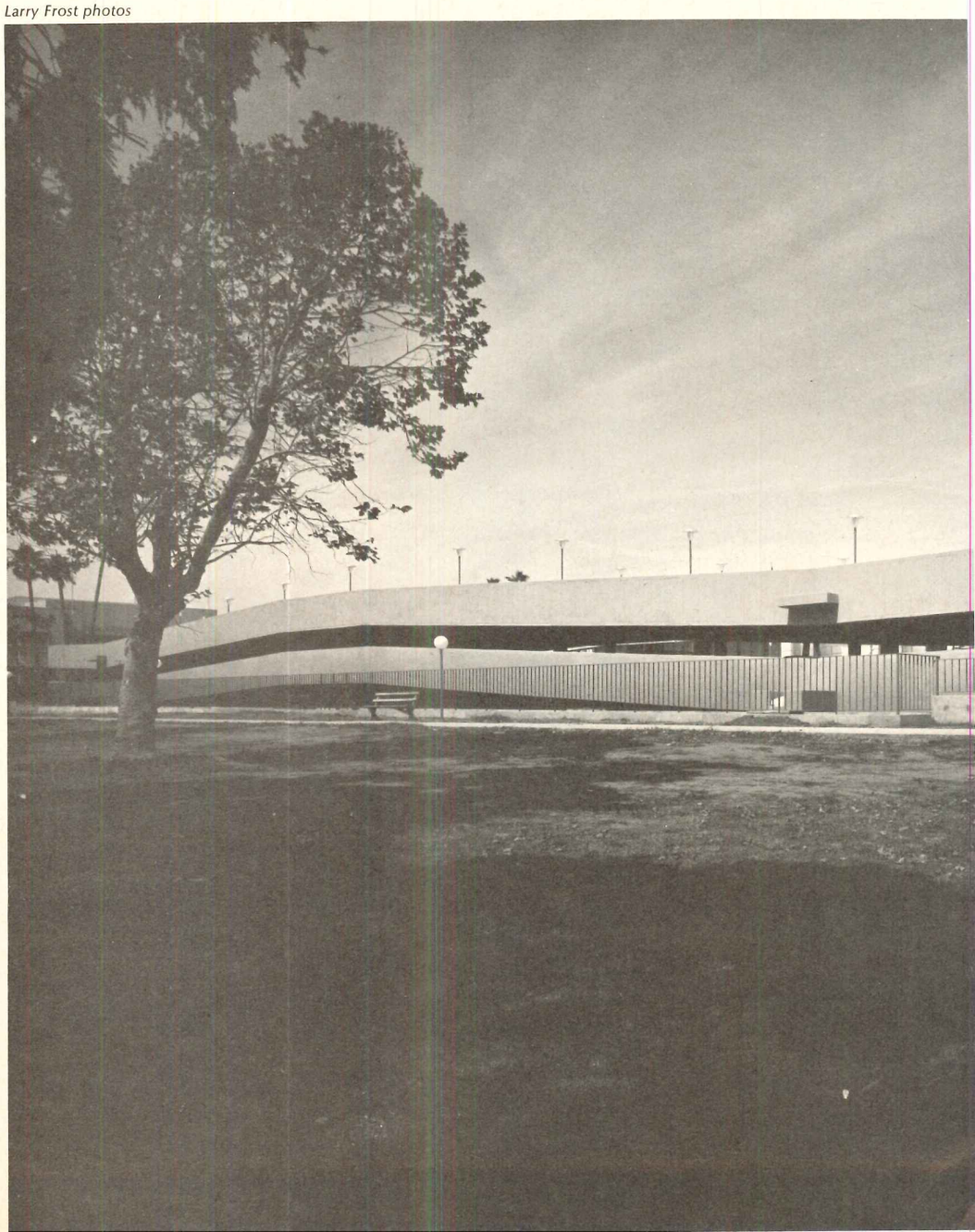
3

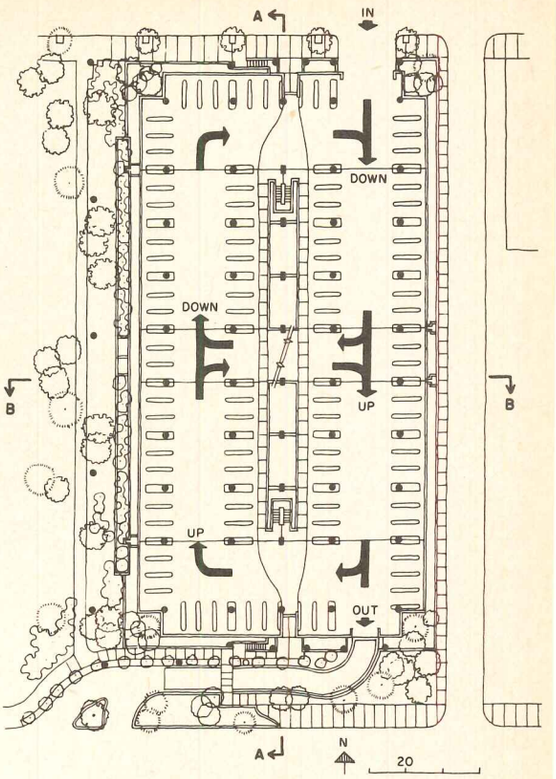
A DIGNIFIED GARAGE IN A CITY'S NEW CIVIC CENTER

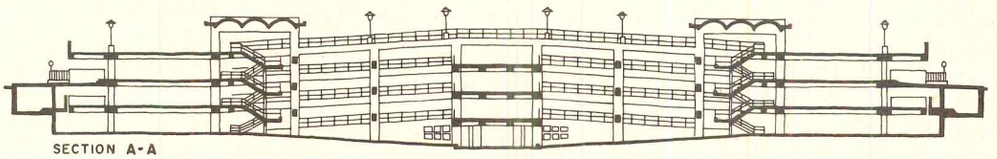
The unusual device of surrounding this parking garage with a light well satisfies the program requirement of space for 450-plus cars with light and air to all decks, and at the same time reduces the above-ground building height to two floors. Since the garage is the first phase of a replacement program for the civic center of Inglewood, California, a city in the Los Angeles area, its appearance is of particular importance. This tasteful and dignified structure suggests a standard of quality for subsequent development phases of the center. The garage is a four-level poured-in-place concrete structure, with two levels below grade, one above, and entrance and exit at the third level. Continuous ramps in an interlocking configuration, used for one-way traffic throughout, eliminate cross-traffic intersections. Pedestrian walkways around the central light wells connect with stairs and a third level with public sidewalks. Cost of the garage was $829,950.

CIVIC CENTER PARKING STRUCTURE, Inglewood, California. Architect: *Ralph Bowerman;* structural engineers: *Richard Bradshaw, Inc.;* mechanical engineers: *Stroms & Lowe;* electrical engineers: *Byler & Carroll;* landscape architects: *Cornell, Bridgers & Troller;* contractor: *Vanlar Construction Company.*

Larry Frost photos







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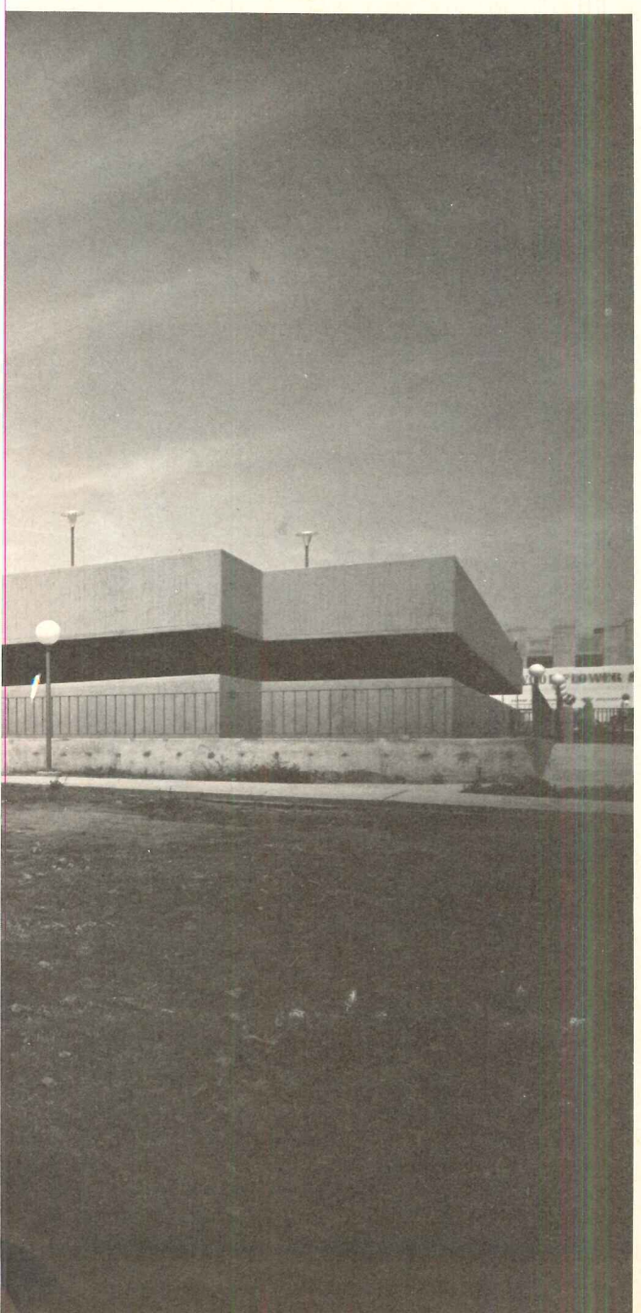
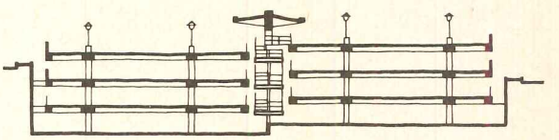


Planting at the lower level near the central light well and along the perimeter of the building is an unexpected amenity. This structure received a "Grand Prix" award as one of the "most significant buildings in the Los Angeles area since 1947."



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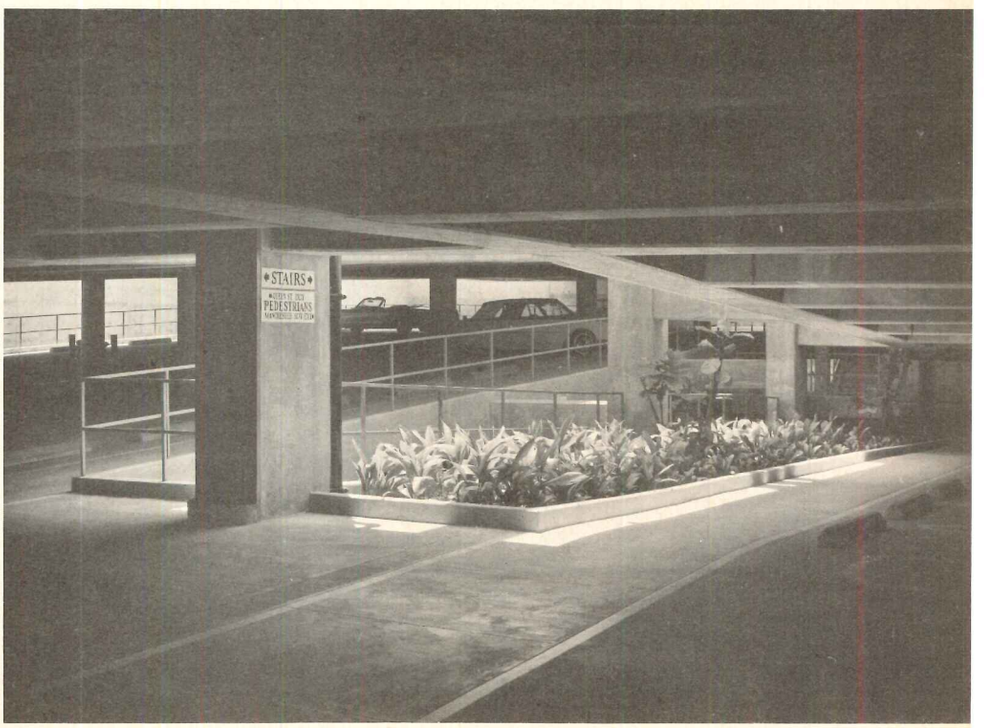
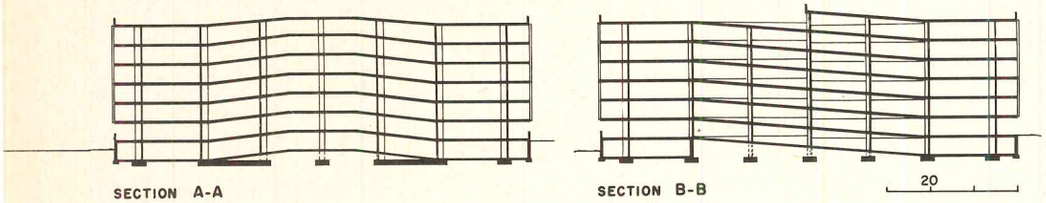
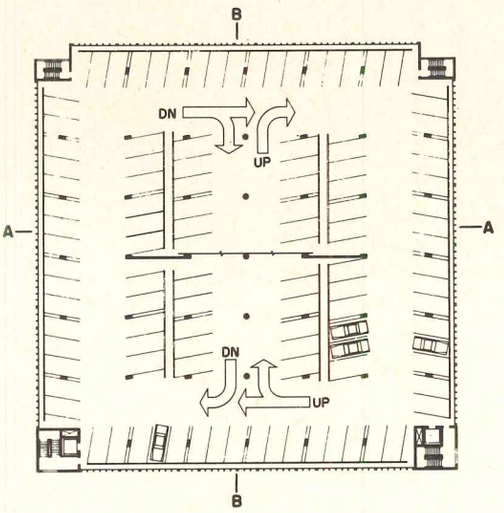






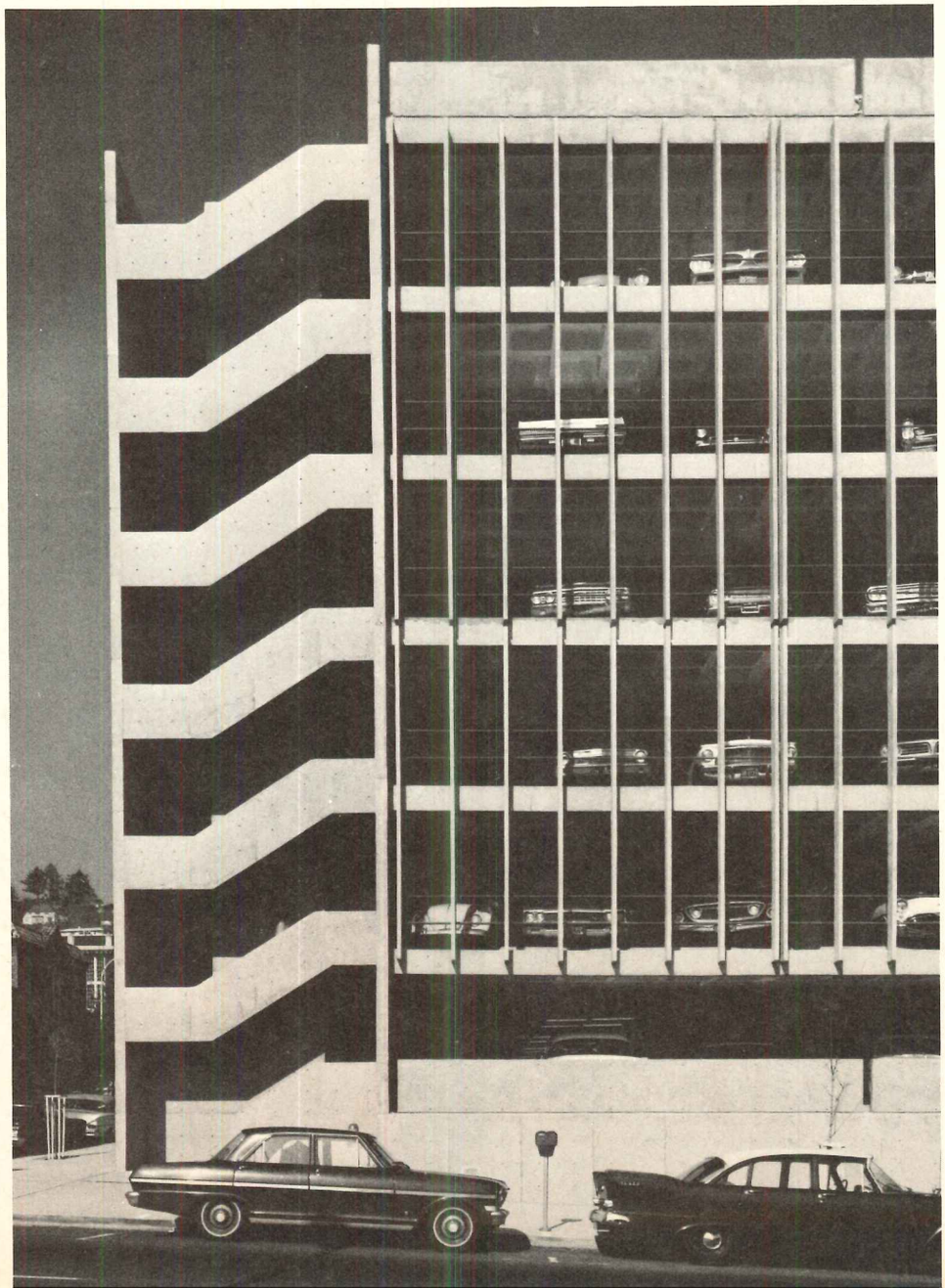
Art Hupy photos

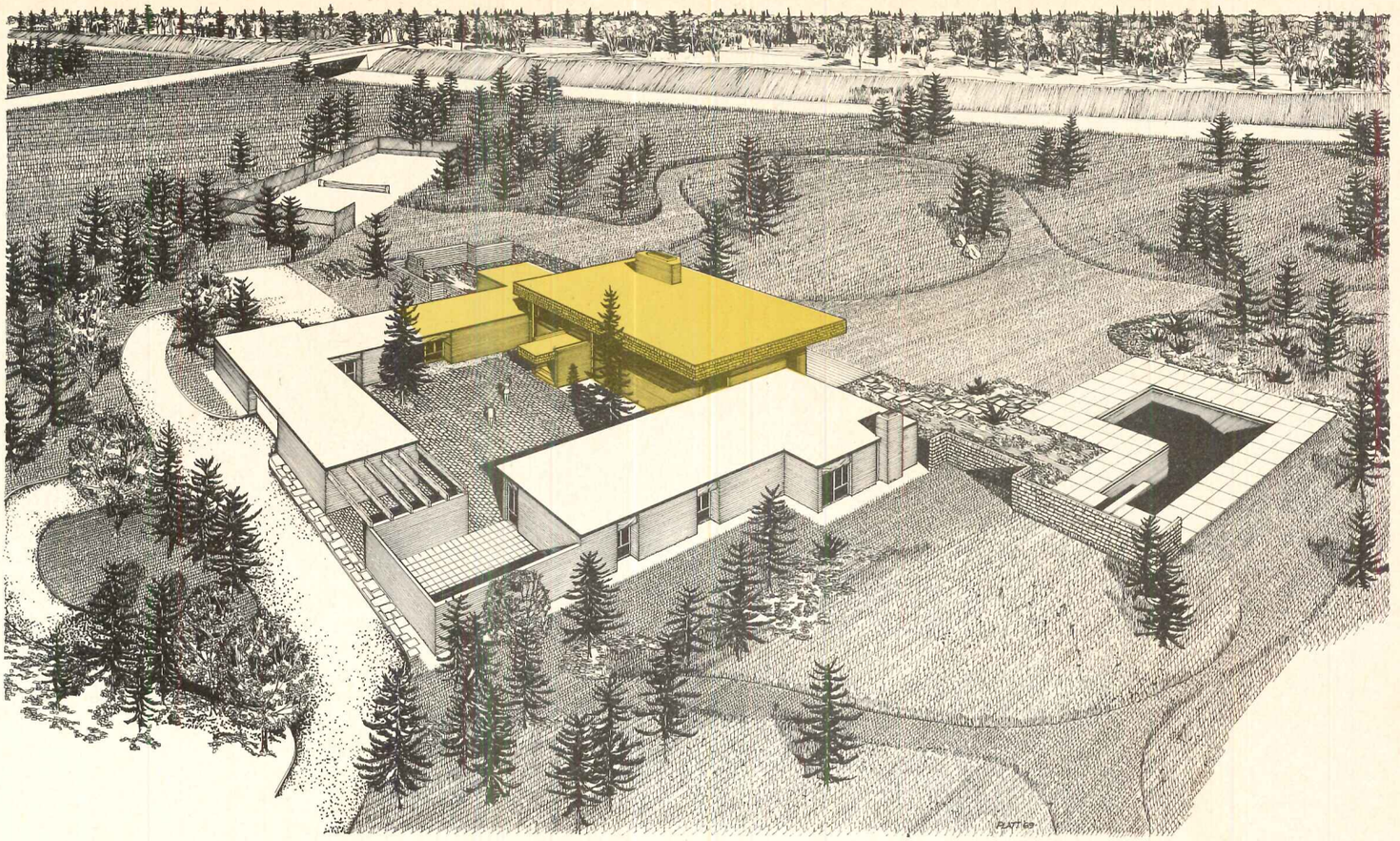
4

MID-CITY SITE FOR EFFICIENT AND ECONOMICAL GARAGE

Although a limited budget, a site 200 feet square in downtown Portland, Oregon, and a program requiring parking for some 800 cars made this garage a difficult design problem, the result again makes the point that housing for cars can be good-looking. A drive-through warped surface solution, instead of a separate ramp system, contributed to the economy of the structure. Parking stalls on the exterior perimeter of each floor are flat; the central section is ramped; and the area between is slightly warped in four parabolic squares. Traffic is two-way on the central ramp, and one-way in the parking area. Columns, floors and shafts are poured-in-place reinforced concrete. The slender non-structural mullions, however, are precast, prestressed concrete and support the interior guard rails on each floor. The eight-level structure provides parking for 812 cars, and cost $1,192,000 to build.

PARKING STRUCTURE, PORTLAND STATE COLLEGE, Portland, Oregon. Architects: *Wolff Zimmer Gunsul Frasca Ritter;* structural engineers: *Cooper & Rose & Associates;* mechanical engineer: *Thomas E. Taylor;* electrical engineers: *Grant Kelley & Associates;* soils engineers: *Dames & Moore;* contractors: *Minden Construction, Inc., Contractors, Inc.*

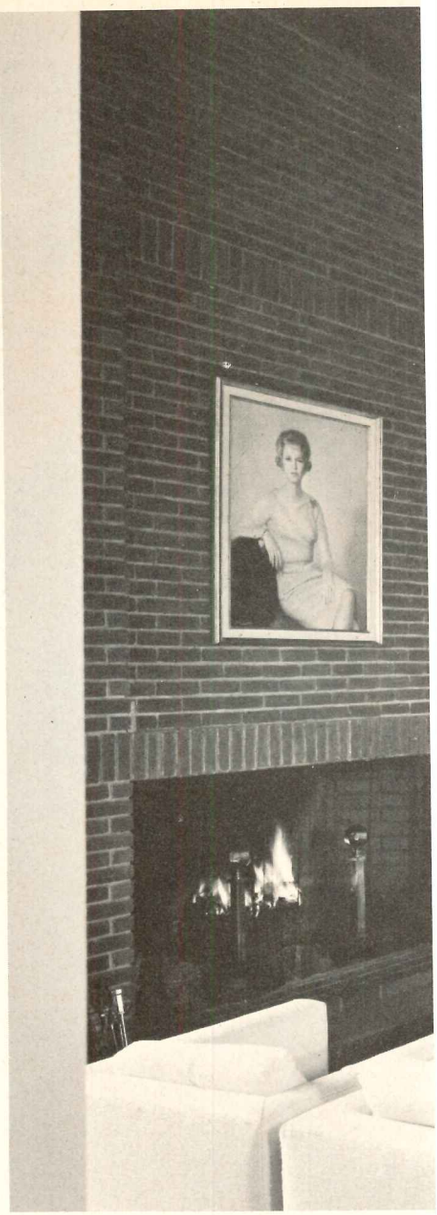


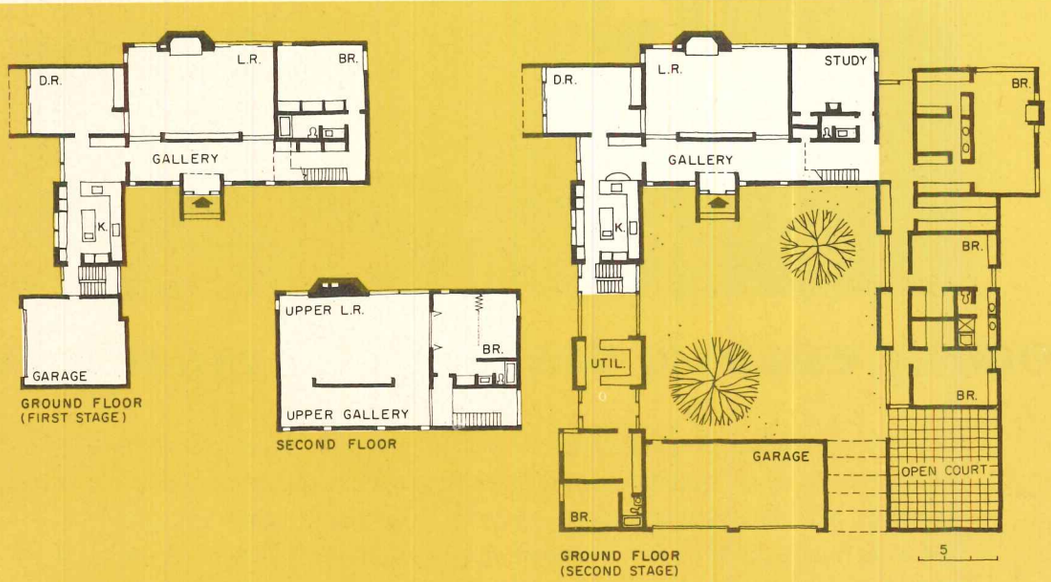


Joseph W. Molitor photos

A handsome country estate is designed for expansion

A two-stage master plan is architect Maurice Finegold's successful solution to his clients' wish for a "quietly elegant" residence which could expand to a sizeable complex accommodating a large art collection, ample space for parties and a growing family. As the site, a five-acre family estate in rural Maine, was quite flat and thus itself imposed no restrictions on growth at all, both foresight and control were especially critical to the architect's design. The first stage, now built, is a handsomely detailed "fragment" which, while complete in itself, already suggests the final complex for which it will form the major wing.





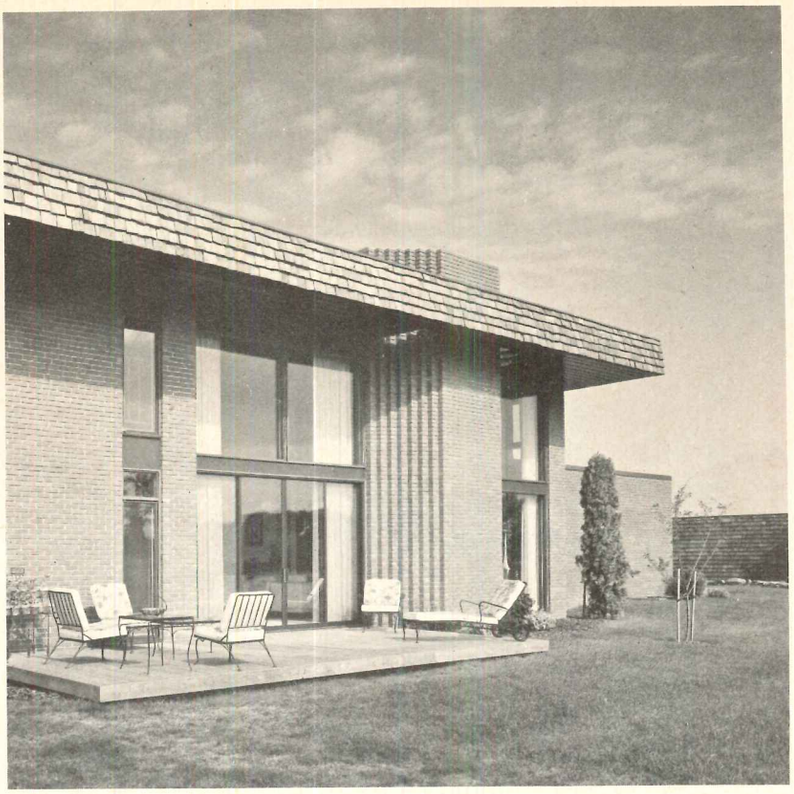
The first stage of the master plan includes the two-story south wing containing two-story entrance gallery, living room, two bedrooms, kitchen and dining room. Second-stage wings will house services, garage and bedrooms, with present bedrooms becoming study and guest room. By organizing rooms around an interior court, the architect has established a clear organizing principle for growth of a large house, which will maintain a sense of the original unpretentious scale while trebling in size. The entry opening onto the spacious two-story gallery and living room will remain the focus of the expanded house. But the new scheme will offer a new sequence of spaces as the visitor progresses from the drive into the compound—through open court, sheltered entry, and im-

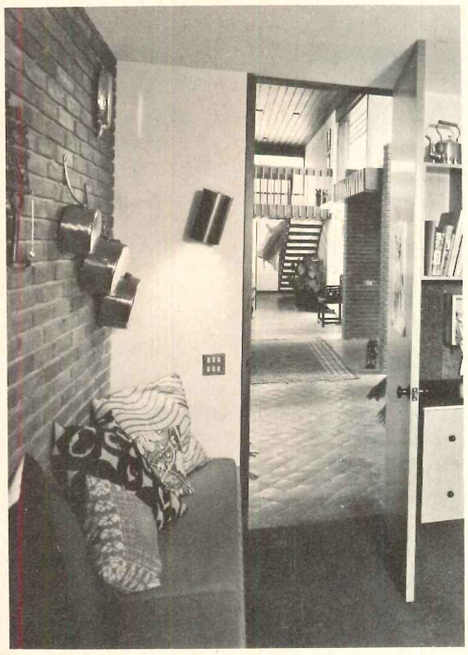
Warm textured materials include stained native pine for high ceilings, window and door frames, red oak floors, and off-white plaster walls. Living room sofa pillows are hot pink and orange. Natural finished, neutral colors in the dining room are contrasted by a bright, red wall. White-plaster wall dividing gallery and living room, below, provides a handsome display space for the owners' paintings.

posing gallery and living room.

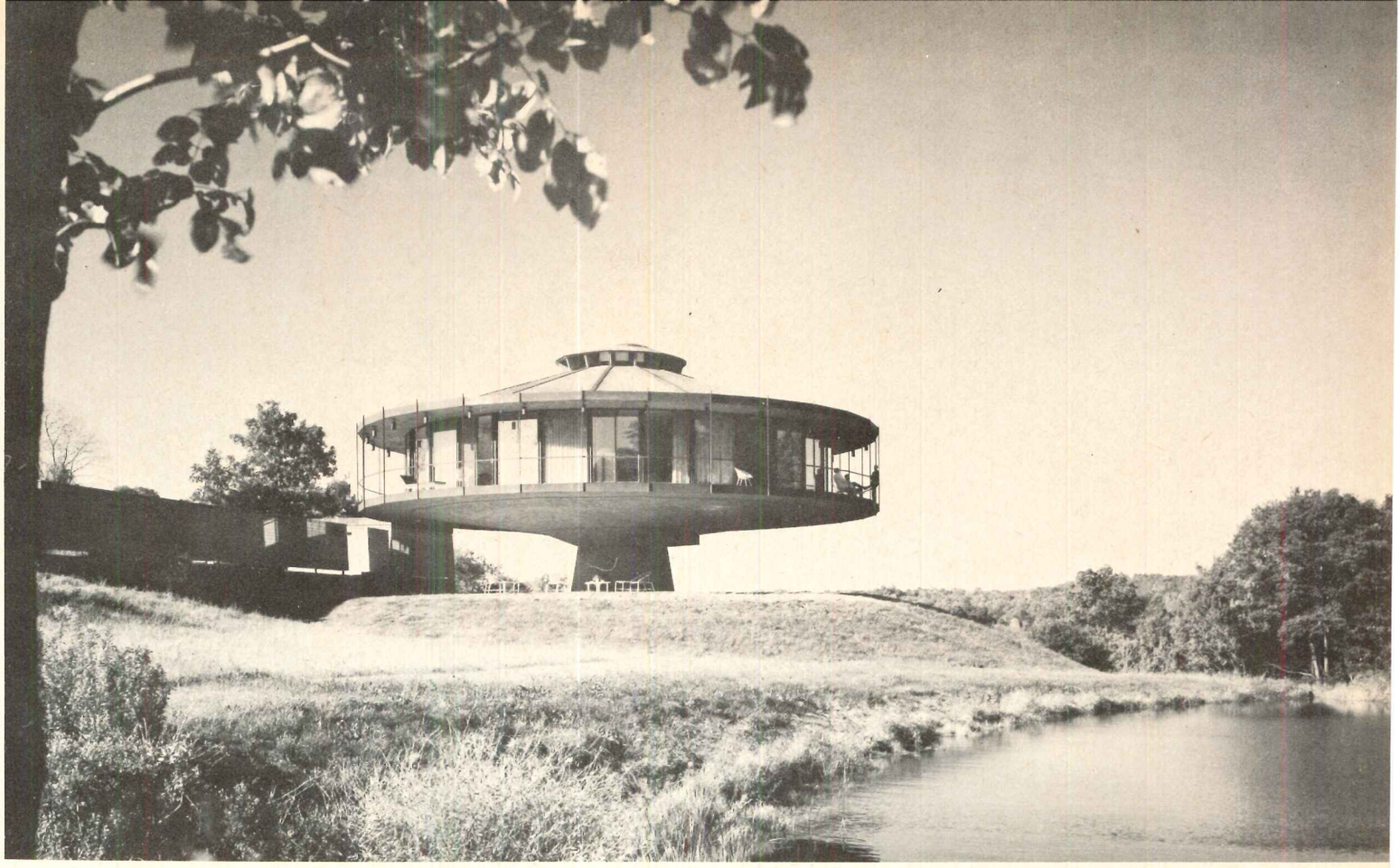
Strong exterior massing combined with simple brick and cedar shingle complements the plan to give the house great character on a flat site. The unity of exterior scale is contrasted by a variety of interior spaces. Here too, materials and scale are expressively handled. Careful detailing of fine, natural finishes—brick, red oak, stained pine and rough plaster—was designed to give warmth and scale to the imposing two-story rooms while meeting a principal design requirement of "quiet elegance."

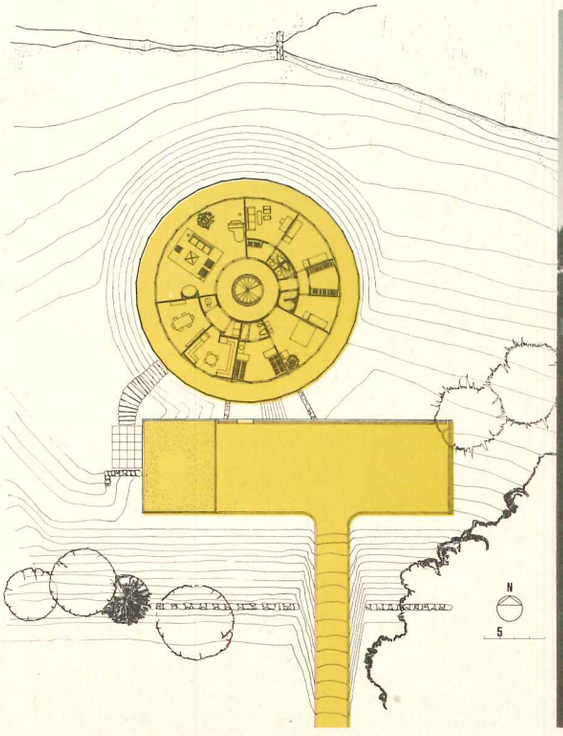
HUTCHINS HOUSE, Bangor, Maine. Owners: *Mr. and Mrs. Christopher Hutchins;* architect: *Maurice N. Finegold;* structural engineers: *Abraham Woolf Associates;* heating: *Leo Brissette;* sound: *Audio Lab;* landscape architect: *Carol Johnson;* interiors: *Maurice Finegold;* contractors: *Owen Gray and Son.*

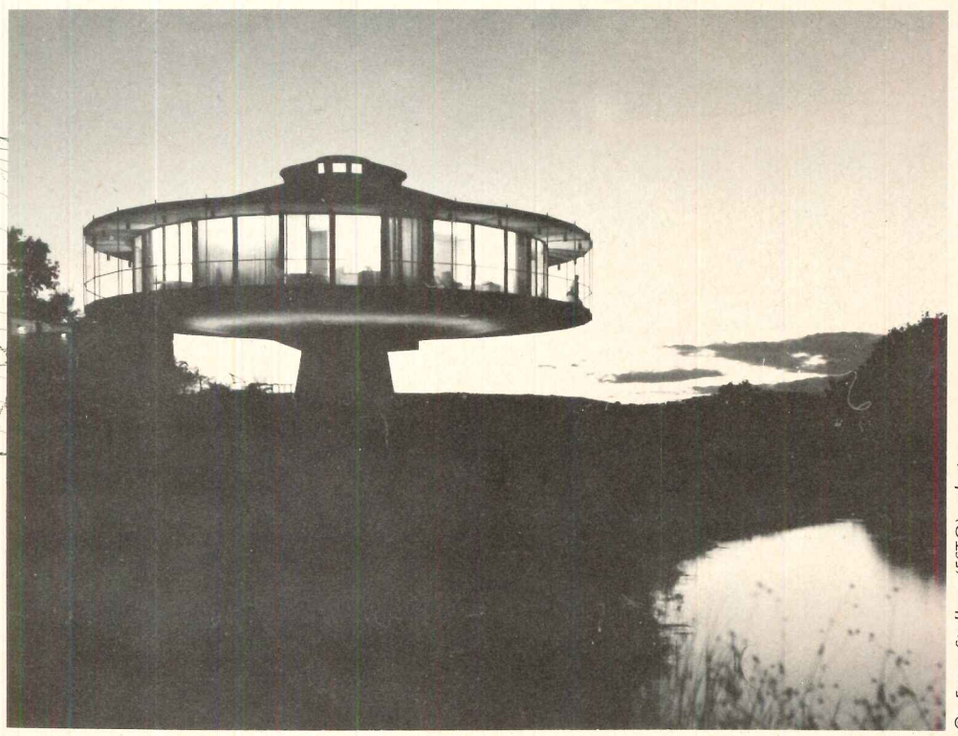




The unusual treatment of the brick chimney and cedar shingle roof shown in the photo above typifies the kind of precision and sensitivity with which form and material are combined to achieve a unified design statement. The roof overhang is pierced by the brick chimney form and the deep shadow reveal continues around the house as a major design motif. A variety of interior spaces can be glimpsed in the view from kitchen to open stairs beyond entrance gallery in photo at left and in photo of the kitchen, below.



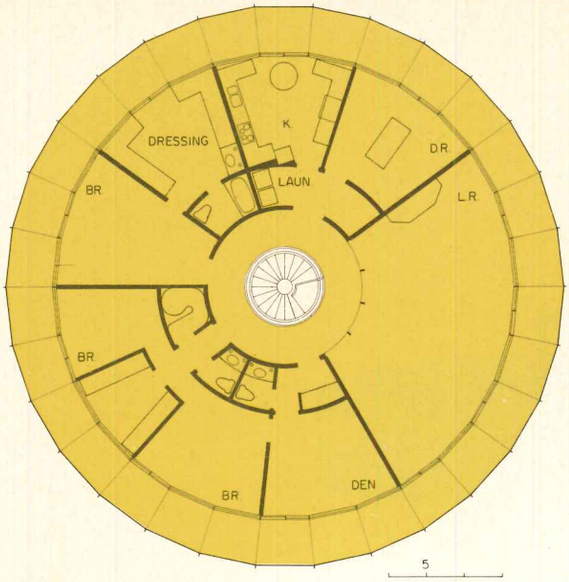




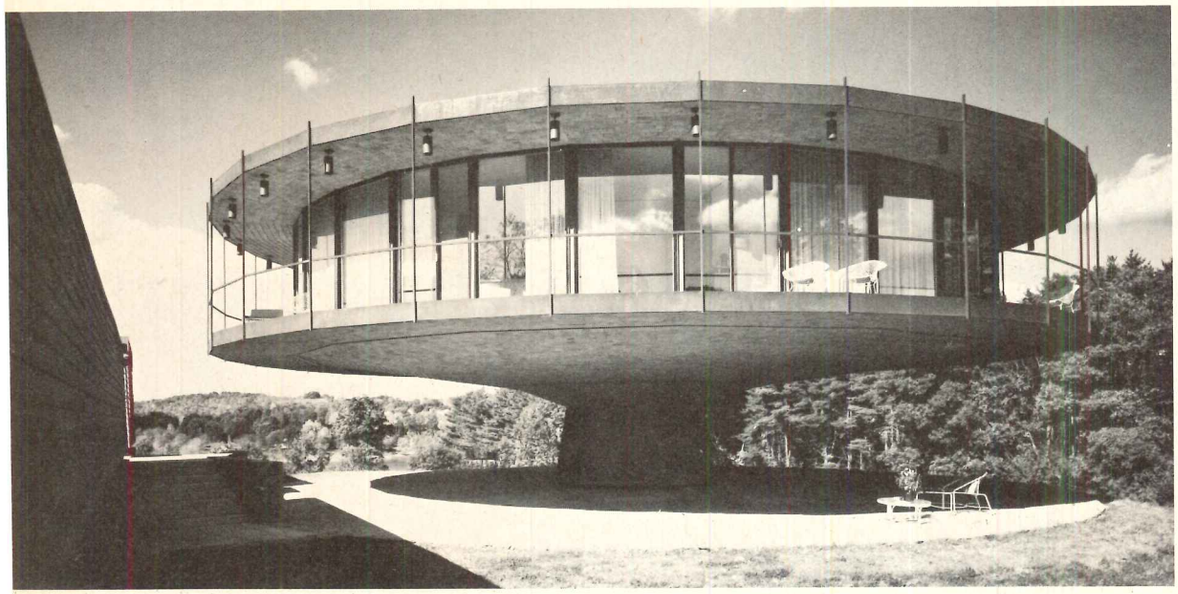
© Ezra Stoller (ESTO) photos

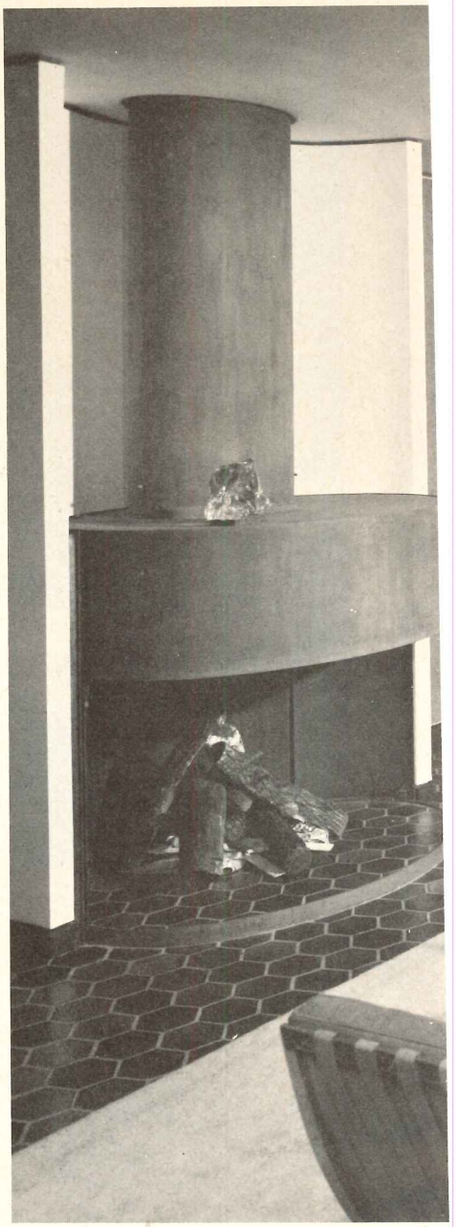
Beautiful detailing enhances a very special house

The unusual glass-walled revolving house shown on these pages was designed by architect Richard Foster for his own family on a six-acre site in rural Connecticut. Rejecting many more conventional schemes, the architect arrived at the final design as the ultimate response to the site's breathtaking, near-perfect view of the surrounding countryside. For fullest advantage of the view—farmland hills and a distant lake to the west, a meadow and nearby pond to the east, and a pine forest to the north—the architect enclosed his circular house in glass, set it on a pedestal, and made it rotate for changing landscape, sun and mood.

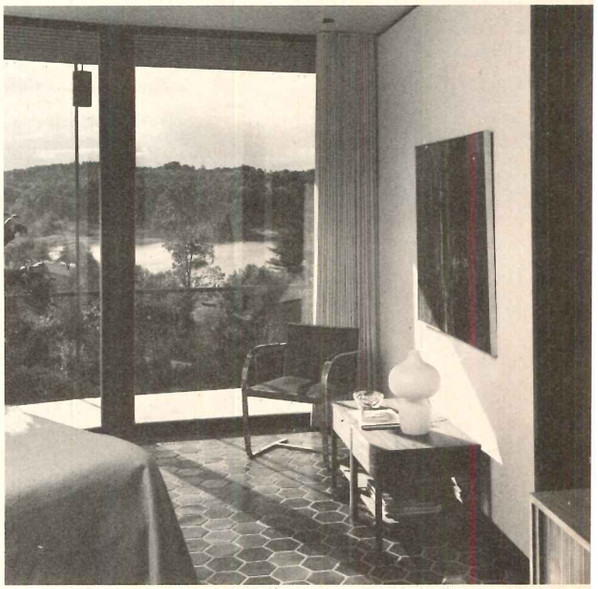


The key to turning a special shape into a workable house was the plan, and the key to a successful plan was provision of plenty of space, good circulation, and many special built-ins. The house is 72 feet wide, and pivots on the central staircase and hall for efficient circulation. A wide opening from living room to hall increases spaciousness, and, most importantly, provides immediate orientation when the house revolves. Service rooms are grouped at narrow ends of segments to leave the periphery mostly glass.





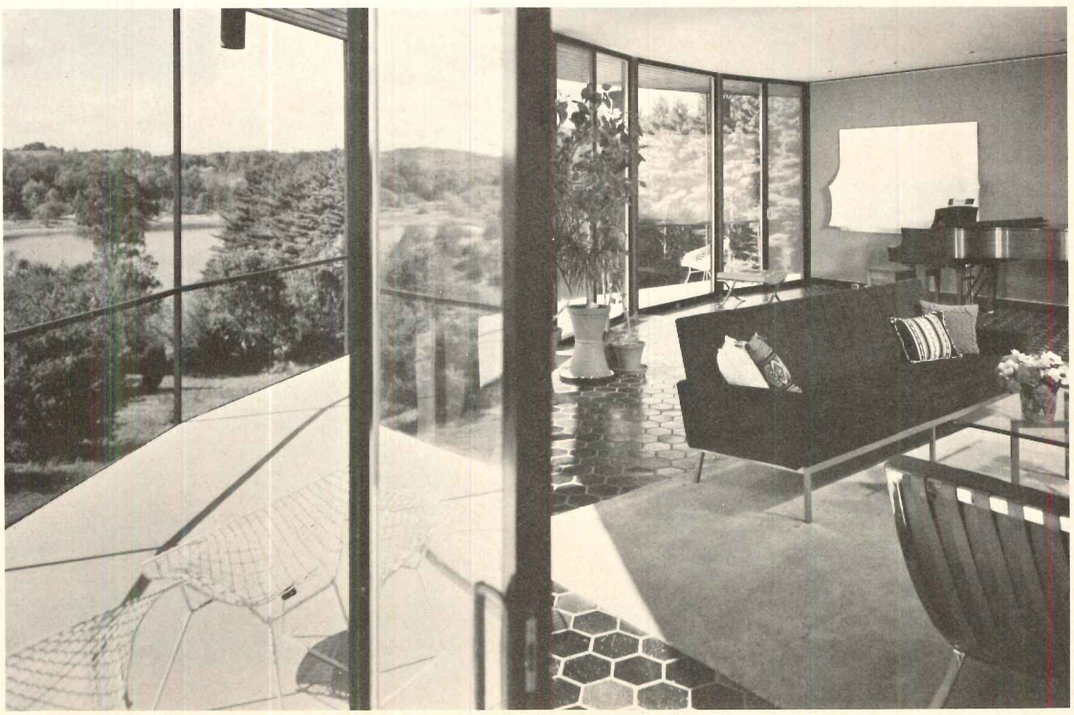
The circular house is anchored to its site by a concrete pedestal which contains entry, staircase and various utilities, and supports a 14-foot-wide ball-bearing ring which in turn carries the entire superstructure. A control panel regulates motion which varies to five feet per minute and is barely perceptible. The house is very special, but it is also a year-round, everyday house designed for an active family. The architect's solution successfully achieves complex organization for living while preserving the unity and symmetry of a self-contained formal shape. For all the ingenuity of plan and mechanical detail, the real interest and delight of this beautifully detailed "machine for living" lies in the high degree of refinement with which the radical architectural design has



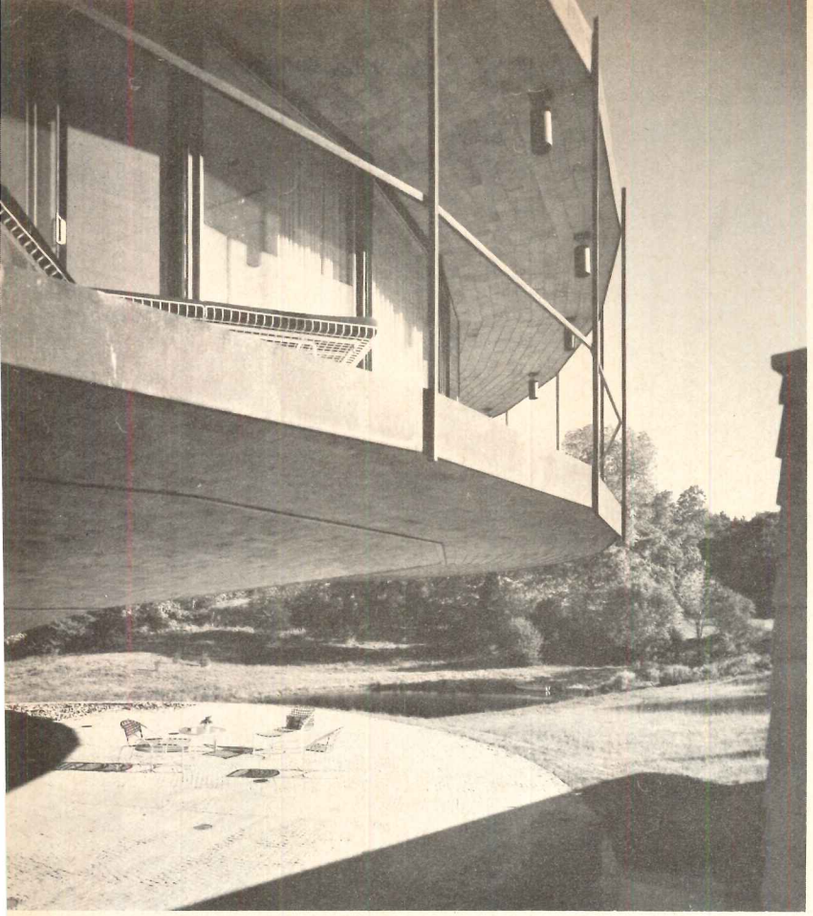
been conceived and carried out.

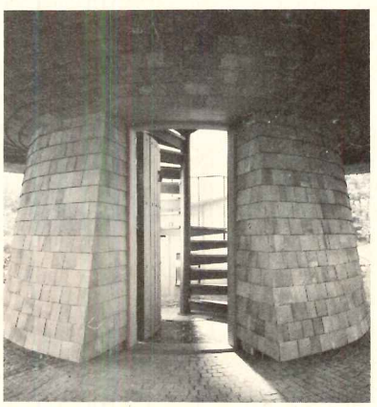
Natural-finished materials are unexpectedly appropriate to the circular house: beautifully-weathering pre-rusted steel; cedar shingle cladding for curved soffits; glazed, hexagonal-shaped tiles for unusual floor shapes.

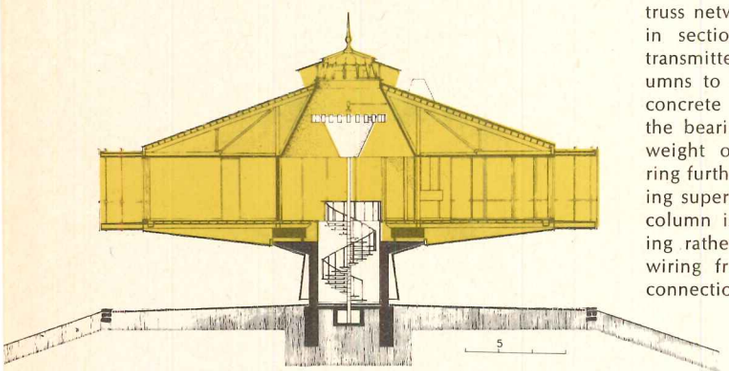
Spaces within and around the house received as much attention as the view from it. The approach—through a walled motor court, beneath the great tree-like superstructure to the pedestal entry—offers a varied spatial sequence while gradually revealing the breath-taking view.



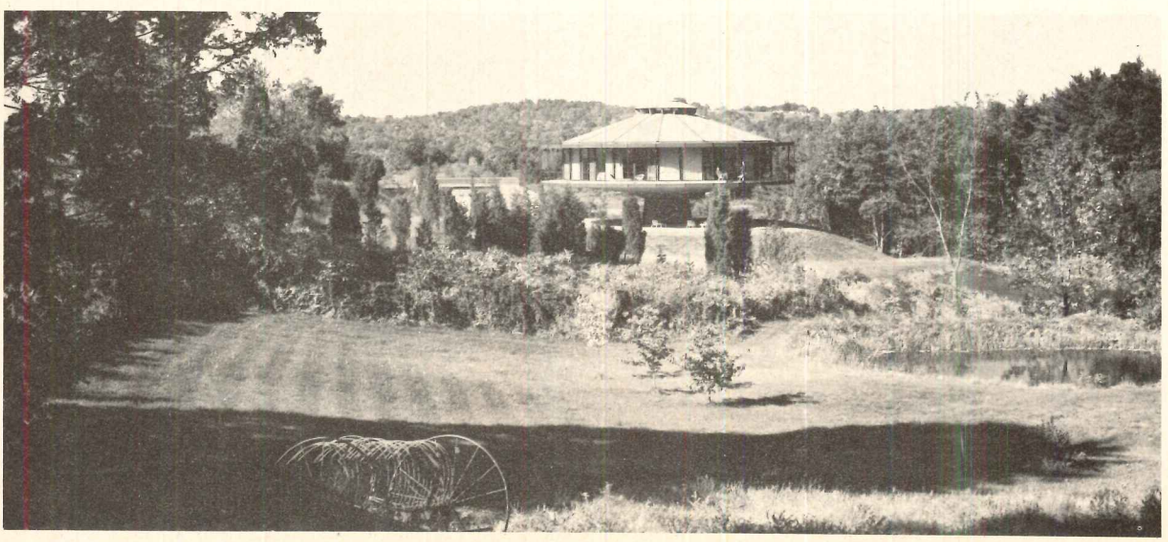
FOSTER HOUSE, Wilton, Connecticut. Architect: *Richard Foster;* engineers: *Zoldos and Meagher (structural); Meyer, Strong & Jones (mechanical);* landscape and interiors: *Richard Foster;* contractor: *William Mewing.*







Floor and wind loads, which with the 30-foot cantilevers could not be carried to the ball bearing supports by beam action alone, are in fact hung from a series of tension-ring-bound vertical trusses. Asymmetrical loads are redistributed by both the roof-top tension ring and a second, horizontal truss network (defining ceiling in section below) and then transmitted down by hall columns to a massive reinforced concrete ring, which rests on the bearing points. The sheer weight of this 50,000 pound ring further stabilizes the rotating superstructure. The central column is nonstructural, serving rather to carry pipes and wiring from core to rotating connections.



TALL OFFICE BUILDINGS: THE PROCESS OF DEVELOPMENT

Office buildings are being designed at a phenomenal rate in this country. The latest Dodge Construction Statistics show that over 31 million square feet of new office space was contracted for in January and February of 1969. This is an 80.5 per cent increase over the same period in 1968; it is no short-term gain but a significant quantitative shift in this important class of buildings, and has specific causes. We are now in a 20 year low in unemployment: an important reason has been the expansion of white collar office staffs. Accordingly, there is today almost no vacant office space in the country. Commercial banks, pension funds, and life insurance companies are pumping money into office buildings as the best long-term investment in the construction field. Most of the new space is being added in core-city high-rise towers, and the problem of designing these dominant buildings has become common across the country.

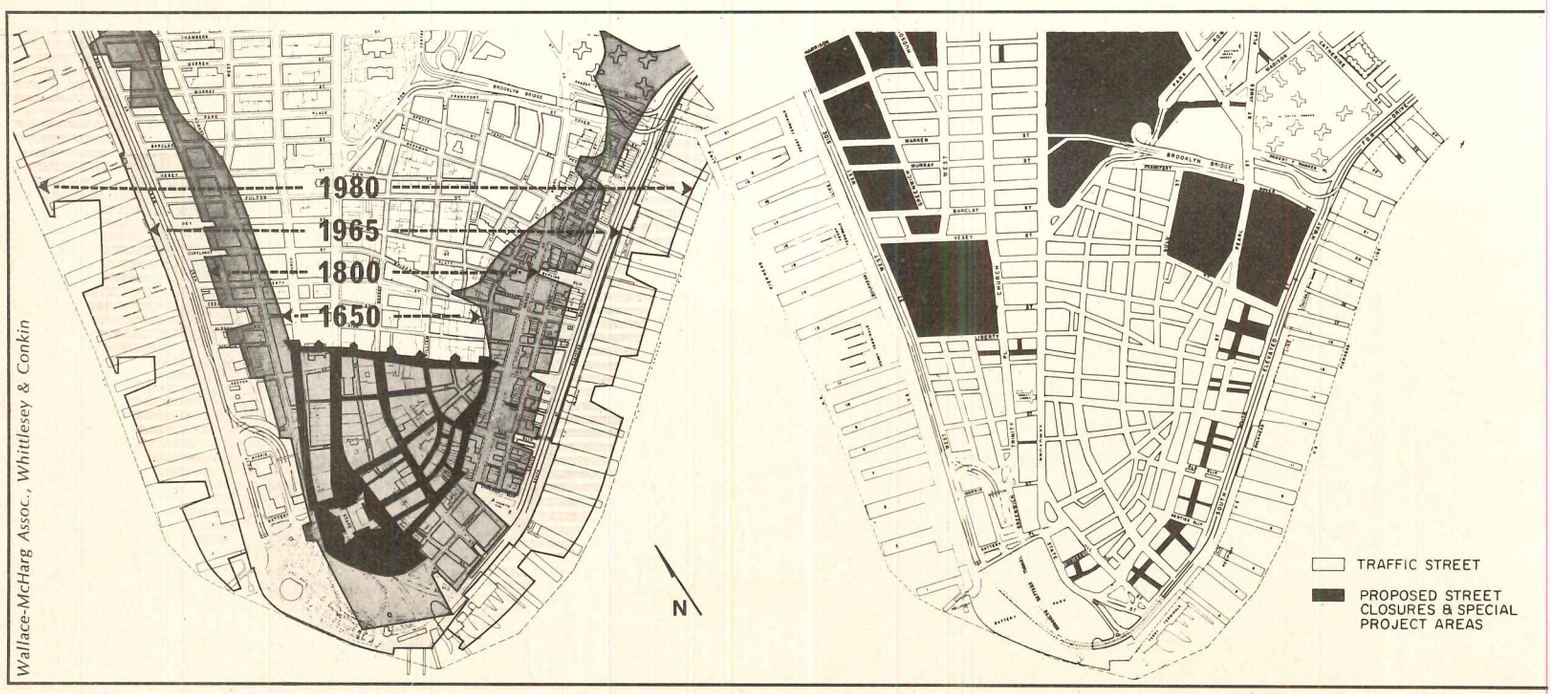
The high-rise structures on the following pages illustrate three fundamental problems in the development of nearly every office building: the organization of the site and the building's relationship to the city around it; the planning of interior spaces to meet a particular client's needs; and the problem of designing the tower itself—its shape and fenestration—both to fulfill the program and to create a sensitive visual expression of the total form.

The problem of a building's relationship with the city, as illustrated here by the proposed 55 Water Street Building in lower Manhattan, is particularly significant today. 55 Water Street will have 3.2 million square feet of rentable office space and will occupy four city blocks. When building reaches this scale (and many will, since tenants are demanding large areas per floor, rather than stacked-up smaller floors) the questions of architectural detail—a particular facade proportion or the rhythm of windows to piers—are overpowered. We must ask first what that building will do to the city, as New York's planning agencies asked the developers of 55 Water Street.

The problem of creating office interiors is more common—and there are few design problems in architecture where more rules and habitual conventions apply. But creating the interiors of the new McGraw-Hill Building in New York (pages 186-191) involved some more-than-conventional study of a particular user's needs, and a more-than-conventional effort in arranging spaces and designing forms to fulfill those needs. It is the process by which needs are identified and solutions presented that is the most pertinent story.

In the First National Bank of Chicago (pages 192-196), we see the evolution of an architectural form to fulfill its program. Special problems influenced the scope of the project and the shape of its tower; the resolution of them has produced a remarkably innovative solution in high-rise architecture.

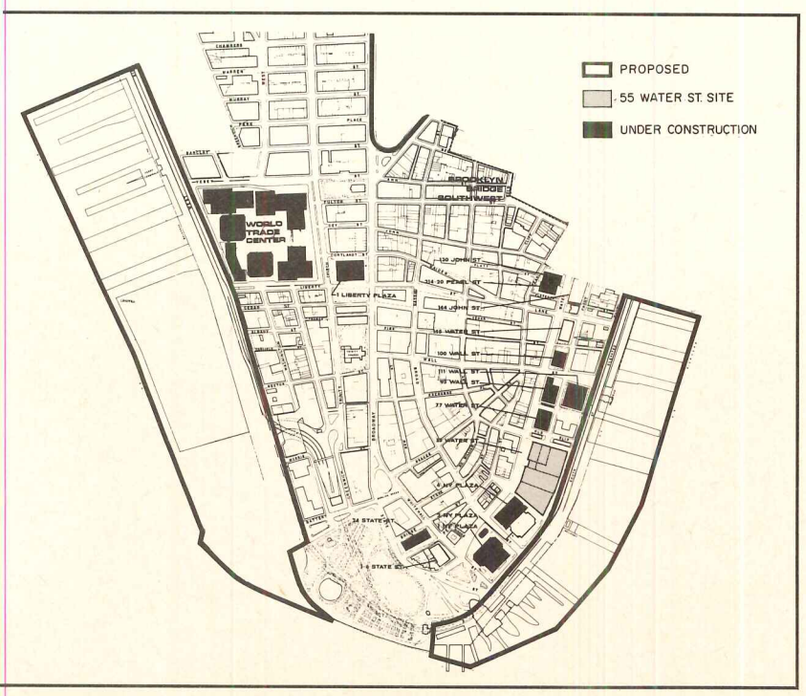
—Robert Jensen



Wallace-McHarg Assoc., Whittlesey & Conkin

DESIGN IN THE CONTEXT OF A CHANGING CITY PLAN

The composite aerial view of lower Manhattan (left) shows a model of the 55 Water Street Building as it will appear against the skyline of the existing city. The present Jeanette Park appears to the left of the building, but the street between them, Coenties Slip, has now been closed and its area added to the redesigned park. Battary Park appears at the far left. The lower Manhattan Plan calls for landfill and new developments out to approximately the end of the piers in the lower part of the photo, plus an equal extension of the island into the Hudson River pier line (top of photo). 55 Water Street has provisions for a future extension of its plaza bridging the South Elevated Highway (between 55 Water Street and East River in photo), connecting it with future landfill projects.



Superimposed in the center of the photograph at left is the proposed 55 Water Street Building, designed by Emery Roth & Sons, and now in working drawings. The 56-story tower, its sloped-wall 15-story wing, and its several ground-level floors will contain 3.5 million square feet of space, and a net rentable area of 3.2 million square feet. These figures make it, on the basis of rentable area, the largest privately-developed office structure in the world. It will be the city's first structure to begin implementing the Lower Manhattan Plan, a comprehensive study submitted to the city in 1966 calling for extensive landfill and systematic rebuilding. The size of the 55 Water Street Building, the public amenities that it will have, and the fact of its being the first private building to conform to the Lower Manhattan Plan, are all a direct result of a remarkable series of negotiations between Uris Brothers Building Corporation (its builders) and New York's city planning agencies.

The goal: conformance with the Lower Manhattan Plan

The Lower Manhattan Plan calls for what would be in any other location an entirely new city: office structures, plazas, apartments, shops, and schools to either house or employ 300,000 to 400,000 people. Development will take place on new land created by filling portions of the Hudson and East Rivers on both sides of the island out to the present pier-head lines. New projects will occur within portions of the existing city, and its street pattern will be altered. The three maps at the lower left tell the story. In the first map, the shaded portion labeled "1965" indicates the approximate boundaries of lower Manhattan today. New land will be created by filling out to the boundary marked "1980" or to about the existing pier-heads. Landfill is not unusual in Manhattan, as the map shows. The center map indicates the proposed location of new projects within the existing city, and the location of existing streets which will be closed. One of these special project areas is the World Trade Center, already under construction. The last map shows the site plan of the World Trade Center and the site of the 55 Water Street Building within the fabric of the existing city.

55 Water Street is being developed as the first privately-financed link to the future landfill projects. The site occupies four existing blocks, and the streets that used to run between them: Cuyler's Alley, one block of Front Street, and Coenties Slip. As can be seen in the center map, these streets were proposed for closing by the Lower Manhattan Plan, and the City has attempted to follow its guidelines.

To achieve the goal: negotiations between the developer and the city

Uris first approached the City with a scheme for developing its four blocks of downtown Manhattan in 1967, and both the City and Uris knew that the streets between Uris's properties would have to be closed if the development was to proceed. A series of surprisingly productive negotiation sessions were held between Uris and the Office of

Lower Manhattan Development, with both parties acting in their own self-interest within a spirit of compromise. The City wanted some useful urban amenities following the Lower Manhattan Plan, and Uris wanted a lucrative financial investment. The negotiations indicate the power a city may use to insert public amenities into a private development, while also allowing the developer a sounder economic investment than he had before.

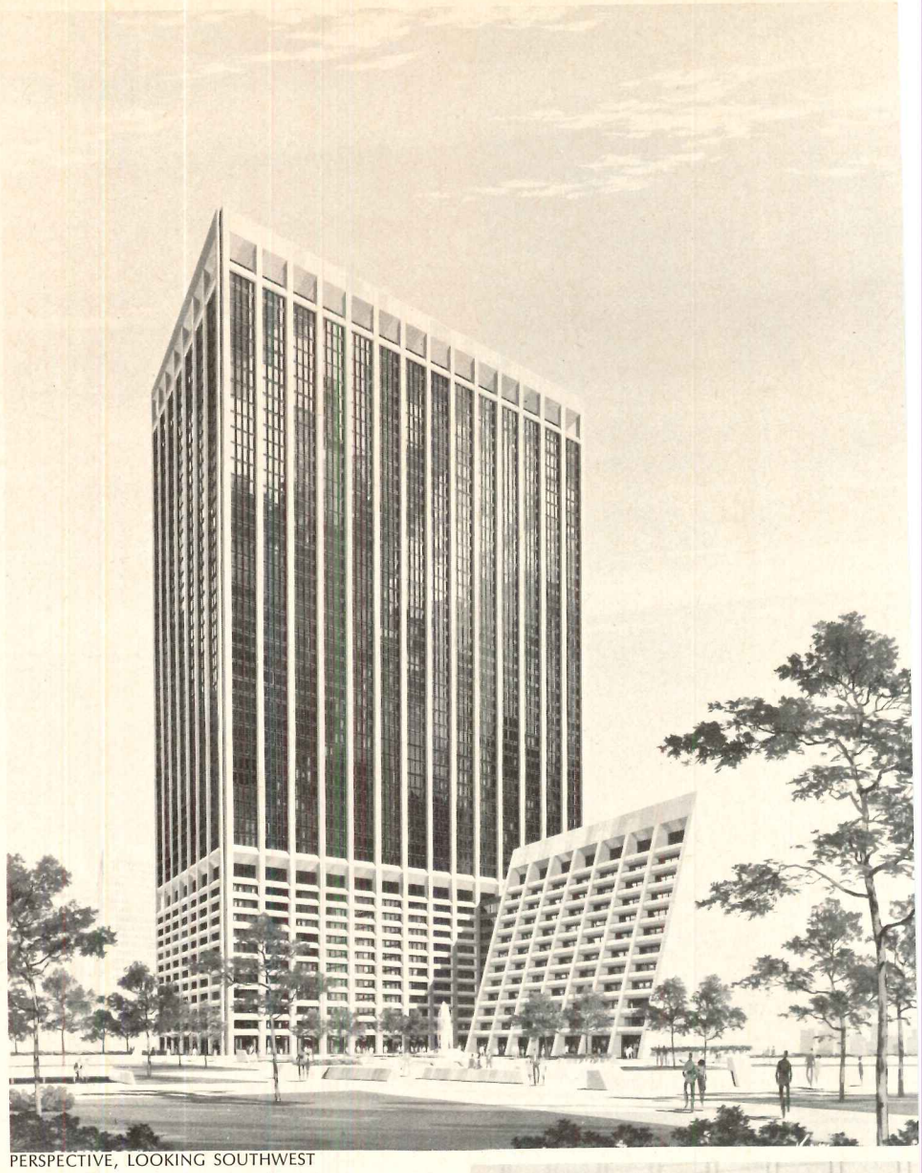
With the building now in working drawings and excavations underway, the list of exchanges looks like this: Uris was given permission to buy and to close the three city streets as listed above, giving them a 100,000-square-foot unified parcel of land. A zoning amendment was passed, permitting Uris to build a plaza more than 12 feet above street level, while still being allowed the extra height benefits which accrue from the inclusion of such open spaces within a project. Uris was also given a dispensation from the normal set-back regulations along Water Street.

In return, Uris agreed to build a new 375-car parking garage under the adjacent Jeanette Park, and to redesign, reconstruct, and maintain Jeanette Park for the City. They agreed to lease at least two-thirds of the commercial space which would front on the park or the plaza to retail commercial establishments (restaurants, clothing shops, etc.) rather than to banks or brokerage houses. In addition, the city required that an entrance be provided from the site to the proposed Water Street subway line, and that the structure of the new plaza and its retaining wall along South Street be designed for future connection to the landfill projects to the east of the city.

Uris has hired Lawrence Halprin & Associates to design the new Jeanette Park and the plaza. Halprin has made only a study model of the park and plaza to date, but his designs indicate he will pursue the themes developed in his widely-praised city plaza for Portland, Oregon. Jeanette Park will be defined on its two long sides by the 55 Water Street tower, (with a 20-foot-wide arcade facing the park) and by several other tall office structures opposite, one of which is already in place. The park will be molded with poured concrete into walks, terraces, and jutting "rock" forms capped with grass and planting areas. Water will, in places, flow down "rock" crevaces into collecting pools at their edges. Below will be the 375-car parking garage, with its entrances molded into the park design.

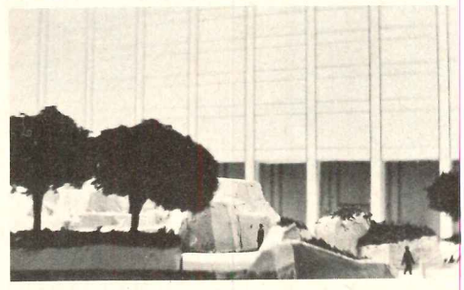
The Roth building will have a sloped-wall wing overlooking the plaza and facing future land developments to the east, acting as a closure element on the plaza. The plaza will eventually span the South Elevated highway, and has been located three floors above existing street level for exactly this purpose. The building will have an arcade facing Jeanette Park and continuing around on the Water Street side (ground floor plan, right). The largest portion of its leasable office space will be in the 56-story tower facing Jeanette Park.

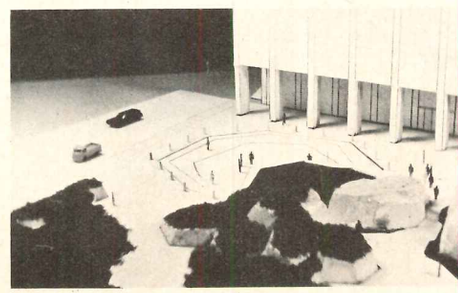
55 WATER STREET BUILDING, New York. Architects: *Emery Roth & Sons;* developer: *Uris Buildings Corporation;* landscape architects: *Lawrence Halprin & Associates.*

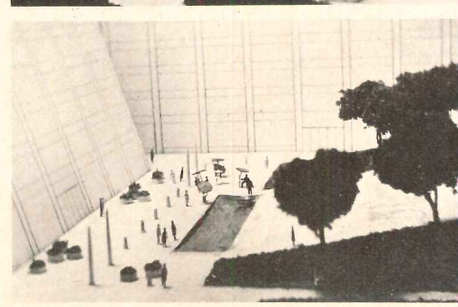


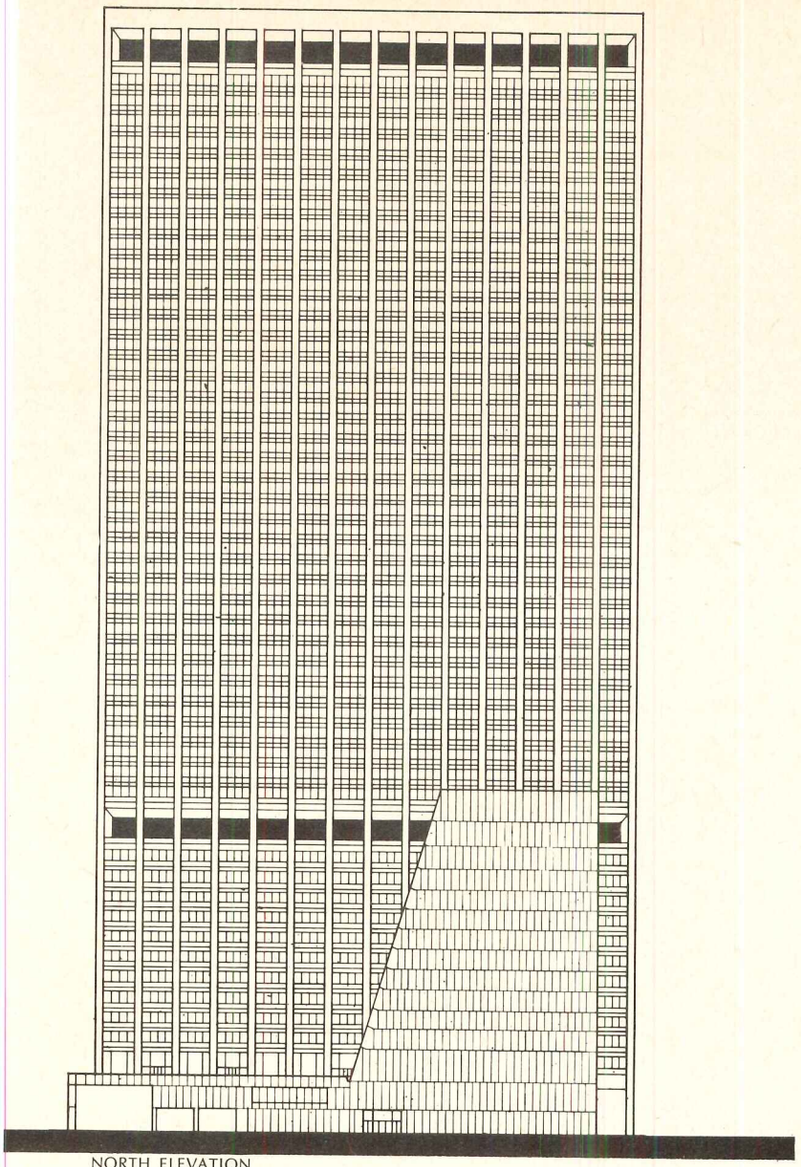
PERSPECTIVE, LOOKING SOUTHWEST

Halprin's study model for the plaza and Jeanette Park (photos, right) show the scale of his jutting rough concrete forms. They appear small against the huge bulk of 55 Water Street, but are 35 feet high in some parts, making what should be an effective transition from human to super scale.



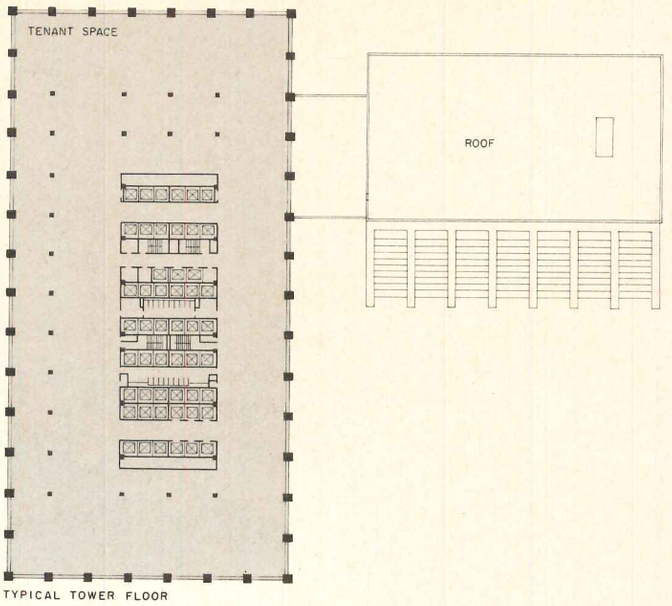




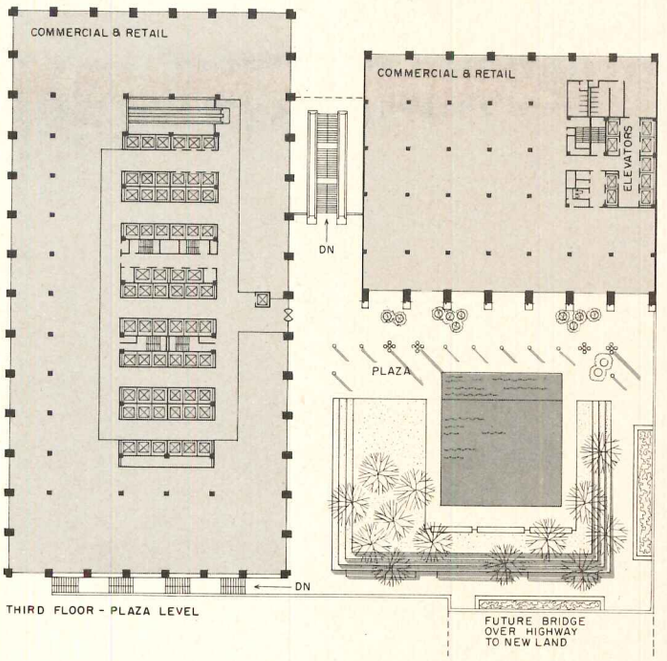


NORTH ELEVATION

The ground-level plan (below) shows the entire site being developed by Uris: Jeanette Park and the huge lower level of 55 Water Street, with its leasable space, ramps to parking below, and the escalators leading to the third-level plaza (middle plan). The plaza model photo (below, left) shows the inclined water cascade which will be its main feature, with the collecting pool in front.

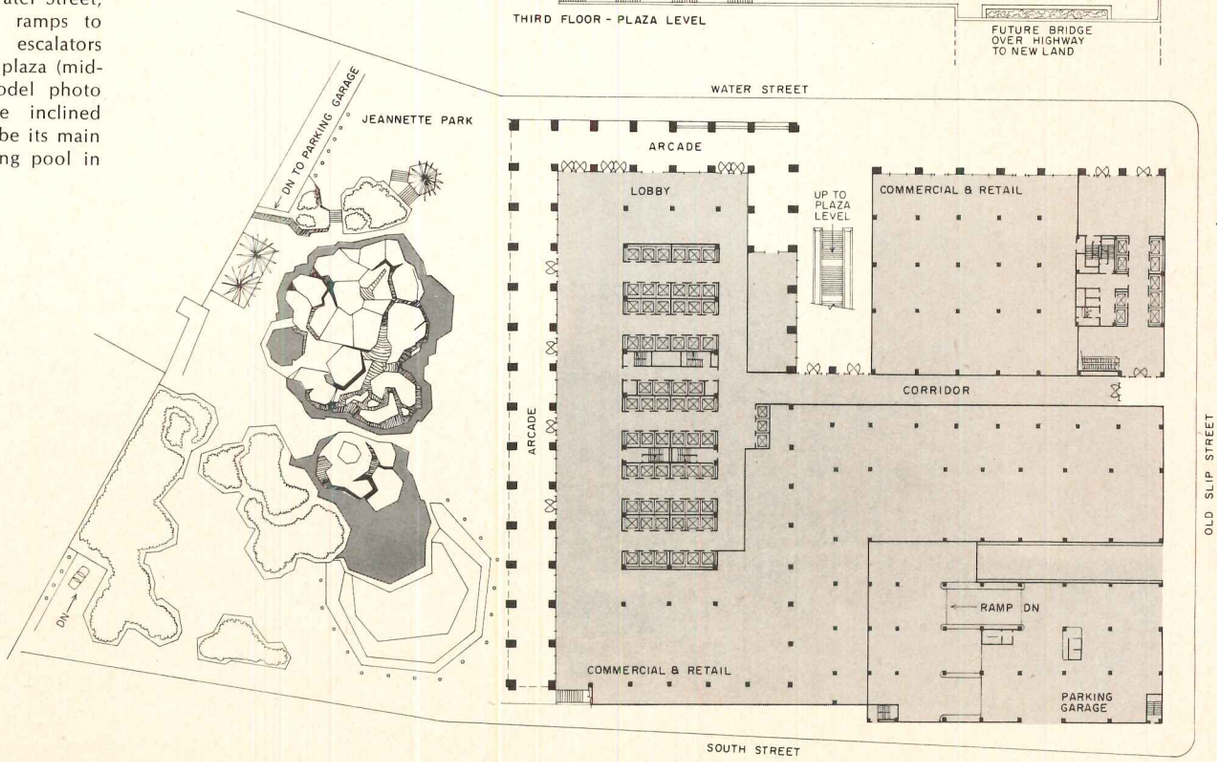


TYPICAL TOWER FLOOR



THIRD FLOOR - PLAZA LEVEL

FUTURE BRIDGE OVER HIGHWAY TO NEW LAND



GROUND FLOOR

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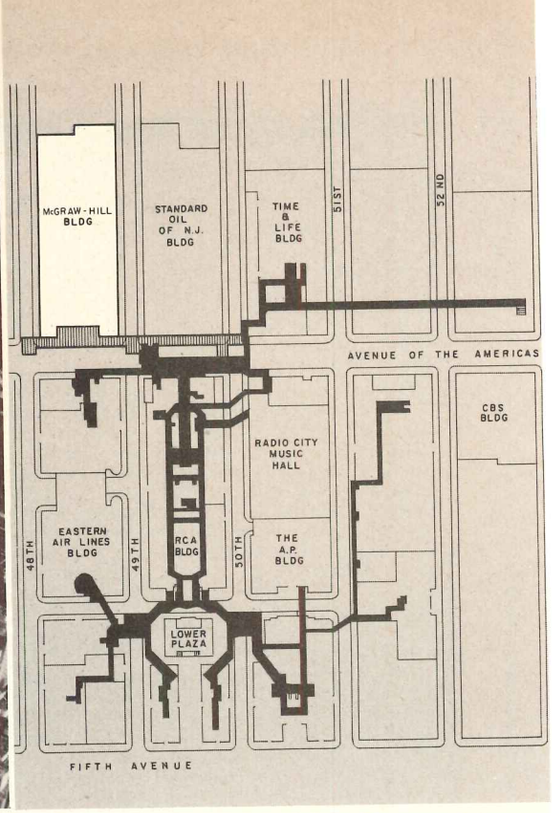
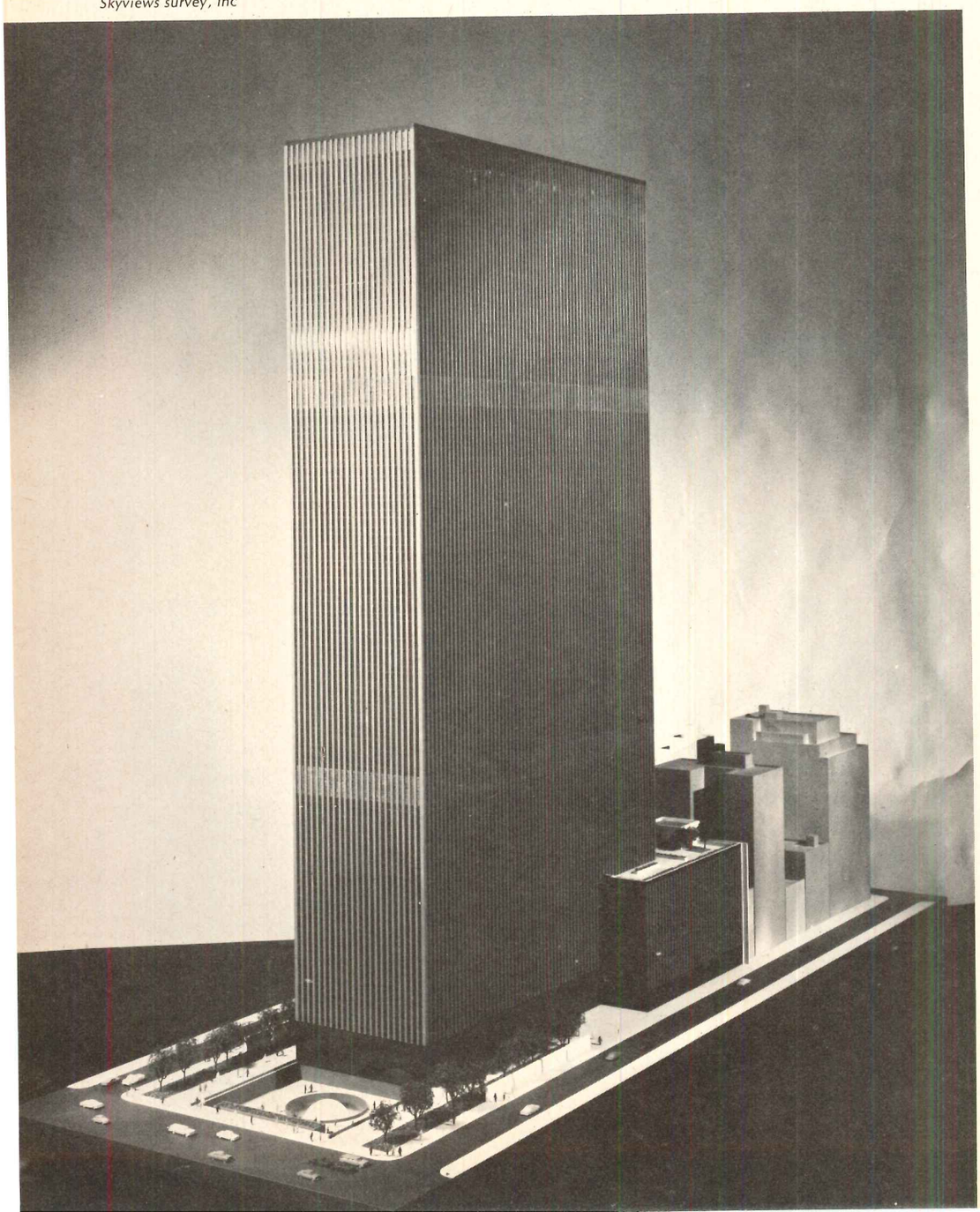
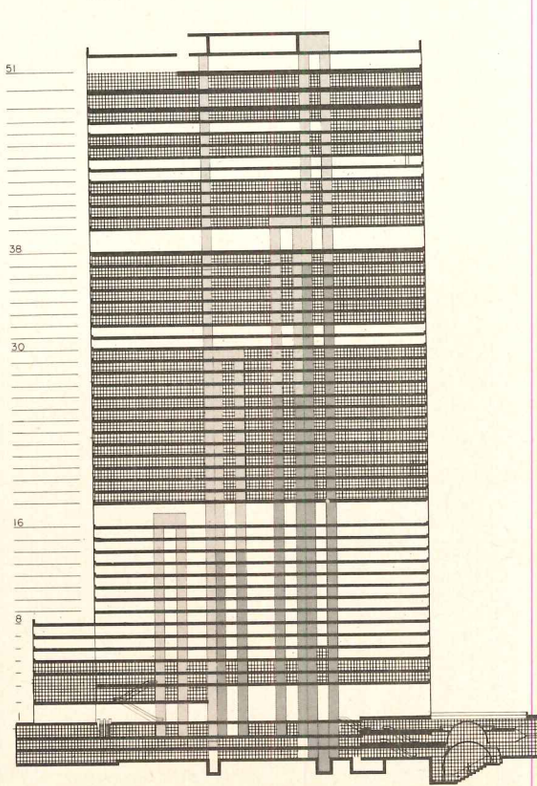
Skyviews survey, inc





The aerial photo (above, left) shows progress on the site of the new McGraw-Hill Building between 48th and 49th streets on the Avenue of the Americas. Diagonally across the street is the R.C.A. Building, tallest in Rockefeller Center. Above is a plan of the underground concourse servicing all Rockefeller Center buildings, with the proposed link to the McGraw-Hill Building indicated by hatched lines. The model (left) shows the tightly-spaced pier and window rhythm of the facade; pier facing will be stone, with bronze-tinted glazing between. The section indicates McGraw-Hill's spaces (shaded) in relation to the other tenant floors of the tower. The building extends three floors below grade, with the plaza 12 feet below street level.



DESIGNING AN OFFICE BUILDING FOR A PARTICULAR CLIENT AND HIS NEEDS

The new McGraw-Hill Building is now under construction in midtown Manhattan, and will be completed in 1971. The process of developing this building has been intricate and in some ways unique, for the normal complement of one client to one architect has been doubled. Rockefeller Center Inc. owns 55 per cent, and is the principal client; Harrison & Abramovitz & Harris are the principal architects. McGraw-Hill owns 45 per cent, and the interior spaces that they will occupy are being designed by the Office of Alfred Easton Poor. It is the process of mutual exchange and agreement between these four organizations that is the most pertinent story of the building—particularly as applied to its interior layouts, which have been subjected to a detailed, well-thought-out study of basic design considerations vs. a particular user's requirements.

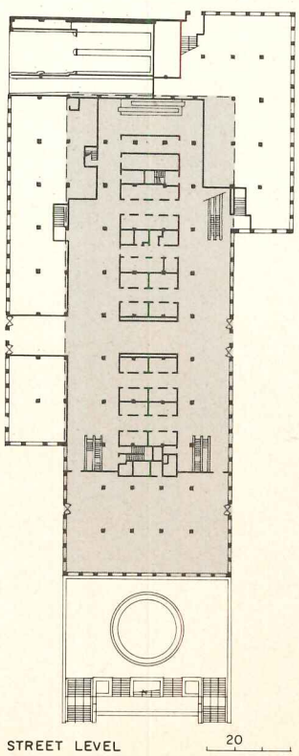
Initially, about two-thirds of the building's 51 floors will house the headquarters staff of McGraw-Hill, Inc.: the Book Company, which now publishes over 12,000 active titles, films and tapes; the Publications Company, which publishes 48 business and professional periodicals; and the McGraw-Hill Information Systems Company, with its Dodge Reports, Sweet's Catalog, and other activities. The remainder of the floors will be leased to other tenants. These leased spaces (section below, left) have been interspersed from the top to the bottom of the tower, rather than at one level: this arrangement will allow a flexible expansion of the separate divisions, as new space requirements occur.

The first stage: design within a context of city plan

In the initial stages of the project, Harrison & Abramovitz & Harris began design studies in conjunction with Rockefeller Center's decision to create two new office towers on the west side of the Avenue of the Americas. Standard Oil of New Jersey was to occupy one of the towers between 49th and 50th Streets, but McGraw-Hill had no connection, at this point, with the companion structure between 48th and 49th.

Designs proceeded during 1967, as the architects established a preliminary scheme for the tower: height, number of floors, gross square footage, and dimensions were developed, structural design was completed in preliminary form (including column placement), and a facade treatment was created, making the building compatible with the remainder of the Rockefeller Center complex.

McGraw-Hill had been considering several proposals for a new headquarters building prior to 1967, both within and outside Manhattan, but decided at that date to occupy the tower as principal tenant and to participate in the equity. The site had many advantages: The Sixth Avenue subway has entrances between 48th and 50th, and the Rockefeller Center complex itself has a unique system of underground pedestrian passageways linking all of its buildings. These concourse areas allow walking from building to building without interference from Manhattan traffic, and the new building is planned to link directly to them (see site plan).



The second stage: adjusting the building design to McGraw-Hill's needs

Some specific needs of McGraw-Hill were not readily fulfilled by the new Rockefeller Center tower, designed up to this point for an unknown tenant. For example: a cafeteria would be necessary, along with several private dining rooms and the kitchen facilities to serve them. A large commercial bookstore was needed at ground level. A 275-seat auditorium was required, with a column-free space which might require structural reframing at some location. Finally, it was hoped that all the office floors could be designed on a module, and a partition system created which would be interchangeable through all divisions. The Office of Alfred Easton Poor was immediately retained by McGraw-Hill as the architect primarily concerned with its interiors for the new building, and directed to coordinate its efforts with Harrison & Abramovitz & Harris.

In laying out the office floors, the first requirement was the module: a planning grid around which spaces could be allocated and partitions designed. Poor and McGraw-Hill had found in previous projects that a 5-foot by 6-foot grid—with the 6-foot dimension running parallel to the window wall—was ideal for open floors, with desks set in rows and few partitions separating employes. A 5-foot by 5-foot grid, however, was more accommodating when most occupants of a floor were to have private, partitioned spaces. Since the headquarters building would involve mostly offices for editorial staffs, the 5- by 5-foot grid was chosen.

It was then necessary to adjust the column spacing, the windows, and the dimensions of the core in the original building design to conform with this grid. Column bay spacing became 30 feet throughout the length of the tower, with 20- and 25-foot bays in the narrow direction (floor plan, above right). The architects then created a 2-foot, 4-inch pier/2-foot, 8-inch window rhythm continuously around the exterior, with load-bearing columns occurring in every sixth pier. The dimensions of the core were adjusted to the grid so that the proposed 3-inch-thick movable partitions could meet the permanent core walls in exactly the same plane.

Thus the final tower plan and its grid were based upon the needs of an individual employe's working space, rather than on the economics of steel sections in the structural frame, or upon some optimum efficiency in mechanical equipment ducts or lighting requirements.

Stage three: determining specific office space requirements

Work was now begun on the resolution of two questions: 1) How much space would McGraw-Hill need at the time of occupancy and in the near future?; and 2) How should the system of interior partitioning fit together, how should it look, and how should it be integrated with the heating, air conditioning, and lighting? To determine space needs, a series of forms were completed by all chief editors,

publishers, and executives—beginning with the Publications Division. These forms required specific answers to questions about the existing requirements of a magazine: how much bulk storage it needed, how much immediately accessible filing it needed, and what specific working area was required by each employe. An accurate anticipated estimate of growth was made: how much new storage space would be required, how many new employes would there be—by specific title—and what auxiliary space, such as conference rooms, would be required. Finally, the magazines itemized their adjacency requirements—what specialized service facilities or other publications should be near them.

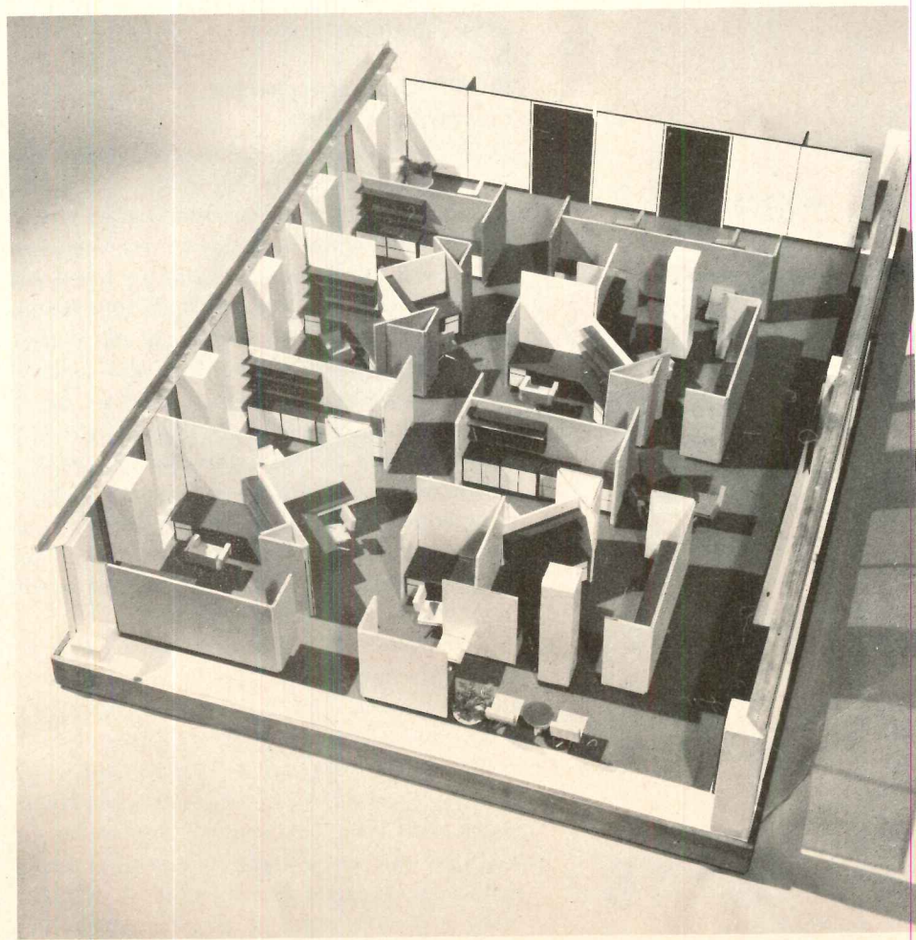
The partitioning system: two alternates were studied

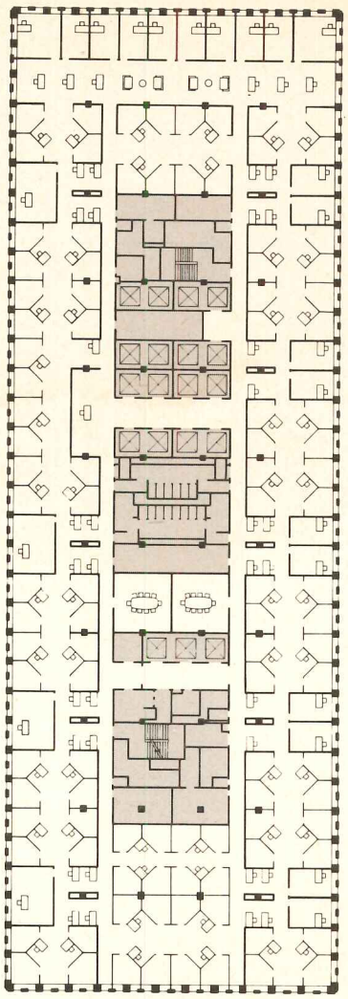
The survey information was used in creating the partitioning system and in laying out the individual floors. Standard partitions for offices are, of course, based on habitual use and commonly agreed criteria for fulfilling office needs. They usually vary between each other in materials, connection systems and color, rather than in the shapes of the spaces they might create—for such spaces are almost always pure rectangles. Such rectangular systems have disadvantages, however. Corridors tend to be tunnel-like and dull. Secretaries are forced to occupy extra-wide corridors, with little privacy. And right-angle corners can (but do not always) waste usable space in an office. An alternate, designed by Poor for McGraw-Hill's needs, has been called the "Y," or the "3 for 2" (see plan and photos, right). Basically, this system cuts off one corner of a standard rectangular office at 45 degrees, and with two such offices placed side by side, creates a recessed right-angled niche along the corridors—one recess per two offices. The usual long corridor of parallel walls eight feet apart with evenly spaced secretarial desks in them is thus broken up, and each secretary, occupying a recess, has a more private work area.

To test these Y units, and to determine user reactions to the spaces they create, a full-scale mock-up of two of them, with secretarial space between, was built at the present McGraw-Hill building. Several sets of editors and their secretaries worked in these mock-ups for a week at a time, and their individual reactions to them were collected. From these user comments, the ways in which the Y system does and does not work properly could be determined, including how it might be altered in the final installations.

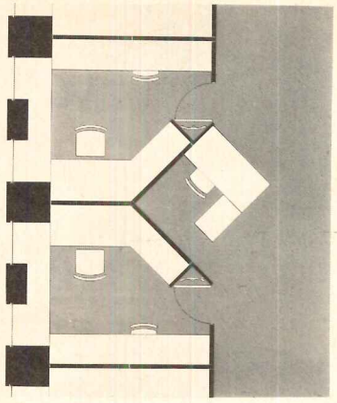
Its benefits seemed to be three: a larger-than-normal desk area with its surface and drawers accessible, a more efficient use of total space allowing more people per floor, and the fresh visual interest it may create in the corridors. Its reported disadvantages were the fixed location of the desks (editors had to face the wall), the lack of side-chair space (and thus conference space) in the offices, and the perhaps too-close (for noise privacy) adjacency of secretaries and editors. After the tests, Poor's office redesigned the Y-unit to make variable desk arrangements possible, the need for small-scale conference space on each floor was restudied, and other adjustments made. The final decision is still pending.

Full-size Y-units were installed in McGraw-Hill's existing headquarters for testing, with the proposed shelving, file systems, furniture and built-in desks in place. Tile is shown here, but carpet is being considered for all corridors and offices. Below is a model showing several spatial options within the basic Y-unit system.

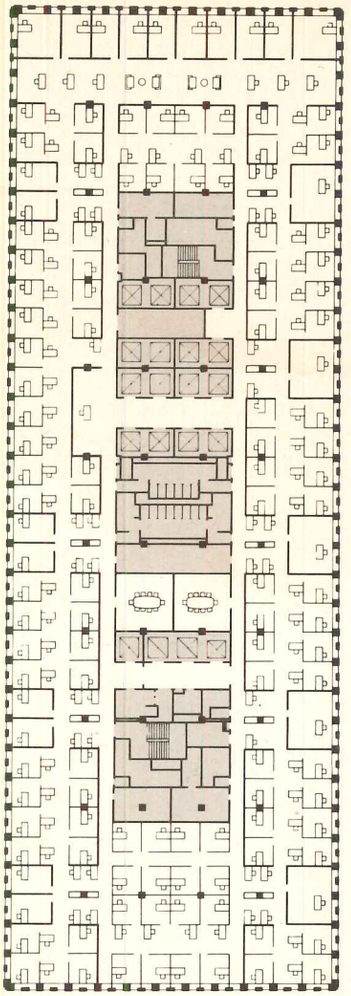




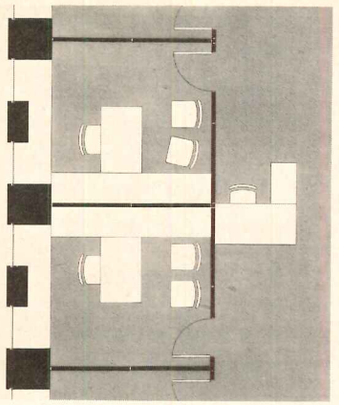
TYPICAL FLOOR



"Y" UNITS

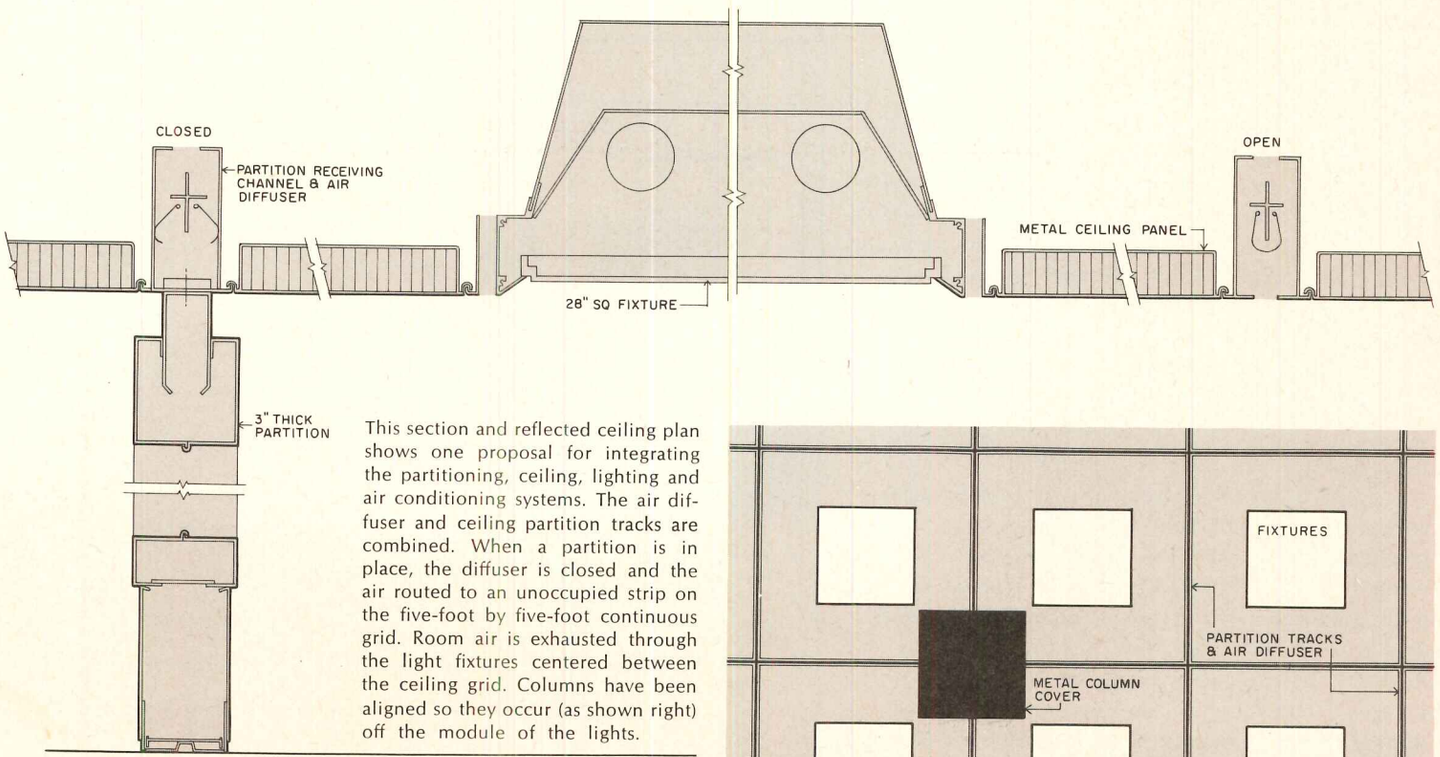


TYPICAL FLOOR

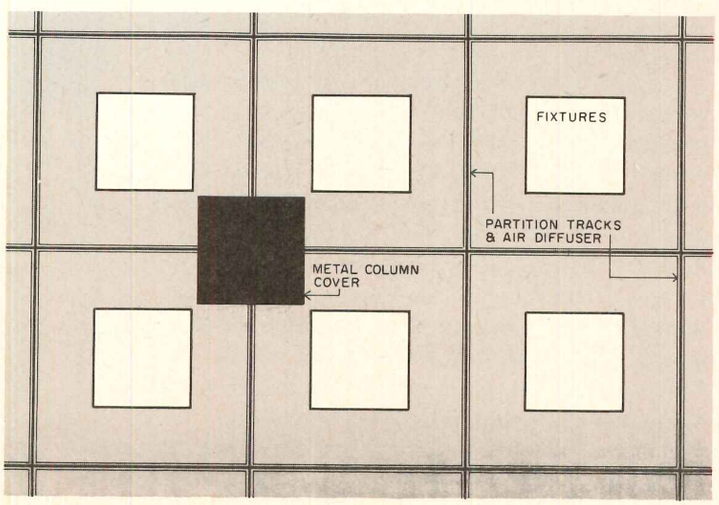


RECTANGULAR OFFICES

The two full-floor plans (left) indicate a typical layout of the Y-unit concept as compared to the normal rectangular office partitioning system. As conceived here, the rectangular offices are larger than those of the Y units, but their secretarial and corridor spaces are smaller and less interesting. Studies are now being made of both concepts, and revisions will occur. It is possible that the decision will be made to use both systems, with the 30-inch-wide partitioning panels designed to be interchangeable between them. With the Y units, the diagonal section of the partitioning cannot go to the ceiling.



This section and reflected ceiling plan shows one proposal for integrating the partitioning, ceiling, lighting and air conditioning systems. The air diffuser and ceiling partition tracks are combined. When a partition is in place, the diffuser is closed and the air routed to an unoccupied strip on the five-foot by five-foot continuous grid. Room air is exhausted through the light fixtures centered between the ceiling grid. Columns have been aligned so they occur (as shown right) off the module of the lights.



REFLECTED CEILING PLAN

To avoid truck traffic tie-ups: elevators and a turntable

To reach the loading docks at McGraw-Hill's third-basement level, large trailer trucks will be lowered in their entirety from the street on two 50-foot-long elevators, then rotated 90 degrees on a 47-foot-diameter turntable into alignment with the unloading platforms. Both the trailer and its cab will be taken on this three-floor elevator trip, but with extra-long trucks, the cab will be detached from the trailer in the basement, so that the turntable can rotate the latter while the cab maneuvers to move the trailer off the turntable after positioning. Elaborate mechanized loading facilities such as these are becoming more necessary in crowded core-city conditions such as exist in Manhattan.

The cafeteria: human scale for an overscale room

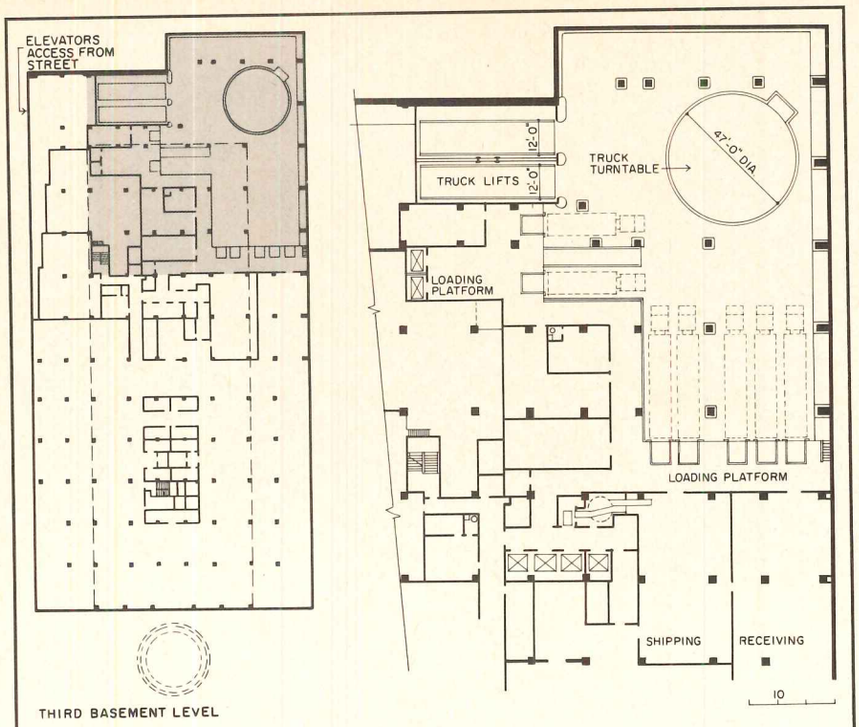
The McGraw-Hill cafeteria, at the plaza level (one floor below the lobby) will have 1200 seats and may serve 4800 people per day, making it one of the largest in Manhattan. Reducing the scale of this potentially large space became the principal design problem, along with the organization of traffic within it. The dining space has been divided into two separated elements, with the elevators and dish drop-off facilities between. The serving area is screened from the dining rooms, and is also directly off the circulation core. There are six serving and pick-up counters, with provisions for quick sandwiches, coffee, or full-course meals. There is a high-ceilinged central space in the two dining rooms, but around this, the semi-enclosed booth areas have low ceilings, to make them more intimate spaces.

The auditorium: some special problems of location and access

Two major problems in planning the auditorium have been accessibility requirements and the need for a column-free space. It was at first planned for the seventh or top floor of the wrap-around element (see plan), so that there would be no loads above—making the removal of columns relatively easy and inexpensive. In that location, however, public access to it from the lobby would be complicated, and the elevators from the upper floors do not stop at the seventh: employees of McGraw-Hill using the auditorium would have to travel to the ground floor, then transfer to elevators for the ride back up.

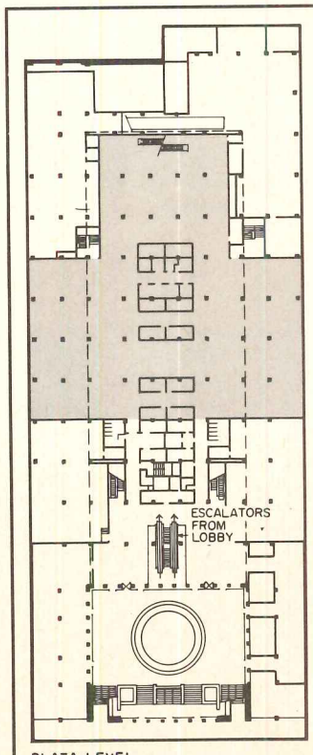
Again, user needs have held sway over the economics of structure, and the auditorium is now planned for the second floor within the wrap-around element. Four columns have been removed from those proposed in the original structural design, and one major tower column has been moved 5 feet from its original location, so as not to interfere with film projection facilities. The auditorium is now well located for use by the general public without its having to go through any McGraw-Hill spaces, and building employes will have quick access to it via two escalators leading from the ground floor.

McGRAW-HILL BUILDING, Rockefeller Center, New York City. Architects: *Harrison & Abramovitz & Harris;* coordinating architects for McGraw-Hill interiors: *The Office of Alfred Easton Poor.*



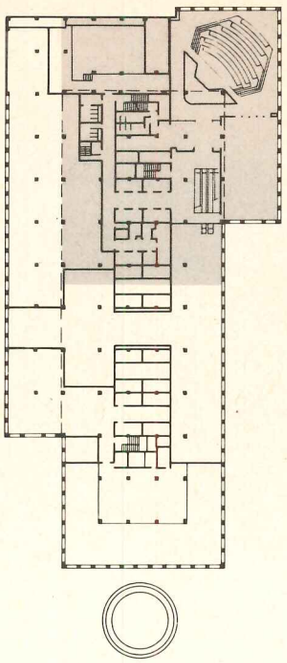
TRUCK LOADING

There will be two 50-foot-long truck elevators descending from the street to the third basement loading docks (see plans, above). Once in the basement, trucks move off the elevators and onto a 47-foot-diameter turntable directly in front. The turntable positions the trucks toward the desired receiving dock so they may back into the space for unloading. There will be space for five large trucks and two smaller ones, plus some extra room to the west of the turntable for unloading small panel trucks and delivery carts. Adjacent to the docks will be the receiving and shipping offices for McGraw-Hill and the other tenants of the building.



CAFETERIA

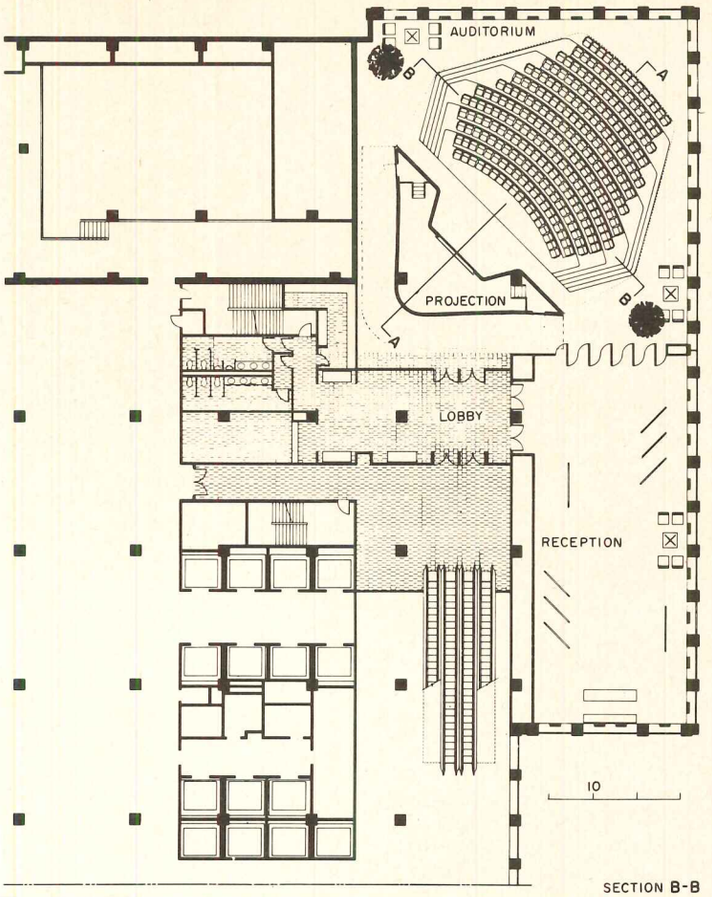
The cafeteria facilities occupy a large portion of the building at plaza level. There is access to it directly from the plaza, via escalators which lead from the street-level floor. The two dining rooms have variable seating arrangements of tables, booths, and wall benches (see plan, right) with the latter placed in the low-ceilinged recesses around the core of each room. The serving counters have been located so that columns occur within them. These columns will be integrated into the design of the counters, with their faces used as sign boards displaying the menu of the day and other pertinent information (section and elevation, above).



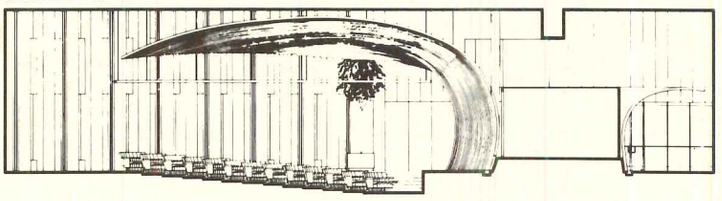
SECOND FLOOR

AUDITORIUM

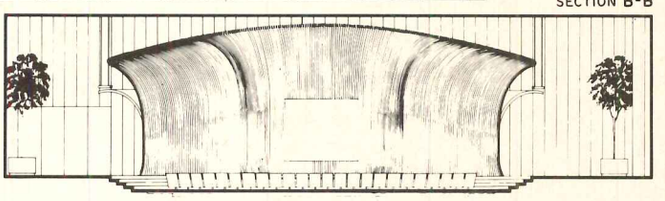
The auditorium will have its own lobby, reception room, pantry and lavatory facilities. Two escalators lead directly to it from the ground floor. The auditorium will be used primarily as a lecture hall, with slide and movie projections. Its windows can be quickly shaded with special vertical blinds when the room must be darkened. In this design (still under study) an acoustical shell, which is the room's main visual feature, will be constructed of one-inch by two-and-one-half-inch German Oak strips. These strips will be warped independently and placed together to generate the shell's contour (section, below). The shell will be suspended from the floor above, concealing the air conditioning equipment and ceiling diffusers.



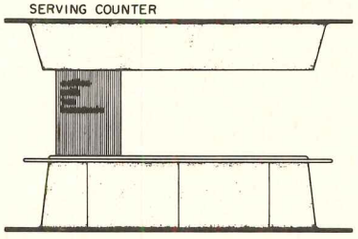
SECTION A-A



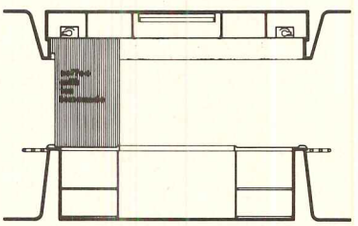
SECTION B-B



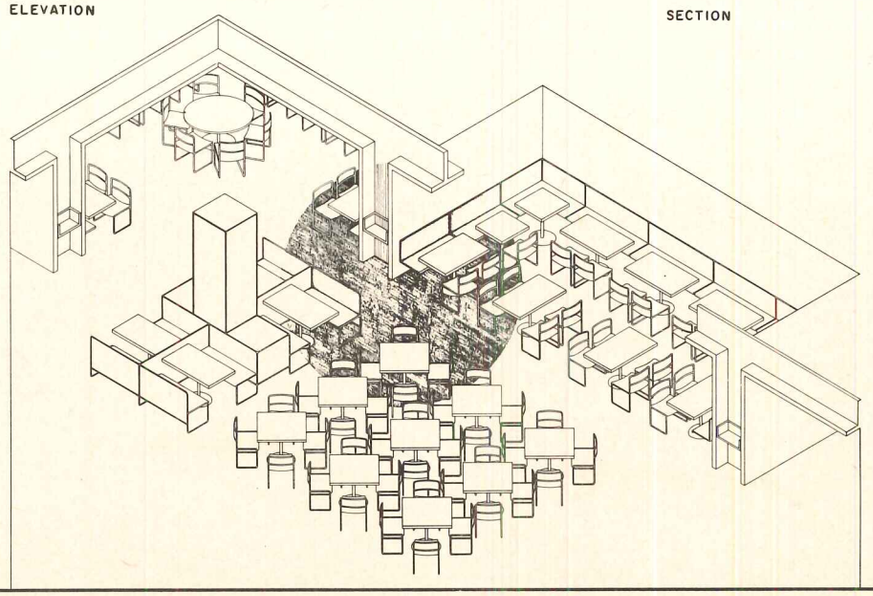
SERVING COUNTER

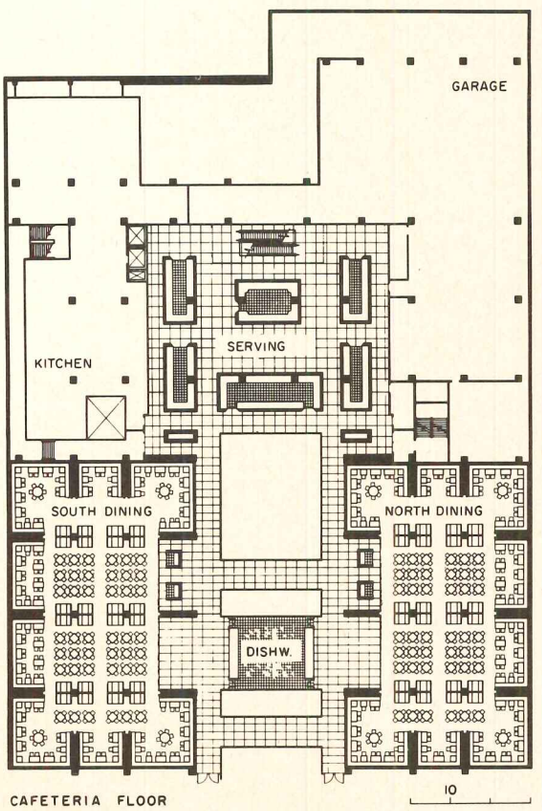


ELEVATION

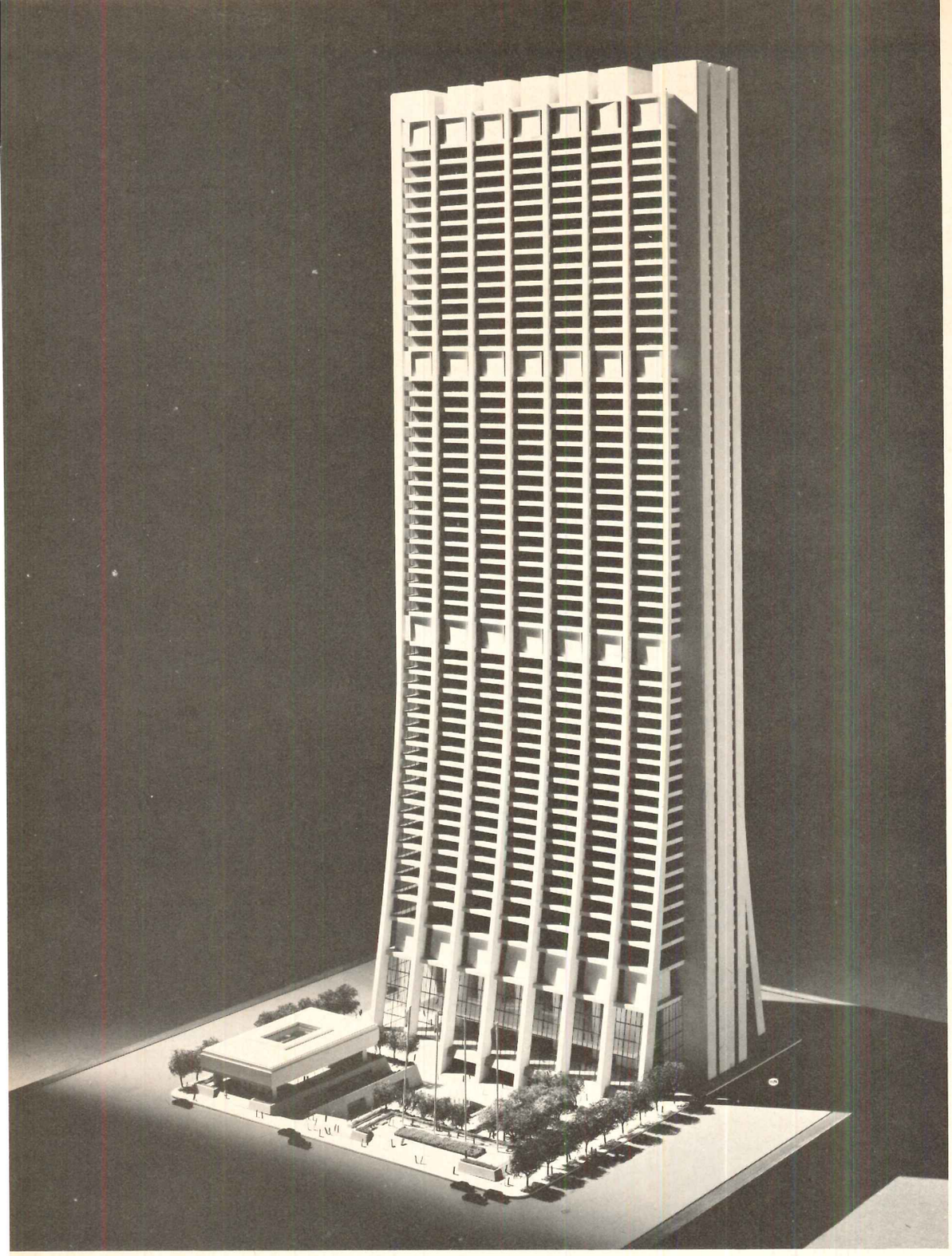


SECTION

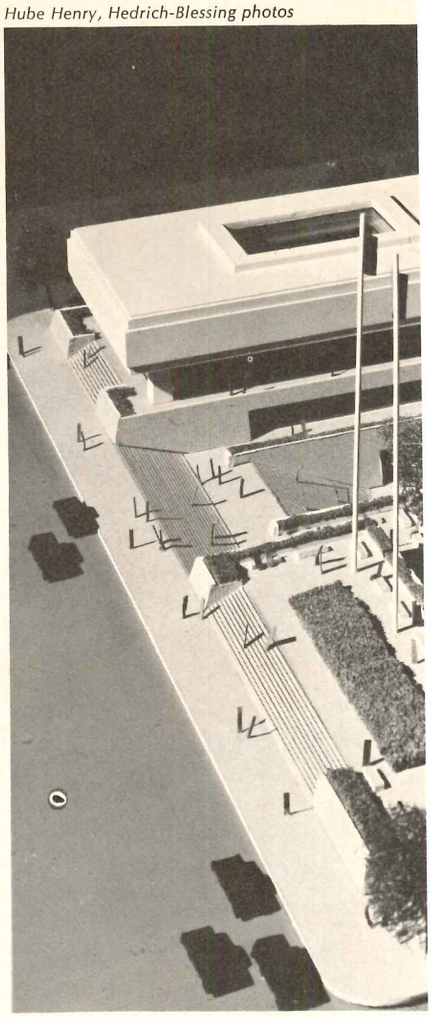




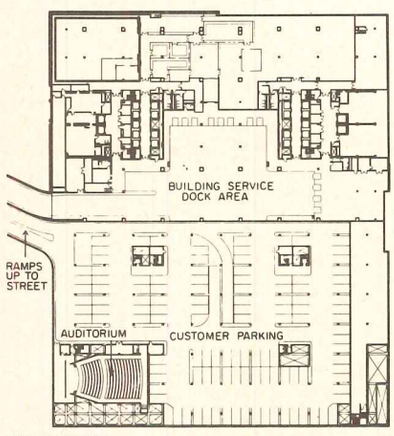
CAFETERIA FLOOR



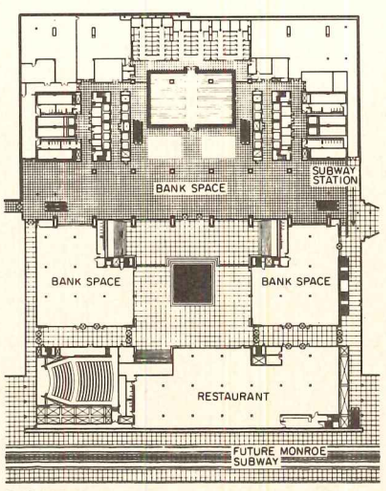
Hube Henry, Hedrich-Blessing photos



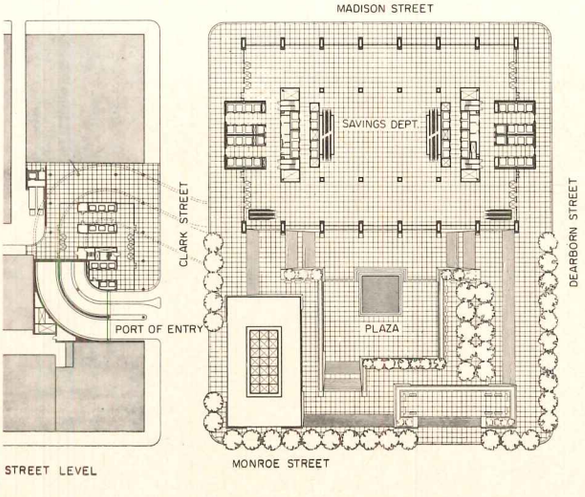
The model photo (above) shows a proposal for the plaza, to be completed in 1972. The tower (left) is nearly complete, and will be occupied in June of this year. The site plan (right) shows the First National Bank in context with Chicago's Loop, a 35-square-block area bounded by the city's elevated railway. The bank is in the center of the Loop, accessible by foot, subway, or from any of Chicago's four main railway stations.



FIRST BASEMENT

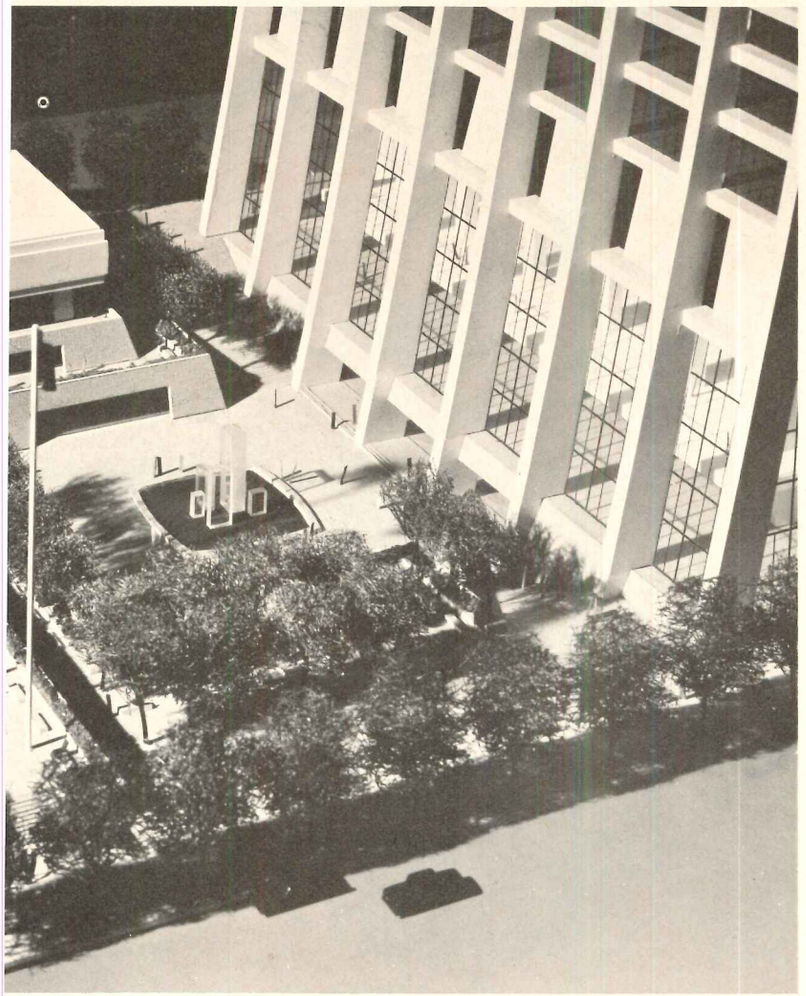


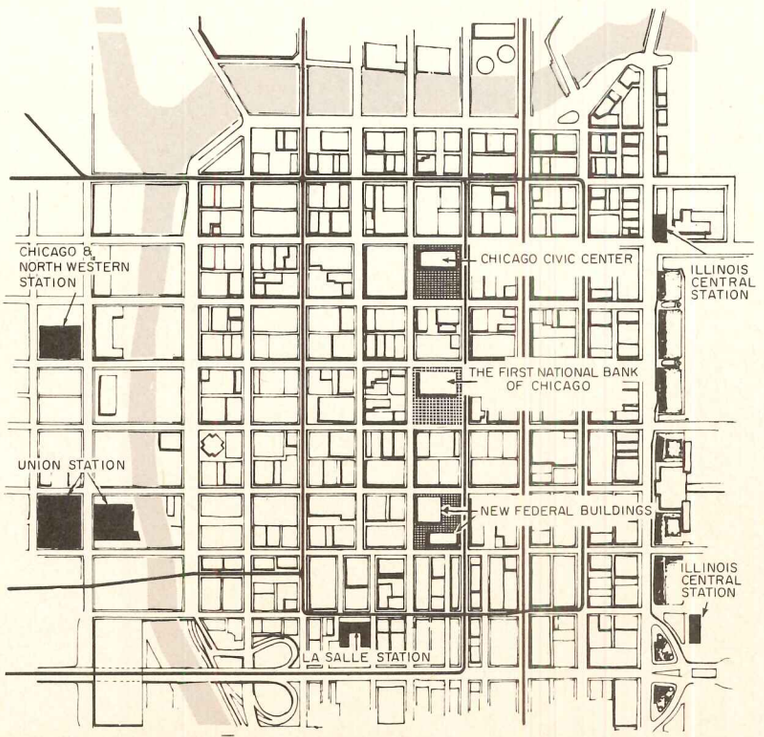
PLAZA LEVEL



STREET LEVEL

THE EVOLUTION OF A SPECIAL FORM TO MEET ITS PROGRAM





The First National Bank of Chicago will soon occupy a curving 60-floor tower, the highest building in Chicago's Loop. The bank will move into the new quarters in June, and its old facilities next door will be removed, making room for a new plaza adjacent to the tower. By 1972 the two-stage project of tower and plaza will be complete, and the bank will occupy the entire block bounded by Madison, Monroe, Clark and Dearborn Streets.

Two architectural firms—C. F. Murphy Associates and The Perkins & Will Partnership—have shared in the design of this 106-million-dollar complex since its inception in 1964. Specific programatic demands have influenced the scope of the project, the shape of the tower, and the location of its vertical transportation. The resolution of these demands is indicative of the logic behind this striking and innovative solution in high-rise architecture.

Starting point for design:
"all banking in one location"

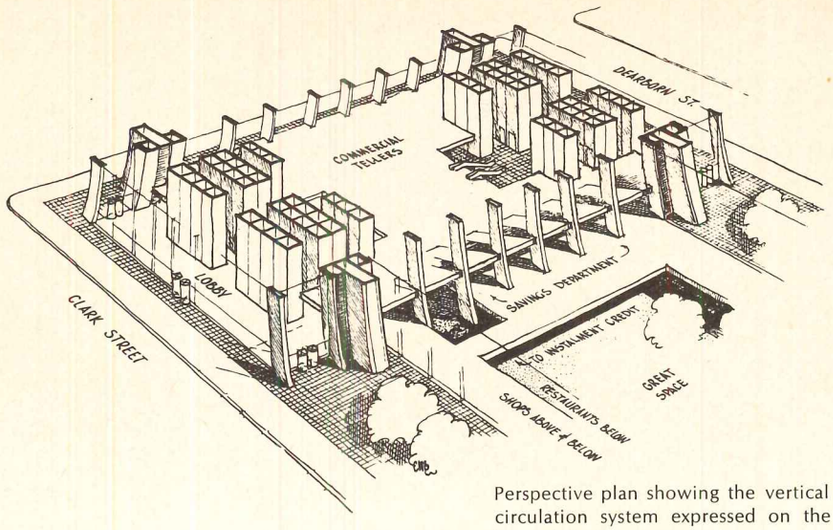
Illinois prohibits the establishment of branch banks. Branch offices normally accommodate most of a bank's public facilities; its central office may be largely administrative and clerical space, with a public floor no bigger than any of its branches. But the First National needed all its teller facilities, savings, and loan departments in one public space. Further, with customer banking at only one location, the facility had to be adjacent to public transportation, and needed on-site parking. Particularly, the site should include a plaza; an active urban place capable of drawing the public to it.

As developed in the final site plans (below, left) the bank is quickly accessible and will have a remarkable series of public amenities. There will be a two-level parking garage under the plaza with access via a ramp which begins on Clark Street opposite the bank, makes a 180-degree turn as it winds down to the second basement, eventually passing back under Clark Street to the garage itself. The architects have provided a direct connection to the existing Dearborn Street subway, and provisions for a link with the future Monroe Street subway and its underground pedestrian concourse. This concourse will link the Civic Center and the Federal Center, making the bank's plaza an important public space along a revitalized strip of the city. The plaza, still in design development, is conceived as a public and ceremonial space on two levels, with terraces, promenades, some public banking, and leased shopping.

Why the sloped tower?
Banking needs vs. leasable space

The wide-based tower did not evolve principally from structural imperatives, although the logic of the shape for resisting wind loads efficiently is apparent. The first need of the client was a 40,000-square-foot banking floor expressed in a clear and unified space. Above the ground level, the bank needed rather large floor areas, but the required size of each receded toward the executive floors at the top. Further, a survey of existing and future needs for office space showed that smaller floors, with a high ratio of perimeter window length to interior area, were likely to be more easily leased in Chicago.

The decision was made to place all of these spaces in a single tower, and schemes which involved stepping-back the building envelope to match the need for variable floor areas were rejected. The architects agreed early in their studies to pursue the possibility of a sloped design. The tower, as based on the program, is a striking and innovative solution. The public banking space rises 56 feet, with a mezzanine level floating within it. Eight piers on each face run from the ground to the top of the tower without interruption, emphasizing its height and expressing, in their tapering form, the shape of the tower itself. Banking floors above the public space are large (41,000 to 45,000 square feet) receding gradually to meet the tenant floors. The four mechanical equipment floors provide rhythmic horizontal divisions on the tower as complements to the vertical.

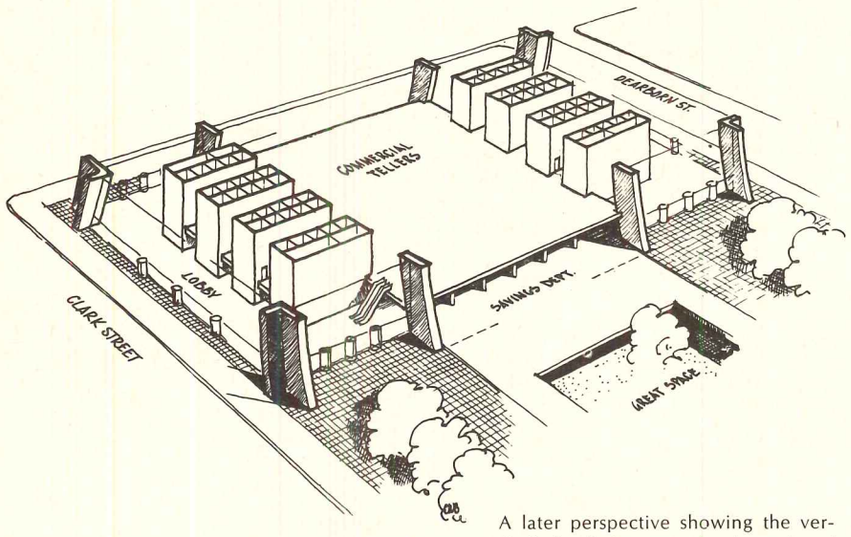


Perspective plan showing the vertical circulation system expressed on the face of the tower: an early scheme.

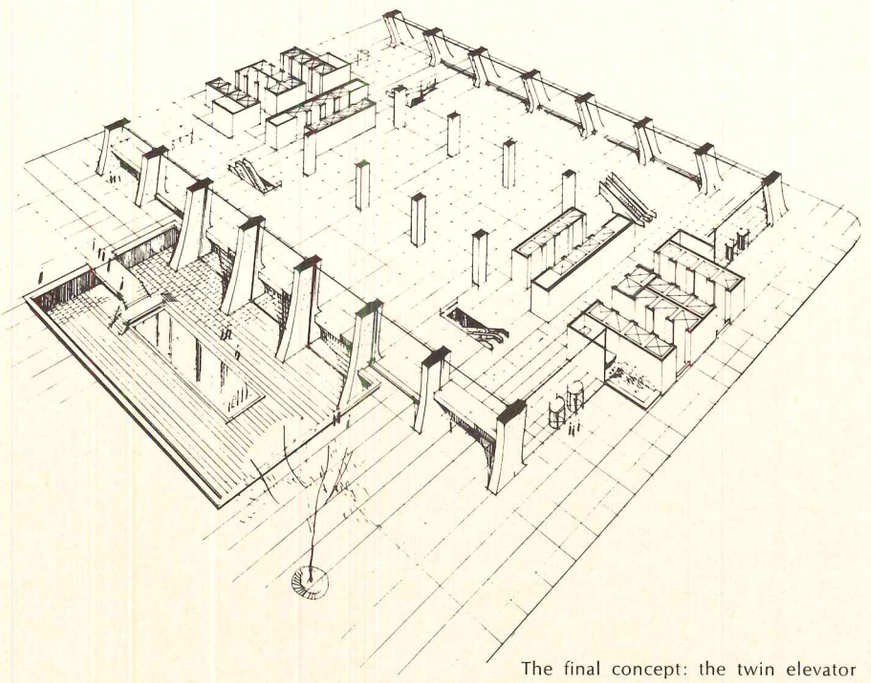
The elevator problem:
accommodating the bank and the public

The location of the elevatoring system became a critical problem, and the resolution of it had a marked effect on the expression of the tower. The usual core scheme, with elevator banks occupying the center, was not compatible with the public banking area at the ground floor. The architects experimented, therefore, with a series of twin elevator core concepts within the basic scheme of the sloped tower. The problem was the expression or non-expression of elevators on the tower facade, and the retention of the large open space at the ground.

An early design scheme (above, right) shows the grouping of elevators and stairs at either end of the tower plan, with vertical circulation expressed on the faces of the tower, rather than at its ends. This scheme allowed less banking space between elevators than the final one, and the exposure of the vertical cores on the face of the tower seemed to disturb the unity of the main facades. In a second sketch (center, right) the elevator and stair towers have been moved completely within the building, with no expression of them on the exterior. This scheme was more successful visually than the first, leaving the graceful curve of the facades uncluttered, but again encroached strongly on the public banking spaces at ground level. Within the context of the problem, therefore, the final scheme (below, right) is certainly the most successful. With the vertical circulation system moved outside the ends of the tower, the usable banking space is extended to fulfill program requirements. The sweeping curve of the two faces of the tower is expressed with a simple pier, spandrel and glass grid, uninterrupted by stronger verticals. And the absolutely perpendicular lines of the elevator towers aid in the perception of the curve of the faces. Without a closely adjacent vertical from which to refer, one's eye might not perceive the subtle curving of the facade so quickly, at least in the middle regions of the tower. The architects did not create this tower form to be "different," but to meet the specific demands of an architectural program.



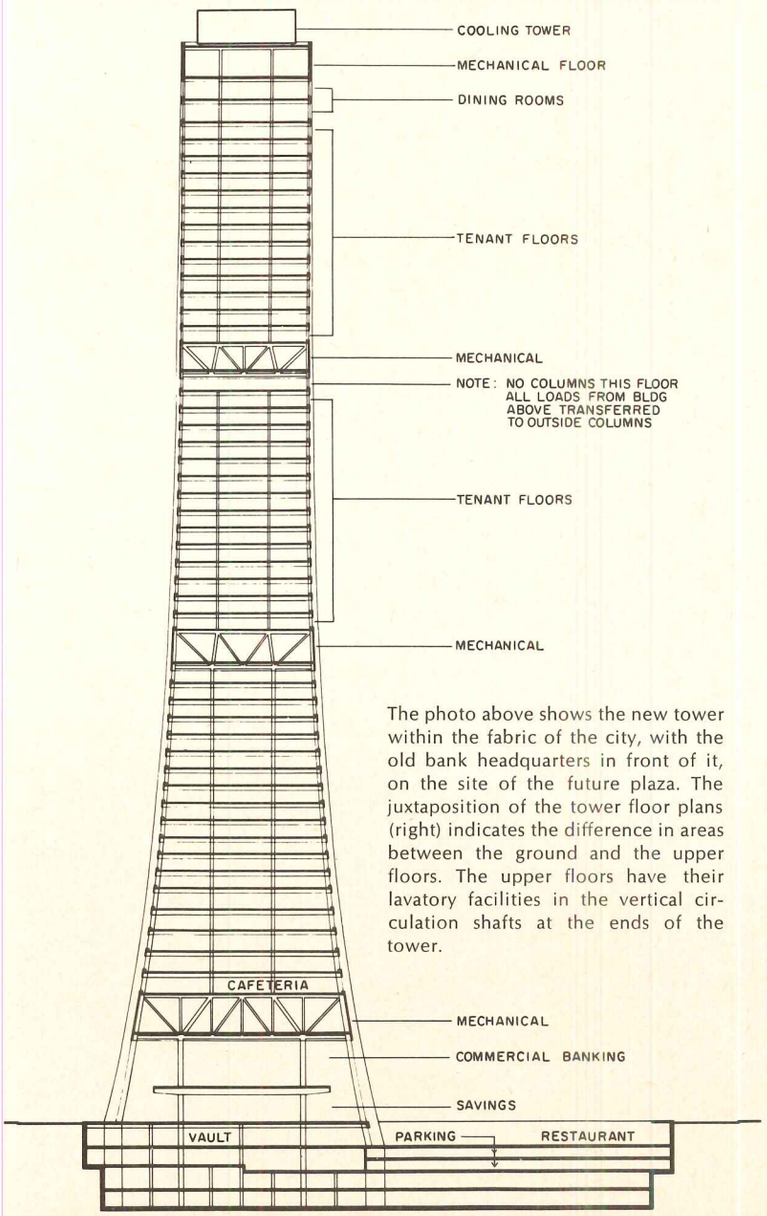
A later perspective showing the vertical circulation completely enclosed within the tower.



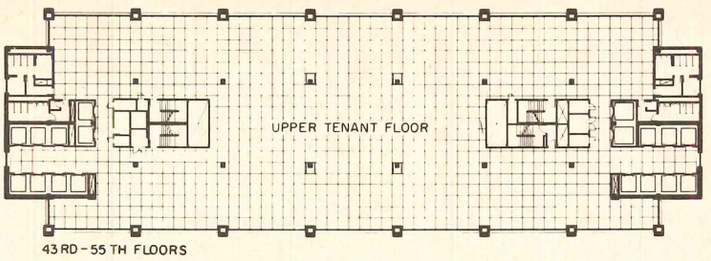
The final concept: the twin elevator towers wide apart and expressed at the ends of the building.

THE FIRST NATIONAL BANK OF CHICAGO, Chicago. Architects: *C. F. Murphy Associates* and *The Perkins & Will Partnership;* acoustics: *Bolt, Beranek & Newman;* lighting: *Richard Kelly;* general contractor: *Gust K. Newberg Construction Company.*

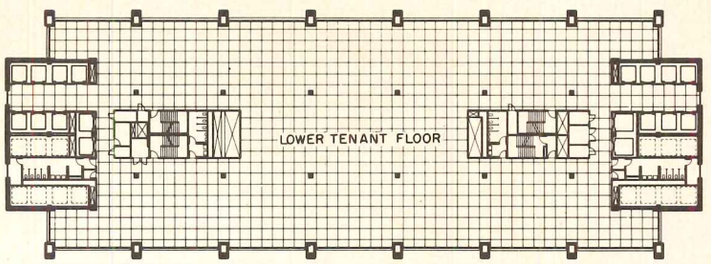
Bill Engdahl, Hedrich-Blessing



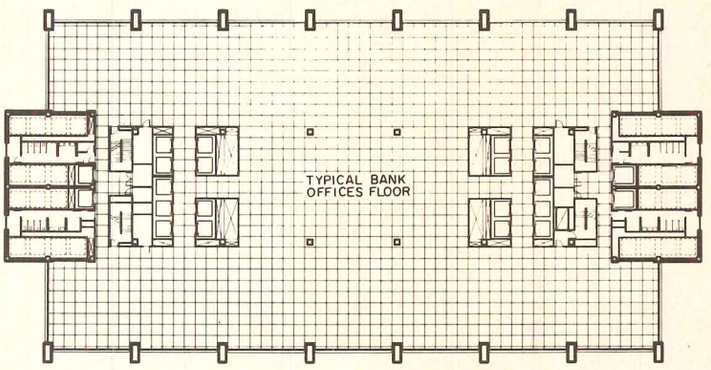
The photo above shows the new tower within the fabric of the city, with the old bank headquarters in front of it, on the site of the future plaza. The juxtaposition of the tower floor plans (right) indicates the difference in areas between the ground and the upper floors. The upper floors have their lavatory facilities in the vertical circulation shafts at the ends of the tower.



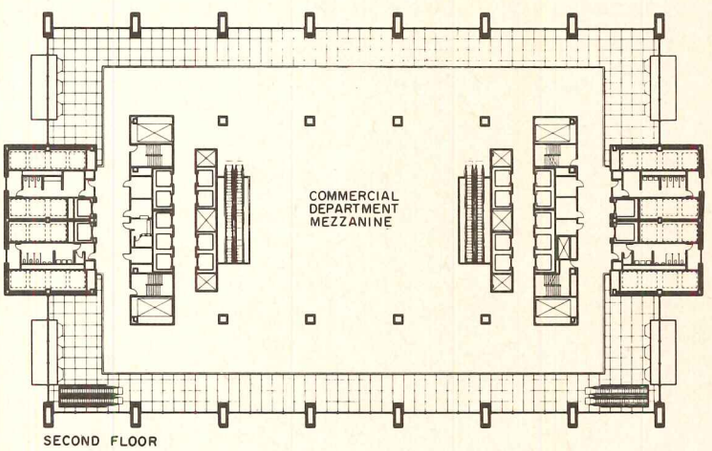
43RD – 55TH FLOORS



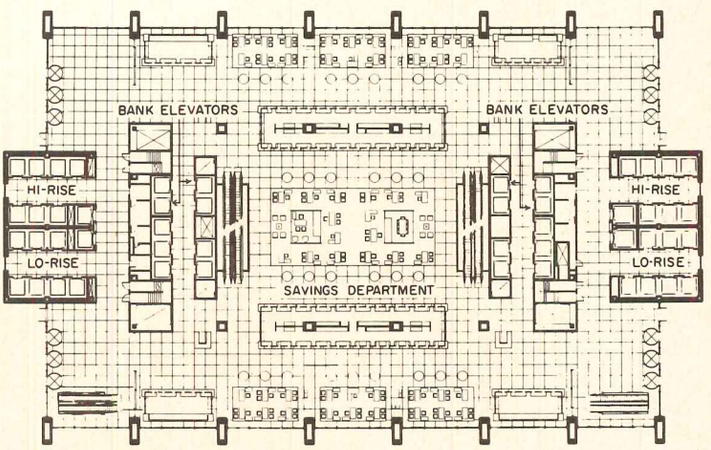
26TH – 38TH FLOORS



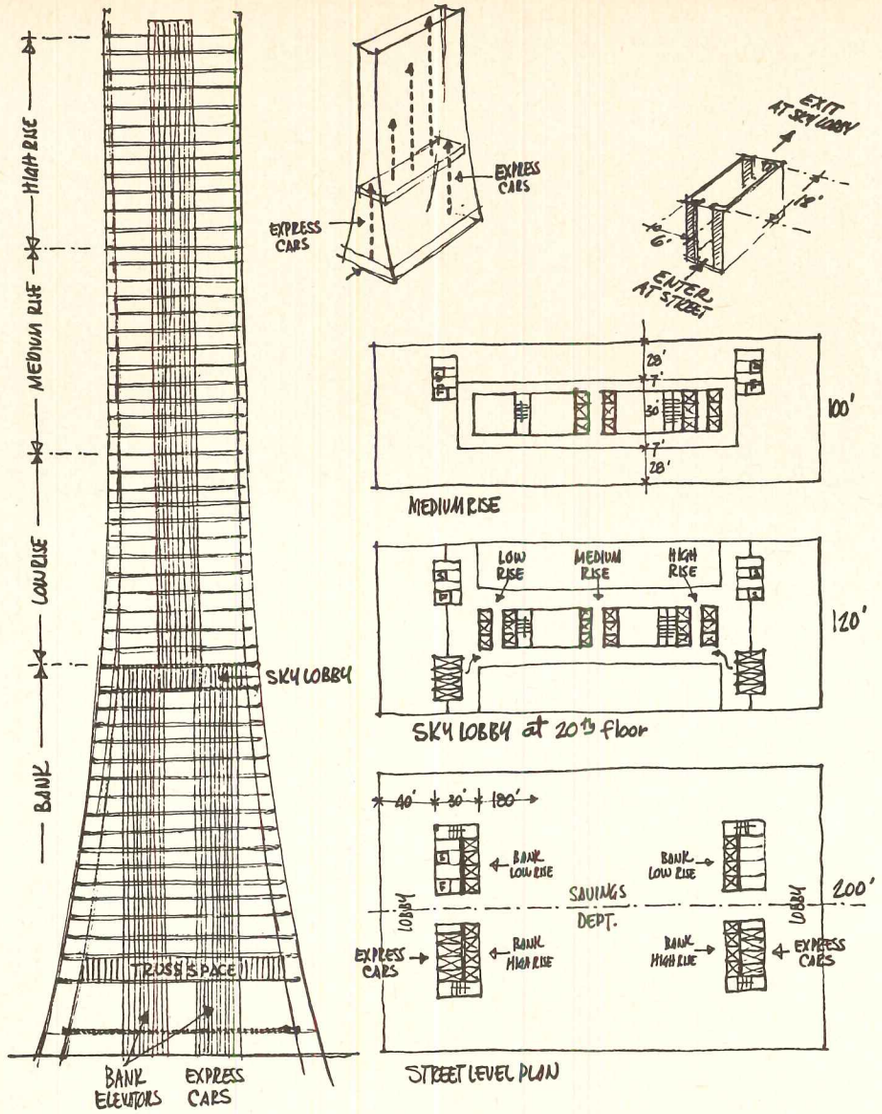
SIXTH FLOOR

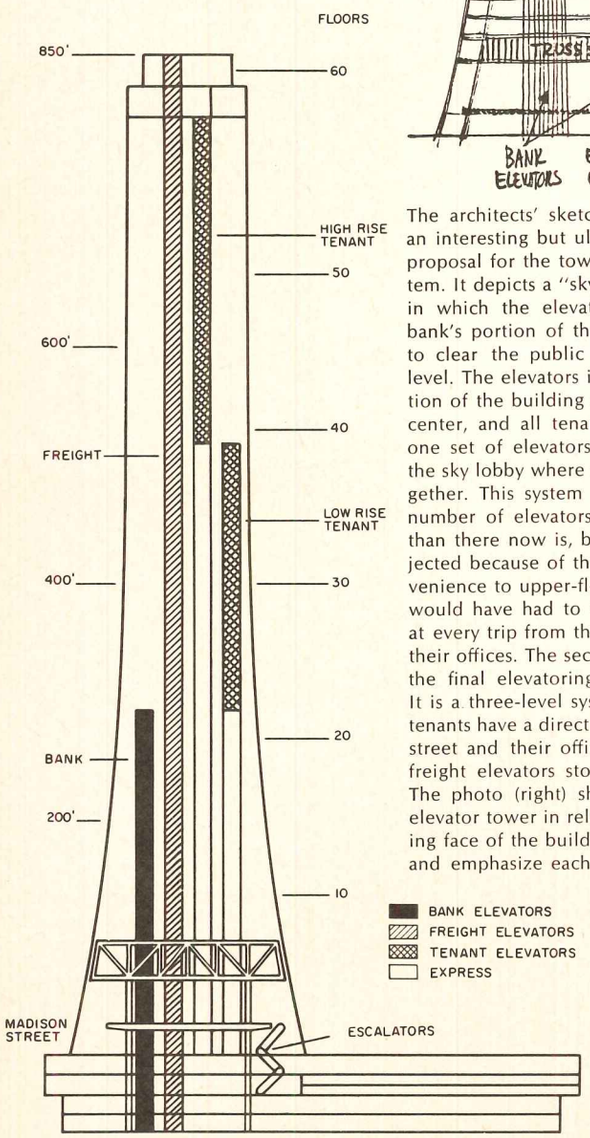


SECOND FLOOR



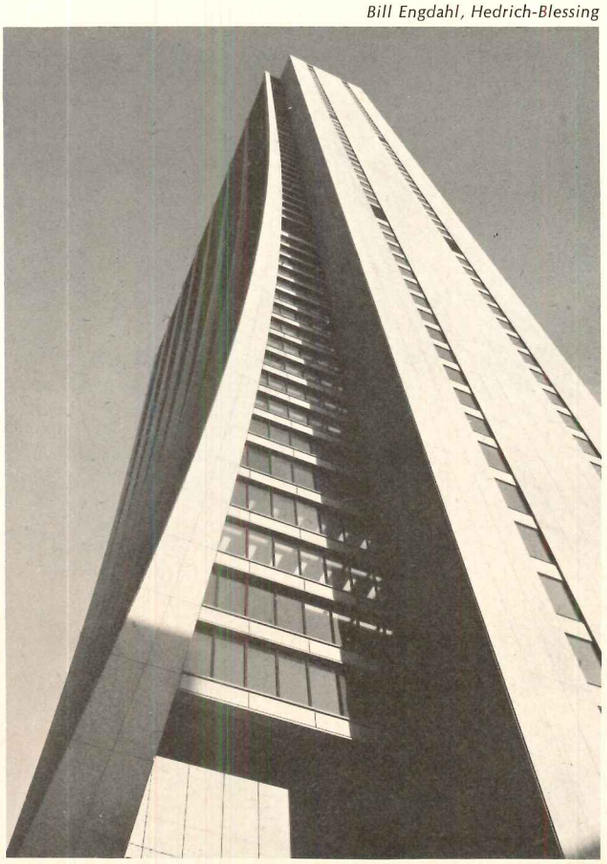
FIRST FLOOR





The architects' sketch (above) shows an interesting but ultimately rejected proposal for the tower's elevator system. It depicts a "sky lobby" solution in which the elevators in only the bank's portion of the tower are split to clear the public space at ground level. The elevators in the tenant section of the building are placed in the center, and all tenants transfer from one set of elevators to the other at the sky lobby where the two come together. This system allowed a lower number of elevators in the building than there now is, but was finally rejected because of the possible inconvenience to upper-floor tenants. They would have had to transfer elevators at every trip from the ground floor to their offices. The section at left shows the final elevatoring diagramatically. It is a three-level system in which all tenants have a direct link between the street and their offices, but only the freight elevators stop at every floor. The photo (right) shows the vertical elevator tower in relation to the curving face of the building; they balance and emphasize each other.

Bill Engdahl, Hedrich-Blessing



SPECIAL REPORT NO. 10

What the systems approach means to air conditioning Part 1

by Robert E. Fischer, senior editor, and F. J. Walsh, consulting engineer

There has always been a systems approach, of a sort, to air conditioning. But today architects and engineers see the need for a more searching insight into the various influencing factors: people, costs, hardware, time. Overriding reason: the client's demand for the best physical environment his money can buy. This article draws on extensive knowledge of the industry and in-depth interviews with manufacturers and technical disciplines. It is a continuation of the two-part article, "Air conditioning: a new interpretation for architects," RECORD July and August, 1967.

Two growing, confluent trends are causing the building industry to be increasingly concerned with today's emphasis on the systems approach as a means of cutting costs, speeding up the construction process and guaranteeing a certain level of building performance. The first of these trends is management's (business, government, military) conviction that the systems approach is a powerful tool for analyzing and helping solve problems requiring top management decisions. This thinking naturally filters down to owners' representatives responsible for building programs, who indicate to architects, engineers and contractors that systems techniques are to be encouraged and perhaps required. The second trend involves changes within the building industry itself that are fostering increased standardization of building components and the combination of these components in larger and larger packages by the manufacturer. These changes involve the spiraling costs and increasing shortage of skilled field labor; the difficulty of architects, and more particularly consulting engineers, in attracting competent personnel in the middle echelons; the growing demand from owners for single-source responsibility. Further, it is agreed that better housing for low-income families must have the highest of priorities. Thus some manufacturers are showing interest in the use of mass-production, assembly-line techniques to make complete buildings for this market. But industrialized building systems in Europe have taken time to evolve: main emphasis has been on shell, with provision of services being relatively unsophisticated by American standards. And while mobile-home technology may work for separate housing units in an unplanned context, there are inherent limitations in application to large structures.

F. J. Walsh is a consulting mechanical and electrical engineer as well as a consulting management engineer.

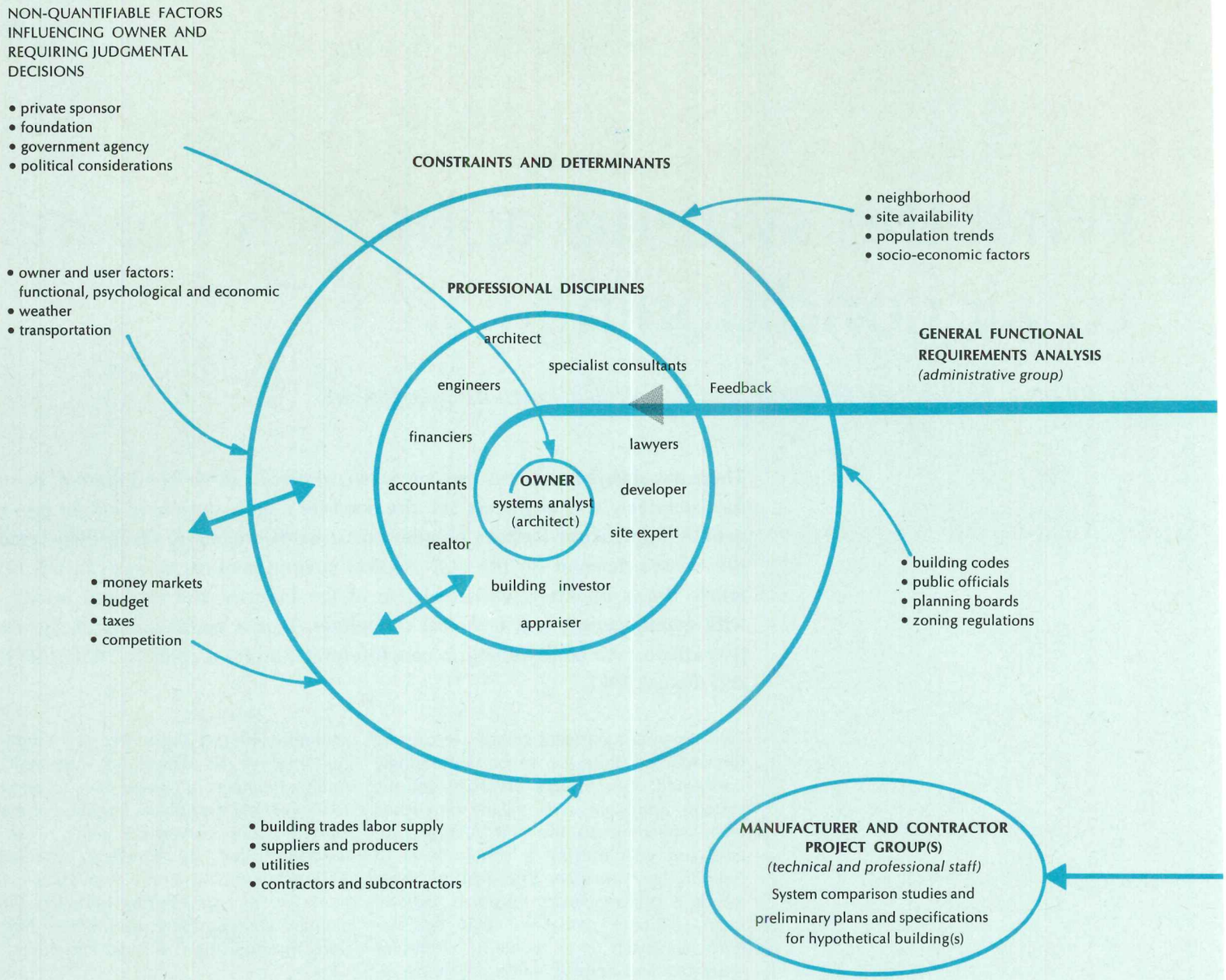
The systems approach: a modern definition

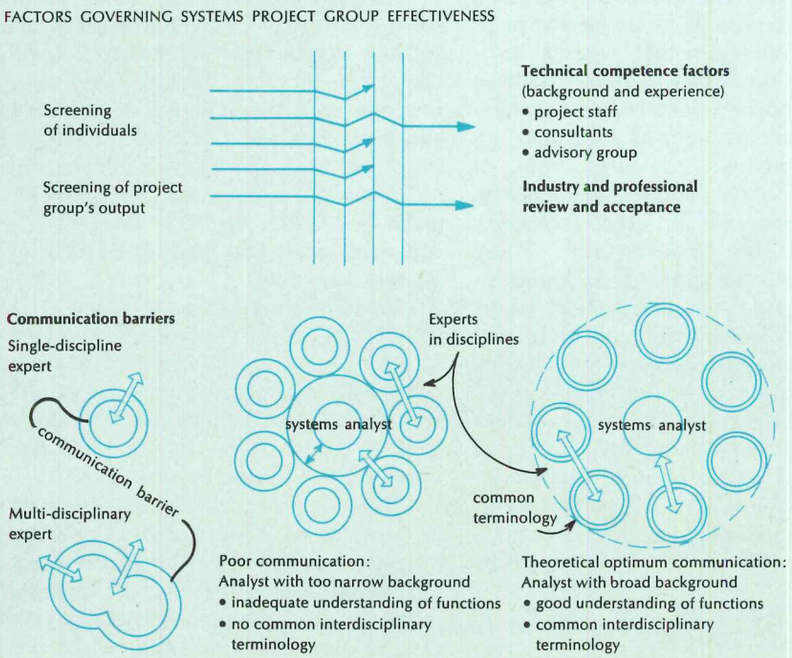
The systems approach to building is here to stay, just as it is for about every other industry and human enterprise. It implies taking the broadest possible view of any situation with the purpose of uncovering and explaining all significant inter-relationships. The approach makes particular sense today because science and technology have made new tools available. In some areas computer simulation utilizing mathematical models is possible.

Communication between all groups has suffered, because of burgeoning knowledge in every area and the introduction of specialty and sub-specialty areas of expertise and professional activity. As a result, the various groups really do not understand how they fit into the over-all context.

The two newest disciplines to develop in recent years, coming about as the natural outgrowth of the world's tremendous technological advancement, are operations research and systems engineering. In the case of operations research, which deals

The systems approach to building: three basic paths





A guide to the chart

Output from the systems analyst (center of the rings above) after approval by the owner is fed to a systems building project group. Such groups can take one of two basic paths.

The first can, in one form (A-1), lead to a completely open performance specification, without specific relationship to hardware or sub-systems. A modification (A-2) considers performance and quality of specific components and equipment common to all possible systems.

The second basic path (B) leads to specific selections of systems and hardware, and can include any degree of investigation of existing technology and new developments in the offing.

With paths A-1 and A-2, manufacturers and contractors (see oval above) may be required to design their subsystems for a hypothetical or prototype building; architects and consulting engineers may or may not be used—this may or may not be made mandatory by project staff.

Interdisciplinary review and advice to the systems project group (shown at top, across page) is critical to project success. But obviously, too much outside involvement can interfere with target dates. The right balance takes careful consideration.

TECHNICAL LIAISON

Manufacturers, specialist consultants to staff, contractors, building trades unions, codes and standards groups, building officials, utilities.

ADVISORY GROUP

Administrative & Technical Review

FORMAL AND INFORMAL PROFESSIONAL AND INDUSTRY REVIEW

(May include recommendations on most qualified individuals)

SYSTEMS BUILDING PROJECT GROUP
(professional staff)

Preparation of functional performance specification for hypothetical over-all building system and subsystems, with plans showing space planning modules and their possible configurations; also limitations on structural framing and limitations on possible location and size of all space-consuming subsystem elements.

Feedback

Feedback

SYSTEMS BUILDING PROJECT GROUP
(professional staff)

Evaluation & selection of optimum systems and compatible subsystems.

Detailed systems comparison and systems analysis studies to select specific systems and subsystems for detailed consideration (existing technology or new development).

Feedback

Input

A-1

BIDDING DOCUMENTS

Systems purchasing approach with minimum description of any actual physical system, subsystem or component. Limitations on physical and design engineering aspects implied rather than stated.

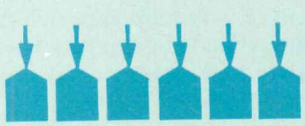
MANUFACTURERS AND CONTRACTORS

BID SUBMITTALS

EVALUATION OF BID SUBMITTALS AND AWARD OF CONTRACT

CONSTRUCTION OF BUILDING PROTOTYPE, MOCK-UPS, OPERATION AND EVALUATION

DESIGN OF ADDITIONAL BUILDINGS
Based upon standard hardware and systems by architects and consulting engineers



Multiple Buildings

A-2

SYSTEMS HARDWARE EVALUATION SPECIFICATION

Covers range of hardware that might be used in possible systems in terms of quality of materials, critical components, fabrication standards, reliability aspects, etc.

BIDDING DOCUMENTS
Including specifications based upon systems hardware evaluation

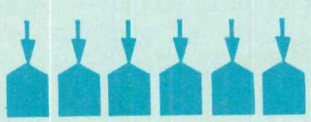
MANUFACTURERS AND CONTRACTORS

BID SUBMITTALS

EVALUATION OF BID SUBMITTALS AND AWARD OF CONTRACT

CONSTRUCTION OF BUILDING PROTOTYPE, MOCK-UPS, OPERATION AND EVALUATION

DESIGN OF ADDITIONAL BUILDINGS
Based on standard hardware and systems by architects and consulting engineers



Multiple Buildings

B

PRELIMINARY PLANS & SPECIFICATIONS FOR HYPOTHETICAL BUILDING(S)

SYSTEM ENGINEERING AND SYSTEM ANALYSIS FOR SELECTED SYSTEMS AND SUBSYSTEMS

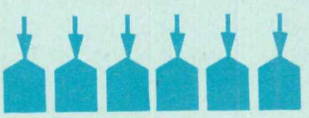
DETAILED PLANS & SPECIFICATIONS FOR COMPETITIVE BIDDING DOCUMENTS

MANUFACTURERS

CONTRACTORS

BID SUBMITTALS

PROTOTYPE BUILDING OPTIONAL



Multiple Buildings

with an analysis of existing operations of any sort, the goal is to provide executives, be they civilian or military, with all possible information relevant to a problem, and to clarify relations between several courses of action so that they can make decisions with a minimum of risk.

Systems engineering relates to developing a new system which has not yet been refined to a workable solution. Further, it deals less with existing operations; rather, it attempts to develop optimum man and machine systems which might possibly be used in the future.

The two disciplines do in fact overlap and are used by some people interchangeably. The specific meanings can of course be fairly precise in certain specialist areas —e.g. data processing, mission-oriented, military or space projects. But undeniably, the term "systems engineering," relating to the latter, involving exotic and sophisticated technological developments and the maximum innovation, has a certain mystique and is by far the more impressive term.

In military projects, technological advance to secure specific military objectives has to be pushed to the ultimate, and each development tends to make obsolete the hardware and systems just developed from previous advances. Obviously, performance criteria set forth are extremely specific and actual performance within close limits is required. In almost every case the systems contractor is also the producer of the system—and is paid separately for his R & D and development costs.

In business management, communications, production activities, etc., use of these new techniques is helped by the fact that there is usually a good reference base for comparison. Or projects are of a continuing nature where adequate feedback is possible and where competitors are using similar approaches. There is, then, some uniformity of thinking and definition of terms.

However, the building industry is an exception. Admittedly, the implications of operations research and systems engineering for the building industry are not too clear, since it is difficult to spell out what activities are involved, and which people should be concerned.

It is highly important that the various disciplines to be involved (necessarily an interdisciplinary approach) be able to communicate effectively with each other and to have a common understanding of terms and concepts.

In addition, the normal building industry professionals will have to learn exactly how the new disciplines function. By the same token, operations researchers, systems analysts or systems engineers cannot establish their approach without also being educated by the professionals. The O. R. and systems people are scientists, not engineers, and it is indicative of the influence that the physical sciences have exerted on them that they have a self-conscious concern with concepts and first principles and show a desire to generalize from specific to all-encompassing theories.

Systems approaches in building: review of projects to date

What do the proponents of the systems approach to building say it can or should do? Mainly, they say, the systems approach: 1) stimulates innovation; 2) reduces much of the tedious dog-work of conventional methods, permitting more time for design analysis and evaluation; 3) reduces cost through standardization of building elements; 4) by stating requirements in performance terms instead of specific sub-system solutions, enlarges the possible range of solutions; 5) by requiring functional as well as dimensional compatibility, encourages integration of function; 6) permits volume manufacturing; also, with physical coordination of components required, the architect and his consultants know ahead of time where these components go ahead and that they will fit together when installed in the field; 7) cyclical renewal of building components makes possible (required because of obsolescence or deterioration when an open building system approach is employed, offering maximum interchangeability of sub-system components); 8) reduction of field labor and the elimination of the need for special skills in job-site erection; 9) permits cost reduction through volume purchasing.

The systems approach to building, narrowly or loosely interpreted, could be said to have been used for many years by architects who have developed standardized procedures and have employed standardized solutions, but not stock plans, for certain building types.

But, more recently, the systems approach to building has taken on more formalized aspects, with special systems projects staffs organized, often with foundation grants, to tackle the problem of getting better public-supported buildings (schools, dormitories, college buildings, housing) for less money in less time. Significant projects built or bid: 1) School Construction Systems Development (13 California schools); 2) URBS —University Residential Building Systems— for the University of California ($18½ million appropriated for 2,000 living units); 3) SEF—Study of Educational Facilities—by the Metropolitan Toronto School Board (10 components bid, and bidders provisionally accepted for 2 million square feet of public schools); 4) RAS—Research in School Facilities—by the Montreal Catholic School Commission; 5) components bid for 3 million square feet of school buildings).

Just how successful these programs have been in mustering the participation and collaboration of industry is another question. Industry has not, so to speak, beat down their door. Generally, maximum participation has come from companies looking for greater market penetration in the building types involved; from those who had products in process that with a slight speed-up in development work could meet the program requirements, and whose products would have market potential beyond the particular systems program.

Basic materials manufacturers and utility groups, through their trade associations, may be willing to subsidize a fairly extensive research and development program with the hope that the spin-off in terms of publicity and future business will pay off. Again, such groups are much more likely to subsidize the costs of a professional development team in working up proposals if they have research programs in the works that they know could produce innovative approaches for component design.

What attitude might you expect consulting engineers to take in regard to having components and equipment pre-selected for them in a systems-approach program? On the one hand, the fact that fees or profits are marginal on building types such as elementary schools and speculative multi-family housing could be a point in favor of preselection. Consulting engineers still are responsible for system design in the usual way. The question then is, does he accept

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SYSTEMS APPROACH—A comprehensive, interdisciplinary approach to problem solving. After considerable use and experience in a given business or in government, valid interdisciplinary guidelines may be evolved.

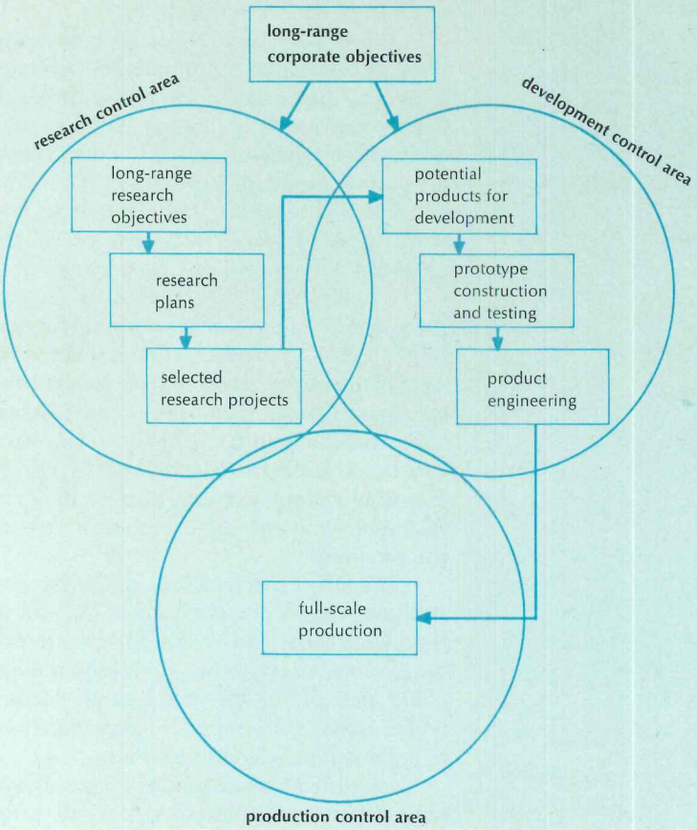
SYSTEMS ANALYSIS—A problem-solving approach, employing the scientific method, in which information is obtained from a team of interdisciplinary experts, and is evaluated and analyzed to establish criteria and parameters describing the functioning and needs of a particular system.

OPERATIONS RESEARCH—A problem-solving approach, employing the scientific method and based upon previous systems analysis, in which an operations research analyst, in cooperation with a team of interdisciplinary experts, *evaluates an existing system*. Purpose is to solve problems in certain parts of the system or to improve over-all functioning. Machines may or may not be a part of the system.

SYSTEMS ENGINEERING—A problem-solving approach, employing the scientific method, and based upon previous systems analysis, in which alternate man-machine combinations necessary for an optimum system arrangement (usually a new one) are evaluated. Such evaluation is done with a team of interdisciplinary experts. The systems engineer relies upon the individual experts to describe capabilities and functional characteristics of the individual machines (packages). In the areas of data processing and development of military hardware, procedures are refined and relatively standardized.

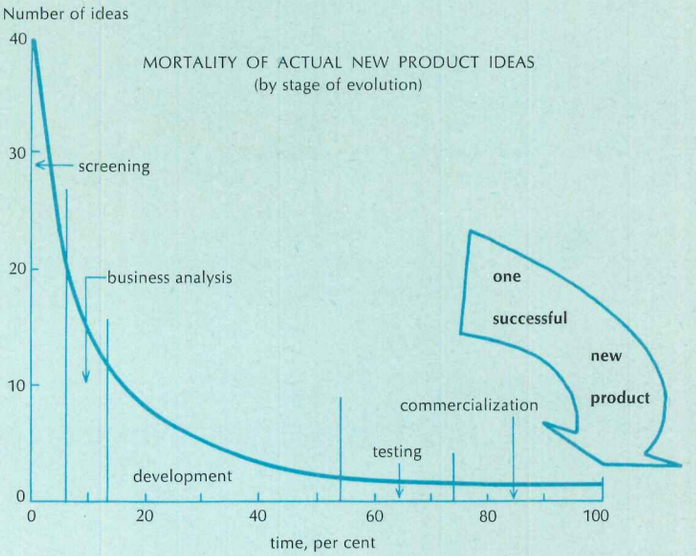
SYSTEM ENGINEERING—Design and evaluation of a particular air-conditioning system in terms of dynamic response of the system to the demands imposed upon it, along with the response of the automatic control system with which it is matched. Engineer requires component and subsystem operating characteristics in detail from manufacturers, or complete analysis is not possible.

R & D FUNCTIONAL AREAS AND ORGANIZATION



INNOVATION SPRINGS FROM R & D AND PRODUCT DEVELOPMENT

- Few ideas make it
- Time and cost are major factors
- Crash programs are generally subsidized



Left: from "Improving the Effectiveness of Research and Development," by Robert E. Seiler, copyright 1965, by McGraw-Hill, Inc. Used by permission. Above: from "Management Consultant," published by the Association of Consulting Management Engineers.

the package in toto? Perhaps not. He may, for example, upon examining the elements in the hvac sub-systems, decide that the controls provided may be in conflict with the over-all system as he must design it for a given building. What does he do about this? If he asks for too many changes, then the advantages of standardization are lost—in effect, he is designing a custom system. The engineering community will, of course, be less likely to make exceptions to the components of the pre-selected packages if it has been brought in on such aspects of system programs as review of performance specifications, and is represented in the evaluation of the packages themselves. The SEF school program in Toronto made sure that a number of outside architects, consulting engineers and users (in the person of plant superintendents) were represented in the evaluation procedure; professional "critics" were drawn at random from the boards of education and the technical professional community to provide expert opinion to the SEF staff.

The fact that SEF asked for more technical inputs at various stages of its evaluation procedure did not diminish the role of judgment. The first check point included mid-term review of proposals from manufacturers bidding on the 10 components comprising the program, with technical input from professionals. Bid evaluation included not only comparison of lump sum costs but potential penalties through a weighting of functional and designability factors (the facility with which a building may be designed and assembled). A computer-assisted process was then used by the SEF group in evaluation of bids. But choice of designated sub-system proposals was not made on this basis only; computer evaluation was used to "sort" the proposals for lowest collective bidders. Final choice was by over-all professional judgment of the final five choices (lowest collective bids of 10 sub-systems) with all sub-system bids taken together. Beyond this, sub-system bidders could still be rejected following first-stage testing in an actual structure, if on the basis of professional opinion, any sub-system failed to meet the intent of the applicable performance specifications.

Some advantages and problems for consultants and manufacturers

What are the potentials for cost savings using the volume-purchasing approach? If a manufacturer knows that over a period of several years he may sell 500 units versus selling five at a time now and then he is willing to negotiate his price downward. The contractor, knowing that he will be dealing with repetitive modules of standard systems and that he is able to set up a volume basis for construction, can produce possible savings of labor of 10 per cent or more. Such savings could result without any advance in sub-system technology at all.

But with a systems project where the manufacturer bidding is involved in design as well as in supplying products, he has to take time to decide how he will approach the problem—how he understands wording and intent—in terms of the criteria that have been set up. He has to involve a contractor whom he has confidence in to handle the pricing of the installed systems. Because of the fact that no systems have yet been installed, this contractor must provide for a number of intangibles and contingencies that may occur during construction. Thus the advantage of normal industry competitive bidding is lost. Further the bids are being calculated on the basis of preliminary rather than fully detailed plans and specifications—another contingency to be allowed for.

Exceedingly generalized or vague performance-type specifications often do not relate to reality, and any performance-type approach to specification cannot succeed except on the basis of limitations set by industry and building professionals themselves.

On the other hand, volume purchasers, say for a building type such as motels, who start with detailed plans and specifications and standardize to the ultimate, can get competitive bidding from various manufacturers. But with systems projects, nearly every manufacturer is bidding a different system.

Characteristic of the systems projects so far—SCSD, URBS, SEF and others—has been the hvac requirement that manufacturers include in their bids maintenance costs, with agreements being made for five-year maintenance contracts, renewable for 15-20 years. This pins down for the owner the owning cost for the equipment itself and gives him some idea of equipment life and reliability. These specifications also call for some estimate of operating costs.

If participants in a systems project have the option of taking on the maintenance contract provided or shopping for their own maintenance, this may be self-

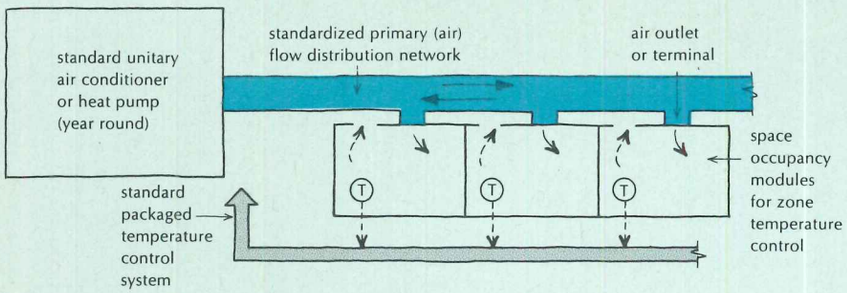
Unitized equipment and standard packages for the air-conditioning system

Direct unitary approach—uses standard package unitary air conditioners up to 50 tons. Size is limited by trucking and handling considerations.

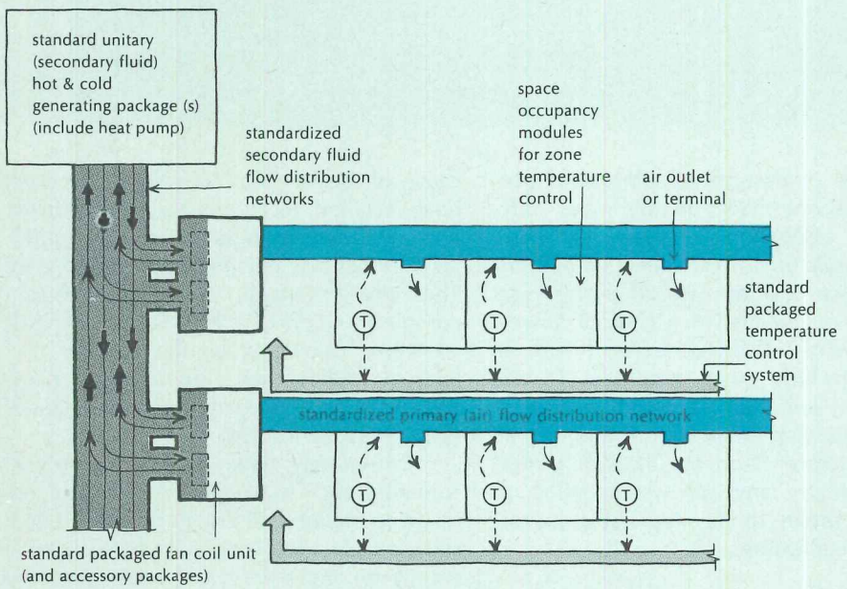
The air distribution system can be double- or single-duct, multi-zone, variable-air-volume, etc. Air-flow distribution network includes flow control devices, mixing devices, terminals and outlets. Use of in-space unitary air conditioners is also possible.

Secondary-fluid unitary approach—many more types of system arrangements can be evolved. This is particularly so when the unitary packaged hot and cold generators are designed for use in multiple for a single building. Standard package fan-coil units can serve loads to 50 tons or more; multiple generator arrangements can provide for tonnages of several hundred tons or more.

Secondary fluid flow distribution networks can be chilled water, hot water, steam-condensate. Flow system includes flow control devices, heat exchangers, coils, recirculating and booster pumps, controls, etc. Use of in-space fan-coil packages is also possible, as well as combinations and modifications thereof.



DIRECT UNITARY CENTRAL AIR CONDITIONING SYSTEM



SECONDARY FLUID UNITARY CENTRAL AIR CONDITIONING SYSTEM

AIR-CONDITIONING SYSTEM—In its most elementary form it can be a single-package refrigeration system including a forced-convection air-flow system with air blowing over the evaporator and directly into the space. A central system will use ductwork and may use a secondary fluid (chilled water) instead of a direct refrigerant.

AIR-CONDITIONING SYSTEM (SUBSYSTEM)—A major subdivision of the over-all air conditioning system that provides for (1) generation of heating or cooling effect or (2) thermal fluid distribution; or (3) automatic control for a package or flow network system. Each subsystem can be subdivided into other subsystems (e.g., primary conditioned air to a single-duct induction termial).

AIR-CONDITIONING SYSTEM (COMPONENT)—A single basic element or device in a multi-component assembly or an over-all system (e.g., a fan; a pump; a thermostat; an air outlet; etc.)

AIR-CONDITIONING SYSTEM (PACKAGE)—A matched grouping of two or more components capable of fulfilling a definable function (e.g., a standard in-line pump motor combination; a unitary air conditioner; baseboard heater with integral thermostat; etc.)

DIRECT UNITARY PACKAGED AIR-CONDITIONING EQUIPMENT—Completely self-contained packaged equipment with secondary energy generating plant within the unit; also includes the additional packaged equipment provision for delivery or the energy so generated. The unit may be supplied with gas, oil and/or electric power with provisions for direct supply of heated or cooled air to a space or spaces on a single or multi-zone basis.

SECONDARY FLUID PACKAGED AIR-CONDITIONING EQUIPMENT—A completely self-contained secondary energy producing plant with integral provisions for thermal fluid (steam, hot water, chilled water) flow moving.

defeating as regards equipment reliability and longevity.

The original systems project specifications presume that the equipment and systems will be installed properly and with proper provisions for maintenance so that where the successful system is a direct unitary system they represent an optimum type of unitary installation, and not a "speculative" type, which is more typical of the usual installation for this type equipment.

Manufacturers will be inclined to take more interest in systems projects and in getting involved in product development work only if they see a good market beyond the systems projects themselves. Manufacturers participating in these projects who have had to do product development work say that they cannot possibly recover their investment from the relatively small size of the programs.

The URBS specifications called for very stringent requirements on noise (NC-30) in the living units, and so the manufacturer's development work to meet this requirement could pay off in the hotel-motel market where noise is an important consideration, as are maintenance and reliability.

Larger hvac manufacturers have shown only rather tepid interest in systems projects undertaken so far. The basic reason is that they cannot very well interrupt their continuing programed research and development program intended to keep them a step ahead of their competitors, and which is based on how they interpret marketing trends. Such disruption concerns them more than the $100,000 minimum that might be required to get involved in the bidding process. (Total spent by all URBS bidders was $6 million.)

What type of air conditioning system fits today's systems approach?

Obviously, today's systems approach in the building field implies volume purchasing with a maximum degree of standardization. This implies dealing with "building-block" modules both for the building and the air conditioning sub-system. Therefore, any of the systems being suggested would have to consider maximum use of broad scope "packages," standardized fluid (air, water, steam) flow networks, standardized control systems, standard flow-moving packages, standard control systems, standard energy-generating packages, etc. In the case of the energy-generating packages, the type of equipment involved would be termed unitary, and these would be either of the hot or cold secondary-fluid type (hot or chilled water or steam)—or of the direct type, in which the heating or cooling energy is transferred directly to the air being sent to the spaces (unitary air conditioner or heat pump, which by definition also includes the flow mover). However, where multiple buildings are involved in a campus-type project, or for larger buildings, use of custom-designed central energy plants—even of the total-energy type—could be appropriate. In these cases, how-

ever, maximum standardization would imply that the central plants be of the multiple standard-module type.

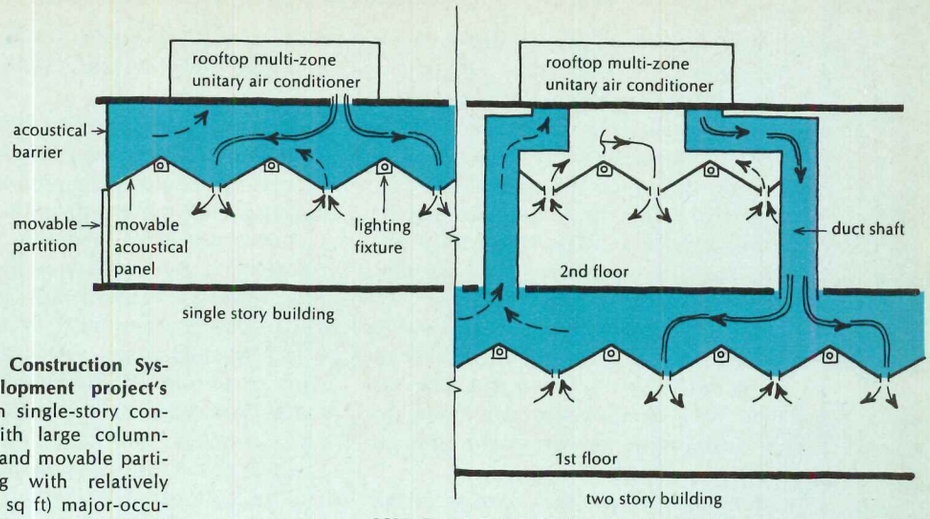
Status of consultants: another reason why systems approach has to move

It is generally acknowledged by consulting mechanical engineers that manpower is their main problem—and the situation is getting worse. In addition, with larger buildings, mechanical systems are getting even more sophisticated and complicated, and this implies even better qualified people than in the past. The problem is where are they to come from? The situation boils down to this: how can the consultants utilize their manpower as efficiently as possible? What they are looking into is how to reduce the amount of work to be done —computerized load and energy-use calculations, computerized specification writing, etc. Also it seems obvious that certain building types could use a higher degree of standardization.

Further, there is a greater demand from the owner for more single-source responsibility—which the engineer wants also. As long as the engineer is responsible for over-all system design, and as long as the engineer agrees that the packages to be used suit the design concept for the job, single-source responsibility is beneficial for him, inasmuch as he is looking for manufacturer backup. But obviously he does not want the manufacturer to supplant him. Of course consulting engineers do not like the idea of standardized systems being imposed upon them. In general, direct unitary systems are more restrictive in the number of options that the engineer can and should call for. But it behooves the manufacturer to be much more explicit than he has in the past: he has to prove to the engineer what is and what is not possible.

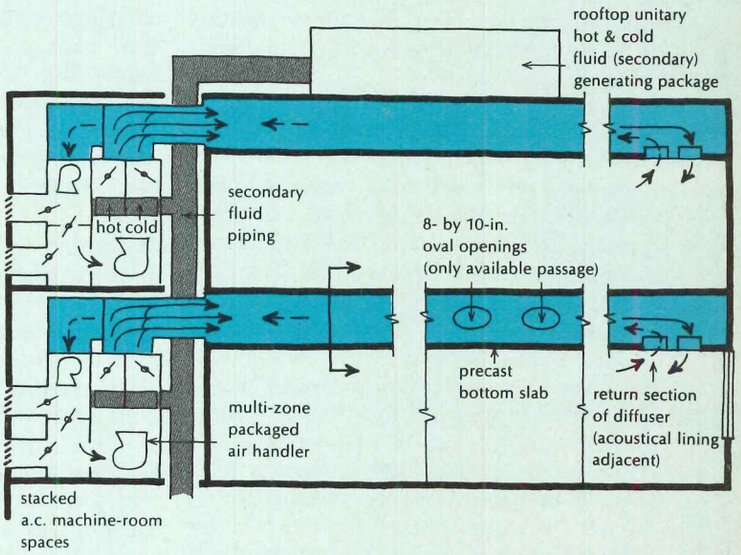
Another reason why standardization of smaller systems is of value is that today we find increasing problems as the size, sophistication and complexity of the system grows. Thus it is easier to deal with smaller systems, whether they be direct- or secondary-fluid unitary. The advantage to the consulting engineer, whether this be a standardized system of his own making or is a result of a systems buying project, is that once the system has proven itself, a lower level of competence is required. This does not mean that the engineer should not periodically look into the packages and components, because these have to be of satisfactory quality; also modifications and changes are continually being made and new manufacturers are entering the field or adding to their line. The engineer may have to make fairly comprehensive investigations in this regard just to keep up with changing technology, and what may be satisfactory now may not be three years from now.

Another area in which the engineer could use more information is longevity of various components in the system. Many of today's comparisons tend to be too super-



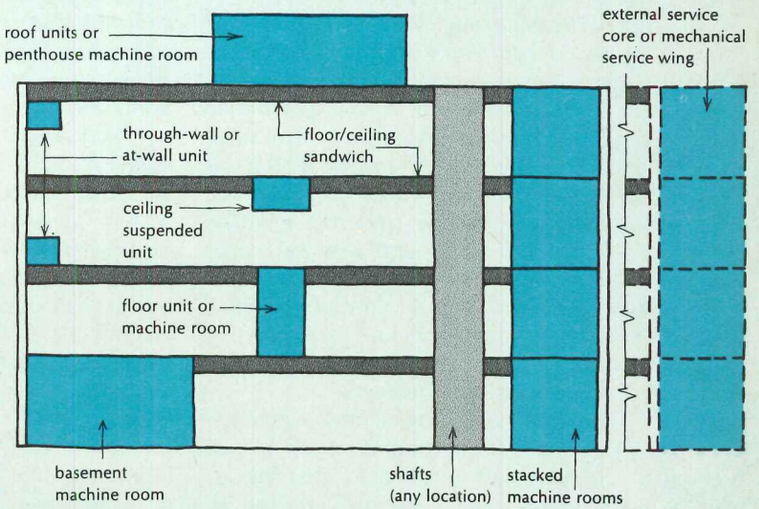
SCSD PROJECT AIR-CONDITIONING SYSTEM

The School Construction Systems Development project's emphasis on single-story construction with large column-free spaces and movable partitions, along with relatively small (4,000 sq ft) major-occupancy modules and small (400 sq ft) minimum-occupancy temperature control zones, made the use of medium- or small-size direct unitary equipment an obvious solution. The rooftop multi-zone unit matched to the major occupancy module optimized system flow network costs and space requirements.



URBS PROJECT AIR-CONDITIONING SYSTEM

The University Residential Building Systems project had to work within a code limitation on cross-circulation of air between individual married-student apartments. System had to be adaptable to serve either apartments or rooms for single students. The small (200 sq ft) zone temperature control zones for low-load residential-type occupancy meant small duct runouts (standard sizes) could be used from the central multi-zone units. This, plus the fact that ducts can be installed by men working at floor level results in considerable cost reduction. Stringent noise criteria and floor space cost penalties, and the applicability to high-rise construction ruled out direct unitary approach and made stacked equipment locations a good solution.



AIR CONDITIONING SUBSYSTEM ALTERNATES REQUIRING STRUCTURAL SUBSYSTEM AND SPACE PLANNING ALTERNATES

Fitting the air-conditioning system physically into the building is typically the architect's biggest headache in regard to the engineering systems. Most structural systems can be adapted—with small modification and difference in cost—after the preliminary decisions have been made. The air-conditioning system problems can continue right to the end of the working-drawing stage.

ficial. With larger systems, equipment such as hot and cold generating equipment may be installed better with better provisions for access and maintenance. With smaller equipment, there is a wide variety of situations in which the equipment gets installed that affect how well the equipment will operate and last. But if the engineer is working with smaller equipment modules and standardized systems with standardized planning modules, it means he can achieve an optimum level of quality so far as the installation is concerned if he has matched the components and seen to proper installation on prototype (initial) design.

Some system projects groups make certain presumptions regarding life of unitary and central station equipment to be used in their over-all evaluation of bids. When such presumptions are made manufacturers indicating interest in bidding should be informed as to what they are. Further, project staffs should look to manufacturers for opinion and proof or disagreement of their presumptions. Involved is not just a question of bearing life, corrosion, and the like, but other matters that are fundamentally important to equipment life.

Who should be involved in project advisory and staff groups? What experts?

Naturally the mechanical engineers feel that they should be involved. But how should participants be picked? Should certain firms be designated and these firms determine the personnel to participate? Or should screening and selection be done by a professional society, which in the case of consulting mechanical engineers would be ASHRAE? It seems logical that if these systems projects are to operate at a professional level, then the profession itself should be asked for recommendations as to who is most suitable for the task, for the reason that technical competence is best evaluated by those people engaged in technical activities as individuals, drawing on their personal expertise.

In the case of SCSD, there was no mechanical engineering representation on their advisory group; with URBS only one engineer, a structural consultant, was asked to serve. The project staff retained mechanical consultants to aid in the preparation of performance specifications and in evaluating equipment performance in test situations. SEF had two consulting mechanical engineers and one structural engineer on its advisory group and retained a firm of mechanical engineers, a firm of electrical engineers, and a firm of structural engineers as consultants to its staff. Beyond this, the professions were involved in commenting on the specifications.

It would seem logical that when the project staff has an advisory group as well as specialist staff consultants, that the advisory group should not be selected on the basis of mere prestige and political acumen and clout, but for technical expertise as well. The advisory group should contribute expert technical opinion.

Degrees of manufacturer involvement depend upon purchasing approach

The more generalized the performance specifications, the more difficult it is for manufacturers to make carefully considered and worked out system proposals. They must examine many more possibilities, which adds to their cost in bidding the project. Manufacturers are, in effect, being asked to perform architectural and engineering functions, rather than for advice and guidance. By implication they are asked to supersede consultants in practice, and that the best technical know-how resides with the manufacturers.

Use of the systems approach is hardly limited to the systems project groups alluded to. In their own fashion, motel and hotel chains, apartment builders and other volume buyers obviously standardize to a great extent, and of course these groups constitute a fairly sizeable market. Further, these groups have a continuity of management and they are quite predictable as to what sort of systems they are likely to buy. They may or may not be knowledgeable buyers, but their influence on the market over-all should not be discounted. In contrast, the market represented by the school and dormitory systems projects is a great deal smaller.

What can be expected from manufacturer R&D?

Today's emphasis is upon developing and producing smaller, quieter, more reliable and longer-life equipment. This includes improved heat transfer, improved refrigeration cycles and the like.

The biggest departure from previous basic components and systems has been with certain fluid (air or water) systems components and with automatic controls and instrumentation.

These component and control developments have led to today's much wider range of systems of increasing complexity and size. Concurrently there have been increasing problems in the areas of noise and vibration; fluid-flow network stability and controllability; over-all systems performance; matching of controls, components and equipment into the systems.

Manufacturers generally agree that no really dramatic breakthroughs are in sight, and what can be expected is a continuation of the modification and improvements of existing basic equipment components and packages. The term "new technology" is not a good one to use in speaking of developments in these areas because of its inherent vagueness and lack of specific meaning. "Technological improvement" might be more appropriate. One should remember that, except for in-room equipment, we still have to deal with an air- or water-flow distribution network, subject to thermal and dynamic limitations that are not subject to change, and for which all possible avenues have been explored. Improvements will depend upon better use of existing technology.

The ways in which R & D functions are bound to affect the extent of innovation for systems projects: First, each company has numerous R & D projects underway at one time, with staff time being allocated and projects in various stages of completion. Time factors for the projects may run from two to five or even 10 years (the latter perhaps representing R & D on a new compressor or absorption unit line). The smallest time (two-three year period) might be for development of a fluid handling component or a terminal unit. Certain product modifications might require less time.

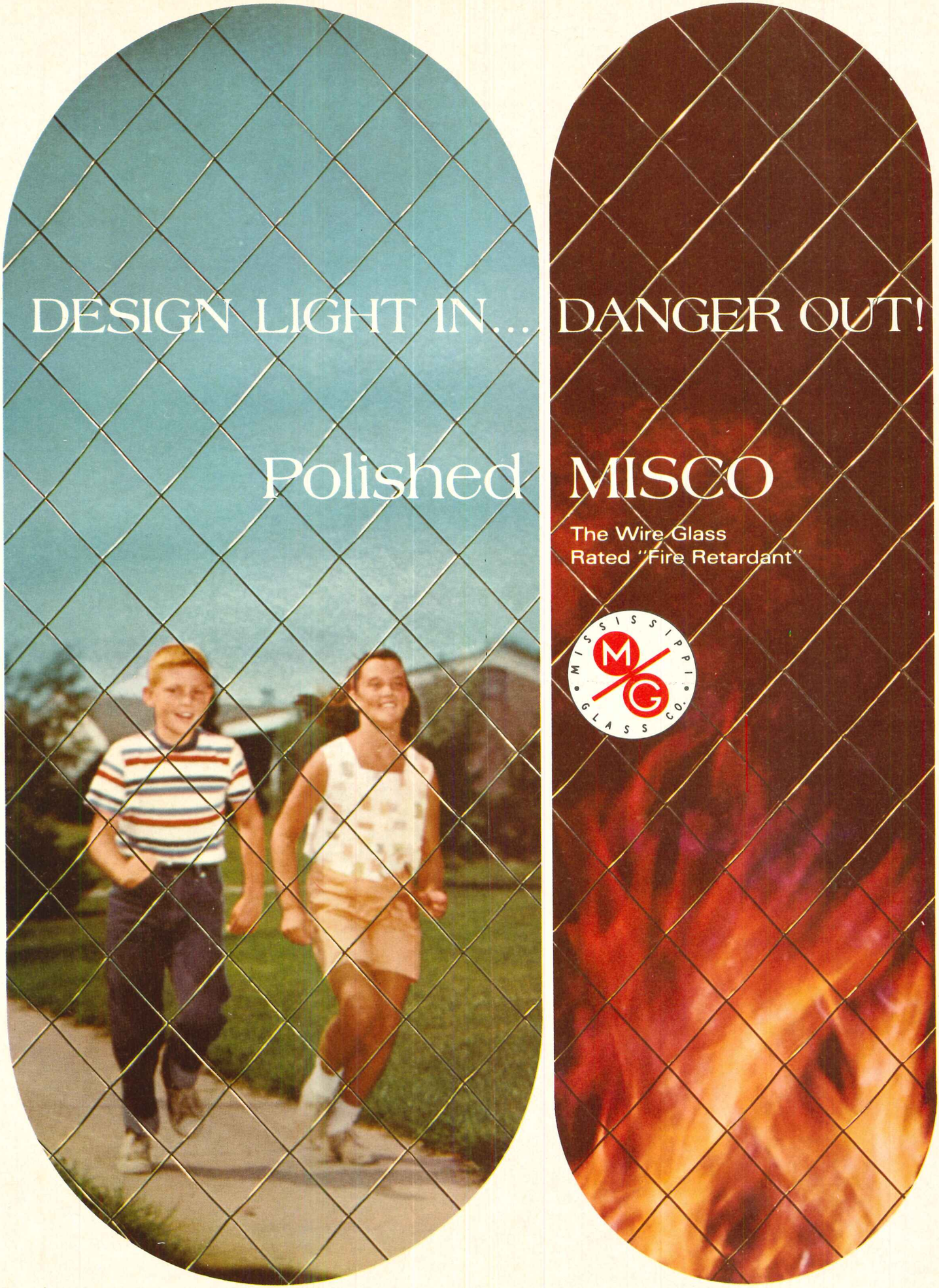
No manufacturers want to prematurely divulge to others—even on a confidential basis—the details of what new developments they are coming out with. At most what manufacturers can expect is a lead of perhaps one to two years over a competitor, except perhaps for certain developments that are positively proprietary in nature. In the case of larger manufacturers, the feeling seems to be that they prefer to bid as part of a consortium bidding against others to develop new ideas and systems on the basis of staff experiences and facilities, with no work to be done until after award of contract to the successful consortium.

While it seems that "systems" approaches to date can, under favorable circumstances, act as a catalyst for a few manufacturers, inducing them to advance their product development programs—the time schedules are far too short to have much over-all effect on the industry. Even in the cases where activity has been advanced due to the project, the manufacturers were looking at the total market in various occupancy categories, not just the project.

R & D is costly and difficult for the manufacturer to evaluate. Cost, for instance—excluding product development—might be in the order of 3 to 5 per cent of sales, but would vary up or down depending on the nature of the product and the company. Manufacturers have not yet satisfactorily solved evaluation of this area of business activity. New systems depend to a great extent on manufacturer product development, although new arrangements of existing hardware can also result in new systems. In this area, new ideas often originate with consultants.

To the consulting engineer, architect and owner, however, no new system really proves itself until after several years' operation in actual buildings. Prudent architects and engineers would not make a long-term commitment to use a radically new type of system for a large number of buildings.

Most, but not all, system and subsystem concepts originate with manufacturers—but not necessarily their implementation. Naturally, the larger and more comprehensive the package the greater the manufacturer involvement.



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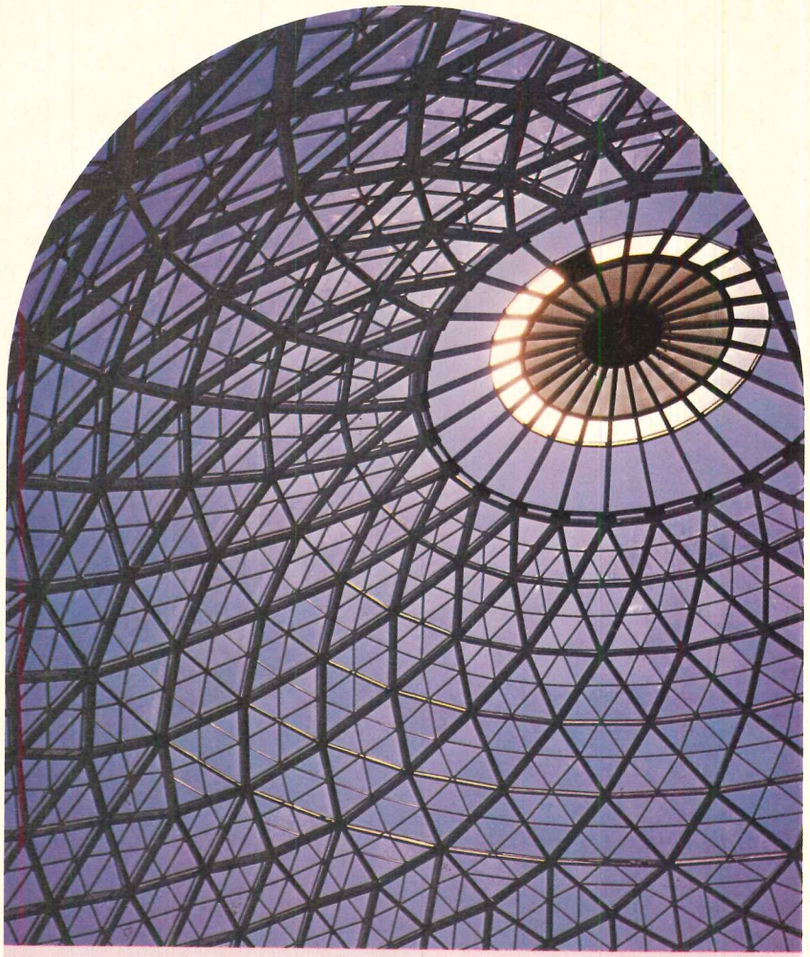

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*To qualify for this "Fire Retardant" listing, Mississippi Wire Glass had to withstand the furnace test given by Underwriters' Laboratories, Inc., Wire glass windows in a removable wall are placed in a gas-fired furnace. Temperature is raised to 1600° F. in 45 minutes and held at this point for 15 minutes. The wall is then removed and the glass is subjected to a 1⅛" stream from a fire hose at 35 to 40 lbs. of pressure. The glass must remain in the sash, substantially unchanged except for any cracking due to thermal shock. Actual test scenes are shown in our 30 minute film "Rolled Glass by Mississippi."

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FULL-VIEW DOORS

with fire retardant glass

Polished MISCO gives clear vision, so important to safety at busy doorways. It can take abuse and still stand by, ready to fulfill its complete fire retardant function. The way it holds against intense heat seals the doorway against drafts that speed through any openings and spread the smoke and flame. The wire webbing is unobtrusive yet it subtly blends with entrance areas so the glazing adds an interesting design feature as well as a safety function.

ATTRACTIVE WALL SECTIONS

with full-vision range

Give the "open" feel to interiors through walls that make full use of natural light. The smooth surface of Polished MISCO makes attractive wall sections that are easy to keep that way. The diamond-shaped mesh is inconspicuous . . . just visible enough to ward off floor traffic accidents from unawareness of glazed openings. Its basic fire retardant ability checks smoke and flame. The sturdy steel webbing holds glazing fast in its frame under prolonged heat exposure.

PROTECTIVE WINDOWS

that give clear view

Transmit natural daylight through windows that are glazed sentinels against fire, breakage, vandalism, and forced entry. Polished MISCO provides window areas with fire retardant protection, while maintaining clear vision and the sense of spaciousness that comes from greater light transmittance. Mississippi Wire Glass has been looked to by architects and engineers as the approved fire retardant glazing through more than 60 years.

SKYLIGHT GLAZING

dramatic and functional

No need for protective screening above and below. MISCO's strong steel diamond-shaped webbing is already fused in where it not only protects against impact from above or below but also prevents shattering that releases ordinary glass for dangerous fall out. Listed "Fire Retardant" by Underwriters' Laboratories, Inc., Polished MISCO holds fast against fire spread under intense heat. Bring more light in from above safely, with fire retardant Polished MISCO.

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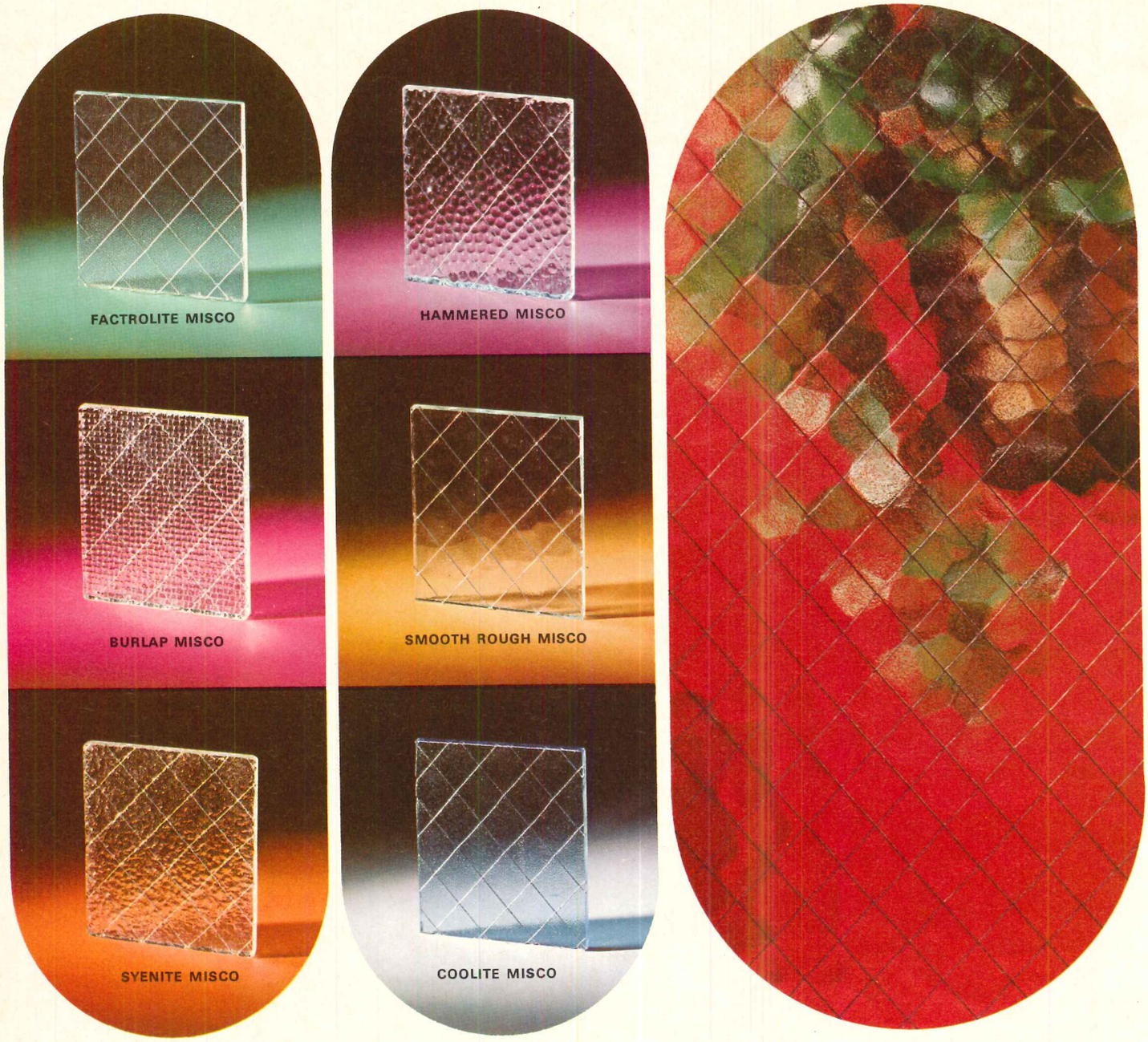

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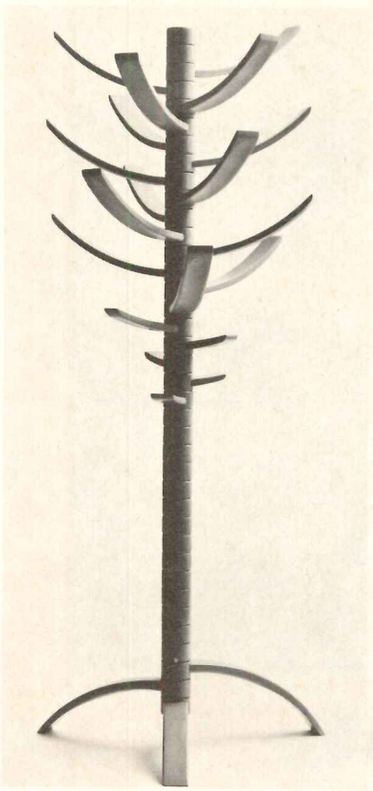

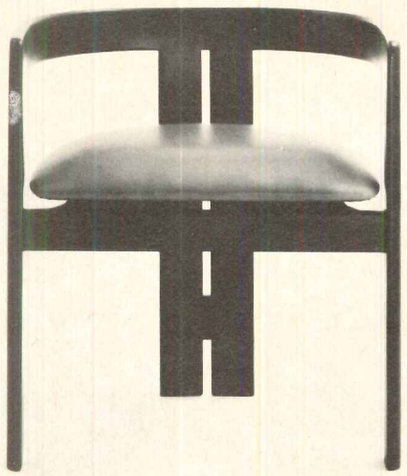

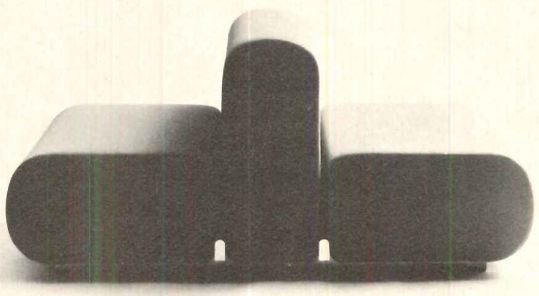

GAVINA GROUP FURNITURE / The acquisition of Gavina, S.p.a., Milan, by Knoll Associates—a company often associated with such names as Eero Saarinen and Mies van der Rohe—was celebrated recently by the presentation of *The Gavina Group*, new and exciting modern furniture, as well as some equally exciting classics (such as Marcel Breuer's tubular steel chair).

Included in the collection is the *Renna Hat Stand* (far left) designed by Bruce Tippett, a British artist. The 74-in.-high stand is a series of lacquered wood components mounted on a metal axis of movable rings.

The *Grande Pigreco* (top right), an arm chair with compact cushion, was designed by Tobia Scarpa of Venice. It can be used equally well in both residential and commercial applications.

A double lounge chair, the *Suzanne*, by Kazuhide Takahama, Tokyo-born designer-architect now living in Bologna, is one of several lounge chairs that also provide many possibilities for residential and commercial interiors. ▪ Knoll Associates, New York City.

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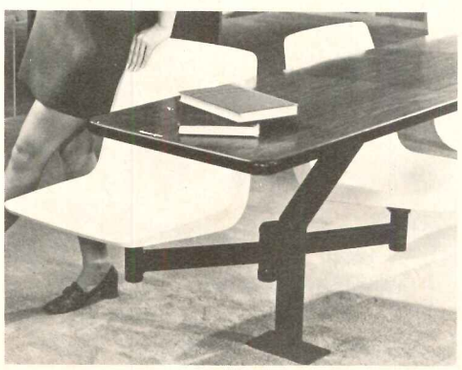

LECTURE ROOM SEATING / Trim swivel chairs mounted on a single pedestal demonstrate one of the uses of the new *Sundberg* chair. Designed by Carl Sundberg, the chairs are made of cast nylon that is static-free, resists cracking, chipping and scratching and is fire resistant. Metal legs and pedestals in a tough matte-finish enamel reduce glare and maintenance. ▪ American Seating, Grand Rapids, Mich.

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DESKS AND CABINETS / The design of *Group Six* desks and cabinets focuses attention on the structural details: the separation of desk and cabinet tops by black recessed top rails; drawer fronts that extend beyond the upper and lower edges of the pedestals; the dramatically scaled drawer pulls in showwood or metal; and the highly polished chrome legs. ▪ Jens Risom Design Inc., New York City.

Circle 302 on inquiry card

CANADIAN FURNITURE / Comfortable lounge group made of 1-in.-thick 19-ply birch with wrap-around cushions is the winner of the 1968 Best-of-Show Canadian EEDEE Award. The collection is "scaled small enough for apartment living without sacrificing comfort, yet is durable enough for extensive contract use." ▪ Georg Jensen Inc., New York City.

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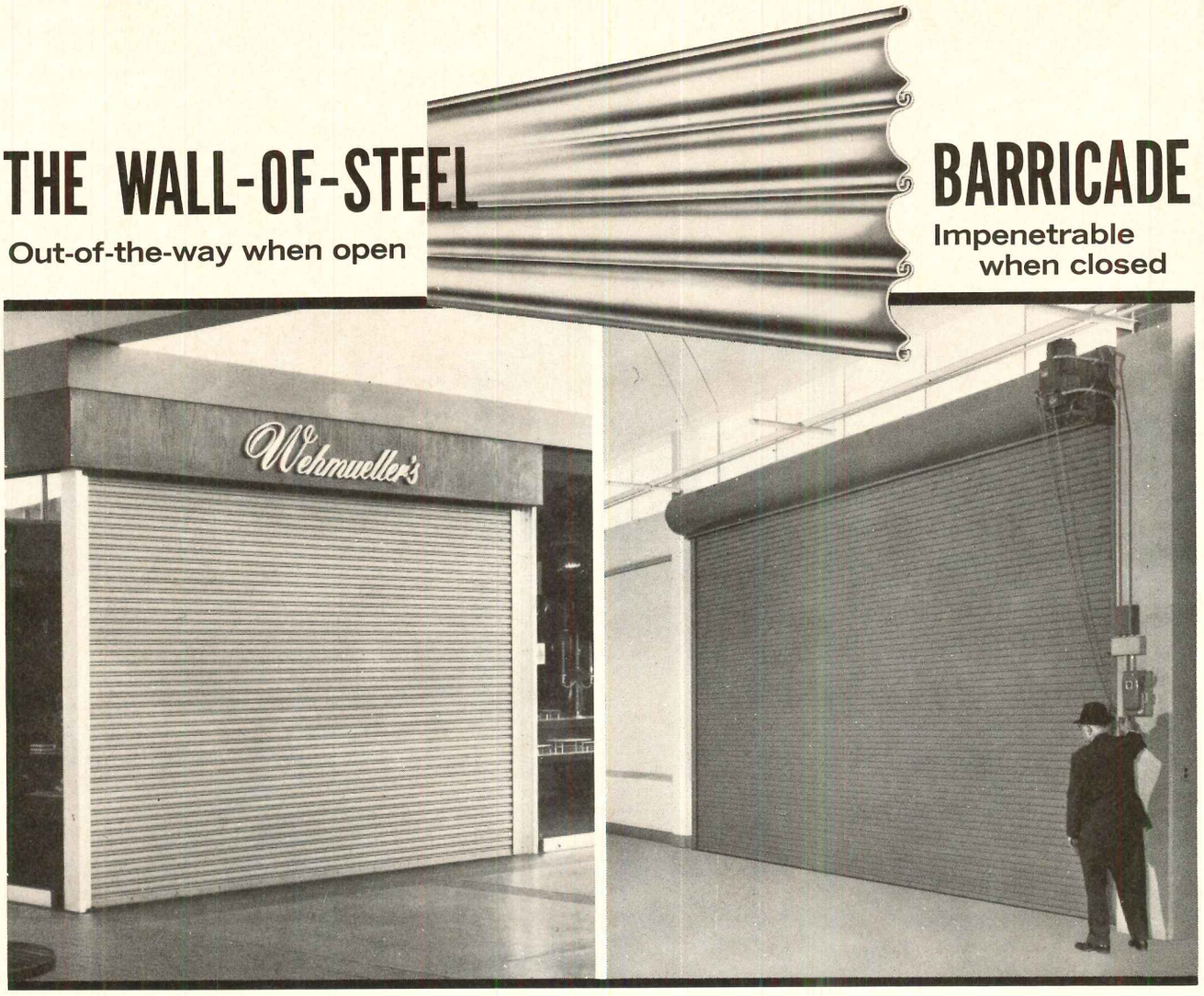
more products on page 214

THE WALL-OF-STEEL BARRICADE

Out-of-the-way when open

Impenetrable when closed



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Kinnear Rolling Metal Grilles —— also offer an excellent barricade for locations where it's desirable to have air, light or vision.

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Offices & Representatives in All Principal Cities — listed in Yellow Pages under "Doors." Also see Sweet's!

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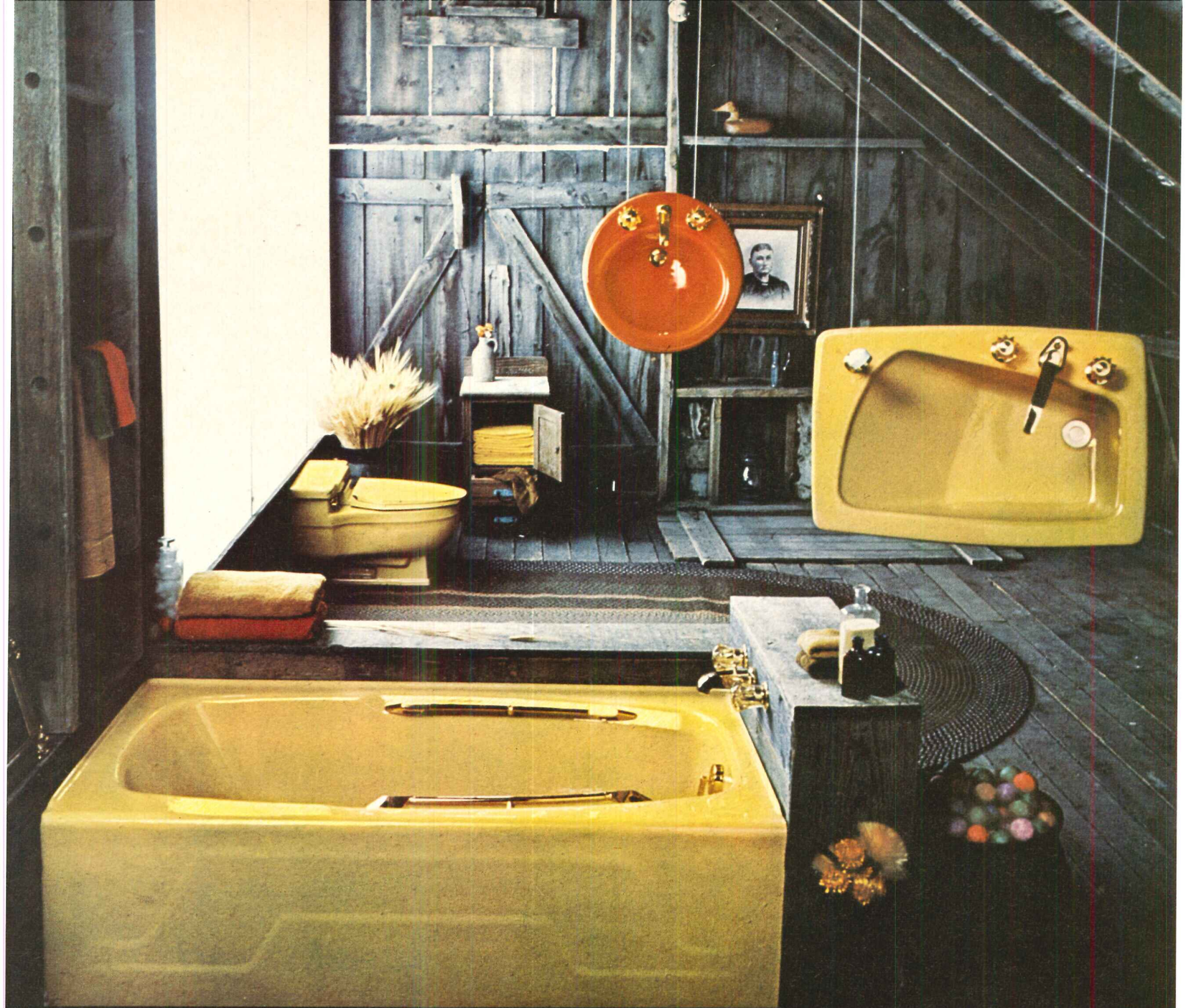
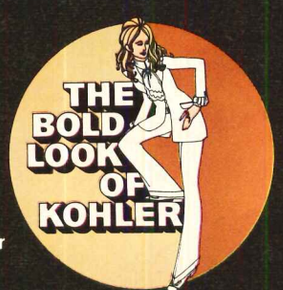
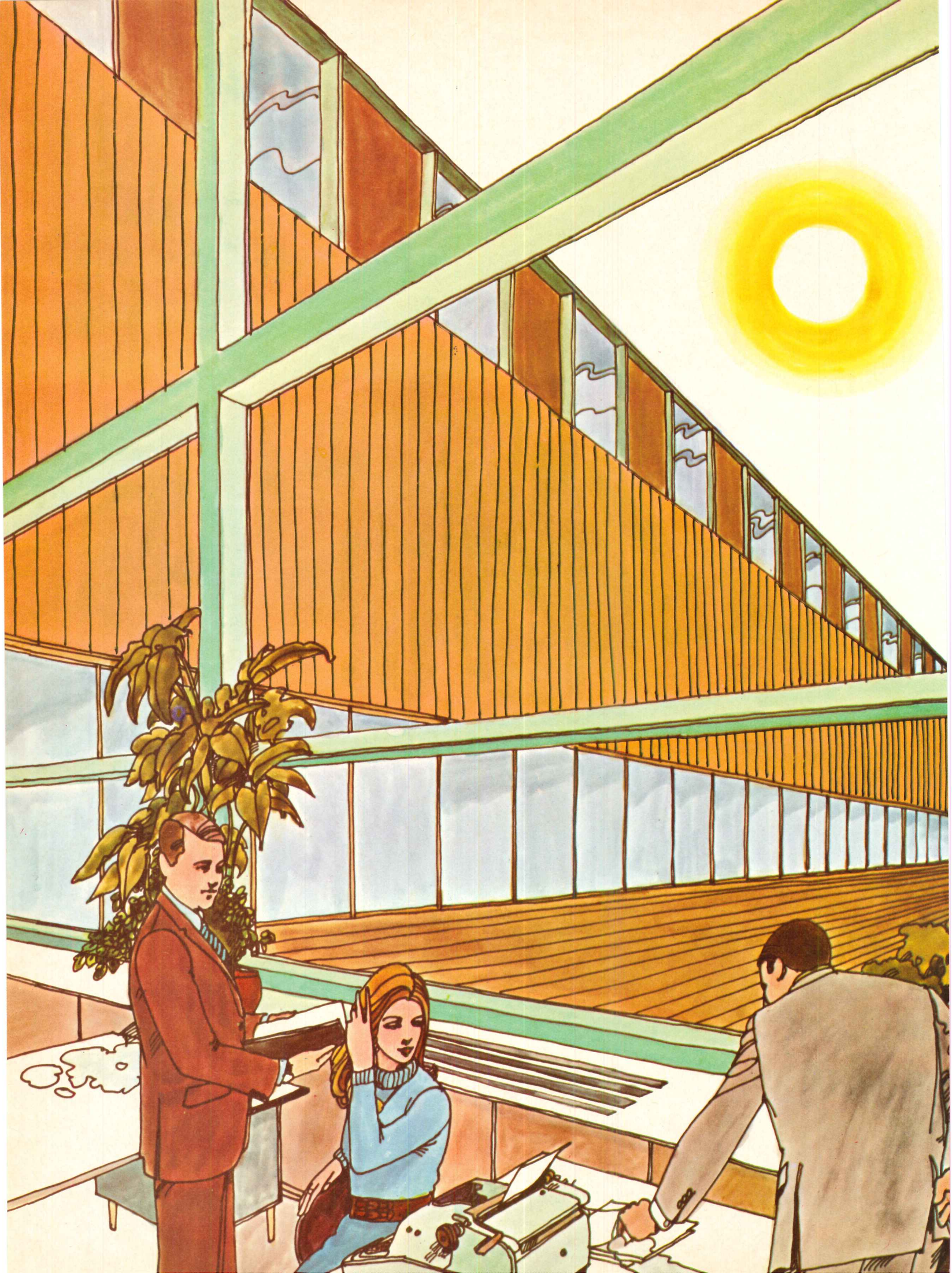


Look what Kohler's done for the ho-hum bath.

It's gone bold with colors and shapes! Kohler's Bold Look fixtures. Kohler's Harvest Gold and Tiger Lily. Loosen up your customer's imagination. Start with a roomy Guardian tub. It comes with big grip-rails and a Safeguard® bottom for extra safety. Next, add a Lady Fair shampoo center. There's a bold design for you. Wide basin, a spray arm and fittings (including swing-away spout) grouped at the side. The bottom even slopes to make a comfortable baby bath. And color! Harvest Gold accented by Tiger Lily. More gold: 24-carat electroplated Flair fittings. Now you've got something going. Go bold with Kohler! Show your customers how to end the ho-hum bath.



Kohler Co., Kohler, Wisconsin



DURANAR™ fluoropolymer color coatings by PPG assure the longest beautiful life under the sun

Metal buildings are now taking on brilliant architectural colors with a combination of beauty and permanence unsurpassed by any finish. This new super finish is DURANAR fluoropolymer color coatings, factory applied to aluminum and steel.

Panels and extruded trim finished with DURANAR coatings should remain bright and colorful 20 or more years after installation—even when subject to strongest ultraviolet exposure. These tough coatings also offer excellent resistance to chemical attack by industrial acids, alkalis and salts.

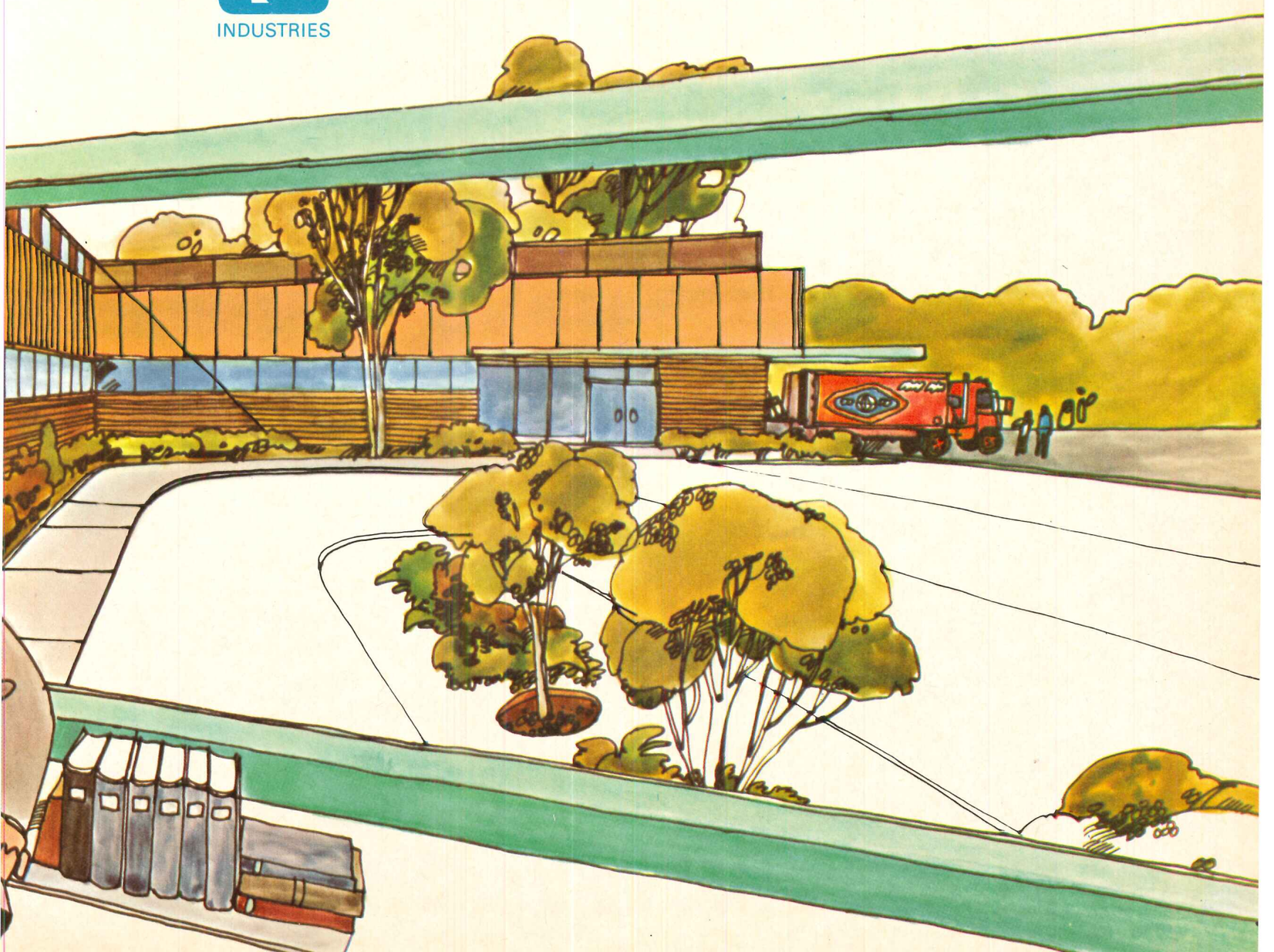
The extra-long color life is achieved by a new pigmentation system developed by PPG which equals the long life of the Kynar 500* fluoropolymer base. DURANAR color coatings utilize a 2-coat factory-applied system to deliver unmatched film flexibility on both steel and aluminum sheets and extrusions. This tough and flexible coating effectively guards against damage in forming and fabrication, shipping and storage, erection and service.

Get full information on this superior new finish for metals from your supplier, Sweet's Architectural File or by contacting Dept. 16W, PPG INDUSTRIES, Inc. One Gateway Center, Pittsburgh, Pa. 15222. Telephone 412/434-3191.

*TM Pennsalt Chemical Corporation

For more data, circle 99 on inquiry card

Color Coatings PPG INDUSTRIES



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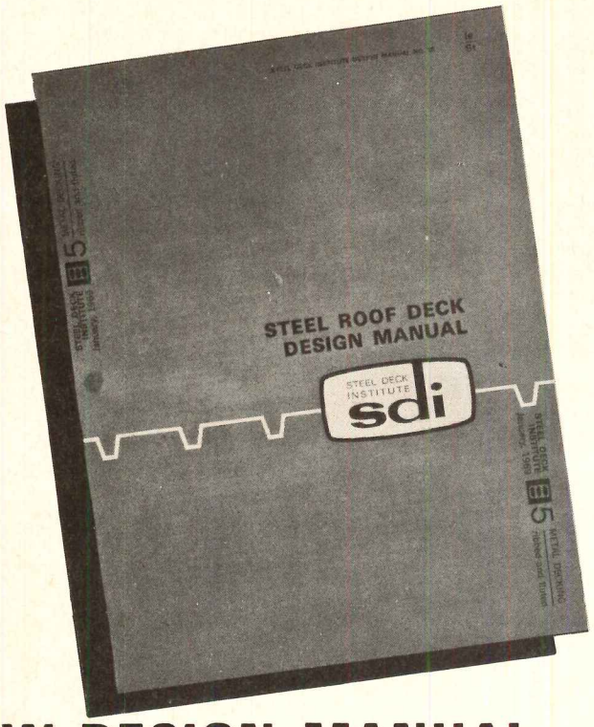

NEW DESIGN MANUAL FOR STEEL ROOF DECK...

Contains new standard load tables for Narrow, Intermediate and Wide rib decks . . . details on ratings from one to two hours, including recent one-hour rating with fire-rated lay-in ceiling . . . latest revision of the Basic Design Specifications . . . suggested Architect's Specifications . . . and the SDI Code of Recommended Standard Practice.

For the first time the above information has been assembled in one design manual — it will serve as a reliable reference for your future roof designs.

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TITLE_____

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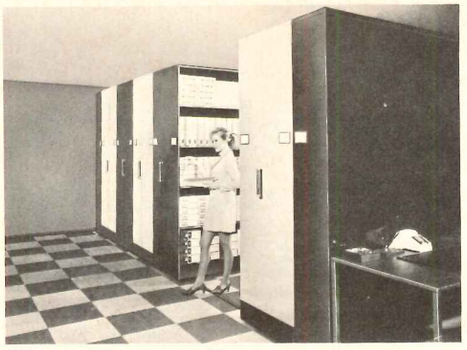

MOBILE STORAGE SYSTEM / *Stor-Trac* is said to save over 43 per cent of space required by conventional storage systems. The system is composed of individual shelving units that glide on tracks. Units at each end are stationary, while units between move easily back and forth to open the aisle to the desired storage area. ▪ Community Metal Products Corp., Forest Park, Ill.

Circle 304 on inquiry card

STUDY CARREL / This unit has a poly-coat screen, rear projection view system with individually adjustable platforms for three separate projectors. The fold-back protective shield reduces projector heat and noise and conceals power cables. ▪ Intelfax, Incorporated, Grand Rapids, Mich.

Circle 305 on inquiry card

BURLAP BOARD / The base of standard 15/32-in. insulated board is surface-laminated and long-edge wrapped with tight-weave, natural color, all-jute burlap. The surface may be used for an entire interior, an accent wall or for many other uses. ▪ Homasote Company, Trenton, N.J.

Circle 306 on inquiry card

more products on page 220

Cotswold by Brian Yale: selected from designs submitted by Students of the Royal College of Art, London

Pilkington Patterned Glasses put a new dimension into design.

Pilkington patterned glasses are as up-to-date as the newest design ideas. Pilkington exclusive patterns, like Cotswold seen here, have been specially designed to match the modern idiom in interior design. For details of the full Pilkington range, both exclusive and standard patterns, write to our U.S. representative: Mr. J. Baldry, Pilkington Brothers (Canada) Limited, 55 Eglinton Avenue East, Toronto 12, Canada.

PILKINGTON GLASS

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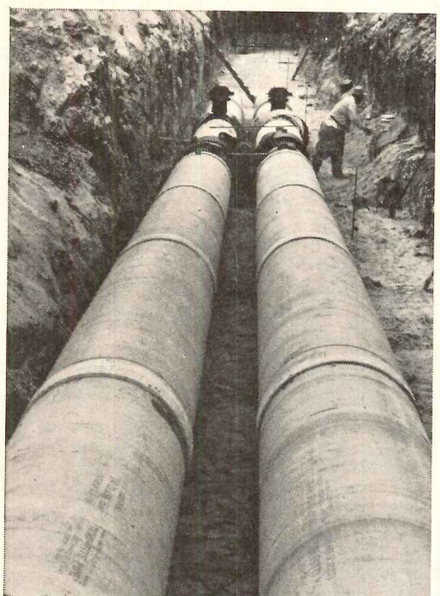
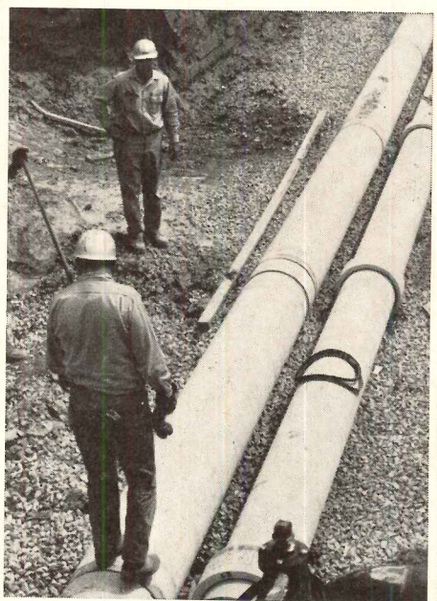
When these major projects needed chilled water supply and return lines, each engineer specified a different pipe "package."

All specified Johns-Manville.

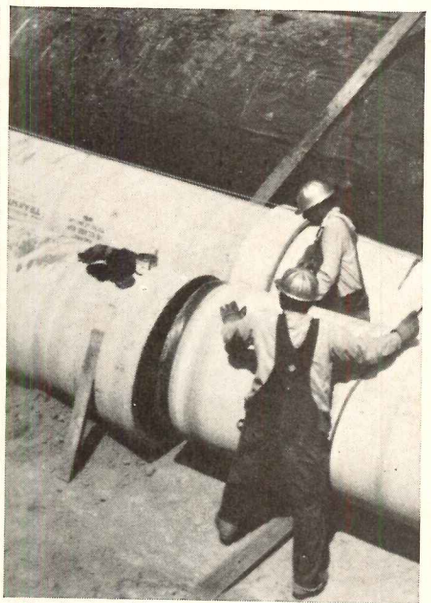
Century City (West Los Angeles, California), Hemisfair (San Antonio, Texas), and Oral Roberts University (Tulsa, Oklahoma) all required different values from their distribution lines. Considerations such as ground temperature and composition, and economic factors such as installation, operating and maintenance costs played a part in their choice. Yet each was able to meet needs with J-M TRANSITE® or J-M Temp-Tite® pipe. Or both. All Johns-Manville!



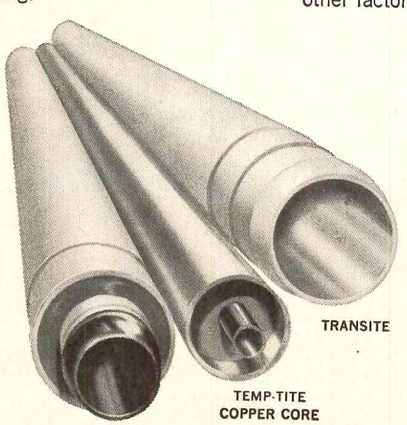
Hemisfair chose insulated J-M Temp-Tite for chilled water supply and return lines. Temp-Tite features polyurethane foam insulation between durable TRANSITE outer casing and an epoxy-lined TRANSITE pipe core. Insulation maintains high thermal efficiency to minimize operating and maintenance costs. J-M Ring-Tite coupling.



Oral Roberts University chose J-M Temp-Tite for chilled water supply, J-M TRANSITE for return lines. This specification blends the economies and values offered by the respective pipes . . . the lower installed cost of J-M TRANSITE, the lower operating costs of J-M Temp-Tite. Ground temperature, nearness of other lines, and other factors may dictate this choice.



Century City chose J-M TRANSITE* asbestos-cement pipe for both chilled water supply and return lines. TRANSITE resists corrosion inside and out . . . features J-M Ring-Tite® joints (coupling with rubber rings) for water-tight seals, elimination of expansion joints, quick and easy assembly. Some insulation value. Lower installed cost, but higher operating costs than with insulated J-M Temp-Tite.



Which pipe(s) for your job? Depends on project requirements, of course. But especially on whether you want to design low installed cost or low operating cost into your system. Whatever your need, J-M has the right pipe. For free technical literature on both TRANSITE and Temp-Tite write: Johns-Manville, Box 290-P, AR-4, New York, N.Y. 10016. Available in Canada and overseas. Cable: Johnmanvil.

Johns-Manville

***TRANSITE** is a registered Johns-Manville trademark for its brand of asbestos-cement products.

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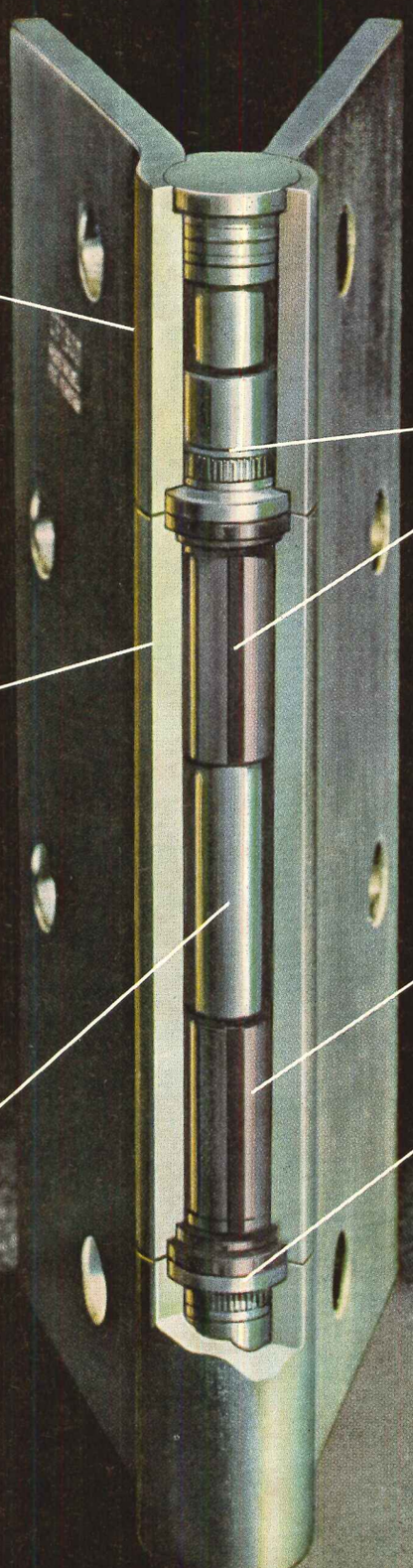
An immortal hinge?

(Stanley comes close with LifeSpan™)



A totally new concept in hinge design and bearing construction so extraordinary the LifeSpan hinge* is guaranteed for the life of the building.

No ball bearings! New LifeStan™ Bearing consists of a stainless steel bearing part, precision flat and super finished — against Stanite, a new self-lubricating bearing material that requires no oil, no grease, no maintenance.

Slimmest barrel in the industry, three knuckles, with only two horizontal lines and flush tips and pins — the handsomest hinge made!

Lateral load is taken between stainless steel pin and surface of Stanite bore.

Vertical load is taken between stainless steel and Stanite thrust surfaces.

Stainless steel rust-resistant pin — through-hardened and precision polished.

Write for LifeSpan brochure H-463 to Stanley Hardware, Division of The Stanley Works, New Britain, Connecticut 06050

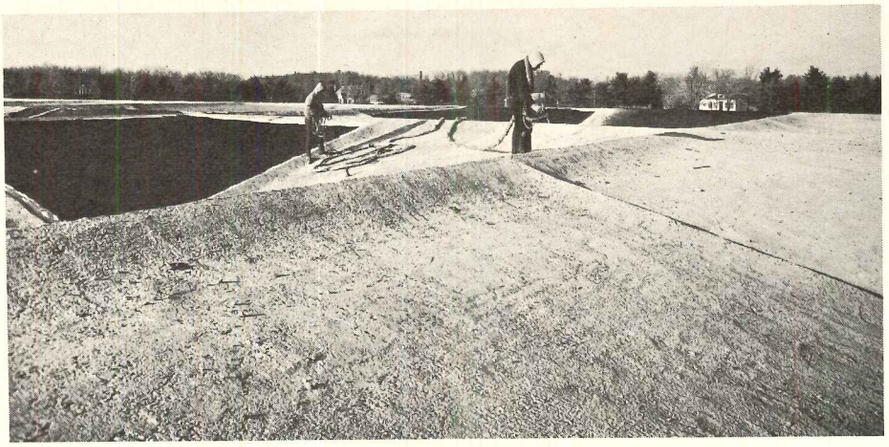
STANLEY®

helps you do things right

*Patent Pending

Gigantic new factory roof in·seal·ated for the ages with sprayed-on urethane foam

The way to sock the sealant/insulation to a few acres of rooftop is as simple as dialing a urethane foam applicator or systems supplier.*



"You can design the most exciting structure in the world", says architect Daniel F. Tully, "but a leaky roof or excessive heating bills can turn it into a nightmare for the owner." Mr. Tully recently designed this 105,000-sq-ft. building with a hyperbolic paraboloid roof for Atkins & Merrill, Inc., builder of space vehicle technical models and electronic aircraft training simulators.

Resembling a tufted mattress from above, the roof consists of 38 concrete shells, each self-supporting and joined by light reinforcing. The design permits a vast expanse of floor space with minimum support columns. But finding a low-cost combination for effectively insulating and sealing the complex surface posed a problem.

To insure against heat loss, an airtight, moisture-tight, seamless shield of sprayed-on urethane foam insulation was specified. With an R value of 9.09/in. of thickness, urethane has twice the thermal resistance of the next-best insulant known. At 2 pcf density, urethane's compressive strength is 36 psi, flex strength is 45 psi and shear 25 psi.

But among its list of second-to-none advantages is the easy applicability of urethane foam. It can be sprayed on, as in this case, poured in place (as between walls) or used as pre-fabbed slab stock. Trying to insulate a complicated job like this one by any other method or with any other material would have made a shambles of the time schedule and had the cost estimator climbing the wall.

The 1" blanket of urethane was sprayed by A. Belanger & Sons, Cambridge, Mass., using chemical foam systems formulated by Diamond Shamrock Chemical Company, North Arlington, N. J., and Isocyanate Products, Inc., Wilmington, Del.

**Mobay does not supply finished chemical systems or apply urethane materials, but we do business with most of the major firms who do. Write for our list. If you have a special structural or insulating problem, our case history files may have an answer for you. Write and give us the details.*

Good resistance of rigid urethane to thermal stress was critical factor in sealing expansion joints between parabolic shell sections on roof.

The 1" layer of urethane was applied to 98,000 sq ft by 3-man crew. Foam was later sealant-coated for added durability.

MOBAY CHEMICAL COMPANY

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MOBAY®

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Carpet of HERCULON® keeps a reception room beautiful even though it leads a dog's life.

When other carpets look dog-tired, HERCULON still looks beautiful. Because carpet of HERCULON* olefin fiber can take the tough professional life of a veterinarian's reception room, or an office, at home, or anywhere you want long-lasting beauty and practicality. A carpet of HERCULON is an excellent value to start with. It gets even more so the longer you have it.

For more good information contact Fibers Merchandising, Hercules Incorporated, Wilmington, Delaware 19899.

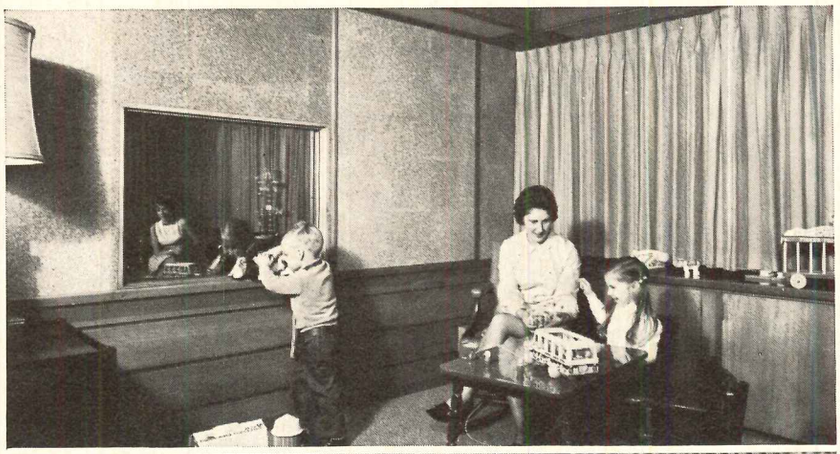
*Hercules registered trademark.

HERCULES

For more data, circle 105 on inquiry card

continued from page 214

Would you believe this is a toy manufacturer's testing laboratory?



It is. For Fisher-Price Toys Inc., the nation's largest manufacturer of preschool playthings. Children's acceptance of new toys is measured by company engineers without the youngsters' awareness. The secret is in the mirror. From the tots' viewpoint, that's just what it is. But for the engineers behind it, it's a window. And the "see-thru" mirror is Mirropane®, a product of many uses.

Mirropane is used to train future teachers. To observe reactions of patients in clinics. To protect stores against shoplifters. For more information on Mirropane, call your L-O-F Distributor or Dealer (listed under "Glass" in the Yellow Pages). Or write Liberty Mirror Division, Brackenridge, Pa. 15014.

LIBERTY MIRROR®

A DIVISION OF LIBBEY-OWENS-FORD COMPANY

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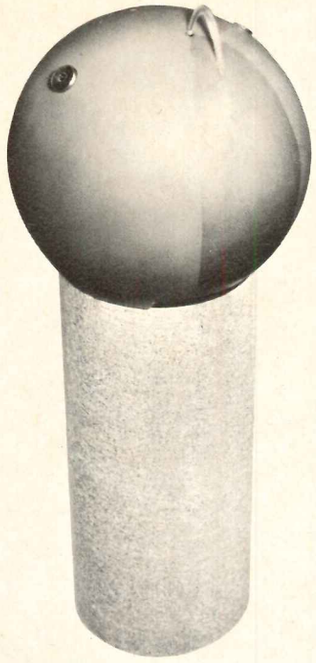
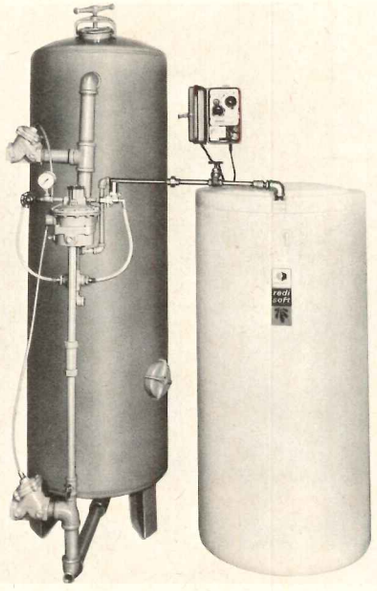


SPHERICAL DRINKING FOUNTAIN / With the *Aqua Sphere,* excess water returns to the sphere's surface, flows around the contour by capillary attraction and funnels into the concealed receptor inside the pedestal. Twin bubblers flow in opposite directions to allow two people to drink simultaneously. ▪ Haws Drinking Faucet Co., Berkeley, Calif.

Circle 307 on inquiry card

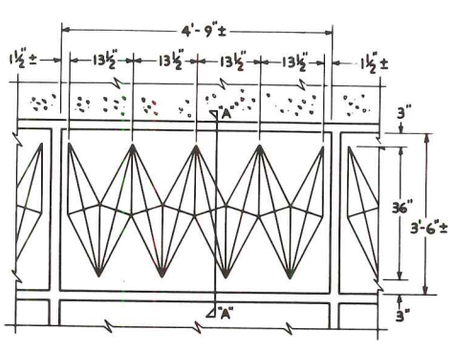


WATER SOFTENERS AND FILTERS / Units for hotels, motels, hospitals and light industry eliminate the need for complicated plumbing and electrical components. The *Redi-Soft* conditioner, a four-cycle regeneration-type unit will handle any capacity and practically all waters, including those with high turbidity and iron content. ▪ Red Jacket Manufacturing Company, Davenport, Iowa.

Circle 308 on inquiry card

more products on page 230

porcelain-enameled steel



Porcelain on Steel

Wells Fargo Bank, Sacramento, Calif. Architects: *Harry J. Devine, Inc., Sacramento, Calif.* Porcelain enameled panels: *Ferro Enameling Co., Oakland, Calif.*

Movable walls, permanent look.

Kwik-Wall gives you the look and feel of permanent walls in track-mounted or free-standing movable partitions. These versatile, no-maintenance walls are erected or stored in minutes, by anyone. Sound-retarding partitions lock solidly in place with simple one-hand, twist of the wrist motion. Positive mechanical lock assures rigidity. Over 1500 custom finishes to complement any decor. Send for details.

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Springfield, Illinois 62705

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The permanent look in movable walls

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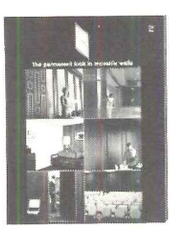

Mail coupon for FREE brochure

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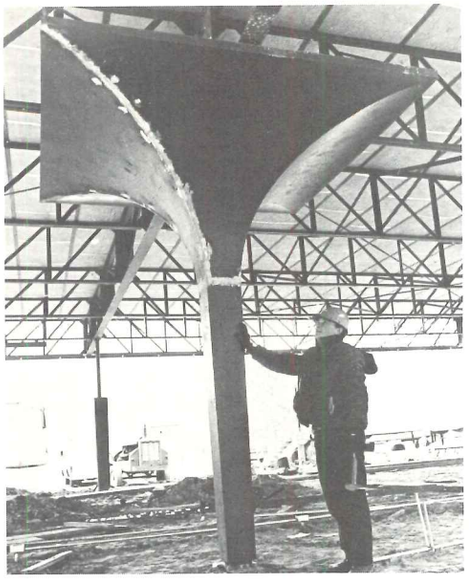
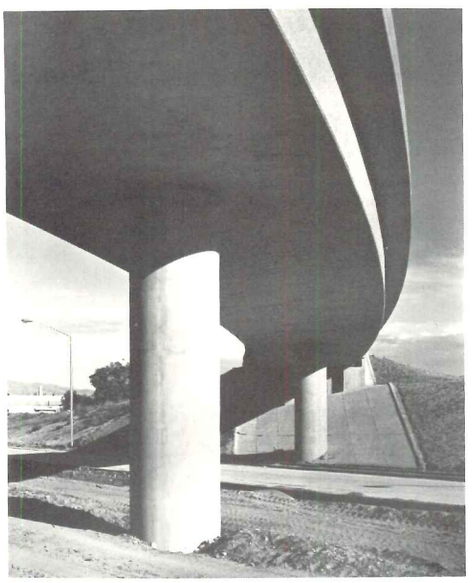


STEEL COLUMN SHELLS / Flaring column shells at the Inland Steel Company's new Employees' Credit Union Building, Chicago, are designed by the architects, Richard E. Glass & Associates. Shells carry live wind loads up to 35 pounds per sq ft and enclose three-inch *XXH* steel pipe columns which carry the entire dead load of the roof structure. ▪ Inland Steel Company, Chicago.

Circle 309 on inquiry card



CONCRETE FORMING MATERIAL / A tough epoxy resin coating offers self-oiling, self-cleaning and durability in one product. *Relesform* is said to leave a good concrete surface which can be painted or plastered without neutralizing. Other advantages: It gives a clean release from poured concrete; it needs no cleaning between pours; it cuts on-site form damage with no need to drop and clean forms between each pour. ▪ Boise Cascade Building Products, Boise, Idaho.

Circle 310 on inquiry card

more products on page 235

For more data, circle 110 on inquiry card

For more data, circle 111 on inquiry card

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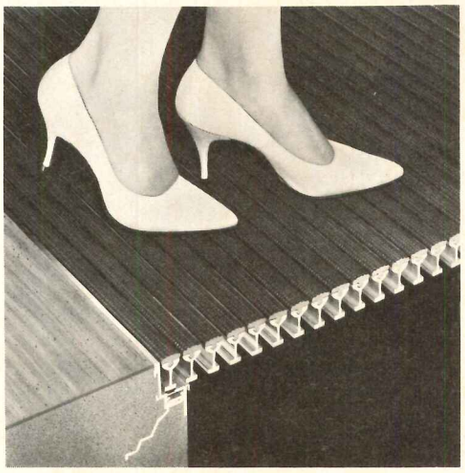
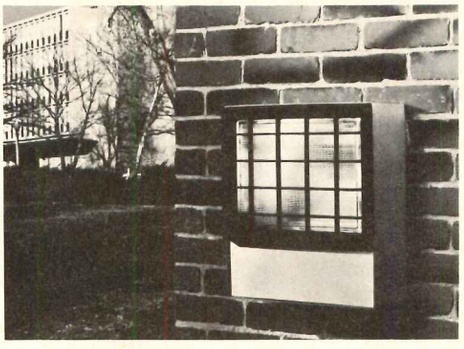


PERMANENT FOOT GRILLE / The *Pedigrid* provides a colorful solution to the problems of safety and maintenance at entrances and other areas with heavy pedestrian traffic. The structural aluminum grating has rugged, serrated vinyl treads that are curved to shed tracked-in water and dirt into a catch basin below. ▪ Construction Specialties, Inc., Muncy, Pa.

Circle 311 on inquiry card



OUTDOOR LIGHTING / The *15 Line* of completely enclosed and gasketed outdoor mercury vapor lighting fixtures is designed to mount as a flat wall, extended wall or ceiling unit. ▪ mcPhilben Lighting Division, Emerson Electric Co., St. Louis.

Circle 312 on inquiry card

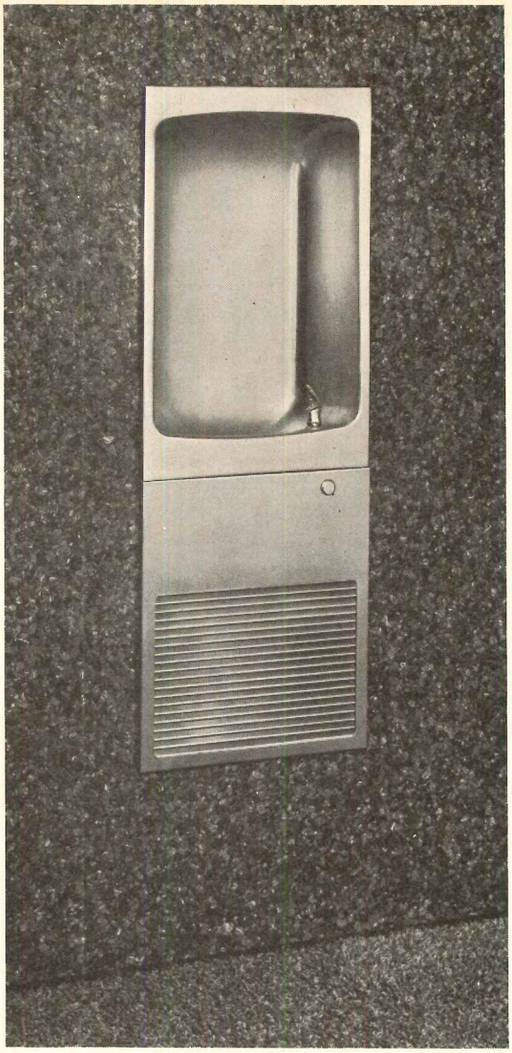
FILTERED ACOUSTICS / A technique called *Varacoustics* uses small filter networks, custom-installed to control sound regardless of room acoustics. The system is said to assure that a professional quality sound system will perform with high fidelity in any large audience enclosure. ▪ DuKane Corporation, St. Charles, Ill.

Circle 313 on inquiry card

more products on page 239

For more data, circle 112 on inquiry card ▸

◂ *For more data, circle 111 on inquiry card*



THE CRISP, CLEAN, CONTOURED LOOK IS

Halsey Taylor®

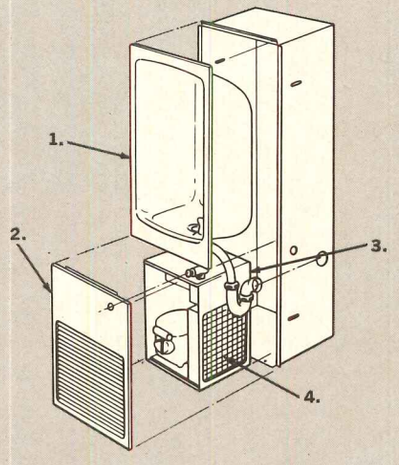
There is a touch of elegance in this new sculptured design from Halsey Taylor. The RC 8A fully recessed electric water cooler features a one-piece contour-formed receptor and basin. Corners are gracefully rounded instead of square-welded—for easy cleaning. Receptor and louvered access panel are of type 304 stainless steel, polished to a subdued satin finish. Push button control and exclusive 2-stream projector are matching satin finish.

The fountain and cooling unit can be flush mounted in any type wall—requires only 12″ back recess.

Recommended for hospitals, schools and public lobbies or other applications where uninterrupted corridor space is required.

THE HALSEY W. TAYLOR CO.,
1560 THOMAS RD. • WARREN, O.

NEW FULLY-RECESSED ELECTRIC WATER COOLER COMPLETE PACKAGED UNIT IS EASY TO INSTALL



1. Receptor—Stainless steel—can be installed flush against wall with no exposed screw heads.

2. Removable Access Panel—provides easy access to cooling package and inner components. Louvers are at bottom and slanted downward.

3. Mounting Box—Sturdy steel box can be quickly secured in any type wall. Permits roughing-in of electric and plumbing connections prior to mounting of receptor fountain and cooling unit.

4. Cooling Unit Package—has capacity of 8 GPH of 50°F. water.

SUBMITTAL INFORMATION KIT

Information on the Halsey Taylor RC 8A fully recessed electric water cooler. If you need specification sheets, roughing-in drawings, full product description, and photographs for a current job, please fill in this coupon and mail.

I am submitting a proposal on _____ (please describe)

When would you require delivery? ☐ 1-3 months ☐ 3-6 months ☐ over six months

What quantity do you anticipate using? _____

Comments _____

NAME _____ TITLE _____

COMPANY or INSTITUTION _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

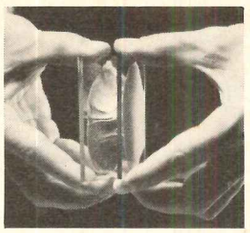
Construction dust is part of construction. Even the most careful sealant mechanic can't keep it out of every joint.

Never mind. MONO has been proving itself against construction dust as well as other job-site hazards for more than 10 years.

MONO is a "deliberate" sealant. In its own good time it penetrates any construction dust that may have gotten in its way. It surrounds the dust particles — actually swallows them up — and takes a firm adhesive grip on the joint surface.

MONO's distinctive ability to remain pliable and adhesive gives it a life expectancy of 20 years or more in moving joints. MONO meets government specifications U.S. TT-S-230a and Canadian 19-GP-5.

See this minor dirt-eating miracle for yourself. Ask your Tremco representative to show you the MONO demonstration while he fills you in on all the rest of the Tremco sealant family.



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PRODUCTS AND TECHNICAL SERVICES FOR BUILDING MAINTENANCE & CONSTRUCTION

THE TREMCO MANUFACTURING COMPANY

Cleveland, Ohio 44104 • Toronto 17, Ontario

Mono eats dirt (...if it has to.)

Before you specify partitions-consider the man who keeps changing his mind!

It's bound to happen with almost every new building, no matter how well planned it is.

Six months from now, or a year, or a couple of years, somebody will change his mind. He'll want the conference room moved from one end of the hall to the other.

Or he'll want a bigger office for someone who was just made vice president. Or more room in the steno pool.

Or something.

That's why our Quick Change movable partitions make so much sense. They allow for changes just about as easily as the mind changes.

The whole idea of our Quick Change partitions is—they're changeable. When they're in place, they're just as sturdy and rigid as an ordinary fixed wall.

But when change is needed they can be quickly disassembled, rearranged and locked in a new place. With a minimum of trouble.

Naturally, we're not the only ones who make movable partitions. But we think we make the best.

For one thing, only Masonite Quick Change partitions give an architect virtually unlimited design flexibility.

There's a staggering variety of painted, unpainted and Royalcote woodgrain surface finishes. In addition, there are many Quick Change styles and shapes to use separately or together.

What's more, Quick Change partitions go in easily and economically. That's because we have professional Partition Representatives to do the installation. Their training, equipment, and experience are nearby no matter where your construction site is.

Finally, Quick Change can change quickly! And that's important!

To get all the information, specifications and similar data, ask a Masonite Quick Change Partition Representative. Or just send us the coupon. Make up your mind to do it today.

MASONITE CORPORATION

MASONITE CORPORATION Dept. AR-4
Box 777, Chicago, Illinois 60690

Please send me your literature on Masonite Quick Change movable partition systems.

Name_____ Title_____

Company_____

Street_____

City_____ State_____ ZIP_____

Masonite and Royalcote are reg. trademarks of Masonite Corporation. Quick Change is a reg. trademark of Glen O'Brien Movable Partitions Co.

For more data, circle 114 on inquiry card

For more data, circle 113 on inquiry card

Bright idea

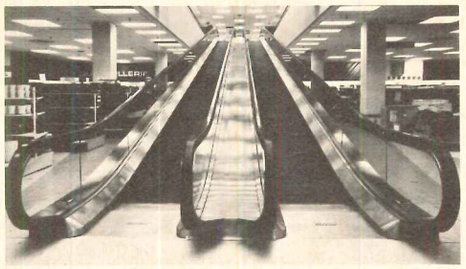
This column shower serves 6 people with one set of plumbing connections! So it cuts installation costs up to 80%. Like all Bradley Group Showers, it saves space, too—serving more people in far less space than ordinary showers. It eliminates double-wall construction and piping in outside walls. And it has its own drain, saving the cost of drains along the perimeter. Made in 2 to 6 person units. Other Bradley Group Showers include Modesty Module®, Multi-Stall, Wall-Saver®, and Panelon types. Bright ideas—space and money-saving ideas from Bradley! See your Bradley representative. And write for latest literature. Bradley Washfountain Co., 9109 Fountain Dr., Menomonee Falls, Wis. 53055.

from Bradley!

BRADLEY

For more data, circle 115 on inquiry card

continued from page 235



MOVING WALK / *Movator,* a two-way moving walk system, is used in Montreal's new Steinberg's-Miracle Mart. The treadway, at a 12-degree incline, is of grooved rubber bonded to a three-foot-wide spring steel belt. It is 78 ft long and travels at 120 ft per minute. Balustrades are of ½-in. hardened and tempered safety glass. ▪ Sandvik Steel, Inc., Fair Lawn, N.J.

Circle 314 on inquiry card

AIR CHUTE / *Cutler Air Chute* is said to move materials up to 25 lbs at speeds up to 35 miles per hour economically and safely within or between hospitals, office buildings, retail stores and similar buildings. The air envelope is generated by a low power blower system which conserves the heated or cooled air it draws into the tubes. There is no need for an air make-up system nor is additional load placed on the heating and air conditioning system. ▪ Cutler-Federal, Inc., Rochester, N.Y.

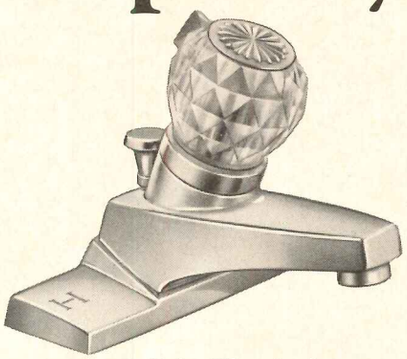
Circle 315 on inquiry card

AUTOMATED ENTRANCEWAYS / Two features of a new line of air doors are the recirculation of air in a closed system and a patented sensing system that automatically changes the direction and velocity of the downward flow of air to offset change in outside wind velocity or interior air pressure. ▪ The Stanley Works, New Britain, Conn.

Circle 316 on inquiry card

more products on page 246

Outside, it's pretty.



Cole. The single-control faucet with a classic kind of beauty that adds a touch of elegant charm to any kitchen or bath. And the practical kind of beauty that makes your selling job easier.

Inside, it's pretty tough.

But Cole's got lots more than just a pretty face. Inside, you'll find a pretty tough valve mechanism. Tougher, in fact, than anything else you can put your hands on. That's because Cole's exclusive one-moving-part mechanism is designed never to leak. Or wear out. Pretty convincing story, isn't it? Cole. The single-control faucet that's beautifully designed to last a lifetime.

COLE VALVE CORPORATION
A Subsidiary of
BRADLEY WASHFOUNTAIN CO.
9101 Fountain Boulevard
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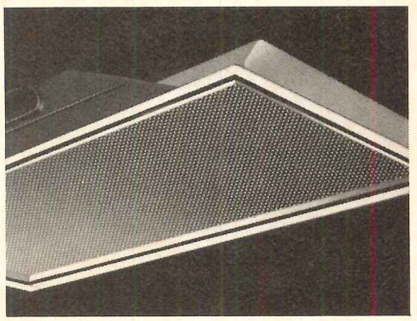

Smaller ducts, less noise, more light, longer life.

Silhouette 500 Troffers combine light, air supply and air return into one unit. Return air flows through the lamp chamber taking heat with it. Amount of recirculated, reconditioned air can be reduced.

Result: smaller ducts, fans and cooling coils. Less noise, too. Lamps operate closer to optimum temperatures, hence more light. Air cooling ballast increases life. Complete specs available and free. (1)

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Denver, Colorado 80216 (1)

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*Company*_____

*Address*_____

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CORPORATION
LIGHTING DIVISION

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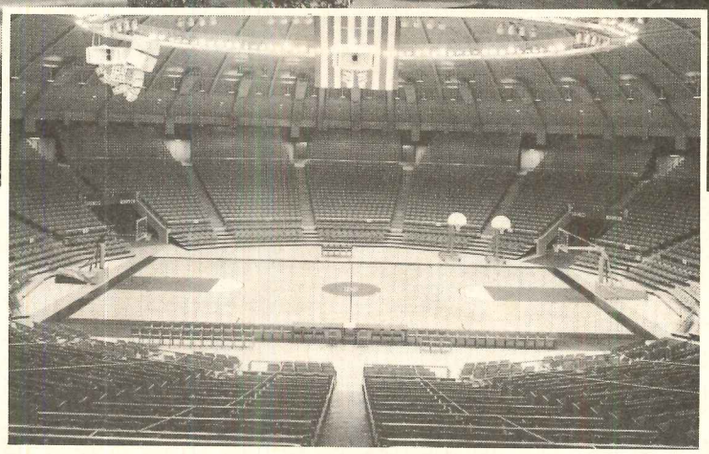
HILLYARD
FLOOR TREATMENTS Used in America's Most Modern Athletic Complexes

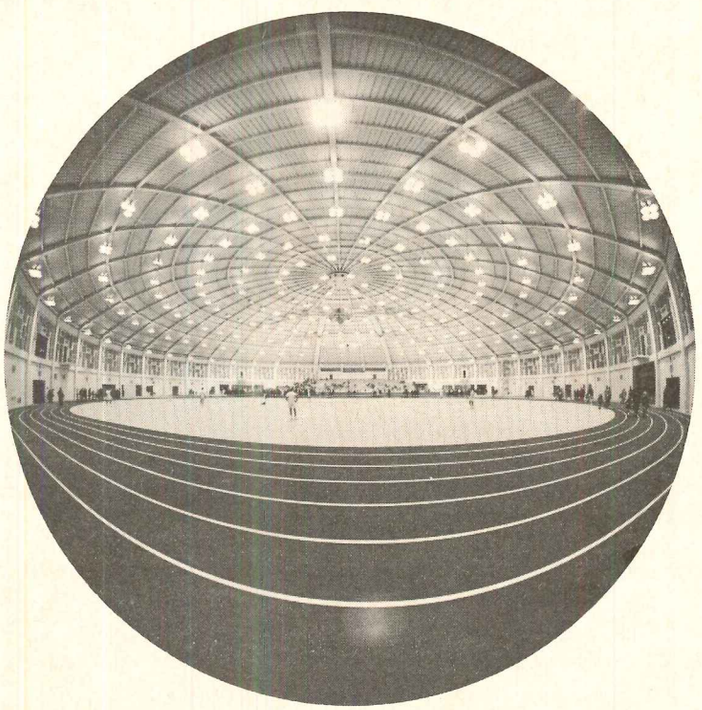


New Notre Dame University Athletic and Convocation Center. Architect: Ellerbe Architects, St. Paul, Minn.

TROPHY Gym Finish, the finish for champions, again takes its place in one of the newest and finest athletic facilities. This fabulous $8.6 million University of Notre Dame Athletic-Convocation Center provides both athletic-auditorium facilities for the campus and exhibit and convention space for the community.

With two huge domes covering 10½ acres of ground, the building encloses more area than the famous Astrodome. The south arena auditorium seats 11,000 and houses the basketball floor designed and built by Bauer-Foster Floors Inc. The north arena is either a fieldhouse where tennis and hockey—and many other activities—can be going on at the same time, or a gigantic exhibition space. Five auxiliary gymnasiums and many workout areas are provided in this spacious building. Administrative and business offices are located in a central complex which joins the two arenas.

TROPHY was chosen for all wood sports floors. Trophy forms a hard, smooth, slip-resistant, glare-free surface that is ideal for fast-play and telecasting. In addition, TROPHY offers unprecedented wearability, beauty and ease of maintenance.



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Write for your copy today. Loose-leafed and numbered, each file will be kept up to date for you.

Also ask, at no obligation, for the services of a Hillyard architectural consultant. He's trained to recommend proper, approved treatments for the floors you are specifying and also to supervise application at the job site.

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FLOOR TREATMENTS
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The number is Menlo 921L

Your number for efficiency. Functional, contemporary beauty. Menlo captures the style, quality and security typical of each Corbin UNIT® Lockset. You'll also find these features in the complete line of Corbin exit devices, door closers and other types of locksets.

Your Corbin distributor can furnish you with complete data on this design, or write P. & F. Corbin, Division of Emhart Corporation, New Britain, Connecticut 06050. In Canada—Corbin Lock Division,

CORBIN®

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Imaginative Solution:

The Precision Automatic Electric Disappearing Stairway.

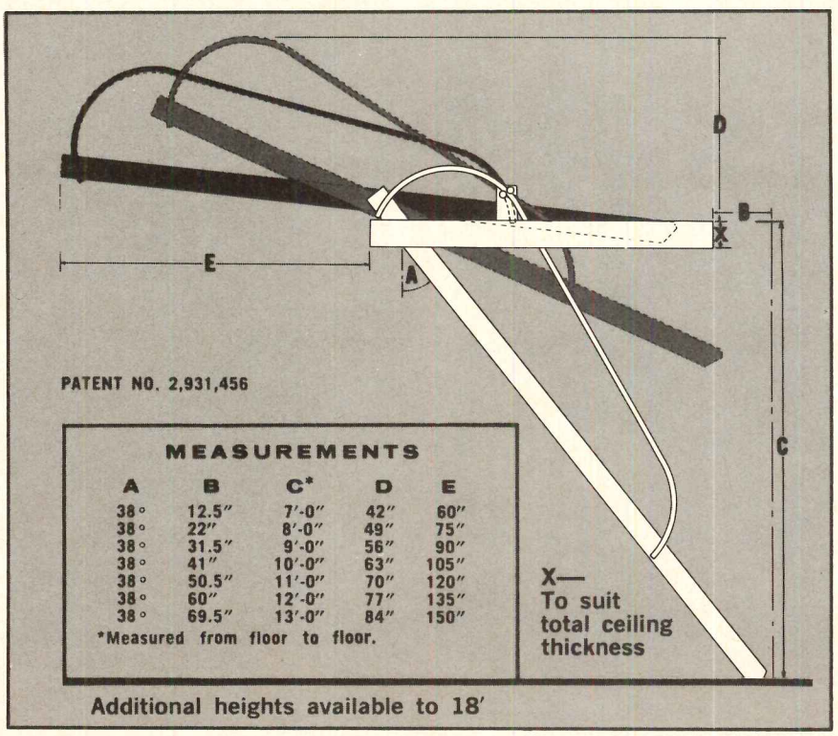
A Unique Stairway Concept: An automatic stairway that provides safe, sturdy access to important storage or work areas . . . yet silently and efficiently disappears to recover premium space.

Efficient Engineering Design. The stairway is operated by two toggle switches —one mounted on the wall below— one mounted on the motor unit above. A key switch at lower level is available, if desired.

Aircraft steel cables and a dual pulley system in conjunction with adjustable automatic limit switches guarantee precise "at rest" position of stairway, up or down.

The curving hand rails glide on twin sealed ball bearing rollers (both sides), which are stationary guides to assure perfect alignment of the stairway on opening and closing.

Power Unit. The stairway utilizes a ⅓ hp, 115 volt, 60 cycle, single phase, instantly reversible electric motor (directly connected to reduction gear drive) complete with contactors—prewired to control switches.



Available In Wood Or Aluminum. Standard specifications on wood models are: 1″ Plywood Frame (Box or Angle) 1 1/16″ x 6½″ Straight Grain Stringers • 1″ x 6½″ Straight Grain Treads, Covered With Non-skid Rubber • ¾″ Fir-Ply Door • 1¾″ B-Label Optional.

Standard specifications on aluminum models are: ⅛″ Steel Frame (Box or Angle) • Aluminum Stringers 7″ x .230″ Channel • Aluminum Treads 6″ x .225″ x 19⅜″ Channel, Covered With Non-skid Rubber • ⅛″ Sheet Aluminum Door • 1¾″ B-Label Optional.

Automatic electric disappearing stairways can be constructed to your special requirements.

PRECISION parts corporation

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There's nothing else like it.

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After facing the problems of automating 4000 buildings, we can tailor just the right system to yours.

Actually, buying a Honeywell one-man control system is kind of like buying a car today.

Sure, we vary features, options and accessories to customize the system to your client's building. But the designs of the basic equipment have been pre-tested and proven in thousands of other buildings. You don't have to buy a costly, custom-built, one-of-a-kind system.

Advantages? Your client gets his system on time. You get it working on time. And there's 18 years of automation experience to help him operate and maintain it properly. An 18-year history of solving the kinds of cost and installation problems you're now facing.

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GRANT PULLEY & HARDWARE CORPORATION, 9 High St., W. Nyack, N.Y. 10994 / 944 Long Beach Ave., Los Angeles, Calif. 90021

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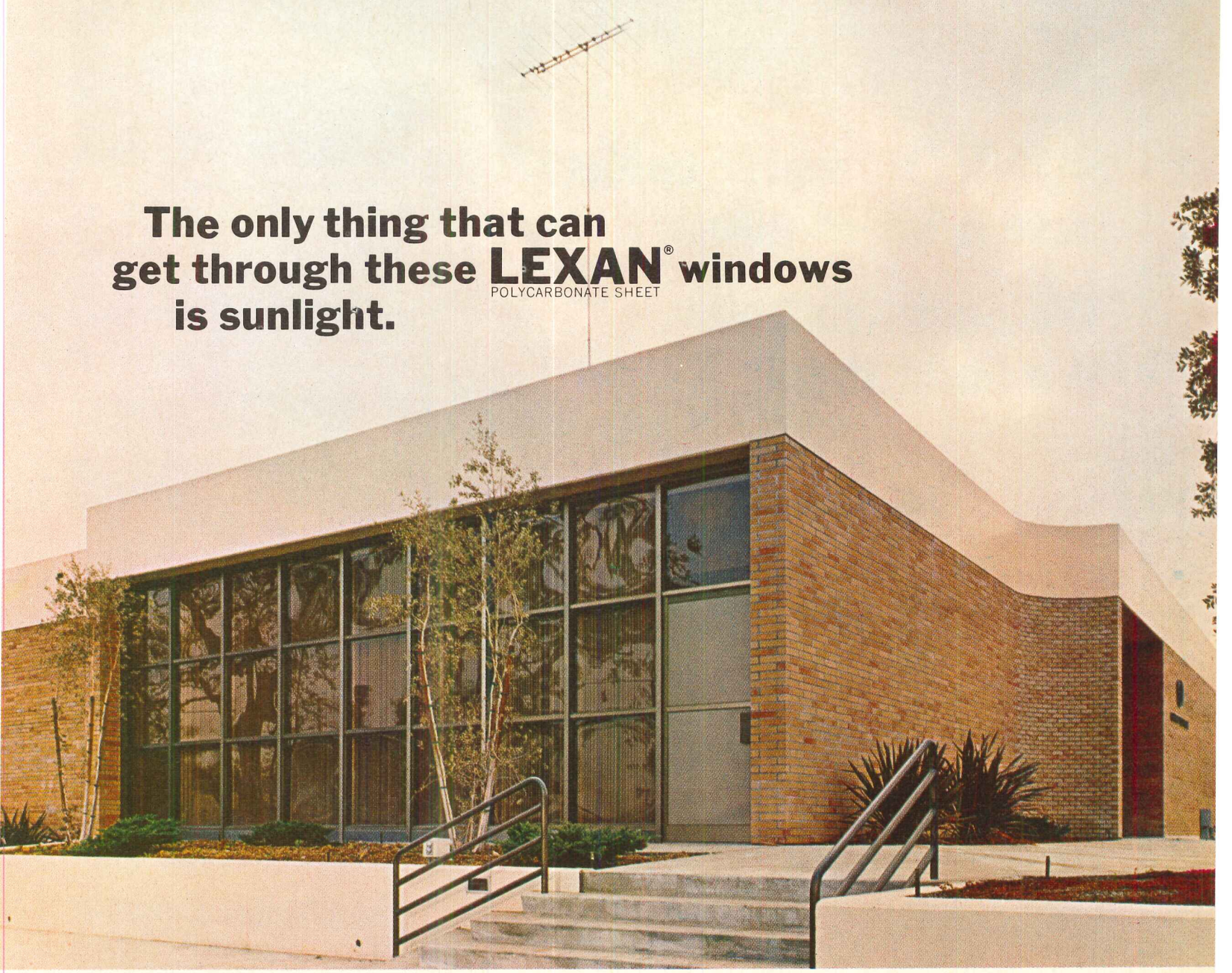
The only thing that can get through these LEXAN® windows is sunlight.

POLYCARBONATE SHEET



Companies that live in glass houses learn to take the breaks as they come. Not so with General Telephone Company of California. They are protecting complex communications equipment with unbreakable, solar tinted LEXAN SHEET for glazing.

LEXAN just won't break. Thirty times tougher than cast acrylic, it shrugs off rocks, bricks, baseballs. It doesn't crack, chip or shatter even if a bullet penetrates it. Easily cut to any shape, LEXAN SHEET is installed with non-hardening sealing compounds.

All clear? If not, we'll be happy to send you complete data. Just return the coupon...or phone, of course.

LEXAN®

Clear as glass...tough as metal

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Section 54D13
Plastics Department
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Please send me more facts about unbreakable LEXAN SHEET for glazing.

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Firm_____

Street_____

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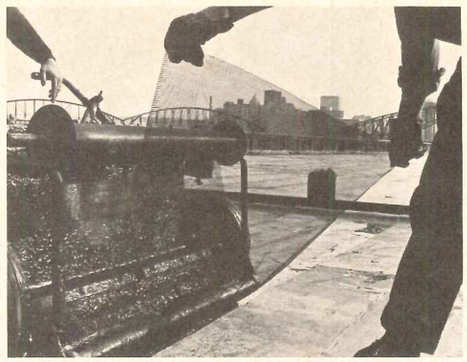
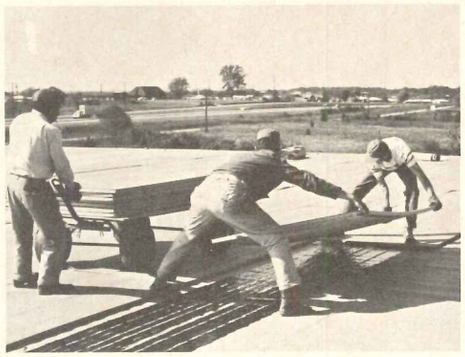
continued from page 239



WATERPROOFING MEMBRANE / A coal tar pitch waterproofing membrane, reinforced with glass fabric, is being used on the parking roofdeck of a warehouse in Pittsburgh. This system is said to be particularly suitable for such a structure where membrane strength is vital. ▪ Koppers Company. Inc., Pittsburgh.

Circle 317 on inquiry card



ROOF INSULATION / *Fiberglas* roof insulation comes in a new large size that is said to sharply reduce installation time and cost. The four-ft by eight-ft insulation, with a thickness of 1 5/16-in., does not sacrifice thermal efficiency, but rather has the same "C" values as two-ft by four-ft insulation boards. ▪ Owens-Corning Fiberglas Corporation, Toledo, Ohio.

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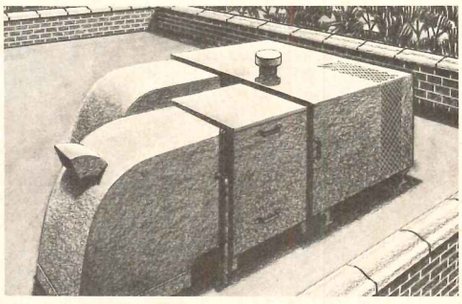

AIR CLEANERS / A line specifically designed for rooftop applications—with special features for severe weather conditions—ranges in size from 1200 cfm to 4000 cfm. The design is long and low to meet specifications that roof-mounted equipment be unnoticeable from the ground level. ▪ Electro-air Division, Emerson Electric, McKees Rocks, Pa.

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more products on page 262

THE CIRCLE OF REFRESHMENT

SUNROC water coolers have a lot of guts.

We ought to know. We build them.

The beauty is outside . . . where it shows.

The guts is inside . . . where it serves.

The quality is SUNROC.

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Write today for your complete Sunroc catalog, Dept. AR-49, Sunroc Corporation, Glen Riddle, Pennsylvania 19037

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NEW IMPROVED AIR...

. . . improved light, improved sound. With Dimensionaire*: an environmental ceiling system by Owens-Corning Fiberglas. It's a totally integrated air, light and sound system for people who want to improve their working environment.

For example, Mr. William Quinn, vice president—engineering of the Fairmount Chemical Company, wanted to improve his working environment. He turned to Dimensionaire. A system that can answer many environmental problems.

There were the problems of wanting a good-looking system, that would give uniform air distribution in private and general offices and an open reception area. Ducts and diffusers were considered, along with ventilated ceilings. Mr. Quinn then turned to Dimensionaire. It has a multi-vaned linear air bar—moving air in a unique pattern. Leaving no hot or cold corners. No stale corners. Just a totally fresh outlook.

Then Mr. Quinn saw the light with Dimensionaire. With two-foot-wide 3-D troughs with fluorescent lamps shielded by plastic lenses. They don't glare and hurt the eyes, but give comfortable illumination at working level. The troughs also give a clean uncluttered appearance that's easy on the eyes, too.

Dimensionaire then went easy on the ears, breaking the noise barrier. With 2 x 8 ft. ceiling boards of Fiberglas† textured glass cloth that absorb 95% of sound striking the abuse-resistant surface.

Dimensionaire also went easy on Mr. Quinn's budget. Eliminating separate material costs for ducts and diffusers, lighting units and acoustical ceilings. Just one system. From one company—Owens-Corning Fiberglas. Mr. Quinn improved his working environment with Dimensionaire: An environmental system by Owens-Corning Fiberglas. Shouldn't you?

Write for detailed case histories and cost analysis on the Dimensionaire Ceiling System to: Owens-Corning Fiberglas Corporation, 717 Fifth Avenue, New York, N. Y. 10022.

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TRADEMARK ®

DIMENSIONAIRE: AN ENVIRONMENTAL CEILING SYSTEM

*Trademark (Reg. U.S. Pat. off.) OCF Corp.
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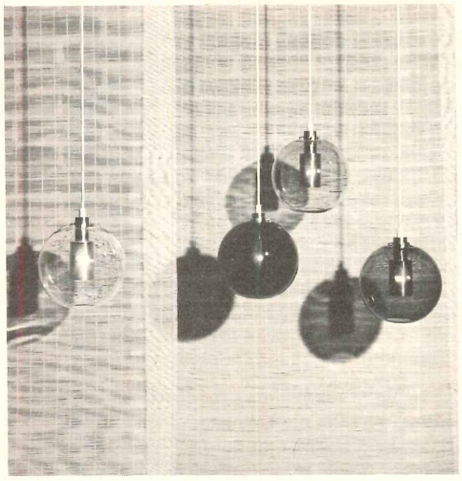

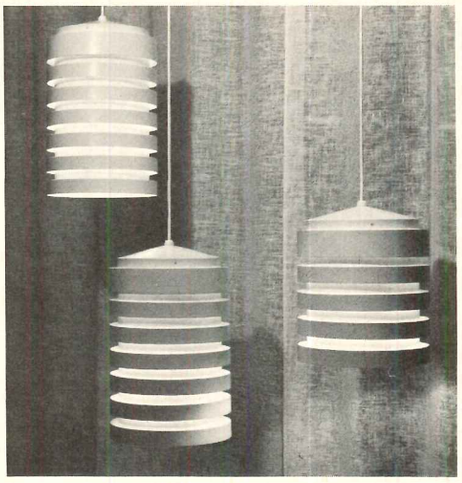

SWEDISH LIGHTING / Designs exhibited recently in the U.S. included a one-light ceiling fixture with metal parts of matte-ground brass. An anti-glare screen of perforated brass encircles the bulb, and a glass shade may be clear or tinted. Other ceiling fixtures shown are of white enameled metal. ▪ Letitia Baldridge Enterprises, Chicago.

Circle 320 on inquiry card

PUSH-BUTTON LOCKS / With keyless convenience, this jimmy-proof dead bolt or dead latch lock is guaranteed "absolutely pick-proof." New features include the ability to change the combinations in seconds and master combination slides so that all locks on the system will open with one combination as well as with the occupant's individual combination. ▪ Preso-Matic Lock Co., Inc., Lyons, Ill.

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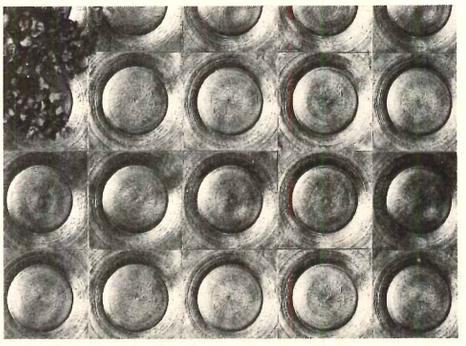
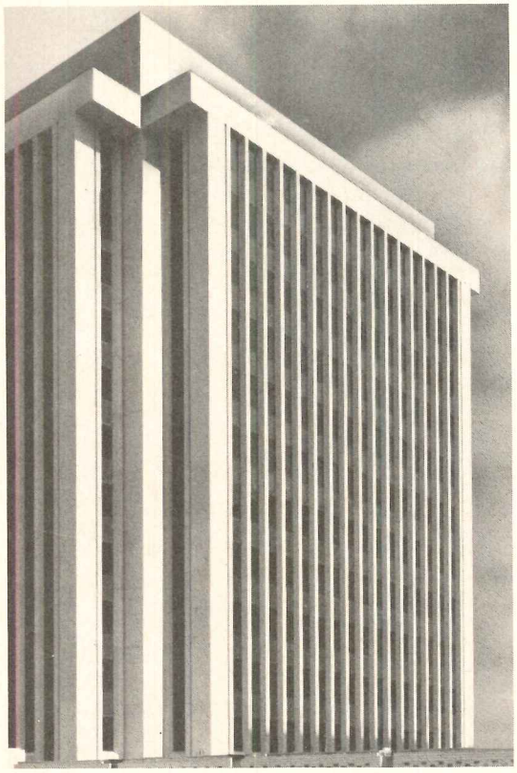


METAL TILES / Metal tiles have been designed for doors, walls, fascias, cabinets, fixtures, and other exterior and interior applications. Tiles are individually sandcast in aluminum. ▪ Forms & Surfaces, Santa Barbara, Calif.

Circle 322 on inquiry card

WHO'D PUT AN OFFICE BUILDING BETWEEN AN AIRPORT AND A RAILROAD SWITCH YARD?



ANYONE WHO KNOWS ABOUT MULTIPANE SOUND REDUCTION INSULATING GLASS!

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CRYSTAL PLAZA # 1

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Architects: Weihe, Black & Kerr
Builder: Charles E. Smith Construction Co., Wash., D.C.
Glazing: Washington Plate Glass Co., Inc.

If YOU don't know about Multipane's SOUND REDUCTION *insulating glass* see us in SWEETS - Catalog Number 19f/MU - then ask us for additional details.

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General Offices:
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(609) 665-6270

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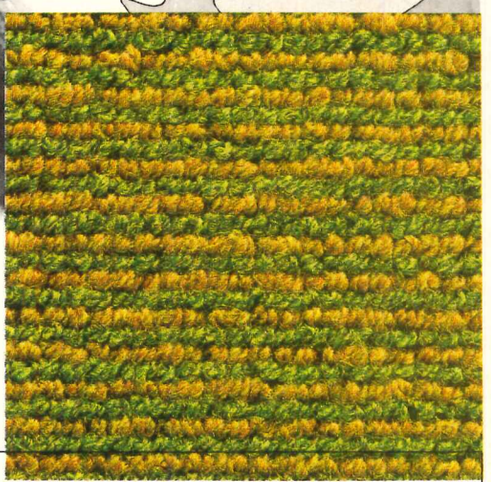
Is resistance still a virtue?

Wellco says yes, with Vectra fiber.

New Wellco "Miracon"—the first 2 color striped, tufted indoor-outdoor carpet of Vectra® fiber—resists stains, fading and wear, but can't resist being beautiful.

The "durable but dull" days of commercial indoor-outdoor carpet are over. It's all because of Miracon! Exciting colors. Fun stripes. All in one elegant, fine gauge tufted carpet. Miracon not only opens countless, colorful new opportunities for indoor-outdoor carpet... it also performs like a trouper in the worst disaster areas. Wellco Miracon is made with spun yarns of 100% Vectra olefin fiber. You know what that means when it comes to resisting stains, fading and abrasion. Behind these colorful stripes is a true indoor-outdoor carpet... with all its rugged advantages. But once you see how great it looks indoors... you may not have the heart to put it outside.

SPECIFICATIONS
Pile of 100% solution dyed Vectra olefin fiber
1/10 Gauge (270 pitch)
Pile Wt.—30 oz. per yd.
Pile Ht.—⅛" or .125
Stitches per inch—8¾
Yarn Count—3.00cc (3 ply)
Primary Backing—4 oz. moisture barrier 100% polypropylene
Secondary Backings—Total wt. per yd.:
Permabonded jute—69 oz.
Compression tested high density rubber—92 oz.
Special All-Weather Back—80 oz.



For additional information and samples of Miracon and Decathlon carpets, write to: Wellco Carpet Corporation, Department V, P.O. Box 281, Calhoun, Georgia 30701

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COMPANY_____

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ENJAY

Vectra® olefin fiber is manufactured by Enjay Fibers and Laminates Company, Odenton, Maryland, a division of Enjay Chemical Company. Odenton: (301) WO 9-9000. New York: 350 Fifth Avenue, (212) LO 3-0720. Charlotte: One Charlottetown Center, (704) 333-0761. Enjay makes fiber, not carpets.

Vectra . . . the fiber that believes resistance is still a virtue.

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Our cooler came out of hiding.

Walnut grained panels give it a warm, handsome look (matches our new mobile buffet units, too) so you can put it where you need it most for greater convenience.

Vollrath's Mobile Buffet Units and Modular Walk-In Cooler also offer you greater flexibility. The basic modules let you add on as many units as you need to expand or convert your growing operation. Change your layout and Vollrath Modules change with you.

Our new Mobile Buffet Units get a warm, coordinated look with walnut-tone woodgrain panels. Breath guards protect on both sides so people can serve themselves buffet style. Plate rests are interchangeable with tray slides for quick conversion from buffet to cafeteria service. Each unit detaches and can be rolled through a 34" doorway for out-of-the-way storage when not in use.

We've also given a warm touch to the Cooler by adding woodgrain panels so that it matches your room decor. Insulated modular tongue-and-groove panels, 4 inches thick, let you set up the shape most suitable for your kitchen. A square, a rectangle, an "L" to fit a corner. The Cooler/Freezer is convertible, too. Changing the size capacity of the self-contained Refrigeration Unit does it. The 4 inches of insulation is more than adequate for either purpose. And reach-in doors, shelves and other accessories are also available and featured in our catalog.

For more flexible ideas, write us in Sheboygan, Wisconsin 53081.

The Vollrath Company, Dept. AR

Vollrath SINCE 1874

THE VOLLRATH COMPANY · SHEBOYGAN, WIS.

it all started with modular pans

For more data, circle 139 on inquiry card

How to plan a computer room that's flexible enough to handle the next generation (and the next and the next and...)

Design with Liskey computer room support materials. Start with Liskey Elaflor, the only elevated flooring offering the total design flexibility of three grid systems, three panel types. No need to substitute or compromise, Liskey gives you free choice to solve your problems best. ■ Then add Liskey-Aire air conditioning, the modular system designed expressly for computer rooms. Use Liskey Spacemaker *movable* partitioning and get ultimate flexibility for enlargement, rearrangement, and modification. And modern Liskey aluminum railing is the finishing touch for platform edges, ramps, or to define work and traffic areas. ■ A complete Liskey support system means complete flexibility to handle growing systems, next-generation computers, and all the changes that are bound to come in this dynamic area. See our section in SWEET'S or write for our AIA file of detailed specifications.

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ALUMINUM, INC.
A CapTech Company

Elkridge Landing Rd./Friendship International Airport
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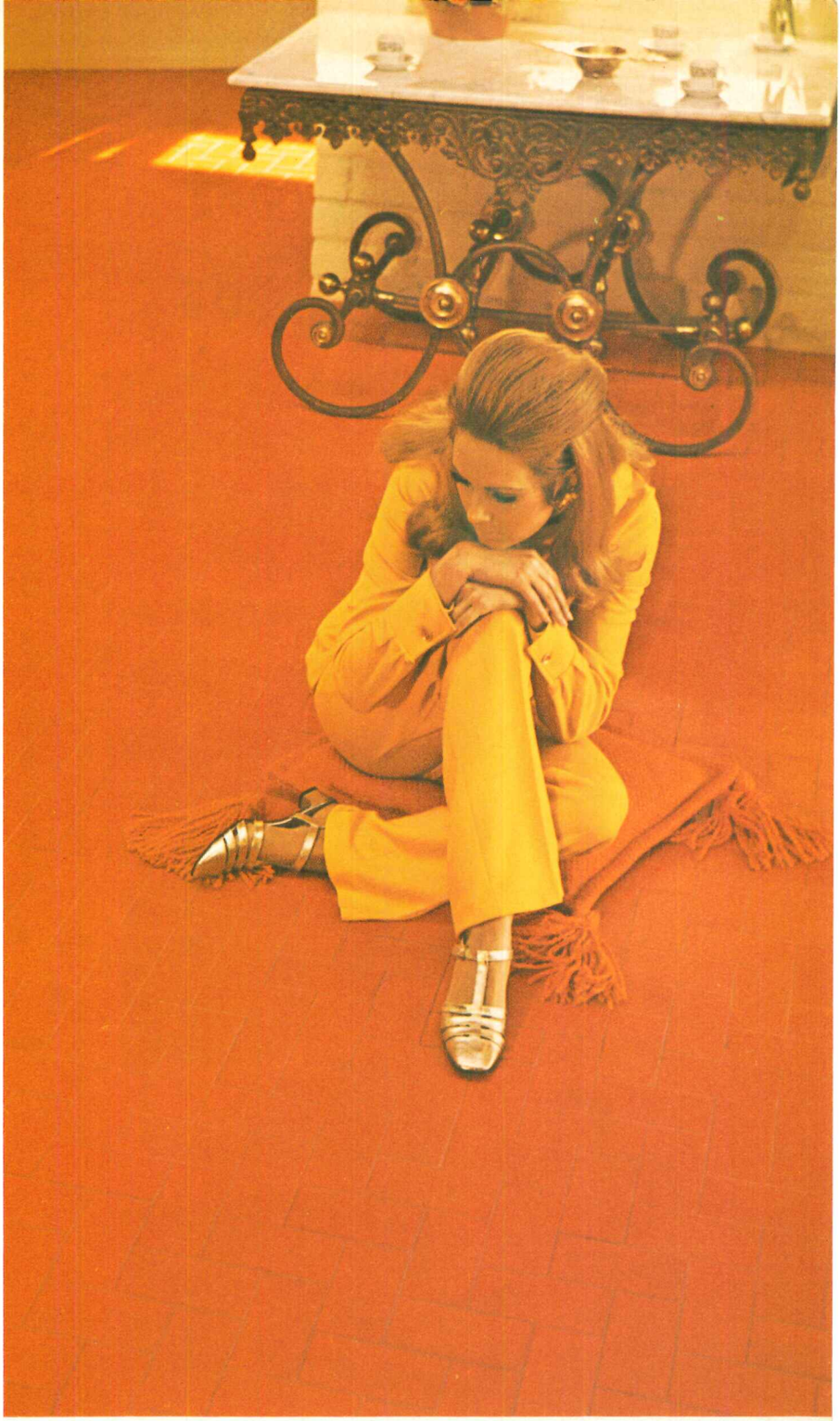

Woodland Hills Country Estates by R. A. Watt Company
Architect: Cliff May Associates / Decorator: W. & J. Sloane; Jack Wojack, A.I.D.
Tile contractor: C. B. Tile Corp.

FRANCISCAN TERRA GRANDE INTRODUCES A COLOR RENAISSANCE IN CERAMIC TILE.

There is a modern movement in ceramic tile. It began with Franciscan Terra Floor and Franciscan Tracery Collection. Now the movement brings you Franciscan Terra Grande which ushers in a new "age of color". This 6" x 3" x ½" tile answers your growing demand for stimulating colors by presenting a palette of vibrant colors on a handcrafted-looking brown body. The intentionally-designed shade variation and crackle glazes of Franciscan Terra Grande offer a new dimension for color styling interior and exterior surfaces in commercial and residential buildings. 14 beautiful colors and textures from which to select for maximum aesthetic impact. Ask your INTERPACE representative for full information on this new challenge to the creative designer.

Franciscan Terra Grande® by INTERPACE® CORPORATION

2901 Los Feliz Boulevard, Los Angeles, California 90039

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Doesn't anybody make refrigeration equipment with all-copper tubing and an Automatic Defrost-Vaporizer and heater wire strips and triple-seal gasketing and 5 standard finishes and self-supporting insulation and adjustable legs?

Nor-Lake does. With a full range of components and options, the only thing we won't change is the quality.

NOR-LAKE INC.
Second and Elm, Hudson, Wisconsin 54016
Phone: 715-386-2323 Dept. 3161

Pride is contageous at Nor-Lake

Over 270 models—all designed to NSF configurations.
Sweets File 23a/No.

What else should I know about Nor-Lake Refrigeration equipment?

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JACUZZI

New built-in whirlpool bath

Famous Jacuzzi water massage built-in to 5′ and 6′ colored, contoured tubs and loaded with custom features. Shipped as complete unit with all fittings, piping, timer, etc., ready to install as easily as an ordinary tub. Your next project will sell faster when you include a Jacuzzi Roman Bath. Write us for details.

Jacuzzi WHIRLPOOL BATH®
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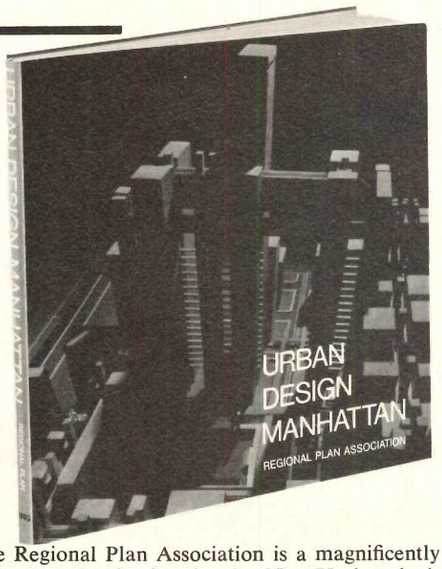
For more data, circle 155 on inquiry card



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Urban Design Manhattan by the Regional Plan Association is a magnificently illustrated book, presenting, in the framework of a plan for New York, principles and objectives applicable to all high-density urban centers. Read the enthusiastic comments below; the reviewers tell you why *Urban Design Manhattan* belongs at the top of your "must" reading list. Order your copy today.

"The Regional Plan Association cares.... A strong plea for immediate and intensive concentration on urban design—or a dim future without it."
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For more data, circle 192 on inquiry card

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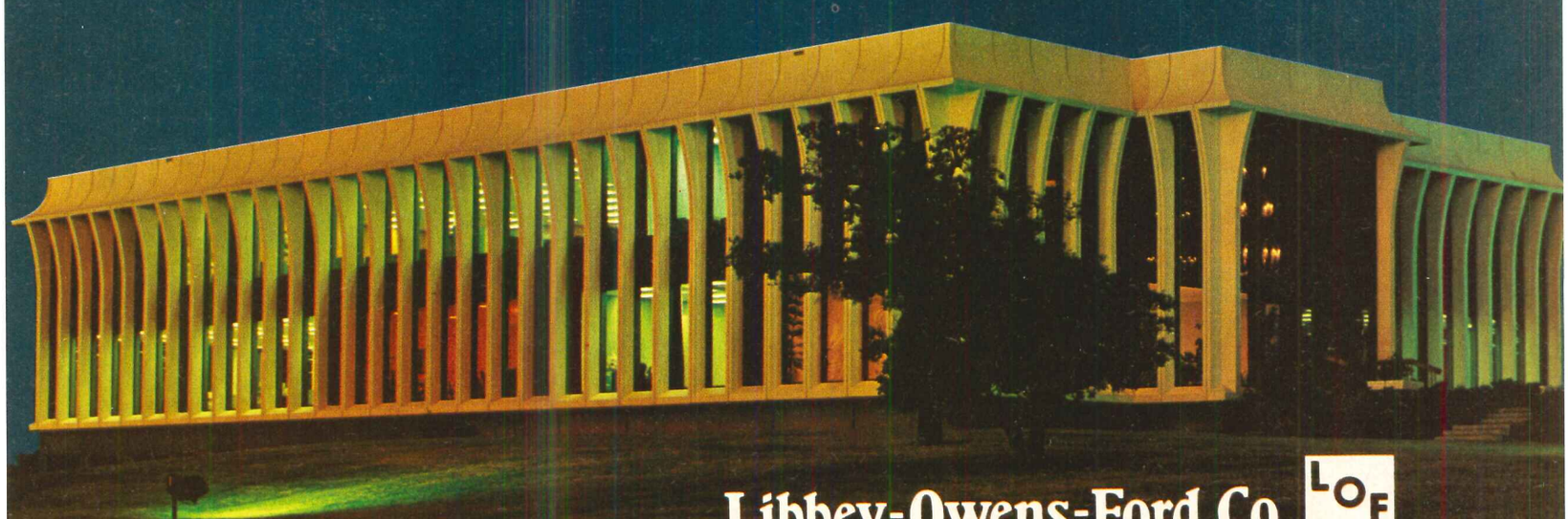
Grayson Gill, Inc. designs a "Joya de Cerro" for National Farm Life Insurance

"Joya de Cerro" means "jewel on a hill." And the building is! With its floor-to-ceiling expanses of rich Parallel-O-Bronze® plate glass, and its spandrels of blending Vitrolux® heat-tempered glass. The building looks like a gleaming modern Parthenon. But it's more than that. On the inside, partitions are kept to a minimum. This open design allows free flow of natural light and enhances the feeling of roominess. The "all glass" treatment provides a 360-degree view of the surroundings. Pleasant, comfortable views. Because Parallel-O-Bronze reduces sky brightness and sun heat transmission through the glass. And this adds to the effectiveness of the building's air-conditioning system.

Thus, the architect, Grayson Gill, Inc. of Dallas, has truly created a "joya de cerro."

L-O-F makes a particular kind of glass for every purpose in building design. Consult Sweet's Architectural File. Or call your L-O-F Glass Distributor or Dealer (listed under "Glass" in the Yellow Pages). Libbey-Owens-Ford Company, Toledo, Ohio 43624.



Libbey-Owens-Ford Co. LOF GLASS

OFFICE LITERATURE

For more information circle selected item numbers on Reader Service Inquiry Card, pages 329-330

DOORS / A condensed catalog describes the versatility and performance of shock-absorbing doors for every type of industrial, commercial and institutional building. ▪ RubbAir Door Division, Cambridge, Mass.

Circle 400 on inquiry card

BRICK BEARING WALL / An eight-page booklet documents a thin-walled loadbearing brick building that received a successful bid $100,000 below budget. ▪ Structural Clay Products Institute, McLean, Va.

Circle 401 on inquiry card

CHILLERS / A 28-page guidebook covers a complete line of hermetic reciprocating packaged chillers of from two through 120 tons capacity. ▪ Acme Industries, Inc., Jackson, Mich.

Circle 402 on inquiry card

SCHOOL CEILINGS / "Ceiling Systems That Work . . . To Help You Build a Better School" is a booklet that aims to show how "fully integrated systems can help build better schools, frequently at less cost." ▪ Armstrong Cork Company, Lancaster, Pa.*

Circle 403 on inquiry card

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...where the torch is carried for ZERO weather stripping.

ZERO makes a complete line of top-quality products: soundproofing, light proofing, weather stripping, thresholds.

Deliveries? Absolutely dependable!

And ZERO backs its line with 45 years of problem-solving.

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For more data, circle 144 on inquiry card

FIRE—POLICE SYSTEM / *FB-100* station receiving and indicating system for both fire and police remote reception of fire and burglar alarms is described in a four-page brochure. The brochure explains that the system permits the elimination of the usual remote panel apparatus and consolidates all alarm annunciators in a single central console, with receiving equipment out of sight. ▪ Notifier Company, Lincoln, Neb.

Circle 404 on inquiry card

VENTILATION / "Powered Ventilation for Every Application" is a 12-page booklet with engineering drawings that give installation detail variations for all size fans and their housings. ▪ Strobic Air Corporation, Trenton.

Circle 405 on inquiry card

DIESEL—GAS ENGINES / A 20-page sales bulletin features stationary diesel and gas engines. Color-keyed cross sections of the blower scavenged and turbocharged engines show the operating principles of the opposed piston design. ▪ Colt Industries, Fairbanks Morse Power Systems Division, Beloit, Wisc.

Circle 406 on inquiry card

VENTILATORS / A new and larger line of propeller roof and wall ventilators is introduced in a 20-page catalog. ▪ Loren Cook Co., Berea, Ohio.*

Circle 407 on inquiry card

AUTOMATED DRAFTING / An eight-page brochure explains the *Diagrammer,* an area photocomposition system that produces graphic presentations such as engineering drawings with "substantial time/cost savings and superior quality when compared with traditional drafting methods." ▪ Mergenthaler Linotype Company, New York City.

Circle 408 on inquiry card

SWITCHBOARDS / A revised 48-page publication covers low-voltage *A-Line* switchboards. ▪ General Electric Company, Plainville, Conn.*

Circle 409 on inquiry card

HEATING-COOLING / Six possible uses for a computer in heating-cooling system design are covered in "Introduction to Evaluating Heating and Cooling Loads." Other subjects covered in the 24-page booklet: conventional calculation methods; the relationship of heat flow to building construction; factors in load determination; and guidelines for studying a particular system. ▪ N.E.C.A., Washington, D.C.

Circle 410 on inquiry card

* *Additional product information in Sweet's Architectural File*

more literature on page 276

Good weather or bad, you see only what light lets you see. We think you want to see a lot. Spacious, safe parking areas. Bright, inviting walkways. Clean, impressive architecture. That's the kind of light we sell.

You see here how a few of our Profile® lights spread even, friendly illumination over a large area. No jungle of poles. No suspicious shadows. Fewer fixtures to buy.

Today, there's an entire line of coordinated Crouse-Hinds lighting fixtures. Large and small. To spot a spire or flood an acre. Contemporary or traditional. Pleasing to see by day, pleasing to see by night.

Let's begin with where you want to light. Our new Idea Book starts ideas. Check the reader service card, and we'll send it to you. Or, if you'd like to talk to one of our lighting specialists, call us or your nearby Crouse-Hinds agent or distributor. He will do the analyzing, costing and comparing. With an assist from our home office computer.

We'd like to hear from you.

Outdoor Lighting Dept., Crouse-Hinds Co., Syracuse, N.Y. 13201.

CROUSE-HINDS

Light is to be warm and friendly by, even on a cold, rainy night.

For more data, circle 33 on inquiry card

'Our new offices highlight functionally related work areas. And we carry out our concept with furniture by Royalmetal.'

—Omer B. Cioli,
Norton Lilly & Co. Inc., New York.

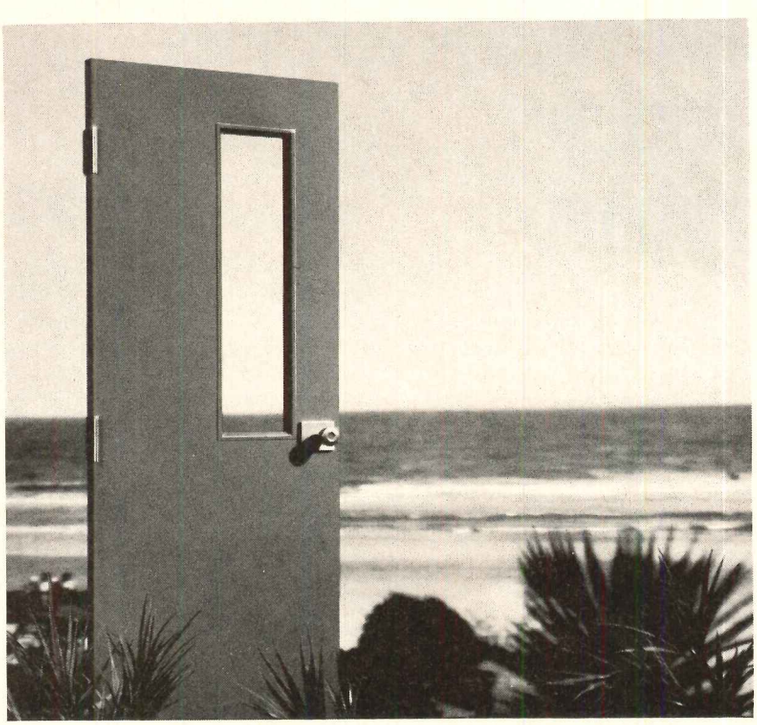
Color defines the working space for functional groups at Norton Lilly. Chairs from Royalmetal's new 6000 series, keyed to the colors of the steamship lines which Norton Lilly represents, identify each area. Blue motif in the photo at left denotes the American and Australian Steamship Line area. Desks from Royalmetal's new 6000 series adapt to the needs of managers, freight agents, and secretaries. And coordinated furniture unifies the grouping into a spacious, uncrowded office arrangement. Matching credenzas and conference tables add to efficiency. Royalmetal office furniture is available in styles to match your needs, from reception room to executive suite. See them at your Royalmetal dealer. Or write for our illustrated office furniture catalog. Royalmetal Corporation, One Park Avenue, New York, N.Y. 10016.

Royalmetal®

For more data, circle 145 on inquiry card

The galvanized door

Discover the rustless door. Discover Steelcraft.



Here's a door that can take it . . . Steelcraft's zinc-coated steel door. Shrugs off weather, salt air, high humidity, abnormal abuse. Retains its good looks year after year.

Scratch the zinc coating and protective action continues. The hot-dip-applied coating of 1.25 ounces of zinc per square foot of steel (in accordance with ASTM spec A-525) makes the door practically immune to rust . . . inside and out . . . even on sharp bends where thinner, less effective zinc coatings flake off.

Steelcraft zinc coated doors and frames are specially treated to take and hold their prime coat of paint. They won't peel. So maintenance is practically nil.

Available in a wide range of styles, in heights of 6′8″, 7′0″, 7′2″ and 8′0″, labeled and non-labeled construction, and in 20, 18, and 16 gage.

For more information on The Galvanized Door, write Steelcraft, 9017 Blue Ash Road, Cincinnati, Ohio 45242 U.S.A.

STEEL Craft **Steelcraft**

finest name in metal doors and frames

For more data, circle 179 on inquiry card

For more data, circle 147 on inquiry card

new

space-saver
WATER COOLER

Choice of 5 Colors

New appearance. New size. GE's new wall mounted Space-Saver combines both to bring you the latest in water cooler appeal.

Take appearance: There are no louvers on the front to detract from the clean, modern lines. It's sleek, it's smart, it's stylish. Five beautiful cabinet finishes to choose from: Mocha Linen or Pebble Charcoal textured vinyl side panels with Ironstone vinyl front panel; Desert Mist or Regal Silver baked enamel side panels with Ironstone enamel front panel; or all stainless steel. A handsome combination for any decor.

Take size: It's 26 inches high, 15 inches wide and extends a mere 12½ inches from the wall . . . less than any other wall mounted cooler in the industry.

Available in 6, 8, 12 and 15 gallon capacities or as fountain only. Refrigeration system can be added later.

For more specifics on the sleek new Space-Saver, check the Yellow Pages for your local GE water cooler representative. Or write GE, Dept. 761-41, 14th and Arnold Streets, Chicago Heights, Illinois 60411.

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new
space-saver

Stability problems on your roofs? Solve them with FOAMGLAS® insulation.

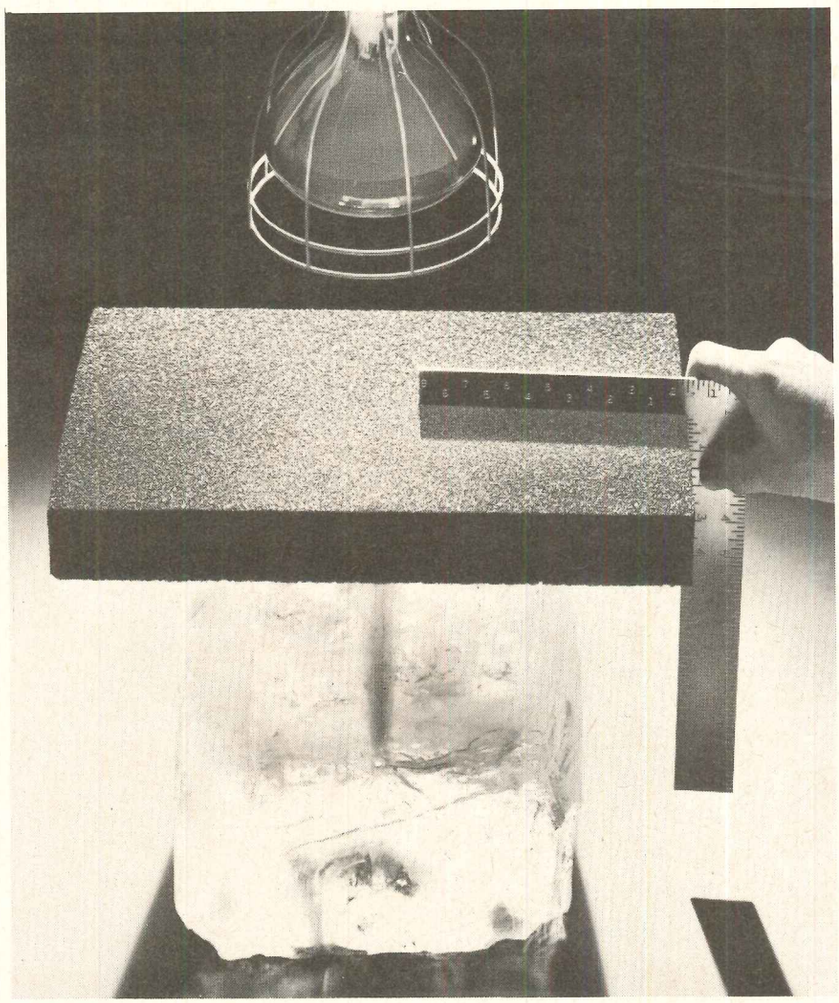
FOAMGLAS won't contribute to buckling or splitting on built-up roofing. Changes in temperature and humidity won't affect it, because it's dimensionally stable. Dimensional stability isn't all: FOAMGLAS is waterproof, strong, and will not support combustion. No other insulation has this unique combination of properties.

It is available in FOAMGLAS-Board and the Tapered FOAMGLAS System for a sloped roof on a flat deck. FOAMGLAS is the only roof insulation guaranteed for 20 years.

For more information, write Pittsburgh Corning Corporation, Dept. AR-49, One Gateway Center, Pittsburgh, Pa. 15222.

The Insulation People

PITTSBURGH pc® CORNING



For more data, circle 148 on inquiry card

continued from page 270

PLASTIC PIPE / An illustrated, 16-page brochure describes three major types of fiberglass-reinforced plastic fabrications and details principal cost-saving advantages for various industries. ▪ Amercoat Corporation, Brea. Calif.*

Circle 411 on inquiry card

LIGHTING / Eight-page brochure introduces black-on-white commercial fixtures that are said to have the efficiency of an all-white unit. ▪ Emerson Electric Co., St. Louis, Mo.

Circle 412 on inquiry card

BAR SUPPORTS / A 20-page booklet gives details and specifications for estimating and detailing bar supports for reinforcing steel. ▪ Superior Concrete Accessories, Inc., Franklin Park, Ill.*

Circle 413 on inquiry card

REFRIGERATED AIR DRYERS / An eight-page bulletin describes a complete line, including three new sizes. ▪ Hankison Corporation, Canonsburg, Pa.

Circle 414 on inquiry card

FLASHING / An eight-page brochure gives information on through-the-wall and exposed flashing. ▪ Sandell Manufacturing Company, Inc., Cambridge, Mass.*

Circle 415 on inquiry card

CONCRETE ROOF SYSTEMS / A 16-page catalog illustrates 14 structural framing systems used on one-story residential buildings. The catalog covers precast, prestressed roof components, cast-in-place roof systems and large-span shell roofs. ▪ Portland Cement Association, Skokie, Ill.

Circle 416 on inquiry card

URETHANE INSULATION / An 18-page guidebook compares the properties of seven currently marketed formulations. A selector chart shows where to use rigid board, preformed sections, and foam-in-place types that may be sprayed, poured or frothed. ▪ The Upjohn Company, Torrance, Calif.

Circle 417 on inquiry card

CEILING SYSTEMS / The second edition of "Ceiling Systems Handbook" describes proper installation techniques for acoustical ceiling systems. The 303-page book, which is pocket book size, costs $5.45. ▪ National Acoustical Contractors Association, 1201 Waukegan Road, Glenview. Ill.

STRUCTURAL CLAY PRODUCTS / A variety of face brick and structural clay tile in various shapes, colors and textures is described in an eight-page brochure. ▪ Glen-Gery Corporation, Reading, Pa.

Circle 418 on inquiry card

* *Additional product information in Sweet's Architectural File*

more literature on page 286

For more data, circle 149 on inquiry card

TCS

Why coat stainless steel?

. . . because proper soldering of stainless steel requires an extra step of pretinning or use of corrosive fluxes. These fluxes must be removed after soldering to prevent attack on the stainless.

TCS solders perfectly using a non-corrosive rosin flux. Pretinning is unnecessary.

. . . because architectural metals are subject to corrosive attack in severe chemical, industrial or marine environments.

TCS enhances the proven ability of stainless steel to resist corrosive attack under these conditions.

. . . because the reflective surface of stainless steel may sometimes be undesirable in architectural applications.

TCS weathers naturally to a predictable, uniform and attractive dark gray. If color is desired, it can also be painted.

TCS, Terne-Coated Stainless Steel, is 304 nickel-chrome stainless steel covered on both sides with terne alloy (80% lead, 20% tin). It is a product of Follansbee Steel Corporation, Follansbee, West Virginia.

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For more data, circle 152 on inquiry card

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Stay on your toes.

With the new Otis VIP-260 system, you'll be at your floor before you know it.

Because a computer controls and coordinates every movement the elevator makes. Starts and stops are swifter and smoother than ever. Our fast, gentle arrivals could catch you offguard.

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VIP-260 is the most advanced elevatoring system ever devised. Our engineers spent years on it.

To save you a few moments every day.

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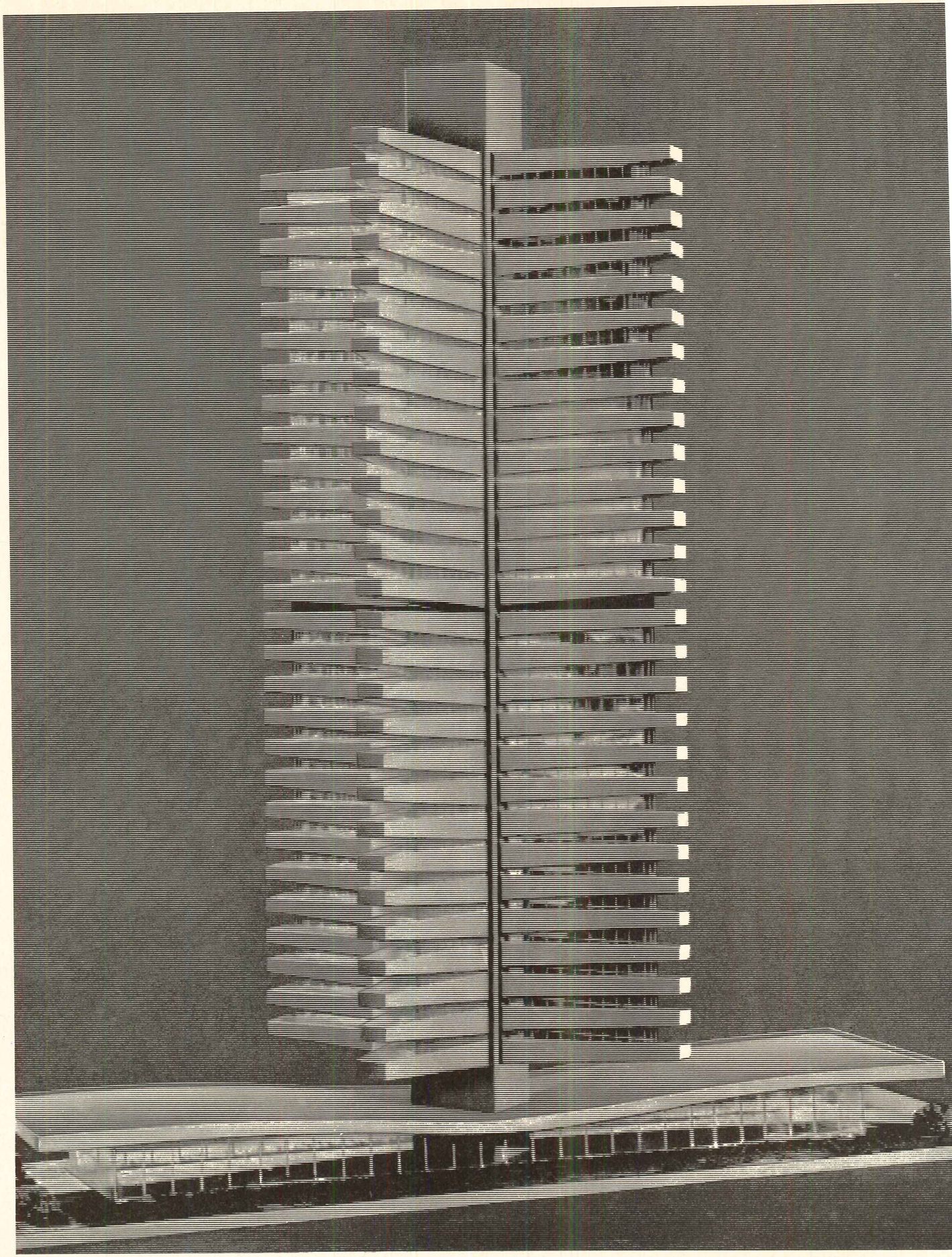

The persistent sealant

Even when surface preparation isn't perfect or when the mechanic doesn't follow application instructions to the letter, DAP® one-part Acrylic sealing system sticks tight...whatever the building material.

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For more data, circle 153 on inquiry card

continued from page 276

PORCELAIN ENAMEL / One brochure presents "a new approach to color" with *Terra-Cal* matte finish earthen-tone porcelain steel and aluminum panels. Another brochure shows porcelain on steel chalkboards in eight colors. ▪ Alliance Wall Corporation, Alliance, Ohio.*

Circle 419 on inquiry card

STEEL ROOF DECK / An eight-page manual contains new standard load tables for narrow, intermediate and wide rib decks. Also included are details on latest fire ratings from one to two hours with recent one-hour rating for fire-rated lay-in ceilings, as well as the latest revisions of the Basic Design Specifications, Architects Specifications and SDI Code of Recommended Practice. ▪ Steel Deck Institute, Westchester, Ill.

Circle 420 on inquiry card

GLASS / The 1968 fall edition of "Creative Ideas in Glass" includes "glass curtain walls facilitate terminal expansion," "all-glass building achieves maximum flexibility in partitioning" and others. ▪ American Saint Gobain Corporation, Kingsport, Tenn.*

Circle 421 on inquiry card

LEAD FOR ANTI-VIBRATION / The winter issue of "Lead" contains an article on how three studios at the John F. Kennedy Center for the Performing Arts in Washington are isolated from sound and vibration with lead asbestos anti-vibration pads. ▪ Lead Industries Association, Inc., New York City.*

Circle 422 on inquiry card

BUILT-UP ROOFING / The 1969 Barrett Built-up Roofing manual includes four new systems for three-ply coated felt roof made of a *Vapor-bar* coated base sheet and two plies of new *No. 33* coated roofing felt. ▪ The Celotex Corporation, Tampa, Fla.*

Circle 423 on inquiry card

COPPER / Methods for more effectively and attractively using copper in contemporary roofing, fascias, and related applications are detailed in a new "Creative Design in Architecture" series. The bulletins, in conjunction with the "Contemporary Copper" architectural handbook, aim at inspiring wider use of copper among architects as well as serving as a specification guide. ▪ Copper Development Association Inc., New York City.

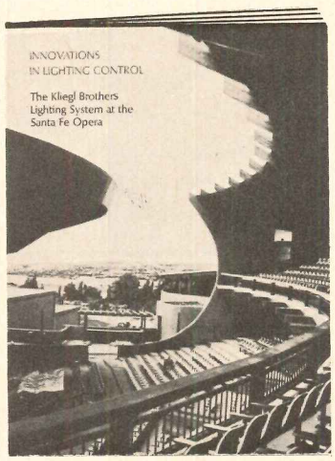
Circle 424 on inquiry card

FOLDING WALL / Literature presents an electrically operated folding wall for gymnasiums, auditoriums and other areas of unusually high ceilings. ▪ Hough Manufacturing Corporation, Janesville, Wisc.

Circle 425 on inquiry card

* *Additional product information in Sweet's Architectural File*

New Guide to Good Theatrical Lighting Design Now Available



This new booklet, available free to architects and engineers, describes and illustrates the lighting systems at the Santa Fe Opera in New Mexico.

The booklet includes detailed drawings of the system and its major components. It is an excellent guide to the imaginative use of both new and existing equipment.

Please write on your letterhead to any Kliegl office for your copy.

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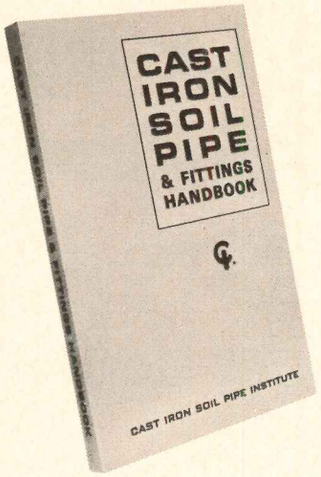

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ALLOW 4 WEEKS FOR DELIVERY

The SHRINKS!

And How TJ Avoids Them

Every builder knows what shrinkage can cost him in ordinary wood framing. Even the best quality, KD 2 x 12 will shrink up to one-half inch, and ordinary lumber much more.

The "shrinks" cause cracked walls, particularly over doors and windows. Floors squeak as nails withdraw; doors and windows stick and siding tends to buckle at the floor level because of extra stresses. As long as a year after completion you're still planing and adjusting doors, repairing cracks and hearing tenant complaints about squeaky floors and sticky windows.

That's expensive!

The "shrinks" are eliminated with a TRUS JOIST floor system, for shrinkage in TRUS JOIST is so minimal it has no effect on the building.

TJ also makes it possible to finish the building two to four weeks earlier which reduces the cost of interim financing by at least five cents a square foot and produces extra rental income which becomes pure profit.

Add it all up, as a Michigan apartment builder did, and you'll find that TRUS JOIST reduces costs by as much as $150 per 750 sq. ft. unit and provides a far superior building.

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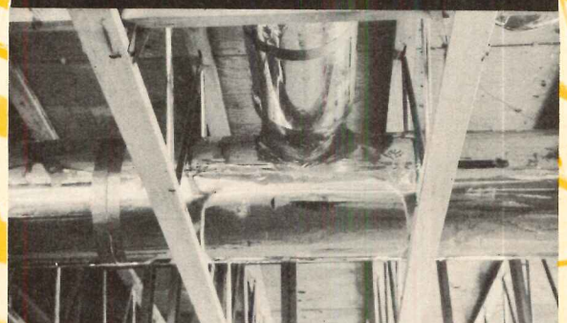
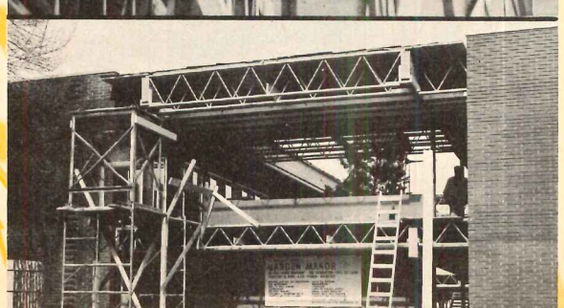
TJ ALSO GIVES YOU: Superior sound resistance ☐ Long clear spans to eliminate footings, columns and beams and create wide expanses of usable space ☐ A 50 to 80% reduction in joist placing labor ☐ Open webs permit big reductions in electrical and plumbing labor ☐ The elimination of at least one-third of the nailing of subfloor, ceiling material and insulation ☐ The elimination of costly dropped ceilings





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Plants at: BOISE, IDA. ☐ PORTLAND, ORE. ☐ SAN FRANCISCO ☐ DUBUQUE, IA. ☐ PHOENIX ☐ CALGARY, ALTA. ☐ Soon in OHIO

For more data, circle 156 on inquiry card

"We could sell you an electric plant for 18% less.

But we probably couldn't sell you a second one!"

I'm Bud Onan, Chairman of the Onan Division.

We make electric power plants, engines, generators and controls.

And we could make them for a lot less . . . passing along a price "saving" of 18% across the board. With a 1.5-kw plant, for instance, we could do away with the special alloy valves that contribute to 300% longer valve life.

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But we won't. Because we want that second order, and every one after that. And we want to make sure *you get what you pay for.*

That means building all our products a little better than we have to. It means being conservative when we're rating our product's capability. It means giving you an Onan product that delivers every bit of power our nameplate promises.

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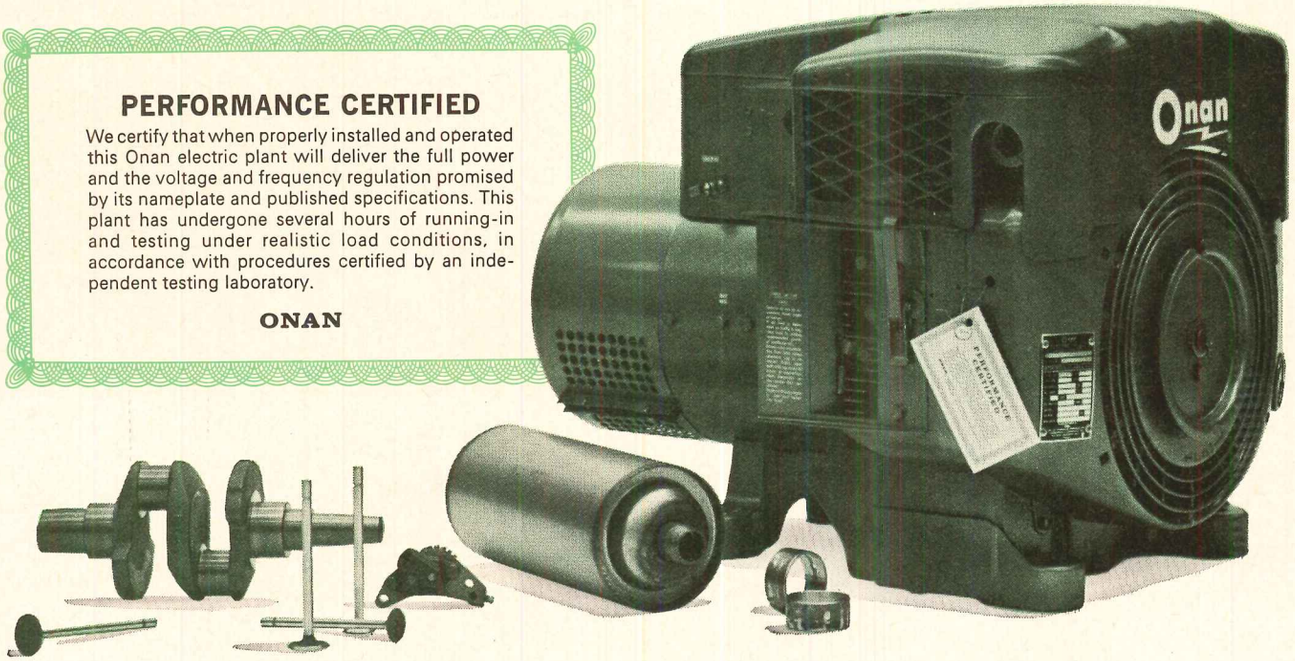
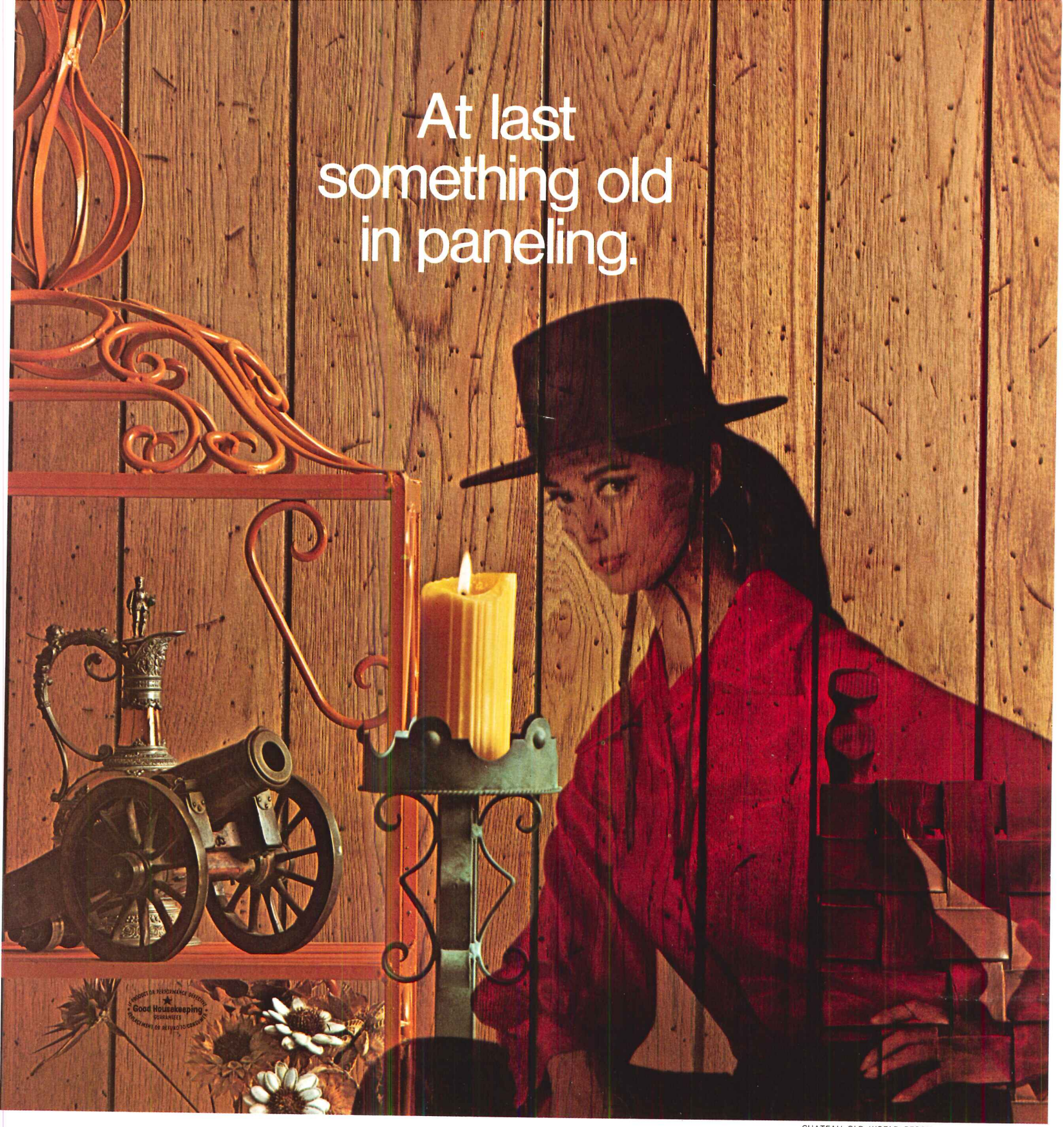


For more data, circle 157 on inquiry card

For more data, circle 158 on inquiry card



CHATEAU OLD WORLD PECAN

Georgia-Pacific captures the aged look of the Old World.

Never before has wall paneling had so much going for it! G-P's Old World paneling is warm. Charming. Yet luxurious as a Venetian villa. It comes in 4 beautiful wood grains—G-P's Chateau™ Oak and Pecan, and Riviera™ Birch and Cedar. Use Old World paneling to create any mood: stately elegance for conference rooms; warm elegance for reception rooms and lounges; quiet elegance for offices, and hotel or motel rooms. Ask your Georgia-Pacific representative about Old World paneling, a great old idea from G-P!

Paneling designed to impress people.

G-P Chateau™ paneling is so rich, it has plain, old fashioned snob appeal! It makes a terrific impression in living rooms, dining rooms, family rooms—any room! The extra wide grooves give walls a deep, solid look. Yet, Chateau paneling costs surprisingly little. Choose from over 25 hardwood grains and colors, all with G-P's famous Acryglas® finish.

CHATEAU WALNUT

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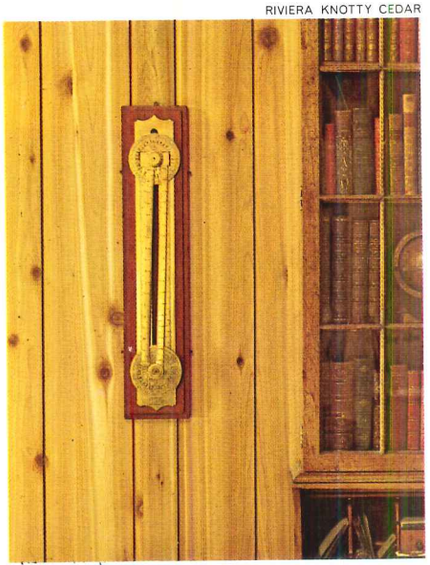

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22-story Exchange National Bank Building, Tampa. Redesign in ASTM A572 steel (grades 50 and 55) saved $45,000. Floor framing in office tower section is designed compositely with the slab. Architect: Harry A. MacEwen, A.I.A.

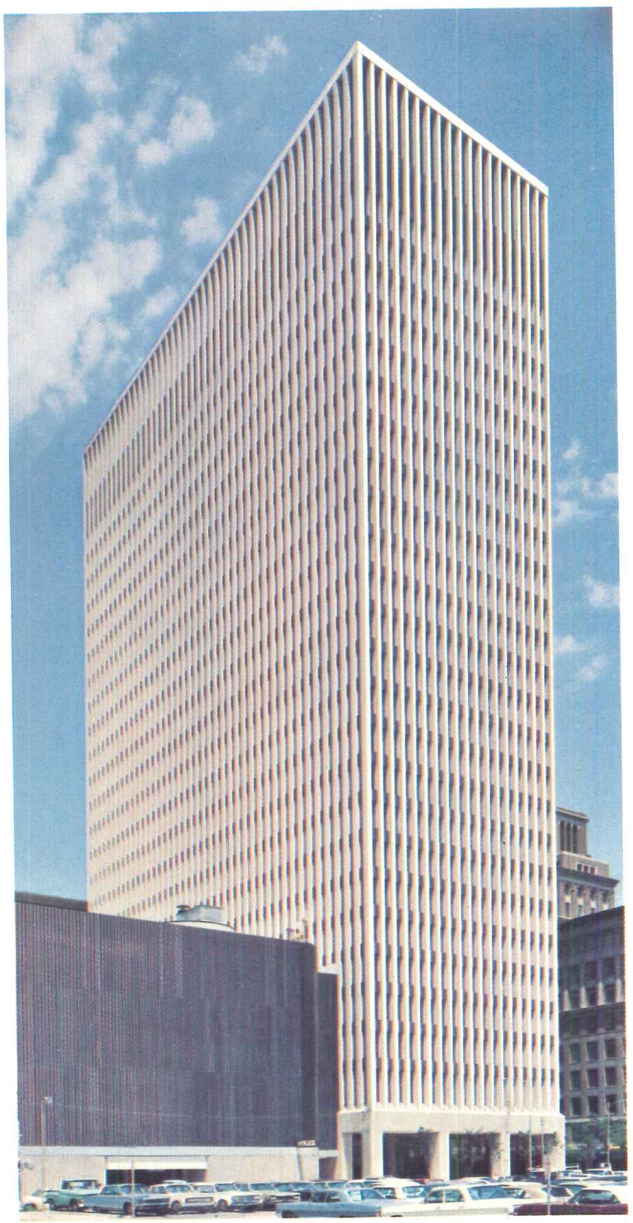
A report on office buildings from Bethlehem Steel

New high-strength steels and new design techniques have spawned an important new generation of high-rise office buildings. Here are some of these structures—and the reasons why the owner-architect-engineer teams decided on *steel* framing.

BETHLEHEM STEEL

24-story Alcoa Building, San Francisco. Steel diagonal bracing, together with vertical hangers and only twelve exterior columns, form a sophisticated system for resisting seismic forces. Floors, column-free except for the service core, are suspended within the clad steel frame. Architect: Skidmore, Owings and Merrill.

What owners and tenants want– interior flexibility– steel framing provides



28-story Houston Natural Gas Building. ASTM A572 steel used in columns and beams for economy. Architect: Lloyd Morgan and Jones, A.I.A.

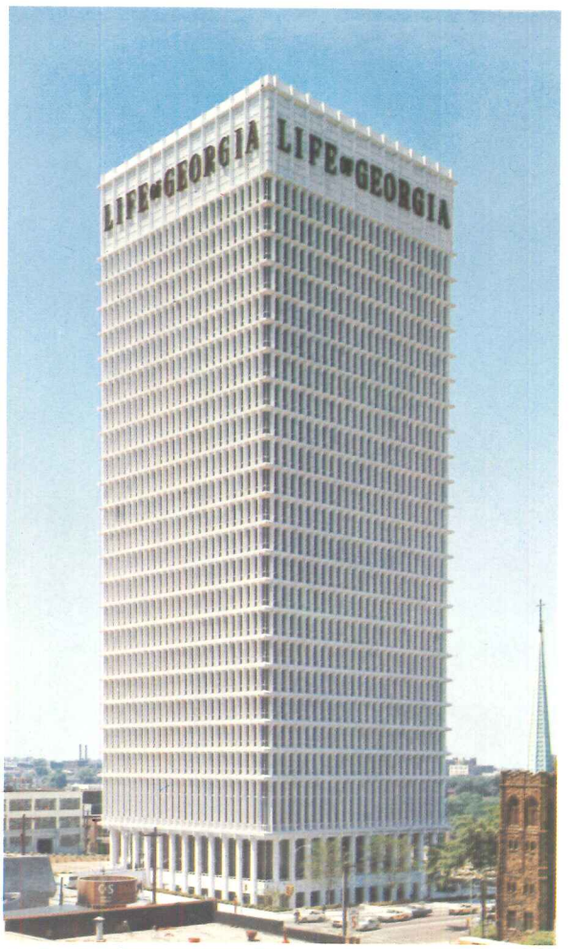
26-story Main Place (left), Buffalo, tops a 3-story shopping mall. Both were framed in steel to provide large, column-free areas and to simplify changing of floor layouts. Tower architect: Harrison and Abramovitz.

21-story Manufacturers & Traders Trust Company's bank and office building (above right) has a completely column-free interior. All loadings are carried by the core and the building's exterior steel columns, which are located only along the long dimension. Steel trusses, composite with the concrete floor, span the entire 71-ft width. Architect: Minoru Yamasaki & Associates.

32-story Federal Office Building, Cleveland (at right). Columns in lower 9 stories are high-strength A441 steel to maintain same column dimension the full height of the building. Cellular floor system provides interior flexibility. Architects: Outcalt, Guenther, Rode & Bonebrake; Schafer, Flynn & van Dijk; Dalton-Dalton Associates.

8-story One Center Plaza, Boston, which is being built in three phases (three 300-ft sections). Steel framing was chosen for the ease with which it can be expanded laterally, and for the interior flexibility it provides. Architect: Welton Becket, FAIA.

10-story City Bank of Honolulu, an AIA honor award winner, features a fully electrified floor system and 30 x 30 ft bays. Architect: Takashi Anbe, A.I.A., Walter Tagawa, A.I.A.



29-story Life of Georgia Tower, Atlanta. Steel permitted slender columns for architectural effect and was ideally suited to the cellular steel flooring system which gives tenants complete office-area flexibility. Architect: Bodin & Lamberson.

21-story IBM Building, Philadelphia (15 glass-enclosed office floors). Offset service core (not shown) serves as the backbone and steel framing serves as the rib cage to provide unusual openness and flexibility of space. Corrugated steel underfloors contain built-in channels for telephone and electrical wires. Architect: Vincent G. Kling, FAIA.

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39-story One Oliver Plaza, Pittsburgh. Steel framing chosen for speed and economy of construction; big, column-free areas; cellular steel floor decking. Steel framing also made it easy to make changes to answer tenant needs. Architect: William Lescaze and Associates.

25-story First National Bank Building, San Diego. Steel framing helped to meet extremely fast schedule of just 21 months from architect's conception to start of occupancy. Architect: Tucker, Sadler & Bennett.

BETHLEHEM STEEL

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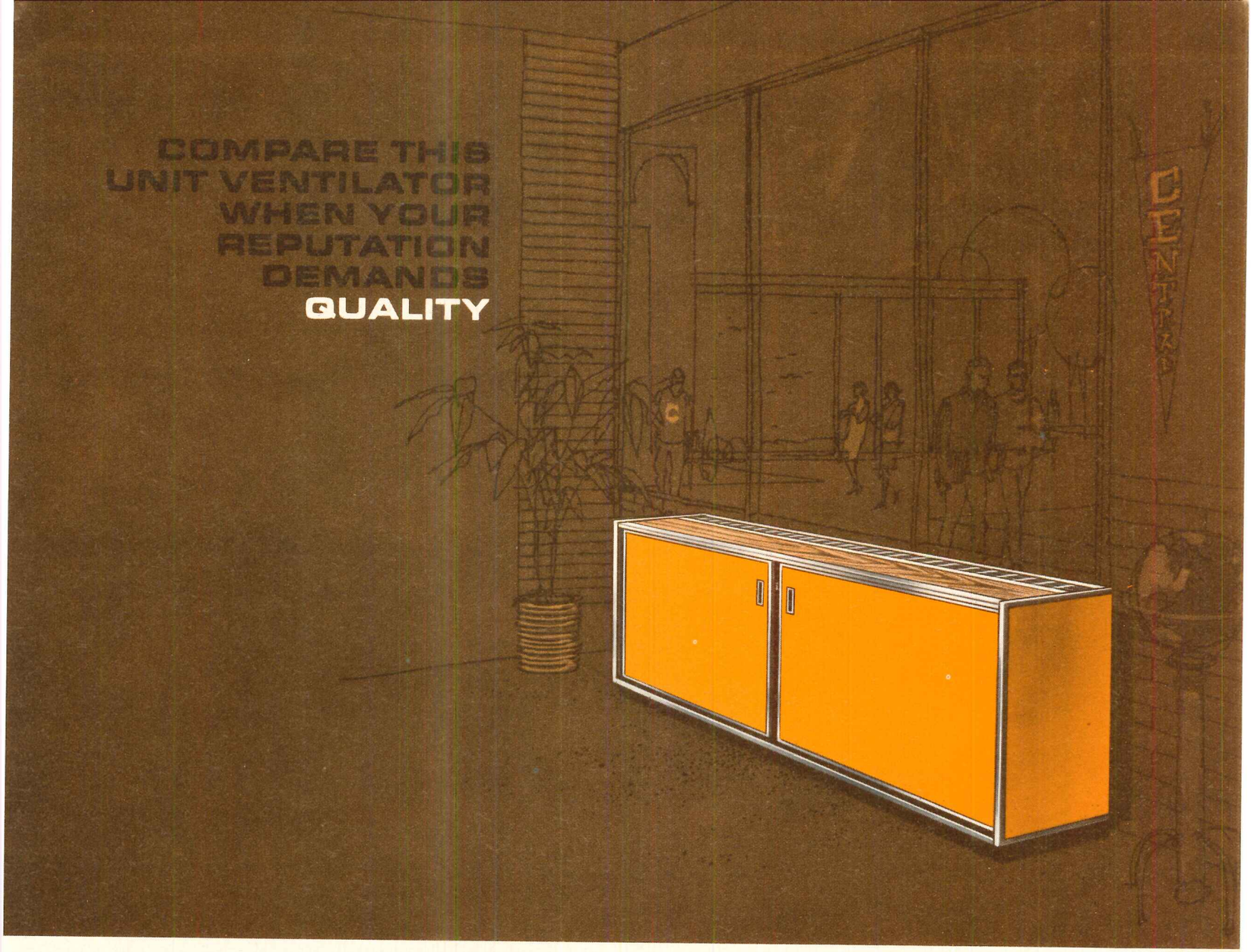

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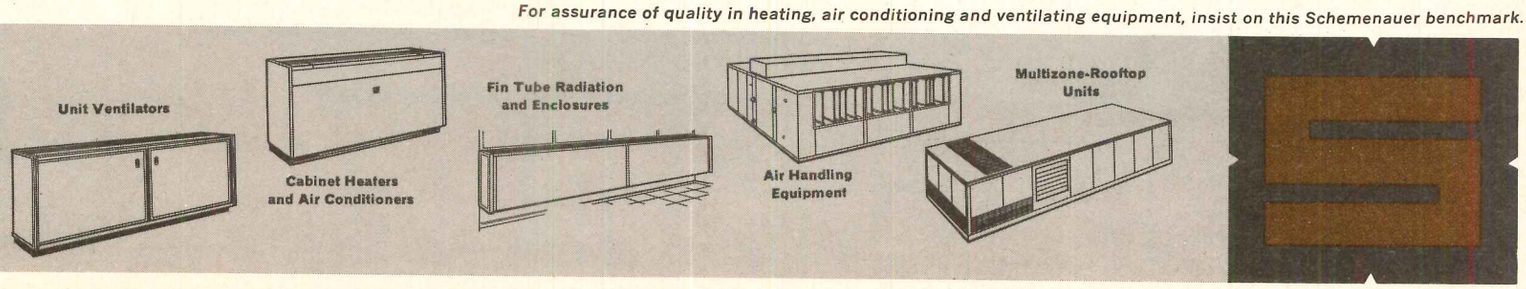

For more data, circle 159 on inquiry card

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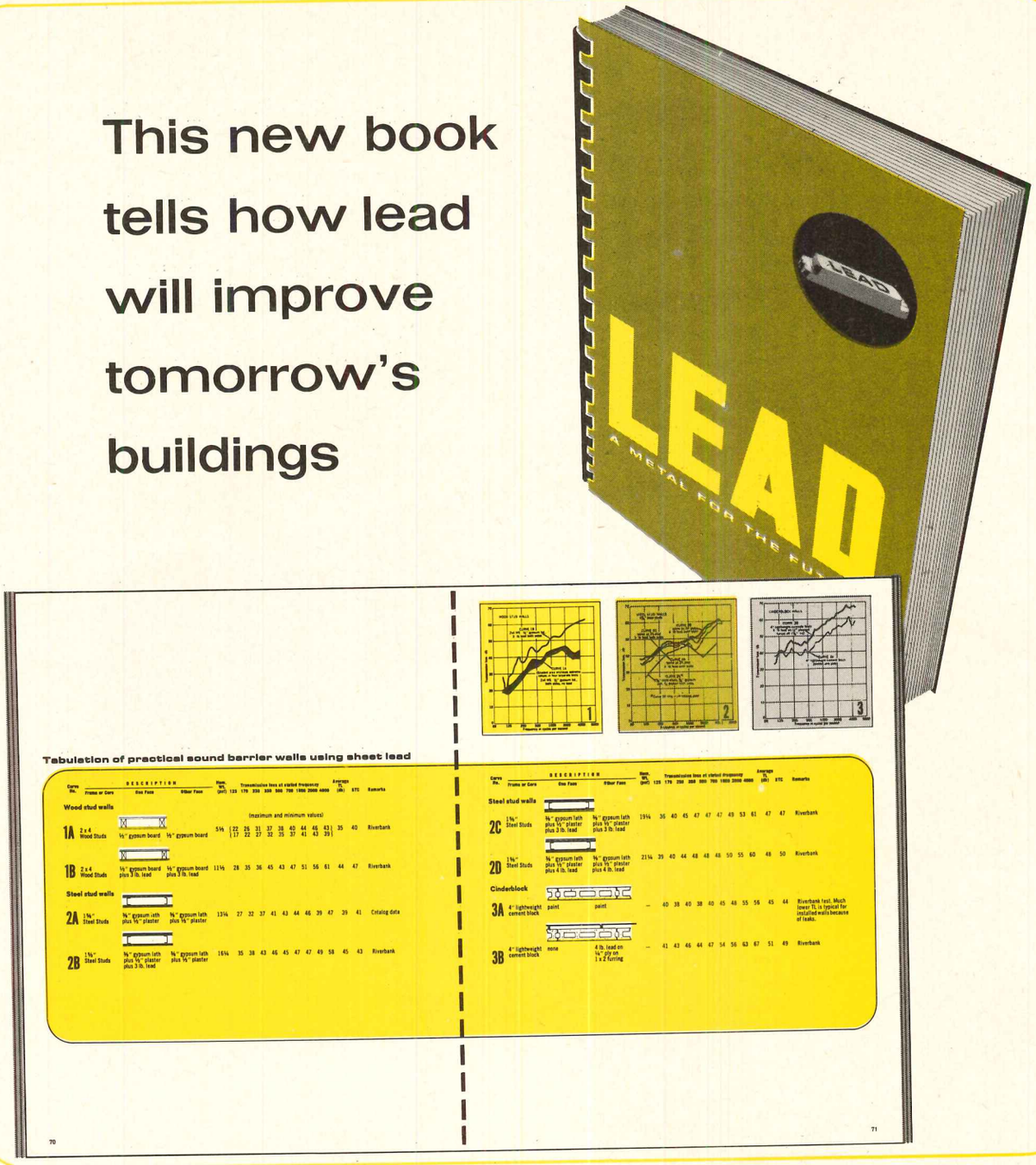
This new book tells how lead will improve tomorrow's buildings



This new 82-page reference book includes important data on the functions of lead in modern architecture. ☐ It covers the use of lead as an effective, practical means of noise and vibration control—an increasingly important problem today. The book shows how lead-asbestos pads are being used in major buildings to keep vibrations from being transmitted through the steel columns of the structure. A 4-page chart contains a tabulation of practical sound barrier walls using sheet lead. ☐ The book also includes valuable technical data on lead's capabilities as a radiation shielding material and its resistance to a wide range of corrosives. It explains and illustrates the use of lead in various aspects of construction, and in construction materials such as glass, ceramics and paint. Finally, the book lists other reference literature on lead, which is available to you. ☐ For your free copy, just send a brief request on your company letterhead. ☐ **St. Joe supplies quality lead—American industry puts it to work.**

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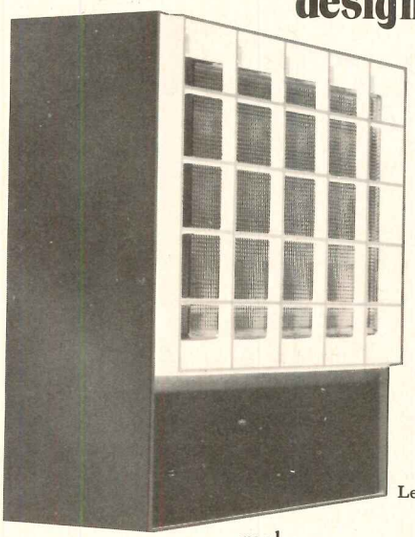

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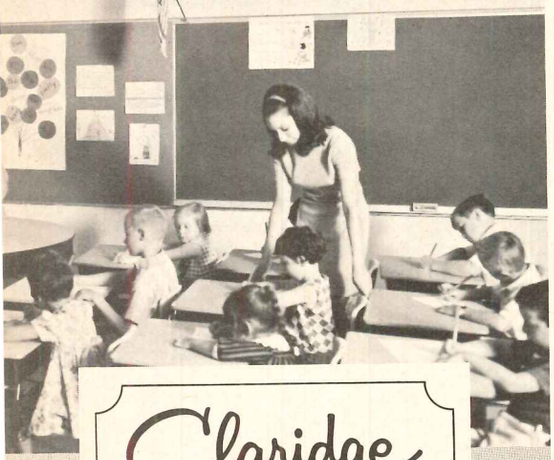

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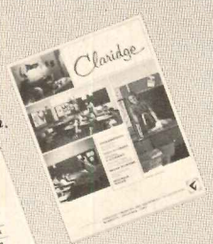

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continued from page 67

Parsons, Brinckerhoff, Quade & Douglas, New York-based firm of consulting engineers, architects and planners has named **Alfred T. McDonough** and **Richard A. Shellmer** as associates of the firm.

Lloyd H. Slomanson has been appointed partner of **Hamby, Kennerly & Slomanson,** New York architectural firm, which formerly was **Fordyce Hamby & Kennerly.**

Shepley Bulfinch Richardson and Abbott announce that **Otis B. Robinson** has been admitted to partnership; and **W. S. Mallory Lash** and **Robert A. Tacconi** have been appointed associates of the firm.

Slingerland and Booss, architects and engineers of New York City, recently changed the firm's name to **Slingerland, Booss and Fakas.**

Smith, Hinchman and Grylls Associates, Inc. of Detroit announce the appointment of three associates as vice presidents. They are **John J. Andrews, P.E., Frank J. Brady, P.E.** and **Peter P. Petkoff, P.E.**

Jean G. Surratt, A.I.A. announces that he has joined in full partnership with former associates of the firm, **Ronald L. Smith, A.I.A.** and **Don E. Abernathy, A.I.A.** to continue the Charlotte, North Carolina practice of **Jean G. Surratt and Associates** under the new firm name of **Surratt, Smith and Abernathy Associates.**

Charles R. Sutton, A.I.A. and **Ted Candia** have announced the formation of a new firm, **Charles R. Sutton & Associates, Inc.** for the practice of architecture and planning consultation.

Robert Russell Jones, P.E. has been named a partner of **Syska & Hennessey, Inc. Consulting Engineers,** to be in charge of the firm's Washington, D.C. office.

Alfred J. Szczepanski is now an associate of the New York and Paris firm, **Lathrop Douglass Architect.**

Robert H. Tuzik, A.I.A. is now a partner in the New Jersey architectural firm of **Ludlow & Jefferson.**

Edward J. Tymera has joined the Chicago architectural firm of **Fridstein Fitch & Partners** as construction representative.

John Carl Warnecke, F.A.I.A. Architects and Planning Consultants announces the retirement of **Charles G. Palmer,** manager of the Washington, D.C. office. Mr. Palmer will remain as a special consultant to the firm. **Hershel Post, R.A.,** an associate of the firm, will coordinate the activities of the Washington office, now at 1101 17th St. Three associates were recently appointed to the firm's New York office: **Lee Hamptian, John Smyth and Michael Koenen.**

William M. Greenwood and **L. Preston Wade** have been named partners in the Lynchburg, Virginia firm of **Wiley & Wilson,** consulting engineers and architects.

Maxine Weill has joined the architectural firm of **Handren, Sharp & Associates** as director of the interior design division.

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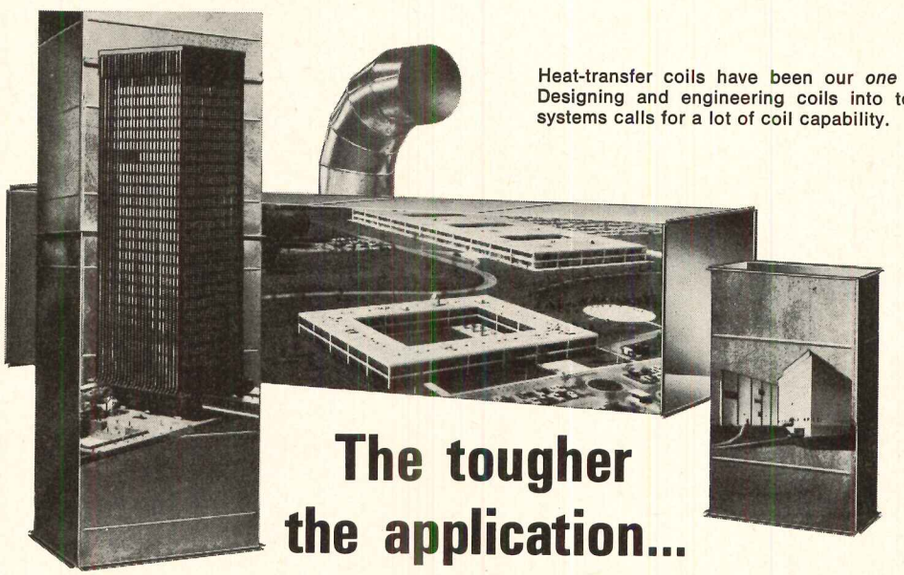

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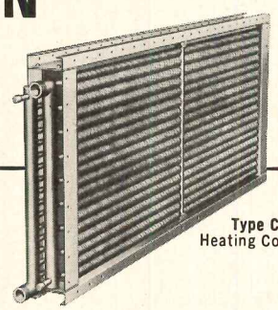

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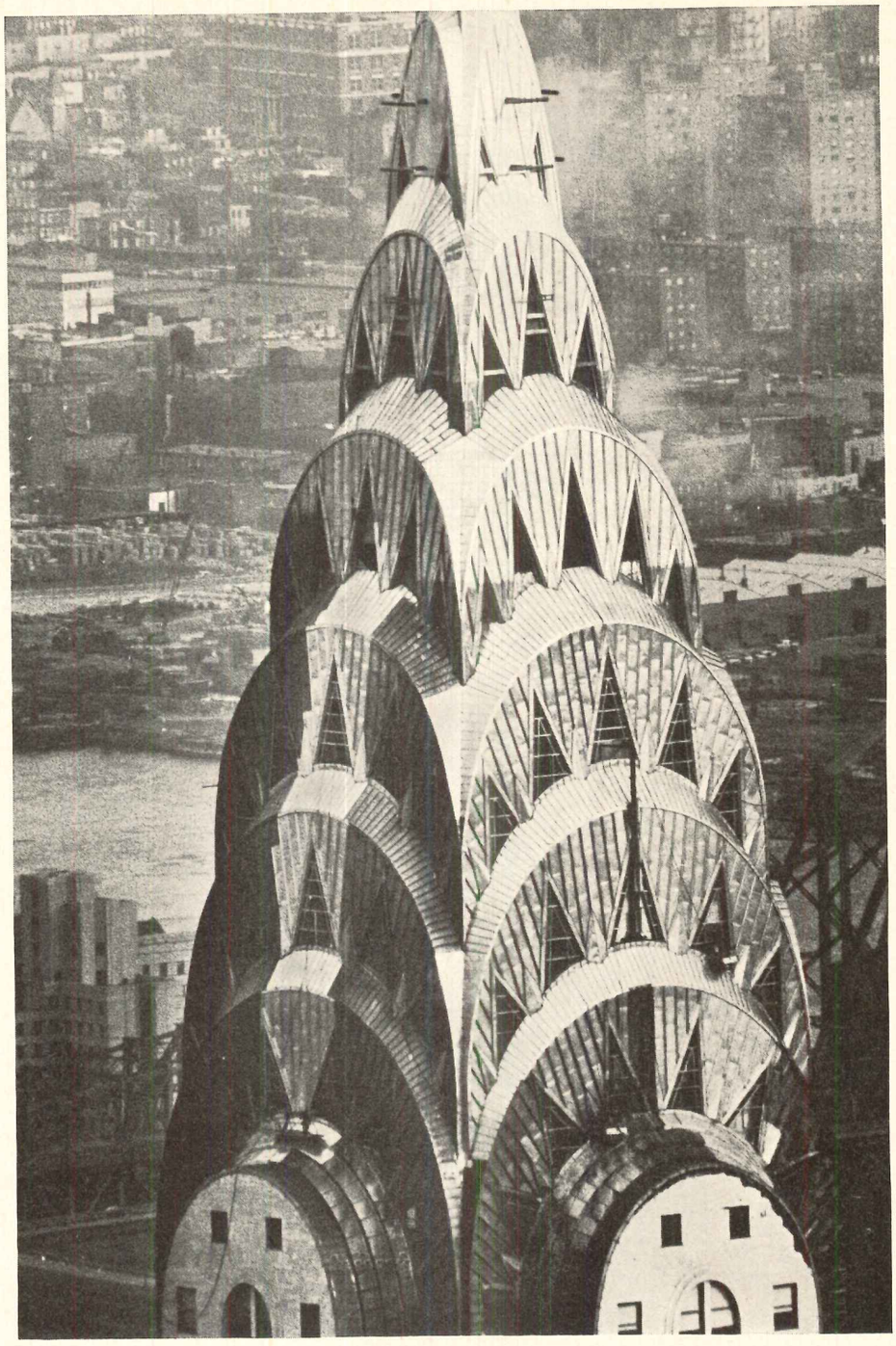

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Roof Drainage	Specify cold rolled (65 to 80,000 psi yield strength) AISI type 304 No. 2 (strip) or No. 2B (sheet) conventional annealed finish . . , appearance — semibright
Concealed Flashing	
Roof Penetration Flashing	Specify soft temper (dead-soft or fully annealed) AISI type 304 No. 1 (strip) or No. 2D (sheet) conventional annealed finish . . ,
Miscellaneous Items	(Republic DUROFLASH) appearance — matte

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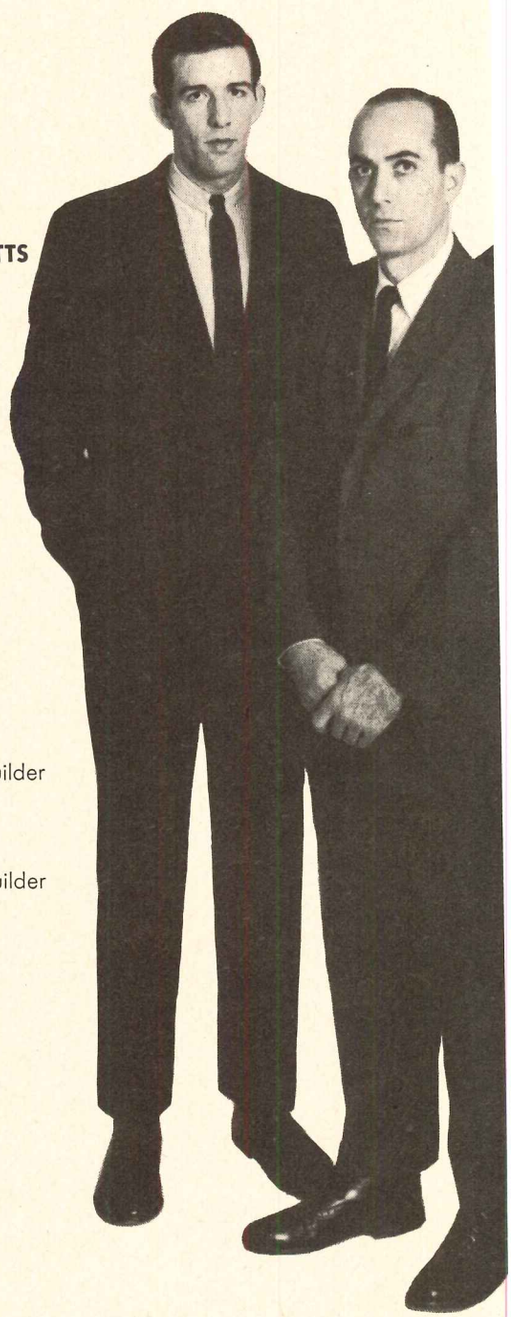

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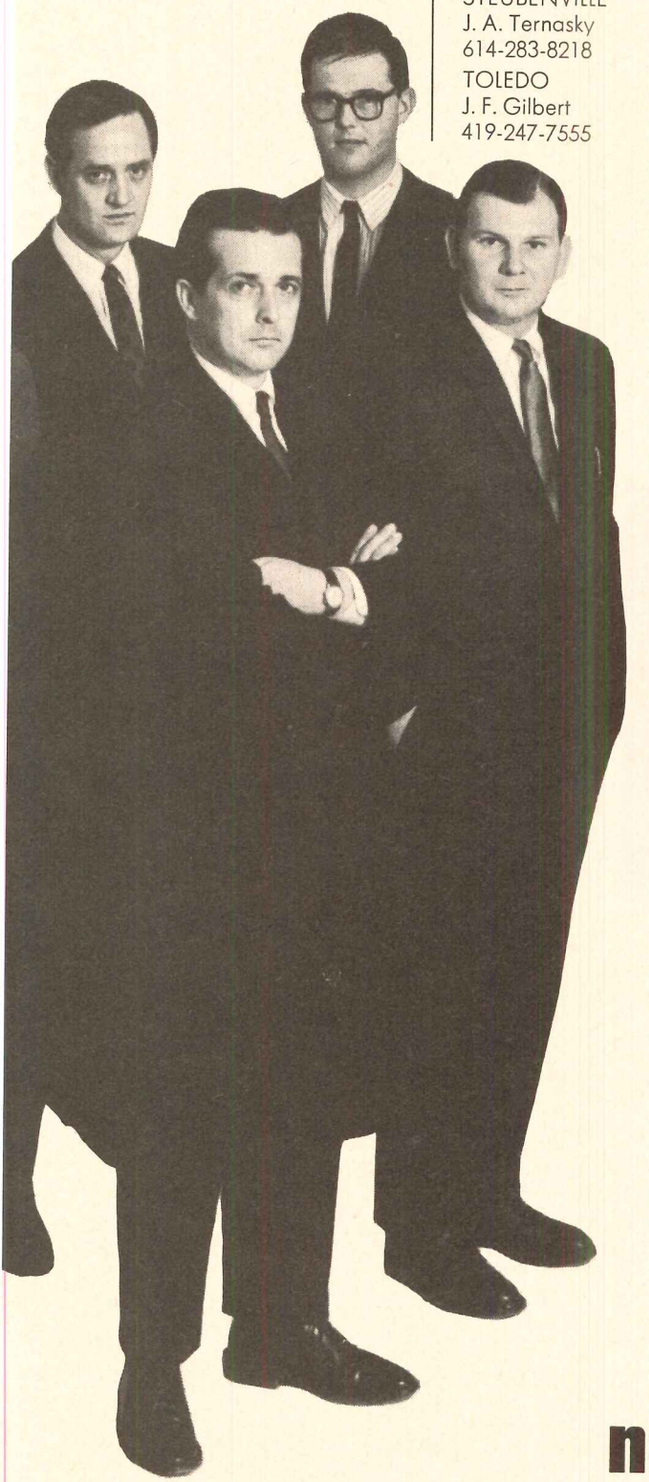

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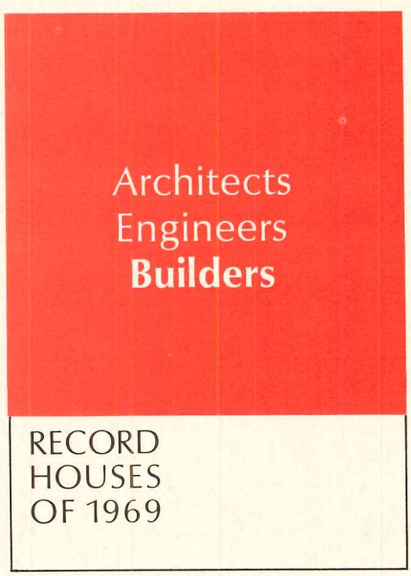

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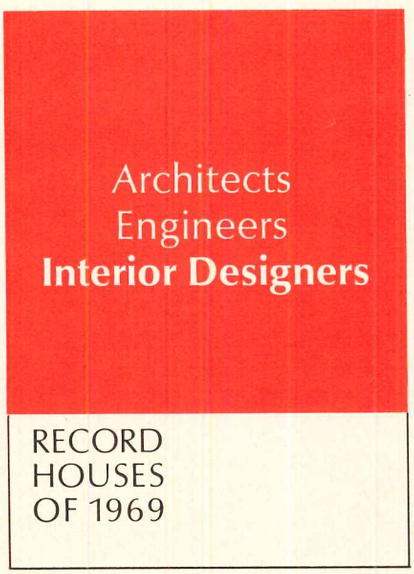

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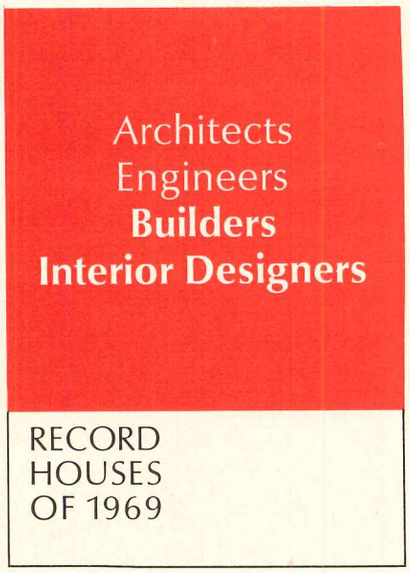

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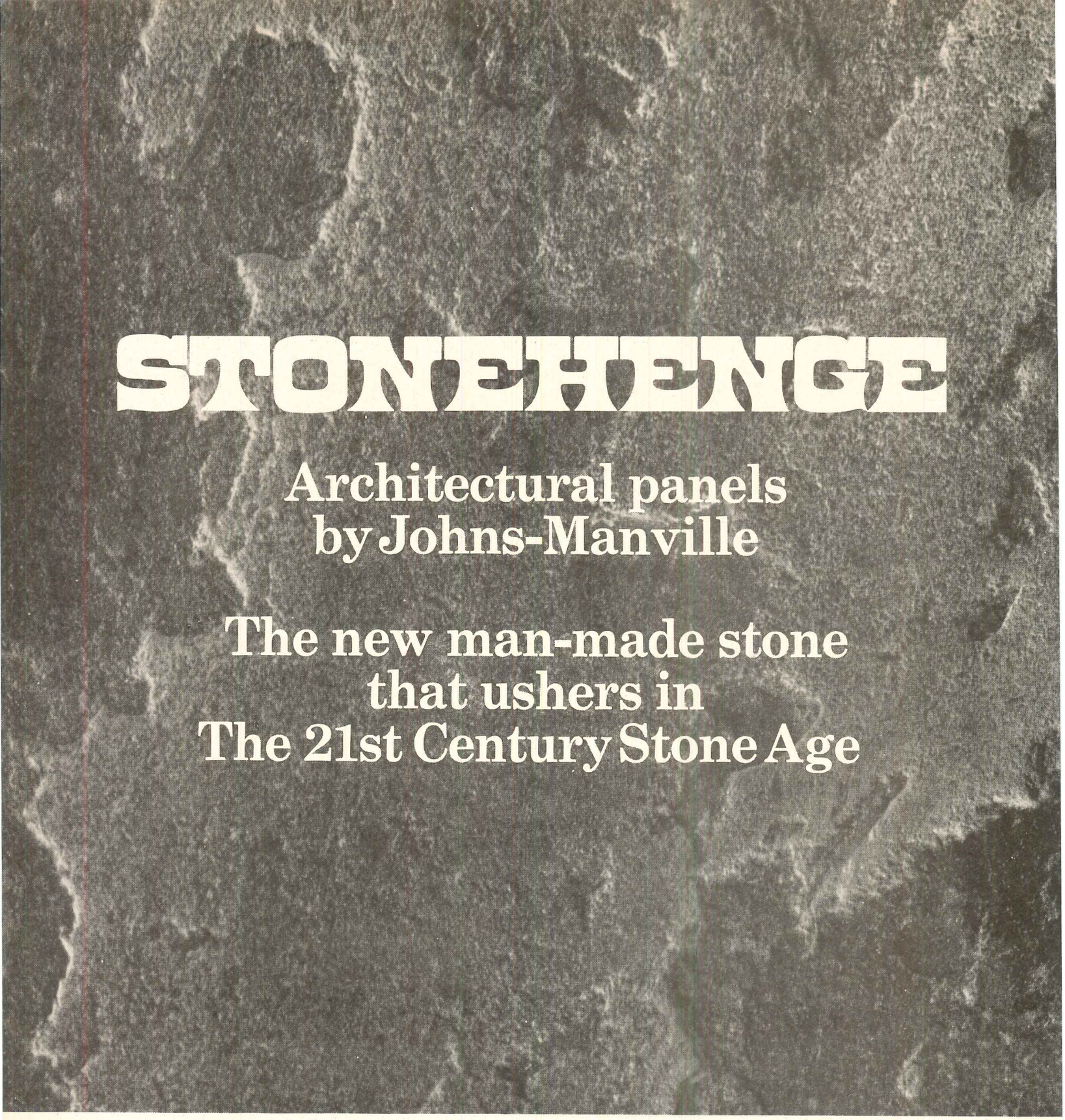

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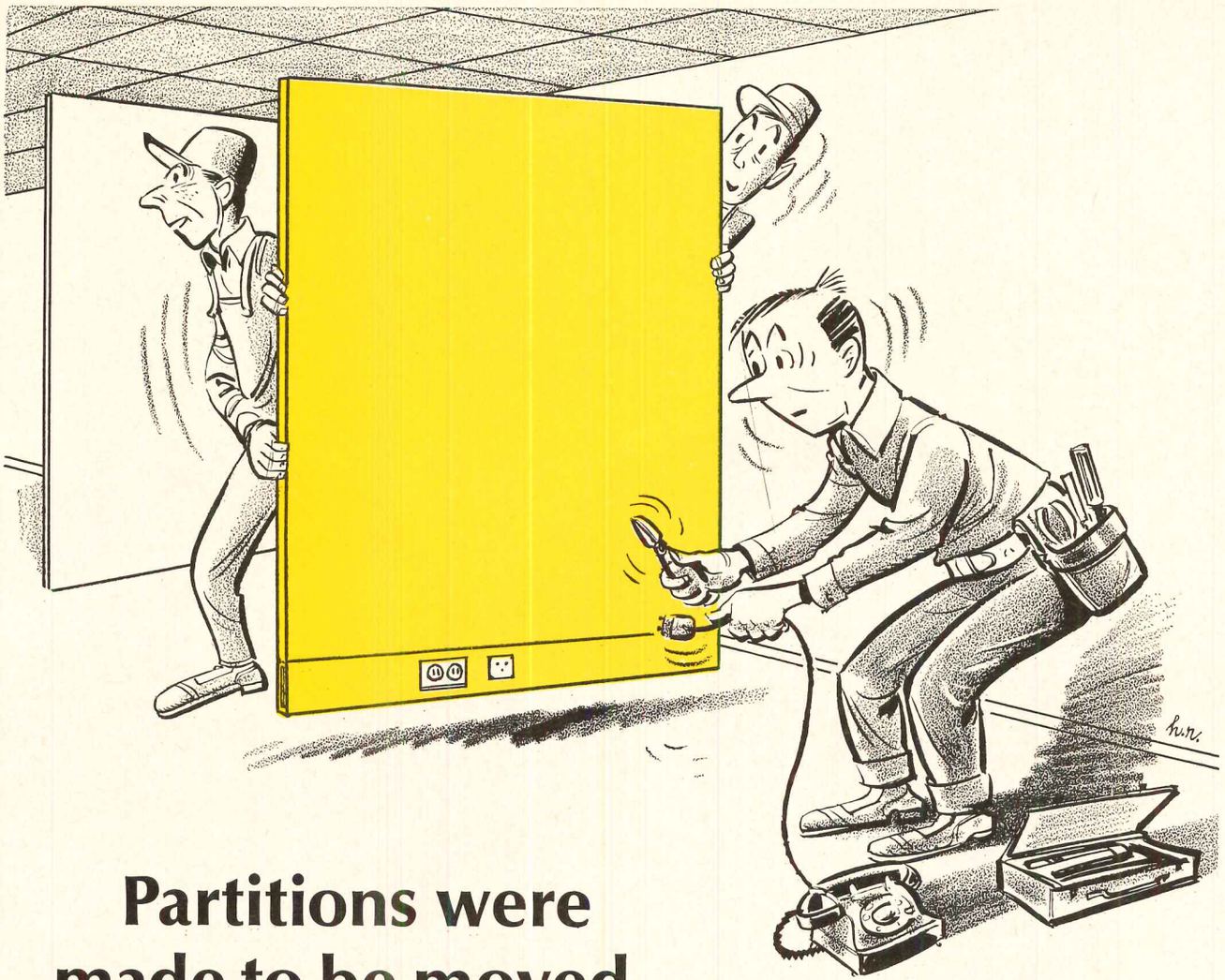

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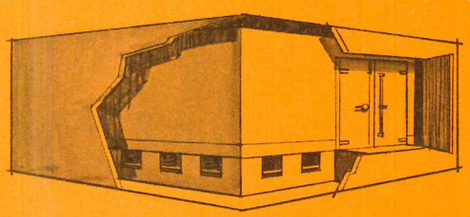

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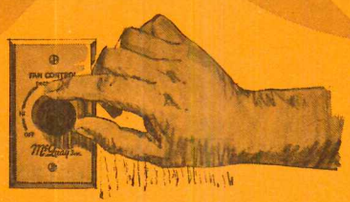

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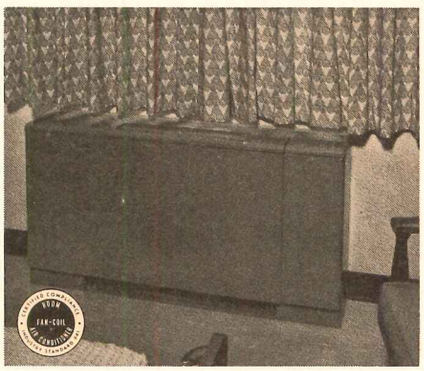

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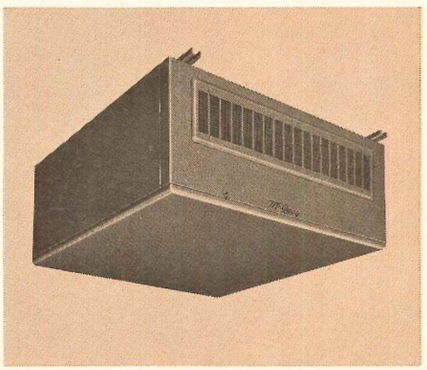

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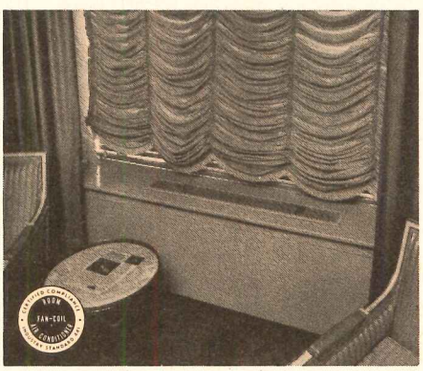

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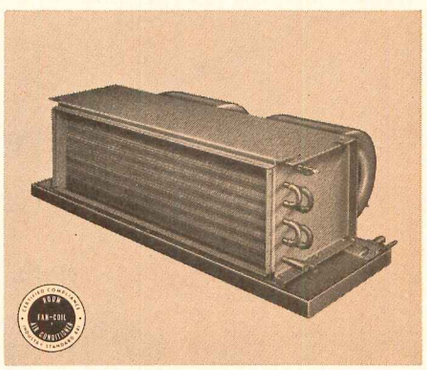

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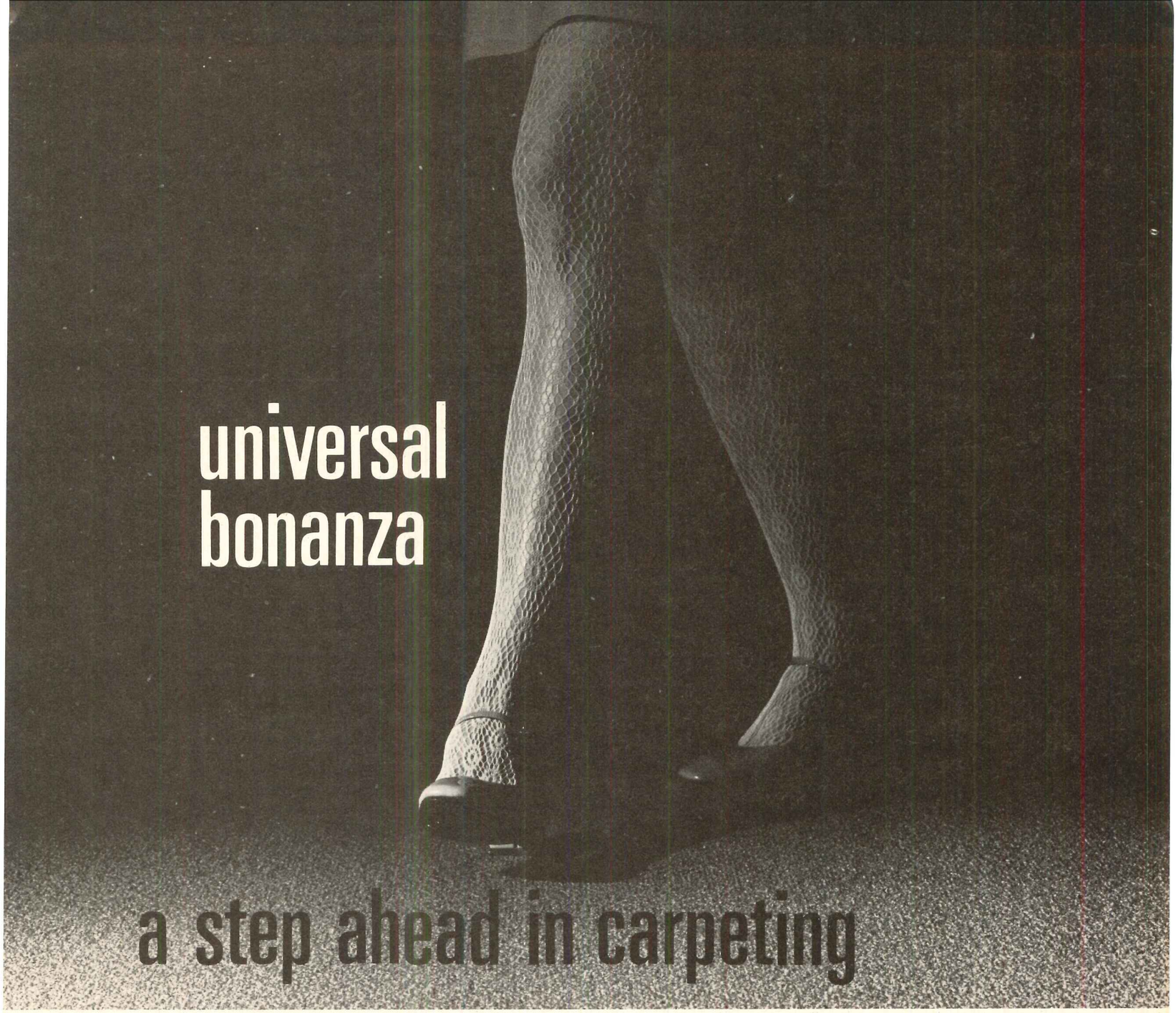

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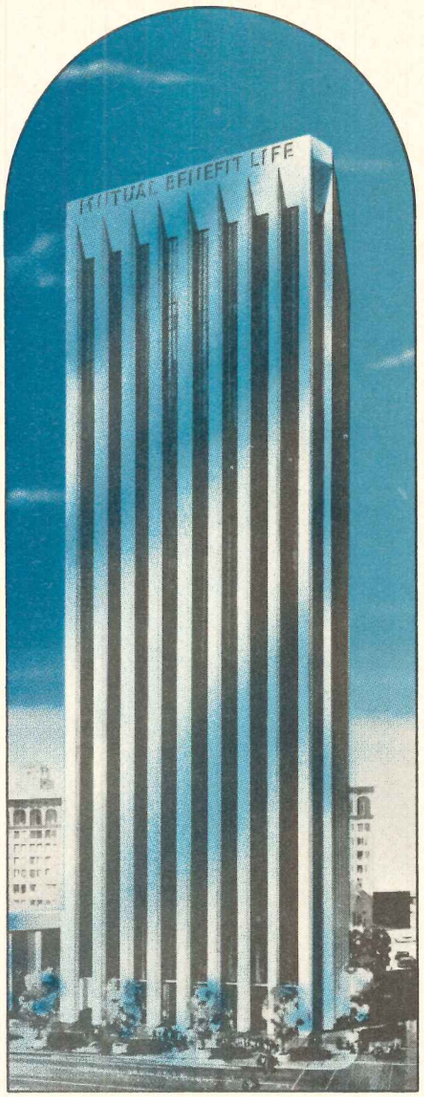

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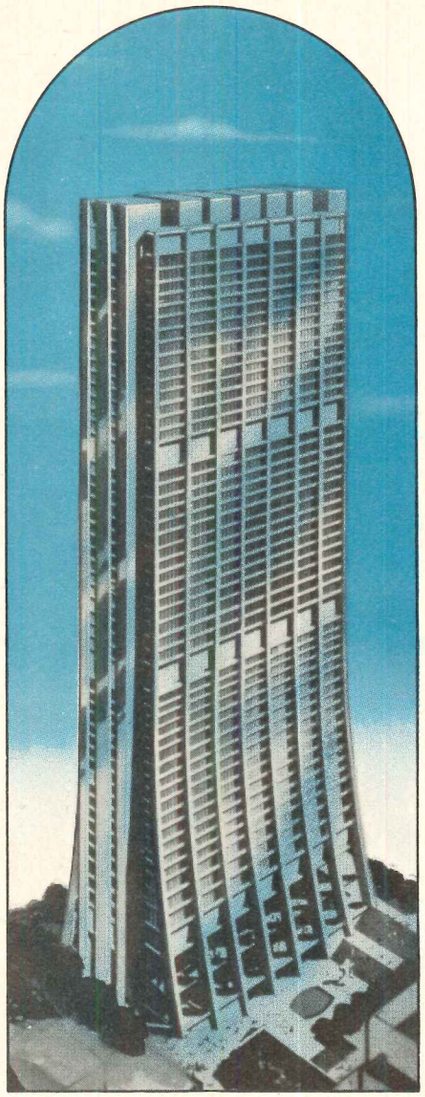

CHICAGO–First National Bank Building
ARCH. & ENGRS.: (Partnership) C. F. Murphy Associates Perkins & Wills, Chicago
CONTRACTOR: Gust K. Newberg Construction Co., Chicago
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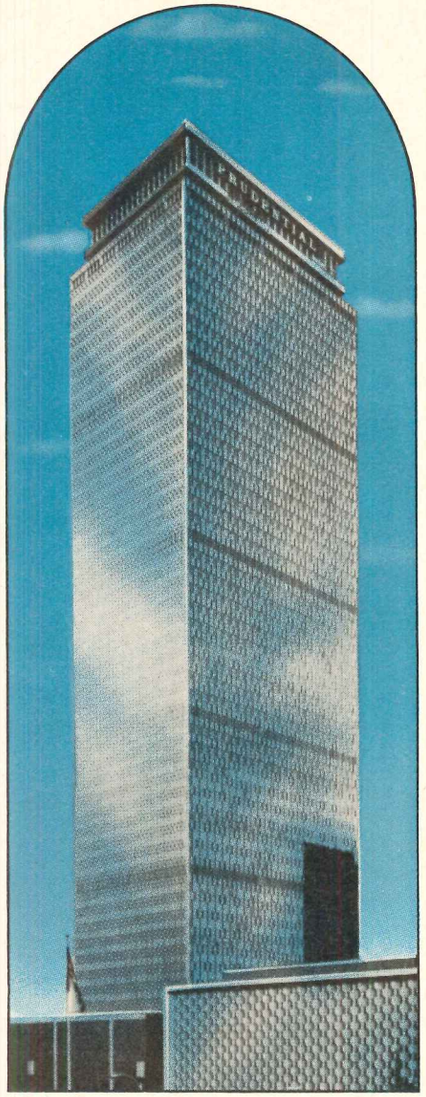

BOSTON–Prudential Center
ARCHITECTS: Charles Luckman Associates Boston, New York, Los Angeles
ENGINEERS: Syska & Hennessy, New York
CONTRACTORS; Perini Corp., Framingham, Mass. Walsh Construction Co., Inc., New York
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And to really spoil the gals, each room has its own GE Zoneline heating/cooling unit. So the coeds can set any temperature that pleases them. How's that for individuality?

But don't get the idea this is a rich kids' school. Not so. Midwestern is run on a taxpayers' budget. It's a gem of architectural efficiency.

That posh Zoneline comfort, for example, actually cost Midwestern a good bit less to install compared to traditional heating and air-conditioning systems.

True, any good zonal heating/cooling system could have done the job for Midwestern. So why was GE Zoneline the choice?

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Zoneline controls are prominently located on top of the chassis, and so simple, a coed's little sister can operate them.

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There are many more GE features the architects liked. The attractive grille, the washable air filter, the unique interior baffle, the positive seal air vent and so on.

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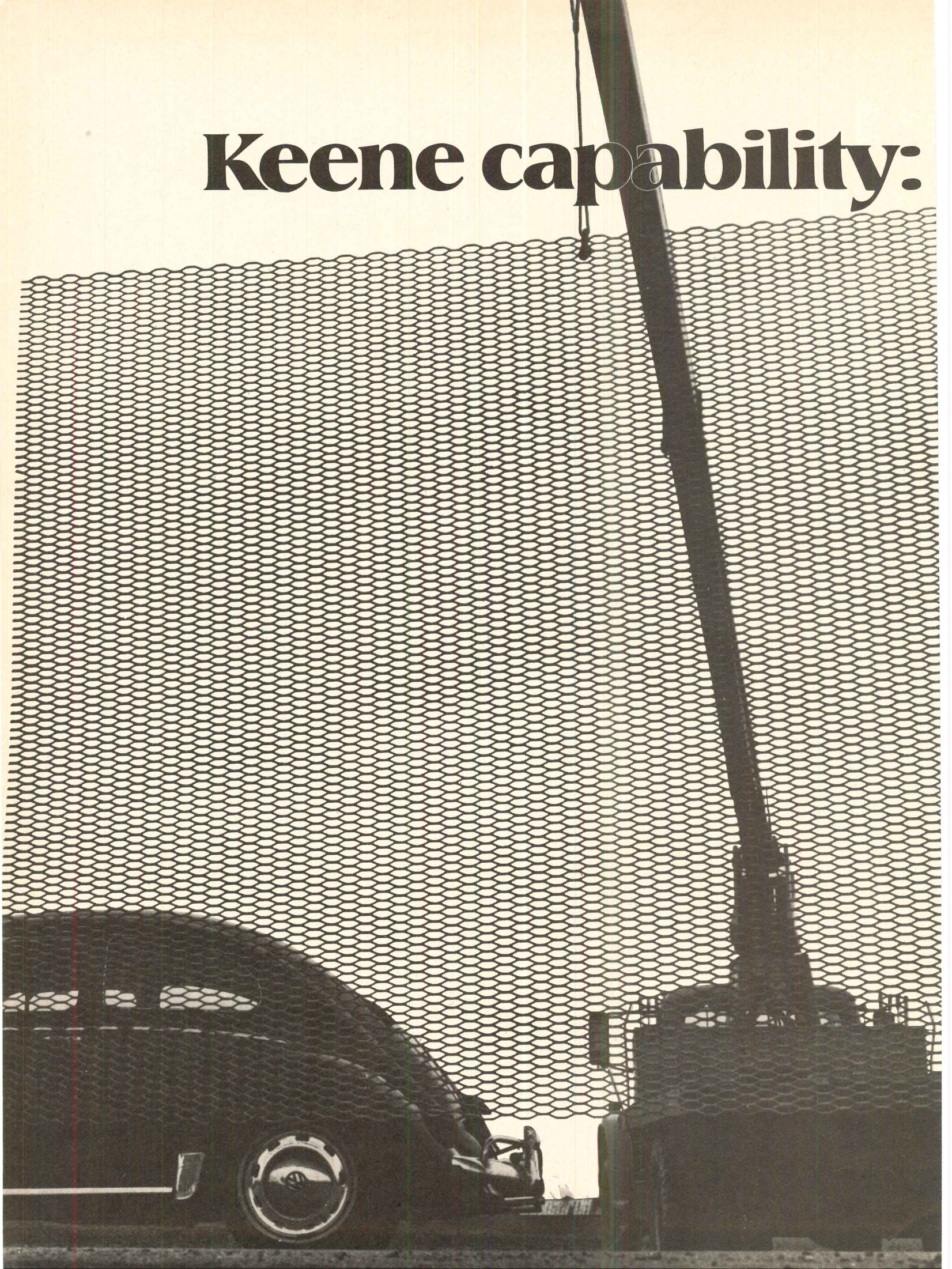
Keene capability:



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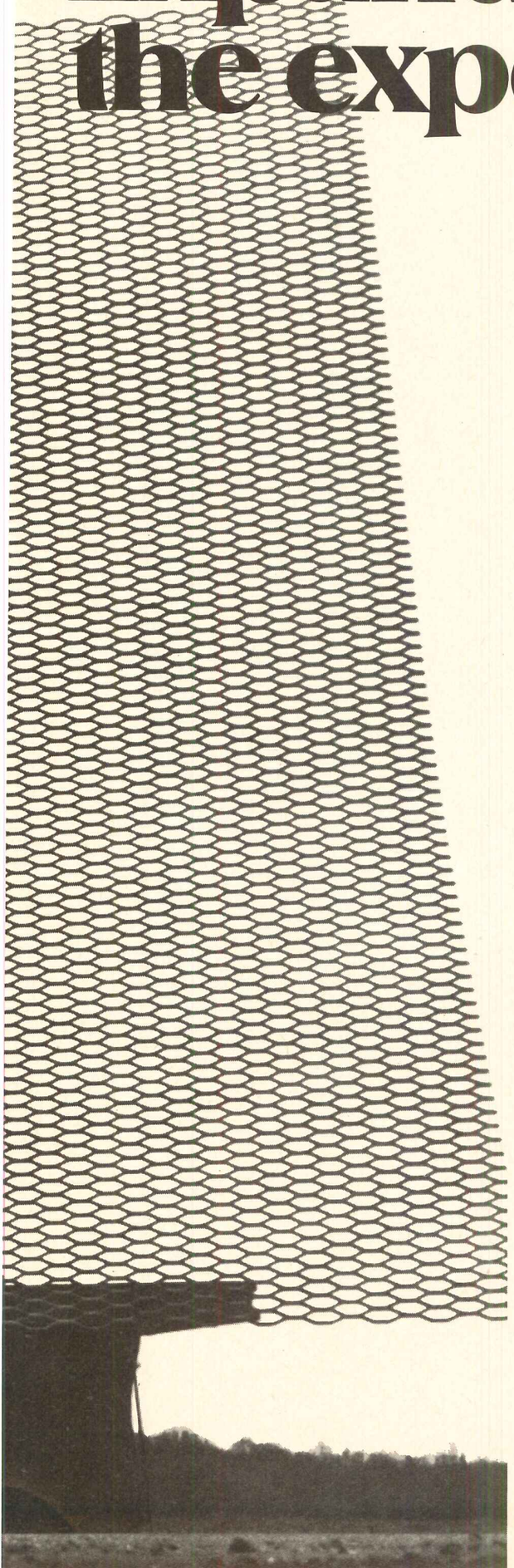

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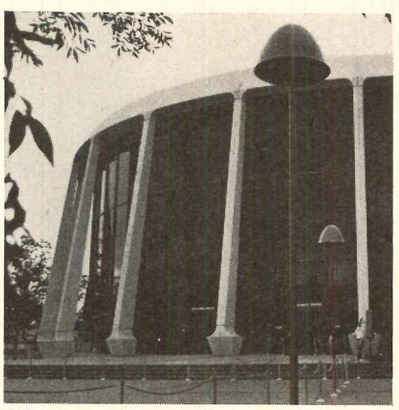
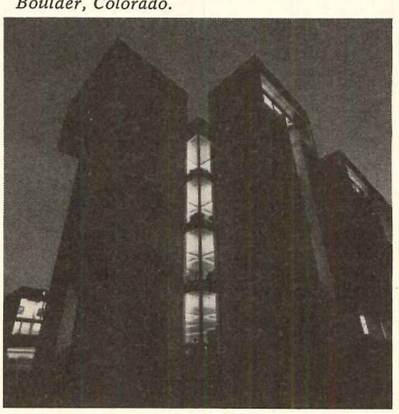


Confluence Theatre, San Antonio, Texas.

National Center For Atmospheric Research, Boulder, Colorado.



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CORPORATION

We've just begun to grow.

For more data, circle 180 on inquiry card

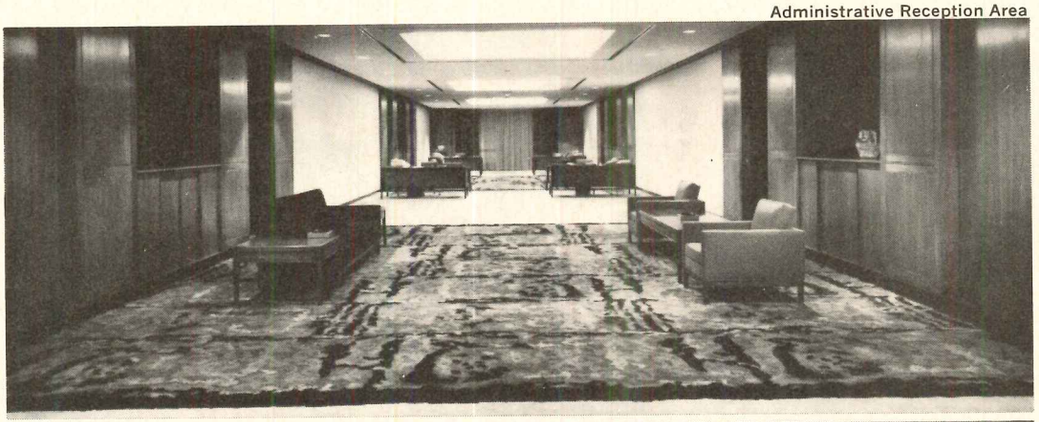
The place:

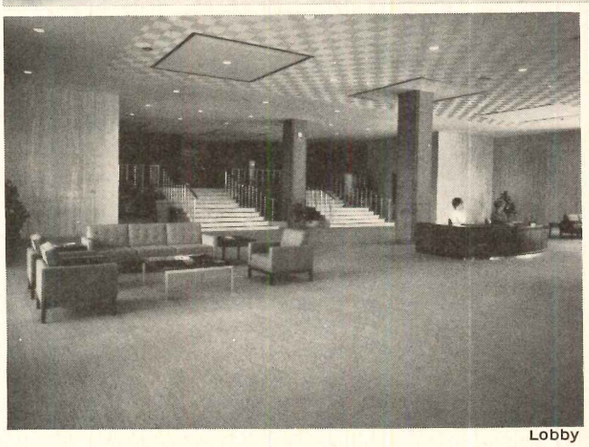
The striking new Caterpillar Tractor Co., Administration Building, Peoria, Ill.

The designer: Mrs. Diane Mitchell, Interior Designer

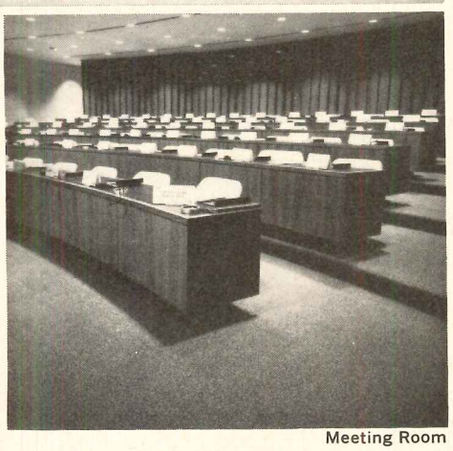
The carpets:

Administrative Reception Area





Lobby



Meeting Room

Bigelows: Administrative Reception Area: hand-hooked custom parquet design carpet in celadon color and deep shags in an abstract design; blue, purple, red. Lobby: Special wool yarn, hand-hooked; grass green. Meeting Room: Special 100% wool carpet in blue and charcoal colors.

Designer Diane Mitchell was commissioned to carpet the entire building in an attractive, durable, low maintenance carpet. She chose Bigelow. Why? Because Bigelows combine all those features with 143 years' experience. Mrs. Mitchell and our carpet counselors chose luxurious wall-to-wall carpet and custom carpet for areas of special interest.

With Bigelow, Mrs. Mitchell got the look she wanted, so did Caterpillar Tractor Co., and so will you. Call a Bigelow Sales Office, or, for a free brochure on Commercial Carpets, write Dept. A, 140 Madison Ave., New York, N.Y. 10046.

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 146 on inquiry card

For more data, circle 182 on inquiry card

YOU'LL NOTICE ONE THING ABOUT KOHLER ELECTRIC PLANTS.

YOU HARDLY NOTICE THEM.

We have this dream at Kohler, about building absolutely perfect electric plants.

We're not there yet. But we're coming closer all the time.

Coming closer to plants so compact you don't notice them.

So silent you don't hear them.

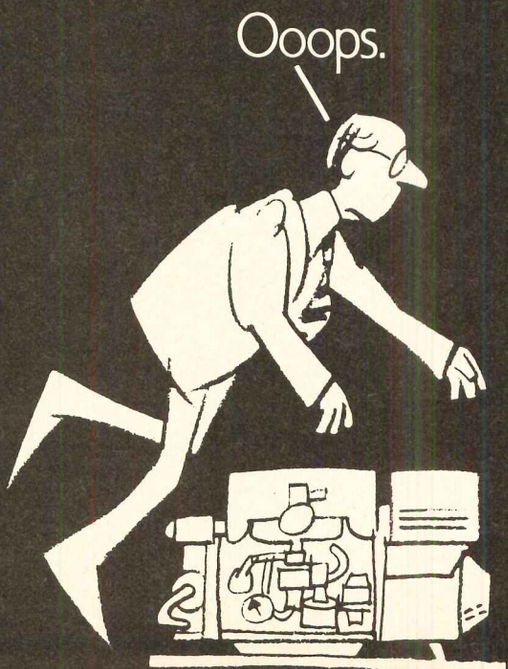
So vibrationless you don't feel them.

So trouble-free you don't even think about them.

We're very close. More and more, we're making electric plants less and less noticeable.

Interested? Write Electric Plants, Kohler Co., Kohler, Wisconsin 53044. Or see your Kohler distributor for a unit from 500 to 230,000 watts, to fit your application.

You'll notice it's so dependable that after you get it, you forget it.



Kohler Electric Plants

We work hard to make them hardly noticeable.

Kohler Co., Kohler, Wisconsin

Your Girl Friday won't be in Monday.

She was killed in a car accident.

Like the nearly 25,000 valuable employees who lost their lives in car accidents last year.

Maybe it's because some businesses don't make it their business to do the little things that help save people's lives.

Like sponsoring the National Safety Council's Defensive Driving Course.

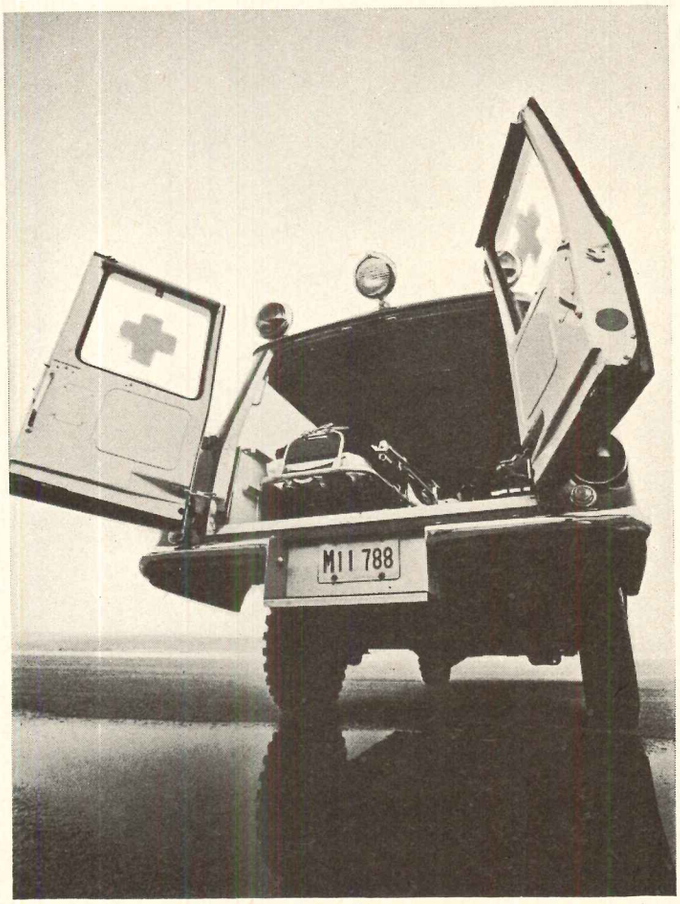
If you're too busy for little things, consider some of the companies who aren't.

Coca-Cola.
Dow Chemical.
Ohio Edison.

Set up a Defensive Driving Course for your people.

Remind your employees to do the things that can save their lives.

Like using Safety Belts.
Like Driving Defensively.
Keep reminding them.
After all, they're only people.



What's your excuse?

69.1

Special Projects—Public Information
National Safety Council
425 North Michigan Ave., Chicago, Ill. 60611

Please mail me full details on the Defensive Driving Program.

Name_____

Title_____

Firm Name_____

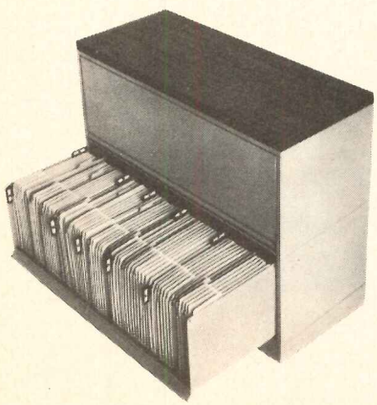
Street_____

City_____ State_____ Zip_____

Advertising contributed for the public good.

If we didn't say it was a file, you'd never know it.

It's a file.



Our Modi-File is more than a lateral file. It's also a piece of furniture.

Use it where you wouldn't dream of putting other files. In the front office as a wood-topped cabinet. Or stacked as dividers up to five units high. Modi-File doesn't have drawer pulls to give it away. No one will spot it as a file. Until it's opened.

Behind its beautiful face, Modi-File has more space than any lateral file its width. A unique hinge suspension eliminates wasted space, so it's nice and slim. Only 15 inches.

Another thing about the hinge suspension, it's not visible. So the sides of the drawers are as clean cut as the cabinet.

Specify it in two, three, four or five drawer units, letter or legal size. And in a choice of finishes your clients will enjoy living with.

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

We'll be happy to send you a brochure on the Modi-File, and tell you where it can be seen. Write today and you will hear from us posthaste.

ART METAL
JAMESTOWN NY

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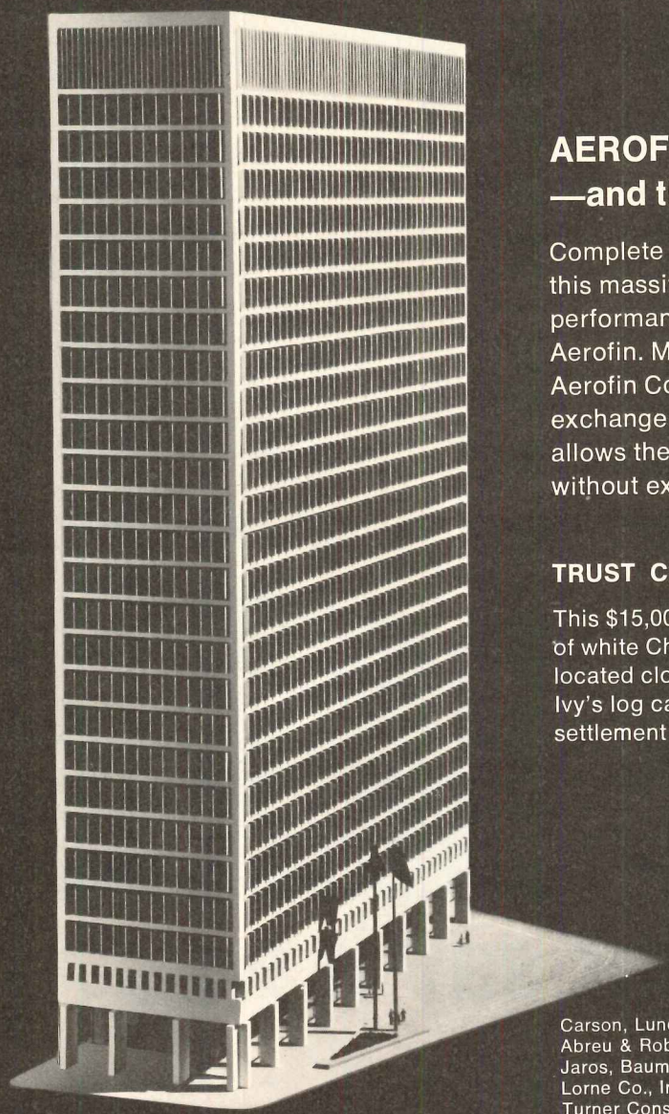


AEROFIN helps "cool the cash" —and the customers, too

Complete cooling and heating comfort of this massive structure calls for exacting performance — the kind delivered by Aerofin. Modern smooth-fin design of Aerofin Coils permits optimum heat-exchange capacity in compact space — allows the use of high air velocities without excessive resistance.

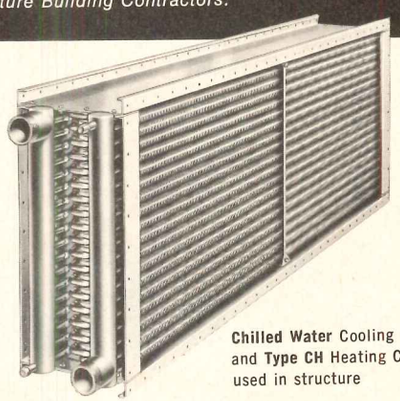
TRUST COMPANY OF GEORGIA

This $15,000,000 banking center is constructed of white Cherokee marble and glass. It's located close to the historical site of Hardy Ivy's log cabin, built in 1833, the first permanent settlement in downtown Atlanta.

Carson, Lundin & Shaw, New York, *Architects*
Abreu & Robeson, Inc., Atlanta, *Associate Architects*
Jaros, Baum & Bolles, New York, *Mechanical Engineers*
Lorne Co., Inc., Detroit, *Mechanical Contractors*
Turner Construction Co., New York—Ira H. Hardin Co., Atlanta, *Joint Venture Building Contractors.*

AEROFIN
Heat Transfer Coils
INSTALLED

Aerofin performance data are laboratory and on-the-job proved. Specify dependable true-rated Aerofin Coils — more than ever the industry standard.



Chilled Water Cooling Coils and **Type CH** Heating Coils used in structure

AEROFIN CORPORATION

Lynchburg, Virginia 24505

Aerofin is sold only by manufacturers of fan system apparatus. List on request.

AEROFIN OFFICES: Atlanta • Boston • Chicago • Cleveland • Dallas • New York • Philadelphia • San Francisco

Aerofin Corporation Ltd., Gananoque, Ontario—Offices: Toronto • Montreal

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1,400 references to heating,ventilating, air conditioning every hour? You must be kidding!

No, it's true. You referred to Section 29 of Sweet's Architectural Catalog File 2,800,000 times last year—that's 11,200 catalog referrals each day. We asked a leading research firm, Richard Manville Research, Inc., to conduct a personal, on-the-spot audit of architectural offices across the country. The study took a year to complete and provides us with an analysis of who used the file, how you used it, what you looked for and the action that you took. That's why this year, 75 leading manufacturers have filed 704 pages of product information in Section 29 tailored to your specific requirements... dimensions, installation details, specifications, appearance, applications, standards, availability. The type of information you told us that you need. Maybe next year it will be 2000 references every hour?

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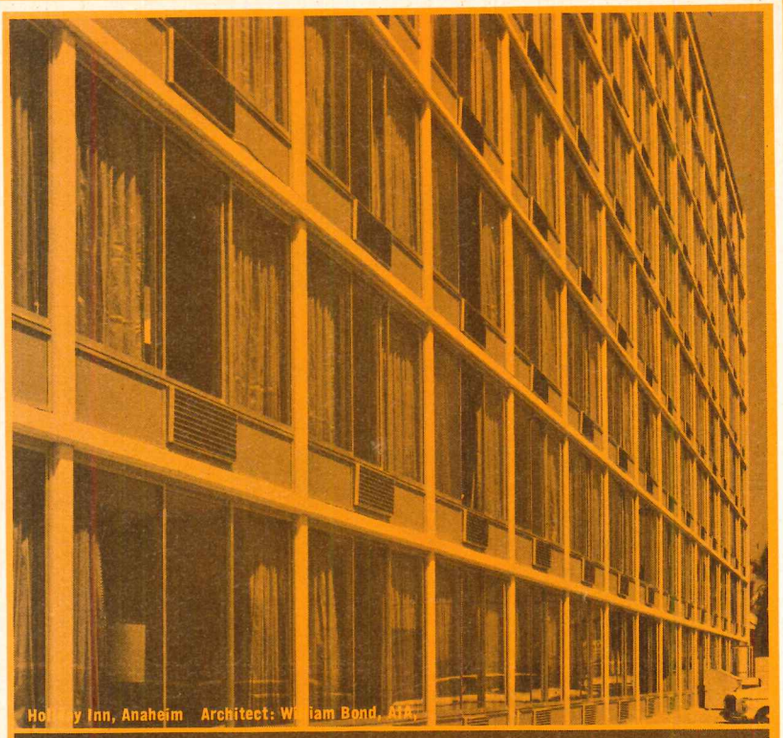
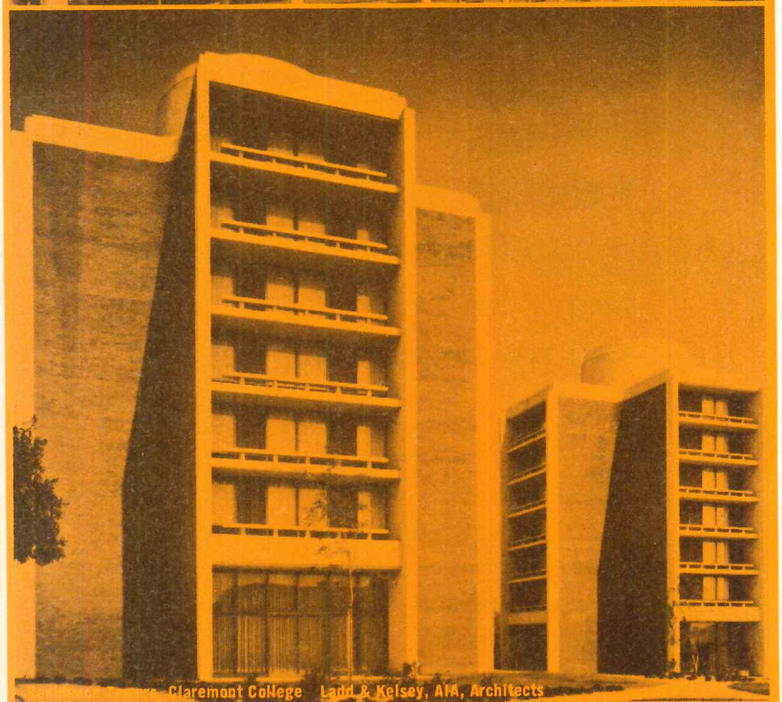
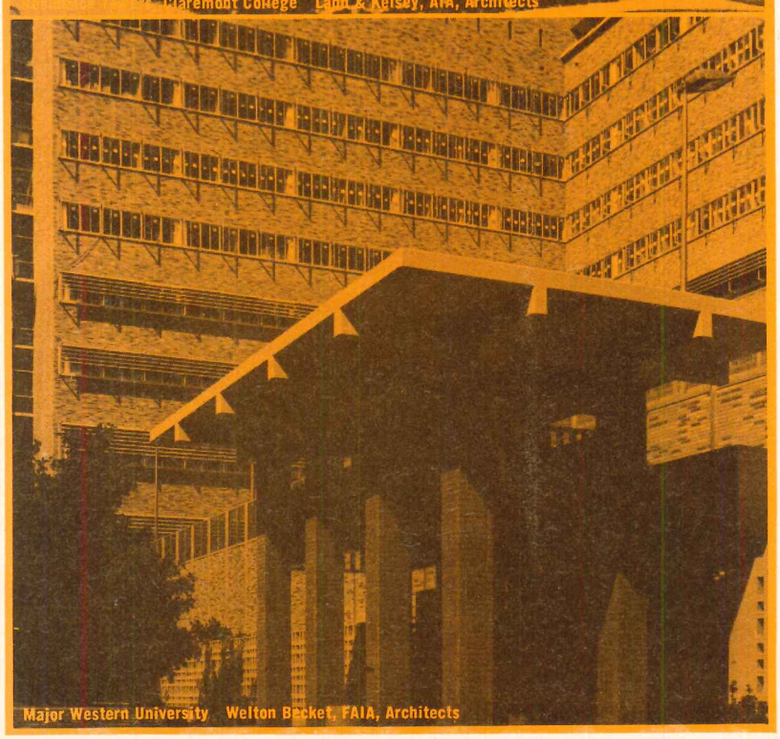
330 West 42nd St., New York, N.Y. 10036



Ho[illegible]y Inn, Anaheim Architect: W[illegible]iam Bond, AIA



[illegible] Claremont College Ladd & Kelsey, AIA, Architects



Major Western University Welton Becket, FAIA, Architects

An architect's best friend is a window wall system equal to this one. Any good window wall system saves time and money, yours and your client's. This one does more.
This one has the full-length pressure equalization slot, and a full-length patented flapper valve. No siphoning, no draft, no whistle. HS-A2-HP. Any kind of weather. High rise to any height.
This one is beautiful. Uniform sightlines, no fins, concealed weatherstripping, symmetrical both inside and outside, anodized as you want it. An architectural pleasure.
This one is stronger. Period.
This one costs less, if you can find a par quality. This one is built to your design, installs fast and easy under all conditions, has every feature you and your client need or want.
Allows individual air conditioning without extra reinforcing.
Is this really a "no-equal" product?
Judge for yourself. Evaluate the following specifications.

Can be installed in front of, between, or behind columns. Both width and height compensation for faulty openings. Both thermal and mechanical contraction or expansion allowed for. Any combination of fixed or sliding panels, custom to your design. Architecturally clean, uniform sightlines, no fins, weatherstripping concealed in panels for easy replacement. Symmetrical both

This superior, economical, window/window wall system will save time, labor and money, for you and your client, every time.

Ador A-70

inside and out, for easy stacking or joining. Adjustable mullion for continuous runs before columns of varying widths.
Full tubular sections for horizontal mullions, extra strength and rigidity. Quadruple wedge interlocks provide strength, no rattling.
Slides right or left, plus bypass for high-rise cleaning.
Fixed panels glazed from interior or exterior, high-rise convenienc
Full screen or half screen for either single or double slide windows
Anti-lift-out blocks, no unauthorized removal.
Standard lock can be placed at any height (above children).
Optional tumbler-type locks. Stainless steel reinforced locking plungers. Adjustable, heavy-duty, nylon-tired rollers, sealed and permanently lubricated. Air conditioning units in lower panel without extra reinforcing, to 12′ wide.
Clear or color anodized, to your specification.

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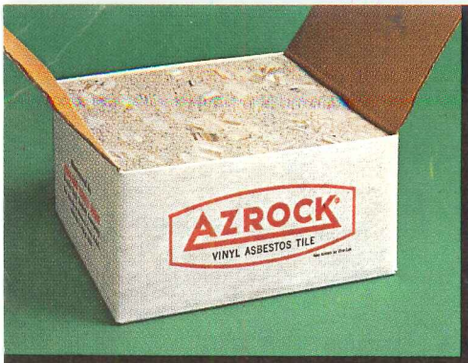
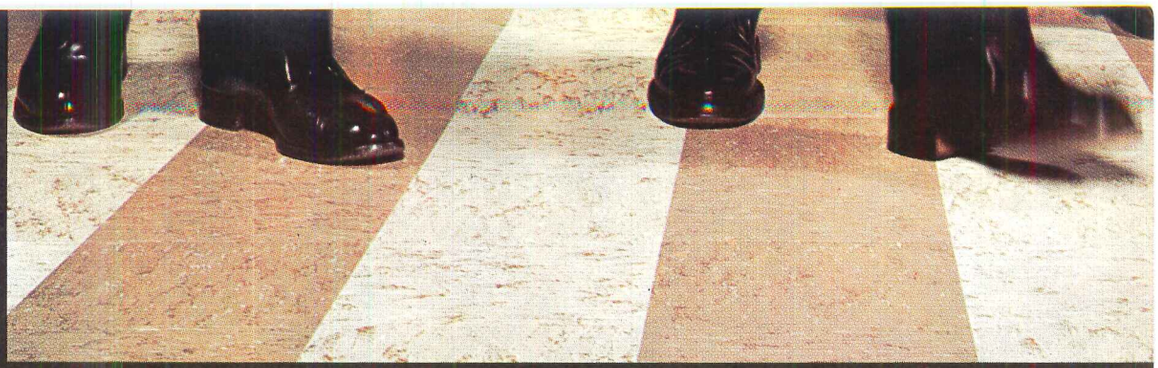
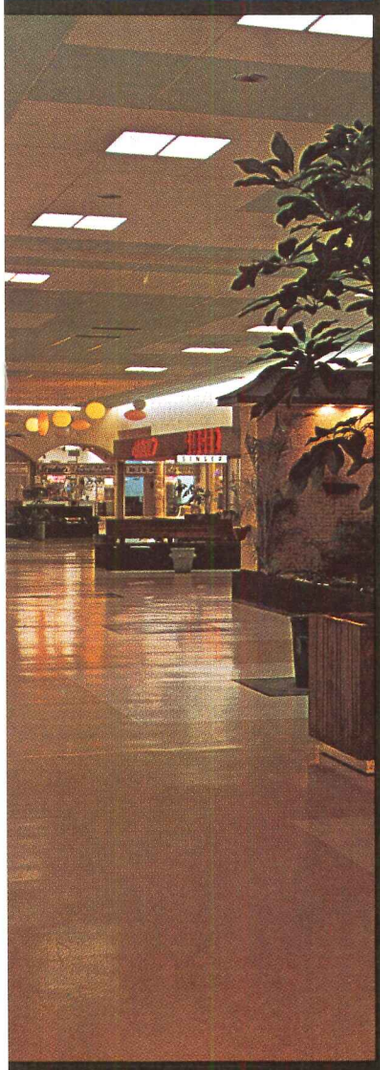




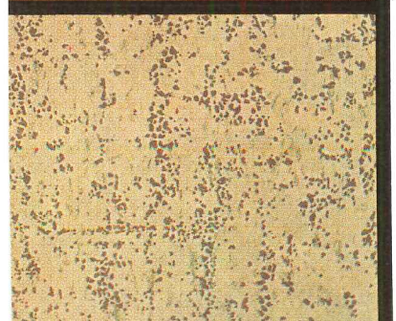
Carton Full of Miracles

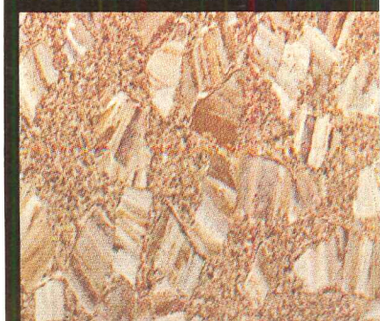
Azrock Vinyl Asbestos Tile. It's what's happening in shopping center flooring.

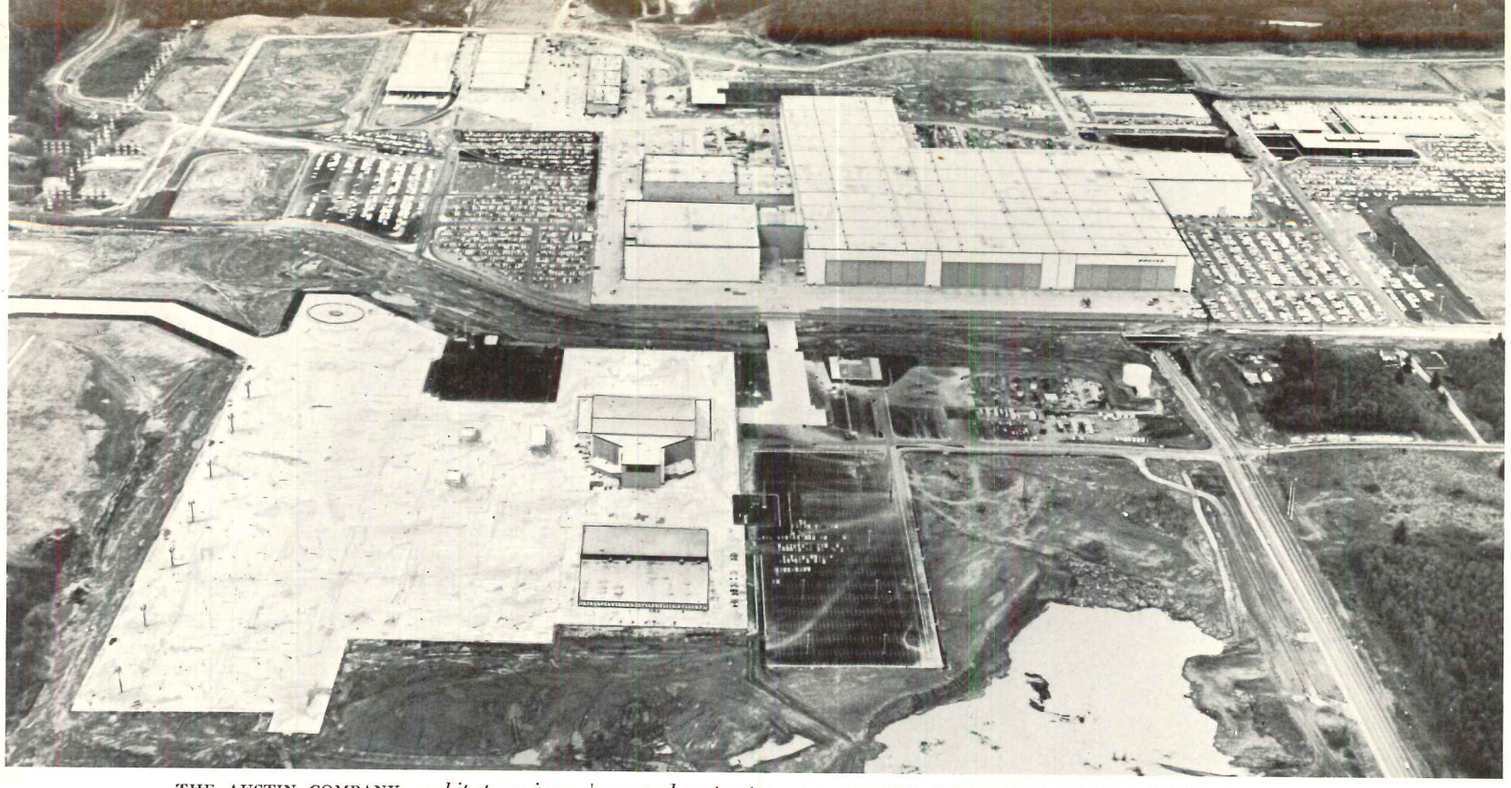


To shopping center planners and designers who equate value with beauty and performance, floors of Azrock vinyl asbestos tile rate exceptionally high. The designer can look to Azrock's "Carton Full of Miracles" for more than 120 colors and styles with which to create floors that look inviting . . . take the toughest foot and shopping cart traffic in stride . . . and do all this at a low initial cost and low maintenance cost unique among flooring materials. Put Azrock's creative styling and superior value to work on your next store project.

specify AZROCK® with confidence







THE AUSTIN COMPANY, *architect, engineer & general contractor* • UNIVERSITY MECHANICAL CONTRACTORS; URBAN, INC.; HASKELL CORP., *mechanical contractors* • CRANE SUPPLY COMPANY, *plumbing wholesaler* • CRANE COMPANY, *fixture manufacturer*

First 747 jet, the world's largest commercial jetliner, on the apron before Everett plant

Boeing 747 Manufacturing Facility

World's largest building— for world's largest commercial jet

205 million cubic feet—the world's largest building by volume—sits next to Paine Field in Everett, Washington, where over 12,500 workers turn out the world's largest jet airliner—The Boeing Company's 747 superjet.

Under one roof is housed space for manufacture, subassembly and final assembly of a jetliner 231 feet 4 inches long, with a wing span of 195 feet 8 inches and a tail 63 feet 6 inches high—taller than an average five-story building. Boeing's main assembly area here is 115 feet high and consists of three bays with 1,365,000 square feet of covered floor area. Adjoining are areas devoted to cleaning, sealing and painting sections of the aircraft before final assembly; areas for full scale mockups, static testing, warehousing, and plant services. Two office buildings and a cafeteria complete the huge complex.

Preparation of the 780-acre site began in Spring 1966. By the time peak production is reached in early 1971, over 17,000 are expected to be employed. Just as this huge complex houses the most modern manufacturing equipment in the aerospace industry, so its personnel facilities are designed for the utmost comfort of workers and visitors. For example, Sloan Flush Valves for the washrooms were selected—assuring quietness, efficiency, reliability and long life with a minimum of maintenance.

Owner, architect, engineer, employee and guest, all intuitively respond to the quality and performance found in Sloan Flush Valves. Your building, too, can share this same Sloan quality. Just specify and insist upon Sloan Flush Valves—most people do.

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