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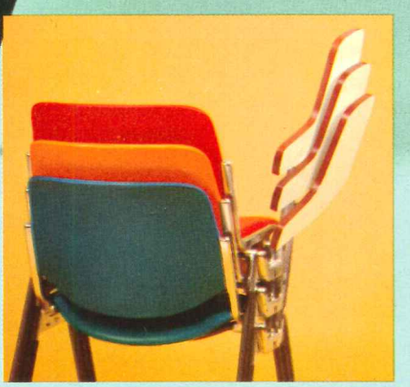

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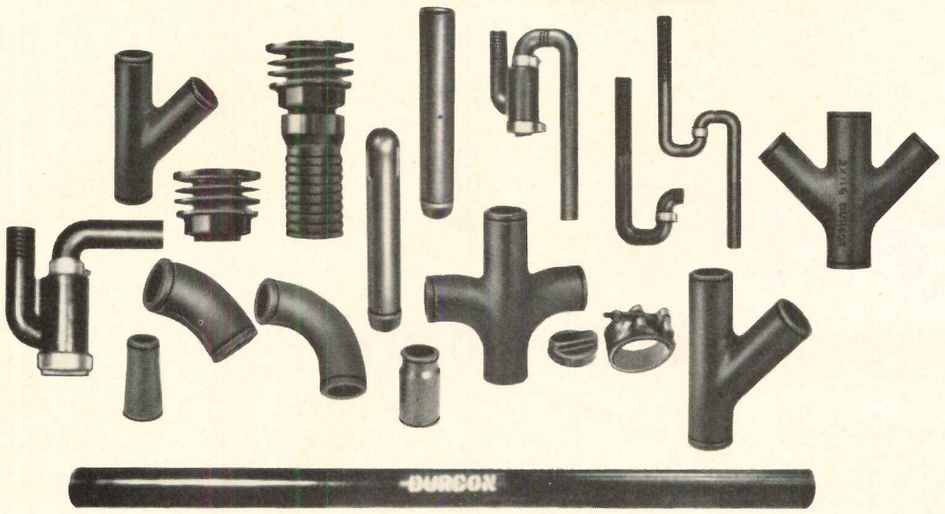

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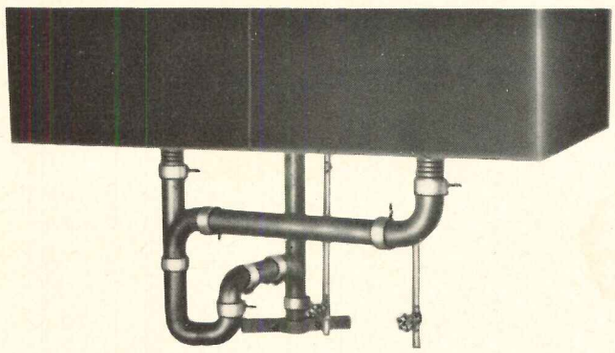

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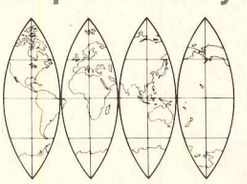

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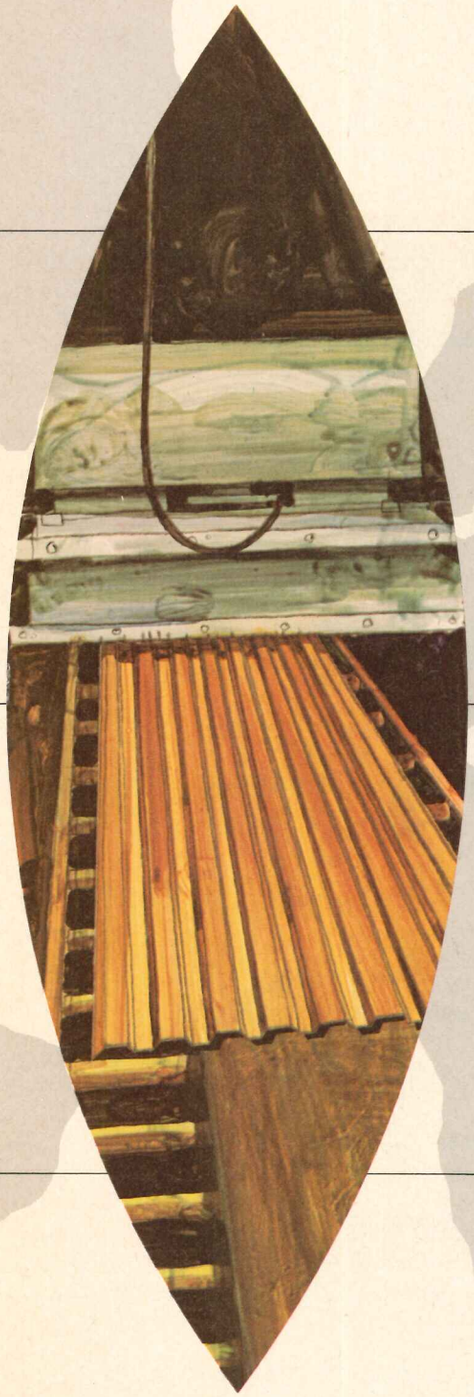

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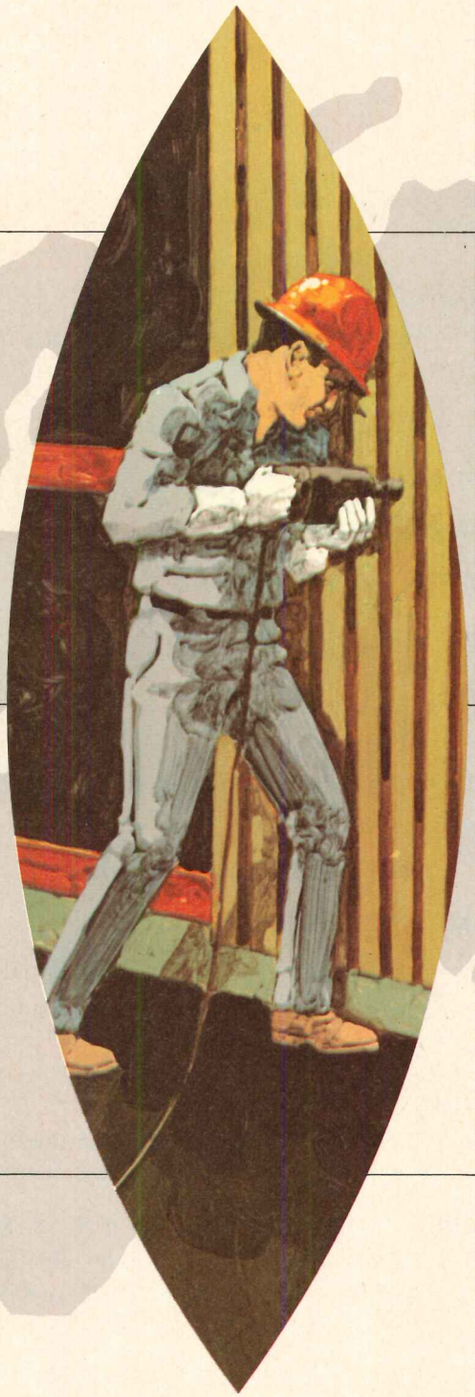

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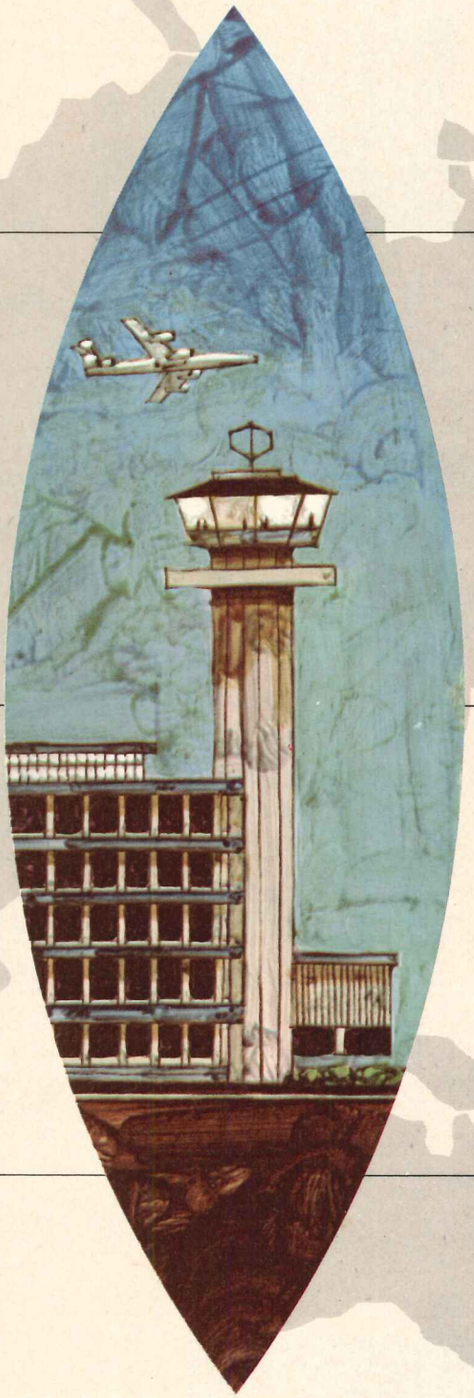

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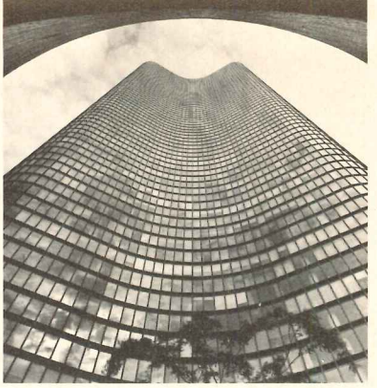

Cover: Lake Point Tower,
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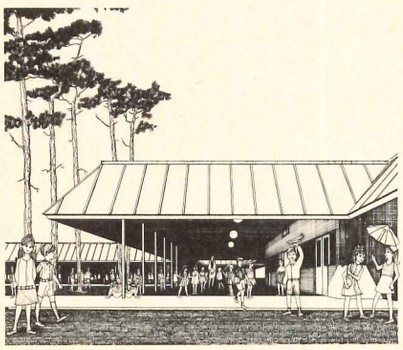

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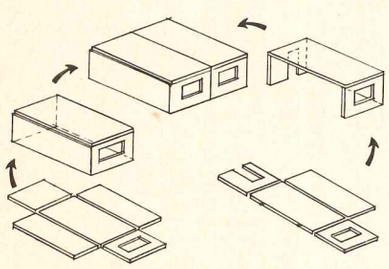

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BUILDING TYPES STUDY: THEATERS AND AUDITORIUMS

Several multi-facility performing arts centers will be shown, and each individual hall will be analyzed from the standpoint of its particular acoustic and performance requirements. Included among these complexes will be the Krannert Center for the Performing Arts by Harrison & Abramovitz, a major center with four halls and an amphitheater, which opened this fall at the University of Illinois. Also to be featured is L'Enfant Theater and Communications Center, part of L'Enfant Plaza in Washington, D. C. This unusual theater has been designed by Jan Hird Pokorny to function as a multi-media communications center by day and as a cinema in the evening.

A CHAPEL FOR TUSKEGEE INSTITUTE

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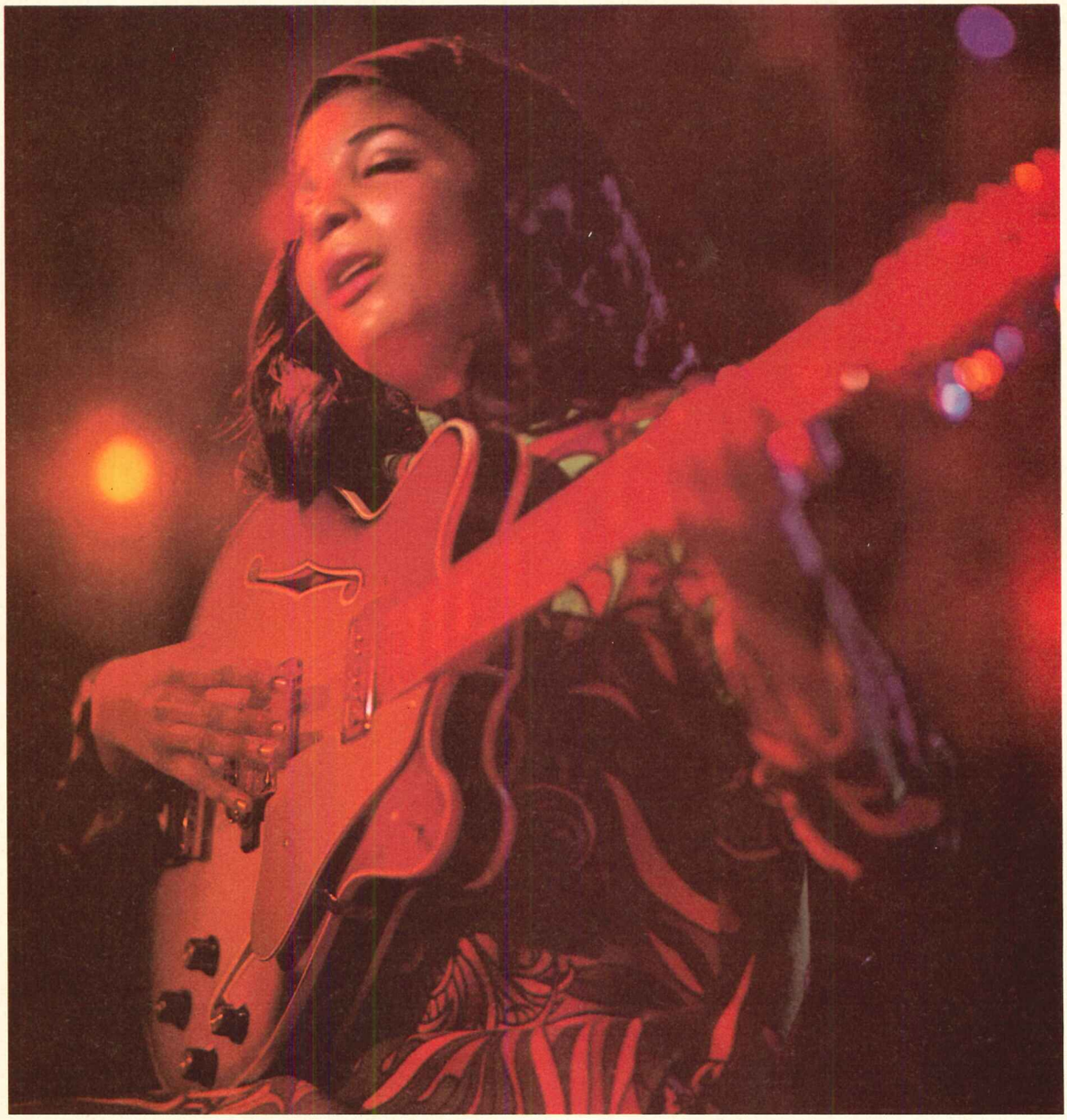

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Why is the building industry like the rebellious students?

Last week I read an article written by Dr. Bruno Bettelheim, who is one of this country's best-known psychologists, for the leading British journal of opinion Encounter. Entitled "Obsolete Youth," the article draws a profile of the adolescent (and especially student) rebellion that was enormously impressive to me because it explored the *reasons*—the deep-seated causes—for the rebellion without dramatizing the results or projecting any simplistic solution. He argues that:

"What has changed [over hundreds of years] is neither the adolescent turmoil nor the social and psychological pressures that make for it, but the ways of resolving it and the ultimate goals. These differences also constitute our problem today. . . . Then, as now, we see the same lumping together of all facets and institutions of society into one defamatory image. This is meant to symbolize a reality so monolithic that it becomes out of the question to improve one or another part of it at a time . . . thus it follows that the only thing left is to bring down the whole system. . . .

"The reliance is on inspiration because 'gut' reactions, according to which the cause 'feels' right, will prove its correctness. Since everything is based on felt, rather than thought-out, convictions, there is no program for what is to be done once the revolution succeeds. . . ."

Bettelheim asks "What do the dissenting youth, all around the globe, have in common?" In his view "Viet Nam and the Bomb serve youth as a screen for what really ails them"—which he believes is "their feeling that 'youth has no future' because modern technology has made them obsolete—that they have become socially irrelevant and, as persons, insignificant . . . their feeling that no one needs them, that society can do nicely without them. . . .

"Deep down," Bettelheim argues, "what youth is fighting against is . . . an America whose technology seems to have robbed them of any place in the real work of the world. . . ."

Thus, whether you agree with the thesis or not, "It makes sense that so much of their battle is fought in and around schools. . . . For it is education that prepares us for our place in the work of society."

Just one more quote to try for insight into your high school student or some architectural student you know who skips classes to work in an urban store front: "We should not overlook the symbolic meaning of the student invasions of the office of the President or Dean. Big in size and age, those who sit in feel like little boys with a need to 'play big' by sitting in papa's big chair. They want to sit in the driver's seat, and they want to have a say in how things are run, not because they feel competent to do so, but because they cannot bear to feel incompetent a single moment longer."

Again, you can agree or disagree with Dr. Bettelheim's analysis . . . what's important is: Out of all the hundreds of columns of type you've read about the student rebellion, how many have you read about the real causes of the student rebellion? How much analysis have you seen on the real reasons behind the stated reasons? And how much do you think can be done about solving the problem until we understand the real causes of the problem?

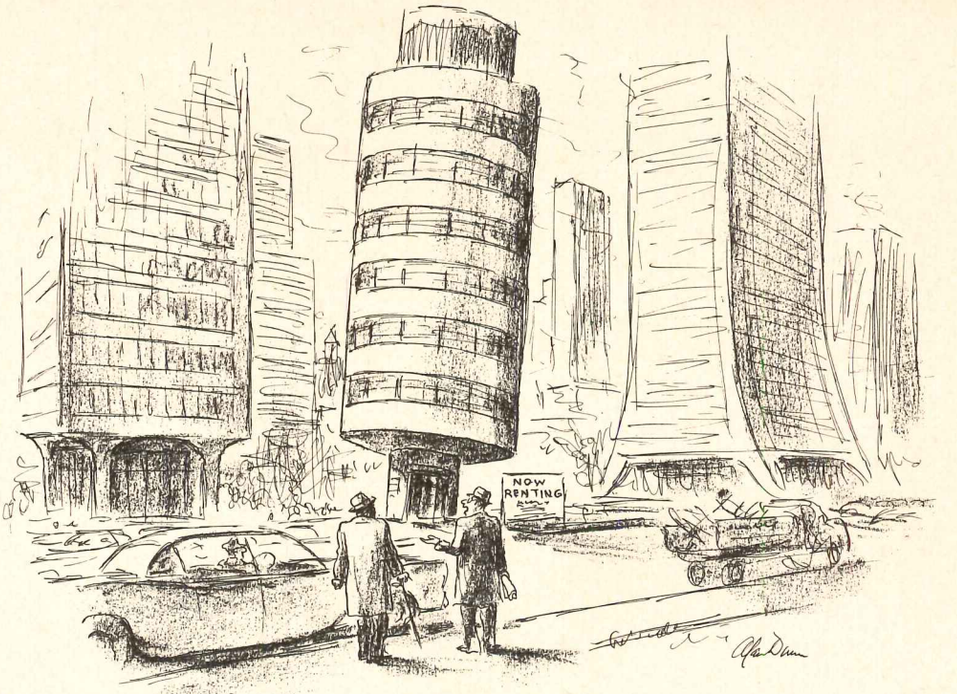
Which started me wondering just how much thinking have we (you, me, architects, the government) done to study the root causes of some of the problems that face architecture and the building industry, before we charge off to solve them? How many programs and actions have we taken not because we feel competent, but because we cannot bear to feel incompetent a single moment longer?

For example: President Nixon's "crackdown on construction." Early in the first week of September, Vice-President Agnew scared everyone in the building industry out of his fourth-quarter profits by leaking news of a "75 per cent cutback." On the 4th came the facts, which everyone read but few understood. The next day, the usually insightful editorial writers of the New York Times intoned that "President Nixon's order for a 75 per cent cutback in new Federal construction was made inevitable by the wild escalation of costs that has been occurring in an industry full of monopolistic and antisocial labor-management and practices." But by the 5th, almost everyone involved had realized, as did McGraw-Hill's chief economist George Christie, that "all that is intended for the present is a 75 per cent reduction of *new* (not work already started) *direct* Federal construction projects (not involving Federal aid grants to states and municipalities" . . . and had estimated (as did Christie) that "the estimate of actual reduction in expenditures comes to only $300 million. . . . As a move to relieve some of the pressure of excessive demand, and thereby inhibit inflation in construction, yesterday's small step is apt to be quite ineffectual." (For details, see Architectural Business, page 83.)

Thus the program—so vigorously announced—has had a two-fold non-effect: 1) the construction industry quickly determined that (at least in this first round) the threat was not a real threat, and thus 2) inflation will not be curbed (at least by this first-round effort).

My point is this: the Administration's

—Drawn for the RECORD by Alan Dunn



"Sorry about that, sir, but remember they thought Pisa was a lemon, too, at the time—"

cutback announcement (like the actions so far taken or not taken on campuses to quiet the student rebellion) has failed because it did not get to the real causes of inflation but simply tried to stop it by a stop-gap device (like calling the police).

Another example:

This spring, U.S. District Court Judge Richard B. Austin directed that the Chicago Housing Authority build three-quarters of all new public housing in census-defined tracts that are less than 30 per cent non-white and further (among other restrictions) directed that no public housing project be designed for occupancy by more than 120 persons (except in rare cases 240 persons), and that no families with children are to occupy units above the third story.

We all understand the intent of the judge's ruling (as we understood the intent of the President's cutback order), but what effect will it have? HUD is apparently a bit nervous about the effect. A joint memo from HUD and the Department of Justice indicated that "lack of data" about sites suitable for implementing the directive made them wonder if the ratio established was "appropriate." What they meant was that the decision could shut down the public housing program for lack of sites.

What is lacking in Judge Austin's directive is any study (or resolution) of the real underlying problems, any attempts to understand the root causes and real needs and do something about them.

In response to the Federal cutback order, Carl M. Halvorson, president of the Associated General Contractors, made a statement that, amidst considerable grumbling about "the root cause of inflation—excessive union power", made a point. After grumping that the average hourly wage for construction workers is $5.80 (which scarcely permits said construction worker to live a life of luxury), Mr. Halvorson correctly argued that, "Correction of inflationary forces in the construction industry will require practical bi-partisan political solutions if we are to pursue and develop our stated national goals. . . ."

Which brings me back to the point: What is desperately needed now is some real study of goals, the alternate goals, how we reach them, and what we must pay to reach them.

The "75 per cent cutback in construction" seems now to have been a trial balloon. The President has plenty of options open to him (other sticks to use), and he can indeed really cut back construction next time. It is clear that slowing inflation ranks at the top of his list of national goals —and he may decide to pay the price (that is, accept a fairly high level of unemployment) to reach that goal. Whether he makes that decision or not, let's have some discussion (like Dr. Bettelheim's discussion of the root causes of student rebellion) about the root causes of inflation; and stop blaming (as the New York Times editorial did) "the wild escalation of costs that has been occurring in an industry full of monopolistic and anti-social labor-management practices." It's of course not that simple.

Let's stop making (and then fighting) court directives to build "three quarters of all new public housing in census-defined tracts that are less than 30 per cent non-white". Instead, let's study exactly why so many suburban communities have "restrictive" zoning (which in my view, as stated here before, is not racial but economic), and offer some real and acceptable alternates to families on one hand who wish to maintain a standard of living that they have worked years to attain and families on the other hand who want a decent place to live and an opportunity for their children to get a decent education.

Let's stop grumbling about "intolerable wage demands" by construction workers, and get at the root cause of high construction labor costs—which is partially union strength, partially restrictive practices, partially a not-altogether-unique wish by workers for more money for the work they do, partially a not-altogether-unique wish by construction companies for more profit for the work they do, partially a matter of too much demand and not enough supply—and probably much more complex than that.

A few months ago, President Nixon announced the formation of a National Goals Research Staff. Its overall charge is to determine "consciously and systematically . . . what kind of a nation we want to be as we begin our third century." Specifically, the functions of the Goals Research Staff will include:

"Forecasting future developments, and assessing the longer-range consequences of present social trends. . . .

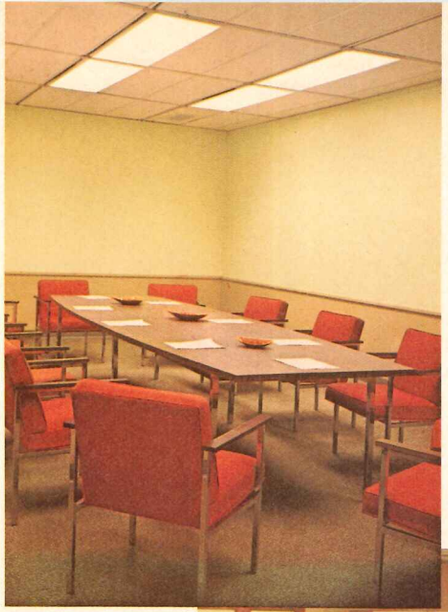
"Measuring the probable future impact of future courses of action, including measuring the degree to which change in one area would be likely to affect another. . . .

"Estimating the actual range of social choice—that is, what alternative sets of goals might be attainable, in light of the availability of resources and possible rates of progress. . . .

"Developing and monitoring social indicators that can reflect the present and future quality of American life, and the direction and rate of its change. . . ."

In my view, those goals and alternate goals are what is desperately needed—so that we can begin to attack our very real problems at the real causes—instead of using devices like "75 per cent cutbacks", and directives about where housing ought to be built and how many stories it ought to be, and searches for gee-whiz technology to "solve" our housing problems. Just as Dr. Bettelheim suggests that we find out just what is troubling the rebellious adolescent and do something about that (instead of stamping out what the adolescent does about his problem), we need to find out just what is troubling the building industry and the people who are the customers and users of what our industry creates—and then design and build to meet those real needs.

—Walter F. Wagner, Jr.



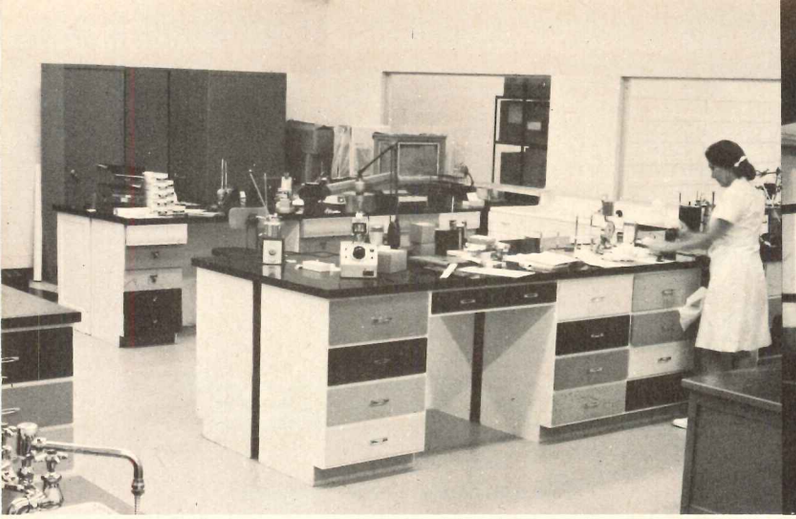
Lennox presents...

growthability in plant comfort: a case of "micro-climates" flexibility

For a manufacturer, growing room is basic in a new building design—for headquarters, branch or expanding complex. One growthability factor is a flexible heating/air conditioning/ventilating system. This is provided easily and economically by the "micro-climates" of Lennox packaged modular systems—add-on comfort zones that can expand with the building.

continued . . .

New 200,000 sq. ft. home of Kerr Manufacturing Company, Division of Sybron Corporation, in Romulus, Michigan, near Detroit. Offices and production areas are heated, air conditioned and ventilated by Lennox rooftop equipment. Architects: Robert Geudtner & Associates. General contractor: Butler Manufacturing Company. Mechanical contractor: Commercial Heating & Air Conditioning.



Critical laboratory testing of dental materials—daily routine in Kerr Manufacturing's Chemical Quality Control—calls for accurate temperature control and fresh air ventilation. Both are supplied by Lennox modular systems.

Careful planning is shown by Kerr's data processing room, with underfloor cable space for future equipment. Such rooms are isolated—but with broad expanses of glass for a "wide open" feel. The necessary "micro-climates" are provided by DMS and other Lennox modular systems.

Kerr employee comfort and laboratory-accurate temperature control are both provided by Lennox rooftop DMS units. Eleven such units have a total output of 192 tons of cooling and 5,350,000 Btuh heating. Twenty-three other Lennox modular units supply supplementary heating and make-up air. POWER SAVER™ equipment on DMS units provides free cooling when outdoor temperatures fall below 57°F.

continued . . .

growthability in plant comfort

The "how to" of facilities expansion often is a major bugaboo for a fast-growing company. But a great deal of those growing pains can be eased by thorough growth planning — not only of the building itself, but of such mechanical systems as heating, cooling and ventilating. These growth needs can only be met completely by such flexibility as that of Lennox modular systems.

An example of this advanced planning is found in the design of the Kerr Manufacturing Company building. The new home of this 78-year-old dental products manufacturer combines the growthability of Lennox "micro-climates" with that of modular Space-Grid construction by Butler Manufacturing Company. Walls, roof and comfort of the 200,000 square foot building system can be extended to keep pace with company growth—and without interrupting existing facilities.

Kerr's spacious and strikingly appointed cafeteria (center photo, preceding page), allows employees to gather in a relaxed atmosphere. The cafeteria has two separate comfort zones, individually controlled by thermostats mounted on opposite walls. Thus, air freshness and temperature are maintained, regardless of occupancy on either side.

No design restrictions are imposed by Lennox systems. For instance, Lennox Direct Multizone System (DMS) low-profile units can be concealed on the roof with little or no enclosure needed. They never steal valuable floor space. And their light weight allows use of non-loadbearing walls.

Roof-mounting frame reduces on-site labor. And the units are completely assembled, wired and tested at the factory. This is single-source responsibility, single-source savings: Lennox.

Bell Helicopter Company's new Logistics Center at Fort Worth is 209,000 sq. ft. of international customer service. Lennox rooftop modular systems here include both single-zone and multizone heating/air conditioning units. A Bell Model 205A aircraft lifted the units to the rooftop.

Bell's Logistics Center is served by 34 Lennox hidden rooftop units, with a total capacity of 700-plus tons cooling. Architects: Kirk—Voich. Engineers: Yandell & Hiller. General contractor: Cadenhead Construction Co., Inc. Mechanical contractor: Broyles & Broyles.

Lennox units are available for multizone or single-zone control, each compatible with the other. Gas, electric or oil heat source.

When you're planning a plant—or any other building—check first to learn why Lennox should be specified. See Sweet's 29a/Le—or write Lennox Industries Inc., 498 South 12th Avenue, Marshalltown, Iowa 50158.

LENNOX
AIR CONDITIONING · HEATING

Tachtronic Instruments, Inc., New Ulm, Minnesota, utilizes Lennox DMS for the critical temperature control (±1°C) required by their sensitive electronic components. The DMS automatic heating/cooling cycles also control humidity in this 24,000 sq. ft. plant. Engineers: Toltz, King, DuVall, Anderson & Associates, Inc. General contractor: Heymann Construction Co. Mechanical contractor: Osborne Plumbing & Heating.

For more data, circle 7 on inquiry card

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INNOVATOR is an integrated system of storage containers, mobile space dividers, work and display surfaces—a medium for a truly adaptable learning environment. Storage containers interface with a variety of base and suspension systems or stack and combine for flexible storage of equipment, supplies, and personal belongings.

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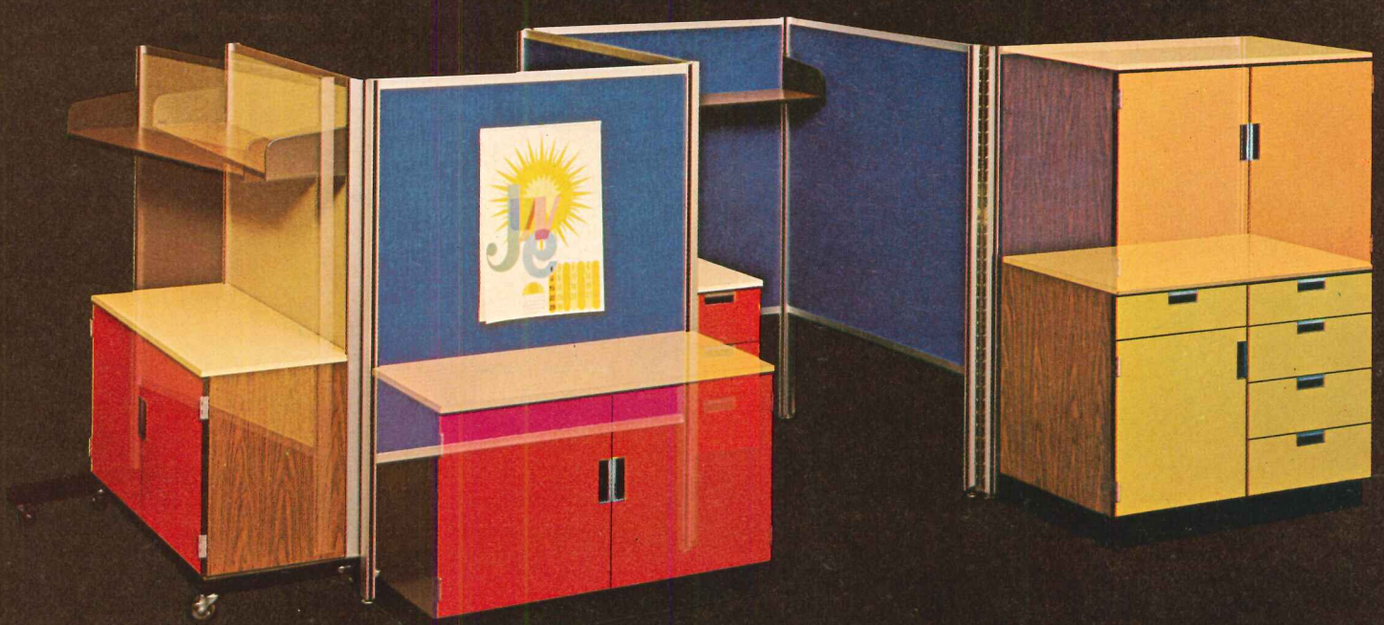

We interrupt this monsoon with the Pittco Seventy-Five Rainscreen.

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.

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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
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But the Communications Explosion is tossing your clients headlong into tomorrow—leaving your buildings bursting and straining to keep up.

Your clients depend on you to plan for their growing reliance on communications equipment.

And we'll be happy to help.

For a complete list of our Building Industry Consultants, call 212-393-4537 collect.

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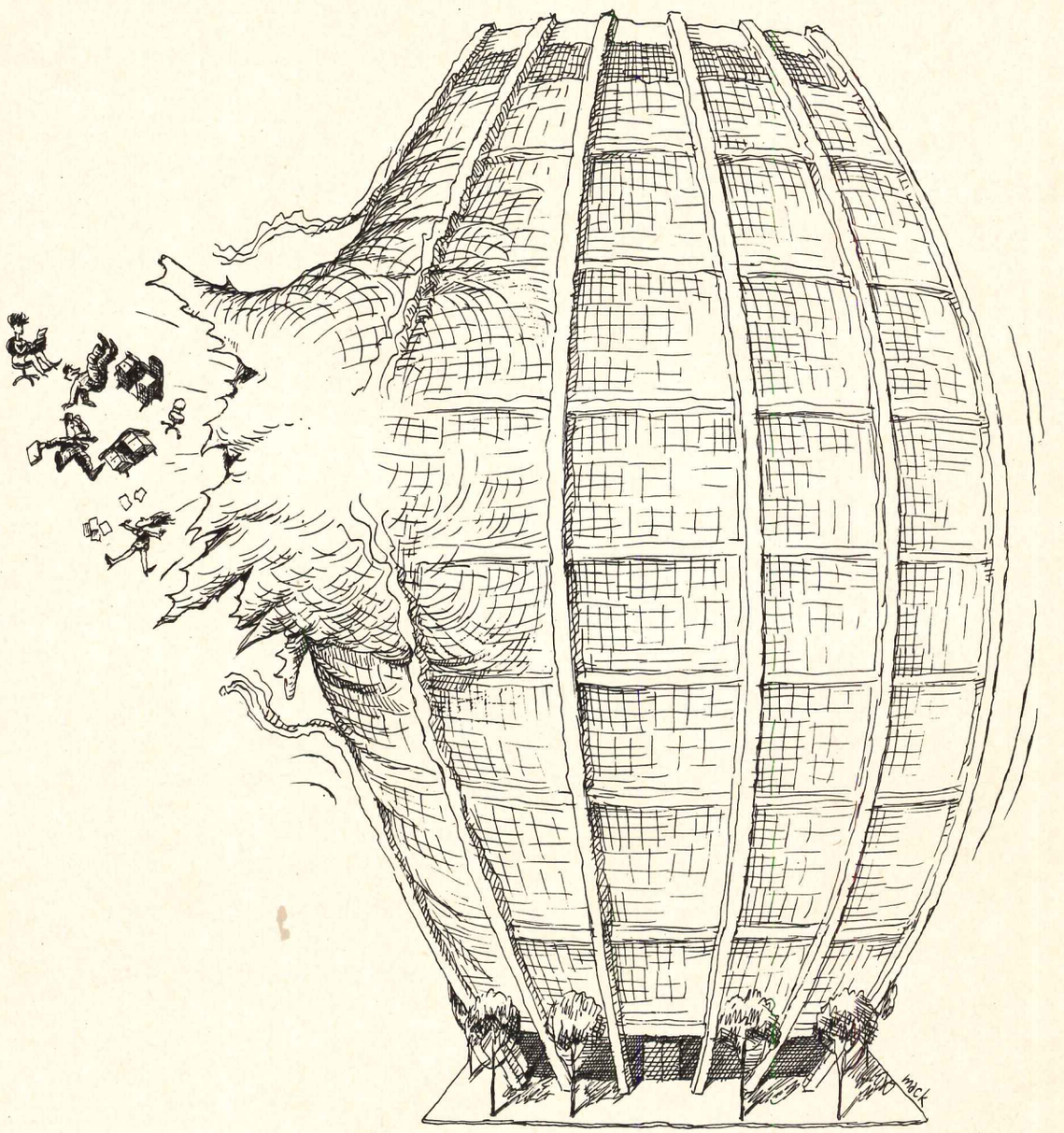

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CAPTAINS-OF-INDUSTRY CHAIR.

The Korbing/JG Chair shown here is only one in a broad collection of coordinated upholstered seating designed by architect Kay Korbing for executive suites. All are available in 22″, 25″ and 27″ widths with a variety of bases. For brochure, write J G Furniture Company, Inc., Quakertown, Pa. 18951.

JG

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Something like this "Play Tower" made of Western Wood.

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ARCHITECT: Craycroft-Lacy & Partners, A.I.A. DEVELOPER: Devane Clark, Dallas, Texas

Delta Faucet introduces

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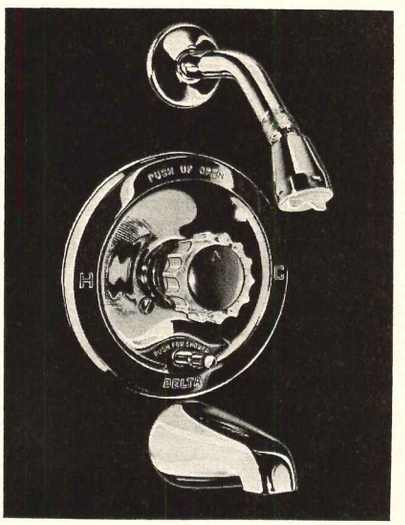
The safety valve.



Delta-Temp, soon to be known as the standard in "safety" tub and shower valves.

If you're tired of mis-matched valves in bathrooms, you're ready for Delta-Temp. It's the only Delta valve around that is accepted by Mrs. America, and she's waiting to know how she can have one—today!
Get one for yourself! They work!

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- Easily installed in remodeling or new construction.
- Sold and installed *only* by qualified plumbers.
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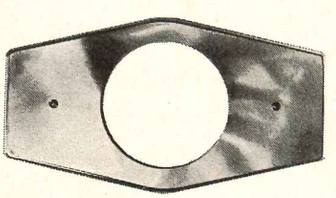

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#557 Remodel shower plate.

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Delta Faucet Company, Division Masco Corporation, Greensburg, Indiana 47240

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ANSO
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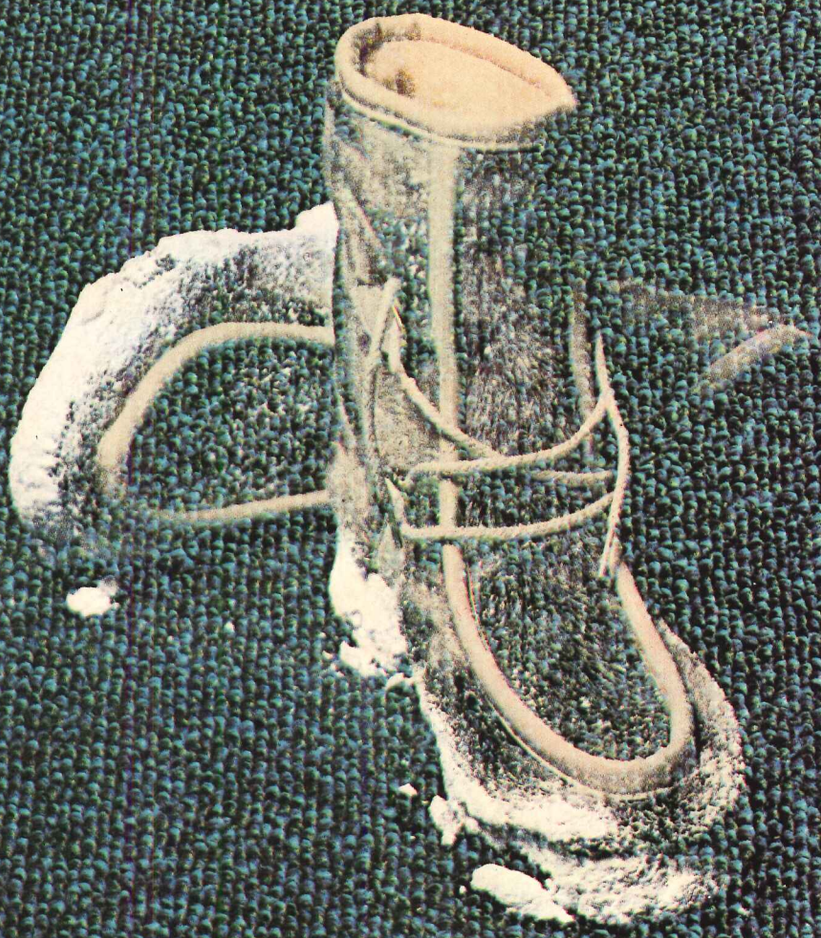

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Because ANSO does strange things with light. Turns it around to reflect the beauty, color, and texture of a carpet. But not the common dirt a carpet has to put up with.

ANSO is specially engineered to resist ugly soiling and extreme wear, which makes it the ideal choice for commercial carpeting.

If ANSO happens to cost more than ordinary nylon, it's worth it.

Because ANSO keeps looking new. Longer.

ANSO™ The Nylon Fiber That Makes Dirt Seem To Disappear.

Allied Chemical

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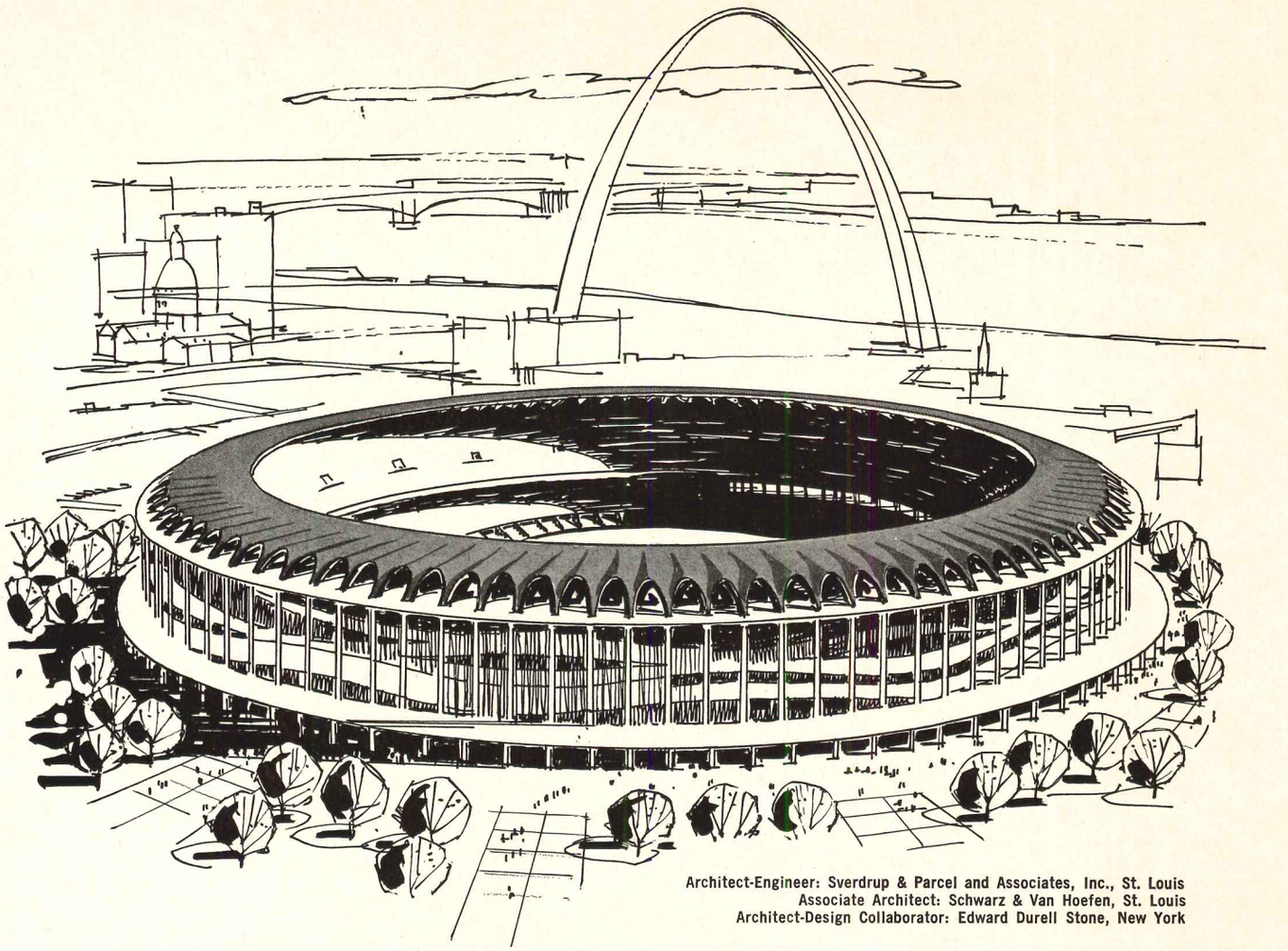

Architect-Engineer: Sverdrup & Parcel and Associates, Inc., St. Louis
Associate Architect: Schwarz & Van Hoefen, St. Louis
Architect-Design Collaborator: Edward Durell Stone, New York

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This is one of the important reasons fluid roofing was specified for Civic Center BUSCH MEMORIAL STADIUM in St. Louis (home of the baseball and football Cardinals).

The stadium's long span, multifaceted, cast-in-place concrete roof is subject to contraction and expansion. Fluid roofing of elastomeric Du Pont Neoprene and HYPALON* accommodates these movements. It protects the concrete against deterioration throughout the seasons.

Neoprene and HYPALON cure quickly after application to form a tough, continuous, weathertight membrane that resists ozone, sunlight, weathering, industrial fumes and abrasion. It's flame resistant, too. And HYPALON can be furnished in a wide range of colors.

When properly applied by experienced roofing contractors, fluid roofing delivers long-term dependable performance.

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Du Pont makes both Neoprene and HYPALON, not fluid roofing compositions. Write for data sheet. Du Pont Company, Room 6863, Wilmington, DE 19898.

*Reg. U.S. Pat. Off. for Du Pont synthetic rubber.

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Neoprene and HYPALON®

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the quiet design

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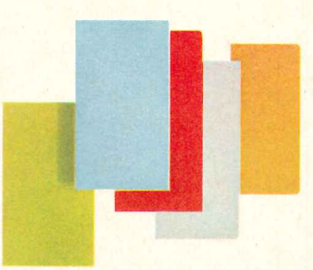

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Write for new Bulletin 600 A36, "A Climate for Learning." Or see your AAF/Herman Nelson representative. American Air Filter Company, Inc., 389 Central Avenue, Louisville, Kentucky 40208.

AAF **Herman Nelson**
SCHOOL PRODUCTS DIVISION

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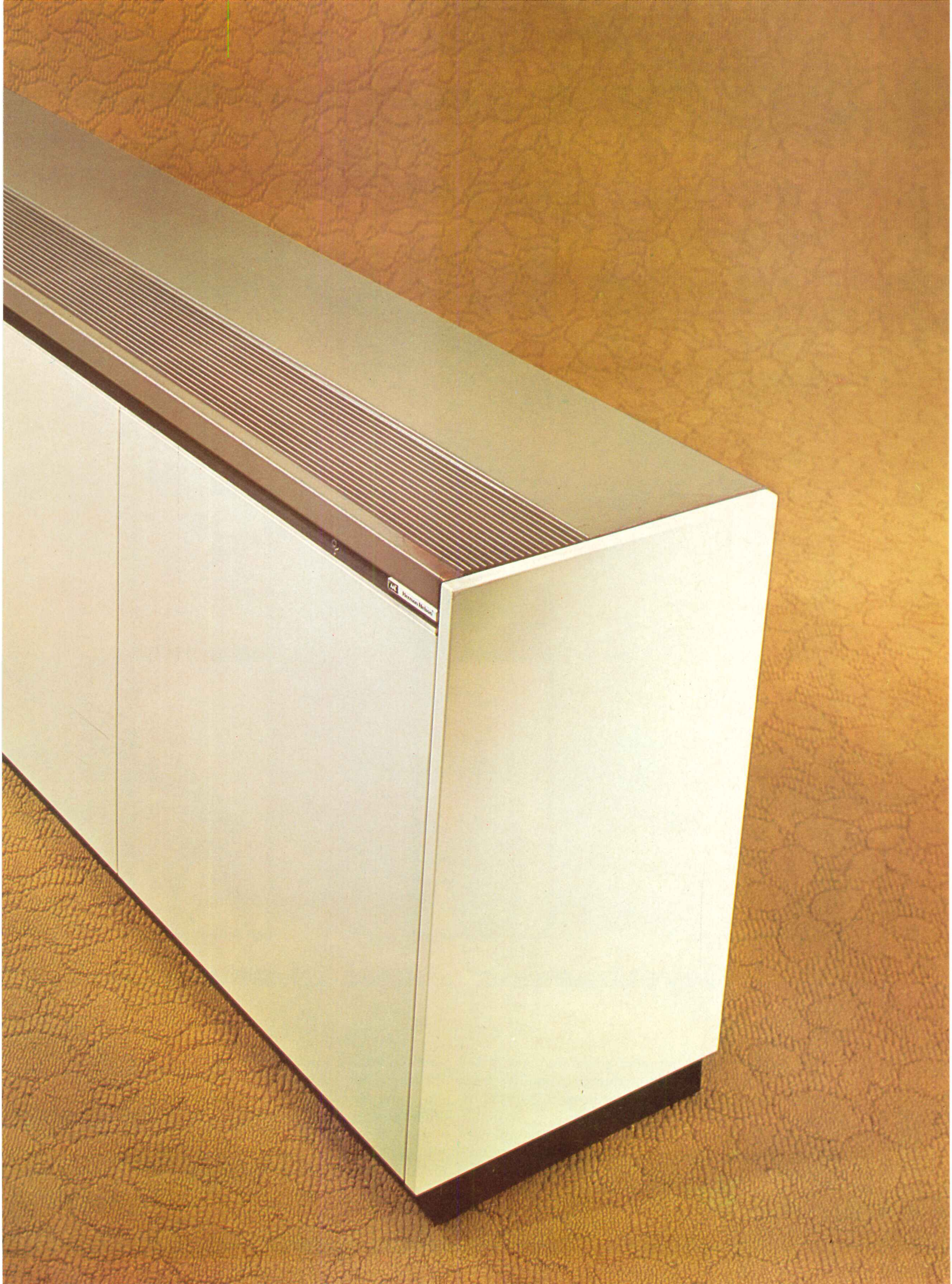

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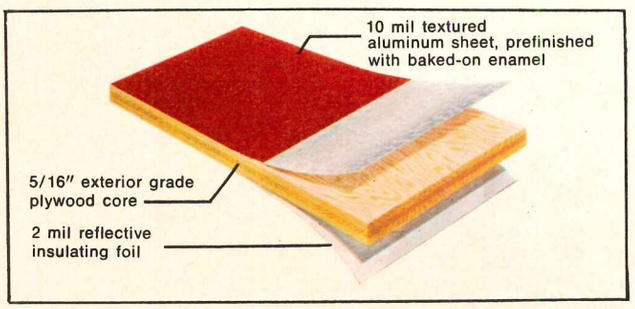
But don't let the bright, good looks fool you.

Underneath that 10-mil textured aluminum face there's rugged Structural I exterior-type Douglas fir plywood.

With this combination of good looks and high performance, Weyerhaeuser Prefinished Siding / Panel 15 goes just about anywhere. It's a great siding. And a hard-working interior paneling that can take it where the going is rough. Bend it, if you like, for a mansard roof. Use it as balcony screening (you can specify double-faced panels for this kind of application). As school lavatory walls. For curtain walls. For soffits. You name it.

And Weyerhaeuser has gone a long way to help

23 basic colors. Or dream up your own.



Panel 15 go even further. We have a complete line of accessories. And non-treated Panel 15 carries a Class II flame spread rating. (Panel 15 is also available with a Class I rating when required.)

Want to know more? Just send us the coupon on the next page, and we'll send you our new catalog. →

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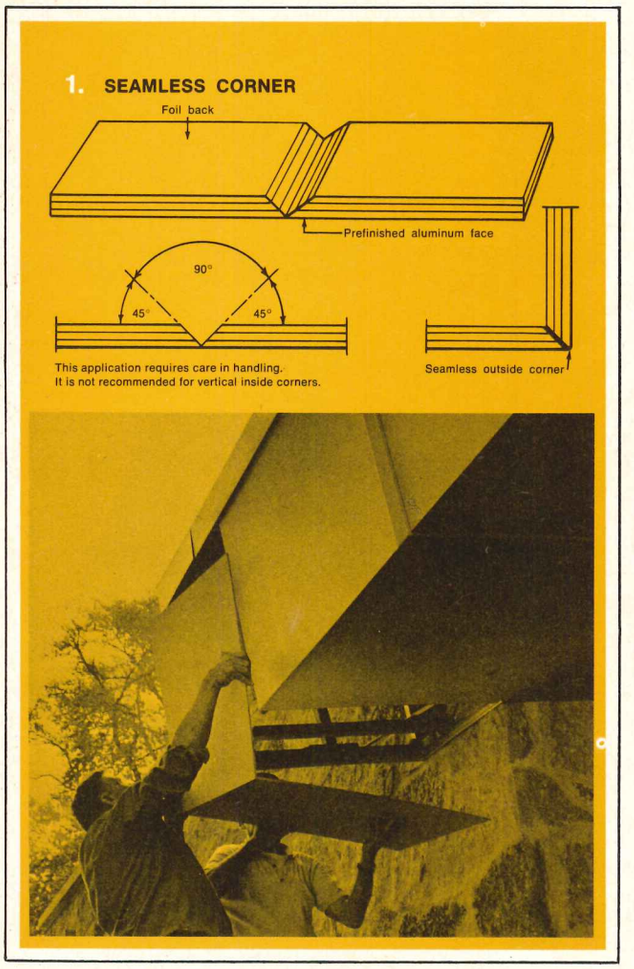
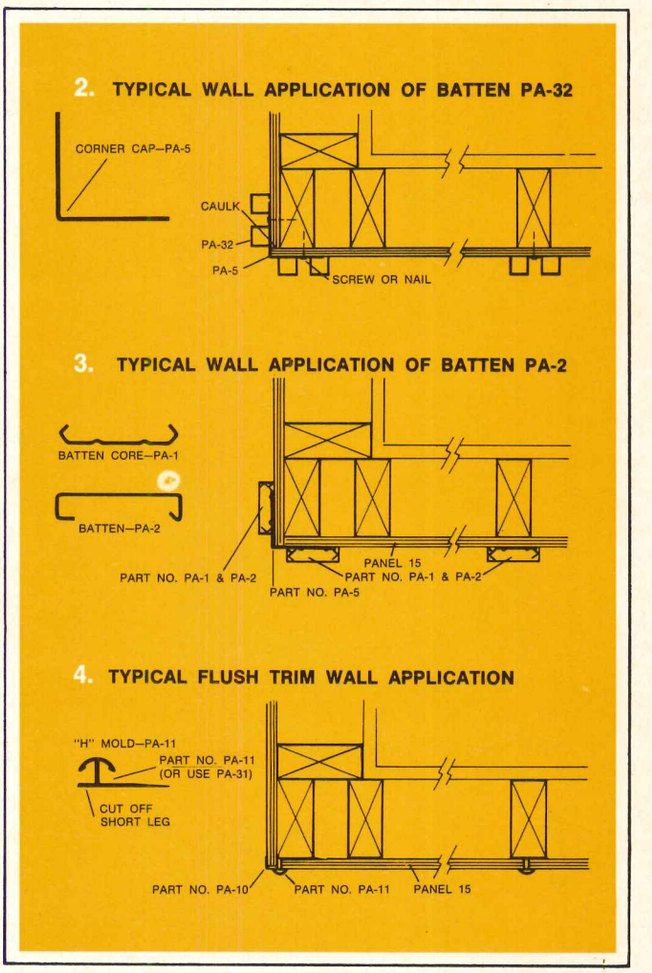
Four ways to turn a neat corner with Weyerhaeuser® Panel 15.





There's a lot more to Panel 15 than the panel itself.

This is a complete exterior cladding system with a wide variety of useful accessories and trim items. They're engineered to fit the product in almost every type of application.

But the beauty of this panel is that it can stand alone. If your design scheme calls for unique detailing, Prefinished Siding/Panel 15 can be handled just like any other plywood. It works easily. And the pebbled surface texture harmonizes with just about anything, including natural wood surfaces, masonry, fabric and other interior surfaces.

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Send the coupon. We'll mail you a copy of our new catalog right away.

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News in brief

William L. Slayton will succeed William H. Scheick as executive director of the American Institute of Architects before the end of this year. Mr. Scheick, executive director since 1961, will continue to serve the A.I.A. as a consultant. Mr. Slayton has been with Urban America, Inc.—first as executive vice president and since last month as president—since he resigned his post as Commissioner of Urban Renewal in the U.S. Housing and Home Finance Agency, HUD's predecessor, in 1966. He had previously been with I. M. Pei & Partners and Webb & Knapp, Inc.

Tax reform and the 75 per cent cutback in Federal construction are worrying builders, but despite the outcries, it looks as if construction won't get seriously hurt, at least for the time being (pages 9 and 83).

The Texas Conference on Urban and Community Affairs, sponsored by the Texas Society of Architects, produced optimism and enthusiasm among its participants, more than 800 leaders of the business and political world, and the design disciplines (see page 36).

David Brower, former president of the Sierra Club, has set up a new conservation organization, Friends of the Earth, an international, politically active group with offices in (so far) New York, San Francisco, London and Switzerland. A major program will be the formation of a League of Conservation Voters, who will work to elect candidates committed to conservation. Friends of the Earth will publish the International series of books on natural sites, such as the Galapagos, which the Sierra Club originally brought out.

Yale will hold a competition for its new Mathematics Building this fall. The competition is open to all architects "registered and resident in the continental United States." Five first stage winners will receive $10,000 each. Jurors: architects Edward Larrabee Barnes, F.A.I.A., E. Kevin Roche, A.I.A., Romaldo Giurgola, A.I.A., and John Christiansen; Charles E. Rickart, professor of mathematics; Vincent Scully, professor of the history of art and Yale official Edward Dunn. The deadline for registration is November 14, and entries are due January 5, 1970. For information, write Charles W. Moore, A.I.A., Professional Advisor, Yale Mathematics Building Competition, 1146 Chapel Street, New Haven, Connecticut 02510.

Thousand Oaks, California, has awarded first place to Robert Mason Houvener, of San Diego in its national competition for a civic center. Over 700 registered, and more than half of those submitted proposals to the competition. The civic center will cover twenty acres of the town near Los Angeles.

The 1969 convention of the California Council of the A.I.A. will be on the theme, "Earth/2000." The meeting at Palm Springs will include talks by Moshe Safdie, Francis Lethbridge, F.A.I.A., David Brower, and Jean-Michel Cousteau, the son of the oceanographer-explorer, Jacques Cousteau.

"Toward Total Architecture—Teams and Systems" will be the theme of the annual convention of the Society of American Registered Architects to be held in Chicago at the Palmer House November 1-5.

"The Crisis in Housing—The Role of Industrialization" will be the theme of the Building Research Institute fall conference, to be held in Washington, D.C. November 5-7.

The new Chairman of the National Council on the Arts will be Nancy Hanks, up to now the executive secretary of the Rockefeller Brothers Fund. She replaces Roger Stevens. Miss Hanks will administer an annual budget of $7 million (if Congress gives its approval) to implement cultural projects.

The 1969-70 "Directory of Behavior and Environmental Design" is available from the Research and Design Institute and contains the names, addresses, and brief descriptions of the work of people from nearly three dozen disciplines related to environmental design. The Directory includes architects, economists, engineers, psychiatrists, lawyers and urbanologists, to list only a few. It is available from the Research and Design Institute, P.O. Box 307, Providence, R.I. 02901 for $3.00.

Optimism at the Texas Conference on Urban and Community Affairs

More than 800 planners, architects, politicians, businessmen, conservationists, community leaders, educators, psychologists and engineers from all over the country attended the Conference on Urban and Community Affairs at Austin, Texas September 7-9. Governor Preston Smith sponsored the session, but the Texas Society of Architects planned and subsidized it.

Governor Smith, who apparently had a "show-me" attitude at first in spite of his endorsement of the meeting, was so impressed after the first day he decided to appoint a task force to make a study of education, health, housing, human resources, transportation, public protection, natural resources, economy and general government facilities. He suggested local governments set up similar studies.

George Kassabaum, former president of the American Institute of Architects, urged the conferees to "take up the fight for humanizing the urban scene. . . . We must lose our timidity and begin to preach intangibles as if they were important."

Secretary of Transportation Volpe was preaching tangibles: "Unless we start now to utilize transportation as an instrument of urban design, we are headed for deep trouble. . . . Our highway system, extensive and effective as it is, needs company. It needs efficient public transportation." Volpe pointed out that the Federal government had spent more money on highways in the preceding six weeks than on public transportation in the past six years.

Stewart Udall, chairman of the Overview Group and former Secretary of the Interior, deplored the forces that are "homogenizing" American life, producing "look-alike cities" that are becoming uglier and less livable. Up to this point, said Udall, city officials who have "tried to grow on the cheap" have caused a general mediocrity and joylessness.

The meeting broke into seven panels on such subjects as education, central cities, conservation and transportation; the panelists included Marie McGuire of HUD, Alan Voorhees of the American Institute of Planners, Ian McHarg, chairman of the Department of Landscape Architecture at the University of Pennsylvania, and Dr. Paul Briggs, superintendent of Cleveland's schools.

The West Texas town of Tulia (population around 7,000) sent six people, its mayor and city council. The Mayor of the panhandle town of Friona (population 4,500) said the meeting "opened up a whole new vista for me."

Mr. Udall said the meeting "has already been profitable in making political leaders realize that architects and conservationists have something irreplaceable to contribute. . . . At the same time I hope it has made the architects and conservationists better politicians."

After the meeting, David Graeber, A.I.A., its co-organizer, said "We architects are in the urban business now. . . . I think because of this more architects are going to commit themselves to solving these problems than ever before. . . . I also think we got one point across very strongly to mayors and councilmen and officials. That is that these things are not just something they are reading about—they are happening here . . . and we have to start doing something about them."

Yale School of Art and Architecture reorganized

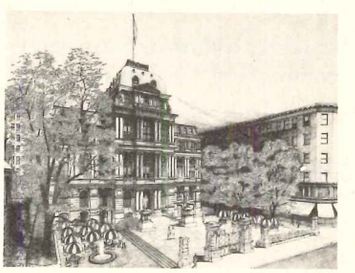
Yale has reorganized its School of Art and Architecture. According to Yale's President Kingman Brewster, under the new interim plan the school will have two deans. Charles W. Moore, who was Chairman of the Department of Architecture, will be Dean of the Faculties in Design and Planning; and Howard S. Weaver, who was Dean of the School, will now be Dean of the Faculties in Arts. Mr. Moore will also serve as Director of Studies in Architecture. Christopher Tunnard will serve as Director of Studies in Planning. Mr. Tunnard was relieved of the chairmanship of the planning department this spring after a student-faculty group within the department sent letters of acceptance to twelve students without authorization (June, page 36).

The reconstruction of the Art and Architecture Building, following the June fire (July, page 36; September, page 35), has been held off until such "reconstruction could be related not only to improvements but also to the outcome of the review of all the programs and objectives of the school."

Landmarks: saved and imperiled

■ In San Francisco, the Old Mint (above), an 1869 Greek Revival monument, designed by Alfred B. Mullet, and one of the few major buildings to withstand the 1906 earthquake, recently came into the possession of San Francisco State College, which wants to build a high-rise downtown campus on the site. The Northern California Chapter of the A.I.A. has called the Mint's destruction "unthinkable" and the National Trust for Historic Preservation and the National Park Service are also trying to save the building.

■ The west front of the Capitol, the last remaining exterior of the original structure, is once again in danger. According to the Capitol Architect, engineer George Stewart, shock waves from a low-flying helicopter could trigger its collapse. Mr. Stewart proposes an 88-foot extension of the front. The American Institute of Architects agrees the walls must be repaired, but wants them preserved in their present position. The House Appropriations Committee has approved $45 million for the extension, but the funds haven't yet been voted.

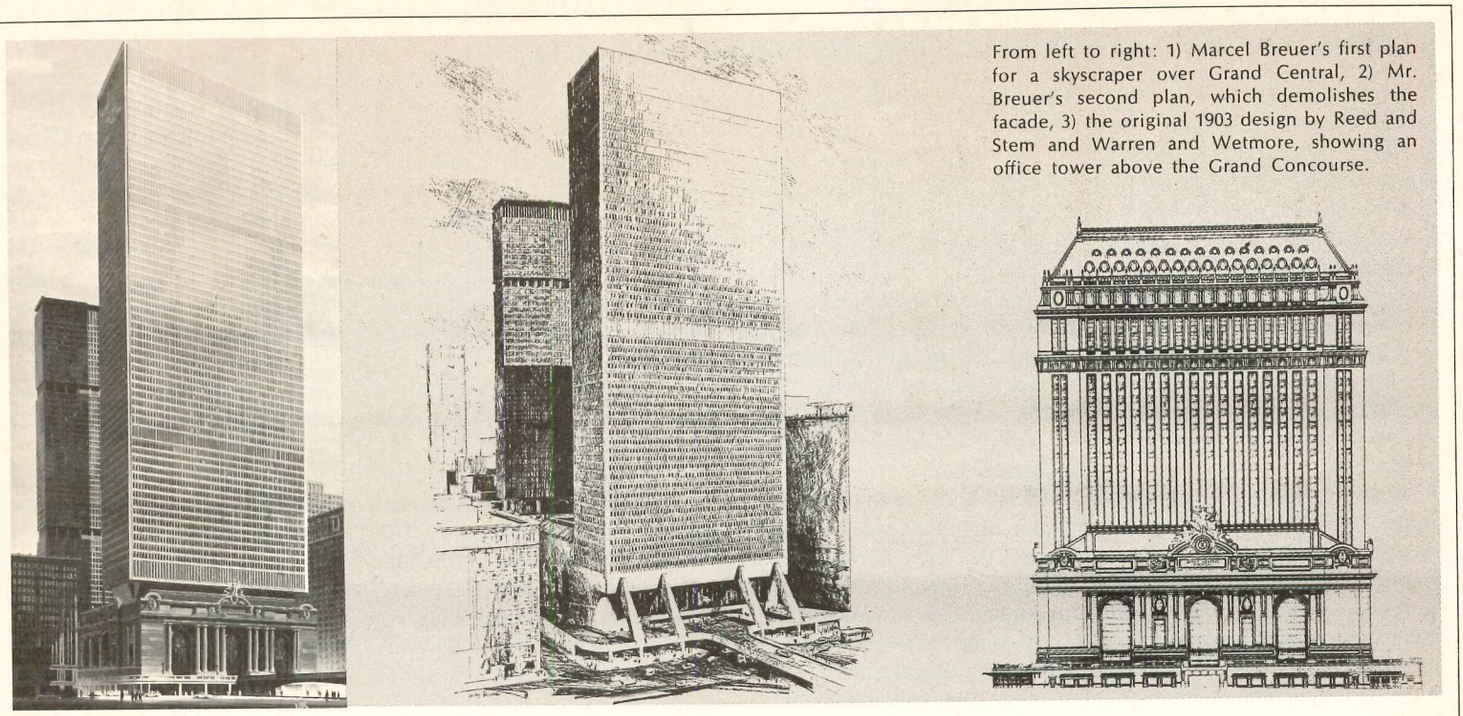


■ The Boston City Hall (above) will be saved—no, not *that* City Hall—but the one the famous new building replaced. The 1865 building, by Bryant and Gilman, will contain history displays, a restaurant and offices (March 1969). It is being restored by a private non-profit group, the Old City Hall Landmark Corporation, a subsidiary of Architectural Heritage, Inc.

■ In case you've been hearing those rumors that Lever House might be torn down, quell them. Lever Brothers says it isn't so.

Richard Neutra to teach in California

Richard Neutra has returned to the United States after more than two years in Vienna. This fall, he will be a lecturer at the Institute of Environmental Design at California State Polytechnical College in Pomona. Neutra recently received his sixth honorary degree, a Doctorate of Fine Arts, from the University of California. An exhibition of drawings, models and photos of work by Neutra and his son, Dion, appeared at the Smithsonian Institution from July through September; the Smithsonian plans a second, traveling Neutra exhibit for the near future. Neutra's book, *Survival Through Design* (Oxford University Press, 1952), has been printed in paperback with a new dedication to Frank Lloyd Wright in honor of the hundredth anniversary of Wright's birth. The Army has bought 5,700 copies, the entire first printing, as well as Wolf von Eckardt's "A Place to Live", which Dell is publishing in paperback. The books will be distributed, along with other titles of all kinds, for general reading, largely overseas, and especially to troops in Vietnam.



From left to right: 1) Marcel Breuer's first plan for a skyscraper over Grand Central, 2) Mr. Breuer's second plan, which demolishes the facade, 3) the original 1903 design by Reed and Stem and Warren and Wetmore, showing an office tower above the Grand Concourse.

New York City's Landmarks Commission gives Grand Central Station a reprieve

The Landmarks Preservation Commission of New York City has refused to allow the Penn Central Railroad to construct a skyscraper over Grand Central Station. Far from laying the issue to rest, the action has set off a legal battle that may go as far as the U.S. Supreme Court. The final decision is likely to be a landmark itself.

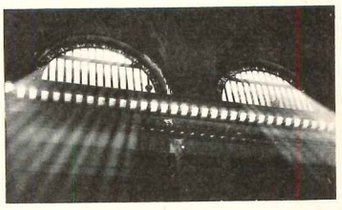
The original 1903 design for Grand Central, by Reed and Stem and Warren and Wetmore, called for a 25-story office building above the Grand Concourse, and, according to the Penn Central, the steelwork for the foundation was constructed. In the 1950's the railroad revived the idea, which eventually took the form of two office towers; the first became the Pam Am building (May 1962 and May 1963), and the second, above the terminal itself, was to follow as economics seemed to demand.

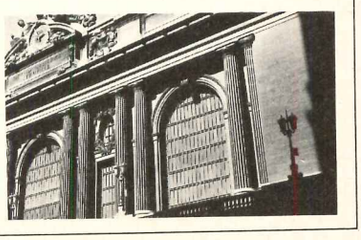
The firm of Marcel Breuer made its first study for this building in 1958. However, in 1966, the Landmarks Commission, which had come into existence a year before, designated Grand Central Terminal a Landmark. This gave the city the right to decide on any exterior changes to be made. In 1968, the railroad decided to build the second tower, a 56-story slab which Mr. Breuer cantilevered over the station to preserve the Beaux Arts facade in accordance with its Landmark designation (July 1968, page 36, and August 1968, page 9). The Landmarks Commission rejected the proposal, calling it an "architectural joke." Mr. Breuer then submitted a design, later slightly modified, which would demolish the facade, but save the Concourse and improve subway, automobile and pedestrian circulation facilities. This is the proposal which the Landmarks Commission has just denied.

Penn Central has leased the air rights to a British developer, Morris Saady, for 75 years at $3 million a year. In effect, the railroad, which has been in deep financial trouble for years, stands to lose hundreds of millions as a result of the Landmarks Commission decision. Mr. Saady and the railroad have filed a claim against the City of New York for $8 million, representing $5 million in lost earnings to Mr. Saady plus the railroad's $3 million a year rental.

The question to be decided is whether the government has the right to deprive the railroad of income from its land without compensation.

The Landmarks Commission is acting under the theory that esthetics and historical value are part of citizens' health and welfare, the protection of which is the government's obligation. "Grand Central," says the Commission, is "one of the great buildings of America . . . a building overpowering in its grandeur, [which] has always been a symbol of the City itself." But Mr. Breuer, while admiring the Concourse, calls the facade a low point in architecture and claims it can't be adequately seen anyway because it is buried amidst roads, skyscrapers and stores. Mr. Breuer feels the site is ideal for a skyscraper because of its direct access to transportation. He took on the commission on condition that his plan include improvements in the station itself. Mr. Breuer insists the Landmarks Commission is preventing the usefulness and natural growth of the city. Sooner or later, he says, there is absolutely no doubt a skyscraper will be built above the Terminal.





Towards a better environment: progress notes from all over

■ The Senate has passed "National Environmental Policy Act of 1969," introduced by Senator Henry Jackson (D-Washington), which authorizes Federal agencies within existing programs and lines of responsibility to follow national environmental policy; it also establishes a three-member Board of Environmental Quality Advisors in the Executive Office of the President. The House is now considering a similar bill.

■ Senator Edmund Muskie (D—Maine) has introduced much stronger legislation, which among other things will require all Federally supported public works to be planned in accordance with their ecological impact. Witnesses at hearings on one of Mr. Muskie's anti-pollution bills, the "Resource Recovery Act of 1969," include most of the Cabinet, not omitting Melvin Laird, as well as Glenn Seaborg, chairman of the AEC. Buckminster Fuller testified before Mr. Muskie earlier this year, but architects have been conspicuously absent. Although there have been stories of a Muskie-Jackson power struggle, their legislation is not in conflict, and both Senators' programs will probably pass.

■ President Nixon has created an Environment Quality Council run by Dr. Lee A. DuBridge, the science advisor to the President, and a Citizens Advisory Committee on Environmental Quality, whose chairman is Laurance S. Rockefeller.

■ Chances of saving the Everglades now seem to be getting better. The area is endangered by a new international airport for Miami, part of which has already been built. After bitter fighting by conservationists, the issue got some powerful support. Recently, DOT Secretary Volpe, Interior Secretary Hickel, and Florida's Governor Kirk issued a joint release, saying "We have agreed that the Everglades National Park should not and will not be damaged. . . . The question of a commercial airport on that site is very doubtful." The ecological balance of the Everglades depends on several micro-organisms and small creatures which have gone largely unnoticed, not being on the dramatic scale of the nearly extinct alligators; many conservationists are convinced the new airport would destroy these organisms.

■ A temporary injunction to prevent the building of a road through Sequoia National Park has been granted the Sierra Club in its fight to save the redwood forest from developers. The Sierra Club has also prevented, at least for the present, construction of a Hudson River expressway, which would have involved land-fill and dikes destructive to the ecological balance.

■ HUD has called for the formulation of a national urban land use policy. HUD has also financed studies to develop short and long term relief from aircraft noise in several cities.

■ There is pressure in Congress to restore to $1 billion a year the money allotted to water purification for the Clean Water Restoration Act of 1966. Congress has allotted less than one-fourth this amount.

■ U Thant has released a report, "Problems of the Human Environment," which says, expectedly, we are on the edge of catastrophe. The U.N. is planning a conference on the environment to be held in Sweden in 1972.

■ "Air Pollution Publications 1966-1968," a bibliography put out by the National Air Pollution Control Administration, is now available from the U.S. Government Printing Office.

■ The Nixon Administration has announced it will encourage invention of a low-pollution vehicle for the 1990's, and DOT is spending $2.2 million on research this year. William P. Lear, millionaire inventor, and developer of the Lear Jet, has already spent $4 million of his own money for development of a steam engine for automobiles. Mr. Lear will be 88 in 1990.

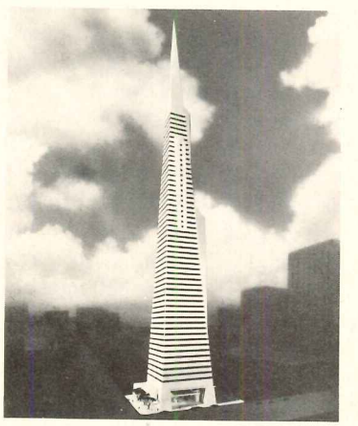
U.N. report urges new planning policies to avert urban disaster

"In many countries, the housing situation has deteriorated, and in some it verges on disaster," writes U Thant in a report to the United Nations Economic and Social Council. The report, which was prepared with the help of British economist Barbara Ward, is an outline for building planning during the next ten years, the U.N.'s Second Development Decade. It suggests urbanization become a major economic activity, rather than being a largely-ignored source of major problems.

The report contains "a new development strategy with urbanization as an essential ingredient." The urban population of the world is expected to have doubled between 1960 and 1980. "Here is the root cause of the urban crisis. And this is only the beginning of the pressures. . . ." The report contrasts the urbanization of the developing nations to that of the industrial powers during the 19th century, pointing out that today, while automation and population increase are creating a huge influx to cities, there is little new demand for labor because factories are automated. "Virtually every one of the factors conducive to growth in the last century is reversed. . . . Throughout the developing world, the city is failing badly. It stands as a warning of an unequal development process that could break down completely in the coming decade."

The report urges decentralization through the expansion of smaller towns, as in Turkey, where "Ankara was chosen as a direct counterpoise to Istanbul in order to energize the resources of the Anatolian plateau." It also describes successful efforts in France, England, Sweden, the Soviet Union and the Netherlands to encourage growth in new urban areas and discourage greater urban expansion.

"In sum, the world crisis in urbanization must be recognized as demanding an effort roughly four times what has been expended on it in the past decade."



Transamerica will get built

The Transamerica Corporation's pyramid-shaped office tower in San Francisco (March, page 42), designed by William Pereira, has got past the final hurdle, the San Francisco Board of Supervisors. Transamerica reduced the tower's height from 1000 feet to 853 feet; but this didn't mollify the opposition, which included the Northern California Chapter of the American Institute of Architects, the California Chapter of the American Institute of Planners, the Environment Workshop, a local planning group run by two members of landscape architect Lawrence Halprin's staff, the city's director of planning, Allan B. Jacobs, and architectural critics Allan Temko and Wolf von Eckardt, who called it "a second class World's Fair space needle."

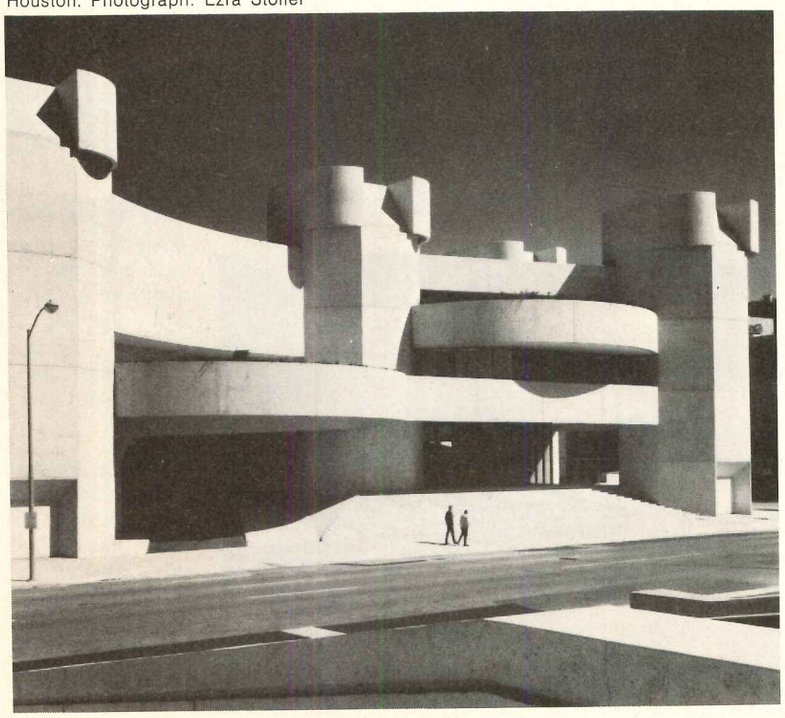
Architects design for outer space

The New Haven firm of Eliot Noyes will advise North American Rockwell, which is working for the National Aeronautics and Space Administration, on the design of space stations. Mr. Noyes' firm is doing an 11-month preliminary study for the station, which is to hold 12 men, including scientists, technicians, a pilot and a cook, for six months in a cylinder 35 feet high with a 33-foot diameter. Beyond making the tiny station livable, Mr. Noyes must design for zero and artificially induced gravity.

The New York firm of Warner, Burns, Toan, Lunde is working on space stations for Grumman, which is contending for later phases of the NASA program.

Two for the show with Dover Stage Lifts

Theater and Classroom Building, Birmingham-Southern College, Birmingham, Ala. Architects: Warren, Knight & Davis. Theater Consultant: Dr. Arnold Powell. General Contractor: Brice Building Company, Inc. Dover Stage Lift installed by Dover Elevator Co., Atlanta.



Alley Theatre, Houston, Texas. Architects: Ulrich Franzen & Associates. Associate Architects: MacKie & Kamrath. Consultant: George Izenour. General Contractor: W. S. Bellows Construction Corp. Dover Stage Lift installed by Dover/Hunter-Hayes Co., Houston. Photograph: Ezra Stoller

Two of the most exciting new theaters for the dramatic arts utilize Dover Stage Lifts for versatility of presentation.

The Alley Theatre in Houston and the Birmingham-Southern College Theatre at Birmingham are the latest additions to a long list of distinguished theatrical complexes served by Dover. A few others include the Metropolitan Opera House, Loeb Drama Center, Santa Fe Opera House, Atlanta Cultural Center and the Jesse H. Jones Hall for the Performing Arts.

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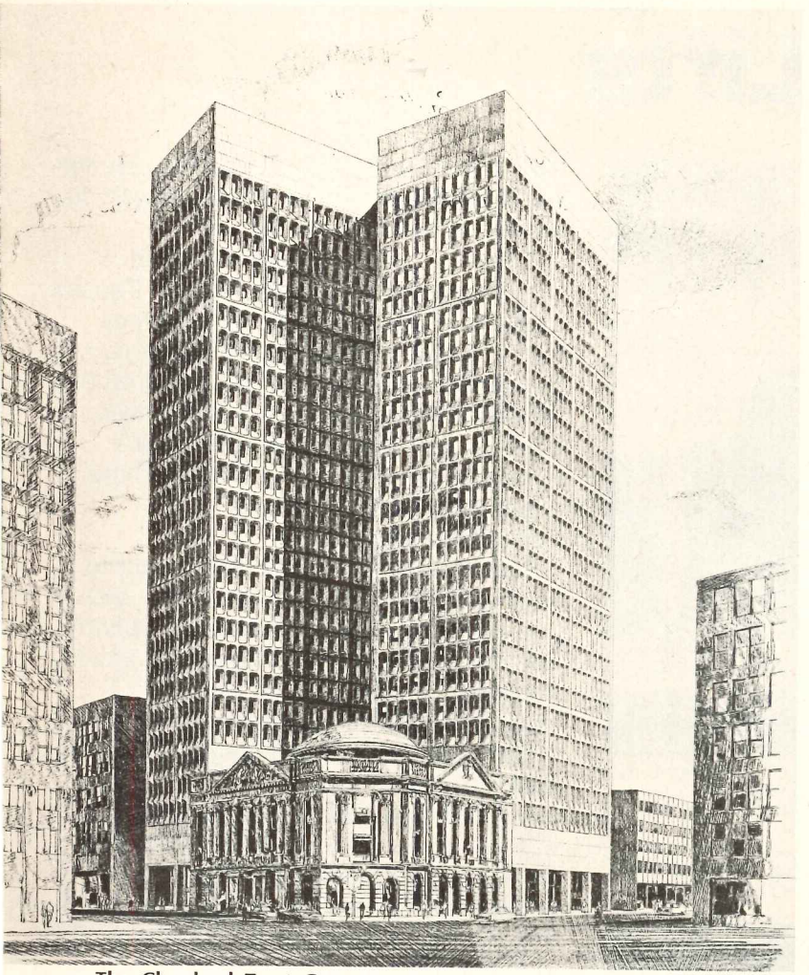
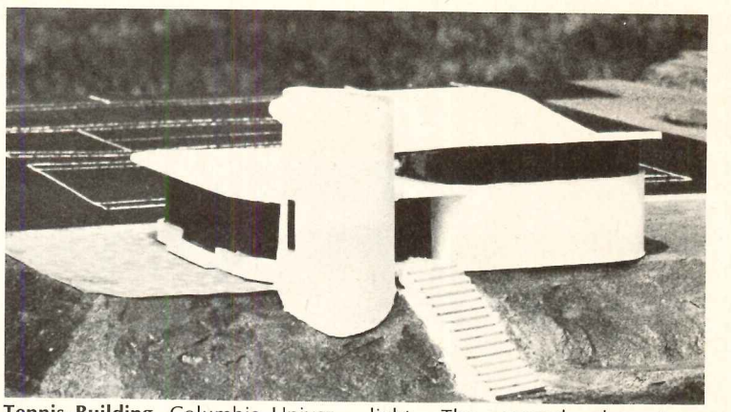
BUILDINGS IN THE NEWS

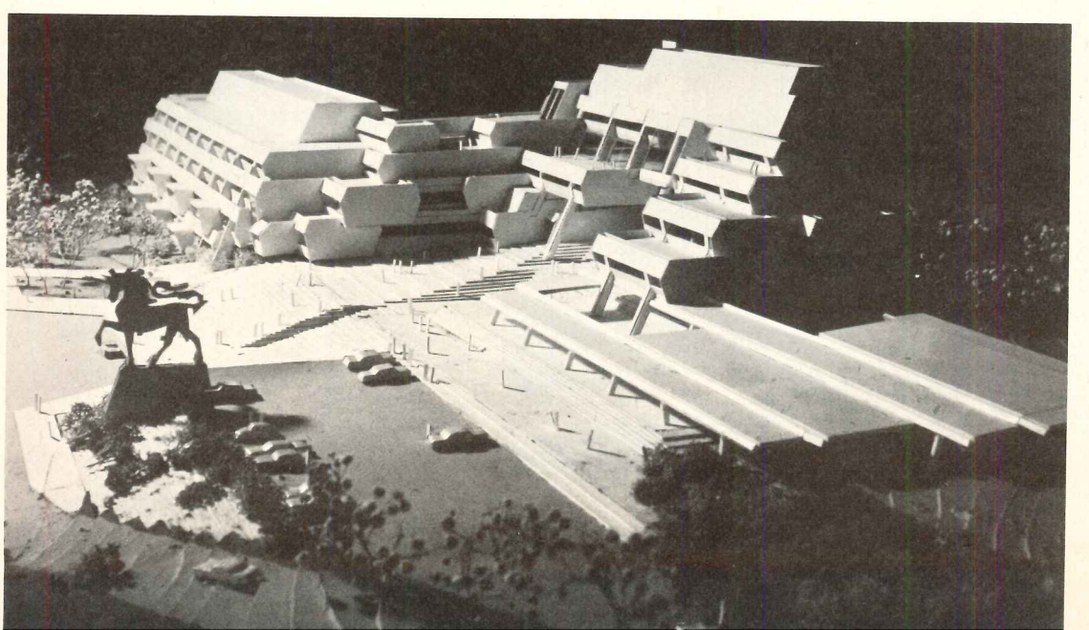


The Cleveland Trust Company expansion, Cleveland, includes preserving as a permanent landmark the original corner banking house designed by George B. Post and Sons and built in 1907. The architects are Marcel Breuer (whose proposals for the site of another landmark, Grand Central Station, have caused considerable debate—page 38) and Hamilton Smith. The project will be built in two phases.

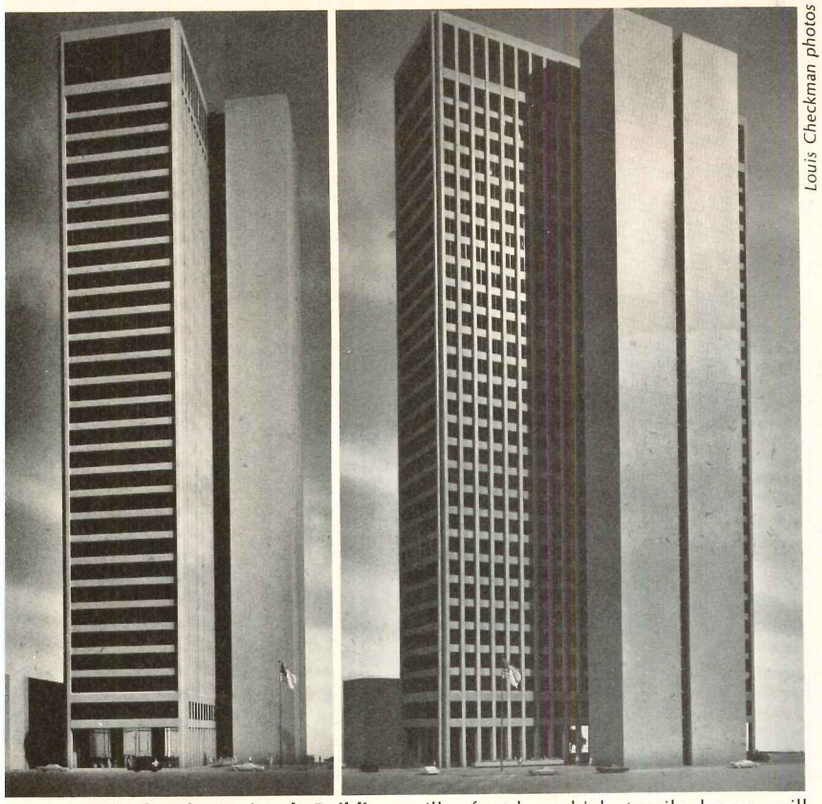


Tennis Building, Columbia University, New York City, will have three distinct elements, each with its own roof. The first, the locker rooms, is basically one space, divided for men and women. A clerestory wraps around this space for natural light. The second element, a lounge, is left open with dark glass to maintain privacy, yet provide a view. The third element is the office tower. The designer is Mauro E. Mujica of The Office of Architectural Planning of Columbia.

Japan House, New York City, strives to blend "the traditional esthetic elements of Japanese architecture with American construction technology." The design is by Junzo Yoshimura, consulting architect of Tokyo, and Gruzen and Partners.

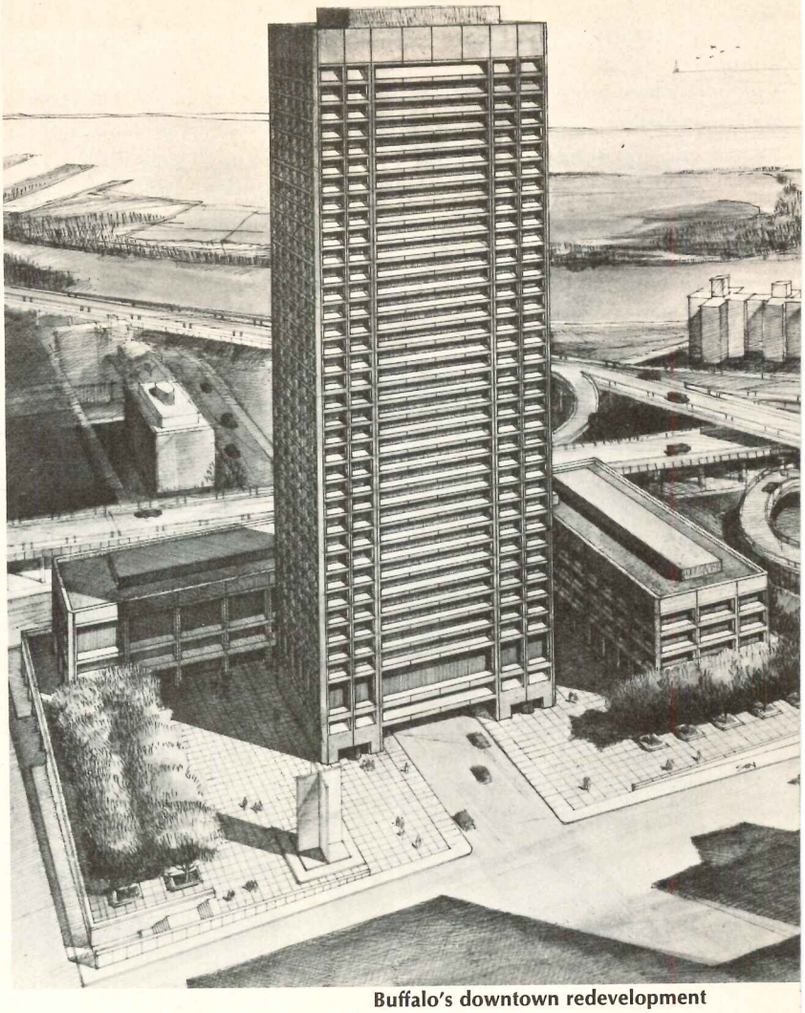


Burroughs Wellcome & Co. Corporate Headquarters has been conceived by its architect Paul Rudolph as "a manmade extension of the ridge upon which it is being built" in Triangle Park, North Carolina. Following the contours of the hillside, the building will be S-shaped with front and back walls sloping inward toward the roof. In the courtyard, mounted on a 20-foot base, will be a 30-foot sculpture of a unicorn, the company symbol.

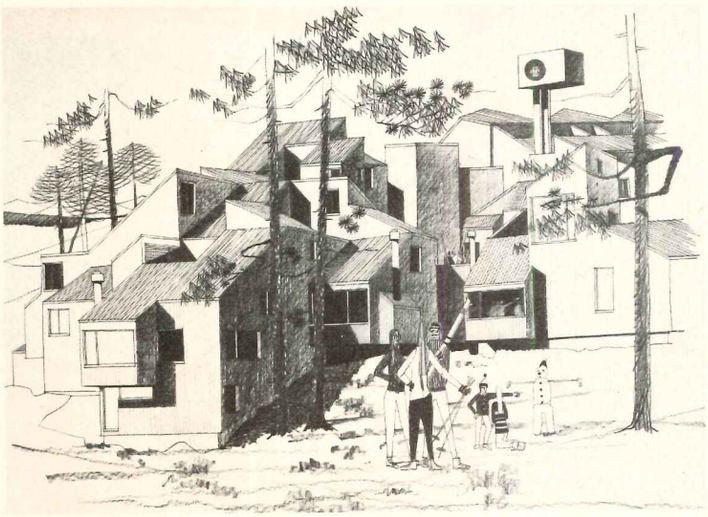


Louis Checkman photos

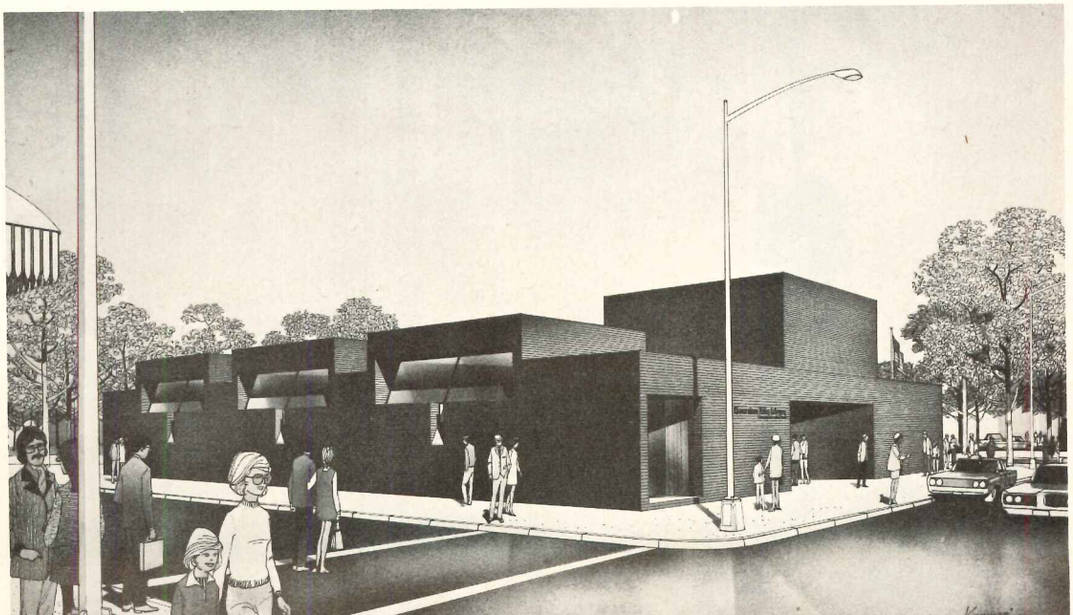
Pittsburgh National Building will have a separate shaft alongside the main structure to house the elevator and service core. This, plus the absence of interior columns—70-foot-long high tensile beams will span each floor—promises the "ultimate in flexibility." The granite-sheathed steel tower is designed by Welton Becket and Associates.



Buffalo's downtown redevelopment project is the largest in the city's history. Marine Midland Center will include a 40-story tower and a four-story plaza building, to be built on air rights over Main Street. The development, made possible through grants from HUD and the State of New York's Department of Housing, will ultimately cover ten acres and will include another office building and a 300-unit hotel. Architects: Skidmore, Owings & Merrill.



Condominiums for an 863-acre planned community in the ski country of Campton, New Hampshire are based on a ten-foot by ten-foot module in plan and eight-foot by ten-foot wall panels. The limited number of configurations can be put together to achieve great variety of size and number of units per complex. The design, by Ralph Harris, provides privacy to the extent that from one roof-top terrace, no other terrace is visible.

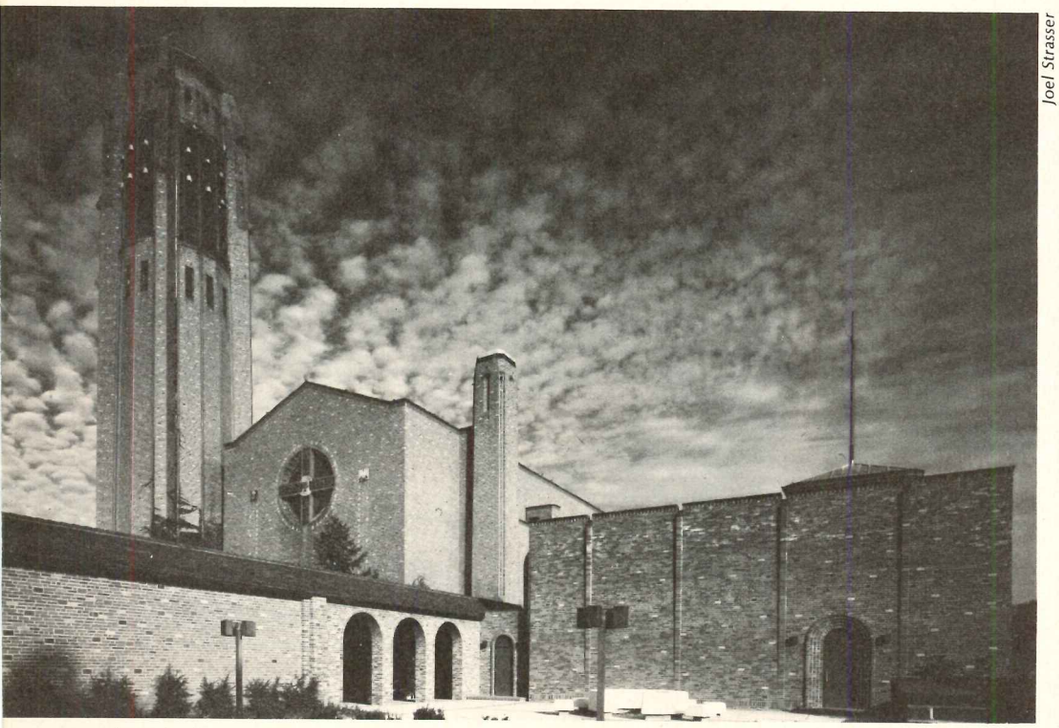


Queensboro Hill Branch Library for the City of New York is a trapezoidal-shaped building conforming to and occupying an entire block in a residential community of Queens. The design, by architects Gueron, Lepp and Associates, "takes advantage of the non-rectangular corners by repeating angular entrance and fenestration cuts in the monolithic mass of the brick building." The interior will have a variety of natural lighting sources ranging from clerestory windows to full-height glass walls.

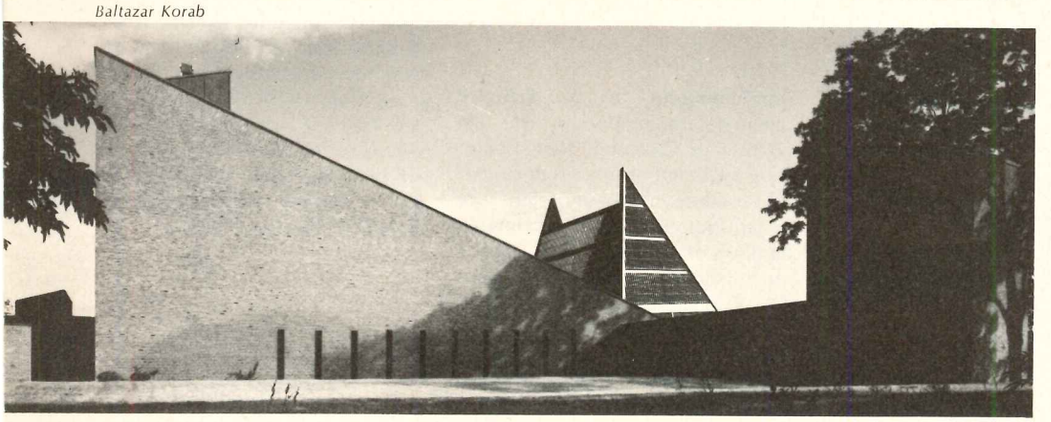
The 30th National Conference on Religious Architecture announces 1969 awards

Twelve projects, including three by Swiss architect Dr. Justus Dahinden, received Honor Awards at this year's National Conference on Religious Architecture April 29 through May 2. The jury included three architects and two clergymen: Alden B. Dow, F.A.I.A., Midland, Michigan; Joseph D. Murphy, F.A.I.A., St. Louis; Daniel Schwartzman, F.A.I.A., New York City; The Rev. James L. Doom, consultant on church architecture for the Board of National Ministries of the Presbyterian Church in the United States and Chairman of the Commission on Church Building of the National Council of Churches; and The Rev. John W. Whetstone.

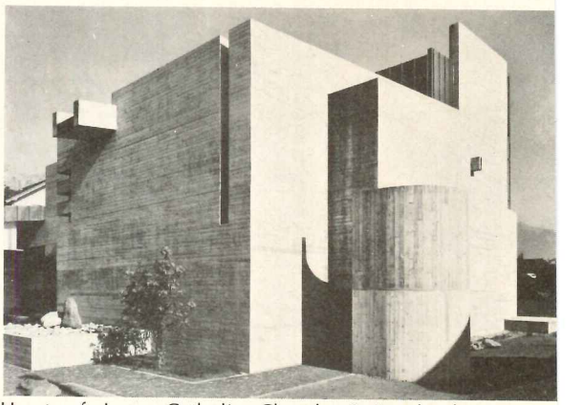
Architects whose buildings received awards but are not shown here are as follows: Burks & Landberg, St. Louis; Curtis & Davis & Associates, New Orleans; Guy V. Prisco, Aurora, Illinois; Sinclair Associates, Hartford, Connecticut; and Harold E. Wagoner, F.A.I.A. & Associates, Philadelphia, and associated architects Kolosky & Ianniccari, Camden, New Jersey.



Baltazar Korab



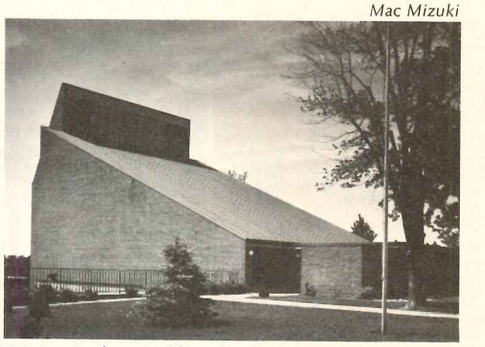
Joel Strasser



Heart of Jesus Catholic Church, Switzerland (above). Dr. Justus Dahinden.

First Plymouth Congregational Church addition, Lincoln, Nebraska (left). Davis-Fenton-Strange-Darling.

Mac Mizuki

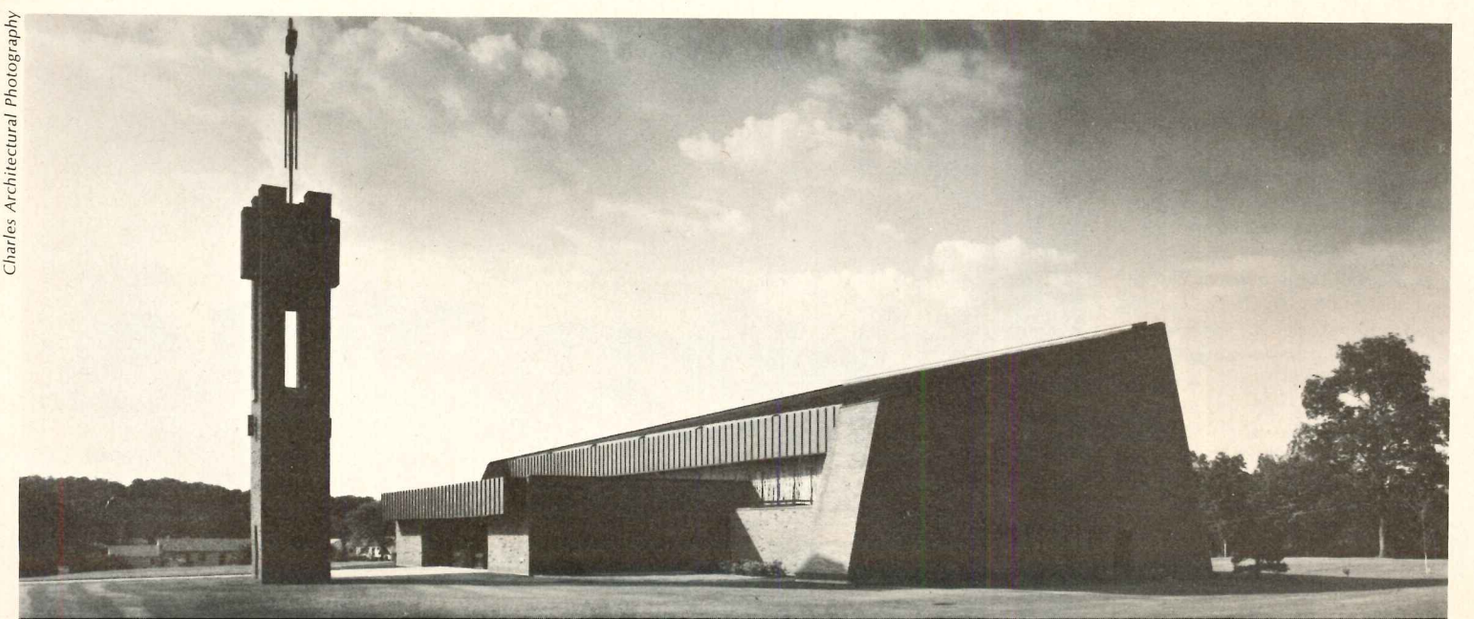


Trinity Lutheran Church, St. Louis County, Missouri (above). Smith & Entzeroth, Inc.

St. Jude Catholic Church, Grand Rapids, Michigan (left). Progressive Design Associates.

The Church of the Resurrection, Wallingford, Connecticut (below). Russell-Gibson-von Dohlen.

Charles Architectural Photography



Oregon boasts a variety of new architecture: a city hall, a commercial complex and a graduate center

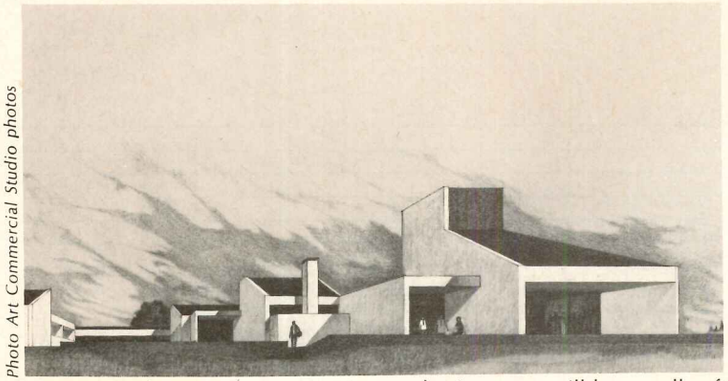
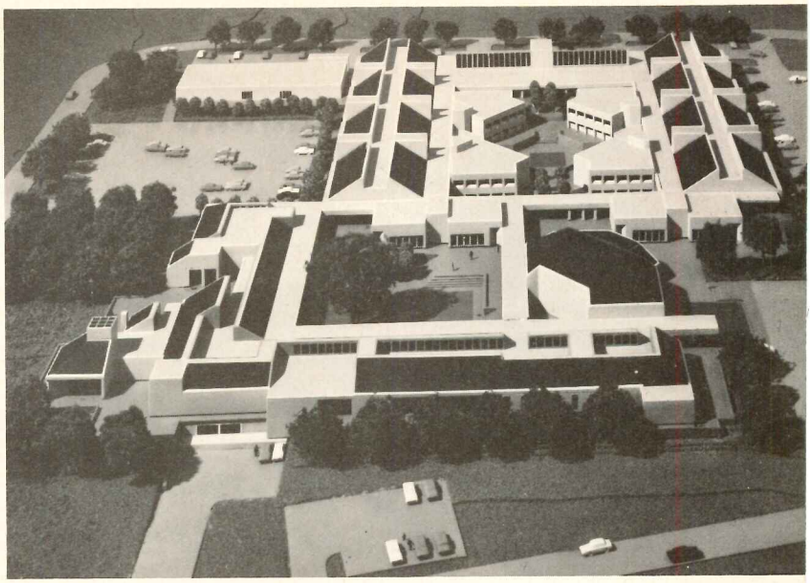


Photo Art Commercial Studio photos

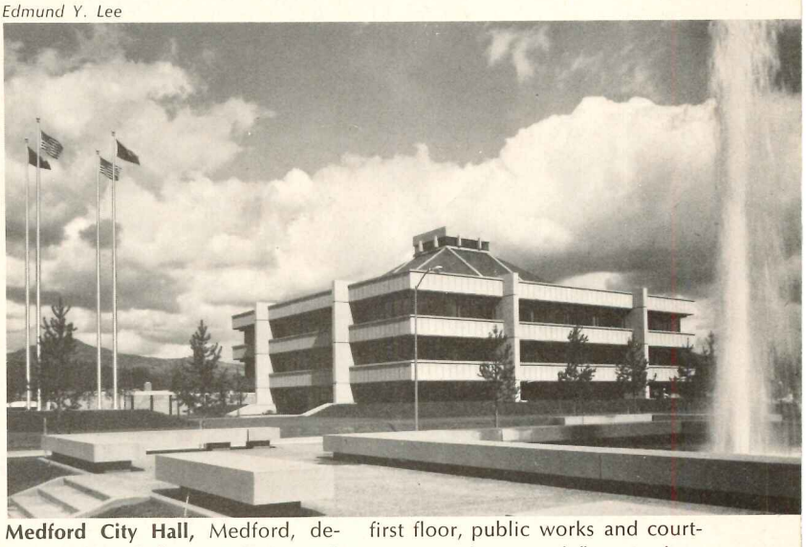
Oregon Graduate Center, on a 70-acre site in open country near Portland, will place emphasis on the physical sciences for doctoral and post-doctoral students. The complex—which will be in two groupings, the central facilities and the academic areas—will have walls of concrete block and roofs of dark asphalt shingles. Parking surrounds the labs—living is off campus. The Center is designed by Wolff Zimmer Gunsul Frasca Ritter, with Pietro Belluschi, design consultant.



Edmund Y. Lee

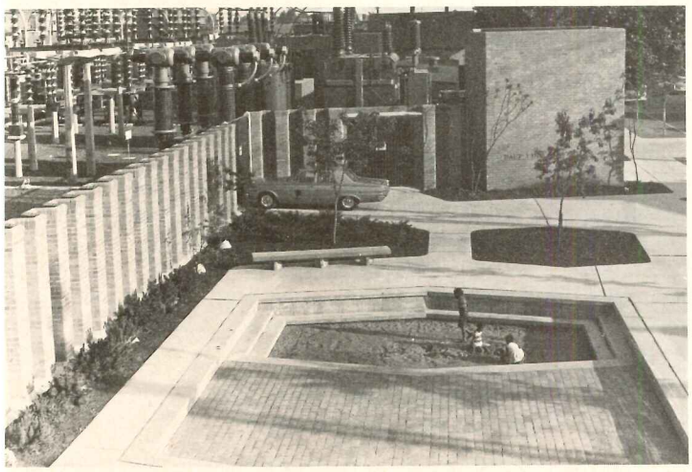
Photo Art Commercial Studio

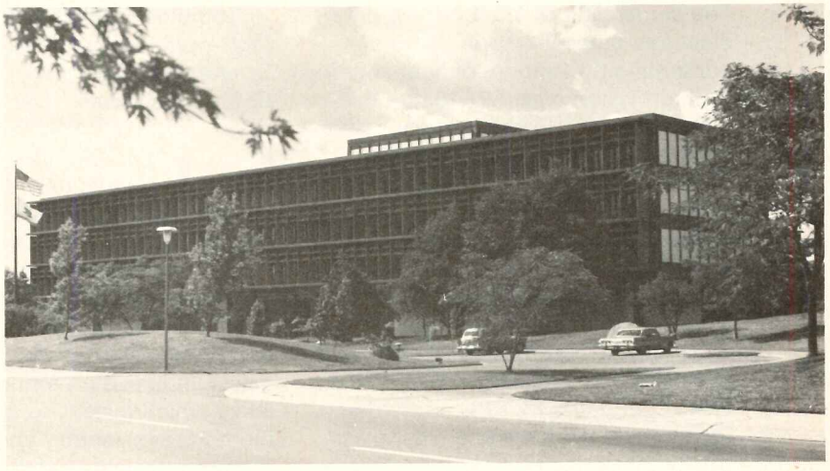
Crown Plaza, a two-block project next to Portland's urban renewal area, will provide 250,000 square feet of office and commercial space and parking for 620 cars. Architects Wolff Zimmer Gunsul Frasca Ritter designed the concrete building with landscaped terraces overlooking the river, and there will be second level public circulation.



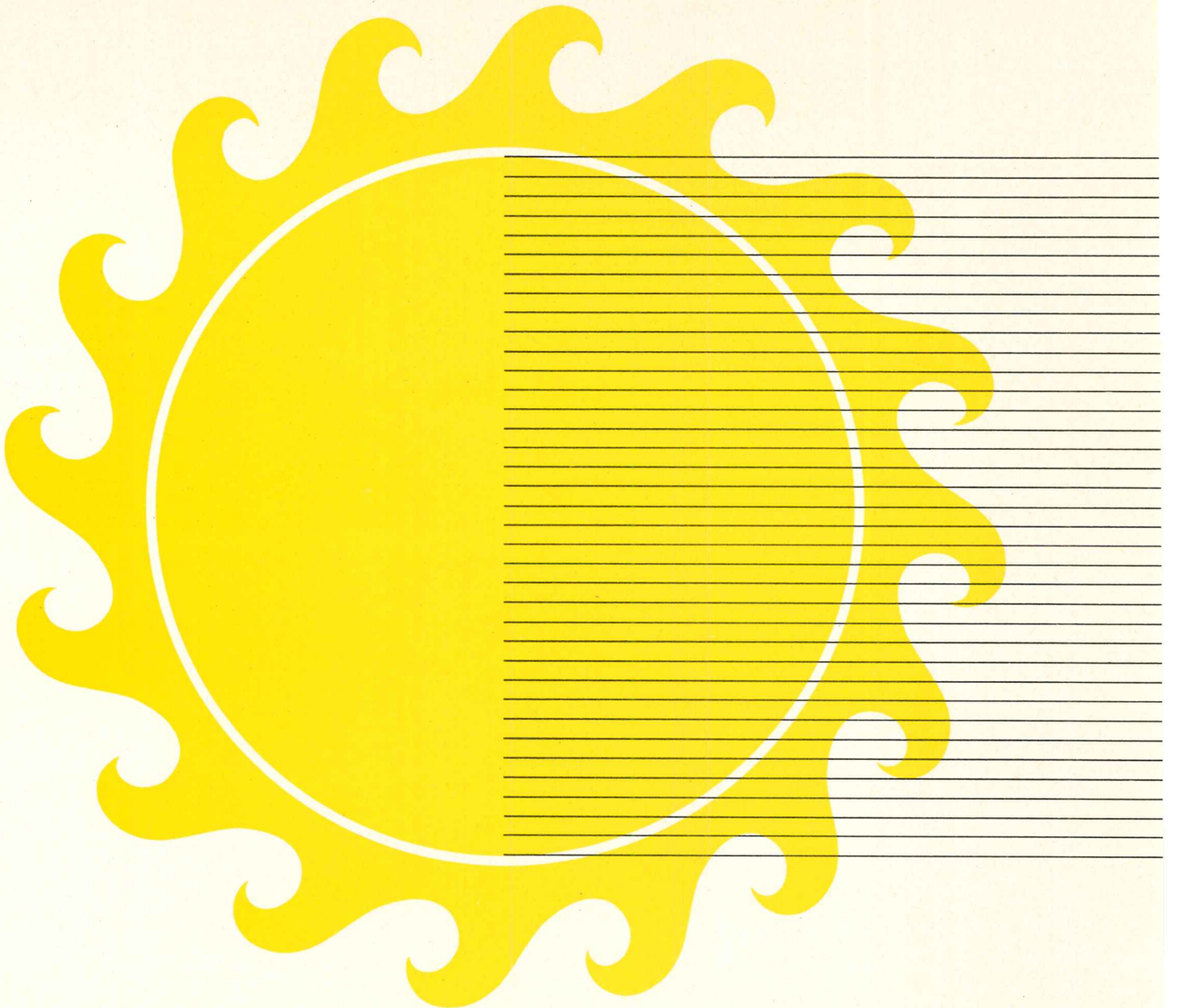
Medford City Hall, Medford, designed by Skidmore, Owings & Merrill, Portland, will have 51,000 square feet of floor space, with police department and jail on the first floor, public works and courtroom on the second floor, and on the third, administrative facilities and Council Chamber above which will be a copper roof with skylights.

Architects among winners in American Public Power Association Awards Program for Utility Design





The First Honor Award went to Fred Bassetti and Company of Seattle for the East Pine Substation (left). One of the four Honor Awards went to Dreyfuss & Blackford, Sacramento, California, for the SMUD Office Building (right). The jury: Francis D. Lethbridge, Washington, D.C. architect; Jeremiah D. O'Leary, Jr., Washington planner and urban developer; Eugene Weber, District V director for American Society of Civil Engineers; and Philip H. Lewis, Jr., chairman of the Department of Landscape Architecture, University of Wis.



Now you can subdue radiant heat at window areas with PPG Feneshield® fabrics.

The sunny side of any building on a clear day presents the problem of controlling the amount of heat entering through vision areas. Building occupants working closest to the window areas can be uncomfortably warm. If the air conditioning is increased to make them more comfortable, people further back from the windows may be too chilly.

A practical and economical solution to this radiant heat control problem is the use of FENESHIELD fabrics, made of PPG FENESHIELD fiber glass yarns. Tests conducted by PPG show that FENESHIELD fabrics and a clear glass window can keep up to 50% of the radiant heat from entering the room.

Combine FENESHIELD fabrics with a high-performance glass like PPG SOLARBAN® TWINDOW,® and up to 85% of the radiant heat can be eliminated. Heat absorbed by the fabric is largely removed by contact with conditioned air. Very little heat is reradiated inward. Interior comfort is uniform, and air conditioning loads are reduced.

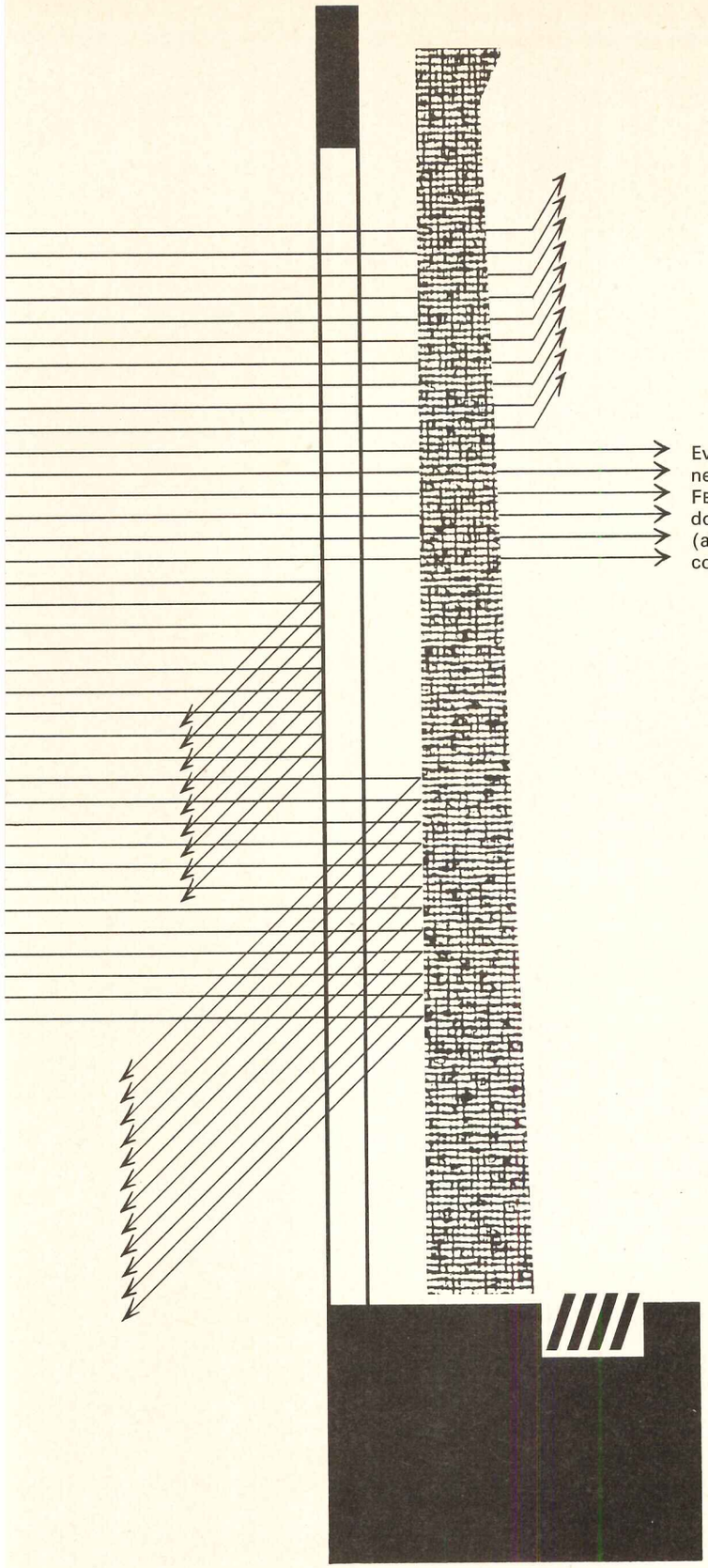
Get technical facts. PPG's test results on FENESHIELD fabrics and other shading devices are yours for the asking. This research has provided a system based on fabric characteristics which gives you a scientific method for selecting fiber glass draperies to reduce radiant heat, cut glare, modify or enhance a view, and improve interior sound control. In addition, FENESHIELD fabrics cost less to maintain than other shading devices.

Personal help for you. Participating FENESHIELD fabric distributors have authorized fabric presentations. These show the wide range of fabric weaves and colors available and are keyed to the selection system and related PPG technical data.

For names of nearby representatives and for detailed technical information, use the coupon.

PPG makes the Feneshield fiber glass yarns only, not the fabric.

PPG is Chemicals, Minerals, Fiber Glass, Paints and Glass. So far.



Even in intense sunlight, occupants of a room can work in comfort near a window treated with the proper type of light-colored FENESHIELD fabric. Most radiant heat is reflected back to outdoors by the FENESHIELD drapery. Heat absorbed by the fabric (as indicated by upward arrows, far right) is removed largely by contact with conditioned air; there is very little reradiation inward.

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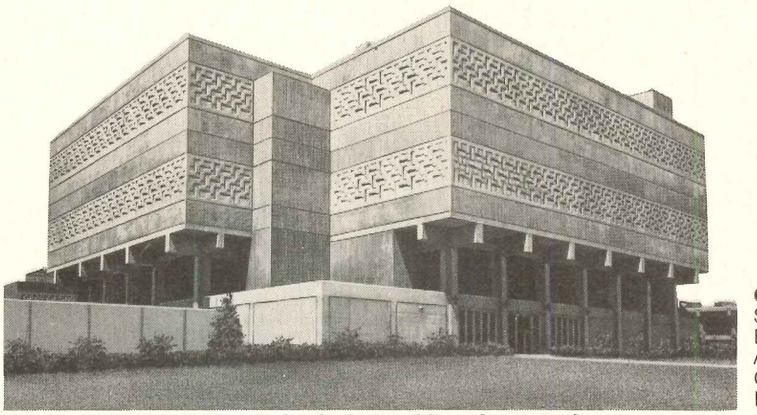
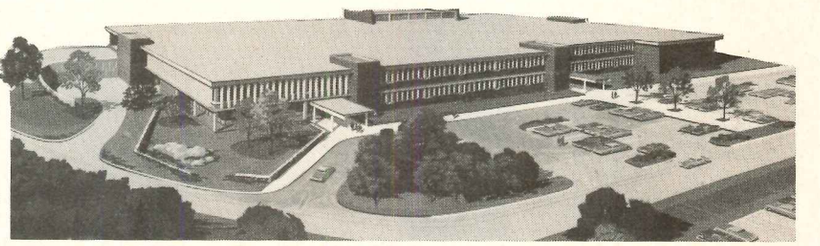
Three practical reasons for using J-M Fesco Board® Roof Insulation on beautiful buildings.



California. Orange County Jail, Santa Ana—Architects and Engineers: Albert C. Martin and Associates, Los Angeles—Roofing Contractors: H. R. Provin Co., Downey.

J-M Fesco Board roof insulation is thoroughly moisture-resistant—not just on the surface.



Massachusetts. BASF System Inc., Bedford—Architects: Edward J. Tedesco Associates, Winchester—Roofing Contractors: Columbia Cornice Company, Cambridge.

J-M Fesco Board roof insulation has the tensile and shear strength to withstand hurricane winds.

New York. Huntington Library, Suffolk County Community College, Selden—Architects: Dobiecki & Beattie, Brentwood—Roofing Contractors: Triple M Roofing Corp., Islip.

J-M Fesco Board roof insulation is non-combustible and has no flammable backing.

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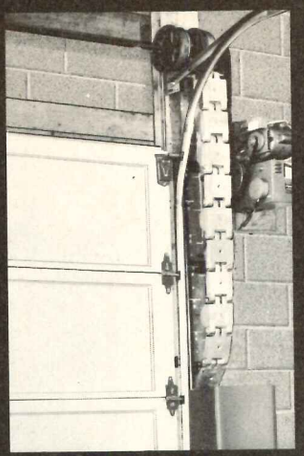

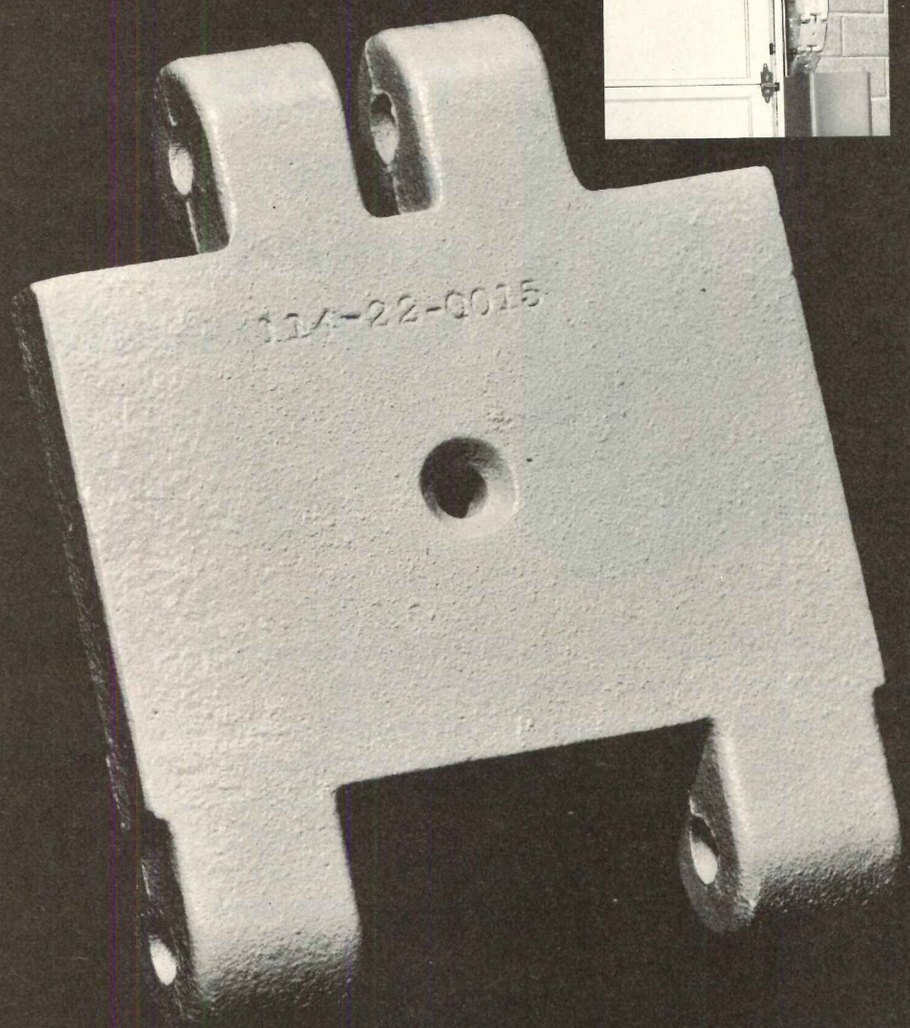

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Complete details on the Crawford counterweight mechanism are available from your local Crawford distributor. He can also tell you about other Crawford innovations that will help you precisely match every uprising door you specify to the job it must do. He's competent. Professional. Call him. Or write to us.

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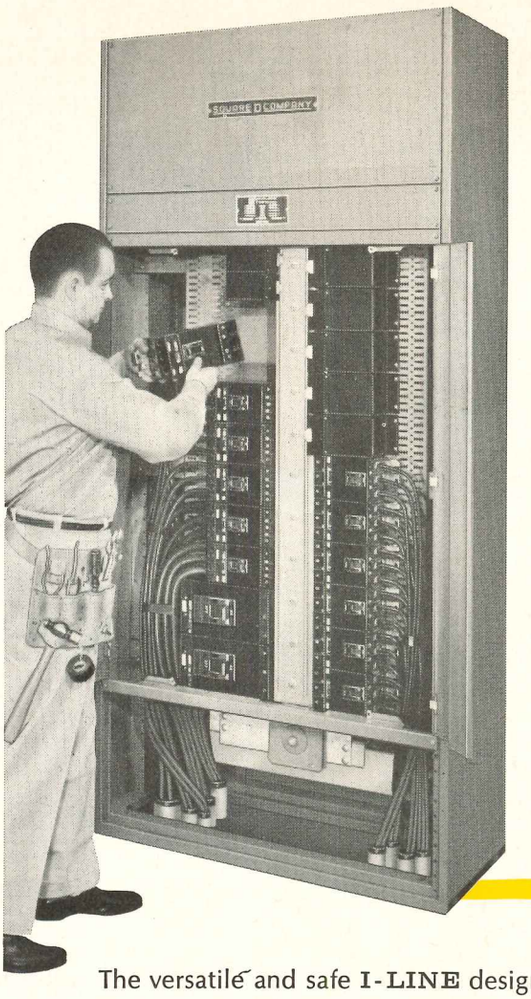


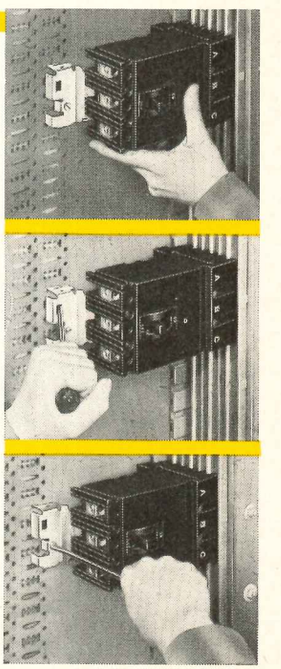
New I-LINE® switchboards assure unmatched flexibility, maximum safety

The versatile and safe **I-LINE** design pioneered by Square D in power panelboards now has been applied to switchboards.

New **I-LINE** switchboards have vertically stacked bus bars which make it possible to mount any combination of circuit breakers on the bus structure. Although **I-LINE** breakers are factory-installed on a new switchboard, additional breakers can be added quickly and easily. Simply plug them right on the bus bars. Replacing or installing a breaker takes only minutes compared to two hours or more for older designs.

The new **I-LINE** switchboard is designed for maximum safety. Stacking of the bus bars isolates most live parts and there is additional safety in the Square D "dead front" design. It has "integrated equipment rating" —which assures that the combination of bus bars, circuit breaker and insulation has been tested and proven for its short circuit bracing, interrupting capacity and temperature rise under load.

Circuit breakers for **I-LINE** switchboards (either bolt-on or plug-on) are the same as those for **I-LINE** panelboards and are as near as your stockroom or Square D distributor. Call your nearest Square D man for a proof-positive **I-LINE** demonstration. Or write us for full details. Square D Company, Dept. SA, Lexington, Kentucky 40505.



Breakers install in minutes. Position the unit, lever it in place, screw down tight.

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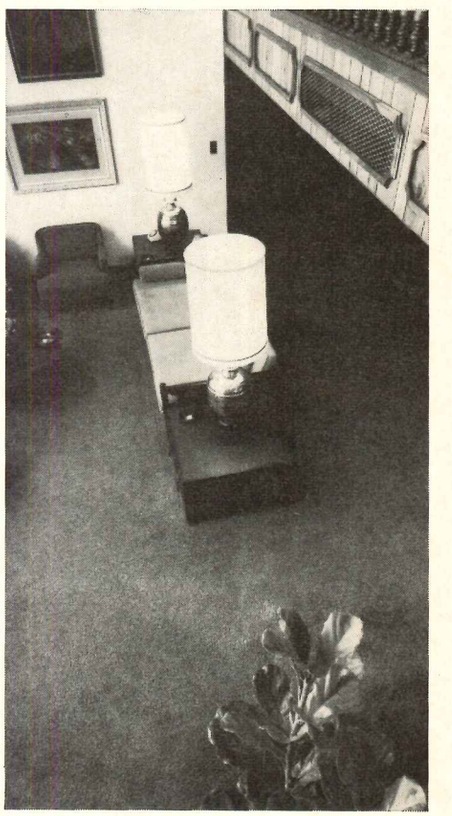
The man: Mr. Robert Greiner,
General Manager

The carpet:



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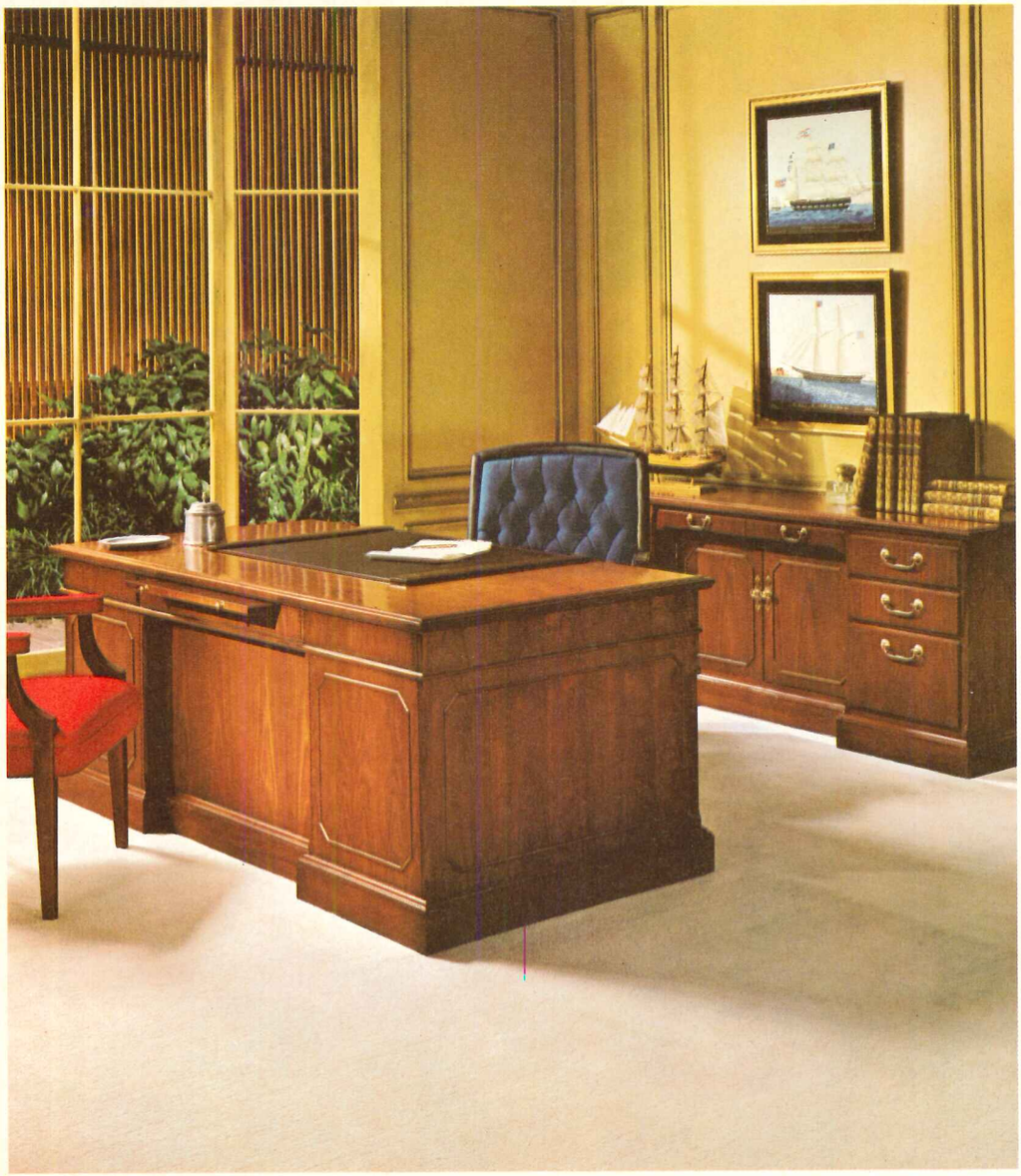

Series 1900

Appearances do count. To visitors, to the staff, to the man himself, the look of an executive's office says a great deal. What it says, and the way it's said, are too important to be left to chance. After all, only a man's signature says more about him than his office.

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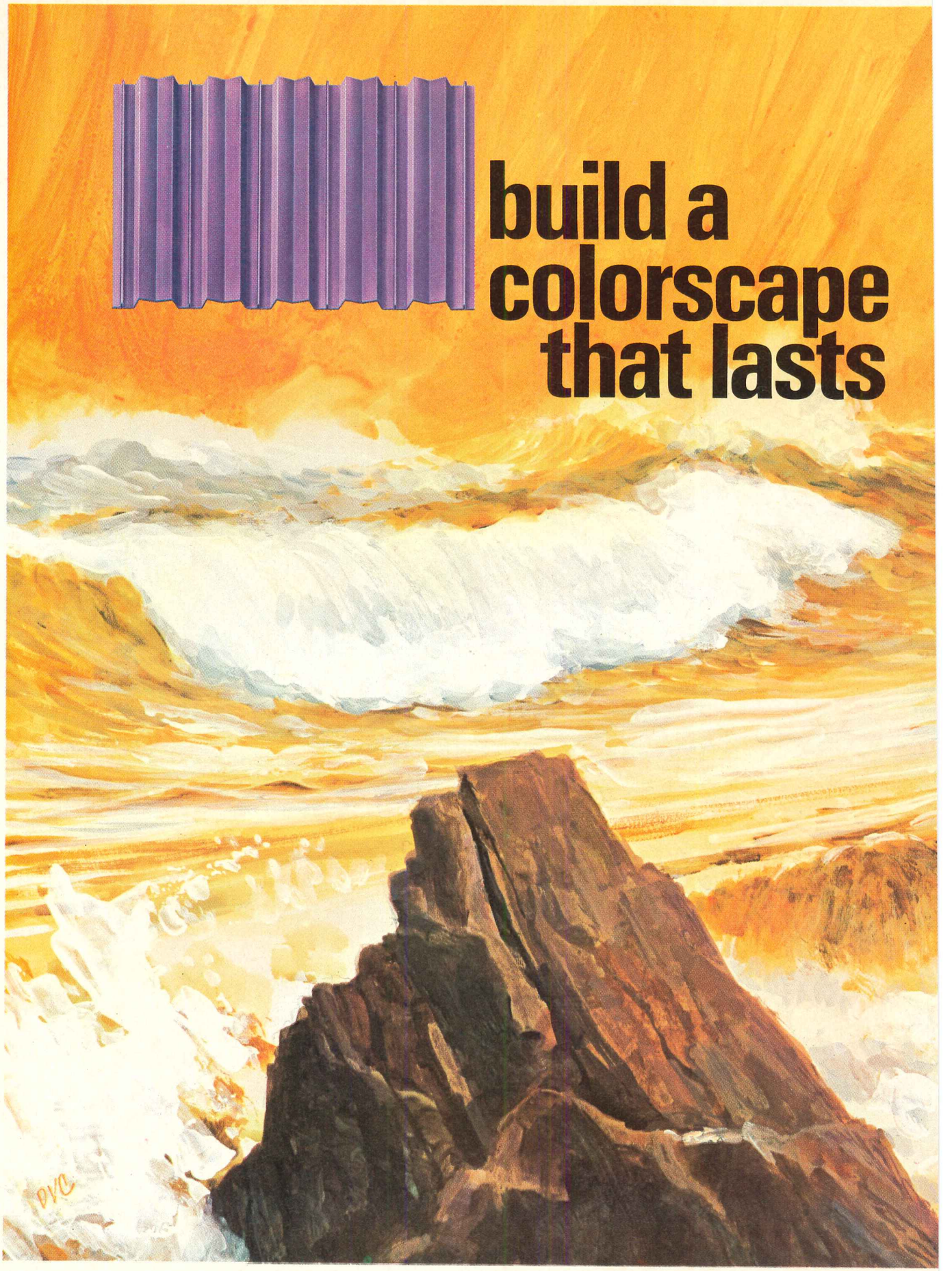
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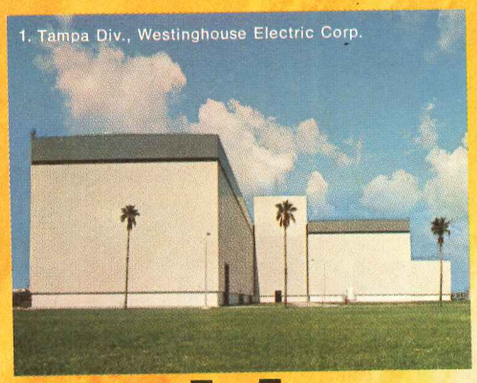
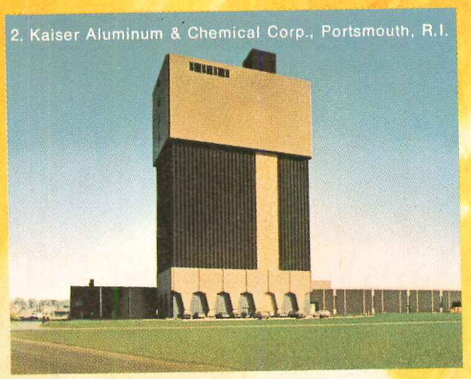


1. Tampa Div., Westinghouse Electric Corp.



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Elwin G. Smith & Co., Inc.
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OFFICE NOTES

NEW FIRMS, FIRM CHANGES

AAAA, Architecture and Allied Arts, Inc. is the name of a new firm organized for the practice of architecture, engineering, landscaping and interior design. The new firm, whose president is **Gustavo Moreno,** architect, is located at 218 Henrietta Street, Greenville, South Carolina.

E. J. Austin and **John Foster Faulk** have recently announced the dissolution of the partnership **Austin-Faulk Associates, Architects.** Mr. Austin now practices under the name **Austin Associates, A.I.A., Architects,** 180 Connecticut Ave., Southern Pines, N.C. Mr. Faulk remains at 225 N. Bennett St., Southern Pines, under the name **John Foster Faulk, A.I.A., Architect.**

Bolt Beranek and Newman, Inc., Cambridge, Massachusetts-based research, development and consulting firm, has elected **Robert B. Newman, Jerome I. Elkind** and **John A. Swets** to the firm's new corporate office position, senior vice president.

Brask Engineering Company, Consulting Engineers, announces the change of its firm name to **Brask and Standley Engineering Co.** Principals of the firm, located at 177 State Street, Boston, are **Henry Brask,** president and treasurer, and **Joseph A. Standley,** vice president.

Stanley Brent, A.I.A. of **Stanley Brent Associates,** and **Ronald Goldman, A.I.A.** have announced the formation of **Brent/Goldman Associates** for the practice of architecture, planning and interior design. The new firm's address is 11350 Gladwin Street, Los Angeles.

V. Leonard Brown, A.I.A. has joined **Albert C. Martin Associates,** Los Angeles architects, engineers and master planners, as principal medical planner.

Larry R. Moore, P.E. has joined the Cedar Rapids, Iowa firm of **Brown Healey Bock** as a partner. Architect **David E. Waldron** is now an associate in the firm.

Five new associates of the Los Angeles-based architectural and engineering firm, **Burke, Kober, Nicolais & Archuleta,** have recently been appointed: **Jon Adams Jerde, Alan Sclater, Irving Rector, A.I.A., Immanuel Vorrath** and **Melvin Mahler, A.I.A.**

The U.S. consulting engineering firm of **Burns and Roe, Inc.,** and **Motor Columbus Consulting Engineers, Inc.,** of Baden, Switzerland, have formed a new British company, **Burmot Engineering Consultants, Ltd.**

Pedro Perez and **Francisco Verrire** have joined the Washington, D.C. architectural firm of **Clas, Riggs, Owens & Ramos** as associates.

CLM/Systems, Inc., Cambridge, Massachusetts, has announced the appointment of four new staff members. **T. William Lambe,** professor of civil engineering at M.I.T. has been elected a senior consultant and vice chairman of the board of directors. **Thomas Lambie** has joined the firm as vice president; **William A. Bailey** has assumed the position of systems soils engineer; and **Alden Foster** has become director of computer systems.

Six new vice presidents of **Daniel, Mann, Johnson & Mendenhall** have been appointed. New vice presidents in the firm's Los Angeles headquarters are: **Charles L. Carlson, Charles R. Sullivan** and **Anthony J. Lumsden.** New vice presidents in the firm's regional offices are: **Jack C. Lipman,** Hawaii, and **William F. Heinkel,** Washington, D.C. A sixth vice president, **E. Parke Rohrer,** is managing the firm's current joint venture project in Weston, Illinois.

David B. Runnells, architect, and **W. G. Roeseler,** city planner, have recently announced their partnership as **Environmental Associates,** architects, engineers, urban designers, socio-economic analysts, and urban and regional planners. Offices of the new partnership are at 922 Board of Trade Building, Wyandotte and 10th Streets, Kansas City, Missouri.

James Fairman, former city planning director for the cities of San Diego and Riverside, California, has joined **Wilsey & Ham,** consulting planners, engineers and architects, as an associate member of the firm. Mr. Fairman is headquartered in the company's Los Angeles office.

Engineer **Michael E. Fiore** has been

continued on page 62

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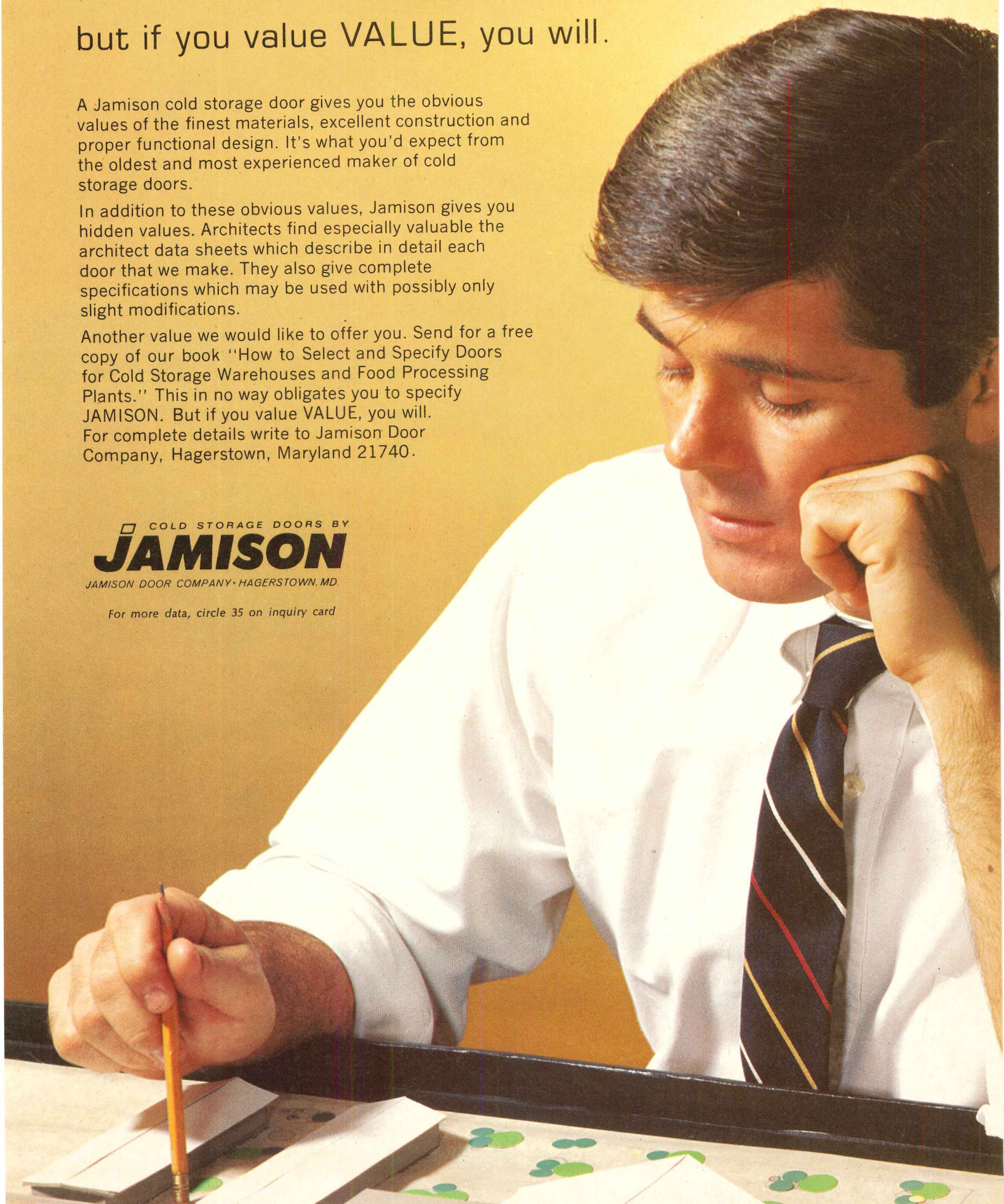

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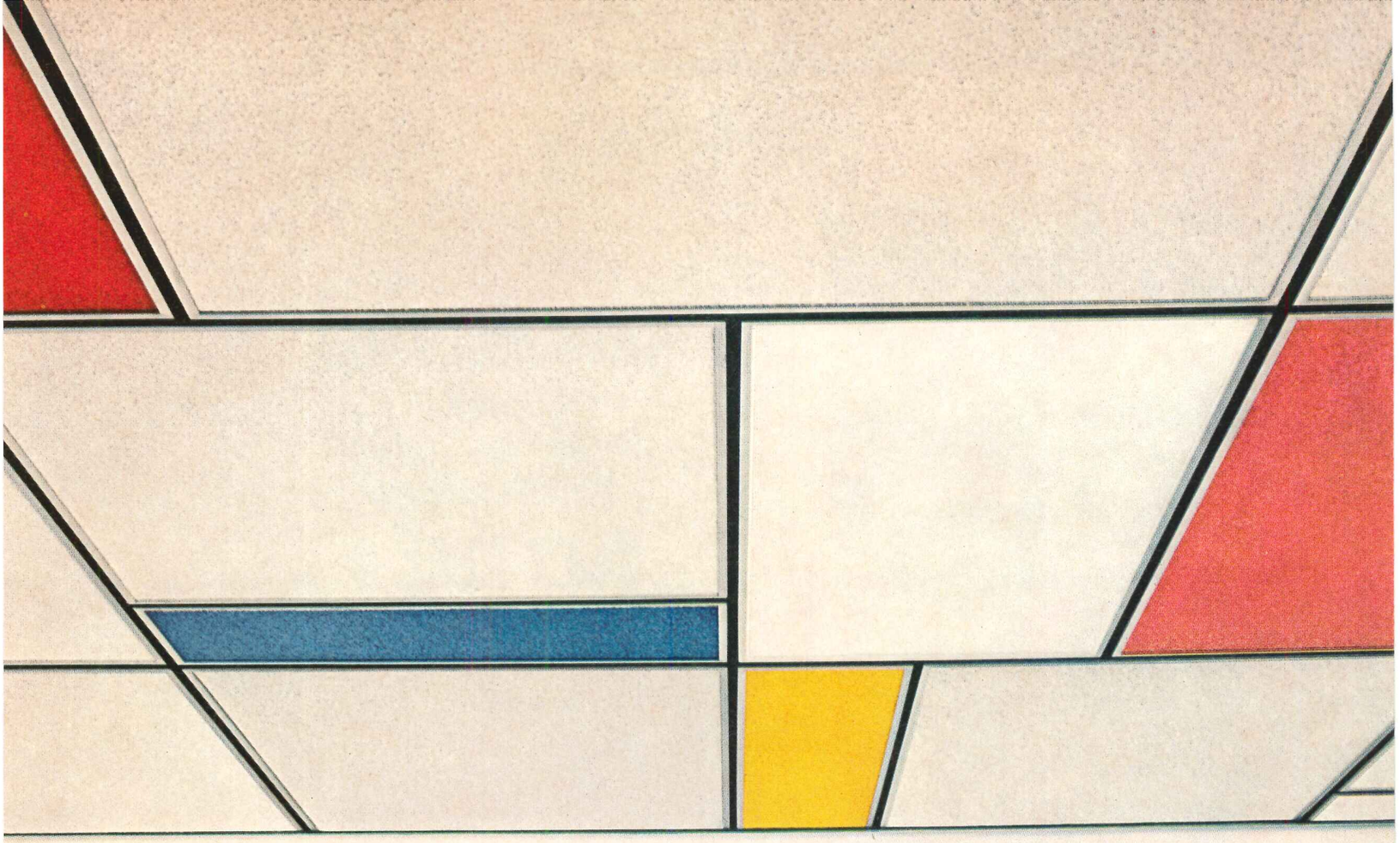
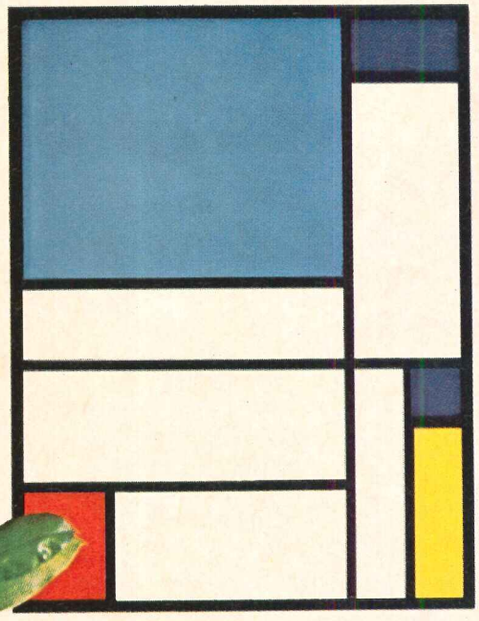


Introducing: Fiberglas Mondrian Ceiling System

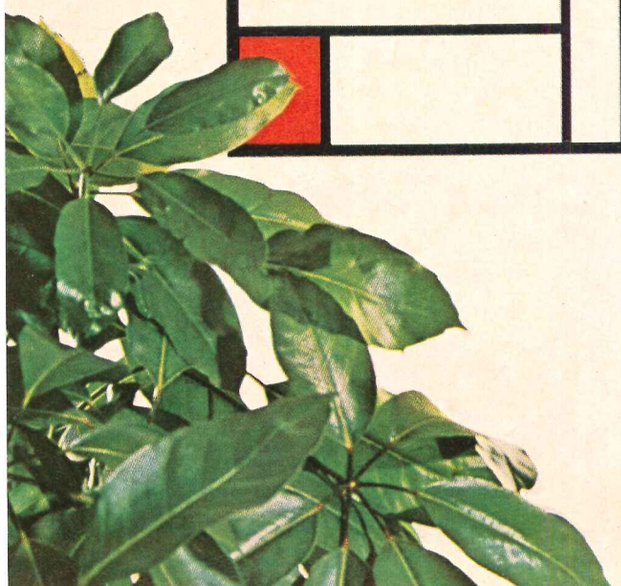


Sound control, beauty and light unified in a new ceiling design concept.

New Fiberglas* Mondrian† combines sound control and lighting in a dramatic new acoustical ceiling which uses the suspension system as a design element. Both acoustical panels and integral lighting modules have frames of identical design and appearance. The result is a functional, uncluttered, luxurious ceiling with a Mondrian design.

The acoustical panels are available in 4′ x 4′ and 4′ x 8′ sizes, with a choice of two white surface finishes: Nubby or Textured Glass Cloth. Nubby is a rough surface with a warm, rich appearance. Textured is smooth with a subtle cloth-weave surface. Sizes and colors (as seen above) further emphasize the Mondrian effect, and can be achieved by cutting and painting panels on the job.

The system is easy to install, and panels may be quickly and easily lifted out for maintenance purposes. For booklet giving more details, *write on your letterhead to:* Owens-Corning Fiberglas Corporation, Attn: M. C. Meeks, Box 901, Toledo, Ohio 43601.



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Hard-Floor Seal

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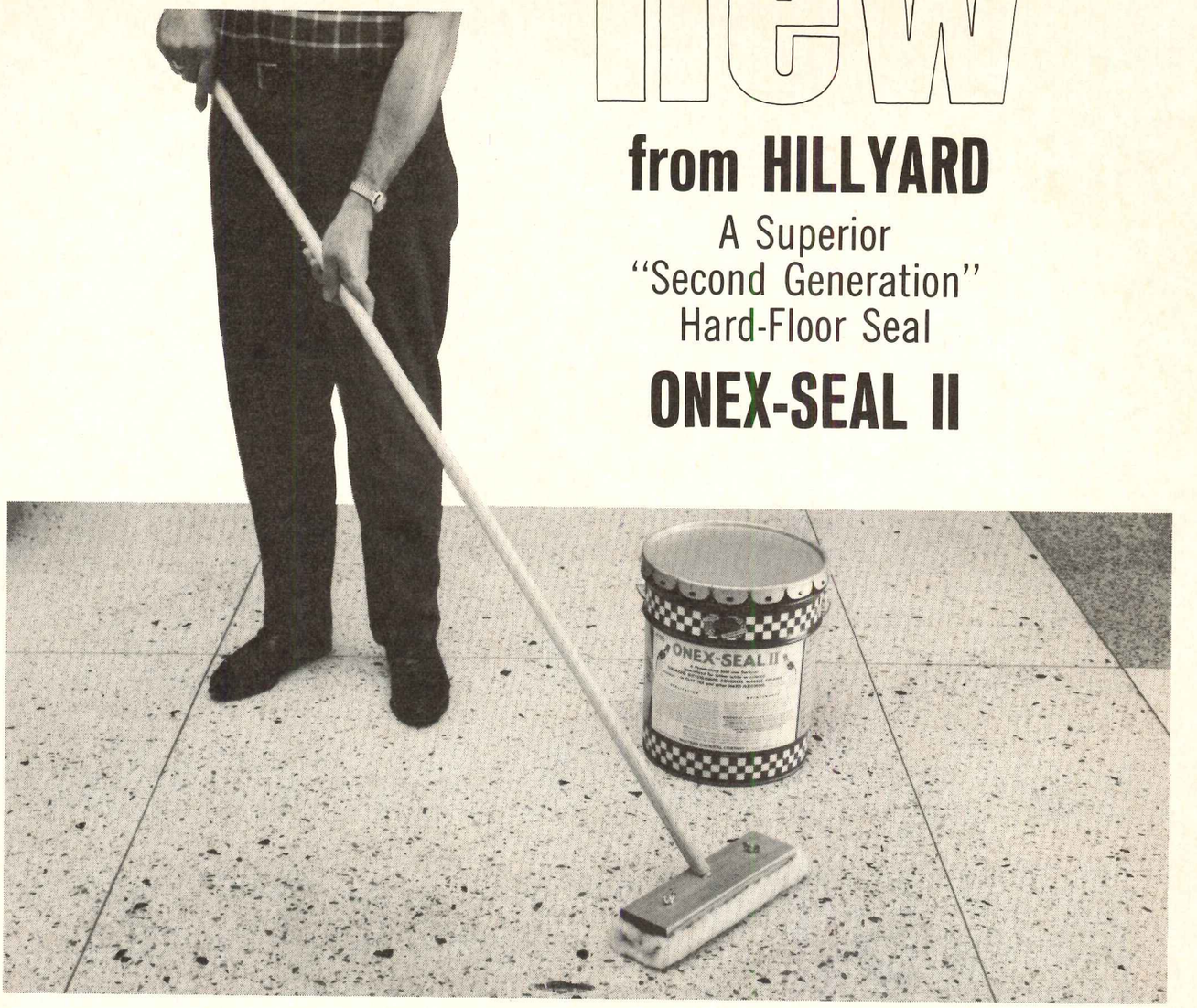

Onex-Seal II is a new formulation of Onex-Seal, the finest terrazzo seal-finish in the Hillyard line for years. It also replaces White Onex-Seal—previously specified for light or white floors. It is the type of seal recommended by the National Terrazzo and Mosaic Association.

In brief, Onex-Seal II provides a seal and finish in one application / keeps water, dirt and stains on the surface where they may be easily removed / produces a tough, wear-resistant and slip-resistant surface / keeps colors bright and true / restores dull, dirty colors when used on an old floor / helps prevent efflorescence, bleeding and dusting / requires only a light buffing to restore its lustre through repeated scrubbings.

Floors finished with Onex-Seal II are easily maintained—requiring only an occasional scrubbing with Hillyard Super Shine-All neutral chemical cleaner, and daily dusting with a Hillyard Super Hil-Tone treated mop. Worn areas can be patched in; and an entire floor can be refinished without stripping because Onex-Seal II won't "build-up". This adds up to substantial savings in labor costs.

Write, wire or call for complete specifications, or ask for a Hillyard architectural consultant who will gladly deliver and explain this new product to you in person. Also, ask for your copy of Hillyard's specifications manual. Loose-leafed and numbered, each file will be kept up to date for you.

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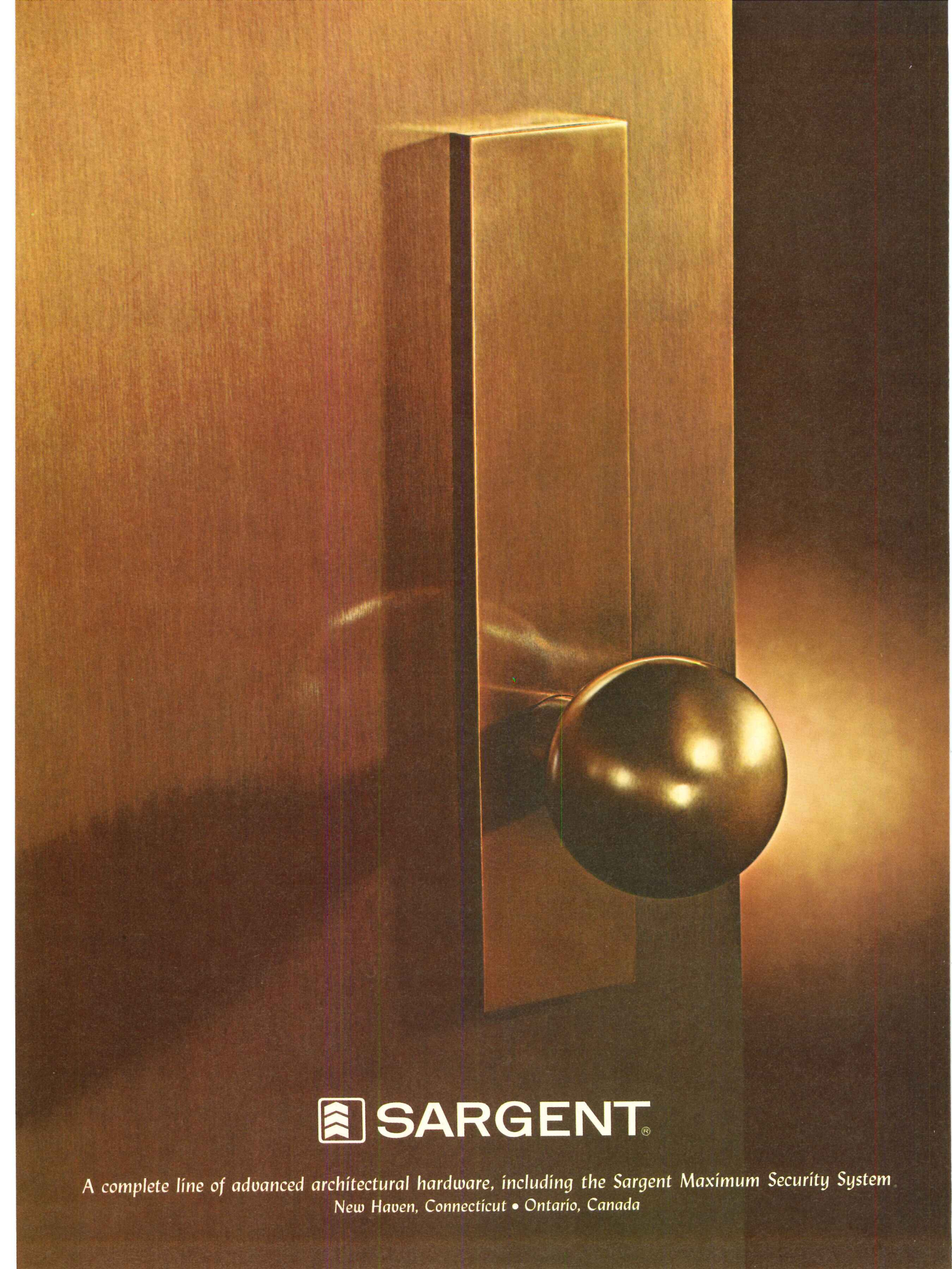

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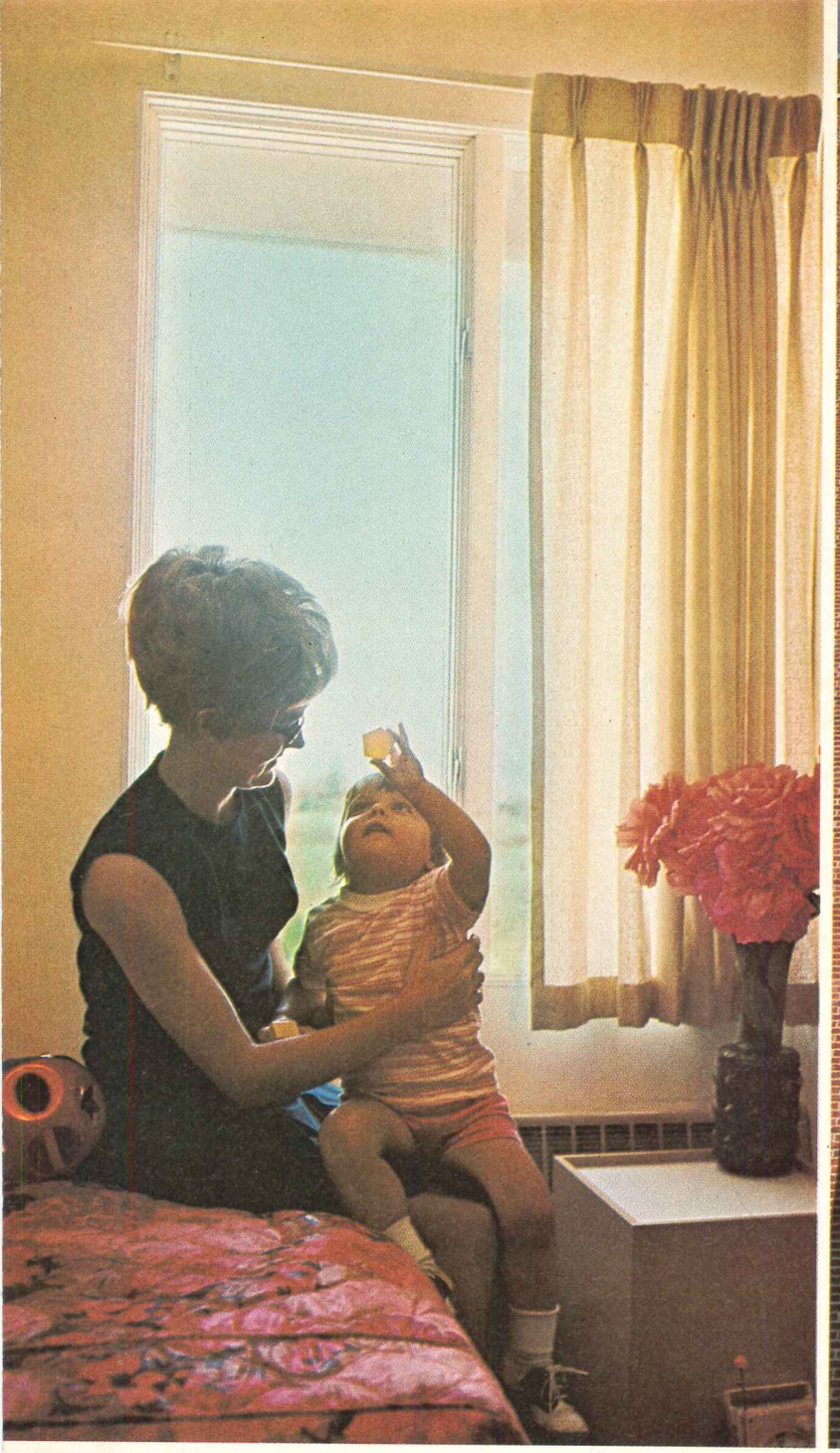

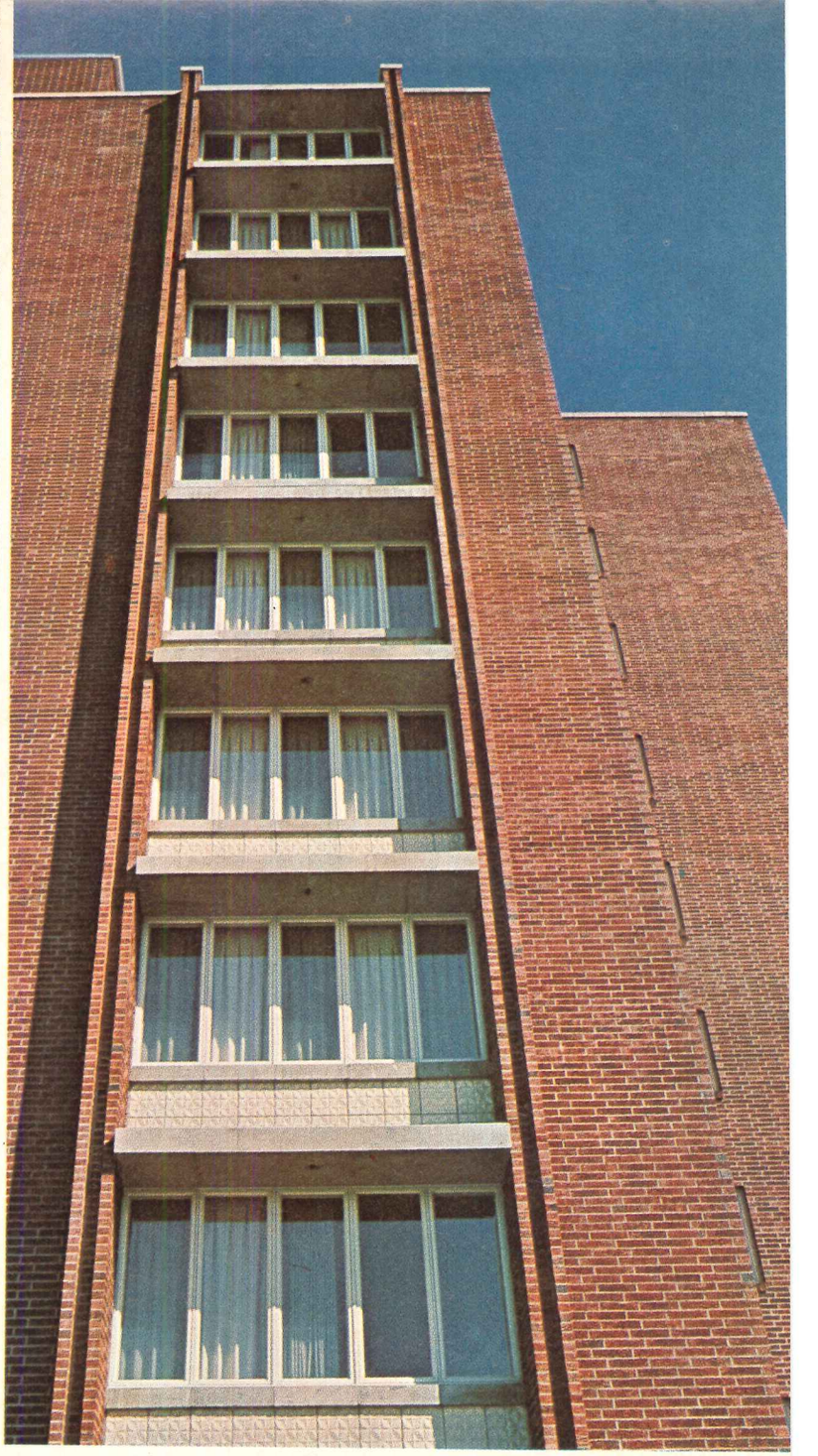

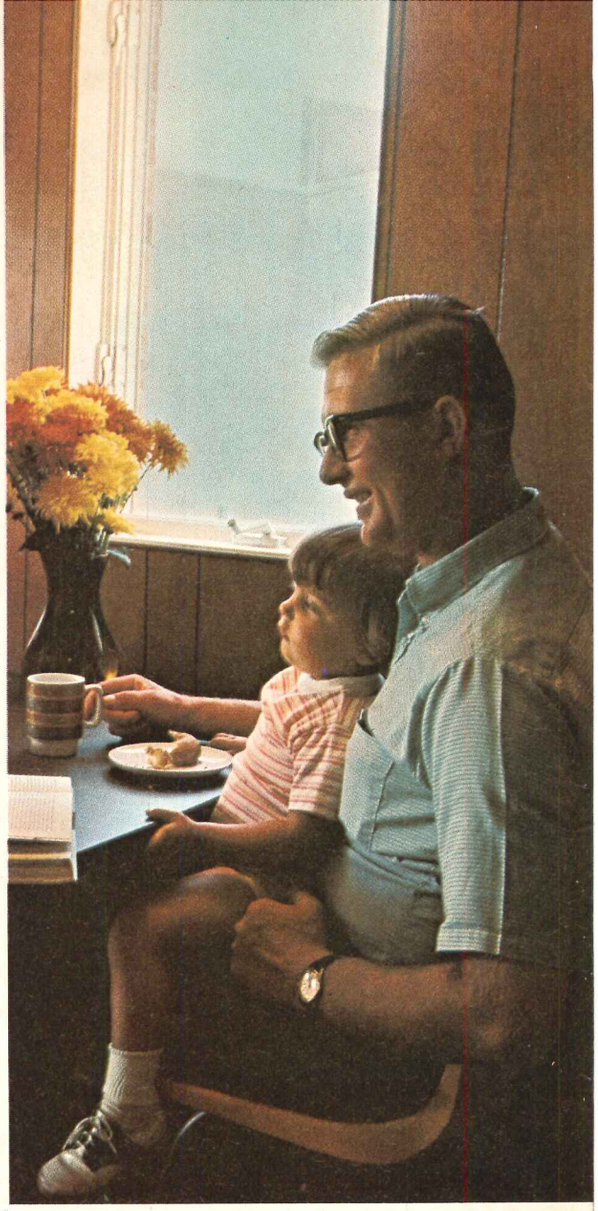

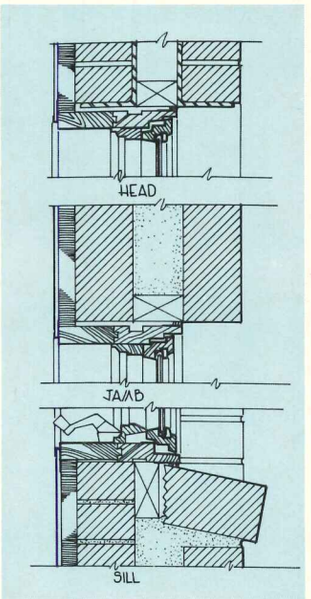

Montanans love wide open spaces.

(but not between their sash and frames)

This is Big Sky Country. Where a view is a 150-mile-wide panorama. Where a man comes to grips with his insignificance.

Where everything's scaled a bit larger. Including the weather. Make no mistake about it. Montana gets cold. Bone-chilling cold.

And sometimes the wind comes cascading down from icy mountain slopes. Paint-peeling hard it blows.

If an architect finds a product that won't knuckle under to weather like that, he remembers it. He *looks* for places to use it.

That's what prompted the architects to choose Andersen Perma-Shield® Casement Windows for this Montana State University married student housing project.

They could install them, the college maintenance staff could forget them. Because their vinyl exterior just doesn't need paint.

Being casements, they wouldn't steal room space from active, growing families. They'd provide top-to-bottom ventilation.

Most importantly, they'd seal out those howling winter winds . . . yet beautifully frame a view and help bring some Montana magnificence indoors.

Remember Andersen Perma-Shield Windows. You'll find lots of places to use them. And get acquainted with the five other types and hundreds of sizes you'll find at your Andersen dealer or distributor.

Building: Married Student Housing
Montana State University, Bozeman, Montana

Architect: McIver & Hess, AIA
Great Falls, Montana

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continued from page 54

elected a vice president of Parsons, Brinckerhoff, Quade & Douglas, New York City.

The office of **Gitlin-Cantor, A.I.A., Associates** has admitted to partnership **Howard J. Rosenberg,** structural engineer. The firm is now known as **Gitlin, Cantor and Rosenberg, Architects-Engineers.** Offices remain at 1101 Seventeenth Street, N.W., Washington, D.C.

The Detroit architectural and engineering firm of **Harley, Ellington, Cowin and Stirton, Inc.** has changed its name to **Harley Ellington Associates, Inc.**

Orrin A. Haworth, A.I.A. has been named an associate in the firm of **Au, Cutting, Smith and Associates, Ltd.**

Gideon Jeremitsky, architect, is now vice president and head of the facilities planning division of the **Office of William Smull, Planners and Architects** of New York City.

G. Anthony Johnston & Associates, Architects-Engineers has joined the firm of **Peck Associates, Inc., Architects,** of Paducah, Kentucky.

The architectural and planning firm, **Bodrell Joer'dan Smith and Associates,** has announced that **Fernando Juarez, A.I.A.** has joined the Los Angeles-based firm as director of architecture and planning.

Joseph L. Bourg has become a partner of **Lanier and Sherrill, Architects and Planners,** and the firm's name has been changed to **Lanier, Sherrill & Bourg.** Mr. Bourg was formerly associated with the firm, **Wurster, Bernardi and Emmons.** The firm is located at 149 Natoma Street, San Francisco.

The partnership of **Lord & Den Hartog, Architects-Planners** of New York City and Boston, affiliated with **Parsons, Brinckerhoff, Quade and Douglas,** has recently been dissolved. **Perry D. Lord, A.I.A.** has been appointed vice president of Parsons, Brinckerhoff, Quade & Douglas, Inc. responsible for architecture and planning. **M. D. Den Hartog, A.I.A.** continues professional activity independently for construction project programming, design and management.

Walter P. Moore and Associates, Inc., Consulting Engineers, Houston, announces the appointment of **Charles A. Drabek, Delmar E. Libby, Ronald L. Krafka** and **Bob L. Ford** as associates.

The merger of two Michigan architectural firms, **Luckenbach/Durkee and Associates, Inc.,** and **O'Dell, Hewlett and Luckenbach Inc.,** has recently been announced. The name **O'Dell, Hewlett and Luckenbach Inc.** has been retained for the new firm, and offices continue to be located at 950 North Hunter, Birmingham, Michigan. President of the merged companies is **Carl Luckenbach,** with **Thomas Hewlett** as president-emeritus and **Owen A. Luckenbach, A.I.A.** as vice president-emeritus.

E. V. Markula is now project manager at **Richmond Manhoff Marsh, Inc.,** Chicago.

continued on page 70

Now! Bally has a new edition of its Working Data Catalog . . . the world's most comprehensive reference for architects, engineers, food consultants . . . everybody who specifies Walk-In Coolers, Walk-In Freezers or Refrigerated Warehouses. Contains 150 pages of detailed technical information that helps to make it easier than ever to prepare specifications . . . includes more than 400 photos, drawings and charts . . . provides refrigeration capacities, sizes, weights . . . door arrangements . . . floor details . . . electrical data. Everything complete and concise. Use your letterhead to send for your free copy.

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Cotswold by Brian Yale; selected from designs submitted by Students of the Royal College of Art, London

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PILKINGTON GLASS

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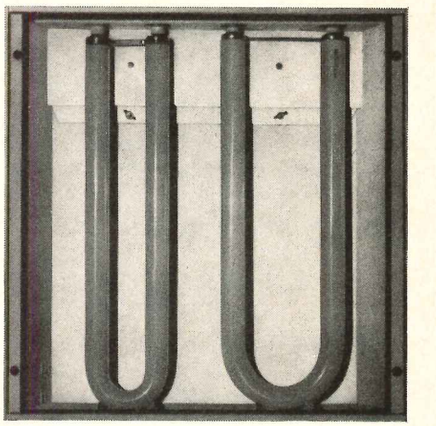
25% more light thanks to U.



Keene's new family of 24" or 30" square fixtures give you 25% more light than similar units using straight fluorescents. You get high light output with complete interior design freedom. Reason: the new 40-watt U-shaped fluorescent just coming into use.

Being square and non-directional the new fixtures are ideal for modular construction and for large areas where the commonly used 1 x 4, or 2 x 4 linear fixtures would be disruptive to design or construction.

Use any U-tube

What makes our fixture truly one-of-a-kind, however, is that it uses any major manufacturer's 40-watt U-shaped lamps... the ones with the 6" leg spacing or the 3½" leg spacing... as demonstrated above.

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This flexibility's possible because our unique fixtures have adjustable sliding sockets* that secure the lamp, provide the power. What's more each fixture needs only one standard 40-watt ballast versus the two expensive ones required on units that use straight fluorescents. A feature that saves on cost and lets the fixture run cooler.

You save on installation and maintenance as well. Recessed models feature a hinged assembly that puts all electrical components on one side. There are 3 types available: surface, air and non-air, recessed. Want us to shed more light on our new fixture family?

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*Patent Pending

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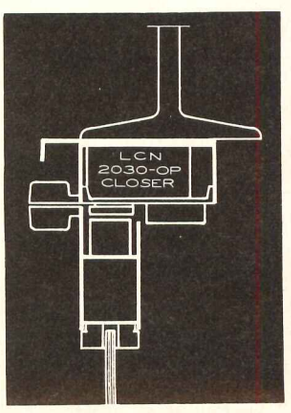
Zellerbach Hall, Univ. of California, Berkeley. Architects: Vernon DeMars, FAIA, and Donald Hardison, FAIA. A joint venture of the firms: DeMars & Wells and Hardison & Komatsu.

LCN Overhead Concealed Door Closers

are well known for a variety of qualities: They look great. They control doors efficiently. They are easily and permanently adjusted for two closing speeds and cushioning of the opening swing. Their basic excellence assures maximum control with minimum service which means—lowest long-run cost. Write LCN Closers, Princeton, Illinois 61356.



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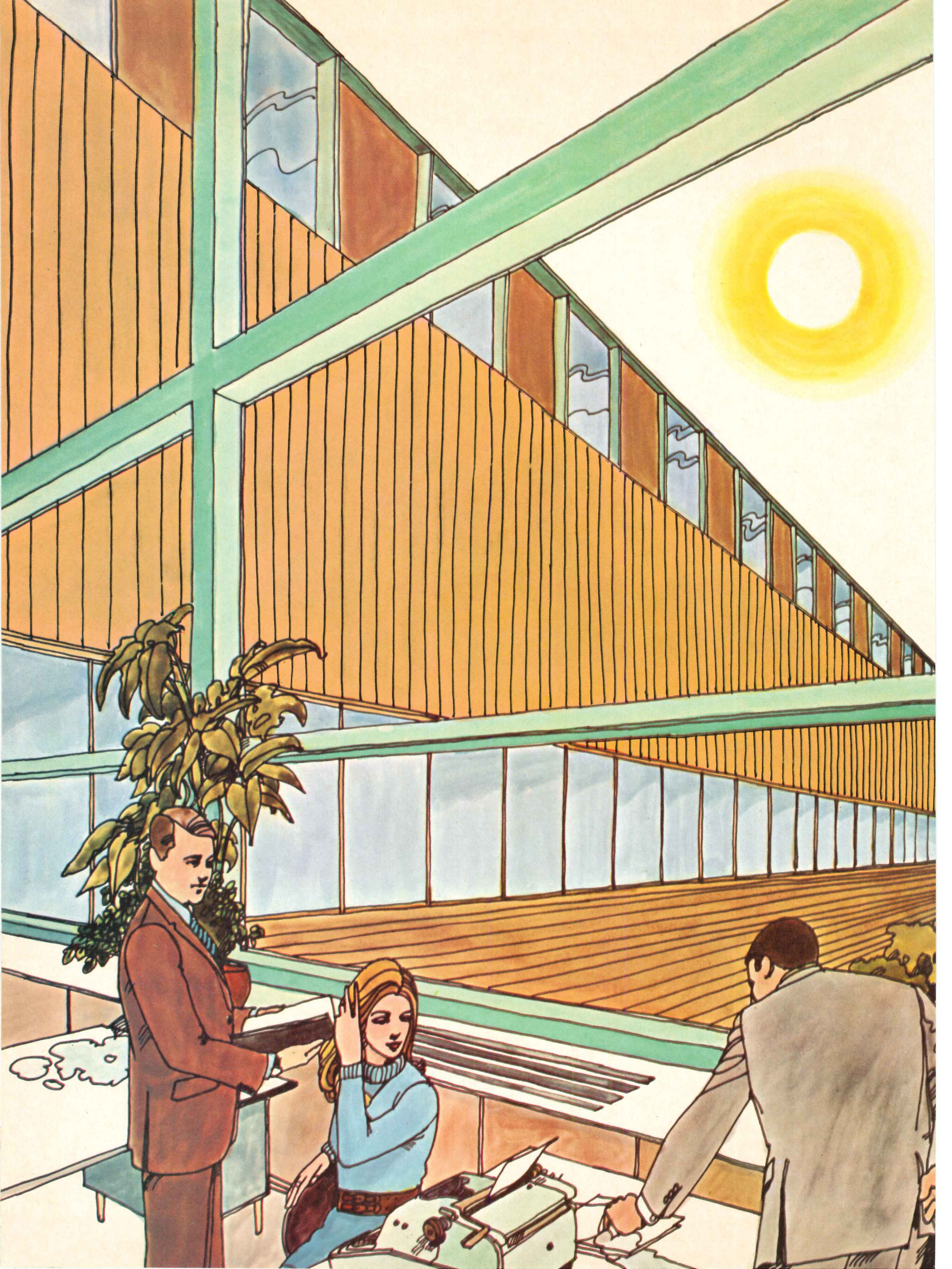

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Get full information on this superior new finish for metals from your supplier, Sweet's Architectural File or by contacting Dept. 16W, PPG INDUSTRIES, Inc. One Gateway Center, Pittsburgh, Pa. 15222. Telephone 412/434-3191.

*TM Pennsalt Chemical Corporation

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Color Coatings PPG INDUSTRIES

continued from page 62

Robert F. Zelsman, P.E., Edwin J. Pfiluger, A.I.A. and **William C. Grobe, A.I.A.** are now associates of the Austin, Texas architectural firm, **O'Connell and Probst, A.I.A.**

T. A. O'Reilly is now an associate with **Schutte Mochon, Inc., A.I.A.,** Milwaukee-based architects, planners and engineers.

I.M. Pei & Partners, Architects has recently announced the appointment of new associate partners: **Leonard Jacobson, A.I.A., James I. Freed, A.I.A.** and **Werner Wandelmaier, A.I.A.** Three senior associates of the firm have been named: **Theodore J. Musho, A.I.A., James P. Morris, A.I.A.** and **Robert Lym, Jr.** New associates are: **Pershing Wong, A.I.A.; Owren J. Aftreth; Kenneth D. B. Carruthers, A.I.A.; Lien C. Chen; A. Preston Moore, A.I.A.; August T. Nakagawa, A.I.P.; Shelton R. Peed, A.I.A.; Theodore Amberg, A.I.A.; Paul E. Crocker, Jr.; Harold Fredenburgh; William J. Jakabek; John Laskowski; Bernard Rice** and **Michael Vissichelli.**

The Perkins & Will Partnership has recently elected 8 staff members to the position of senior associate. The new senior associates for the firmwide staff, with offices in Chicago, are **William J. Hurley** and **John T. McGuckin.** Other senior associates are: **Neil M. Baker, James K. Maeda** and **Robert J. Piper** (Chicago); **Stewart E. Duval, Joseph B. Reid** and **James M. Haushalter,** engineer (Washington, D.C.). Elected associates were: **Kenneth C. Merrill; Vernon R. Noechel; Betty J. Ritter; Edward E. Alvarado; Dennis A. Ream; Robert J. Cowling; Robert E. Gray; Kenneth Ritchin; Ivan Sargeant; Willem A. Swaan; James C. Allen; Joseph T. Barrowman; Edward J. Burnell; Frank P. Gagarin; Sigmund P. Haraburda; Melvin P. Hemmer; David C. Klauba; also J. Lauran Kretchmar; Elmer O. Olson; John M. Powell; Max N. Schmidt; Duane J. Schultz** and **Salem K. Shaheen.** Recently appointed as partners-in-charge of design were **Robert G. Larsen, A.I.A.** (White Plains, New York office) and **Robert L. Palmer, A.I.A.** (Washington, D.C. office).

The office of George Pierce—Abel B. Pierce, Architects, Engineers and Planners, A.I.A., Houston, has appointed as associates architects **O. C. Bartholomew, Jr., Tom K. Rodgers** and **Logic Tobola, II.**

A firm has recently been formed for the practice of landscape architecture and architecture, entitled, **Quennell/Gaffney,** and located at 946 Massachusetts Avenue, Cambridge, Massachusetts. **Nicholas Quennell** and **Jack Gaffney** are principals.

Paul Rasmussen is now an associate of the Washington, D.C. firm, **Duncan Gray Consulting Engineer.**

Ratcliff-Slama-Cadwalader, Architects of Berkeley and Oakland, California, recently appointed **Sanford S. Pollack** and **Syed V. Husain** as associates.

James Scott Rawlings, A.I.A. and **John Elzey Wilson, A.I.A.** have announced the election to partnership of **Edward Shelton Fraher, Jr., A.I.A.** and the change of their firm name to **Rawlings, Wilson and Fraher,** 1000 North Thompson Street, Richmond, Virginia.

Harper Richards, A.I.A. is now chairman of the board of **Harper Richards Associates,** with **Richard N. Hague, A.I.A.** succeeding him as president. Four new associates of the Chicago architectural, engineering and interior design firm have been named, **James Duke, Joseph Kobylecky, Nelson Buck** and **Peter Majewski. Patrick Raymond, A.I.D.** now directs an expanded design program; and **Edward Lee Goettler** has joined the firm as senior interior designer.

Thomas H. Roberts, who has been director of regional planning for the **Metropolitan Washington Council of Governments** in Washington, D.C., is now executive director of the **American Institute of Planners,** succeeding **Robert L. Williams.**

Louis A. Rossetti, A.I.A. has announced the formation of **Rossetti/Associates Inc.** for the practice of architecture, community planning and engineering. Mr. Rossetti was formerly associated with **Giffels & Rossetti, Inc.** as vice president and director of architecture and design and a member of its board of directors. Associated with him in the capacity of senior consultant is **Louis Rossetti, F.A.I.A.** Offices are in the Penobscot Building, Detroit.

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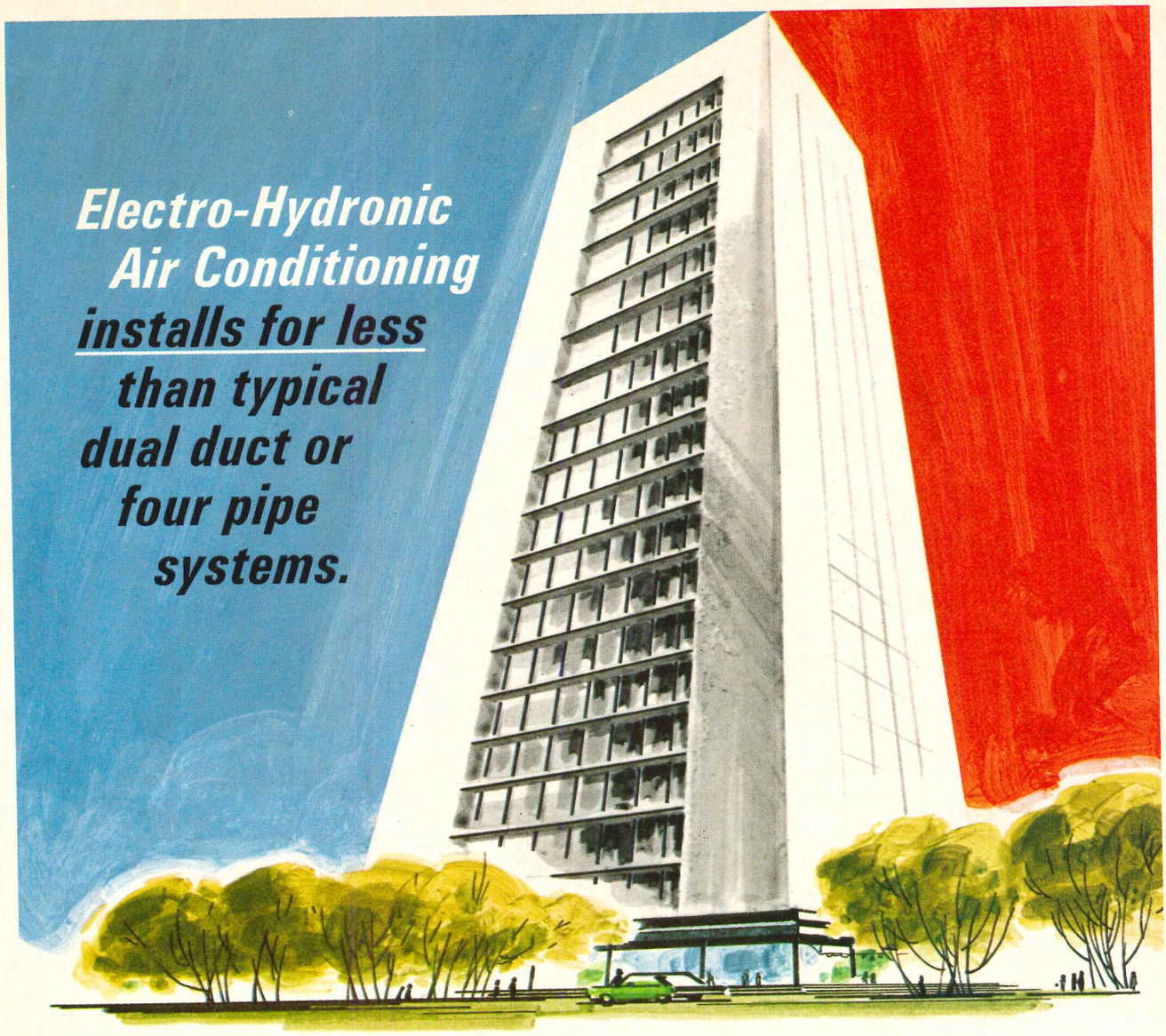

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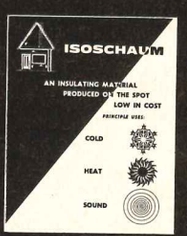

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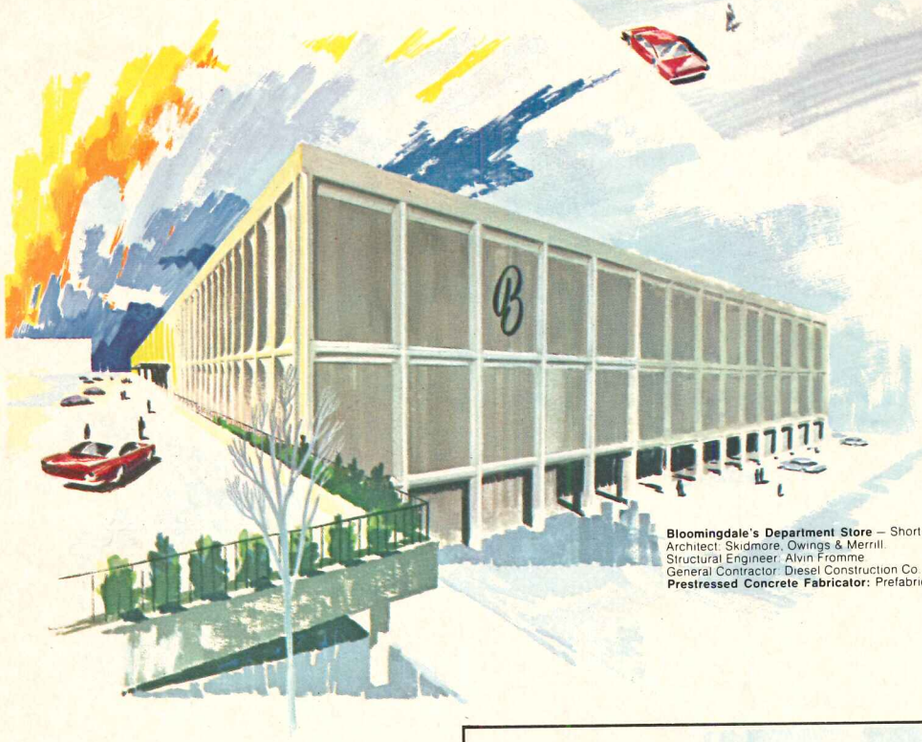
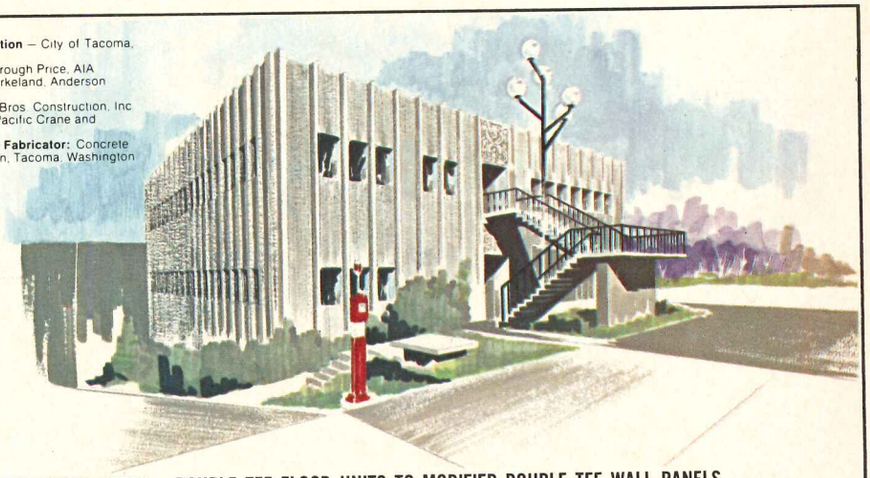
Owner: Conbus Corporation.
Architect-Engineer: Edwards and Portman.
Contractor: George A. Fuller Co.
Prestressed Concrete Fabricator: Concrete Materials of Georgia, Inc., Forest Park, Ga.

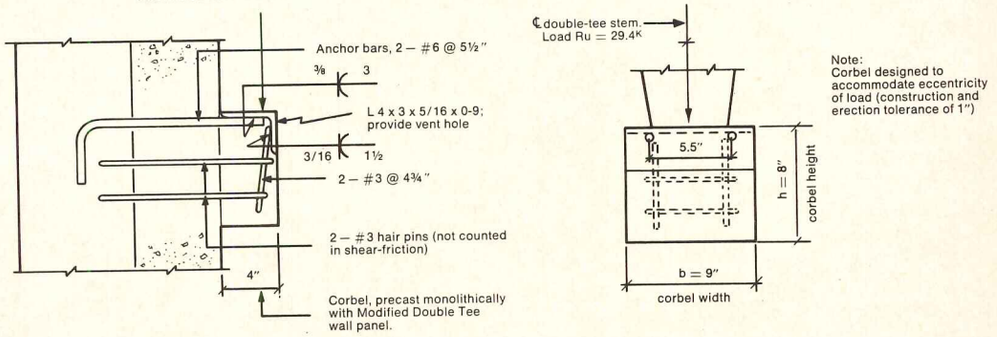


Bloomingdale's Department Store — Short Hills, New Jersey.
Architect: Skidmore, Owings & Merrill.
Structural Engineer: Alvin Fromme.
General Contractor: Diesel Construction Co.
Prestressed Concrete Fabricator: Prefabricated Concrete, Inc., Farmingdale, N.J.

Headquarters Fire Station — City of Tacoma, Washington.
Architect: Robert Billsbrough Price, AIA
Engineer: Anderson, Birkeland, Anderson and Mast.
Contractor: McKasson Bros. Construction, Inc.
Prestressed Erection: Pacific Crane and Construction Co.
Prestressed Concrete Fabricator: Concrete Technology Corporation, Tacoma, Washington



CONNECTION DETAIL — DOUBLE TEE FLOOR UNITS TO MODIFIED DOUBLE TEE WALL PANELS



Note:
Corbel designed to accommodate eccentricity of load (construction and erection tolerance of 1")

BASIC DATA AND REFERENCES AVAILABLE UPON REQUEST: CF&I STEEL CORPORATION, P.O. BOX 1920, DENVER, COLO. 80201

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No other lamp will receive such a blessing from everyone concerned—management, plant engineers and factory workers. The very fact that the General Electric Lucalox lamp creates a more ideal working environment is worth the price alone. But also consider that nothing can outlight it—or undercost it. That makes strong business sense. Proof? Bring on the strongest fluorescent—and our 400-watt GE Lucalox lamp will give 2½ times more light. Bring on the finest mercury lamp—and it will give twice the light. More evidence? Recently, several industrial operations wanted to double their light levels. The choice: fluorescent, mercury or 400-watt Lucalox lamps. It was hardly a contest. Their installation estimates showed Lucalox lamps and fixtures could be installed for 25% less. Now that you're armed with these facts and figures, isn't it time you saw your GE Large Lamp Agent about your factory lighting? Or write: General Electric Co., Large Lamp Dept., C-806, Nela Park, Cleveland, Ohio 44112. Look at your ceilings. The savings could floor you.

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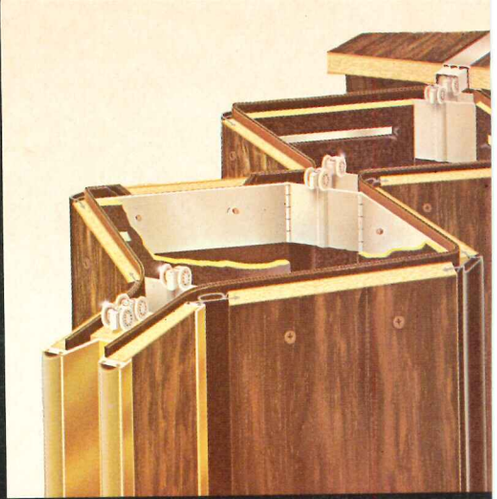
an exciting new concept in wood

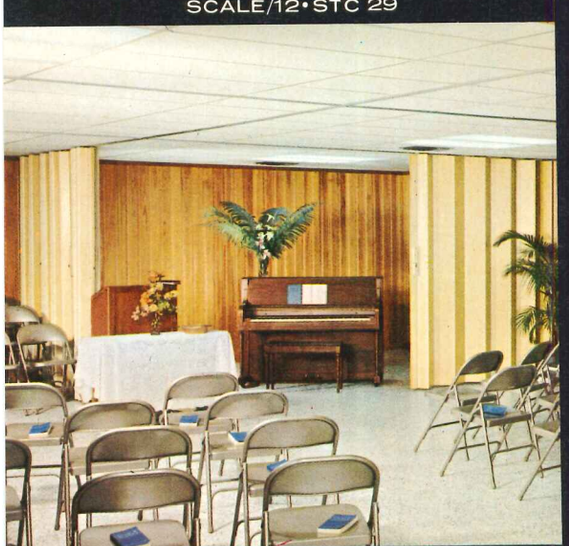


TWIN PANEL SONICWAL

SCALE/12•STC 29

SONICWAL/88•STC 40

SONICWAL/66•STC 36



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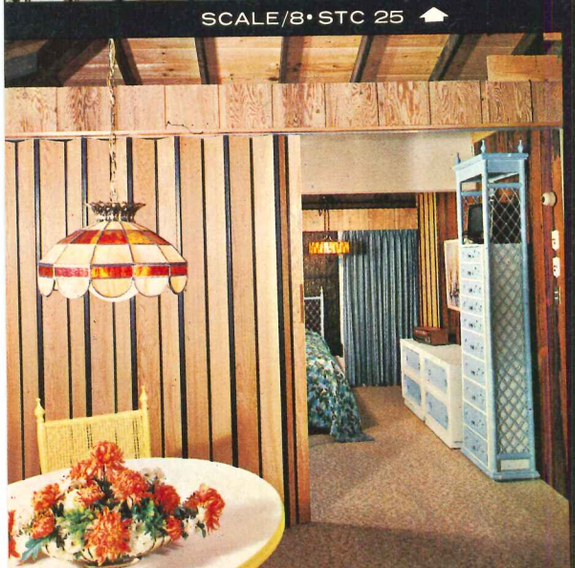

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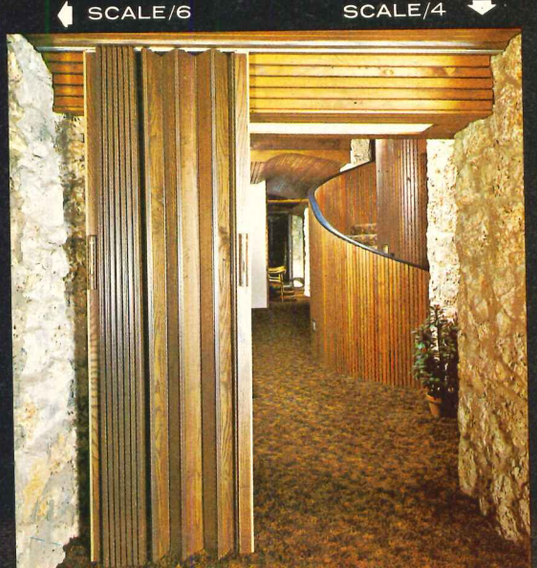

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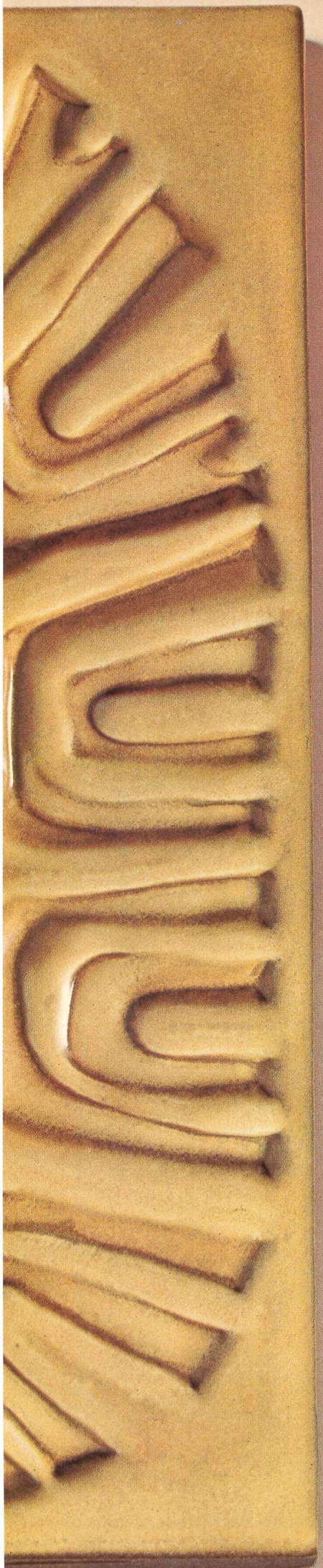

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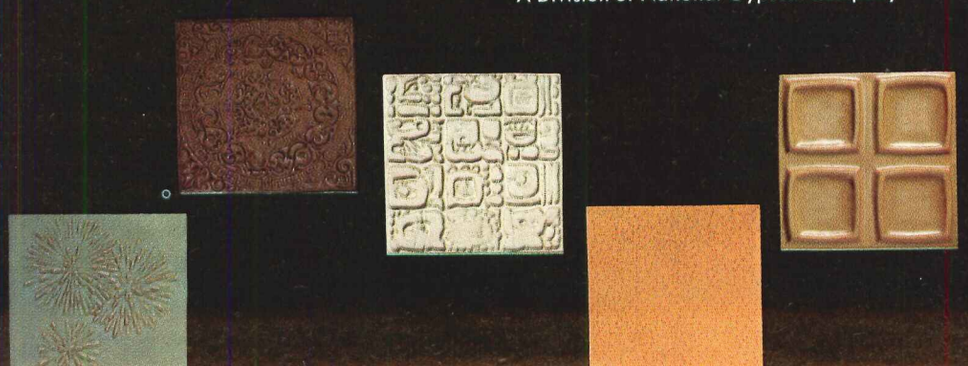

LETTERS

Tribute to Walter Gropius

The tribute of Mildred Schmertz to the late Walter Gropius (August) is a eulogy which even that great but modest man would have had to acknowledge. As a former student, I am deeply appreciative.

John C. Parkin
Toronto, Ontario

When someone does such a wonderful job of writing as "Walter Gropius, 1883-1969," the drums should beat and praises should be sung to the ringing of bells.

A. L. Aydelott
Memphis, Tennessee

Commission of Fine Arts

In reference to your article on the Commission of Fine Arts (April, page 37), I would like to advise rereading of the *Shipstead-Luce Act*. Although Congress states its objective that ". . . development should proceed along the lines of good order, good taste, and with due regard to the public interests involved, and a reasonable degree of control should be exercised over the architecture of private or semipublic buildings adjacent to public buildings and grounds of major importance . . ." (which are further defined), it also states that, "To this end, . . . the plans, therefore, so far as they relate to *height* and to *appearance, color, and texture of materials* of exterior construction, shall be submitted by the Commission of Fine Arts; . . ." (emphasis added). In other words, Congress directed the Commission of Fine Arts to pass judgment on two items: the height of buildings and the acceptability of exterior construction materials as they relate to appearance, color, and texture only. Whether CFA's interpretation of its review power under *Shipstead-Luce* is beneficial is for others to decide.

Jo-Ann Neuhaus
Urban Planner
Washington, D.C.

Not just the cities

Mr. Albert Mayer's "It's Not Just the Cities," Part One (June), is of great interest to us because it so succinctly describes many of our problems. As a state chairman of the Ohio Jaycees my portfolio area, Environmental Development, includes most of the things that Mr. Mayer speaks of in his article.

Fred A. Dickey, Chairman
Environmental Development
Chesterland, Ohio

Who said that?

A note concerning "A Slogan Worth Remembering" in your June, 1969 Perspectives column. Your readers might be interested to know that the quotation, "If you're not part of the solution, you're part of the problem," originated with exiled Black Panther Minister of Information Eldridge Cleaver.

John T. Radelet
Ann Arbor, Michigan

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Construction cutbacks and tax reform: more bark than bite

Two major moves at the Federal level, one to control inflation in the construction industries and one to revise the tax structure, generated scare headlines this month: "President orders 75 per cent cutback in Federal construction spending," says one; "Investors say tax reform bill would cut construction," cries another. There has been some fear that a wait-and-see feedback among owners could halt or postpone construction planning and design phases to a point of serious recession in architectural and engineering activity.

Below is comment from two authorities with records of no-nonsense analysis of construction costs and trends: George A. Christie, chief economist of the F. W. Dodge Division of McGraw-Hill Information Systems, whose columns and forecasts have appeared regularly in this department, and the construction cost consultant firm of McKee-Berger-Mansueto, Inc., which has also been a frequent contributor. Their views in capsule:

- The tax bill's tougher depreciation allowances may increase costs but won't reduce demand for most kinds of new construction.
- The Federal cutback will have less than two per cent impact on the over-all construction market.

"Fear itself" the main threat in tax bill and cutbacks

By George A. Christie, chief economist
F. W. Dodge Division
McGraw-Hill Information Systems

The new tax reform legislation, which has passed the House and is in Committee in the Senate, could hurt some areas of construction, but not much. One of the features of the legislation would limit the tax subsidy now available to owners of many types of commercial and industrial buildings through accelerated depreciation. On newly-built structures, the fast write-off would be reduced sharply, and the practice would be eliminated altogether for existing buildings that are resold.

Once this change becomes law, it will clearly have a negative effect on new nonresidential construction because, since building owners will have to pay more taxes, their buildings will be less profitable under the new ruling than under the old. Moreover, since resale will become more difficult without the sweetener of a new round of depreciation, firms that build and operate commercial properties will find that being less able to dispose of existing properties will somewhat restrict the availability of funds to initiate new ones.

It's important to keep in mind, though, that there's nothing in the tax law—either as it stood before or as it is proposed—that affects that *demand* for industrial and commercial buildings. The impact of the existing tax shelter is to lower the *cost* of building and operating such properties and the elimination of part or all of that shelter simply means that commercial buildings would cost more.

Some marginal projects that might have been profitable under the more liberal tax laws may not be built under the newer regulations, but these are apt to be few in number. The real impact of the change is that the higher cost of operating such properties without the depreciation subsidy will have to be covered by higher rentals.

Unlike the *suspension* of accelerated depreciation in 1966-67, which brought a very sharp, though brief, cutback in building, the present proposal would be a *permanent* change and there would be no reason to delay in adapting to the new rules. Except for its necessary effect of raising costs due to elimination of the subsidy, the new depreciation ruling on commercial and industrial properties isn't likely to inhibit anything but a few marginal projects, and adjustment to the change ought to be reasonably smooth.

The Federal building cutback turns out to be 75 per cent of about 3 per cent

Now that the dust stirred up by Vice President Agnew's newsleak early in September hinting at a massive Federal construction cutback has begun to settle, it's possible to get some idea of the dimensions of this plan. With President Nixon's later clarification, it looks as though—once again—the apparent force of the original statement has faded "like the morning clouds around San Clemente." It turns out that all that is intended for the present is a 75 per cent reduction of *new* (not work already started), *direct* Federal construction projects (not involving Federal Aid grants to states and municipalities).

The difference is substantial. It means that the cutback is limited to the construction the Federal government engages in solely for its own use—i.e., Federal office buildings, post offices, and the military and conservation work carried out by the Corps of Engineers and Bureau of Reclamation. It *does not* involve the construction supported by the Federal government through its several agencies and departments for social purposes—highways, sewer and water facilities, even schools and hospitals. These projects are the big expenditure items, and in total add up to about 30 per cent of the $90-billion total of all construction spending in the economy. *Direct* Federal spending for construction (the work affected by the cutback) doesn't amount to much more than a billion dollars. What's more, most of this fiscal year's work has already been contracted, and the estimate of the actual reduction in expenditures this year comes to only $300 million.

On this basis, the September announcement has to be interpreted more as an example set by the Federal government for states, municipalities and even industry to follow. The real strength of the Federal order lies in the threat to pull back on its grants to state and local governments *at a later date* if they do not follow the Federal lead and cut back their construction voluntarily. But even a voluntary reduction by state and local governments comparable to the Federal cut would reduce actual spending there by only $700 million—a total of $1 billion altogether. At just a shade over one per cent of total construction spend-

ARCHITECTURAL BUSINESS THIS MONTH

ing, this is hardly more than a token cut.

Except for homebuilding, which is being restrained by tight money, most of the construction industry is already operating at or beyond practical capacity. Because of the very strong demand for facilities of all kinds, inflationary pressures in construction are especially severe. (This year's output, in a physical sense, won't be much larger than 1968's, though it will cost something like 8 per cent more.) As a move to relieve some of the pressure of this excessive demand, and thereby inhibit inflation in construction, the small Federal cutback—while in the right direction—may be quite ineffectual.

The Federal construction cutback misses cost targets

By Lawrence C. Jaquith and Bradford Perkins
McKee-Berger-Mansueto Inc.
Construction Consultants

President Nixon's order to cut new Federal construction contracts by 75 per cent has produced grave concern (exaggerated in our view) among some industry spokesmen, and more significantly, the move seems to be the product of exaggerated hopes on the part of the Administration for its effectiveness as a brake on inflation. Taking away $1.6 billion worth of post offices, government office buildings, and reclamation projects from a $90-billion industry isn't likely to cause many problems for the average construction worker and contractor (although some have expressed fears of a recession). Neither is it likely to "relieve immediate strains" on the industry and "reduce the rise in housing prices" as claimed in the President's announcement.

Perhaps the most candid assessment of the cutback order was made by White House counselor Arthur Burns, who admitted that its probable impact would be largely psychological.

This statement implies, however, that the Administration is underestimating the industry's problems, for it will take more than psychology to bring about the relief from inflation the White House expects.

The President's announcement noted the establishment of a Cabinet Committee on Construction, a directive to the Departments of Labor and Health, Education and Welfare to increase manpower training programs, pleas to state and local governments to issue similar cutback orders and the suggestion that business postpone non-essential construction. But the emphasis was on the cutback order itself and the effects it is expected to produce.

The basic concept that guided formulation of the cutback order rests on a traditional economic assumption: if you reduce demand (the level of planned construction), then pressures on supply (contractors, labor and materials) will be eased, and prices will level off. Equally important to the Nixon approach is a corollary assumption: that these released factors of supply will find their way (or can somehow be directed) into housing, thus specifically reducing prices in that sector.

Both of these assumptions show that the Administration has not come to grips with the basic causes of construction inflation. Not only is the cutback too small to make a significant impact on the problems of soft bidding, high premiums to attract labor and other practices stemming from the current shortage of construction resources, but also it ignores many of the equally important causes of the industry's long cost spiral.

A larger cutback is not the answer either for it would have only a small positive effect on costs and a major negative effect on the nation's critical domestic programs. What is needed is a program that recognizes and deals with the other inflationary pressures on the industry.

Monopolies, management and risk are among real cost factors

Among the other causes that are left relatively unaffected by current Administration proposals are the uncontrolled bargaining power of the unions; the non-competitive markets controlled by some materials manufacturers and subcontractors; the labor productivity decline experienced in some areas; the critical shortage of able management personnel; the increasing role of organized crime in the industry; and the legal factors which discourage innovation, including codes, union jurisdictional rules and the lawsuit dangers associated with new materials.

It is the combination of most or all of these factors—not just the excess demand—which has caused bids such as those received for a new New York community college to reach their current levels. These bids came in $50 million over the budget and represented a square-foot cost of approximately $100.

The unfortunate fact is that schools, hospitals, low-income housing, and other high priority construction programs are killed by such bid levels. The Philadelphia Board of Education and many other public bodies are already being forced to hold back or cut their construction programs. Only developers of new office buildings, manufacturing plants and similar facilities seem to be able to afford these prices because they can pass costs along to tenants and consumers.

This is one major reason why the Administration's second assumption—that labor and material resources freed by the Federal cutback will flow into housing and stabilize prices also seems naive.

Furthermore, not only can other groups outbid housing for any freed construction resources, but also it is very doubtful whether contractors and labor working on dams, post offices and other stalled Federal projects will move easily into housing, or from one geographical area to another. The skills required are too different.

The unfortunate conclusion that has to be drawn from this analysis is that the President's cutback call will not halt the climb in housing prices or any other area of construction costs. Moreover, his other proposals are also inadequate solutions to the overall problem.

The increased manpower training proposal is a step in the right direction but will barely begin to meet the industry needs; especially since the advice of Presidential committees is rarely heeded. Only the call for state and local governments to cut back their programs has the potential to cause a major impact—if it is enforced by a withholding of matching Federal funds.

The United States, however, clearly needs more construction, not less. Even the present cutback will hurt some architects and engineers as well as several domestic programs while it does little or nothing about inflation. If the states and municipalities follow suit, the effect on both the design professions and the nation's social needs could be very serious.

A more fruitful attack might be organized along the following two lines:

1. *Innovation:* Since costs for conventional construction are not going to retreat, a major effort should be directed towards developing ways to build more for the same money. To do this, it will be necessary to:
   a. Provide greatly increased funding for research and development.
   b. Encourage legislation to update building codes, jurisdictional rules and other barriers to innovation.
   c. Develop programs to attract skilled management and other personnel into the industry.
2. *Stabilization:* Since most construction, in the near future at least, will still be conventional in nature, it is necessary to stabilize costs by:
   a. Programs to counter-balance the bargaining power of unions and improve the competitive nature of some subcontractor and materials markets.
   b. Large scale programs to increase the available labor force, number of contractors and supply of materials. This would include a greater effort in manpower training, a relaxation of union racial barriers and incentives to attract new contractors and materials suppliers to the industry.

On balance it is encouraging that the President has demonstrated a genuine concern for the industry's inflationary problems. However, a more imaginative and sophisticated approach seems necessary to achieve a long-run solution.

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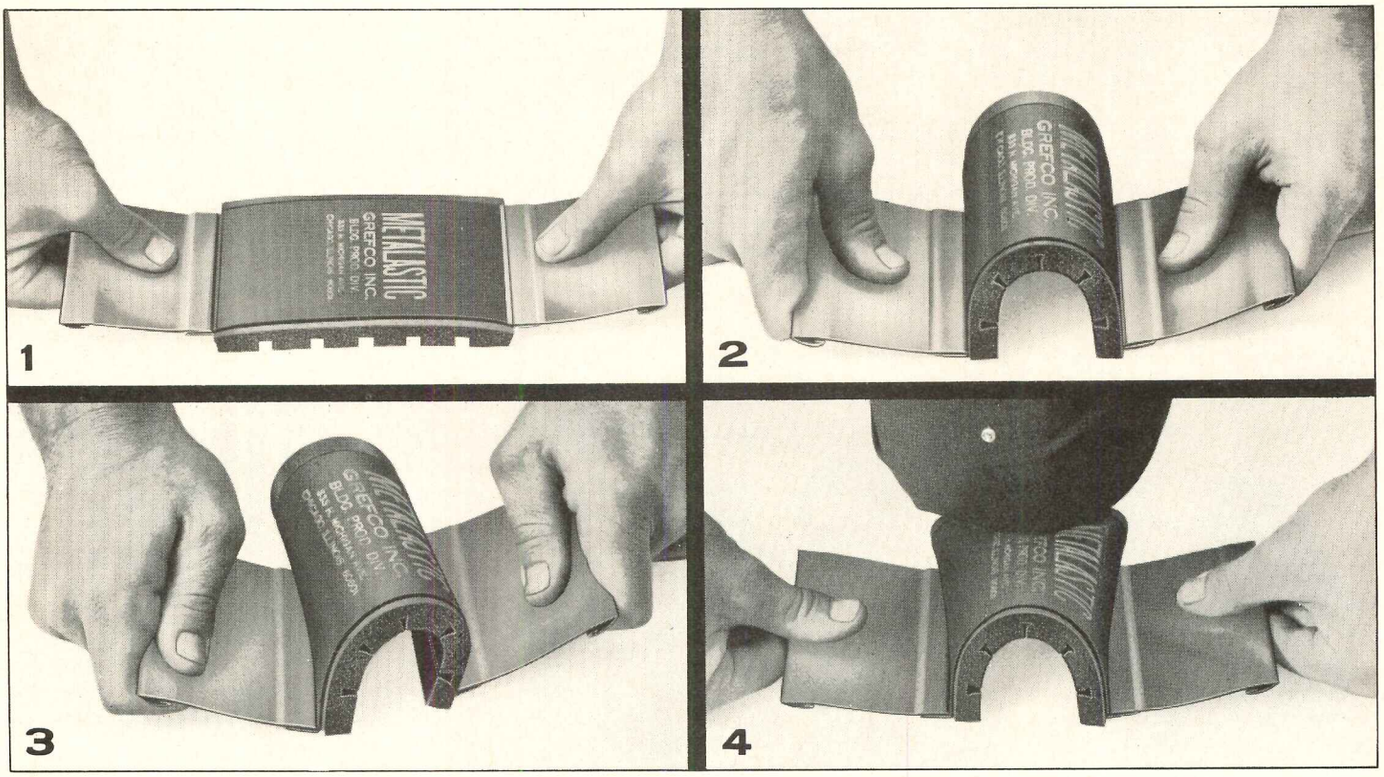

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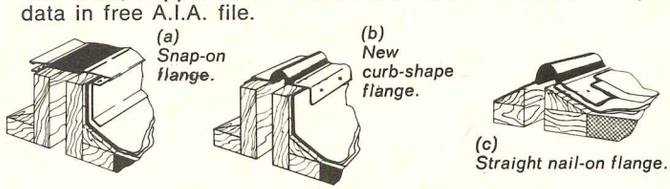

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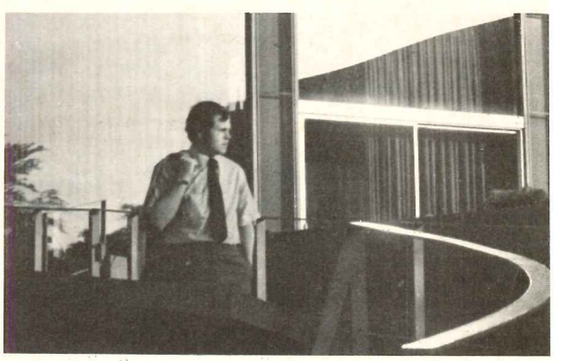
Internship: bridge to future practice

A giant step toward solving some of the problems of transition from architectural school to actual practice is an internship program at the University of Tennessee School of Architecture. The program, called "Guideline," is similar in intent to medical internship programs. It places fourth-year students in real-work situations for six months in architectural offices throughout the nation as prerequisite for entrance to the fifth and final year of study. Students spend the last three months of their fourth year in a working office with the understanding that their exposure will be about as broad as that of a junior-executive trainee—*not* that of a summer-job draftsman. This period is followed by three months of assigned work in the same office.

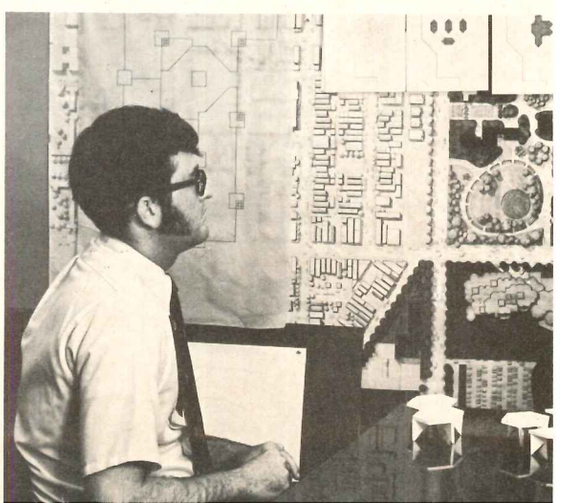
Dean Bill Lacy sees the Guideline Program as furthering his aims for the school in two important ways. First, it extends the drive toward effective contemporary practice through which, for example, design classes during the past year have worked on such problems as low-cost housing for Knoxville, a study of commercial strip highways, and an investigation of new towns for

Jim Bottorf, architect designer for TVA, left, explains a new town development to student interns Paul D. Quinley and Lawrence Waldron as TVA landscape architect Mike Fowler looks on.



Student Robert Couch, intern at The Architects Collaborative, Cambridge, explores Le Corbusier's Carpenter Center at Harvard.

Student Vance W. Travis (below) looks over plans with Ken West, head of the construction department of Earl Swensson and Associates of Nashville, then (right) goes with Ken to check conditions at the site.



Tennessee. Second, it orients the student's own drives and options in the work of the final fifth year, broadens the scope of his practice objectives, and eases the shock of his subsequent entrance into the real world of practice.

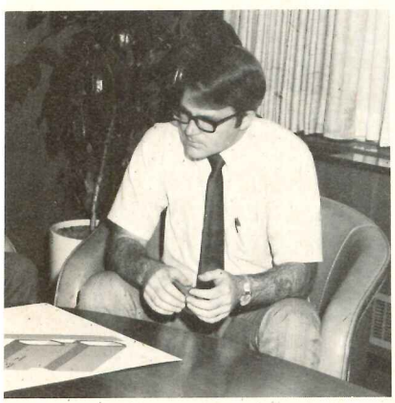
This year, there were 35 students placed in 31 offices. Most of these offices were practicing architectural firms, but several students were encouraged to associate with other architecturally related kinds of offices. For example, among organizations participating in the program this year are the Tennessee Valley Authority; the Division of Architectural Services, State of Tennessee; and the Bedford-Stuyvesant Restoration Corporation in Brooklyn, New York. The photographs below scan the varieties of this year's experience.

During the first three months of his internship, the student is in a close teaching association with management levels of the firm in all phases of their daily work. He receives a nominal salary, about $3 an hour. The program is organized to increase the student's awareness of the whole architectural process, not only in design but including such aspects as finance, administration, and construction management.

So far, the program has been operated as a requirement for entrance into the fifth year, although there may be individual modifications for students already qualified by working experience. Some consideration has been given to making the Guideline Program an honors adjunct, but its effectiveness in its first year in 1967-1968, under the directorship of associate professor Fred Grieger, and the favorable response of participating firms confirmed the decision to retain the program as a fifth-year requirement. Assistant professor William S. Shell, director of the 1968-1969 program, reports that the response of both students and participating firms continues at a high level of enthusiasm, and he had no difficulty in placement of the 35 students of last year's class in offices across the country.

The views of participating firms have been expressed as combining basic enthusiasm with some reservations about such operating details as modes of financing and formalization of the in-house program. The idea of compensating the student through the school rather than the company payroll, for example, has been explored. So far, it is not practical, but it has merit in the educational context and may develop further as the program becomes more widespread. Further, the expense to the firm in salary is negligible (and tax deductible) in comparison with the expense of work interruptions and executive time devoted to the teaching process. These considerations also are in the minds of everyone involved and will be handled as the value of the program continues to be demonstrated.

One firm acknowledged a not-inconsiderable immediate return in feedback to the firm of the fresh and reflective views of the student as each of the year-long internships draws to a close.



Alan C. Hunninen and Hugh Patrick Lawson talk with President Robert F. Hastings in his Detroit office at Smith, Hinchman and Grylls Associates, Inc.

Student Larry W. Price looks over Sea Pines models at Rogers, Taliaferro, Kostritsky and Lamb, Baltimore.

Keith Thomas Brown, interning at the San Francisco office of John Carl Warnecke, takes time out to look at the local scene, including SOM's Alcoa building in the background.

Frank Lawyer of Caudill Rowlett Scott, Houston, explains a site development to intern DeWayne Pendley.

Student James I. Wilson talks things over with Walter Netsch at the Chicago office of Skidmore, Owings and Merrill.

Student Donald P. Shell, foreground, working with Bill Lampe of Cooper and Warterfield, Nashville, on staff housing for a state park.

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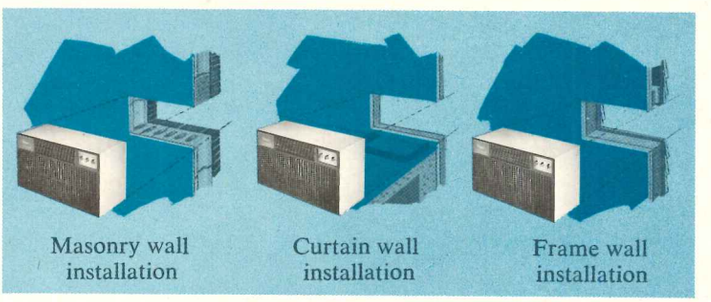

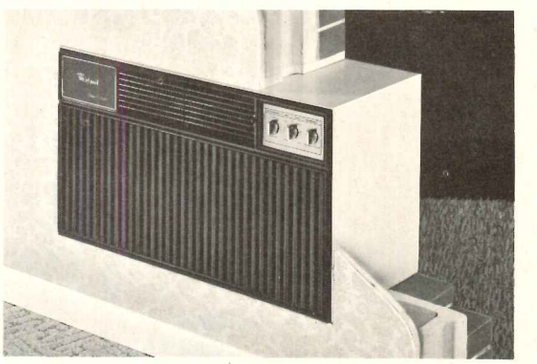

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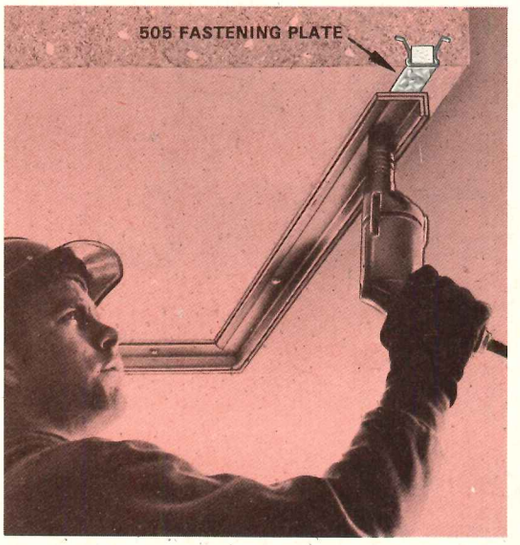

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INDEXES AND INDICATORS

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

BUILDING COST INDEXES

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.

The indexes are computed on a basis of 40 per cent labor rate and 60 per cent materials price. Wage rates for nine skilled trades, together with common labor, are used. Prices of four common building materials are included for each listed city.

OCTOBER 1969

Metropolitan area	Cost differential	Current Index residential	Current Index non-res.	% change year ago res. & non-res.
U.S. Average	8.6	315.9	336.5	+ 7.37
Atlanta	7.4	364.5	386.7	+ 8.59
Baltimore	7.7	307.0	326.5	+ 4.46
Birmingham	7.3	284.2	305.6	+ 6.50
Boston	8.4	280.8	297.2	+ 6.35
Chicago	8.9	341.4	359.1	+ 4.70
Cincinnati	9.0	308.8	328.2	+ 7.54
Cleveland	9.9	340.0	361.3	+ 7.91
Dallas	7.8	299.8	309.7	+ 9.34
Denver	8.3	320.6	340.8	+ 8.33
Detroit	9.6	338.2	355.0	+11.47
Kansas City	8.3	281.2	297.7	+ 6.22
Los Angeles	8.4	319.7	349.7	+ 7.35
Miami	8.5	315.8	331.5	+ 7.77
Minneapolis	8.8	313.2	332.9	+ 6.75
New Orleans	7.8	283.0	299.8	+ 8.20
New York	10.0	326.0	350.6	+ 7.07
Philadelphia	8.6	307.5	322.8	+ 6.26
Pittsburgh	9.1	294.2	312.7	+ 5.64
St. Louis	9.1	308.8	327.2	+ 6.54
San Francisco	8.7	409.3	447.9	+ 9.18
Seattle	8.6	290.2	324.3	+ 8.52

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.

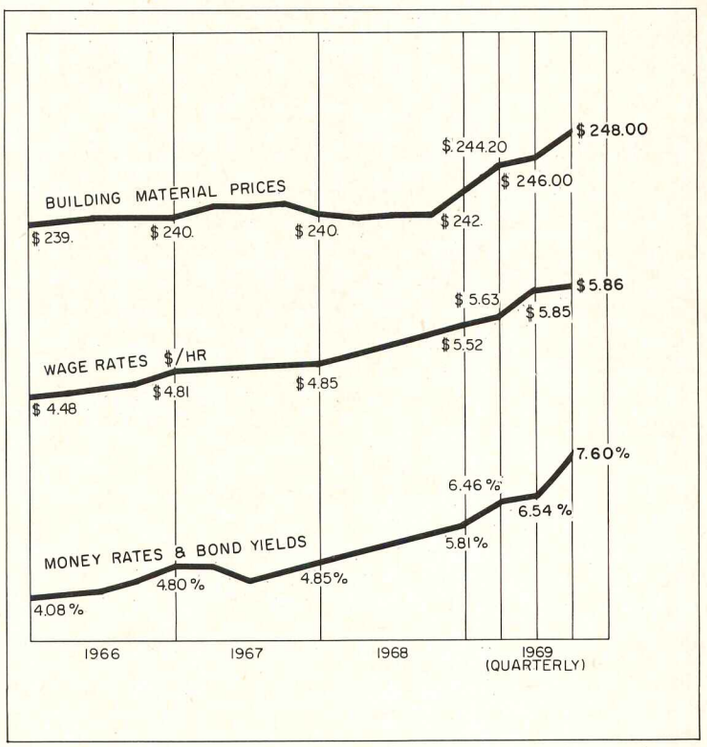
ECONOMIC INDICATORS

Indicators are intended to show only general direction of changes.

BUILDING MATERIALS—The U.S. average price of a "package" of common materials.

WAGE RATES—The U.S. average wages of nine skilled trades and common labor. Fringe benefits are included.

MONEY RATES AND BOND YIELDS—An arithmetic average of the latest prime rate, short term prime commercial paper rates, and state and local government AAA bond rates.

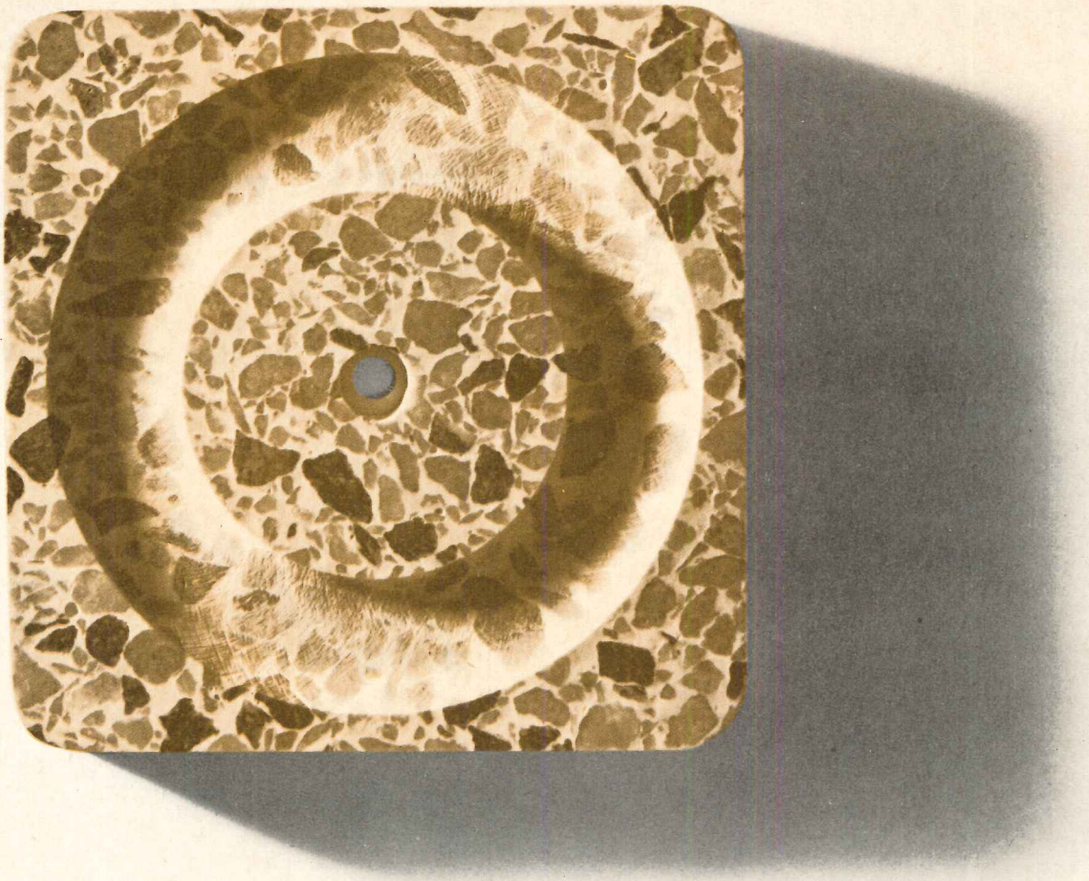


HISTORICAL BUILDING COST INDEXES—AVERAGE OF ALL BUILDING TYPES, 21 CITIES

1941 average for each city = 100.00

Metropolitan area	1961	1962	1963	1964	1965	1966	1967	1968 (Quarterly) 1st	1968 (Quarterly) 2nd	1968 (Quarterly) 3rd	1968 (Quarterly) 4th	1969 (Quarterly) 1st	1969 (Quarterly) 2nd	1969 (Quarterly) 3rd	1969 (Quarterly) 4th
U.S. Average	264.6	266.8	273.4	279.3	284.9	286.6	297.5	301.5	302.6	309.3	310.0	314.9	316.5	331.4	
Atlanta	294.7	298.2	305.7	313.7	321.5	329.8	335.7	345.6	346.7	352.3	353.1	364.2	365.9	381.7	
Baltimore	269.9	271.8	275.5	280.6	285.7	290.9	295.8	302.9	304.1	307.9	308.7	311.4	313.0	320.8	
Birmingham	249.9	250.0	256.3	260.9	265.6	270.7	274.7	278.5	279.5	283.6	284.3	288.4	289.9	301.4	
Boston	237.5	239.8	244.1	252.1	257.8	262.0	265.7	269.3	270.3	276.3	277.1	278.2	279.6	293.1	
Chicago	289.9	292.0	301.0	306.6	311.7	320.4	328.4	329.4	330.0	338.7	339.5	340.4	342.1	353.8	
Cincinnati	257.6	258.8	263.9	269.5	274.0	278.3	288.2	291.4	292.5	301.8	302.6	309.8	311.5	323.7	
Cleveland	265.7	268.5	275.8	283.0	292.3	300.7	303.7	316.5	318.3	330.7	331.5	334.9	336.7	356.0	
Dallas	244.7	246.9	253.0	256.4	260.8	266.9	270.4	272.3	273.4	281.0	281.7	287.2	288.7	306.6	
Denver	270.9	274.9	282.5	287.3	294.0	297.5	305.1	304.9	306.0	311.7	312.5	317.0	318.5	336.8	
Detroit	264.7	265.9	272.2	277.7	284.7	296.9	301.2	309.2	310.4	315.5	316.4	326.8	328.5	350.8	
								267.5	268.5	277.2	278.0	281.0	282.3	293.6	
Kansas City	237.1	240.1	247.8	250.5	256.4	261.0	264.3								
Los Angeles	274.3	276.3	282.5	288.2	297.1	302.7	310.1	312.0	313.1	319.3	320.1	323.7	325.4	341.9	
Miami	259.1	260.3	269.3	274.4	277.5	284.0	286.1	293.1	294.3	304.5	305.3	309.6	311.2	327.3	
Minneapolis	267.9	269.0	275.3	282.4	285.0	289.4	300.2	300.0	301.0	309.0	309.4	310.6	312.2	329.0	
New Orleans	244.7	245.1	248.3	249.9	256.3	259.8	267.6	270.6	271.6	273.9	274.2	285.5	287.1	295.7	
New York	270.8	276.0	282.3	289.4	297.1	304.0	313.6	315.9	317.0	320.6	321.4	324.9	326.6	342.4	
Philadelphia	265.4	265.2	271.2	275.2	280.8	286.6	293.7	293.3	294.2	300.9	301.7	304.6	306.2	319.0	
Pittsburgh	250.9	251.8	258.2	263.8	267.0	271.7	275.0	293.0	284.2	291.3	293.8	297.0	298.6	309.0	
St. Louis	256.9	255.4	263.4	272.1	280.9	288.3	293.2	293.7	294.7	303.6	304.4	306.8	308.3	322.7	
San Francisco	337.4	343.3	352.4	365.4	368.6	386.0	390.8	396.4	398.0	401.9	402.9	415.6	417.5	437.8	
Seattle	247.0	252.5	260.6	266.6	268.9	275.0	283.5	286.2	287.2	291.6	292.2	296.1	297.5	315.8	

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.



This is epoxy terrazzo. It was just given 4000 wear cycles with a Taber Abraser.

This is PermaGrain.™ Ditto.

PermaGrain is not ordinary wood.

It's genuine red oak impregnated with a liquid plastic, which is then hardened throughout the entire wood-pore structure by atomic irradiation.

The test shown here, performed on a section of a PermaGrain tile, indicates just how tough it is. In a standard ASTM test (D-1044), depth of track was 50 mils in the terrazzo, 8.5 mils in the PermaGrain. In a series of tests, PermaGrain was proven to be 6 times more durable than epoxy terrazzo.

Obviously, this is important news for architects. It means that you can now specify real wood floors for high-traffic areas like lobbies and corridors in commercial buildings, stores, churches and schools.

When you install flooring, you install a surface. The surface in PermaGrain goes right through the entire 5/16-inch thickness of the 12 x 12 tile. PermaGrain is completely sanded and buffed at the factory. It requires no filling, sealing, staining, varnish, shellac or waxing. The result: very low maintenance cost.

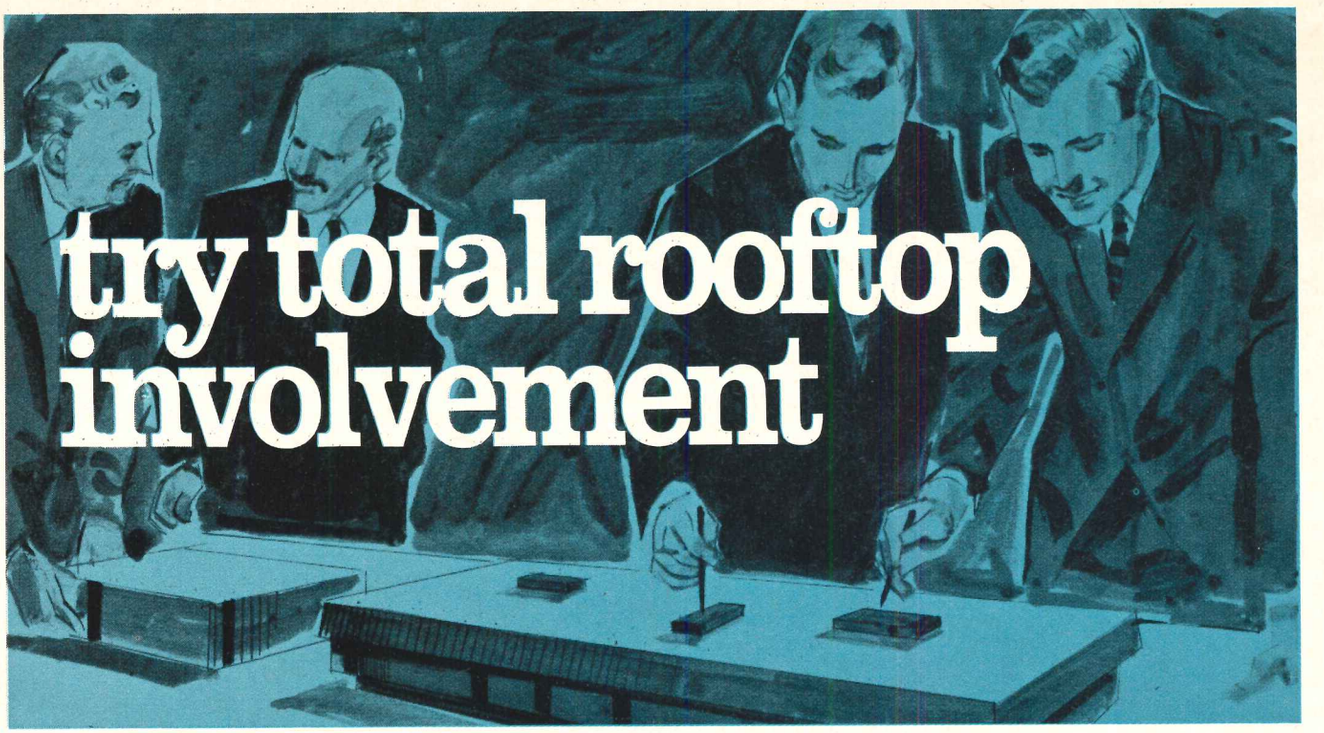
PermaGrain is available in five colors: Natural, Provincial, Americana, Barcelona and Gothic. It is now being installed in a wide variety of applications. Its installed price is comparable with other high-quality materials like terrazzo, vinyl and urethane.

If you want more information, or an actual sample of PermaGrain, please write:

ARCO Chemical Company
Division of AtlanticRichfieldCompany
260 South Broad St.
Philadelphia, Pa. 19101

an ARCO-NUMEC product

For more data, circle 61 on inquiry card



try total rooftop involvement

from job planning to start-up, Mammoth stays with you to provide the optimum heating-cooling-ventilating system for your building

When it comes to rooftop environmental air control, ask your Mammoth man. He's an expert!

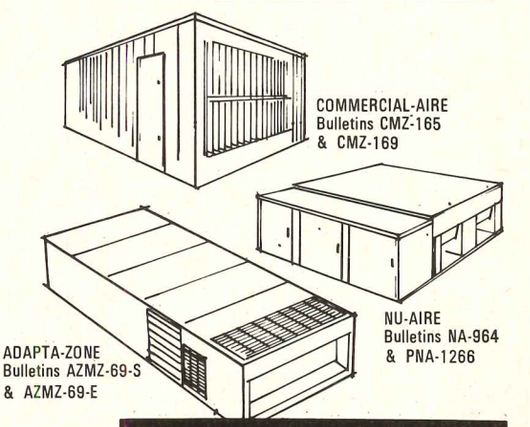
See the Mammoth Adapta-Zone Road Show coming to your city soon! Call your Mammoth representative for details.

When it comes to specifying rooftop heating, cooling, ventilating or make-up air equipment, look first to Mammoth—the company dedicated not only to total rooftop environmental air control but to total involvement with you and the design of your rooftop system. No matter how complex your air conditioning or air handling problem, you'll find Mammoth ready to work closely with you to provide the optimum equipment for any type of institutional, commercial or industrial building.

Central-station heating, cooling, ventilating? Let Mammoth get involved with their Commercial-Aire, Adapt-Aire or new Adapta-Zone rooftop equipment. These units are flexibly designed and engineered to provide precise control of all the environmental air control functions—heating, cooling, ventilating or any combination—in from one to 23 zones . . . and with the exact capacities you require.

If yours is a problem of make-up air, Mammoth is ready to get involved with its Nu-Aire line of direct gas-fired equipment—rooftop units in low-line or penthouse configurations made to maintain favorable environmental conditions in any size industrial or commercial plant.

There are 350 Mammoth representatives in 85 offices in the United States and Canada ready . . . and fully qualified . . . to get totally involved in your rooftop environmental air control problems, and each of them backed by a company with 20 years' experience in the rooftop business. Get in touch with the Mammoth man nearest you, or write Mammoth for a detailed response to your inquiry.



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CURRENT TRENDS IN CONSTRUCTION

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

Shopping centers: downtown is the next target

Ever since the end of World War II, the big story in retail store construction has been the boom in the suburbs. This makes sense, because the suburbs have been where the people have gone. Between 1950 and 1966, the U.S. population increased almost 43 million. Thirty million of this gain ended up in the urban fringes of major cities, while central city population increased only seven million. The suburbs upped their share of total metropolitan area population from 40 to over 52 per cent in the decade and a half.

The shift in buying habits was even more dramatic than the turnabout in population patterns. In 1954, the downtown shopping areas of large cities accounted for half the metropolitan regions' shopping goods (apparel, furniture, etc.) sales. Just nine years later, this portion had dropped to only 30 per cent, and the trend has continued.

Why has the exodus of retail spending to the suburbs been so much greater than the movement of people? For one thing, the bulk of the buying power has shifted to the outlying areas. Aside from the numerical differences in population growth, there have been important social and economic shifts, as higher-income families have moved to the suburbs and poorer groups have taken their place in the central cities.

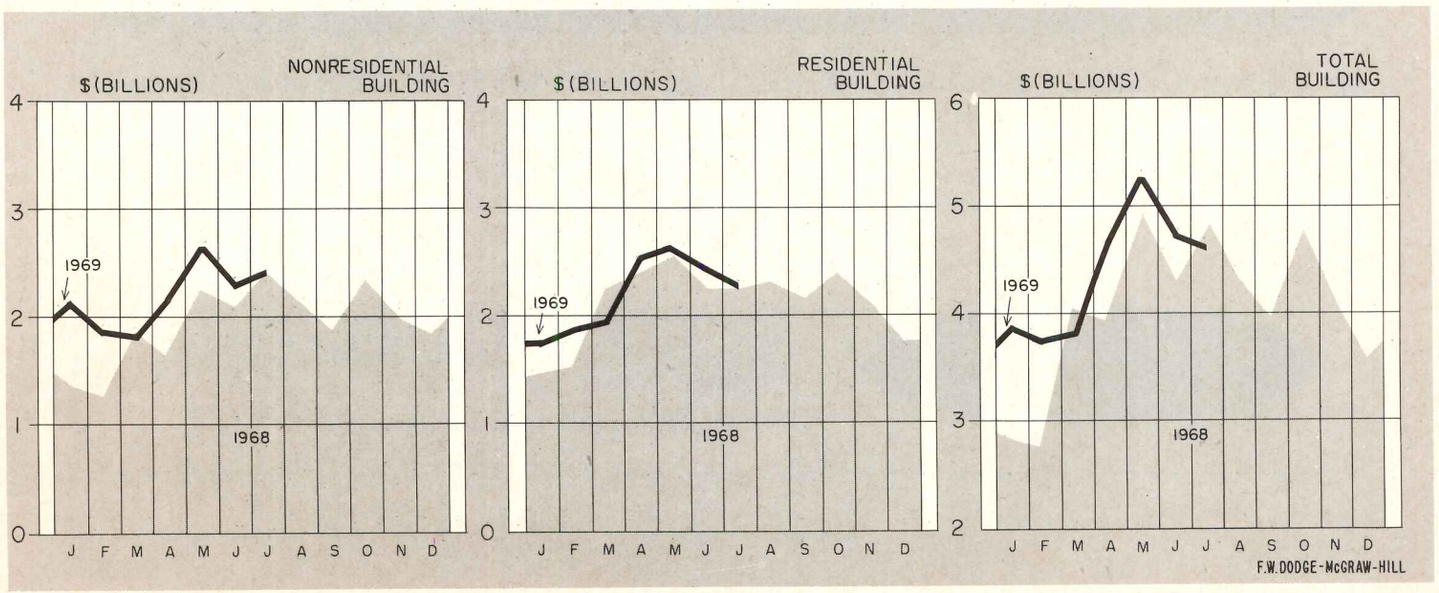
Despite shifts in both population and buying power, downtown might have held its own. For a long time it did just that, as suburban retail facilities consisted largely of supermarkets, service stations, and short strips of small stores stretched along the highway. Then, in the early Fifties, developers began clustering these shops in planned areas, adding many of the goods and services that had previously been available only downtown, plus the further bonus of adequate parking facilities. Thus, the shopping center was born, offering many of the conveniences and few of the discomforts of downtown retailing.

The development of the shopping center did not stop with the discovery that more customers could be attracted to the convenience of a cluster of stores with room to park the family car. During the Sixties, new concepts have been put into practice that have added to both the attractiveness and the prestige of shopping centers. Perhaps the most important of these has been the development of regional shopping centers. Designed to serve large populations—upwards of a quarter of a million—these centers include two or more major department stores, most other traditionally downtown-type stores and services, theaters, community centers and, increasingly, adjoining office and hotel or motel complexes, often connected by air-conditioned malls. In short, they create new downtowns designed for the convenience of today's mobile population. The result? The value of construction contracts for shopping centers more than doubled between 1963 and 1968, while the average size of the centers increased 50 per cent. The $1.1 billion worth of shopping center contracts let in 1968 accounted for 40 per cent of all retail building—up from 29 per cent in 1963.

The story might very well end at this point, but it doesn't. The shift of retailing to the suburbs left downtown with blocks of empty stores and warehouses. More and more, these and nearby blighted residential areas are being razed as part of urban redevelopment programs. A lot of the empty spaces are being filled up with high-rise apartment buildings that are attracting high-income groups back into the city, where they can be close to the cultural and business facilities that have not yet emigrated to the suburbs. The extent of this trend can be seen in housing figures for 1967. Permits for dwelling units (mostly apartments) inside 62 major cities rose 15 per cent, while the gain in the suburbs of these cities was only 2.5 per cent. The 1968 experience was roughly the same, and the trend appears to be accelerating in 1969.

Developers have been quick to notice this latest twist in living patterns, and plans for downtown shopping centers have multiplied, encouraged by the results in such cities as Portland, Oregon, Buffalo and New Haven. Similar plans in Bridgeport, Lancaster and other cities are no doubt forerunners of the next important trend.

Building activity: monthly contract tabulations

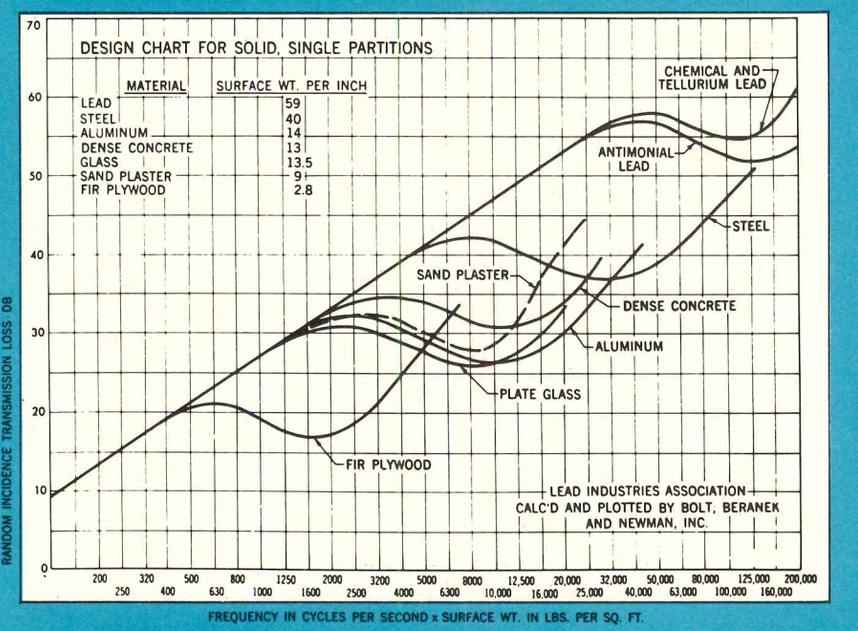


LEAD–

the lightweight champion of noise barriers

Type of Partition	Weight of Partition lbs./sq. ft.	Weight of Partition equiv. lead* lbs./sq. ft.	Weight Ratio	Thickness inches	Thickness equiv. lead inches
Plywood	2.25	0.47	4.9	3/4	1/128
Sheet Steel[1]	3.0	1.8	1.75	1/16	1/32
Solid Plaster	18	3.75	4.8	2	1/16
Cinderblock	22	5.5	4.0	6	3/32
Plaster on studs	12	7.5	1.6	4-6	1/8
Plaster on double studs	16	11.0	1.4	5-8	3/16
Brick	104	15.0	7.0	8	1/4

[1]as employed in a movable partition, for example.
*Lead required to provide an equal degree of sound transmission loss.



As the table and chart show, lead's unique combination of limpness and density enables it to block sound transmission more effectively than common construction materials. As a result, wherever weight and space are important, it makes engineering sense to use lead for noise attenuation ☐ For further information on the modern uses of lead, including a tabulation of practical sound barrier walls using sheet lead, write for our new book "LEAD—A Metal for the Future."

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This is why Executone engineers are so concerned about the environment in which an Executone Sound System operates. They apply principles of "sound contouring" to bring sound to each listener at the right level and clarity.

Executone engineers are specialists in sound reinforcement as well as sound distribution. And they are experts in designing a single sound system for paging, music, security and alarm signals—at far less cost than separate systems.

If your clients are looking for smooth sound throughout a school, auditorium, stadium, office or plant, call your Executone representative. He has the answer to every kind of communications problem—whether sound or two-way intercom.

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☐ Have your representative phone for an appointment.

☐ Please send me free portfolio, "Executone's Approach to Sound and Intercom Systems."

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Company_____

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Executone Sound Systems

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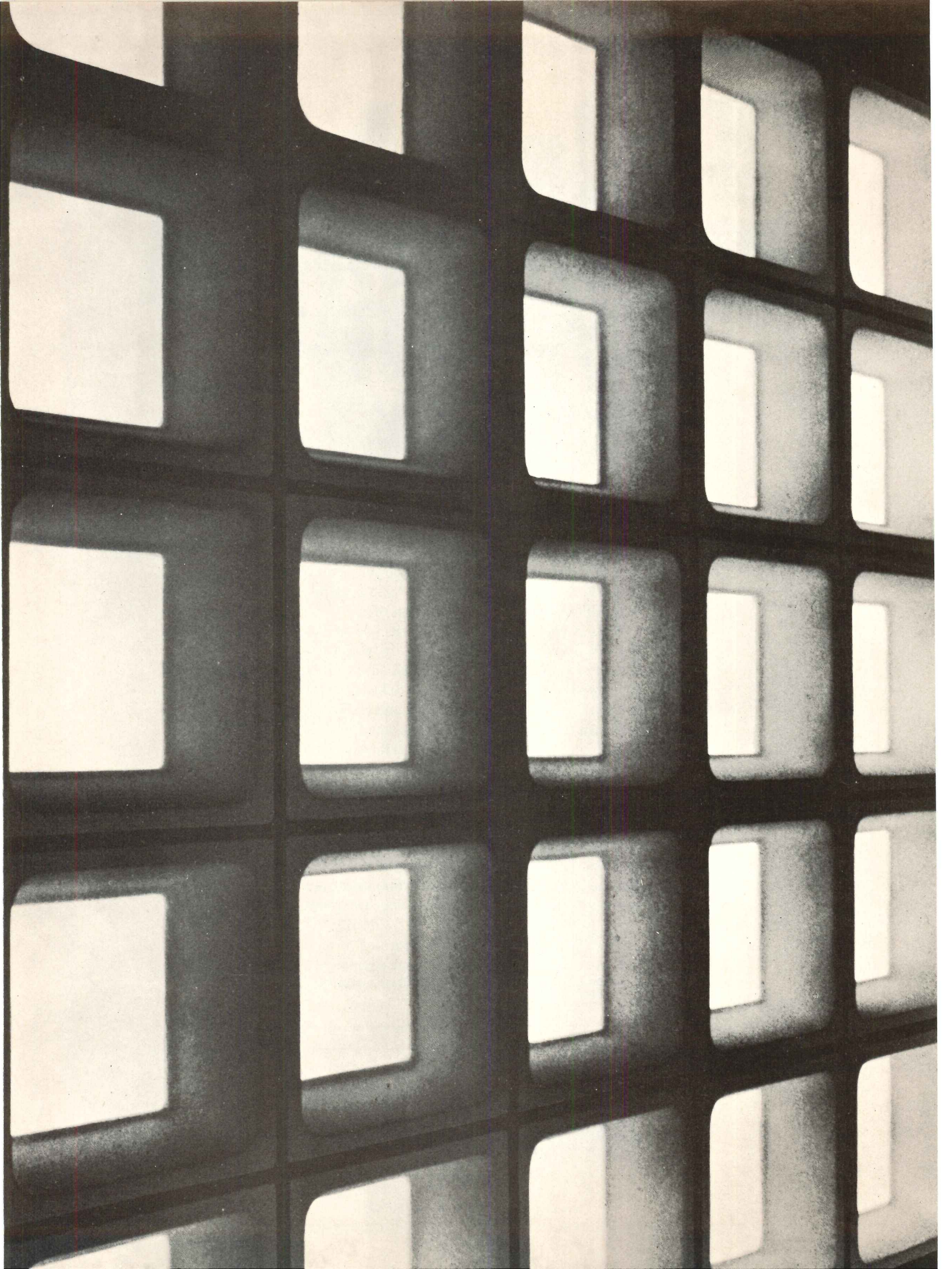

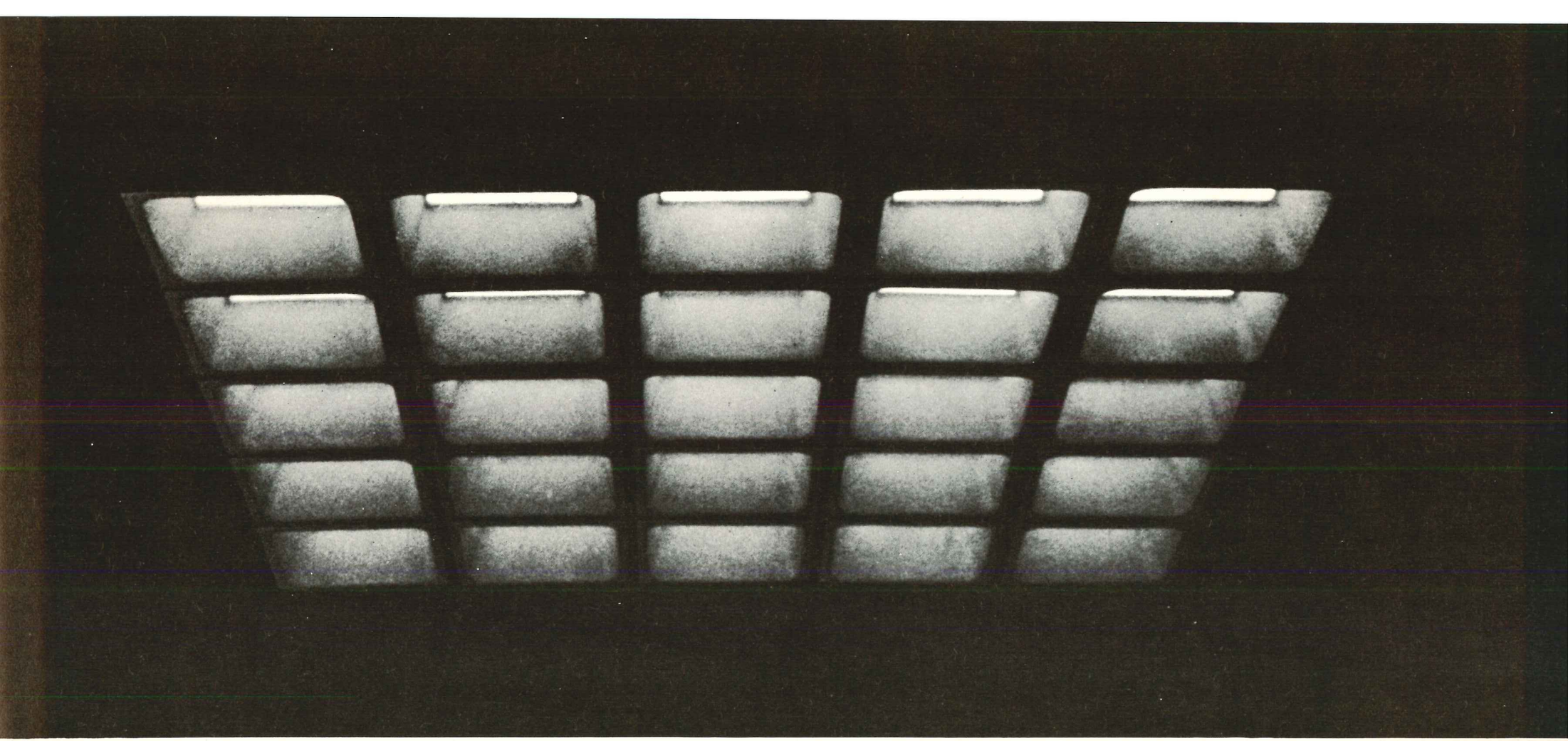

That's right. That's what it is: A three-dimensional, suspended, luminous ceiling. No. It's not concrete. It just looks like it. It's Sculptura—the newest unbeatable system from Integrated Ceilings. (You're looking at the 3′ x 3′ modules.) Write us and we'll tell you how we did it.

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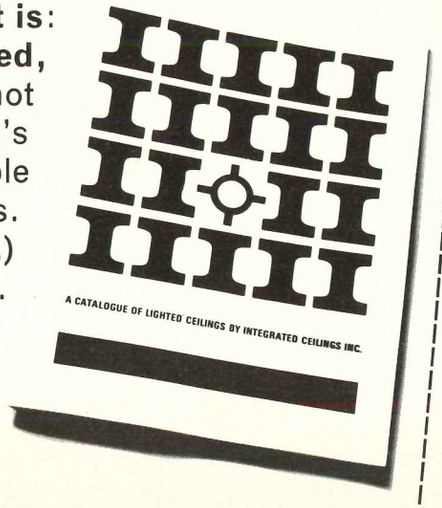

Integrated Ceilings, Inc. 2231 Colby Ave.
Los Angeles 90064 Phone (213) 272-1136

Okay. I give up.

Tell me about Sculptura. (And send me your new full line brochure while you're at it.)

ar

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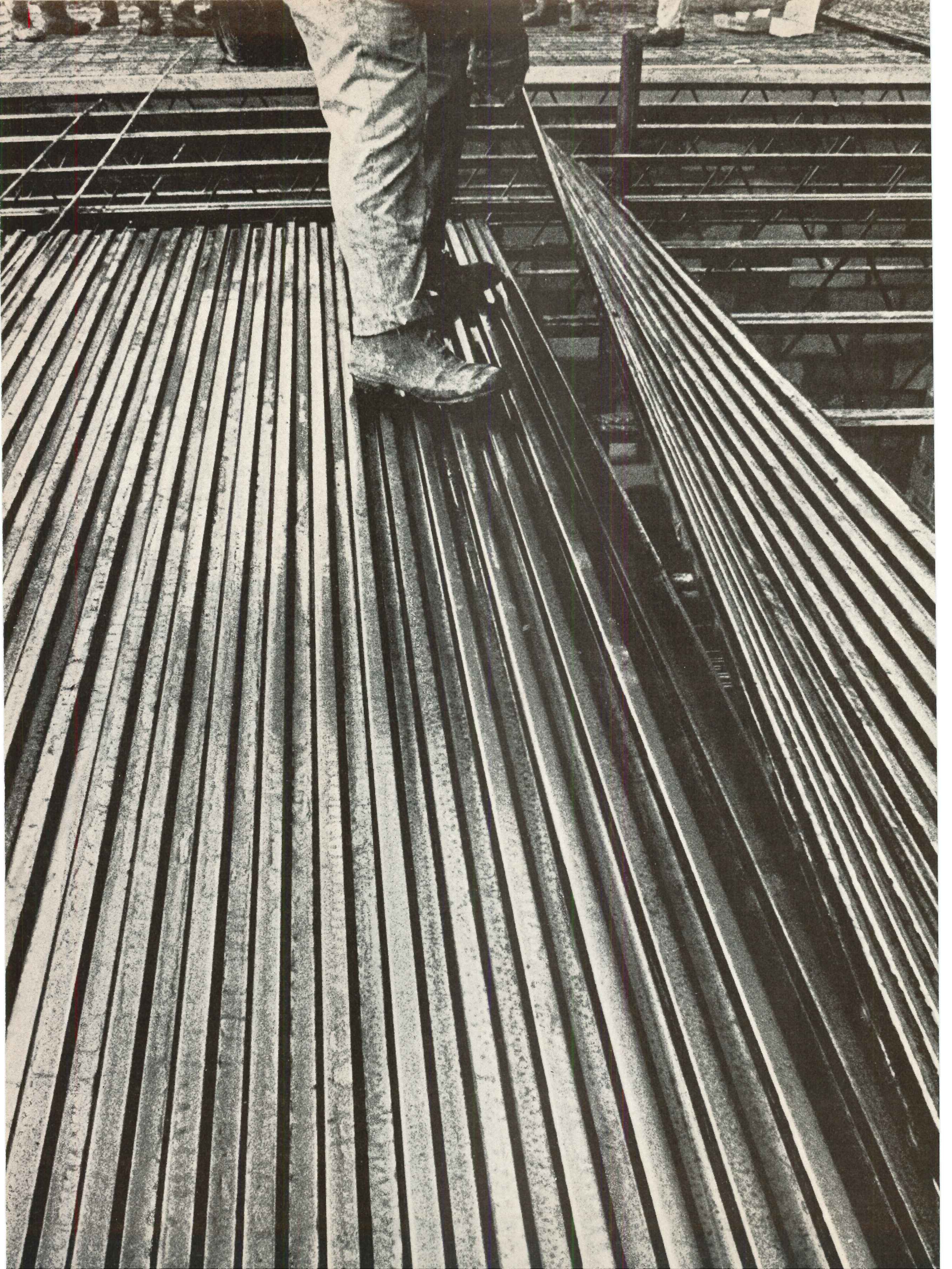

In the past two years one building company, Multiplex Inc., has put down ½ million square feet of concrete form.

And left it down.

Because the form they used was Tensilform,® Wheeling's permanent steel form for concrete floors.

And what's more, their electricians, plumbers and other tradesmen were able to walk on it before the concrete was poured.

The Nob Hill Apartments in Syracuse, New York is only one of the projects where Multiplex has used Tensilform. Here's what their VP of purchasing and construction coordinator, Mike Stepanovic says about it:

"We first used Tensilform in 1966, and we'll keep on using it because it saves us money. It's easy to handle, quick to install, and it provides a good working platform for other trades."

"And, best of all, it saves us time. It doesn't have to be stripped."

Multiplex has completed 10,484 similar apartment suites, in Ohio, Indiana and New York. They plan to build 5,000 to 6,000 more a year. Mike has the tricky job of keeping the quality high and costs low. Specifications take care of the quality by including things like individually controlled heating and air-conditioning, carpeted hallways, built-in kitchens, high speed elevators.

Wheeling Tensilform helps take care of the costs.

Mike also said something else; "Delivery was good. Tensilform was always here when we needed it."

Maybe that's what helped him to decide to stick with a good thing. For the Nob Hill Project he's using Wheeling Roof Deck, too.

Wheeling Tensilform

Wheeling Corrugating Co., Div., Wheeling-Pittsburgh Steel Corp., Wheeling, W. Va.

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MOVING AND
No 9
DANGER

If your old elevator won't move faster, your tenants probably will.

We've found out that people will wait patiently for an elevator.

For about 30 seconds.

In today's competitive market, there's a penalty for poor elevator service. It shows up in vacancies and lower rental rates.

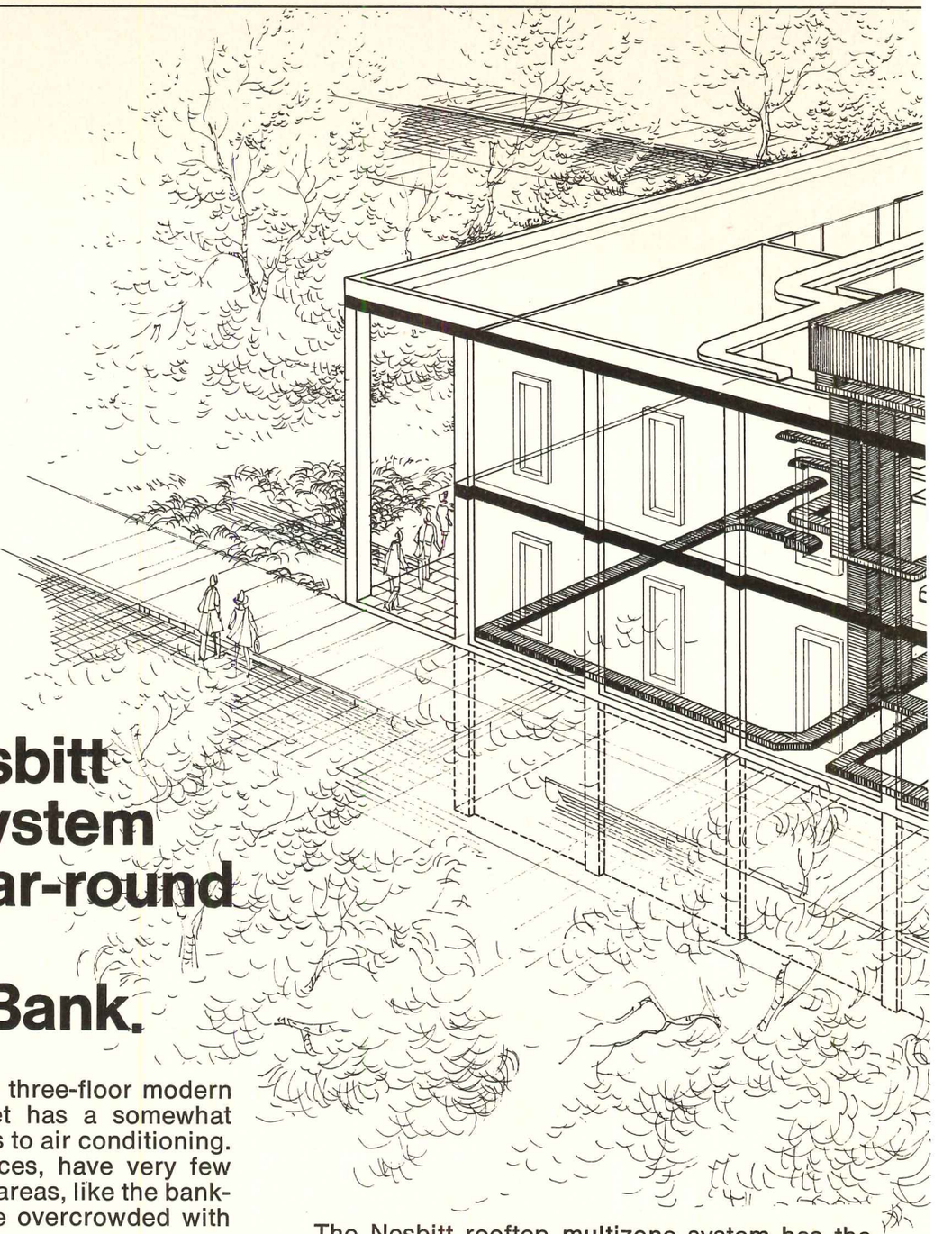
Otis modernization can prevent that. It's a sound investment. In fact, a San Antonio bank recently figured that the savings from their modernization would amortize the investment in just 9 years. And they ought to know.

Talk to Otis. We'll show you how to take full advantage of your present Otis system to build in the latest technological advances.

So your old elevator can keep up with the competition.

Otis®

The Elevator Company



How the Nesbitt Multizone system provides year-round comfort for Prairie City Bank.

Unlike other buildings, this three-floor modern edifice of 11,907 square feet has a somewhat unique problem when it comes to air conditioning. Some areas, like private offices, have very few people per square foot. Other areas, like the banking floor, can quickly become overcrowded with an influx of customers.

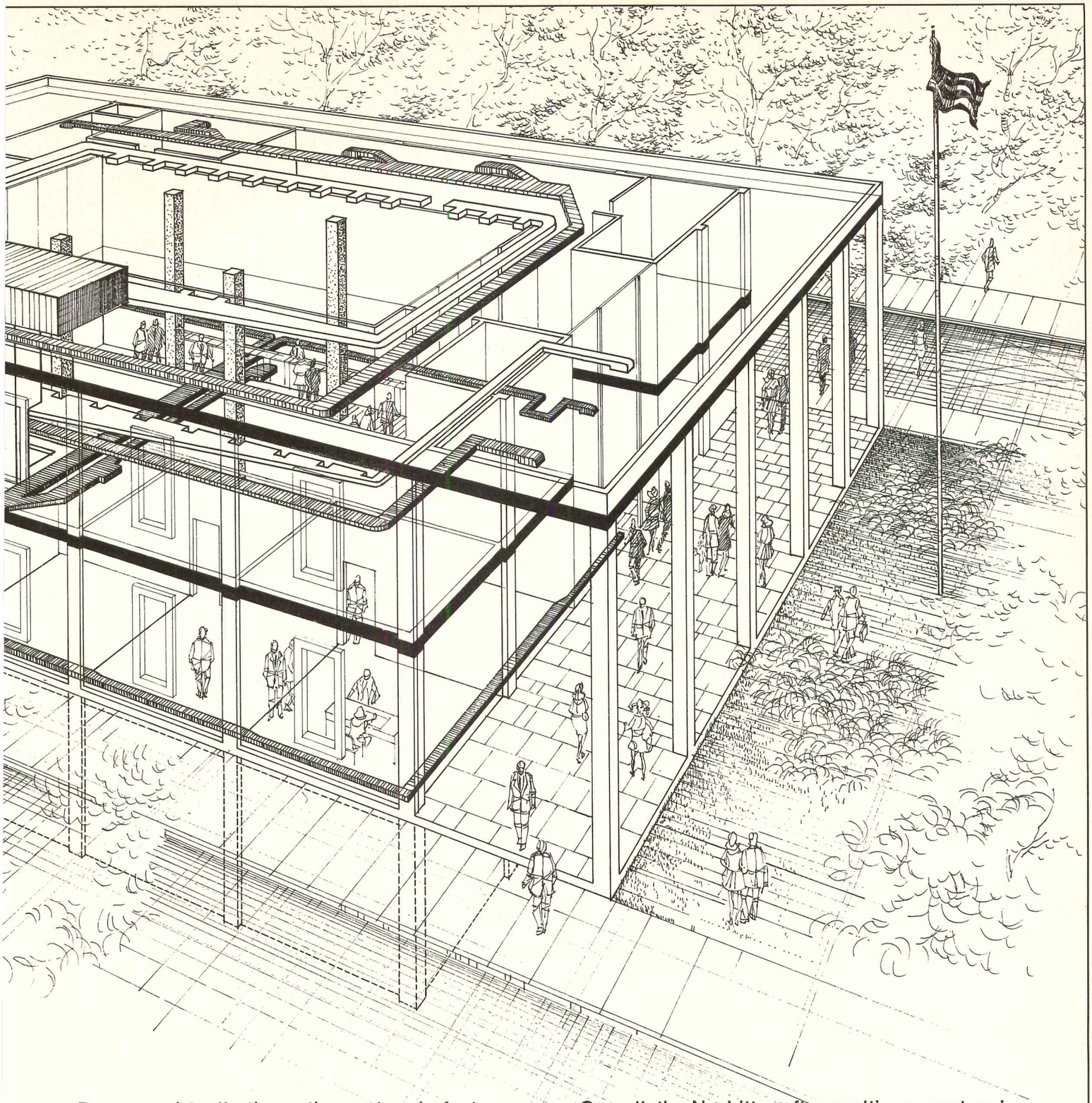
Here is how Nesbitt helped Little and Humlaker, Architects, and Bird, Bird and Associates, Consulting Engineers, provide year-round comfort for the customers and employees of Prairie City Bank.

First, it was decided that a year-round multizone system could be installed on the roof instead of cluttering the basement with mechanical equipment. This decision permitted the inclusion of a comfortable community room, as well as lavatories and storage rooms.

The Nesbitt rooftop multizone system selected serves six separate and individual comfort zones. Each zone has its own thermostat to signal the requirements of the space served.

The Nesbitt rooftop multizone system has the ability to provide both heating and cooling simultaneously to meet these requirements, no matter what they may be. For instance, during cold weather, it provides heating via a direct-fired, tubular heat exchanger (although electric or glycol coils are also available) and cooling with outdoor air; during warm weather, it provides mechanical cooling and can temper the cooled and dehumidified air with an auxiliary hot refrigerant coil.

What's more, it does it economically. The economizer cycle locks out mechanical refrigeration until one zone needs more cooling than can be satisfied with outdoor air. Likewise, mechanical refrigeration is taken off the line whenever the temperature of the outdoor air is low enough to satisfy cooling requirements.



Because virtually the entire system is factory-built, there are fewer parts to assemble and install at the job site. The reduction in job-site labor (presently the fastest rising of all construction costs) tends to reduce the total cost of the building.

Finally, the Nesbitt rooftop multizone unit installed at the Prairie City Bank is equipped with a remote monitoring panel that provides instant checks on its operation and allows for control from within the building.

Overall, the Nesbitt rooftop multizone system is not only a dependable way to fit the needs of the Prairie City Bank but it is also the most economical way.

For details of how the Nesbitt rooftop multizone system can assist you in planning flexibility with economy, write the Nesbitt Operation, ITT Environmental Products Division, International Telephone and Telegraph Corporation, Philadelphia, Penn. 19136.

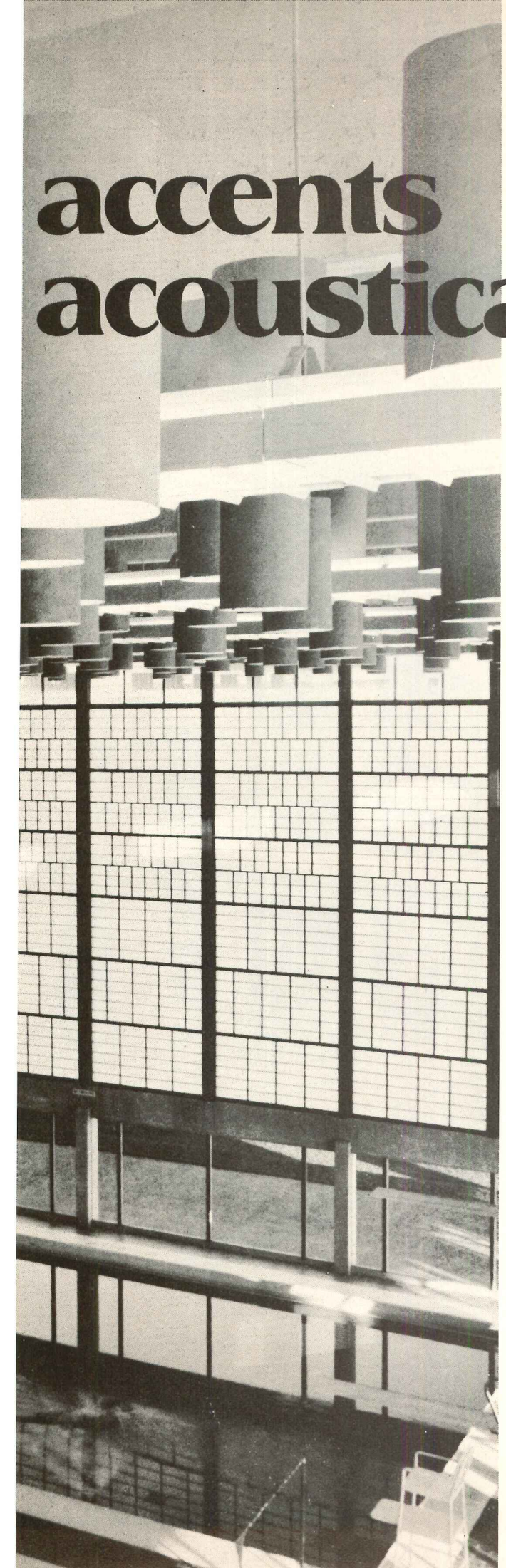
NESBITT ITT

For more data, circle 67 on inquiry card

Keene imagination

SIMON FRASER UNIVERSITY POOL
VANCOUVER, B.C.

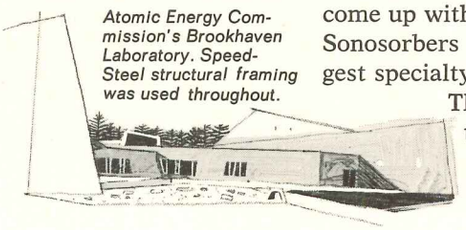
ARCHITECT: DUNCAN S. McNAB AND ASSOCIATES
VANCOUVER, B.C.



accents acoustical products.

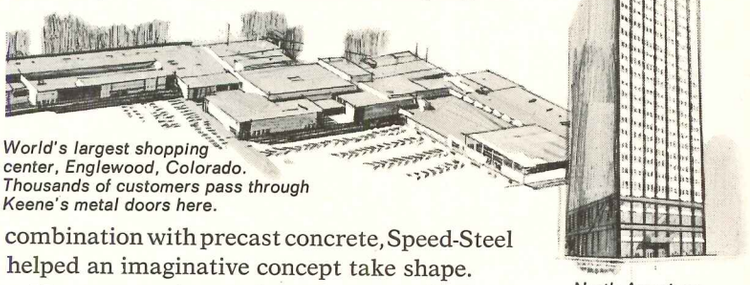
If you've ever tried to make yourself heard around a huge indoor swimming pool, you'll appreciate Keene's solution to a tough acoustical problem at Simon Fraser University, Vancouver. The highly reflective surfaces make speech and hearing practically impossible. That's why those Keene Sonosorbers are hanging from the ceiling. More than 100% sound absorption is obtained from each square foot of their surface area.

Whatever acoustical problem comes up, chances are Keene has come up with the product to solve it. Sonosorbers are just part of the biggest specialty line in the business.



Atomic Energy Commission's Brookhaven Laboratory. Speed-Steel structural framing was used throughout.

The most versatile structural framing line in the business is Keene Speed-Steel,™ chosen for the Atomic Energy Commission's Brookhaven Laboratory shown here. The only flat surface in the building is the floor, since all of the walls are sloping. In combination with precast concrete, Speed-Steel helped an imaginative concept take shape.



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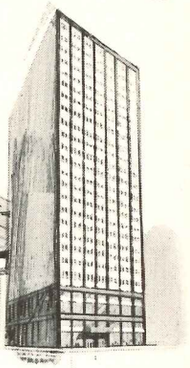
If you open doors, chances are you've handled some of Keene's door products. Keene metal doors, both fire-rated and non-rated, are in thousands of America's schools and colleges, offices and factories.



North American Rockwell Building, Pittsburgh. Keene movable wall systems were chosen for interior design flexibility.

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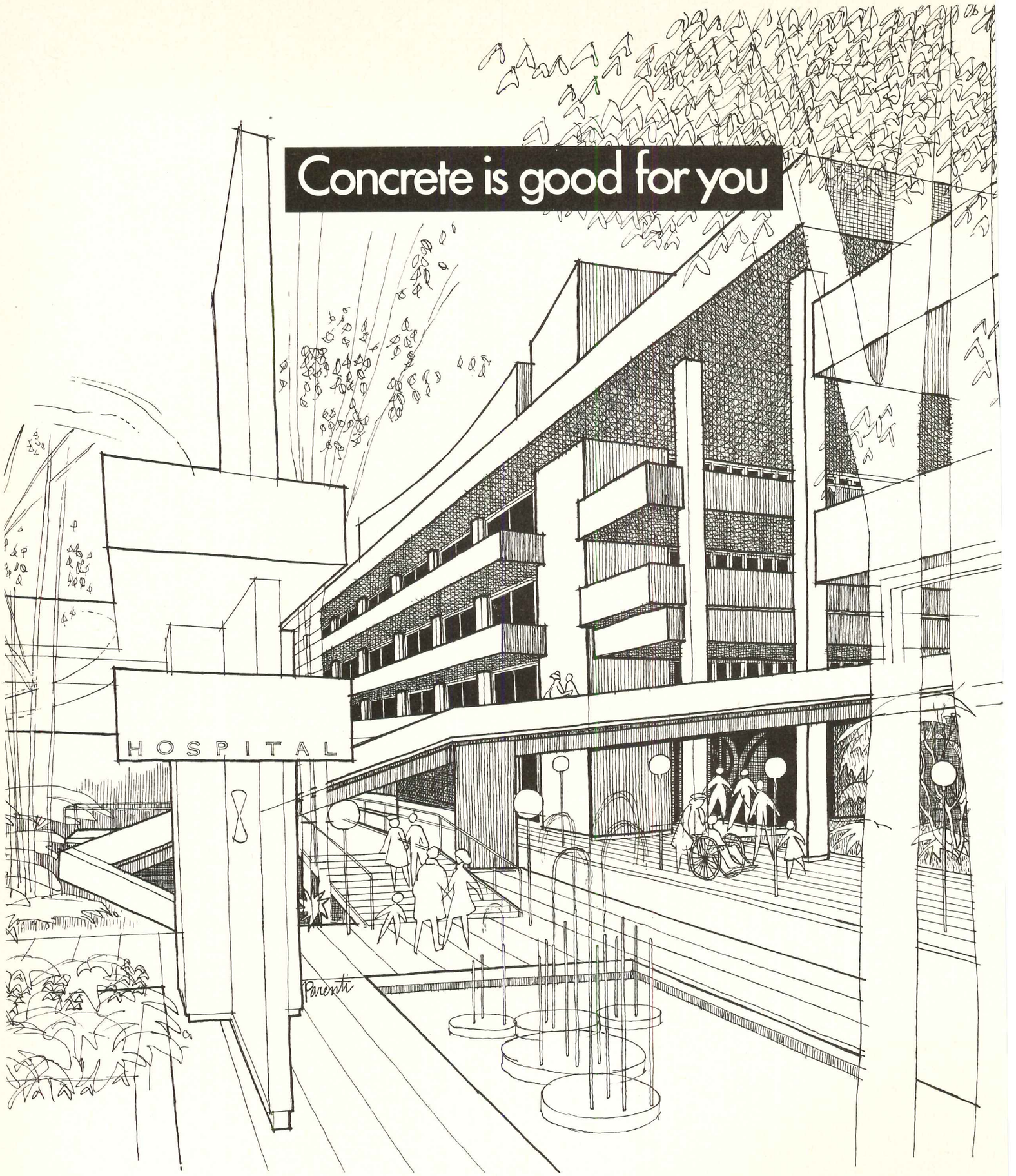
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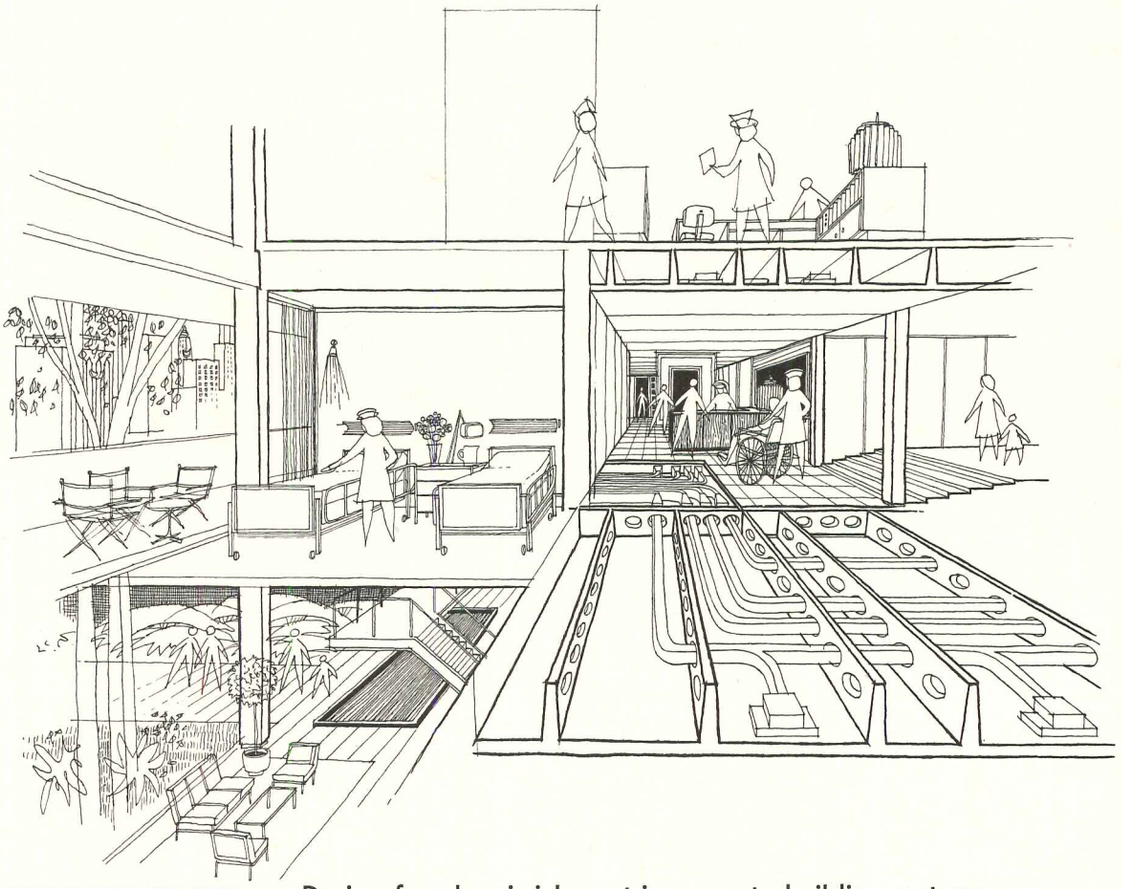

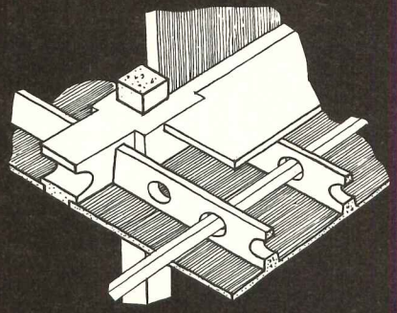

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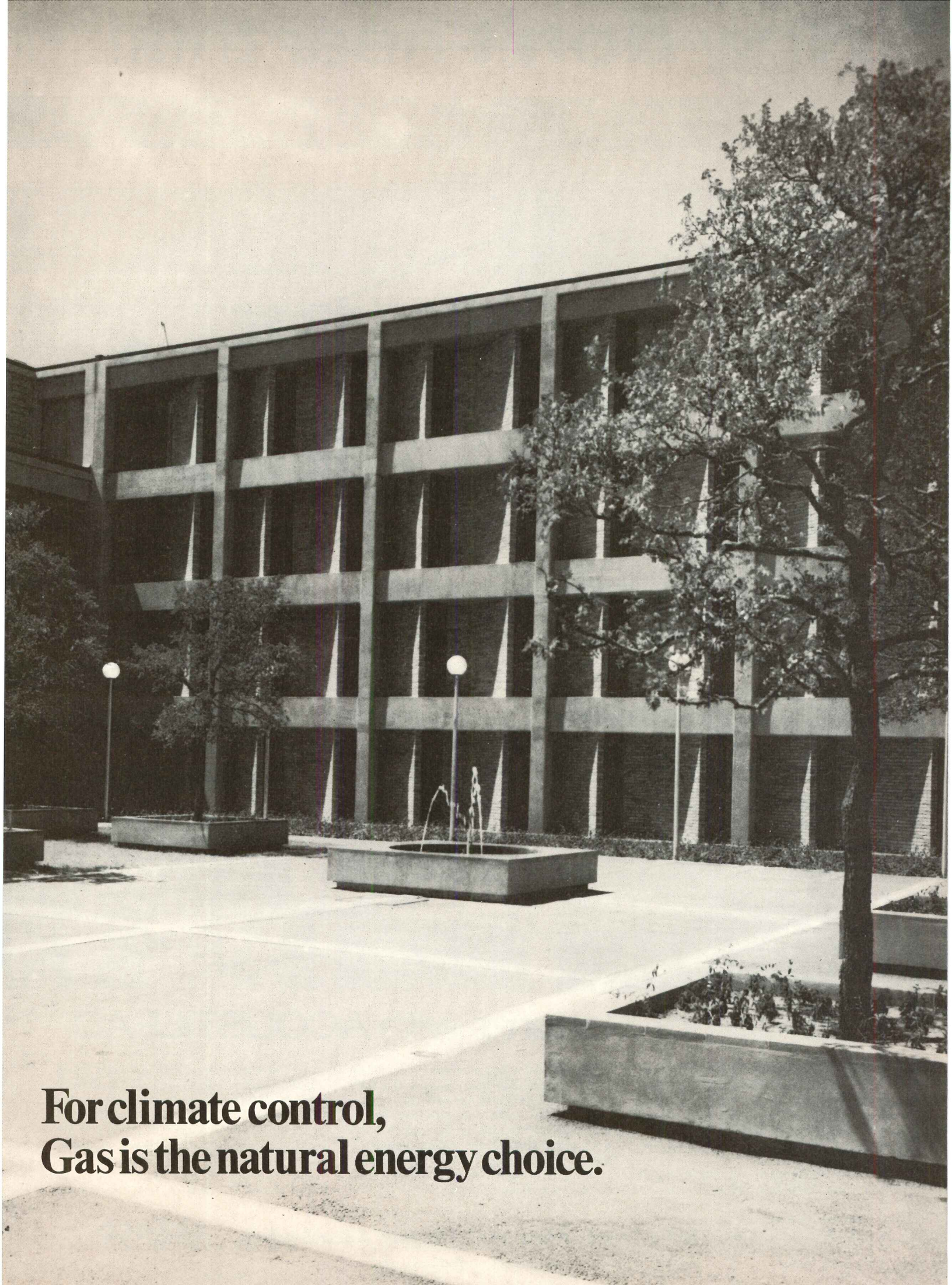

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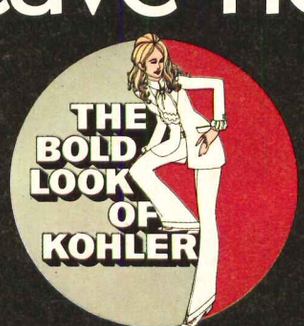

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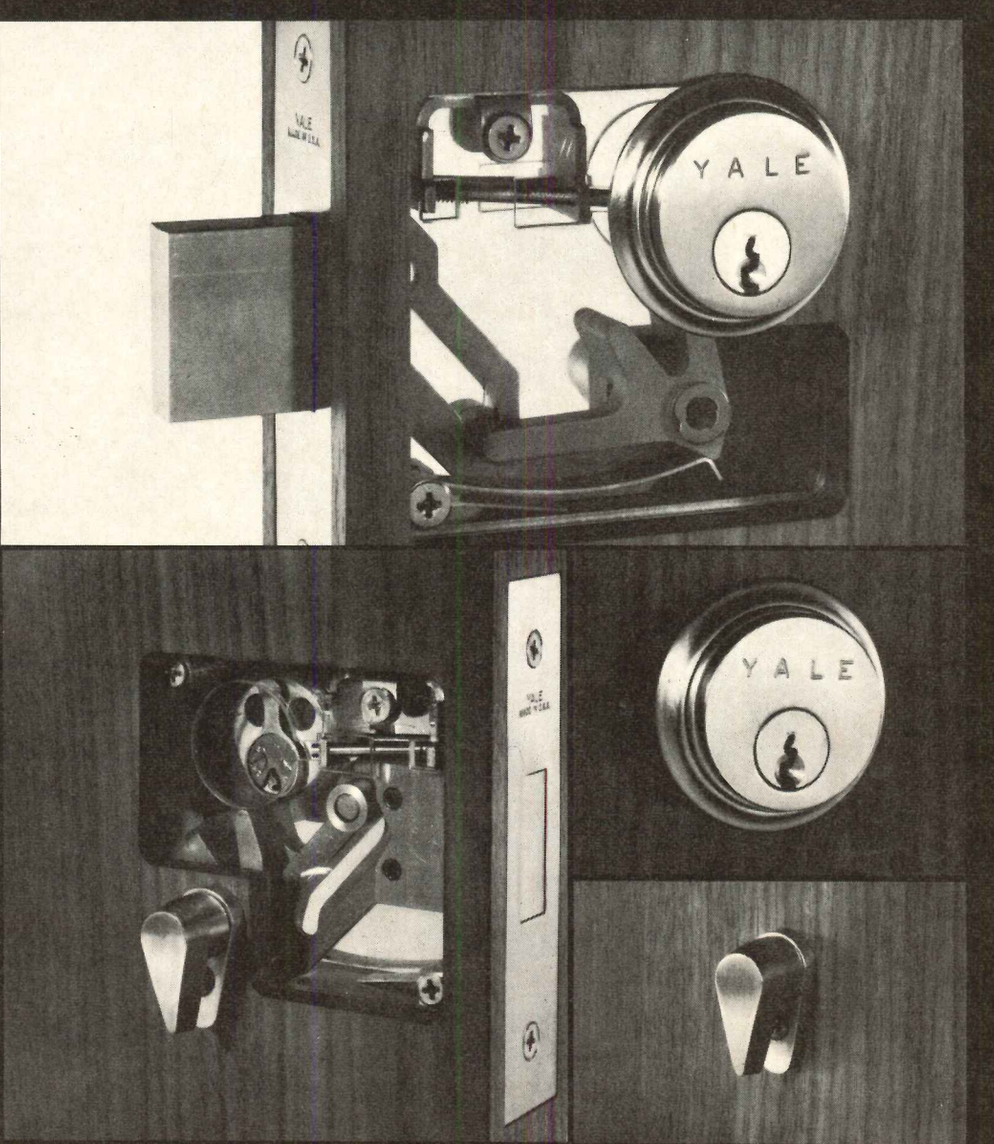
So, when you need a high security deadlock, remember the new 300 series. It's a stopper. Contact your Yale representative for further information.



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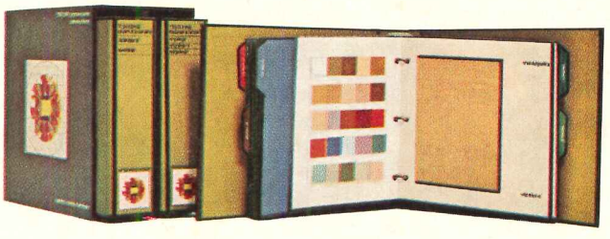

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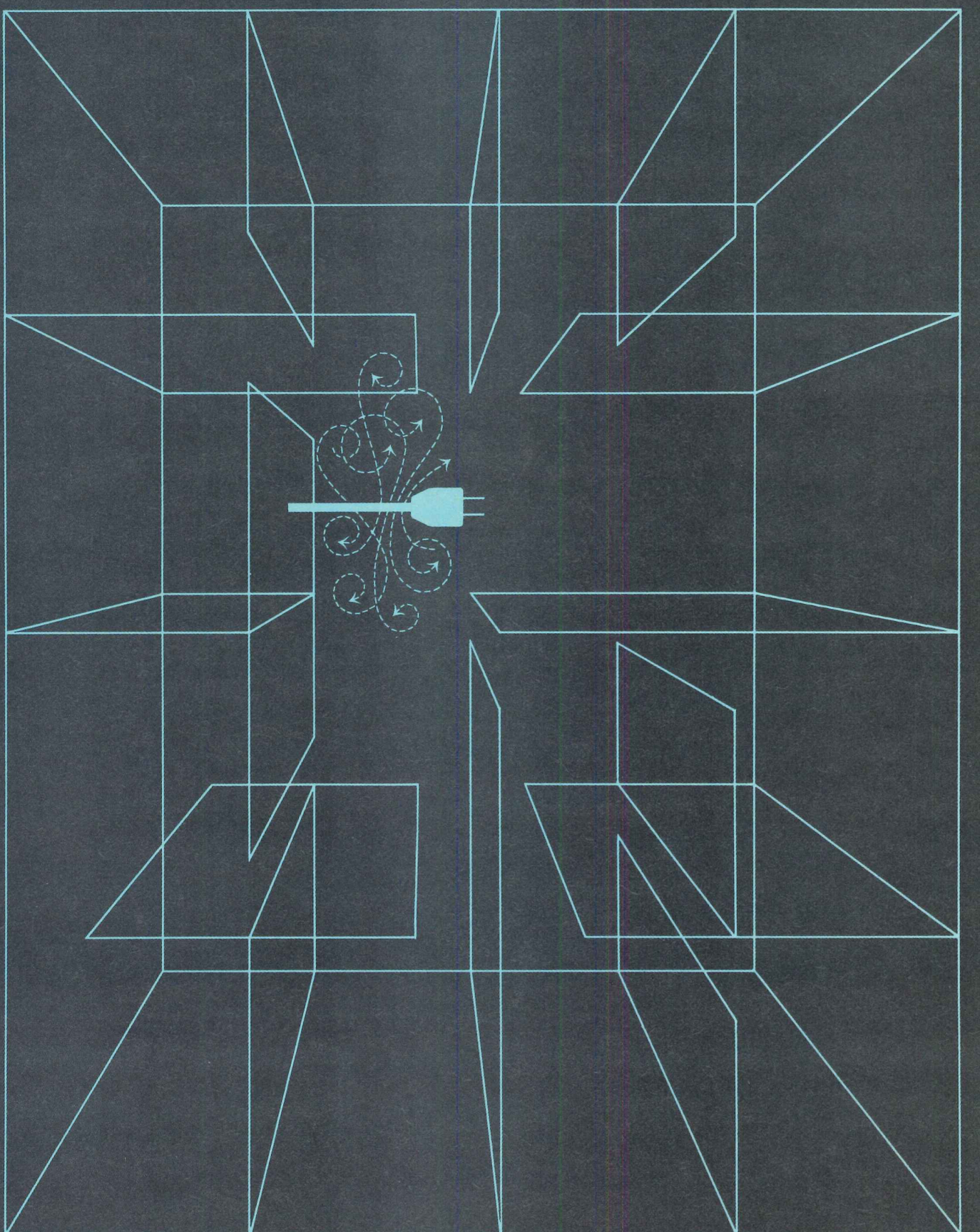

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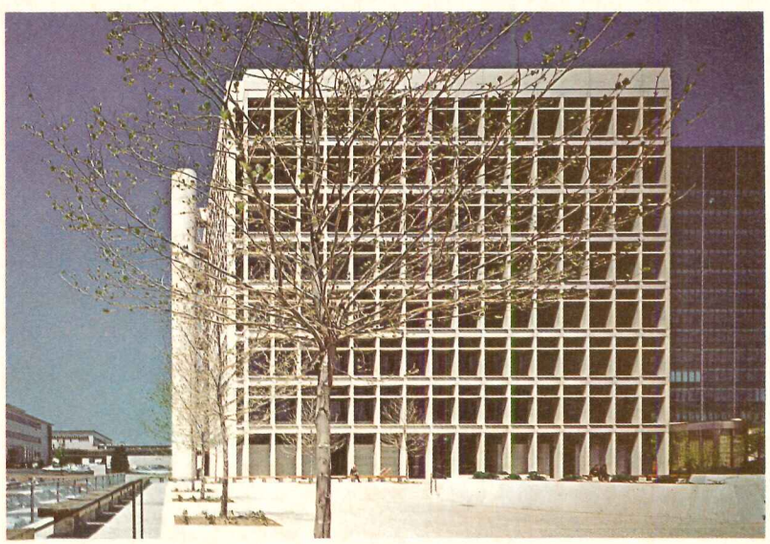

△ L'Enfant Plaza, Washington, D. C. (Office and Retail Center) Architect: I. M. Pei & Partners / Structural Engineer: Weiskopf & Pickworth / Mechanical-Electrical Engineer: Syska & Hennessy

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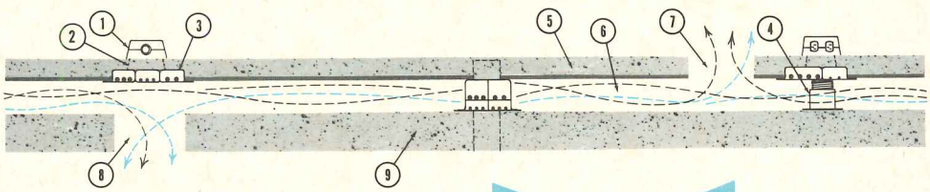

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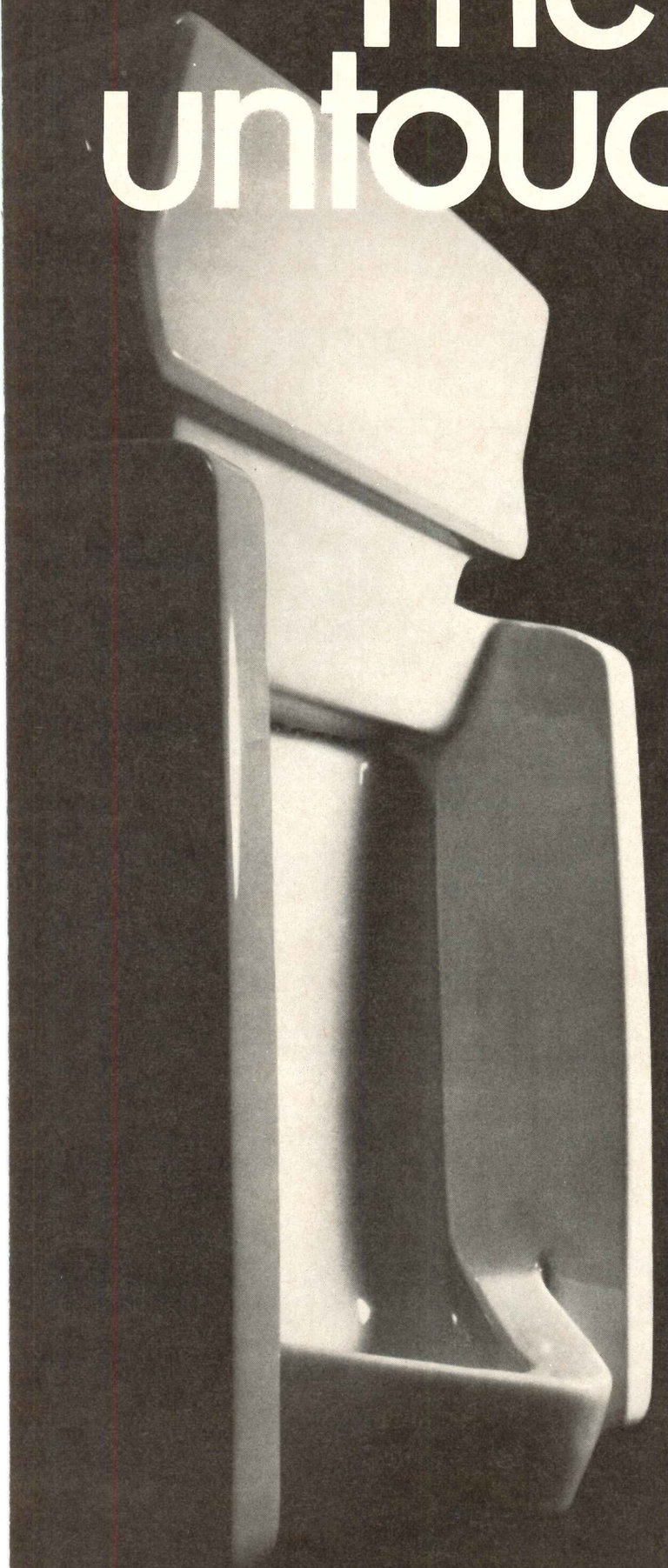
The untouchables



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We call them The Untouchables because that's what they are. They have no handles. No manual controls. So there's absolutely nothing to touch.

Our new Proximatic™ Urinal is one of a kind. It's part of a new generation of electronically activated plumbing fixtures exclusively developed by American-Standard. So simple, so fool-proof, so sanitary... every school and public building should have it.

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New Proximatic urinal assures positive, automatic flushing after every use. Provides perfect sanitation. Reduces water costs. Has completely tamper-proof controls. Exceptionally quiet operation.

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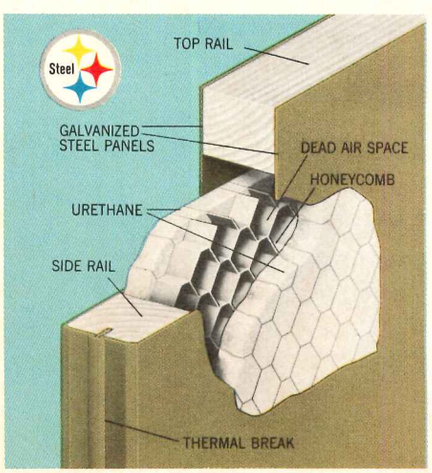
The inside story on the new INSULCOR door.



INSULCOR is a pre-hung steel door with sidelights. And the warmth and charm of wood.

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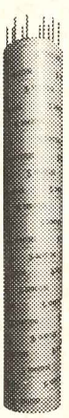
Think what architects like Iktinius and Kallicrates would have accomplished with Sonotube® Fibre Forms.



For one thing, the Parthenon would have gone up a lot faster.

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You know the columns should be round.

Look at the budget and you know the columns shouldn't be expensive.

And you specify Sonotube Fibre Forms.

Sonotube forms are easier to place, brace, pour and strip than conventional forms.

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Sonotube forms give you freedom. Freedom to make things beautiful. Freedom from excessive column-forming costs.

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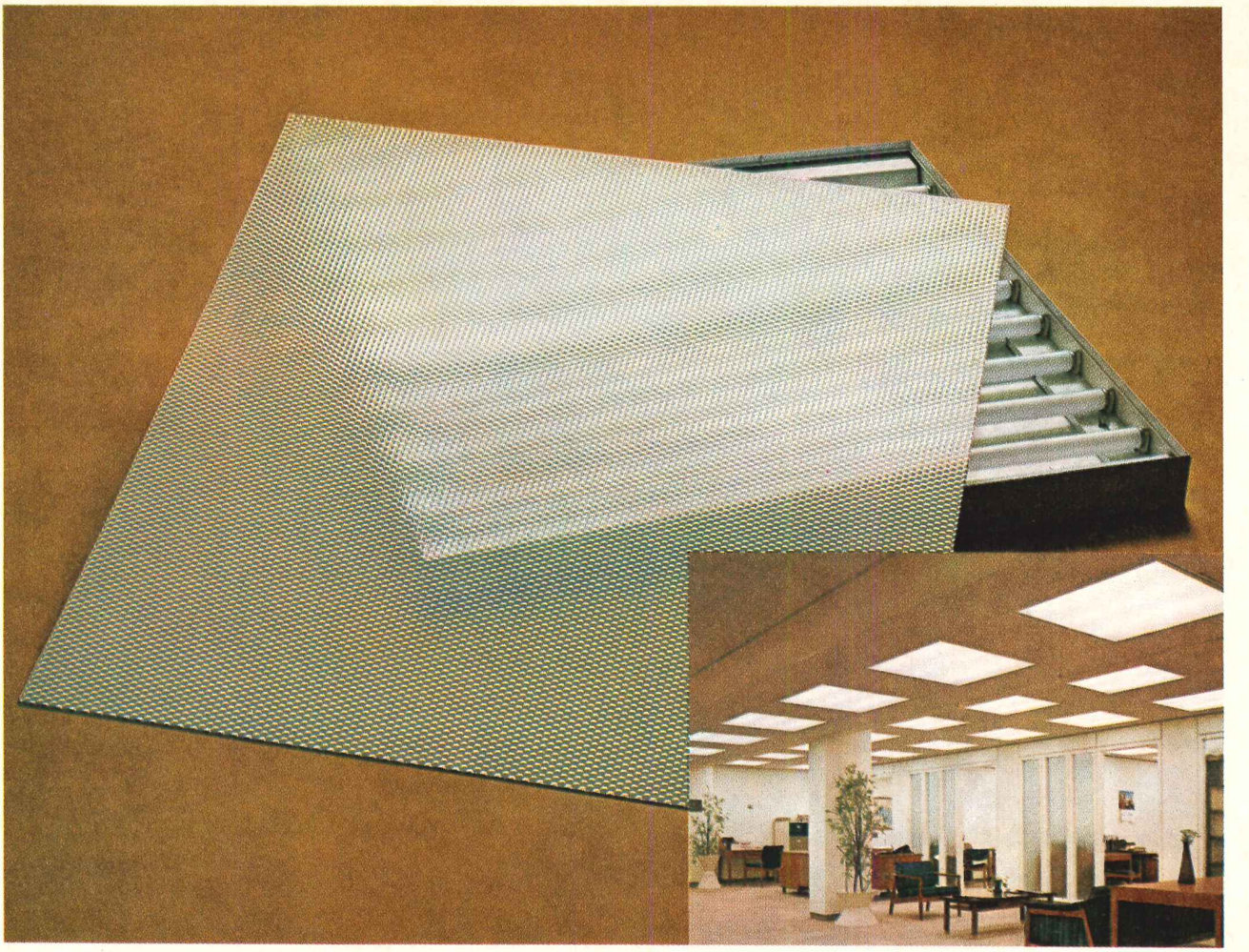

PLEXIGLAS acrylic plastic allows you lighting design freedom not possible with other types of lens and diffuser materials. Compared to glass, lightweight PLEXIGLAS lenses let you cover larger areas—5 feet x 5 feet in a single panel is entirely practical. Compared to other plastics, PLEXIGLAS has high, unmatched resistance to yellowing.

Lighting panels of PLEXIGLAS are highly breakage resistant, economically maintained and safe to handle. Through precise lensic control, they provide maximum light on the task and low brightness at normal viewing angles.

PLEXIGLAS is code-approved nationwide as a lighting material. Write for our technical brochure and the names of manufacturers who use PLEXIGLAS in their lighting equipment.

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Plexiglas is made only by ROHM AND HAAS
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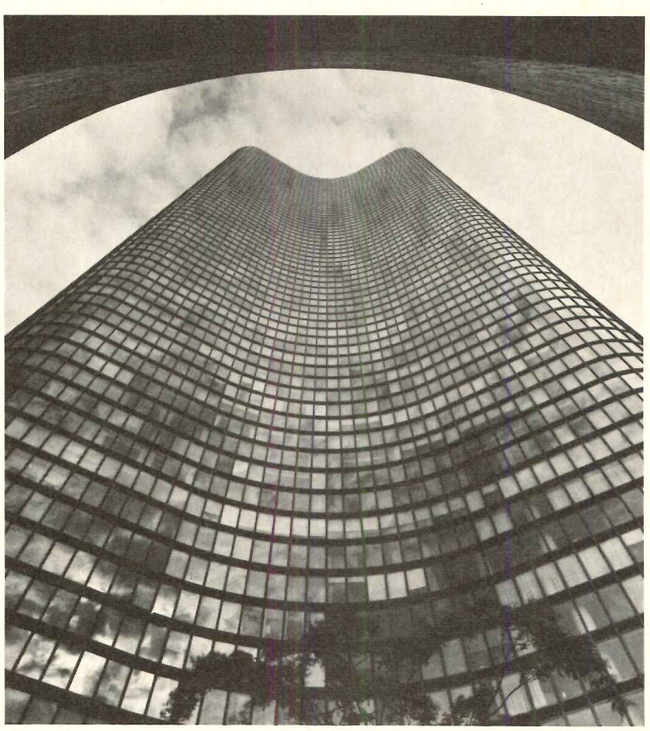
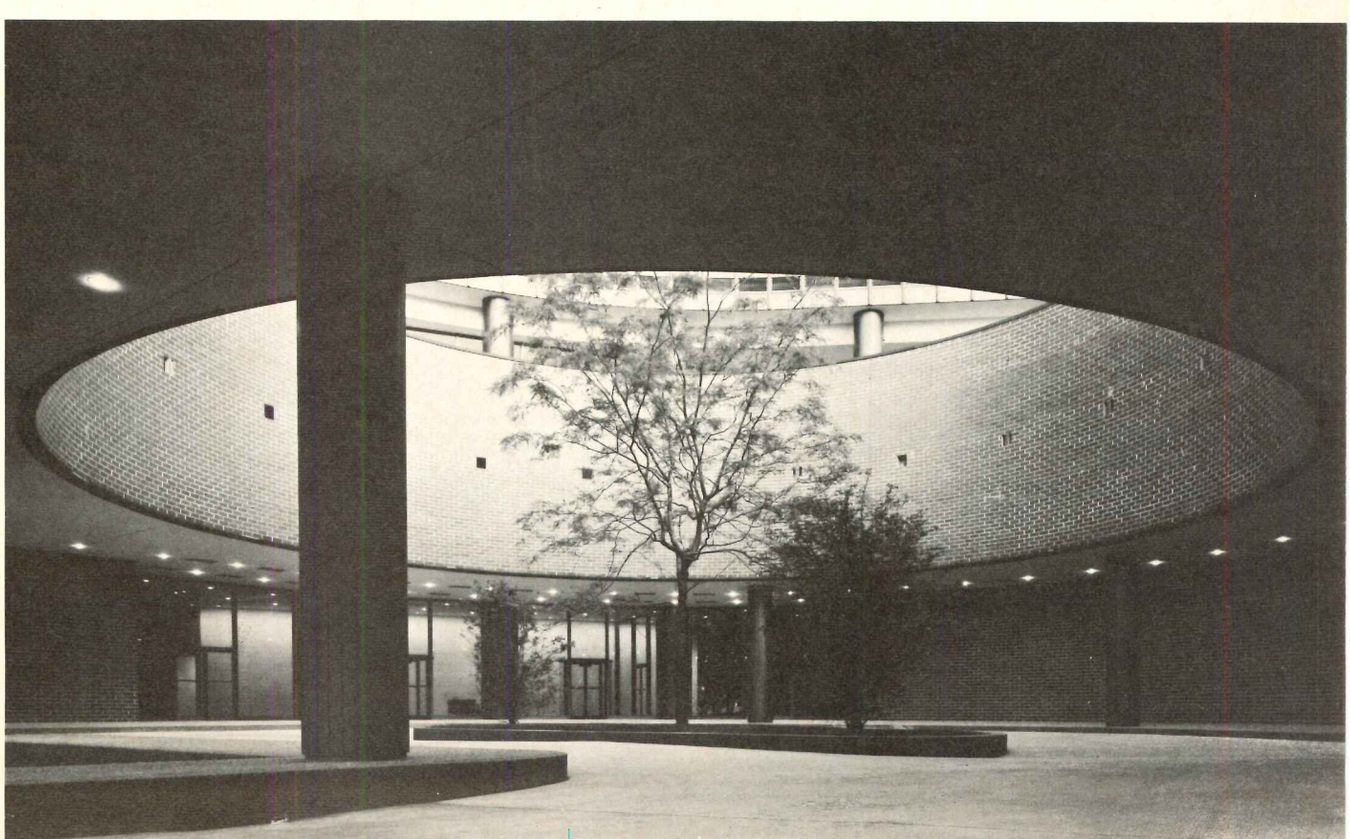
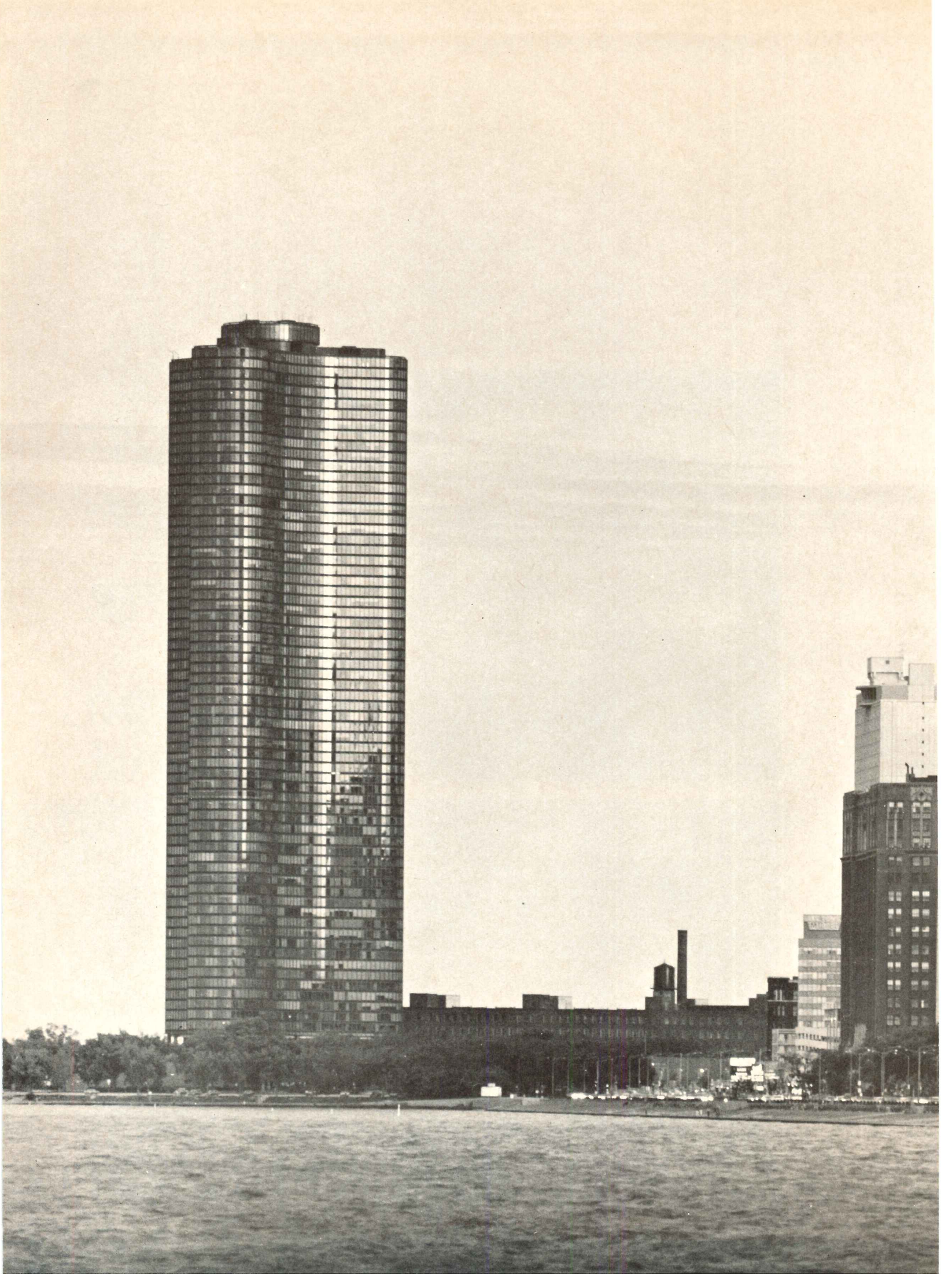


LAKE POINT TOWER: THE FIRST SKYSCRAPER WITH AN UNDULATING GLASS WALL

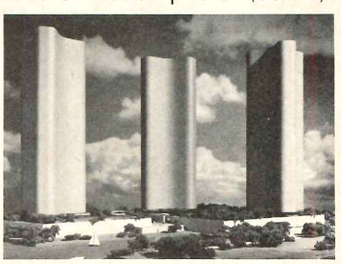
Hedrich-Blessing photos





Skyscrapers are seldom surrounded by space these days, and only rarely can be viewed from near and far and many directions as Lake Point Tower can. Presently the world's tallest apartment building, it stands off by itself on a spit of land which juts into Lake Michigan at Navy Pier Park near the intersection of Lake Shore Drive and Grand Avenue in Chicago's Near North Shore. Given such a site, it is fortunate for the Chicago skyline that the form of this 65-floor, 900-unit cloverleaf-shaped apartment tower stands up so well to scrutiny, and that the play of reflections on its handsome bronze-toned aluminum and glass sheath rewards the onlooker at all hours of the day in every kind of light.

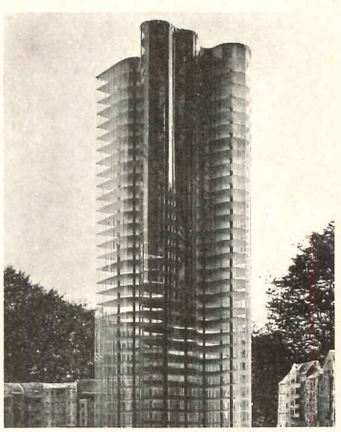
If architects Schipporeit and Heinrich prevail, the tower will eventually cease to exist as a single point in space and will become one of three, as shown in the model photo (below).



The result would be less dramatic, more complex—but, it can be hoped, equally interesting.

A dream of Mies

In 1921 the late Mies van der Rohe made his first sketches and models for a skyscraper office building with a curving glass curtain wall. Designed in an irregular shape for an imaginary site (see model photo) it



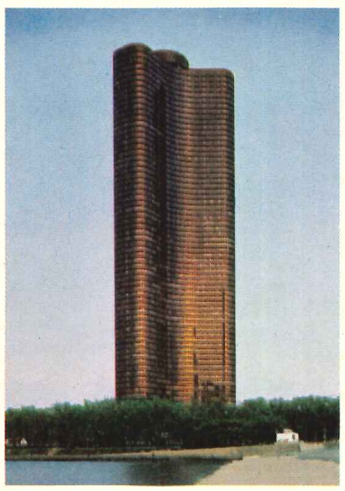
prefigured Lake Point Tower by 47 years. Construction of the concrete skeleton of the apartment tower and installation of its curtain wall was completed early last year in Mies' adopted


NORTH PIER TERM

city—the world's most appropriate place for the first fulfillment of an old skyscraper dream.

. . . by two Miesian disciples

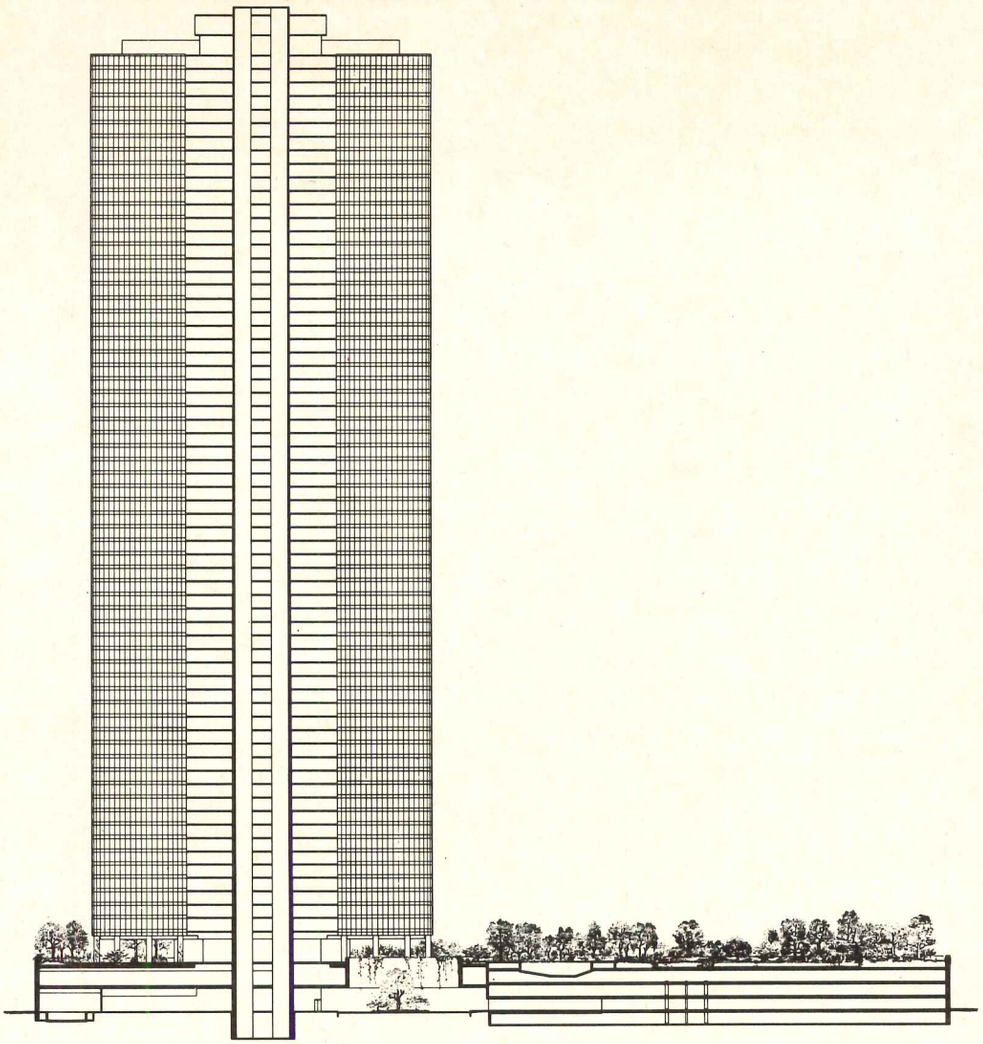
George Schipporeit and John Heinrich, young architects who once worked with Mies, are the first men to build a skyscraper with a curtain wall of this type and interestingly, Lake Point Tower was their first real commission. While working on Mies projects, they had become acquainted with William Hartnett, who at that time had been with Herb Greenwald's organization (now Metropolitan Structures).

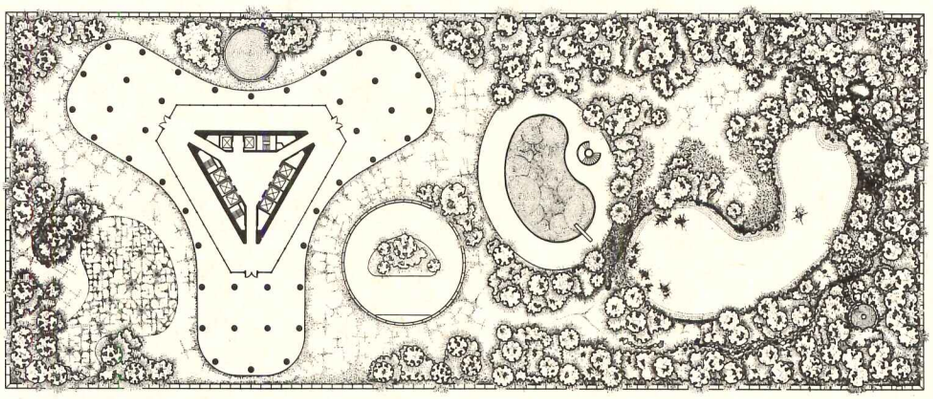


When Hartnett started his own development company, Hartnett-Shaw & Associates, Schipporeit and Heinrich got their chance.

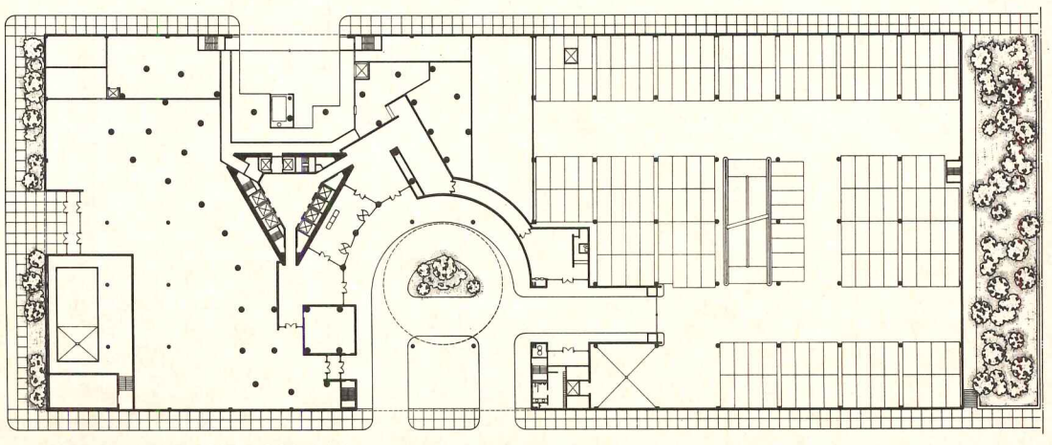
A tower and podium scheme

From the beginning the architects urged the tall tower concept to conserve as much private park and recreation space adjacent to living space as possible. The section and plans (right) show how the elements relate to one another. The right-hand portion of the base contains four levels of parking for 700 cars. To the left, directly under the tower, are two floors of commercial space. Rising through the center to the full height of the building is the triangular-shaped structural core containing elevators, stairwells, corridor supply ducts and the main electrical distribution systems. It is designed to withstand all horizontal moments and shear forces. Only vertical compressive forces are transmitted through the columns to the caissons. At the top of the building are the two penthouse levels. The lower penthouse houses the elevator equipment rooms and ventilation fans. The upper





PLAZA LEVEL PLAN



PLOT PLAN AND FIRST FLOOR PLAN

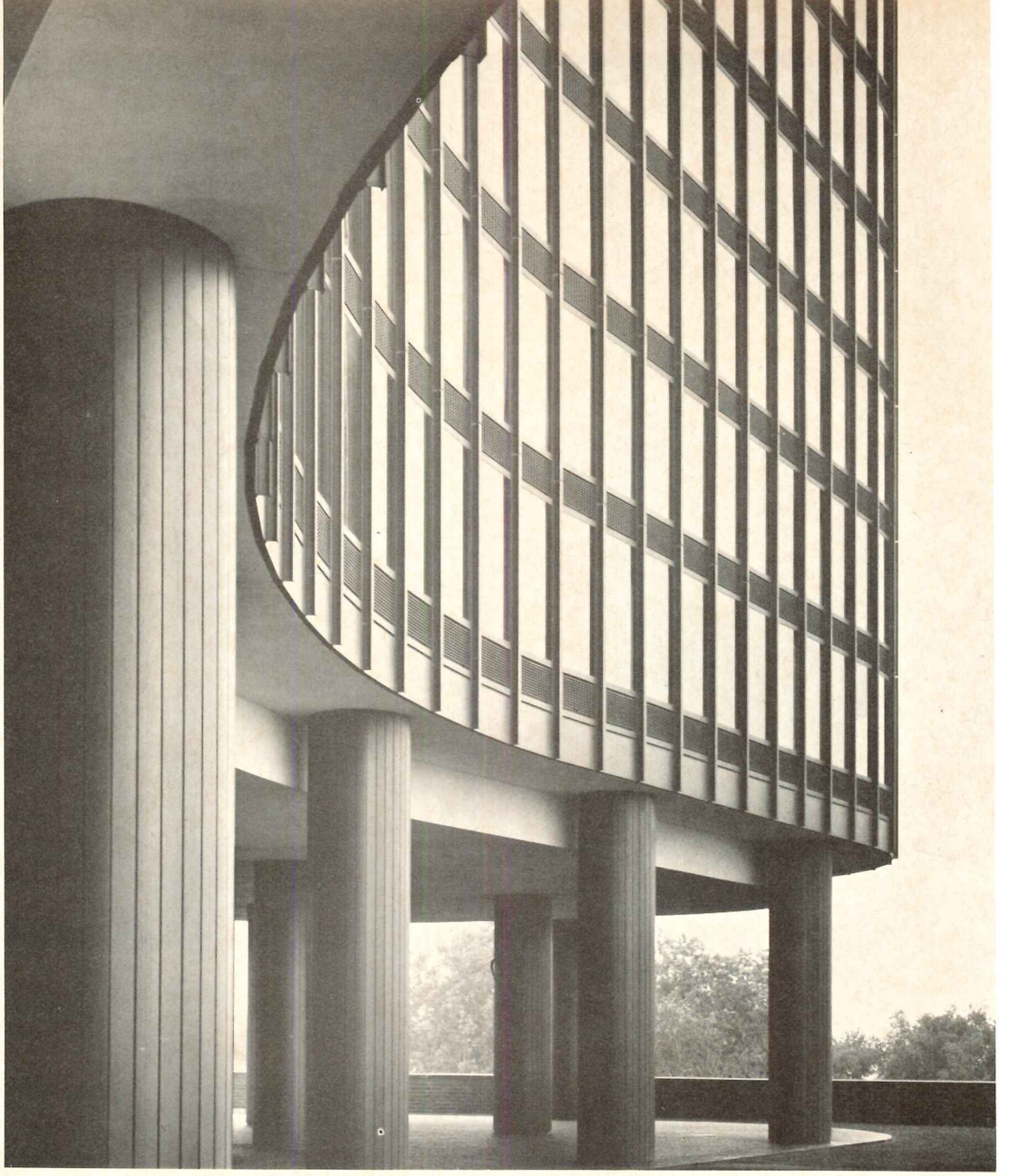
penthouse is a restaurant.

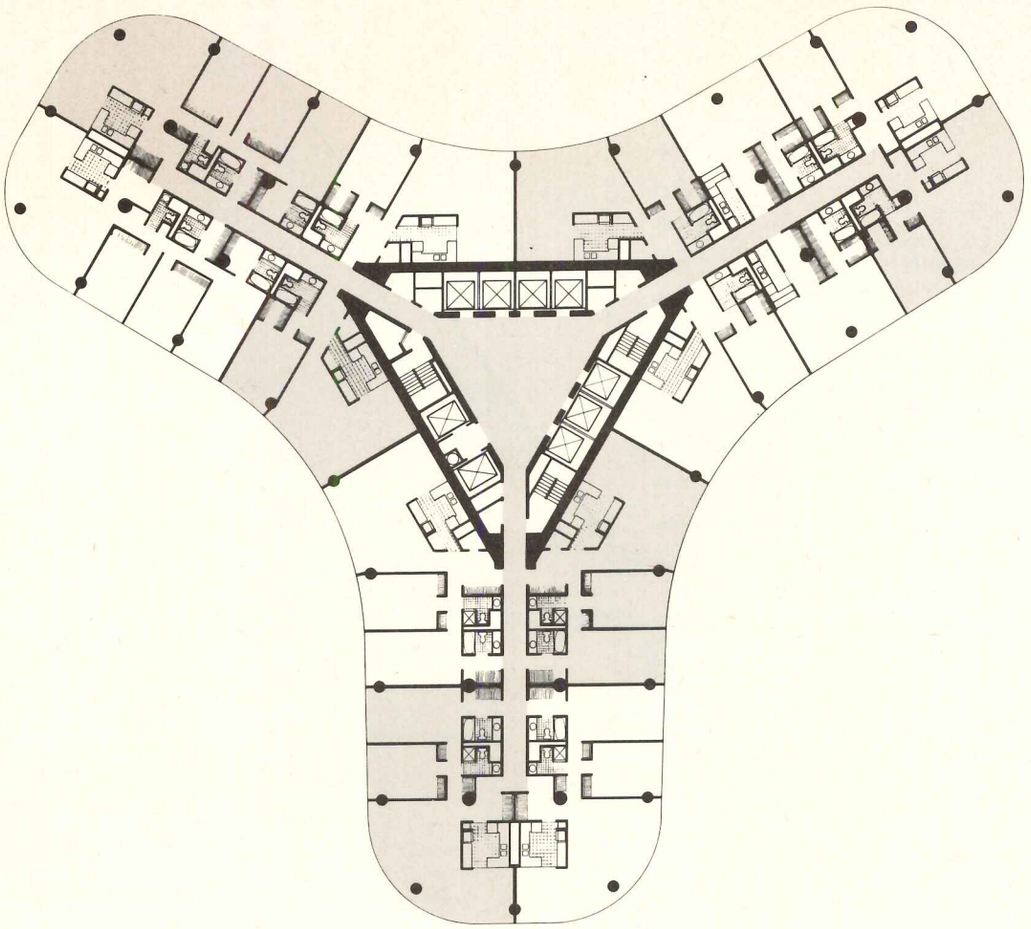
The bird's eye photo (bottom right) helps show how the podium functions. The large circular opening brings daylight to the entrance drive below which serves the garage, the main lobby, the commercial space, a health club and indoor pool, a loading dock and receiving rooms. The main refrigerated rubbish collection point connected with the rubbish chute is incorporated under the podium as part of the loading dock. At the garden level of the podium, directly behind the arcade, are enclosed community rooms. The arcade overlooks the entire garden which includes an outdoor swimming pool, a reflecting pool (opposite page, right), a putting green and a children's playground. The architects and their landscape consultants have provided an informally shaped garden in deliberate contrast to the strict geometry of the building. The planting humanizes the setting and gives it scale.

The cloverleaf plan

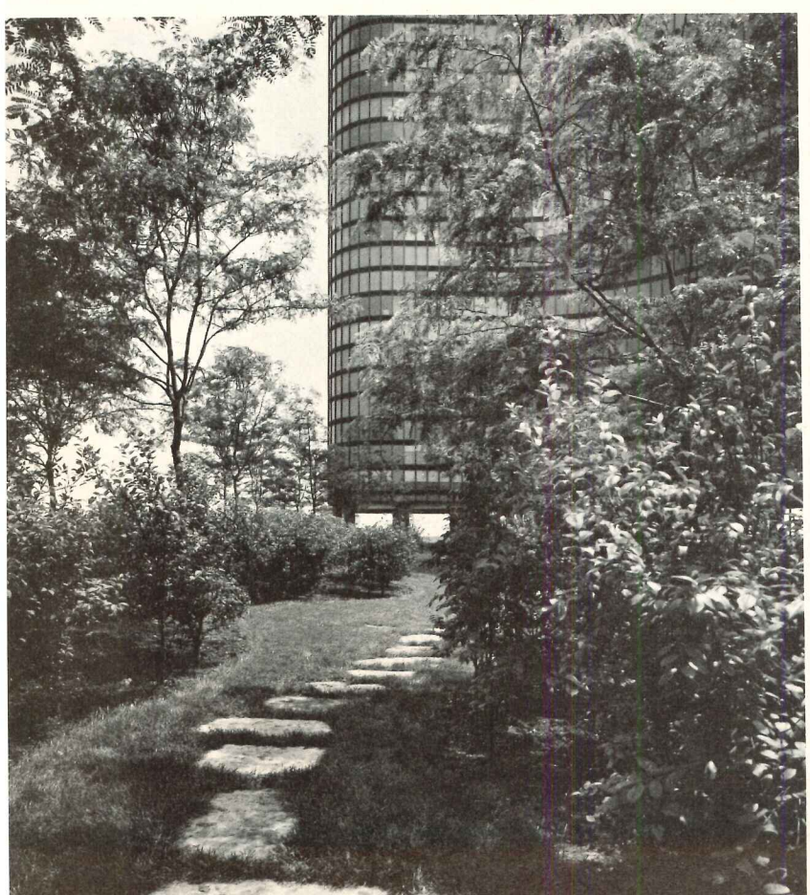
Among the advantages of the tower floor plan are the relatively short corridor lengths it generates. As one leaves the elevator he enters a separate small lobby at each apartment floor. From this lobby, branching in three directions, are the short corridors which serve the individual apartments. Because there are fewer apartments per corridor, a high degree of privacy for each apartment in each wing has been achieved. From the floor plan (right) it can be seen that the maximum number of apartments flanking each corridor is six. This occurs on floors which have a one-bedroom, efficiency, one-bedroom configuration. On floors having two-bedroom units, and those having the one-bedroom, three-bedroom configuration, the maximum number of apartments flanking the corridor is four.

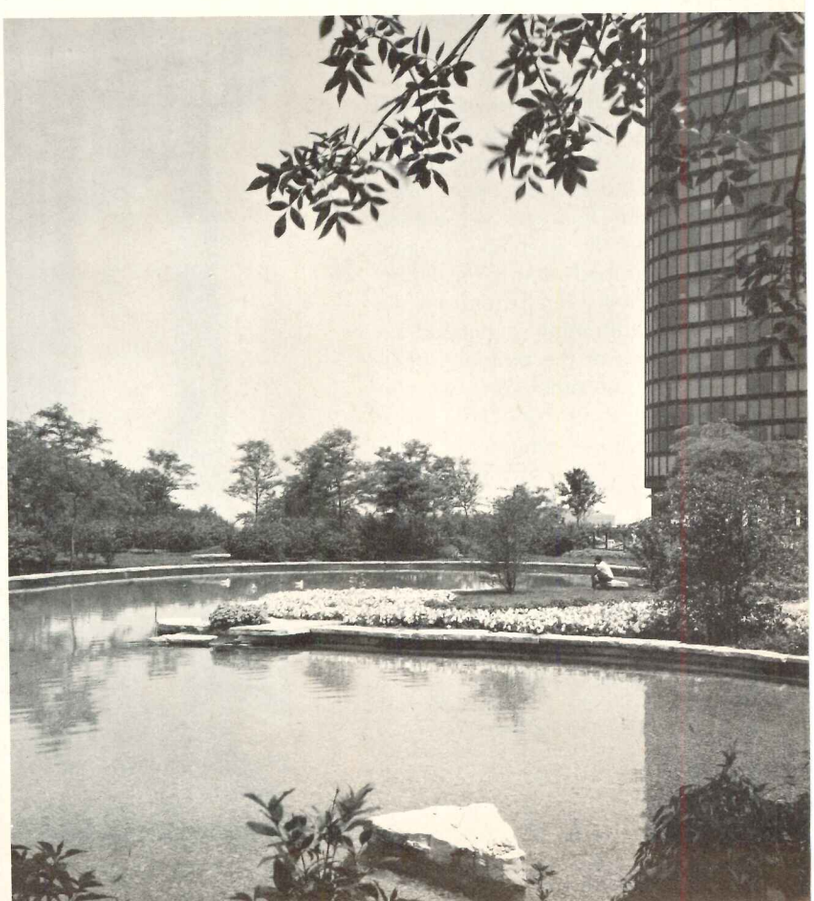
In planning the apartment layouts, the two-bedroom unit established the basic module of a scheme which permits the building owners at low cost to quickly increase and decrease apartment types to meet the demands of a changing real estate market. The plan reveals that to change two of the latter units into one three-bedroom and one single-bedroom unit, all





COMPOSITE FLOOR PLAN





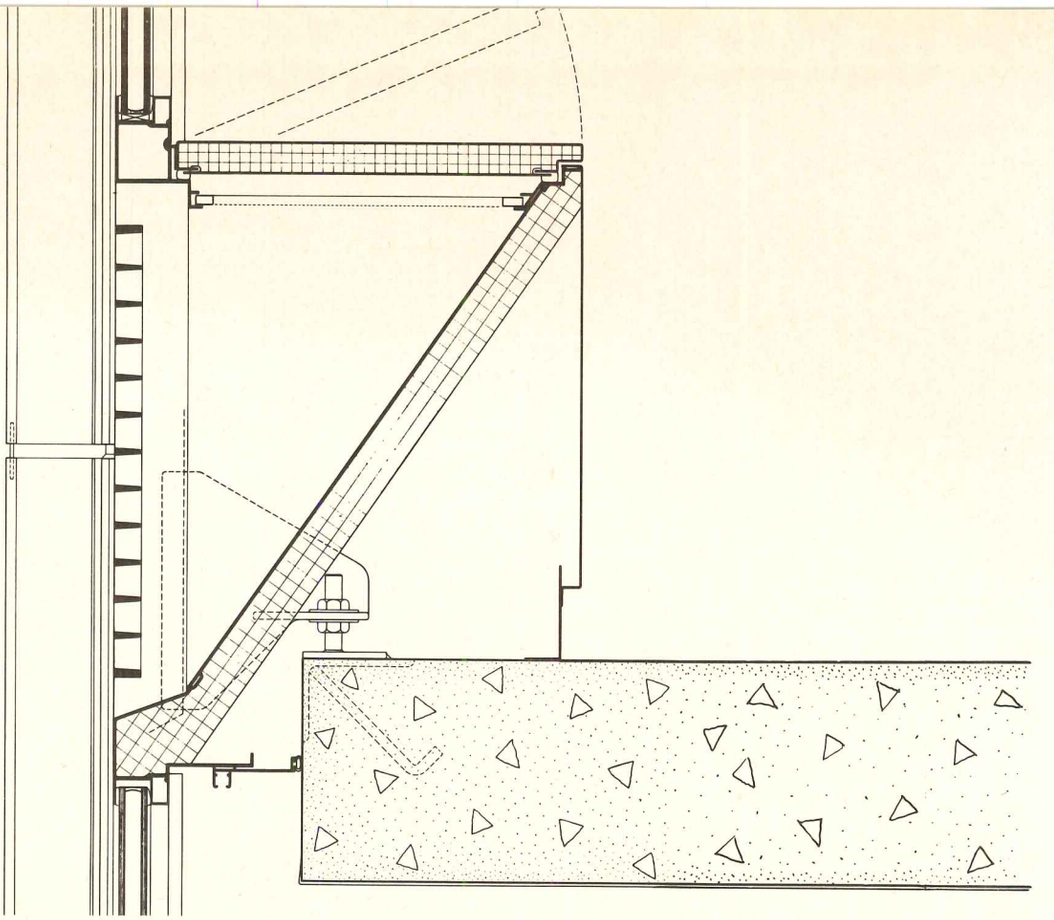
that is necessary is to move the party wall one-half bay over, thus incorporating the bedroom from the adjacent apartment along with its bath. Moving the party walls one bay in each direction forms two one-bedroom units flanking a single efficiency unit. In this instance one bath becomes a kitchen. Pipe space and shafts need not be changed.

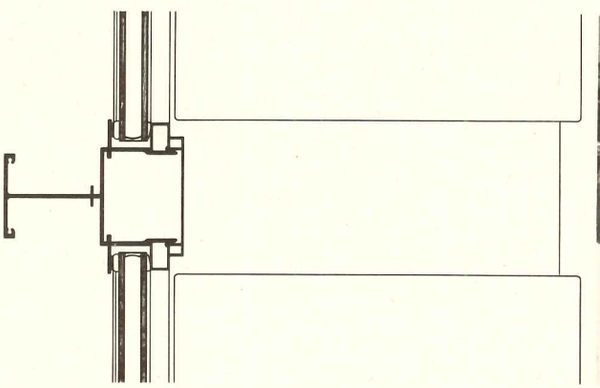
At one point the architects studied a four-wing building, which they found would have worked extremely well for a higher density solution. When they considered, however, that the 90-degree angle between each wing offered cross views from apartment to apartment, they returned to the three-wing configuration which generates 120-degree angles, making it practically impossible to look across at a neighbor's apartment.

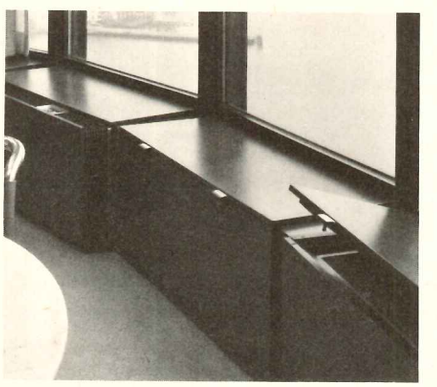
Climate control

Heating and air-conditioning units for bedrooms, living and dining spaces have been coordinated with the window wall components, because the architects wished to eliminate the central system and its space-consuming distribution requirements. Public lobbies are heated by duct heaters, and cooling is supplied from the 69th floor mechanical penthouse which supplies both heating and cooling to the corridors. As shown in the photos (right) HVAC units are mounted in cabinet units and slide forward to make the controls accessible. Next to these are similar cabinets with lift-up lids which admit fresh air through grilles located just below the fixed sash, as can be seen in the section. Said John Heinrich: "We wanted to whip the problems created by solar loads during those critical spring and fall months when air conditioning is needed on one side of the building, heating on the other. And we also wanted to provide an answer to individual temperature preferences." The typical apartment shown (right) adapts well to informal arrangements of contemporary furniture.

LAKE POINT TOWER, Chicago, Illinois. Owner: *Hartnett-Shaw & Associates, Inc. and Fluor Properties;* architects: *Schipporeit-Heinrich, Inc.;* associate architects: *Graham, Anderson, Probst & White;* mechanical engineer: *William Goodman;* landscape architect: *Alfred Caldwell;* general contractor: *Crane Construction Co.*







TOWARD "A DECENT HOME . . . FOR EVERY AMERICAN FAMILY"

With the housing crisis fast reaching explosive proportions, Operation Breakthrough seeks to break the logjam by luring the building industry along the path of mass production and marketing into the 20th century. It calls for rapid and radical change not only in the industry itself, but in the institutions—political, social, and economic—which shape it. The challenge is clear. Will it be met? Can it be met?

HUD Secretary George Romney early raised eyebrows and not a few hackles in the building industry by invoking the image of cars rolling steadily off an assembly line as a model for the solution of the nation's housing woes. The hackles have since been smoothed for the most part as subsequent moves from HUD make clear that neither Romney nor his lieutenants take the automobile-manufacturing analogy so literally as have some of his hearers. The eyebrows, however, remain raised while industry observers await further developments, with a special eye toward the fate of Operation Breakthrough, HUD's intensive and broad-gauged effort to spur housing production in the unprecedented volume required to meet demand in this decade and beyond.

Of the need for a "breakthrough," there can be no doubt. Twenty years after the National Housing Act of 1949 called for "the realization, as soon as feasible, of a decent home and a suitable living environment for every American family," the highly esteemed National Commission on Urban Problems (Douglas Commission) was forced to conclude that "a third of our affluent Nation cannot afford adequate, nonsubsidized housing." A year after the Congress, in the Housing Act of 1968, reaffirmed the earlier commitment and quantified the national goal at 26 million housing units within the next decade, 6 million of them for low and moderate income families, the situation has not improved. Indeed, all signs suggest it will get worse before it gets better.

This country has never produced 2.6 million housing units in a single year; it has never even produced 2 million units—though the industry came close in 1950 under the impetus of post World War II demand. Annual production now stands, as it has with some fluctuation for the last ten years, at around 1.5 million units—barely enough simply to keep pace with new family formation as population increases, and far short of the additional volume required to clean up existing and accruing backlogs of substandard and overcrowded units or to make up deficits caused by units lost to the housing inventory through demolition and other means. If that is all the running we can do, as the Queen warned Alice, we will not even be able to stay in the same place—and will miss the ten-year goal of 26 million new and rehabilitated housing units by 11 million, or almost half.

As for the 6 million units earmarked for low income families and requiring some form of public assistance, the prospects for meeting the need are, on the basis of past performance, even more dismal. In the last decade—which encompassed the discovery of "the other America," the declaration of the "war on poverty," the eruption of our urban centers and the consequent recognition of the depth of the urban crisis—this country contrived to produce all of 634,000 assisted housing units: a grand total for the ten-year period just slightly greater than the number Congress has deemed necessary in *each* of the next ten years.

NOT ONLY THE POOR

The 1968 Housing Act directs—quite properly—that "the highest priority and emphasis should be given to meeting the housing needs of those families for which the national goal [of a decent home and a suitable living environment] has not become a reality"—those families, that is, "with incomes so low that they

could not otherwise decently house themselves." The primary target of the act, in short, is housing for the poor; its primary weapons, those programs (and variations of them) which have traditionally provided such housing, albeit inadequate in quantity, and, too often, inferior in quality.

This emphasis cannot be faulted. But with the rhetoric surrounding the "housing crisis", which bids fair to join the urban crisis and the weather in the ranks of phenomena everybody talks about and nobody does anything about, it may work to obfuscate the point that continued under-production of housing must sooner or later impinge on the declared right to a decent home of *every* American family—not the poor alone. Statistical data on the state of the housing supply in the present and immediate past tend to be hazy and ambiguous, as are definitions of "decent" home and "suitable" environment; so must be projections based on them. It is reasonable to suppose, though, that the constraints and pressures which preclude the provision of unassisted housing to those defined by statute as "poor" also affect the capacity of the market to meet the housing needs of more fortunate families.

Increasing prices and inelastic supplies of land, labor, materials and money are even now forcing housing construction costs up while holding construction starts down, contracting an already tight market and making it ever more difficult for ever more families to obtain shelter—whether new or filter-down stock—without either lowering their standards of space and amenity or paying more of their incomes for housing at the expense of other necessities.

If this trend continues unabated and an absolute housing shortage replaces today's market inflexibility, "those families for which the national goal has not become a reality" may well exceed the present third of a nation, and the goal itself pass beyond the realm of achievable reality to become one more slice of pie in the sky—a mockery to the accustomed poor and a gauntlet to the newly beleaguered middle class.

PROCESS NOT PRODUCT

It is tempting, and not a few have succumbed to the temptation, to view the critical housing problem of the coming years as nothing more or less than a matter of money. A position often heard in recent months holds that a nation which can land a man on the moon can do anything, given only the will to do it and the willingness to commit the required resources.

Certainly money is central to the problem. In the area of low- and moderate-income housing particularly, full funding of authorized programs—with full public acceptance of the inevitability of some form of subsidy for these families—is a *sine qua non* of progress toward the six-million-unit goal, and many observers believe spending levels could and should be much higher. Looking at the money question from the other side of the coin, inflation stands as perhaps the most intractable obstacle in the way of producing an adequate supply of housing for the poor —or indeed for anyone else.

Yet money—the lack of it, or the erosion of its effective purchasing power—is not in itself the problem. Nor, though it touches far nearer the root, does the solution lie wholly in even so massive and concentrated a national commitment as that which culminated in the triumph of Apollo 11. If the housing industry is unlike the automobile industry, it is still less akin to the space industry. Should peace suddenly break out, inflation halt, and (despite recent warnings that it won't) money rain like manna, there would remain reason to doubt whether the housing industry as constituted could mobilize the capacity to produce housing at reasonable value for cost in the volume required, in the time required.

From this seed of doubt, Operation Breakthrough springs. It rests on the premise, nourished by the gathering consensus of expert opinion and the hard lessons of past failure and waste, that the accelerated need for housing cannot be met without a significant overhaul of the total building process, a key hurdle being the fragmentation of the market and of production capacity alike. HUD Assistant Secretary for Research and Technology Harold B. Finger, a NASA alumnus now directly responsible for the new housing program, sums up: "If we can break through the many constraints operating in housing and assemble a mass market at a continuing high level, we can attract the industrial investment necessary to apply modern management and technology and innovative production approaches and building concepts. These new and innovative techniques and methods will permit reductions in cost and an increase in quality as volume output is increased." Or, given a relatively unrestricted and thoroughly established demand, supply will flow to meet it, sweeping old obstacles aside.

The strategy outlined for bringing this about is disarmingly straightforward—and to building industry veterans, awesomely difficult of achievement.

GENERATING SUPPLY AND DEMAND

The program consists basically of two parallel parts: the development by the private sector of high-volume production and delivery systems, and the identification and assembly by state and local governments of continuous, assured mass markets. The former is not unlike earlier experimental and demonstration programs—with the significant exception of the premium placed on demonstrated ability to move proposed systems rapidly from plan to prototype to production. Of the submissions which were received in response to the formal request for proposals issued last July, and which are now being evaluated, 12 to 20 will be selected for Phase I contracts calling for detailed preliminary development of prototype units to be erected on designated sites in each of HUD's eight regions. On completion of this design and planning stage, 30 to 40 prototype units drawn from several systems will be constructed on each site, and subjected to a barrage of performance and "consumer evaluation" tests whose successful completion HUD will accept as *de facto* evidence of the concepts' eligibility for HUD program funds and mortgage funds—in the hope that states and localities will similarly accept such approval in lieu of existing code, zoning, and land use requirements. The prototype sites, then, will serve as demonstration centers where prospective buyers can shop among the various models—which presumably will be available for instant (or almost instant) delivery.

Whether they are, of course, will depend in no small measure on the success of the market aggregation program, which is

the aspect of the Breakthrough strategy that is most complex, costly, controversial—and most fraught with political peril. As RECORD editor Walter F. Wagner, Jr. pointed out last month (Perspectives, page 10), the commitment being asked of state and local governments is unprecedented. HUD reports good response to its initial invitation to submit proposals for prototype sites and its longer-range request that staff be designated to work with HUD regional coordinators on market aggregation. But it is an open question how many governmental units will long pursue with much vigor the administrative chores entailed in detailed cataloging of housing needs and identification of sites, let alone the more ticklish problems of pushing for code waivers and locking horns with local labor. Yet it is these measures that will turn an estimated market into a guaranteed market substantial enough to justify or benefit from volume production. Without such incentive to industry, production capacity will not be generated at the required scale, and Breakthrough's final, delivery stage in which HUD expects to pull out of its direct contracting role, leaving prototype producers to market their systems directly to prospective purchasers in competition with other approved systems, will never get off the ground.

PROMISES AND PITFALLS

Because its underlying theory that mass production and marketing techniques can break the housing logjam and bring along the presumptive advantages of scale is far from being proved—or even tested—Operation Breakthrough must for the time raise many more questions than it answers.

To many, the most critical is its credibility. Is it, bluntly, a serious effort, or but one more in the long and disappointing train of promising development programs whose principal product proved to be a cloak of activity masking continued delay in housing appropriations, and brilliant technical innovations whose prime function was to distract attention from more prosaic tools lying unused at hand?

Operation Breakthrough's stated aims, like others before them, are immediate and direct; they are given credence by the relative de-emphasis of shiny new building baubles in favor of solid mechanisms for housing production and delivery. "What we are trying to do," Romney told a group of California bankers last May, "is to focus not only technical ingenuity but the whole complex of modern industrial management on each stage of the problem: the identification of markets; the identification and more effective use of available land; the design of the product and its environmental situation; its production; and its financing and distribution to the consumer."

A convincing, if tall, order that. Yet relevant programs are undeniably under-funded, as Romney is quick to admit, and likely to continue so—which leaves Breakthrough dangling a limp carrot and wielding a flimsy stick.

The real incentives to participation are, for industry, new and readily tappable markets; for community consumers, new and hopefully improved housing products. To merge the interests of the two, in the face of a considerable initial cost to each, Breakthrough, once past the prototype construction stage, can do little more than promise the In's priority on available funds while threatening the Out's with a shut-off.

The leverage gained by thus focusing departmental resources will doubtless be considerable even at present program levels. One could wish, however, for more money and less moral suasion.

Meanwhile, skeptics point to the time table, which calls for prototype construction and evaluation to get under way in March of next year, with volume production ready to start in late 1971. Even assuming that the relatively brief time allowed for preparation of proposals, and the implicit emphasis on delivery, make it virtually certain that prototype contracts will be awarded bidders offering well-developed technologies and/or well-developed production capabilities, that is a tight schedule. Few outside HUD believe it can be met. The principal reservations, interestingly, hinge less on the issue of production start-up time than on the time required for prototype evaluation and market aggregation, both of which must precede contract negotiations between producer and purchaser. Negotiations, too, are seen as a potentially lengthy process, since the "purchaser" may well be a conglomerate of smaller sponsoring groups and the "producer" contractors for several approved systems.

The most optimistic schedule then involves a minimum two-year period before Operation Breakthrough becomes effectively operational. In the interim, HUD officials insist, all existing programs will be pushed full-speed ahead. It may take some pushing. Given the persuasive logic of the Breakthrough strategy and the forcefulness with which it has been presented, it would be only human for large chunks of HUD's constituency to adopt a wait-and-see attitude—and not least for a Congress already addicted to the myth that a quick and easy solution to the housing problem, one that will let the taxpayer off cheap, lies just around the next bend.

Yet even a brief hiatus in the nation's already meager housing effort could be a disaster, and the loss of momentum finally subvert those objectives toward which Breakthrough itself is directed.

A related concern is continuity of effort after the first push. HUD emphasizes that Breakthrough is not to be a one-shot affair but an on-going program, and to that end has received and expects to go on receiving "on a more or less continuous basis" proposals for R&D work on individual items or groups of items related to the total building process. It also expects to invite proposals for more full-scale prototypes "at some future time when the situation appears to warrant such action."

This, in principle, should assure a steady flow of ideas to be nursed along, tested and approved on the basis of the same procedures used to evaluate early systems, and slipped into the repertoire. In practice, HUD's ability to avail itself of such inputs is less certain. Since the principal inducement offered initial producers is an identified market with guaranteed priority on HUD funds, approval of new systems without also increasing available funds (and hence the effective market) could slice the carrot very thin indeed. Yet the Breakthrough goal of substantially augmenting the nation's housing capability relies heavily on constantly advancing the state of the art, both through direct support of research and development and through channeling sound innovations to the marketplace.

The continued assessment and refinement of new ideas

would also be a vital element in approaching the stated Breakthrough goal of improving quality while lowering costs—an aim which oddly has triggered relatively little controversy. This may be because no reasonable man could quarrel with the aim. Or it may be because housing experts tend to believe cost-cutting feasible or not depending on how they define it. If construction costs are at issue, most agree, volume production could bring about a reduction. A significant lowering of total cost, however, which must include such key elements as land and money as well as building costs proper, is considered doubtful.

In its request for proposals, HUD itself formally hedged by referring to "costs controlled through utilization of economies of scale, efficient management, and improvement in existing systems of production, construction, land use, and equity financing." The emphasis, though, is clearly on controlling costs rather than lowering them, and on doing so through the whole battery of related cost components rather than relying on the emergence of a "miracle module." Nor are Breakthrough planners unmindful of the implications of a HUD-sponsored study by the Institute for Defense Analyses on "Opportunities for Reducing the Cost of Federally Subsidized Housing for Lower Income Families." The study suggested, somewhat soberingly, that while "serial production" of housing in sufficient volume and under the right conditions might cut construction costs by as much as 15 to 20 per cent, the potential economies could promptly be wiped out by increases in materials and land cost brought about by expansion of effective housing demand.

BREAK THROUGH OR BABY STEP?

The caveats provoked by Operation Breakthrough abound, as do the kudos: each in its way a measure of the impact the embryonic program has already made on an industry at once uncertain and complacent. Few within industry ranks believe that Breakthrough—or any program—can itself make much of a dent in the housing problem without the infusion of a great deal more money than is now in sight. But fewer still quarrel seriously with its underlying premises, either in the short range sense of what-to-do-til-the-money-comes or in the longer range sense of how to make most effective use of additional resources when (and if) they arrive.

Its present weakness, in fact—the enormous difficulty of bringing about radical change in the established processes and relationships of those loosely connected and often conflicting elements which comprise today's building industry—may finally prove its greatest strength. If it cannot effect an instant cure for the nation's housing ills, as it almost certainly cannot, Breakthrough may at least force a more acute diagnosis of the constraints, within the industry proper and in the larger context in which it operates, which contribute to those ills.

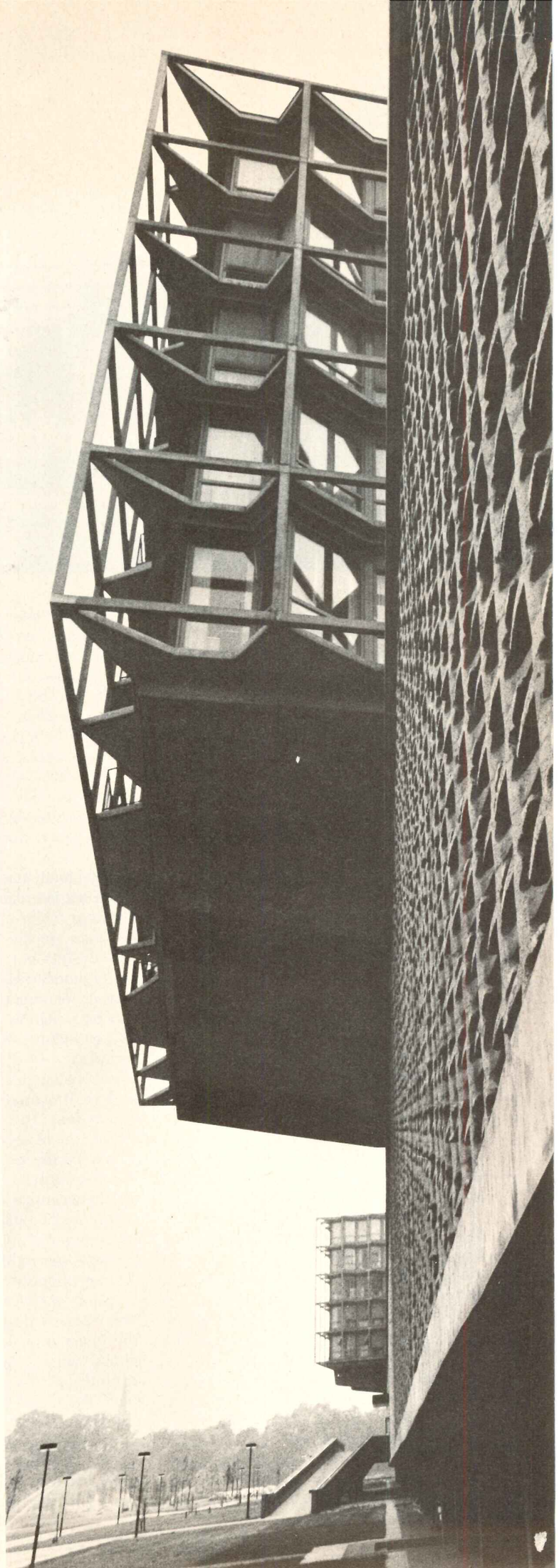
Even now, it has been instrumental in raising for serious discussion in responsible circles once heretical notions ranging from land banks to national performance codes to the single tax. For its challenge strikes at the central issue of whether the housing industry—and the nation at large—can muster the wit or will to respond constructively to the pressing exigencies now upon us. And if not, what then?

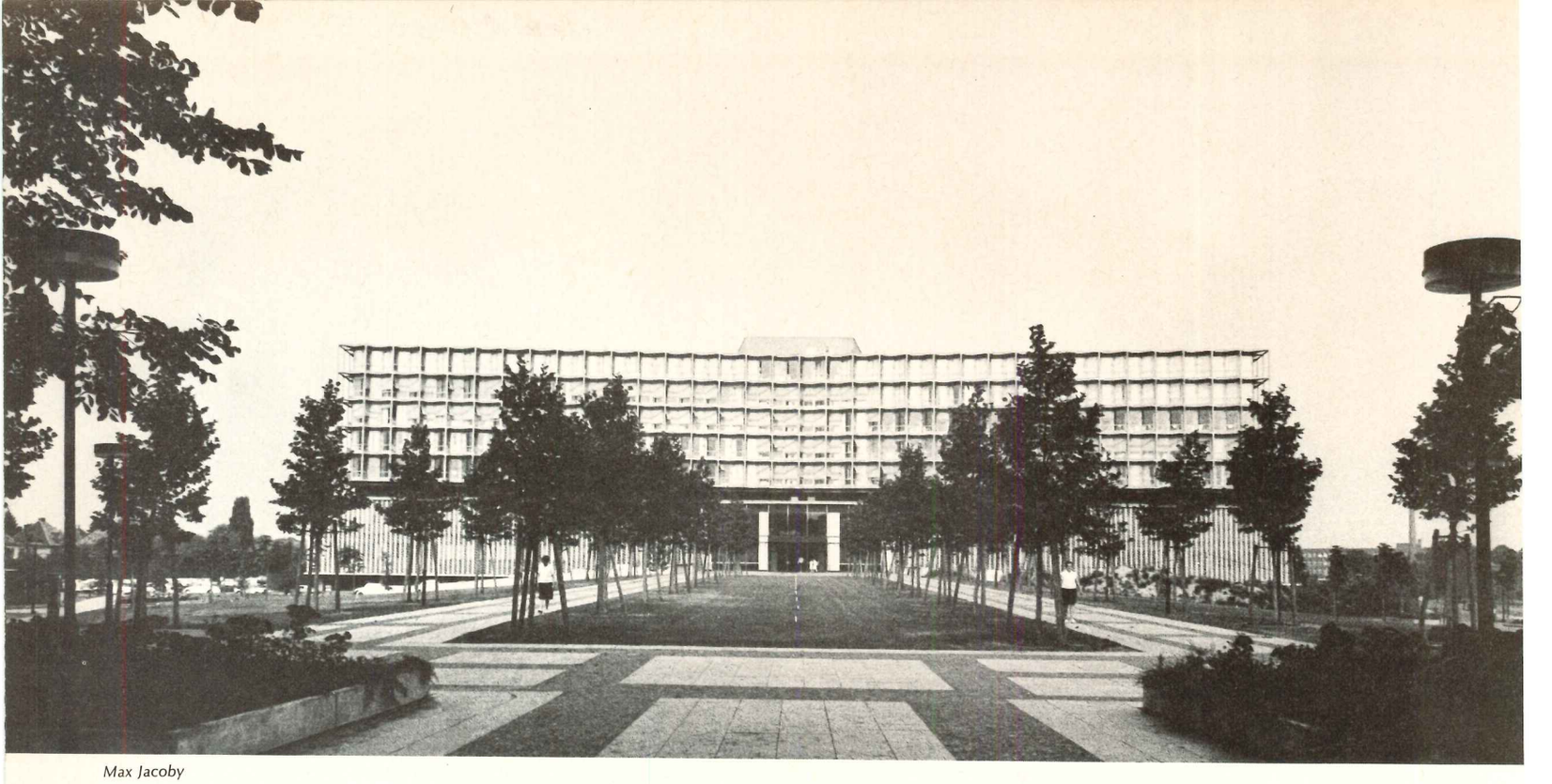
—Margaret Farmer

Berlin University Hospital: International design for optimum form and function

Design of the Medical Teaching Center (Klinikum) of the Free University of Berlin interprets architecturally the most advanced ideas and techniques of both German and American approaches to medical treatment, teaching and research. The result—a 1,426-bed complex designed to handle 25,000 patients a year with a staff of over 2,000—is considered to be of optimum, non-expanding size and full-service diversity for its region and for its purpose.

This all-at-once optimum in scope of the program has had two strong advantages. First, it freed the architectural options from constraints of future expansibility so that the unusual shape of the building evolved naturally from functional relationships. Second, it permitted decisions regarding mechanical systems and advanced automatic distribution systems to be made without interim compromises in sizing or





Max Jacoby

commitment and with utmost economy within its $75.5-million budget.

There were problems enough, nevertheless, according to design coordinator Arthur Q. Davis of the U.S. firm, Curtis and Davis Architects, who worked with Berlin architect Franz Mocken from inception of the project in 1958. One problem was in reconciliation—without reduction to meaningless compromise—between two divergent and highly developed medical teaching and practice techniques. German medicine, for example, has traditionally been taught more by lecture than by bedside demonstration. The consequent expectation of many large amphitheaters—one for each discipline—was successfully reconciled with more efficient general use of teaching spaces in this multi-discipline establishment. A series of diagrams, developed by the architects in consultation with Dr. Russell Nelson of Johns Hopkins and Dr. Paul Roessing of Berlin, showed the flow of patients, students and staff for each department and brought the German staff along to understanding how, using modern techniques such as closed-circuit TV, even virtually autonomous individual clinics could share basic services and use the teaching hospital as an organic whole.

This prepared the way for planning to serve about a dozen clinical disciplines adequately with only two lecture halls of 300 seats each, two with 100 seats each and three with seating capacities of 50 students each. In addition, students will be trained in special teaching facilities within the various medical departments.

Other problems that affected configuration of the hospital had their roots in long-standing German laws and codes which provide, for example, that any room where personnel work more than four hours a day must be an outside room. The plan solution of six open courts crossed by glass bridges helped implement the intent of this law. Also, in the same spirit of intent, the nurses' stations, with core location strategically placed for minimum distances and dual-unit night service, were legally related to the outside by day rooms interposed between their necessarily interior positions and the outside walls.

Another legal requirement—that all patient rooms should have southern exposure—resulted in the saw-tooth outer walls of the 5-story nursing floor turrets.

Architectural massing expresses internal functions

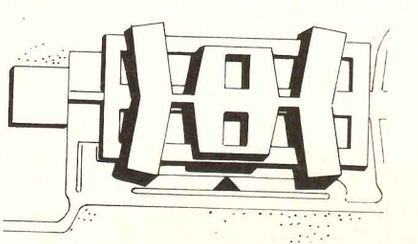
The four major architectural masses of the Klinikum are the rectangular base building (373 by 769 feet with six inner patios) and three superstructures consisting of a hexagonal treatment building in the center and two slightly V-shaped nursing wings, one on either side of the treatment center. Including a small utility annex at one end of the rectangular base, the medical center has an over-all floor space of 1,750,000 square feet. The rectangular building and the treatment section have a unifying sun-screen facade of precast concrete filigree which enhances privacy at ground level and between close-coupled towers.

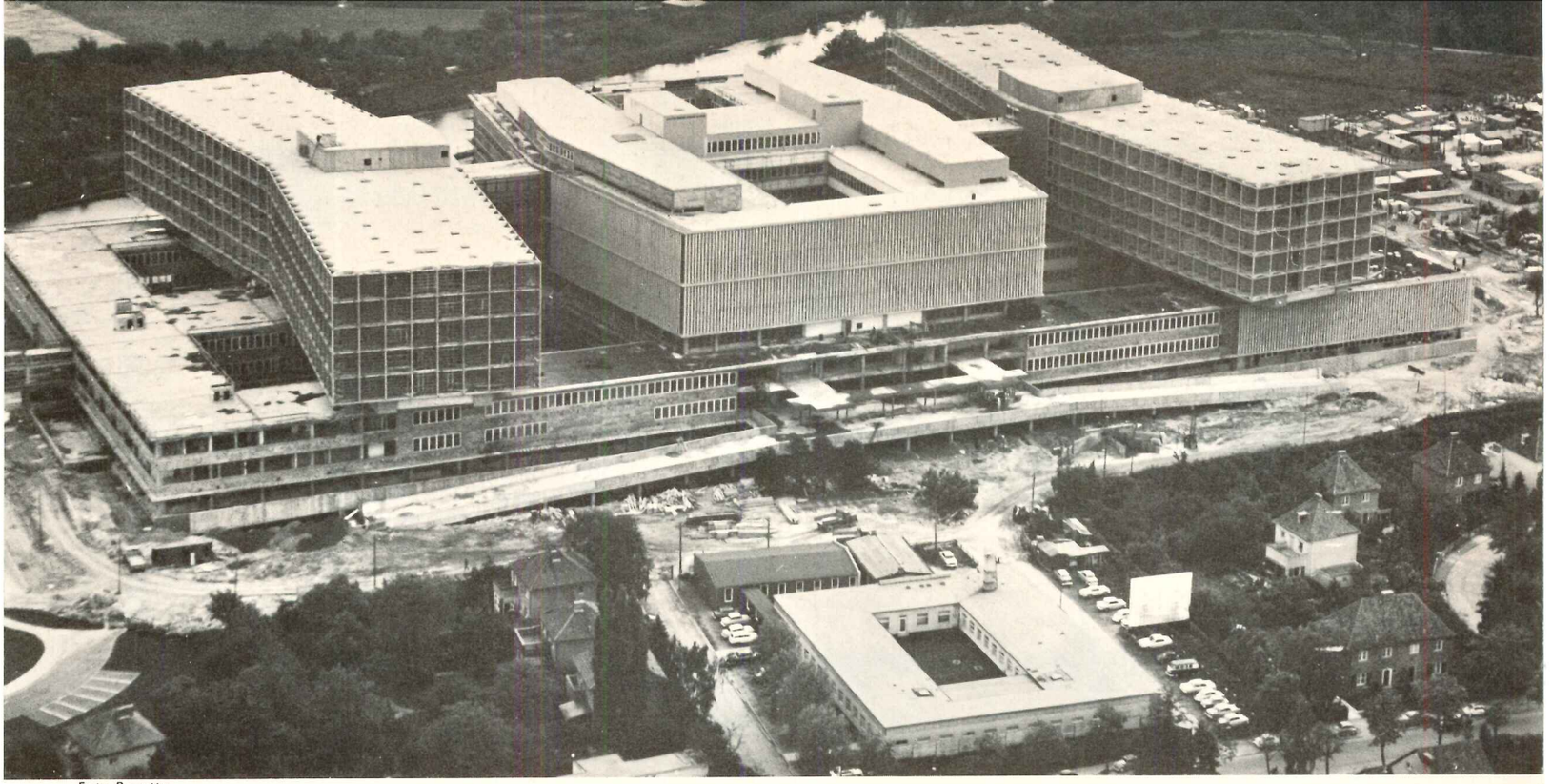
The rectangular base has three floors above ground and two subterranean floors. It houses general functions as shown in the diagrams opposite.

The treatment building (245 by 330 feet) rises six floors above the base block. The lower four floors house various polyclinics, central laboratories and research institutes, as well as the obstetrics department. Polyclinics have a uniform basic layout, four on each floor.

A similarly uniform pattern has been applied for the layout of 16 operating rooms, four to a quadrant, on the fifth floor. They are arranged as self-contained

Above a four-level base are three five-story towers, connected at each floor by glass enclosed corridors. The center tower is devoted primarily to laboratories, research, routine examinations, operating theaters and facilities for outpatients. The twin wings which flank the treatment tower contain the rooms for in-patients. They are slightly angled to the center block in order to improve the outlook and sun-angles in the bedrooms and at the same time increase the privacy function of a precast concrete filigree screen which surrounds the central tower. This helps to keep horizontal distances between towers to a minimum. Relationships of spaces are shown in the schematic diagrams opposite. While these spaces are considered relatively fixed in size and scope for the long-term use of this building, there is room on the site for satellite structures to house, for example, pediatrics or psychiatrics, now handled elsewhere.





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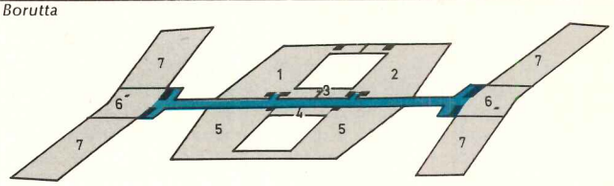
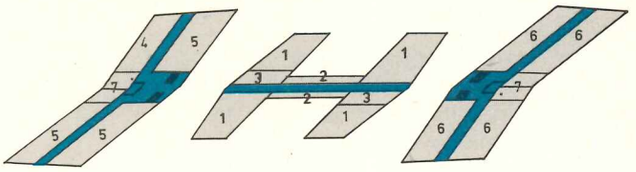
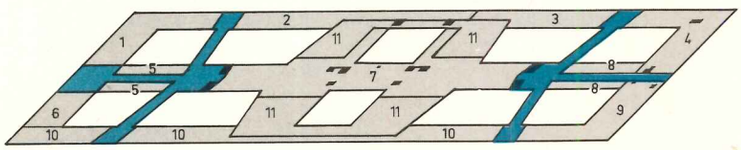


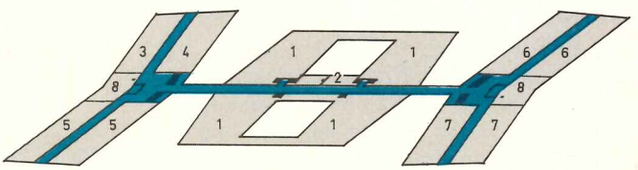
SECOND FLOOR
1 Neurosurgical polyclinic
2 Dermatological polyclinic
3 Department heads (medical)
4 Photographic department
5 Animal experimentation and clinical pharmacology
6 Kitchen utensil washing
7 Technical facilities



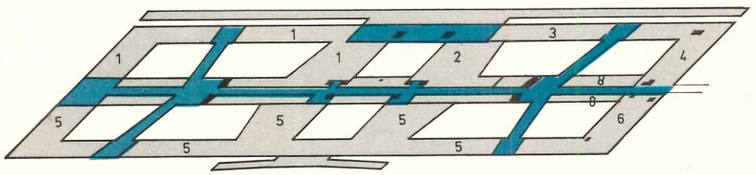
SEVENTH FLOOR
1 Technical facilities
2 Staff rooms for OP personnel
3 Student observation stations
4 Radiation
5 Private patients
6 Surgery
7 Kitchen



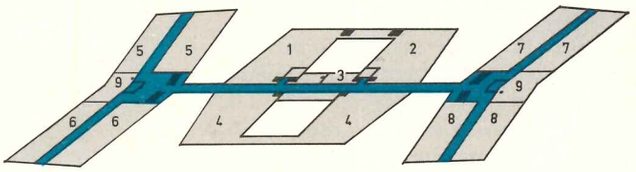
FIRST FLOOR
1 Institute of Theoretical Medicine
2 Central filing
3 Surgical polyclinic
4 Isotope research
5 Personnel management
6 Dean's office
7 X-ray (diagnosis)
8 Personnel changing room
9 Isolation
10 Lecture rooms
11 Technical facilities



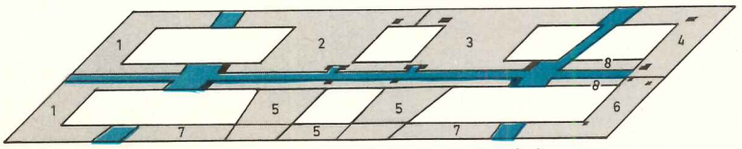
SIXTH FLOOR
1 Central surgery department with 4 recovery rooms
2 Instrument sterilization
3 Ophthalmology
4 Oto-rhino-laryngology (ORL)
5 Neurosurgery
6 Gynecology
7 General surgery
8 Kitchen



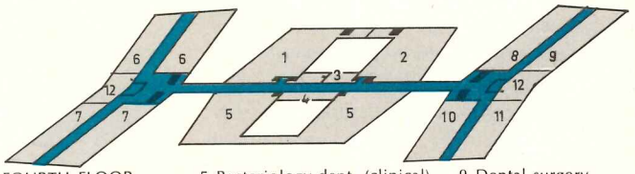
MAIN FLOOR
1 Administrative offices, Central admission
2 Admitting room
3 Emergency surgery
4 Isotope diagnosis
5 Lecture and work rooms
6 Pathology
8 Changing room for personnel



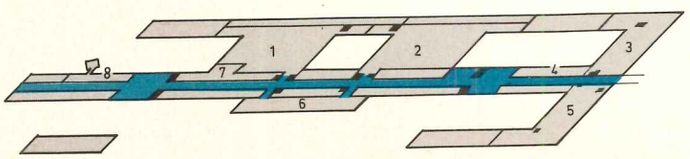
FIFTH FLOOR
1 Urology polyclinic
2 Obstetrics
3 Departmental heads
4 Biochemistry dept. (clinical) Physiology dept. (clinical)
5 Urology
6 IM (internal medicine)
7 Obstetrics
8 Private patients
9 Kitchen



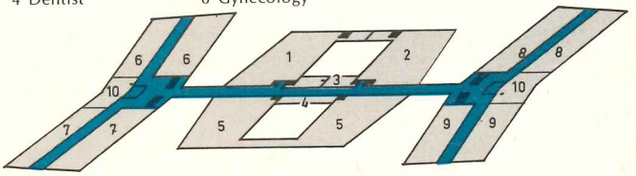
FIRST BASEMENT
1 Storage
2 Pharmacy and medical central supply
3 Kitchen
4 Isotopes
5 Commissaries
6 Pathology
7 Staff rooms
8 Personnel changing room



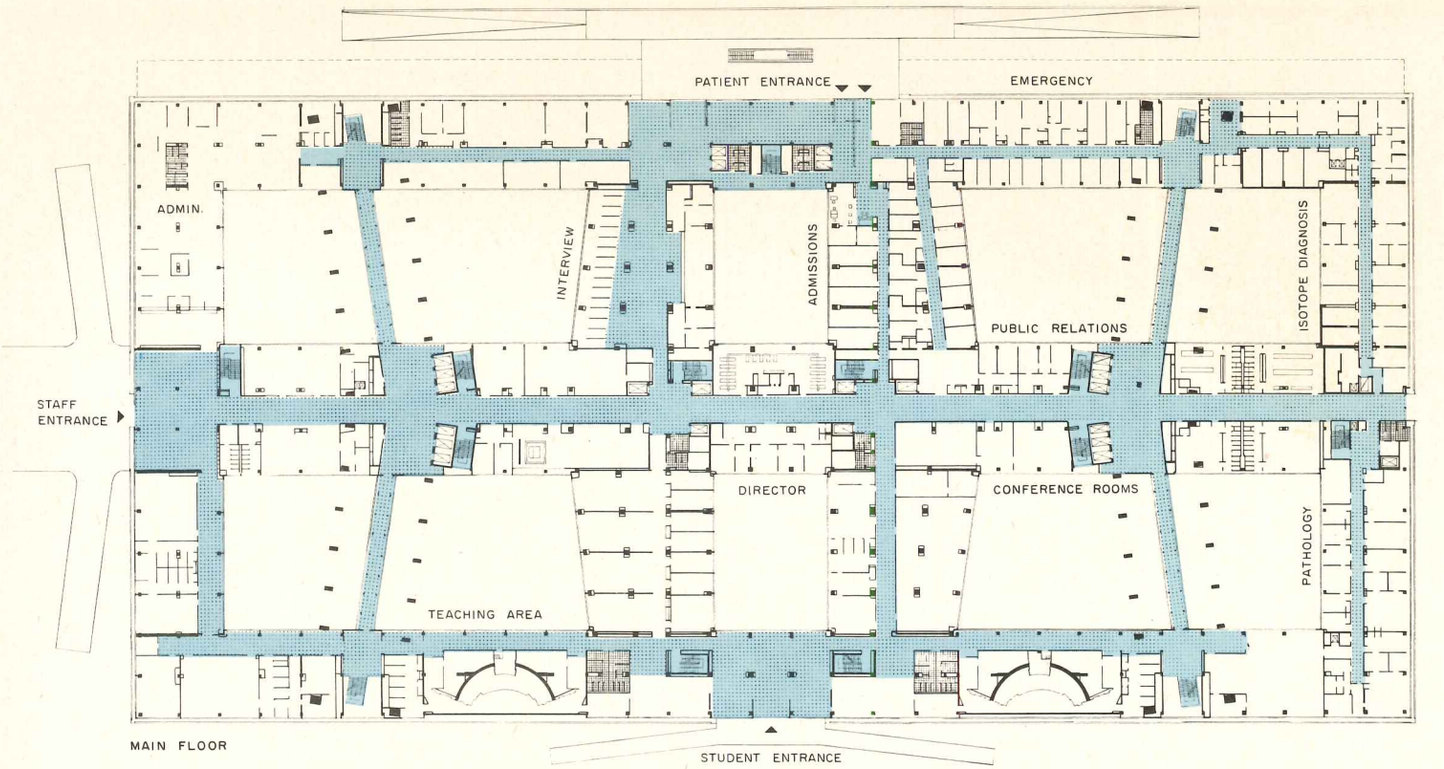
FOURTH FLOOR
1 ORL polyclinic
2 Gynecology
3 Departmental heads
4 Dentist
5 Bacteriology dept. (clinical) Central chemical laboratory
6 Oto-rhino-laryngology (ORL)
7 IM (1)
8 Gynecology
9 Dental surgery
10 Dermatology
11 Private patients
12 Kitchen (distribution)



SECOND BASEMENT
1 Radiation therapy
2 Physical therapy
3 Isotope laboratory
4 Central incinerator station for refuse
5 Pathology
6 Central bed cleaning
7 Radium therapy
8 ORL echo proof room



THIRD FLOOR
1 Ophthalmology polyclinic
2 IM 2 polyclinic
3 Departmental heads
4 Endoscopy
5 Central hematological lab. Central cardiology dept.
6 Ophthalmology
7 IM (1)
8 IM (2)
9 Dermatology
10 Kitchen



groups, each with a pre-surgery preparation room and a post-operative room where patients are placed in their own beds. A recovery station with space for 16 beds serves all units, whereas the intensive care stations are set up in four units, each with space for 11 beds. The storage and sterilization of surgical instruments is also centralized. Glassed-in galleries for students and visitors are on the top floor above each operating room. Each operating room has color television cameras installed in the lamp over the operating table. Monitors can be watched on the galleries above, in the offices of the chief surgeons, and in the lecture halls.

Automatic equipment speeds communication and distribution

The colossal Klinikum makes use of an advanced array of conveyor and communication systems. An eight-mile, fully automatic network of pneumatic tubes rushes capsules containing documents, plasma or medicine at a speed of about 26 feet per second to 123 different receiver stations. To transport X-rays, an additional pneumatic tube system with push-button control connects a central station with 10 intermediate stations and two terminals.

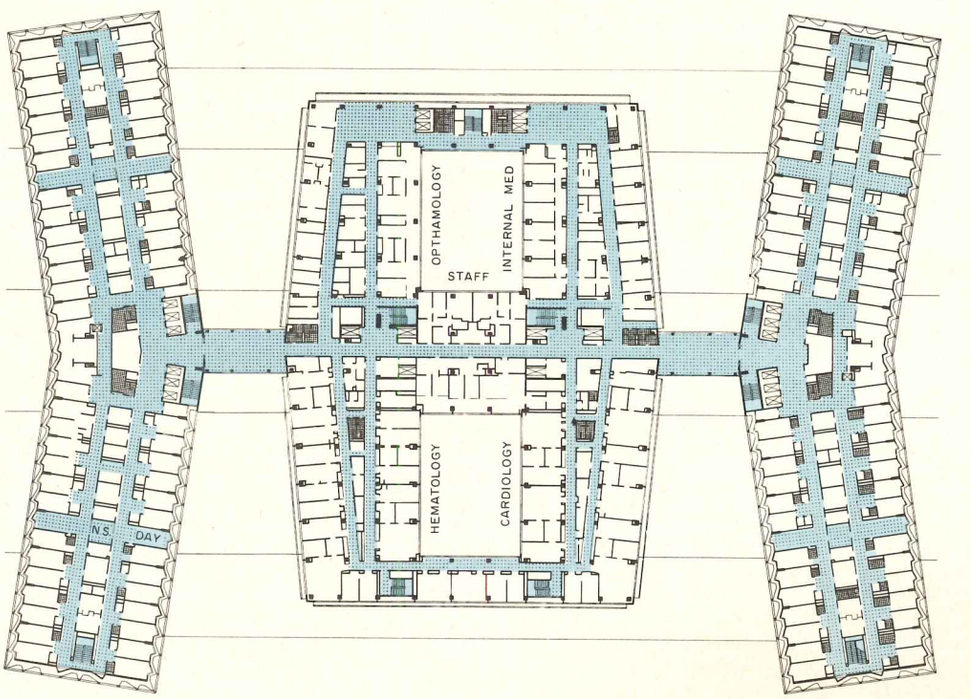
For maximum loads of 33 pounds, a container conveyor system transports supplies, food, files, mail, etc. throughout the entire hospital complex. This system too is fully automatic. A control mechanism on the container is adjusted to send it at a speed of three feet per second to any one of 190 different destinations.

A third conveyor system is designed for files only. It connects the archives with the various departments.

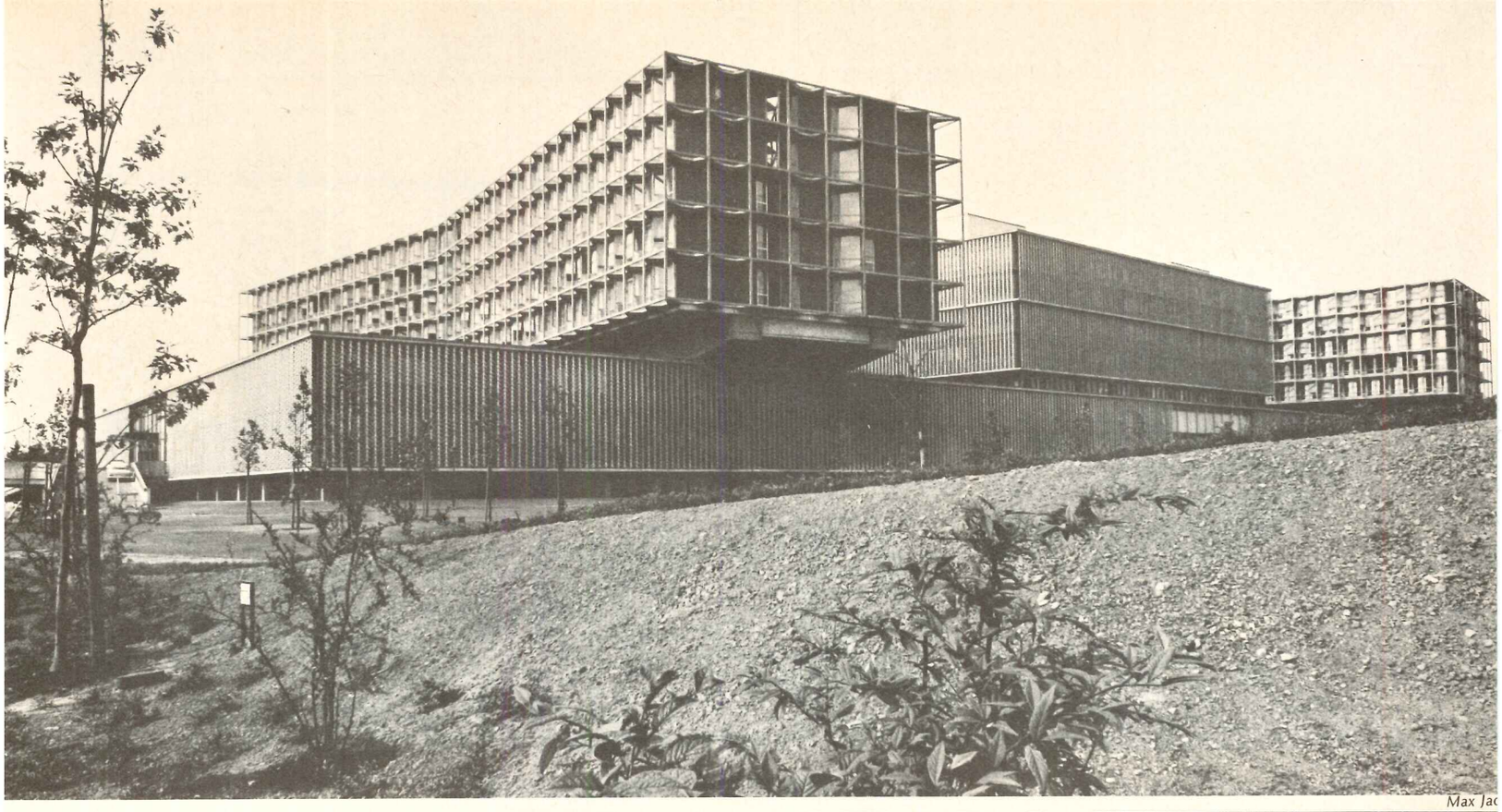
Each incoming patient will receive a newly disinfected bed from central supplies. The bed will be waiting for him either at the general admittance or at

The plan of the main floor of the rectangular block base (above) shows the general arrangement and traffic patterns for administrative and teaching spaces. The two large amphitheaters are symmetrically placed on either side of the main student entrance. The connecting bridges across the four main courtyards (opposite) establish a pattern that is carried up through the two nursing towers.

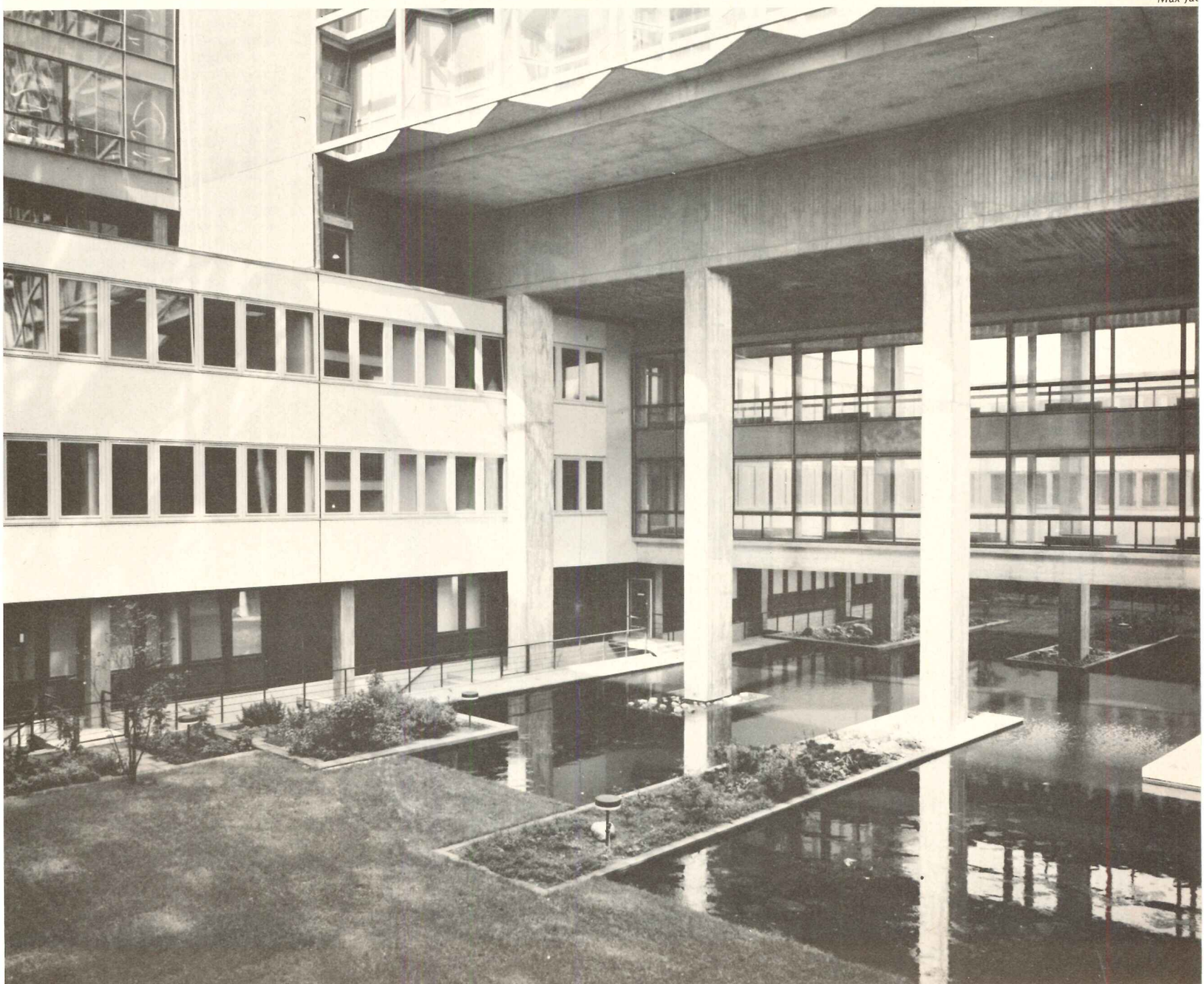
A typical nursing and treatment floor (below) has two nursing units in each arm of the V-shaped wings. Nurses' stations are centrally placed so that each can serve two units at night. Patients are generally assigned on the basis of specialties served by the four clinics on each floor of the central tower. Thus the medical and teaching disciplines are integral units with access to all services.

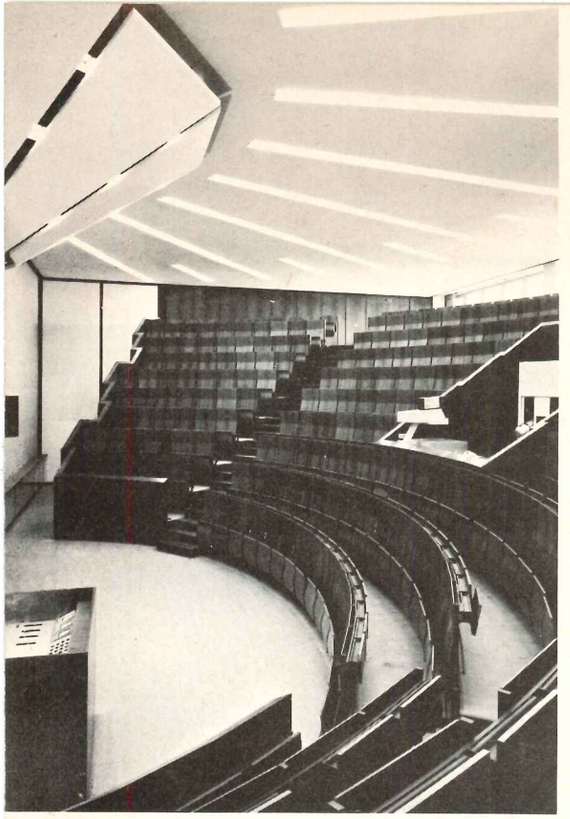


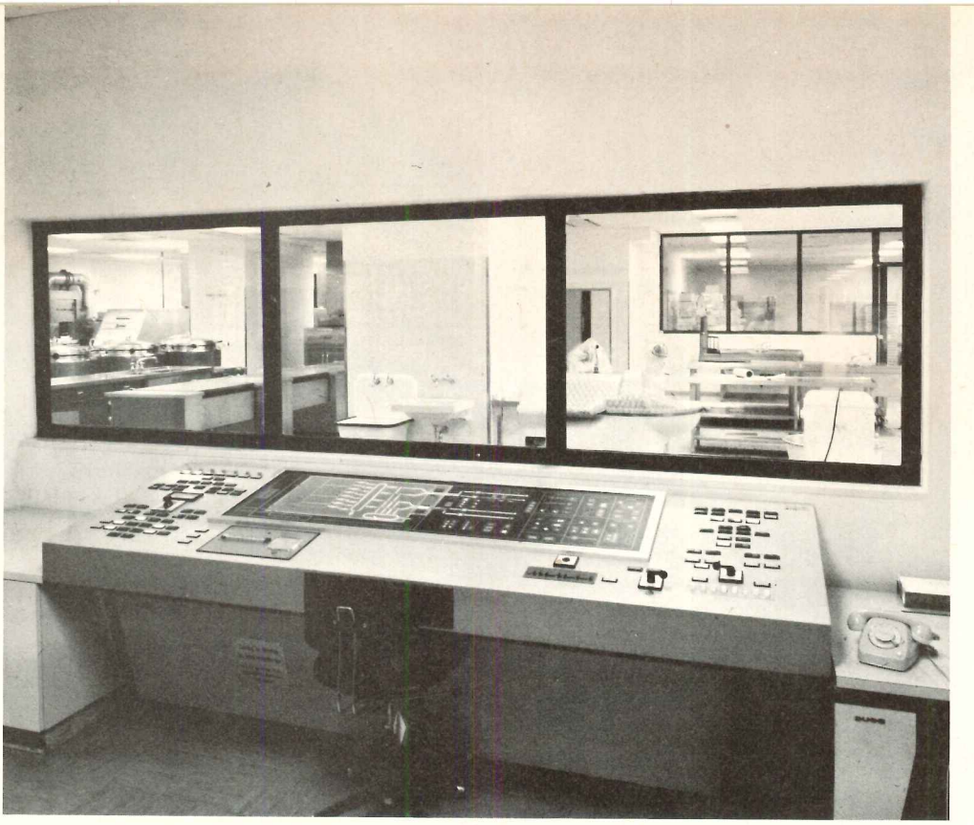
TYPICAL (3RD) FLOOR



Max Jac





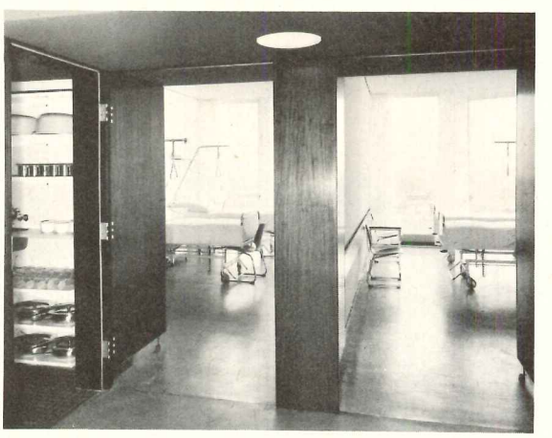


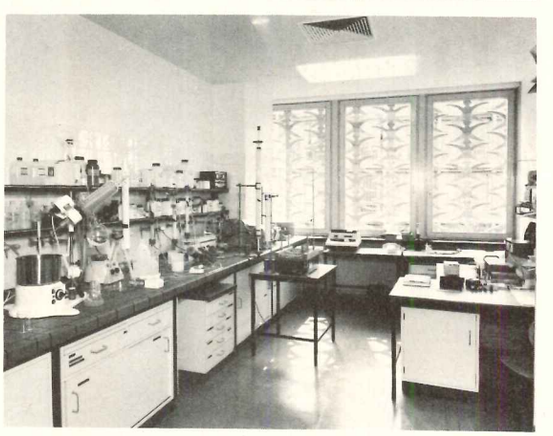
the ward. New beds are also supplied after surgery and—in eight- to ten-day intervals—to patients who stay for a longer period. Used beds are immediately returned to central supplies, where they are stripped, disinfected, and reassembled on a production line which is equipped to handle 250 beds per day.

Hospital giant grew as international ideal

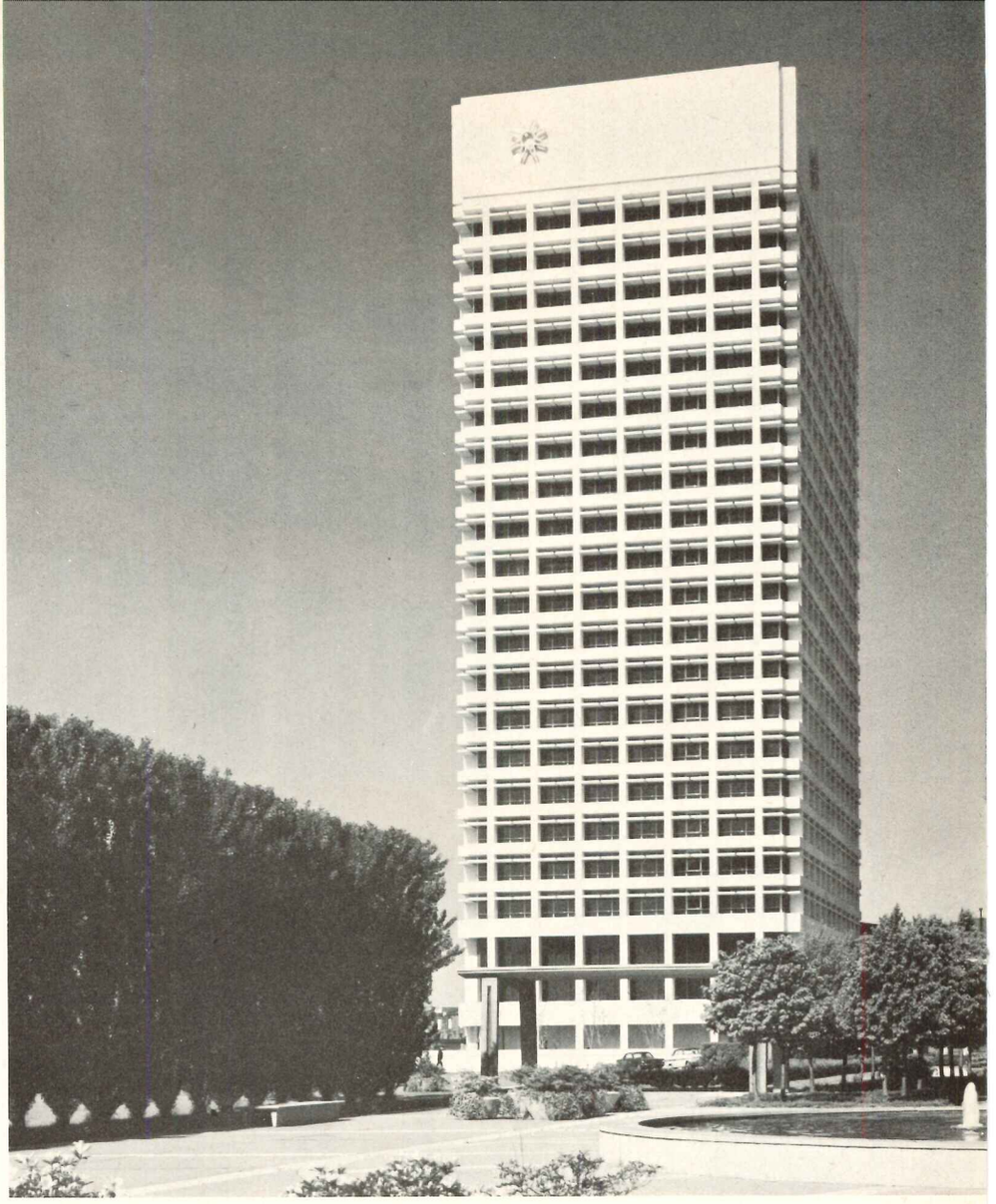
The idea for the Klinikum was born in 1958 by a German-American team of experts under the guidance of Ralph Walker, then chairman of the Benjamin Franklin Foundation. He was succeeded in November 1958 by Leon Chatelain, Jr., who acted as owners' representative until the Foundation (which was official owner and funding coordinator of the project under construction) turned the key to the Klinikum over to the rector of the university at dedication ceremonies October 9, 1968. Among the initiators were Berlin's former governing mayor Willy Brandt and Mrs. Eleanor Lansing Dulles, then special assistant for German affairs with the State Department. Mrs. Dulles had been instrumental in formation of the foundation in 1954 as a means of facilitating joint German-American building projects financed by U.S. State Department funds. The United States contributed $15 million, supplementing funds from the Federal German Government and the Senate of Berlin. The cornerstone was laid in October 1959 and the actual construction work started in the summer of 1961. Before the first patients were admitted in the spring of 1969, the staff had been in training for months to become fully familiar with the new equipment.

Medical Center (Klinikum) of the Free University of Berlin. Architects: *Curtis and Davis* (U.S.) in association with *Franz Mocken* (Berlin)—*Arthur Q. Davis, design coordinator.*





Two large amphitheaters and a programed allocation of supplementary teaching spaces, all with closed-circuit color TV, are the response of the design to combined German and U.S. teaching practice. Automation of food services (above and bottom left) makes use of Lufthansa airline techniques in preparation and storage with computerized methods of assembly and dispatch of about 5,000 meals a day by conveyor to 10 distributor kitchens on nursing floors. Bedrooms (left) have well-stocked sanitary-lavatory vestibules. Laboratory looks out through precast concrete sunscreen.



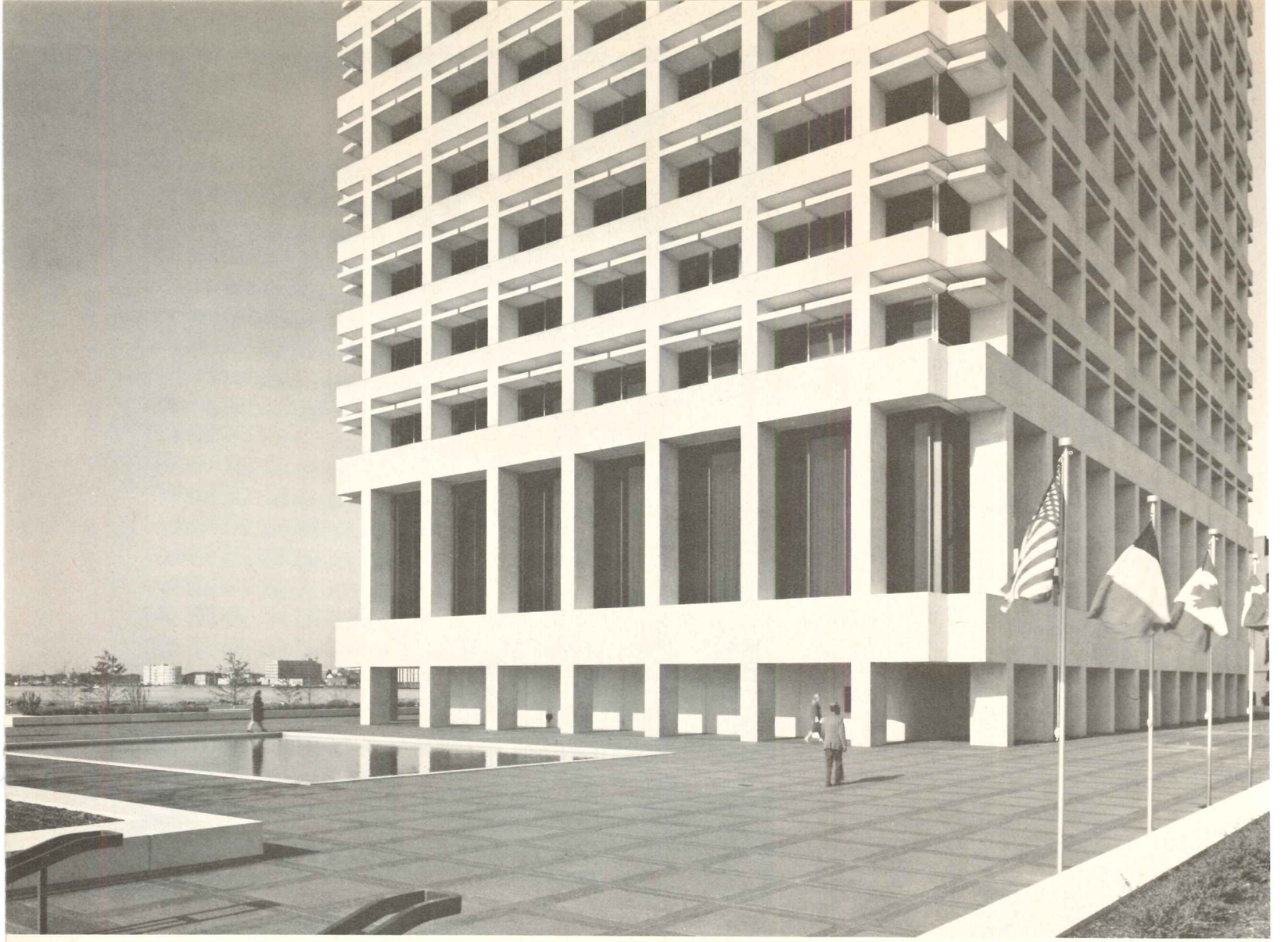
© Ezra Stoller (ESTO) photos

Sculptured precast tower paces downtown redevelopment

The Virginia National Bank's new headquarters in downtown Norfolk is quite openly a corporate symbol, planned to polish the public image of its owner and, not incidentally, to set a public example of thoughtful private development.

The bank tower rises from the heart of Norfolk's waterfront redevelopment area, a district virtually leveled over the course of years and only lately beginning to be rebuilt—largely, thus far, with commercial structures of no particular distinction. In this context, the site proper, a 3½-acre parcel which extends to the new waterfront drive and flanks a newly refurbished park block, afforded an opportunity to create a protected but prominent setting in keeping with the client's desire for a building of importance and individuality. The structure, accordingly, is placed at one end of the plot on a paved and planted podium, leaving a large landscaped waterfront area open for public use—and assuring that the tower will not be hemmed in by future neighbors. Existing street patterns were modified to serve the same end while also improving traffic circulation in the area.

Siting, however, was but one device calculated to give the tower prominence in the cityscape: the structure is in addition



strongly sculptural (at the specific request of a client emphatically opposed to "tinfoil and cellophane" curtain walls) and planned with an eye to maximum height.

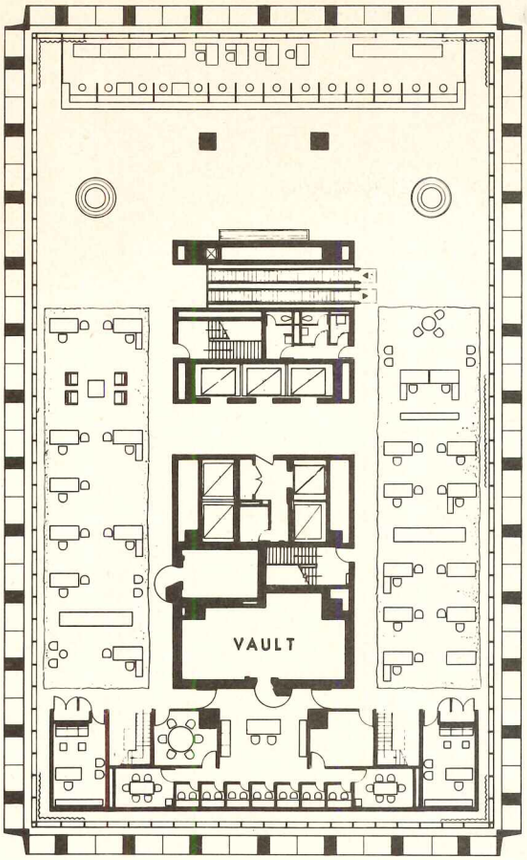
The emphasis on height most notably influenced the over-all dimensions of the 175- by 105-foot tower, whose 300,000 square feet of usable space are disposed in floors as compact as is consonant with plan efficiency, stretching the total height to 21 stories plus penthouse. The nine lower floors are occupied by the bank itself; the rest by small individual tenants.

The accompanying specification for visual boldness as well as bulk was satisfied with a concrete framing system made up of massive but meticulously detailed members. The base of the building—the ground floor and the two-story main banking floor above—is cast in place while the upper floors are framed with load-bearing precast T's deep enough almost to obscure the window wall behind.

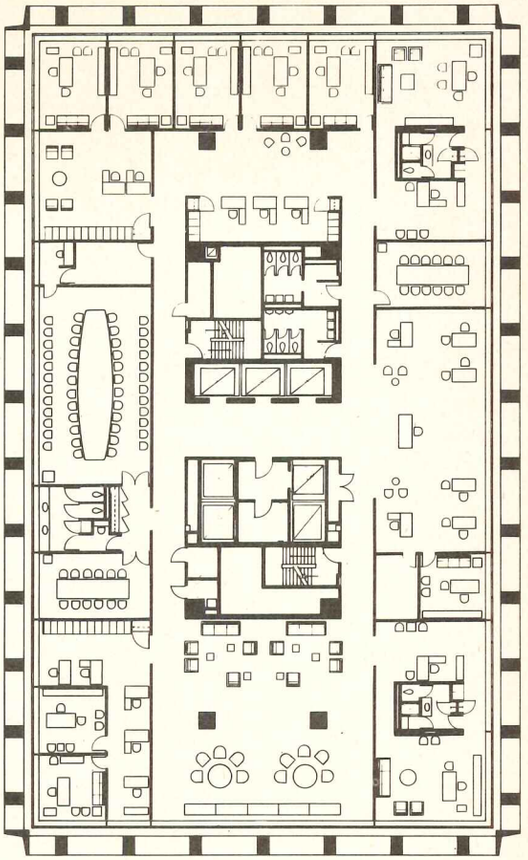
VIRGINIA NATIONAL BANK HEADQUARTERS BUILDING, Norfolk, Virginia. Architects: *Skidmore, Owings & Merrill—J. Walter Severinghaus, partner-in-charge; Roy O. Allen, partner-in-charge of design;* associate architects: *Williams & Tazewell;* structural engineers: *Weiskopf & Pickworth;* mechanical and electrical engineers: *Jaros, Baum & Bolles;* contractor: *Basic Construction Company.*

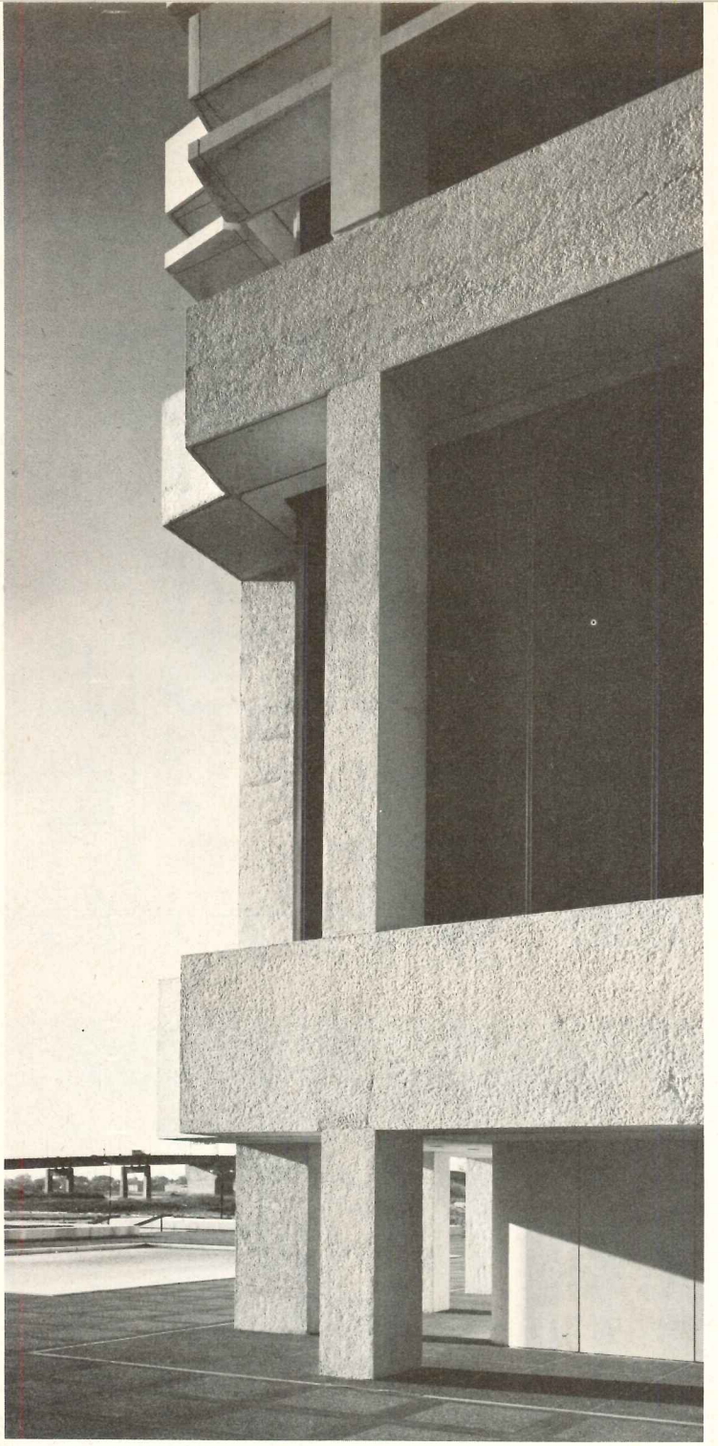
In keeping with the emphasis on height—and in deference to soil conditions which restricted below-grade construction—the tower is set on a four-foot-high paved podium embellished with pool and planting. Entrance is through a ground floor lobby which gives elevator access to the bank's office floors and to tenant spaces on the upper stories. Two escalators lead to the main banking area, a two-story-high space framed in double-length windows, with a mezzanine at one end which serves as an officer's platform.

On the floors occupied by the bank, architect-designed interiors are highlighted by an extensive collection —the first of its kind—of the work of contemporary Virginia artists, whose more than 100 paintings, sculptures and drawings are displayed to good advantage against the warmly neutral backgrounds which characterize both public and private spaces.



MAIN BANKING FLOOR

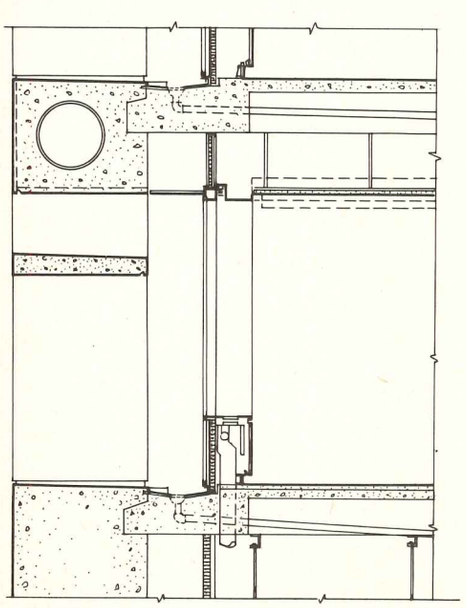

EXECUTIVE FLOOR

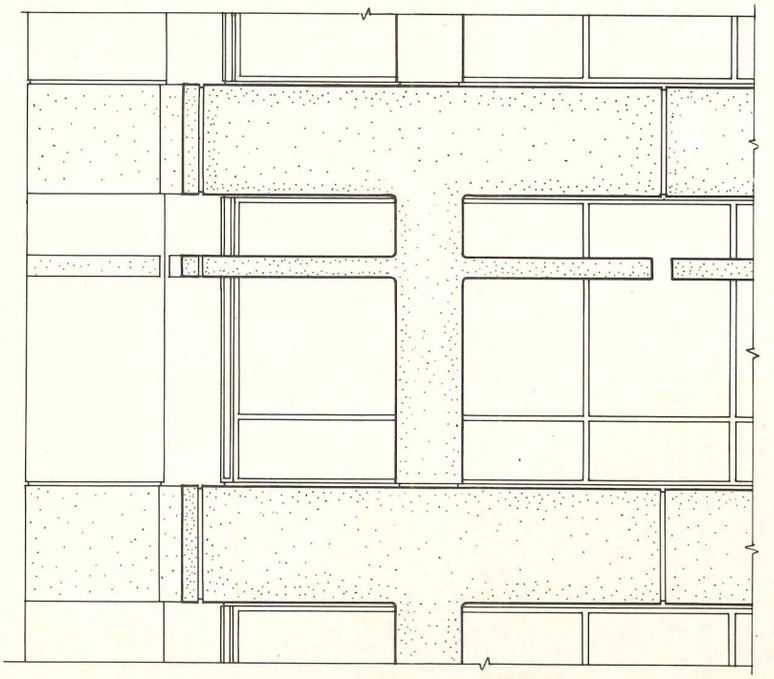


Though both are cast in the same snowy concrete—white sand, white cement, white quartz aggregate—the poured-in-place tower base with its heavy spandrels was formed and finished in deliberate contrast to the precast elements that frame the upper stories, the base being lightly sandblasted for a matte texture while the T's have a much smoother, almost marble-like surface.

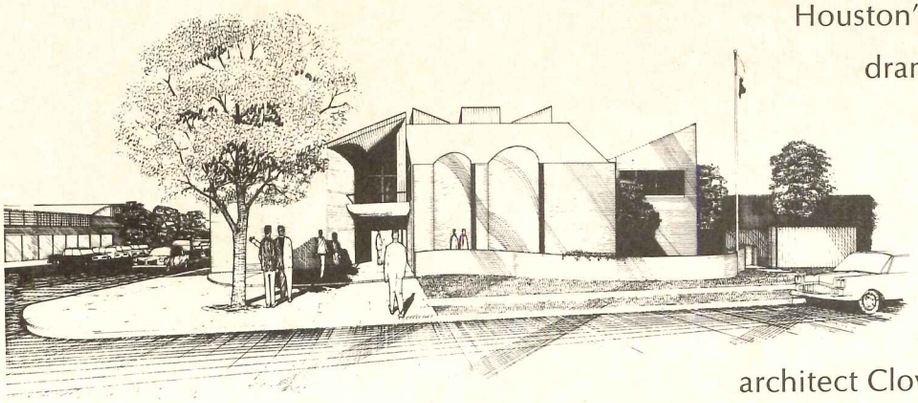
For economy in forming and visual consistency, identical T's are used for the whole of the tower—at 308 feet, one of the tallest yet framed in precast sections. Reinforcing varies from "almost solid" steel in some lower T's to "almost none" in the upper sections. The T's themselves are roughly 14 feet wide by 11½ feet high, with 2-foot-wide stems and integral concrete sunshades. (The sunshades fall shy of joining horizontally for visual interest and to avoid the impression of a structural function.) Four feet deep, the T's are set 5½ feet from the recessed gray-glass and aluminum window wall, leaving an 18-inch walkway to facilitate window washing. The inset, plus the horizontal fins, also reduces air-conditioning loads as well as glare.

The T's are joined invisibly at top and bottom by hidden lugs and sockets in steel plates cast into stem and spandrel respectively, but have no fixed horizontal connection. Reinforcing ties anchor the sections to waffle-type floor slabs, which also transmit wind loads to the poured-in-place central core.

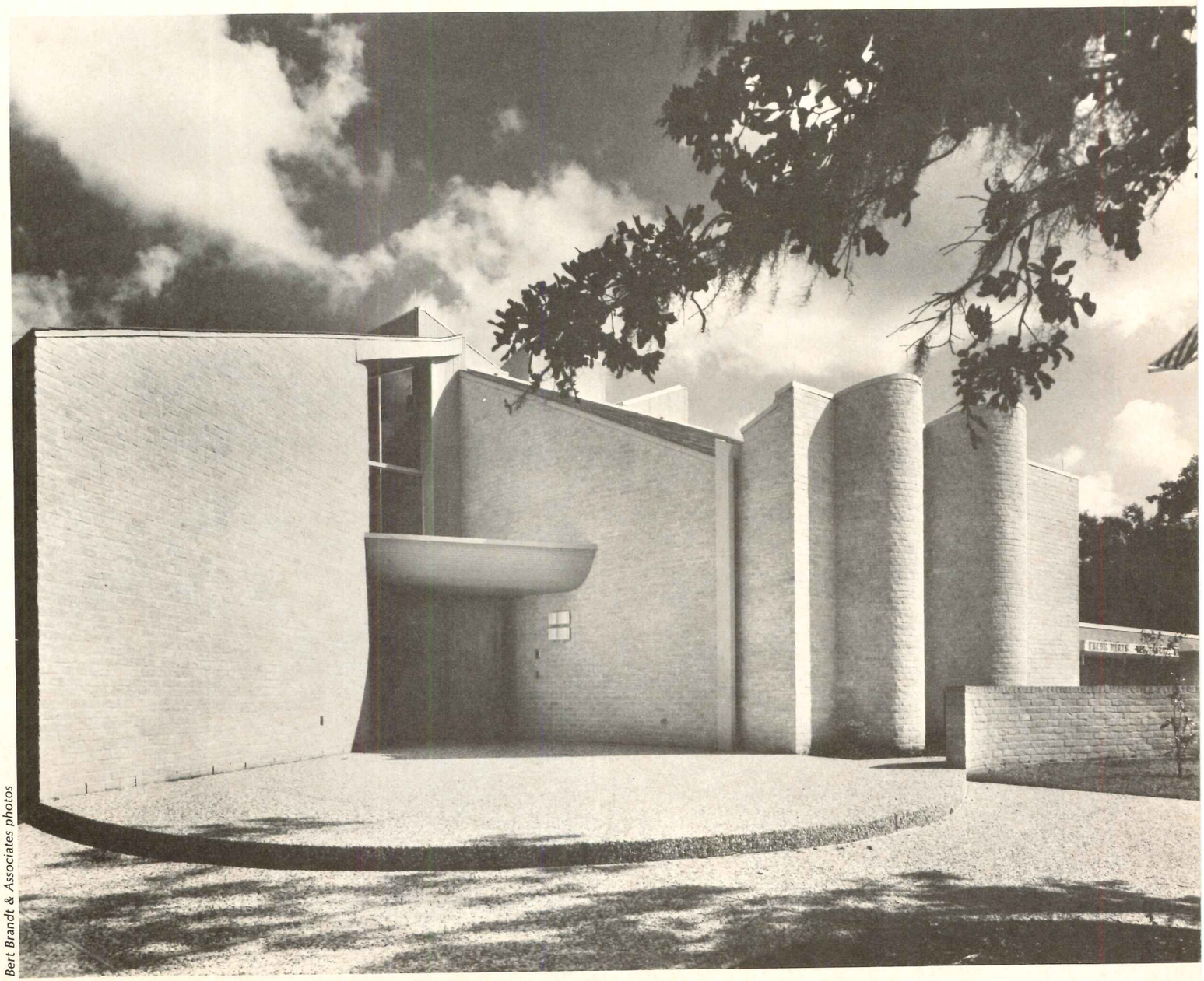




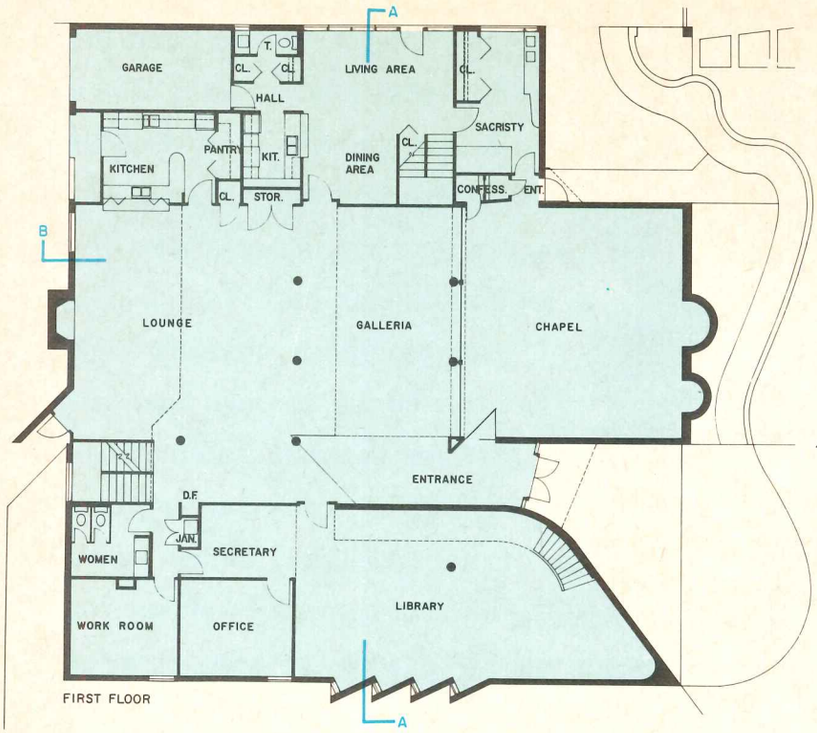
Contrasting a quiet, almost austere simplicity with an eye-compelling array of disparate shapes, this little building deftly accommodates—and expresses—the varied program of activities of the Newman Club at Houston's Texas Southern University. Flexible, dramatically lighted, multi-use spaces for information, worship and relaxation for the students, plus living quarters for two priests, are each boldly articulated. But through a unifying restraint in details and materials, architect Clovis Heimsath has welded a complexity of forms into an extremely interesting architectural interpretation of the new liturgy of the Roman Catholic Church. This symbolic expression of dialogue between the priest and communicant, stressing religion in all spheres of life, forms



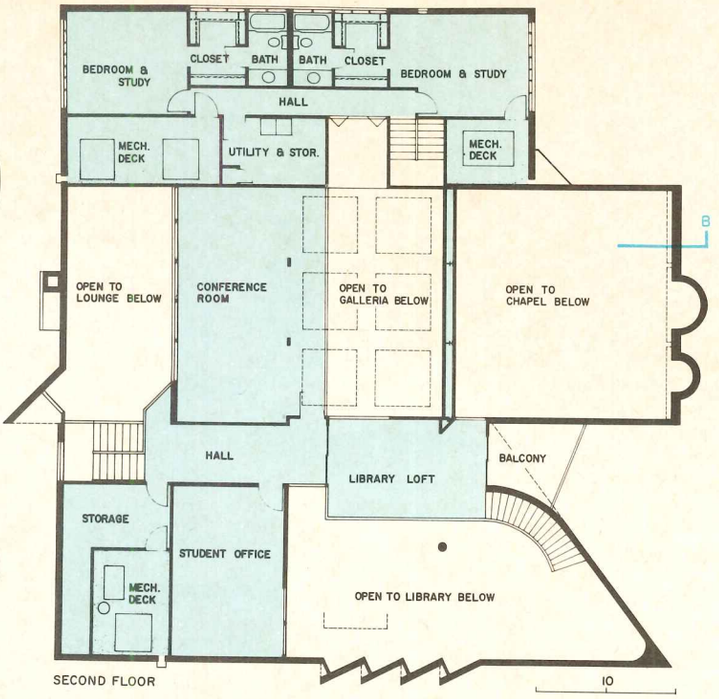
A LIVELY STUDENT CENTER



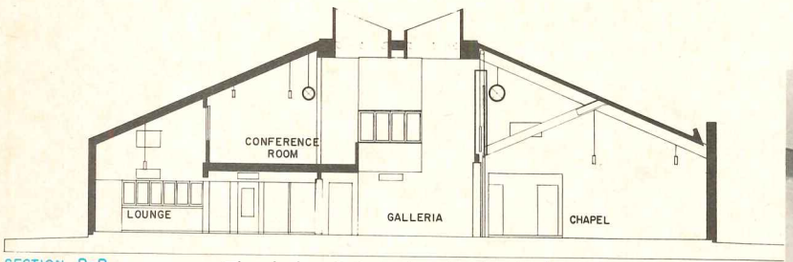
Bert Brandt & Associates photos



FIRST FLOOR

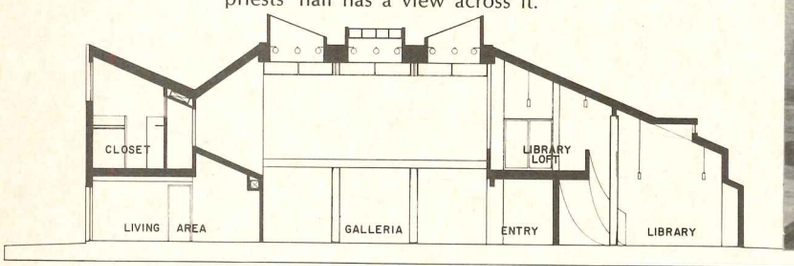


SECOND FLOOR

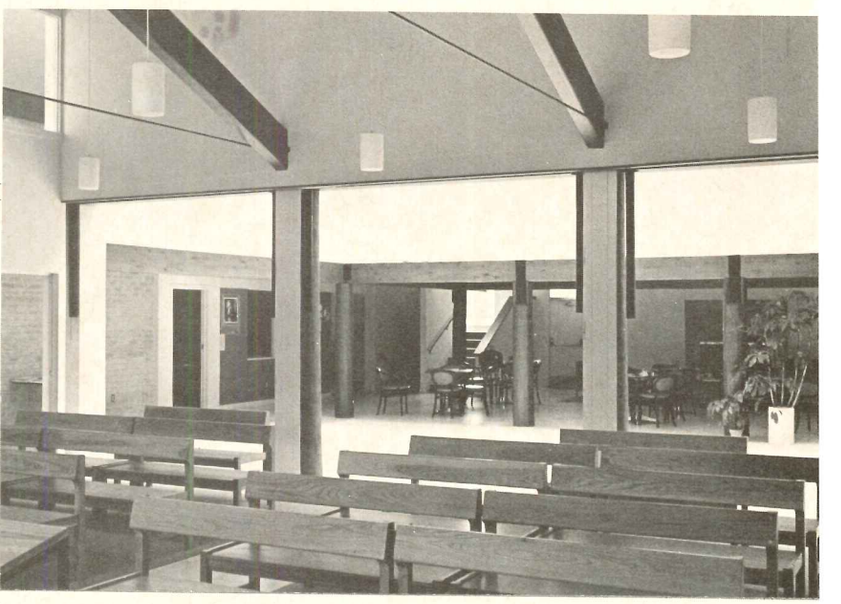


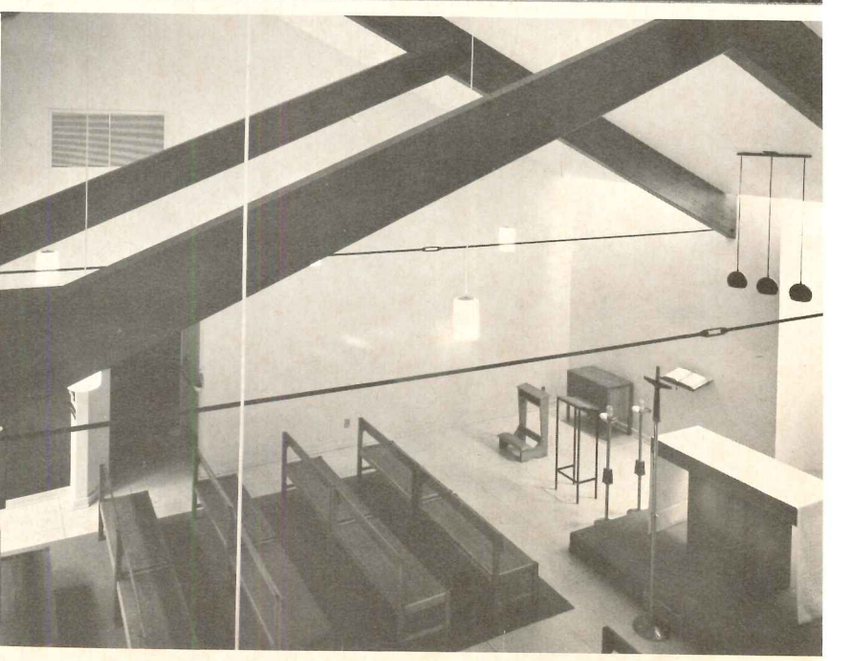
SECTION B-B

The hub of the plan is the "galleria," a high indoor courtyard capped by six skylights. All main parts of the building open in some manner onto this space; even the priests' hall has a view across it.



SECTION A-A

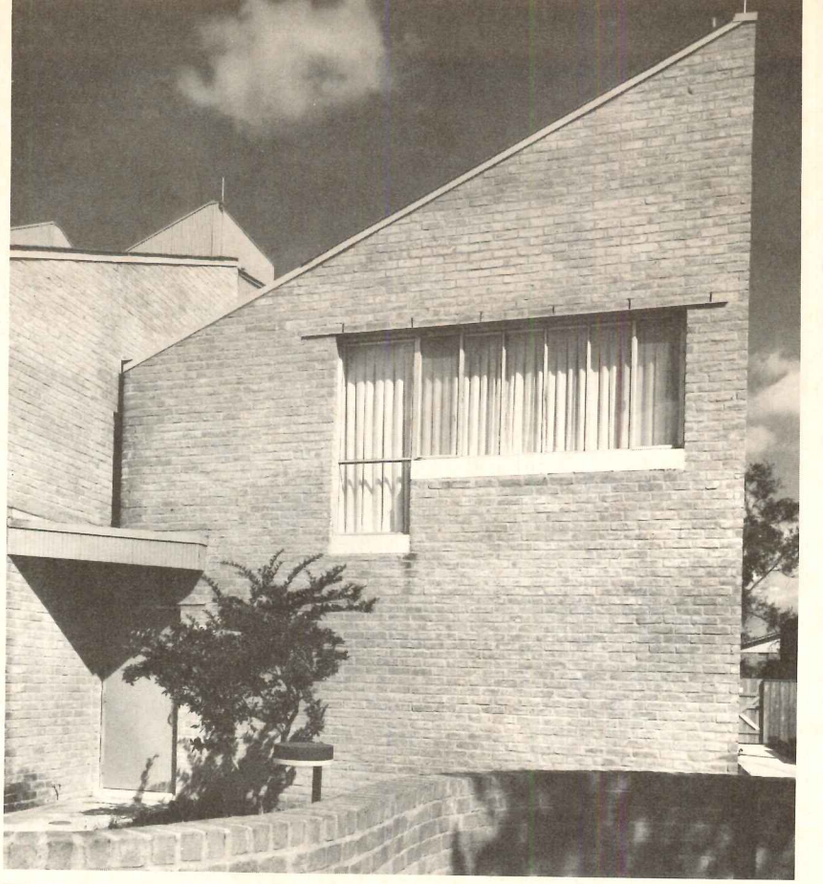




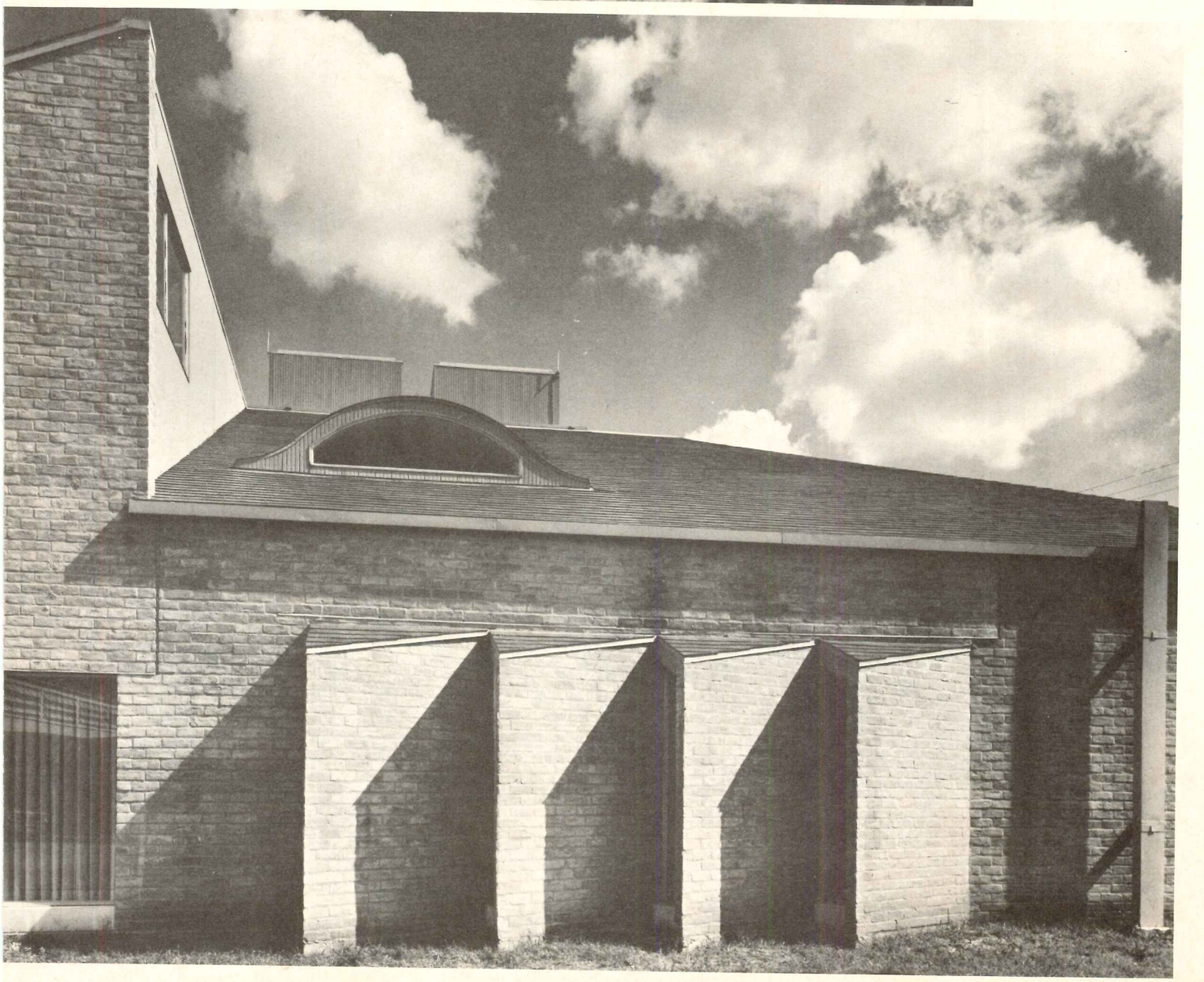
Newman Hall is well related to the campus. It is constructed of a light orange brick similar to the other buildings, and the main entrance is a diagonal, curved sweep at the street corner which visually connects the building with the main path from the campus. A visually arresting focal point is thus created by the strong forms of the entrance, two curved exedras of the chapel, and the lines of the roofs and fenestration. The building is basically conceived as a "carved-out cube," with exterior forms reflecting each interior space. The plan is divided into three main sections: two of the bays provide for the main functions of the center, and the third contains two-story quarters for the priests.

NEWMAN HALL, TEXAS SOUTHERN UNIVERSITY, Houston, Texas. Owner: *The Diocese of Galveston-Houston.* Architects: *Clovis Heimsath Associates;* consulting structural enginer: *Karl Krause;* consulting mechanical and electrical engineer: *Walter Timmerman;* contractor: *B. J. Robbins Building Company.*

The center provides an unusually good sense of space and light for a building of this size. The large areas of the center bay (photos below) form a flexible space for liturgical functions, art exhibits, dances, student meetings and recreation. The chapel may be closed by upward-acting doors with concealed counterweights. The central galleria is overlooked by two large balconies—one for conferences, and a loft for the library (right).



The sense of a private townhouse is provided for the priests at Newman Hall: there is a private entrance and small walled garden, while the opposing thrust of the shed roof (right) visually sets it apart. Fenestration throughout is planned for interior effect. In the photo below, the staggered windows provide side-lighted reading niches in the library; the "eyebrow" shaped window terminates a view from the priests' rooms; the others serve offices.



THE MAKING OF NON-ARCHITECTS

by Sibyl Moholy-Nagy

A noted architecture critic and teacher calls for a real revolution in architectural education, asserting that the current rebellion in the architecture schools lacks "the substance of revolution"—a new ethics and a new pragmatism —and calls for the reunion of architectural experience with architectural theory in the teaching of architecture

There is a noticeable trend in major architectural offices today that indicates an increasing number of foreign graduates in design positions while the fluctuating drafting room crew remains American-trained. Aware of the deficiencies in their architectural education, students clamor for foreign study programs. Quotas for these are filled immediately, regardless of staggering cost and the frequently questionable qualifications of the host institutions abroad. The sole motivation is to get out. Those who cannot afford to buy foreign credits and have to stick it out at home fall into three categories (and it is the small percentage of existing exceptions that justifies the following generalizations).

The gray flannel majority with more or less cynicism resign themselves to a lifetime of routine office jobs. Their interest in any esthetic, sociological or historical implications of building is nil.

The most noticeable group are the post-architectural collectivists. One of two dissident factions has been persuaded by Buckminster Fuller, Candela, and the Archigram comic strips that they will be absorbed by electronically controlled prefabrication. The other is armed with slogans from sources ranging from Chairman Mao to Doxiades, Jane Jacobs and Charles Abrams which are simplistically interpreted to prove that any building beyond minimum shelter is a subversive act of a decadent society. Their short-term goal is the replacement of five tedious years of specialized learning with the instant self-gratification of advocacy planning in a new version of the slum storefront chapel. The staff, if such is admitted, consists either of social workers hiding their true identity behind an Urban and Regional Planning Certificate, or—at best—of embittered architects who never landed a major commission. While it is taken for granted that The College of Their Contempt supplies full financial backing and academic credits, "relevant criteria" are established through community control.

The third group of current undergraduates are the congenital architectural talents. They are isolated individualists, more or less silently mad at the incompetence of the faculty and the scorn of the

Sibyl Moholy-Nagy resigned last spring as professor of architecture at Pratt Institute, where she had taught architectural history for 18 years (June, page 36). This fall she is a visiting professor of architecture at Columbia University. Mrs. Moholy-Nagy, who has written and lectured widely on architectural subjects, started her teaching career 25 years ago at the Institute of Design in Chicago, and later taught at Bradley University in Peoria, Illinois, the University of California, Berkeley, and the Rudolph Schaeffer School of Design in San Francisco. Her newest book, *Matrix of Man: An Illustrated History of Urban Environment*, was published this spring by Frederick A. Praeger.

". . . the replacement of five tedious years of specialized learning with the instant gratification of advocacy planning in a new version of the slum storefront chapel. . ."

"advocates," and restively uncooperative in mass-participation projects. They can show passionate response to individual attention in the rare instances where teacher-student symbiosis is still possible; but their general reaction is utter frustration. They disappear with or without diploma as soon as they can raise the fare to Canada, Europe or the Arizona desert to salvage their architectural ideals, which have never been tested against a viable reality.

While we have 6000 years of history to prove that the mature architectural personality needs the realism of the conformist, the public spirit of the social planners, and the imagination of the Utopians to perform creatively, the polarized extremes developing in our collegiate schools are useless for assuming responsibility in active offices, or as potential leaders who will take the profession into the future. Architectural education today is a failure because it no longer turns out a model that responds to professional demands.

"Architectural education today is a failure because it no longer turns out a model that responds to professional demands. . ."

This incongruency between school and practice is recent. The most important work today comes from architects who did not study in Paris as did their predecessors but who usually received their undergraduate training at tradition-oriented state universities, and their Master's degrees from Harvard, M.I.T. or Yale, where highly selective admission standards aimed at architectural leadership. They managed to absorb international theories into the pragmatic American approach to building, and to project this equilibrium into the design curriculum when they assumed teaching positions.

". . . The most productive talents left Academe. What is left are refugees from the marketplace who hide their professional failure behind the invincible security of academic tenure. . ."

Around 1960 there started the expansion of the profession into package practice and mega-offices, placing the architect for the first time in history on a par with Big Business. The visible glamour of the skyscraper boom and total ignorance about the fee structure (10 per cent of a $10-million job makes a million for the architect, doesn't it?) flooded small selective schools with mass-enrollment. Architectural and planning departments, promising revenue to inflation-plagued college budgets, proliferated like rabbits, regardless of faculty or student qualifications, while the fully developed building boom of the mid-Sixties produced a synchronized teacher crisis. Practices became so lucrative and interesting that the most productive talents left *Academe*. What is left are refugees from the marketplace who hide their professional failure behind the invincible security of academic tenure, and the fledgling independents who exchange the crumbs of their time and energy against a check that will pay the office rent. To fix up a friend in need with a teaching position is considered as honorable as it would be dishonorable to investigate his teaching qualifications.

"No amount of skill training can make an architect. Architecture differs from all other academic disciplines in its conceptual-pragmatic interaction. The only test is the thing done—the completed project."

But the most numerous faculty members who

have replaced the qualified expert are the graduate assistants. They are let loose on freshmen and sophomores alike, and a tuition rebate combined with professorial authority compensates for their disappointment in the graduate programs. These have been tagged on to existing facilities to satisfy competitive vanity and budgetary demands of college trustees. One has to have made a study of the blatant discrepancies between graduate catalogs and the actual program offerings to dare the assertion that many chairmen indulge in shady promotion practices that would result in legal action if the end product were medication or stocks and bonds.

The ultimate remedy of the teacher shortage is "the vertical program." It offers a convenient three-in-one solution by attaching freshmen and sophomores to senior projects. These projects are student-determined and frequently completely non-architectural in character. The observed result has been exploitation of the beginners for meaningless legwork, and their contamination with four years of conceptual confusion which is filtered down like recirculated dishwater. Despite the absence of the rigorous disciplines of detailing, mechanical equipment, cost calculation and complete visual presentation, a design critic rarely if ever fails his assigned team. Epidemic absenteeism from crit sessions is a boon for his own time schedule, and limitless tolerance for ideological comment heightens his prestige as a truly progressive student pal.

That there is a steadily growing crop of graduates with employment certificates—who are the despair of many offices—is entirely due to Parkinson's Law of College Administration. A bureaucratic hierarchy, far outnumbering the faculty, has been hired to process student progress into computer data. No architectural dean has protested the grotesque incongruence between a finite system of invariable quantities and the unquantifiable, open-ended stages of personal development. The truly democratic grading machine knows no difference between 36 units cribbed by the village idiot, and those achieved in disciplined work by a future designer of cities. The only positive contribution of the punch-card crit is ultimate proof that the making of an architect is incompatible with the college evaluation system.

It is highly improbable that the stupendous resistance of our society to bureaucratic change will release architectural departments from the framework of the liberal arts college. It should therefore be acknowledged as it is in all European countries that building practice needs two different professionals—the technician and the designer. A four-year training in the scientific fundamentals (which everywhere but in the U.S. is the obligation of secondary education), and in structural and representational skills should turn out qualified office and construction help.

But no amount of *skill* training can make an architect. Architecture differs from all other academic disciplines in its conceptual-pragmatic interaction. The only test is the thing done—the completed project. Each project constitutes a specific, unduplicable experience that must be pre-visioned as the best of existing alternatives by a trained intellect. Only a practicing architect, who has been many times through this intricate, indivisible process from abstract concept to workable realization can arouse in a student the intense concentration and the limitless willingness to face the ferocious contest between imagination and expediency.

No matter how many obsolete faculty members and curriculum evils will be eliminated by the current campus rebellion, it will remain an intramural side-show because it lacks the substance of revolution. Successful revolutions, whether religious, social or economic, are bound by a positive denominator that replaces eliminated traditions with a new ethics and a new pragmatism. Only a revolution that takes graduate training beyond the built-in invariables of the established university into a freely associated workshop collaborative can test new ethical obligations and new means of implementation of alternative solutions inspired by their advisers.

Although it is inherent in the workshop concept that no blueprints are given and the goal is only obtainable through the process, there might be a few first causes for this revolutionary search.

The decay of ethics dates from the separation of architectural theory from architectural experience. The Beaux Arts search for a codifiable ideal environment, re-coined by "the makers of modern architecture" as functionalist principles, relieved the designer of the obligation to select and adjust to the infinite variety of environmental needs. The vacuum left by the vacated leadership of the architect was occupied by the contractor, the social planners, and the paper messiah of "intelligent systems" for prefabrication. None has produced a designed environment even faintly comparable to the multiple-scale manscapes of all historical periods. By way of analogy this can be explained through the more evident fact that the replacement of the doctor by the pharmacist would be unconducive to healing, or the extermination of lawmakers by gang killers to an ordered existence. It is the ethical obligation of the architect-planner to be totally responsible for the physical matrix of society—no more, and no less.

This total matrix must provide for a new client —a new establishment. The bloated power of the

military-economic power complex which today is the prime client of the building industry cannot suppress the rise of a new power structure—elected majority representation. It is the commitment of the architect to create that client by providing concepts and material solutions for educational, residential, recreational and communal projects that lift the time- and locality-bound shelter need into a lasting testimony of a revolutionary moment in history. It will be the function of the workshop program to test alternatives against the historical precedent which at no time denied even to the poorest citizen his visual and emotional identification with designed monumentality.

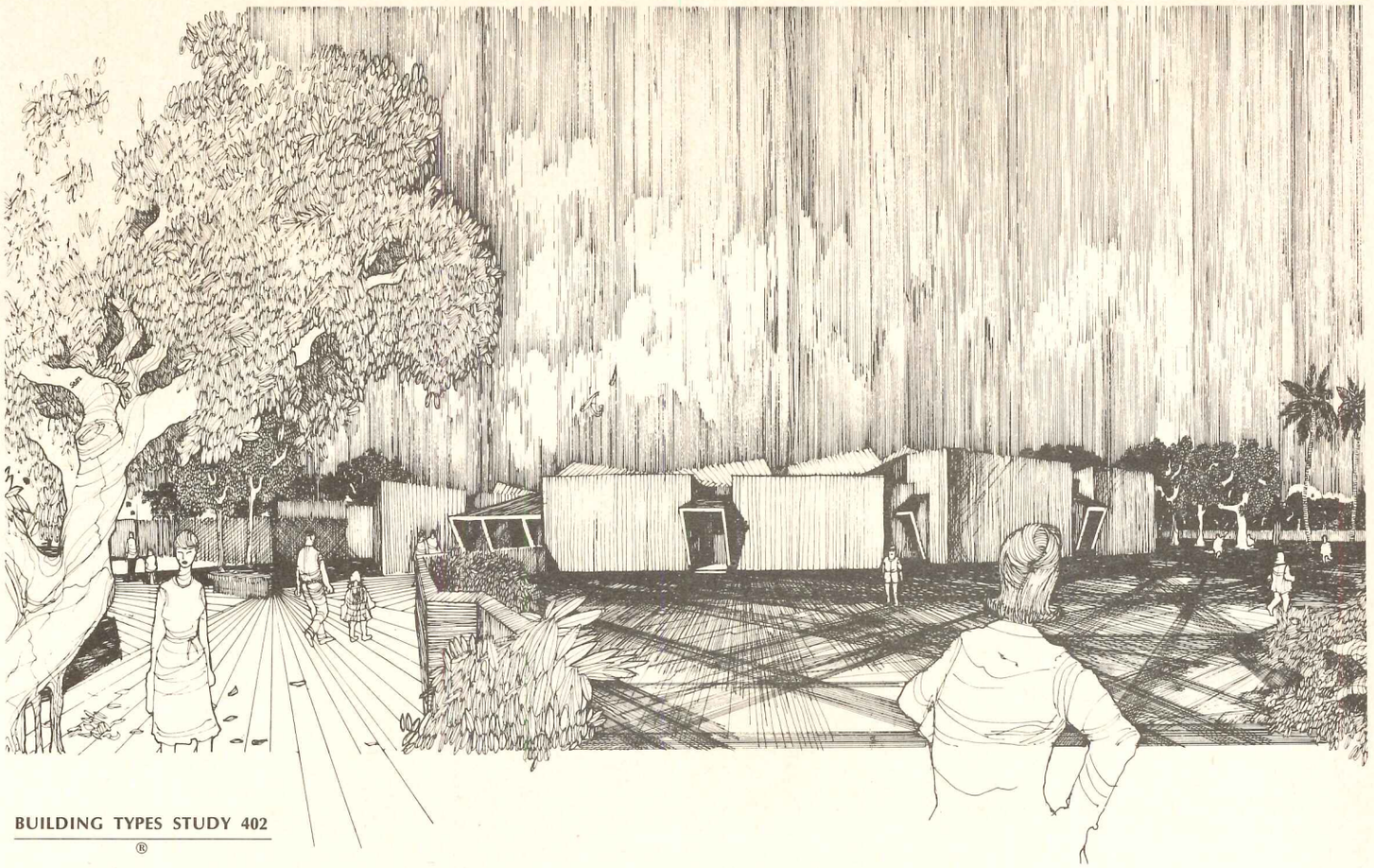
"No matter how many obsolete faculty members and curriculum evils will be eliminated by the current campus rebellion, it will remain an intramural sideshow . . . it lacks the substance of revolution. . ."

The new pragmatism that can only develop in a graduate workshop must be coordinated in its investigation of purpose, materials and methods, now hopelessly fractured in college courses. Like the pre-adolescent sex-education course, spot offerings in building law, or landscape architecture, have long been forgotten when reality strikes. Undergraduate projects float in an environmental, historical and economic vacuum because city official, labor leader, ecologist, mortgage banker, historian or sculptor never enter the more or less ivied halls, or at best deliver unrelated lectures. Technical research departments are not for students, but keep faculty members well subsidized by grants from specialized building product industries. Only a workshop project, seen through by the same team as a multi-leveled influence on society, can prepare the future designer-planner for the material powers that are his challenge and the measure of his talent.

These observations of an old educational pro can be summarized on two planes. On the practical level, architecture will only survive the termination of its present compromised expansion if a new type of planner-designer, trained by the best experts of today, develops a leadership role that synchronizes historical and material responsibilities. The subtle and intangible process of moving from the present to the as yet unknown solutions of the next environmental era can only be achieved in a collaborative, experimental workshop program, unhampered by a totally obsolete, or at least incompatible, academic system.

"Only a revolution which takes graduate training beyond the built-in invariables of the established university into a freely associated workshop collaborative can test new ethical obligations and new means of implementation of alternative solutions. . ."

The ideological commitment was formulated by Francis Bacon, who wrote around 1620: "Even if the breath of hope which blows from that new continent were fainter than it is and harder to perceive, the trial (if we would not bear a spirit altogether abject) must by all means be made. For there is no comparison between that which we may lose by not trying and by not succeeding. *There is hope enough and to spare,* not only to make a bold man try but also to make a wise man believe."



BUILDING TYPES STUDY 402
®

MIAMI'S INNOVATIVE SCHOOLS

For the past six years, an extraordinarily productive and innovative school building program has been in progress in Miami and its surrounding Dade County. Creative design and planning have been stressed and, within carefully controlled costs, a quantity of educational amenities—such as carpets, air conditioning, better acoustics and lighting, audio-visual equipment and improved furniture and color design—have been added to both old and new schools. The architect for each school was chosen for his overall talent and capability, whether or not he had previous recognition as a "school architect."

All of this has been largely brought about by a unique concept of having a private architectural firm as consulting architects to the Dade County Board of Public Instruction. The firm of Ferendino/Grafton/Pancoast was hired as "architect to the board" in 1963 to replace a previous "in-house" department of school planning. This continuing association with a firm active in many areas of architecture has led to some probably unpredicted areas of "expanded services" to the board: not only have cost and quality controls been established, with new procedures and checklists established via extensive research and experience, but invaluable consulting benefits are available to both individual project architects and to the board for some very forward-thinking changes in educational and planning specifications. All the newest schools built under this program are well designed and equipped for the latest non-graded, team-teaching theories.

This Building Types Study shows seventeen of the school projects achieved in these six years; each school represents an interesting step in design and planning. The following text outlines the Ferendino/Grafton/Pancoast views on their firm's noteworthy objectives and achievements. —*Herbert L. Smith, Jr.*

THE EVOLUTION OF A NEW "SCHOOL DESIGN" SYSTEM

By Edward G. Grafton

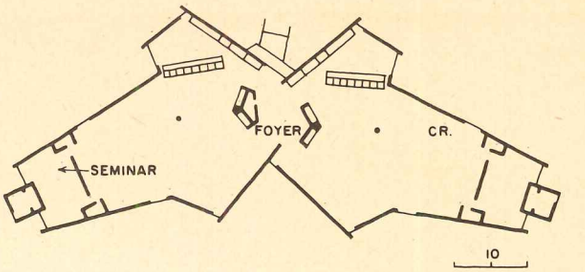
When, in 1963, the Dade County Board of Public Instruction proposed to cut $75,000 from the operation of the school board architect's office, he resigned and recommended Andrew J. Ferendino to take his place. Ferendino refused to consider the job, as it was then constituted, but instead suggested a survey be made to determine where money might be saved.

The board then retained Ferendino/Grafton/Pancoast to make this survey, and then persuaded the firm itself to accept the new position of architect to the board, as newly defined, and Senior Partner Ferendino as the specific "architect to the board."

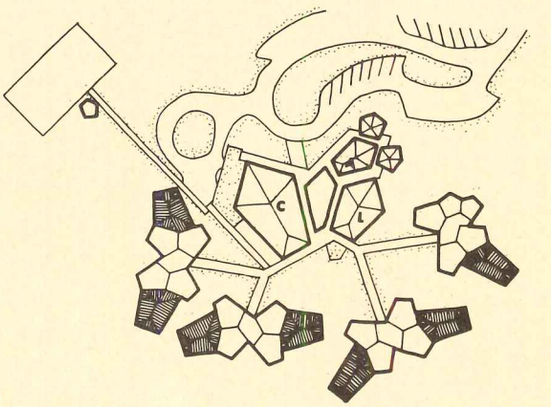
Paramount among the recommendations in the survey was a reduction in cost of running an "in-house" department of school-house planning, which fluctuated widely from 1.66 per cent during a year when there was $9 million worth of construction, to 5.86 per cent when construction fell to only $3 million. Ferendino/Grafton/Pancoast charges a flat 1.5 per cent fee for furnishing the same services. After six years of this association (with some 20 totally new schools complete or under construction, and numerous additions and renovations to existing schools), F/G/P is still showing an annual savings of approximately $42,000 over the former public operation.

As part of their services, the architects for each individual building were carefully selected by F/G/P. Selection was based on professional capabilities, with emphasis on their creative ability. Assisting in this endeavor, all partners and often many of the top designers of F/G/P are rounded up to criticize the designs of project architects on individual schools. This occurs both at the schematic and preliminary phases after many hours of consultation with another F/G/P partner, Pinson Whiddon, specialist in school design.

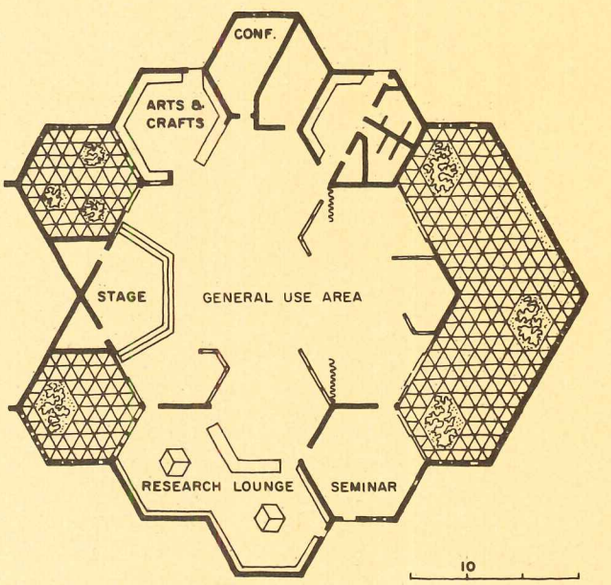
To implement achievable school innovation, a number of seminars relating to school construction are conducted each year under a $25,000 research program, and in many cases in cooperation with the Ford Foundation's Educational Facilities Laboratories, Inc. Architects involved in on-going



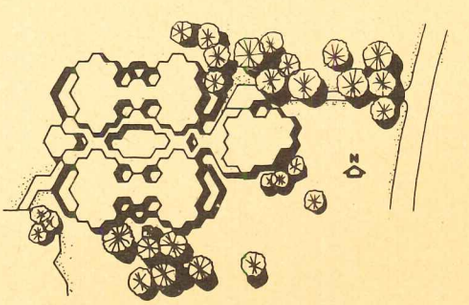
THE FIRST POD DESIGN AND AIR CONDITIONING WERE ADOPTED in the first school completed with F/G/P as consultants to the Dade County Board. The contract was awarded in 1964 at a price of $405,545. The school houses the elementary grades in a loose series of extremely pleasant, child-scaled pavilions. Facilities include administration, cafeteria, library and 15 classrooms; there are generally four classrooms to a "pod", arranged in pairs for team teaching. All are connected by covered walks in a tree-strewn campus plan. Each major interior space is accented by a tall hipped roof; the arrangements of the pods vary slightly in each case—a typical classroom arrangement is shown above.



HIGHLAND OAKS ELEMENTARY SCHOOL. Architect: *Robert B. Browne;* contractor: *Apgar and Markham Construction Company, Inc.*

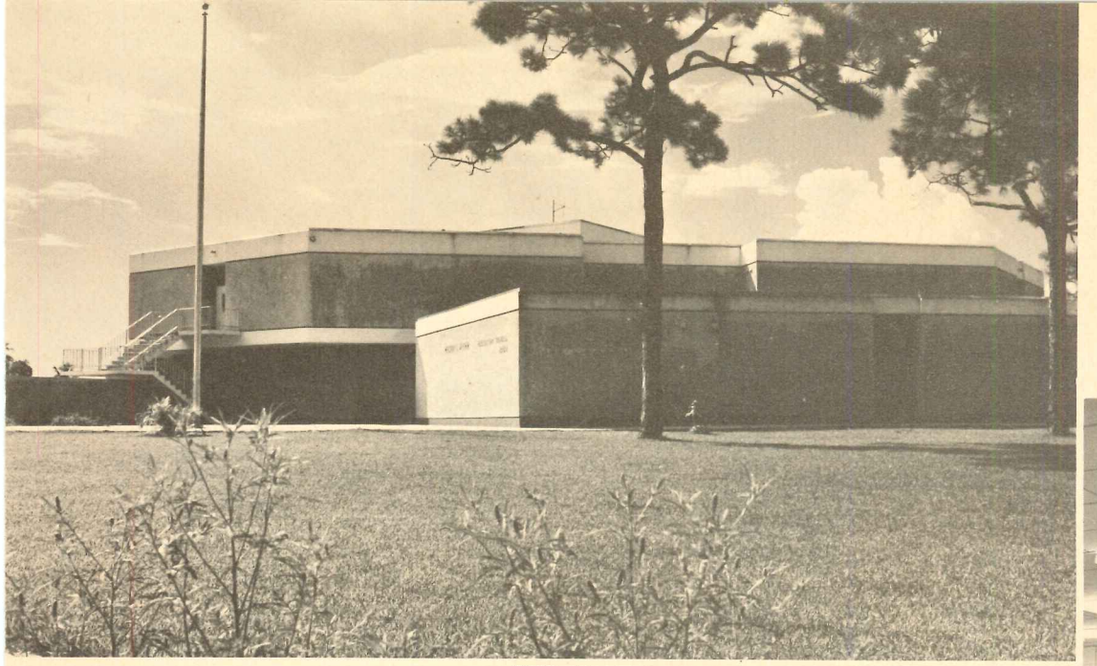


THE FIRST SCHOOL DESIGNED FOR NONGRADED TEAM TEACHING has five pods, each air conditioned, clustered around an open, landscaped core. Serving, dining, and library research materials are located in each pod; circulation between them is by covered walkways. The school was built in early 1966 at a cost of $541,345.



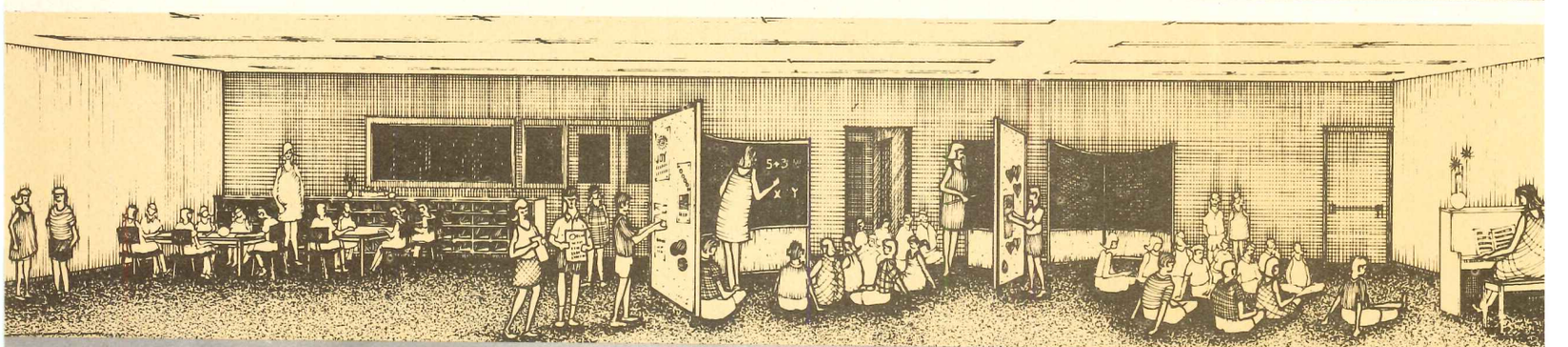
COLONIAL DRIVE ELEMENTARY SCHOOL. Architect: *Kenneth Treister;* contractor: *Sam Joseph & Son, Inc.*

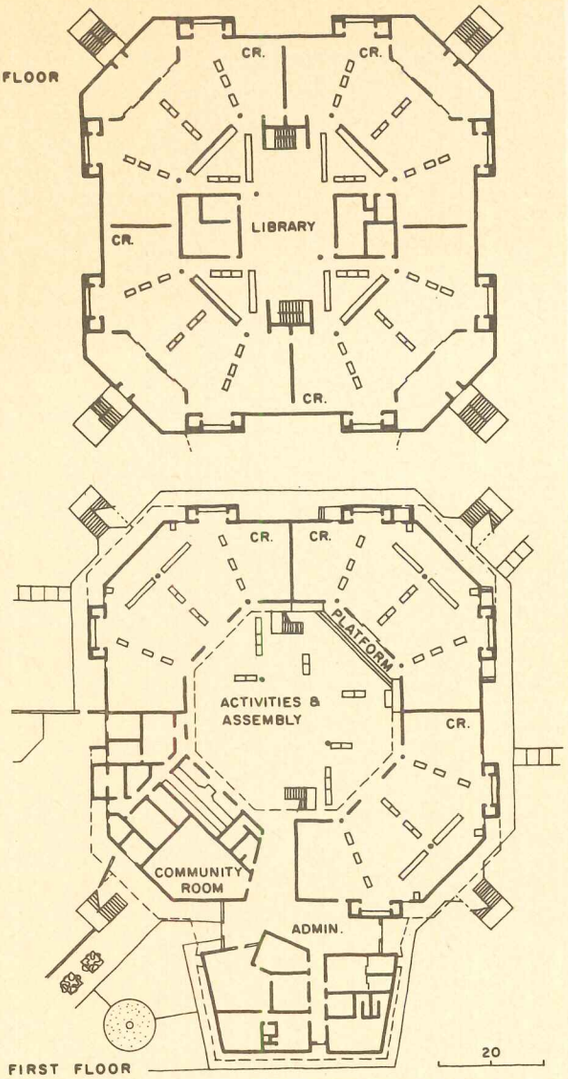

HIGHLAND OAKS
ELEMENTARY SCHOOL



A MULTI-USE, AIR CONDITIONED

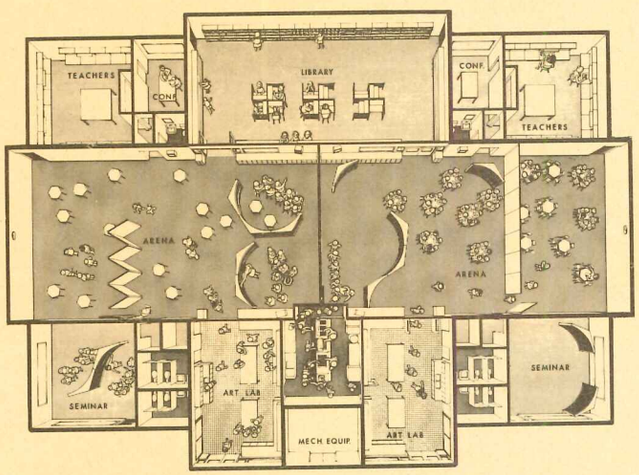
Block & Baker





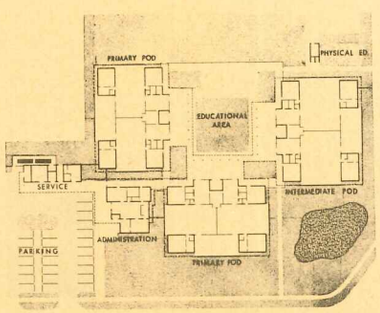
CORE REDUCES AREA in this more compact, two-story school for an urban site. The central space on the main level is used for dining, circulation and such educational activities as large-group work, science and art. It is also used as a community "town hall" meeting place at night. Above it is a central library, open to all four surrounding pods. Visual separation is attained with movable storage cabinets. Built in 1966 for 840 pupils, the school cost $621,-473. The school was repeated later in two other appropriate locations, and gives a clear comparison of the rise in school construction costs: Lorah Park school cost $661,-200 in 1967, and Palm Springs North Elementary School cost $710,000 in 1968. In these last two schools, lighter, more easily moved visual barriers were used.

KELSEY L. PHARR ELEMENTARY SCHOOL. Architect: *Greenleaf/Telesca;* contractor: *Polizzi Construction Company.*



PAIRED, RECTANGULAR PODS FOCUS ON AN EDUCATIONAL COURT in this team teaching, non-graded school. The pods have an open-plan arena with movable dividers for most activities and dining. The pair of units in each building share library and kitchen.

Each building has air conditioning and carpet. A preplanned addition completes the outdoor square. The cost was $541,153 in 1967.



WHISPERING PINES ELEMENTARY SCHOOL. Architects: *Starnes, Rentscher and Associates;* contractor: *SAC Construction Company, Inc.*

school programs are invited to participate.*

The research has had many positive results. For example, an "Art In Schools" seminar is beginning to show results in the integration of more art work into the architecture. One important development in this respect has been the use of creatively designed supergraphics, where before simple signs would do.

A study on utilization of auditoriums in the secondary schools dictated the construction of divisible auditoriums. After reviewing the survey, one superintendent stated that he either had to have a divisible auditorium or a conventional auditorium and eight classrooms to serve the needs of his district. The Rockway Junior High School Divisible Auditorium was then built. (See page 168).

Of even greater importance have been the other results obtained in the area of space utilization. Student-oriented educational space in a typical elementary school in 1963 constituted only 51 per cent of the gross area of the school. Under the new educational specifications for team teaching requiring multi-group spaces, eliminating low-utilization areas such as cafetoriums and corridors has made it possible to utilize 68 per cent of the building for educational purposes. Converted to square footage, this represents eight conventional classrooms under Dade County's previous standards.

Dade County architects and educators are also achieving greater utilization of school space by building compact buildings: major spaces have been drawn together in new schools. Circulation spaces have been reduced in length and gross square footage, and widened for multi-use. The result has been shorter utility runs, less demand for mechanical space and more efficient use of site. The reduction in length of electrical, mechanical and plumbing lines has had a significant effect on building costs.

Effective use of land is particularly important as good sites become less available —requiring the purchase of smaller sites at ever-increasing prices, and in turn requiring more compact plans.

* Among the research seminars and reports to date:
1963: A study on the operations of the department of school house planning.
1964: Discussion with Dr. Harold B. Gores, EFL; elementary curriculum and school design; carpeting; site selection; emergency lighting; vision engineering; maintenance of air conditioning.
1965: Paint and color selection; education specifications and air conditioned schools; school construction; prevention of water penetration in buildings; the open stage; resilient flooring and ceiling systems; acoustics; available prefabricated and portable facilities; computer developments in air conditioning; results of the California School Systems Development project.
1966: Acoustics; food service; educational parks.
1967: Acoustics; landscaping.
1968: Art in schools; building costs; public parks and public schools; air conditioning; public schools in Miami Model City; maintenance; precast concrete for school buildings/kindergartens.

Flexible space, which may be expanded or reduced at will with light, movable barriers, make possible an immense diversification of activity without the requirement for space which may lie unused for large portions of the day.

The result of incorporating such flexible space has been that, during these six years, it has been possible to increase by almost 20 per cent the available student-oriented space without increasing gross square footage allotments. This has allowed specialized spaces for music, art, library, individual and small group instruction, available previously only from a distance, if at all, to be brought closer to the student.

Careful control of design has made it possible to create air-conditioned buildings at a cost which is competitive with similar non-air-conditioned buildings around the state and the nation. Research studies show that this has made possible a reduction in maintenance costs and an increase in morale and efficiency of students and teachers working in the building.

The results of the design aspect of this contract has produced many awards and citations of merit, unknown under the previous school board staff architects. Among the premiated designs shown in these pages: Primary School "C", Highland Oaks Elementary School, Colonial Drive Elementary School, Kelsey L. Pharr Elementary School and Miami Gardens Elementary School.

THE NEW SCHOOLS BEGAN WITH THE DEVELOPMENT OF NEW EDUCATIONAL OBJECTIVES

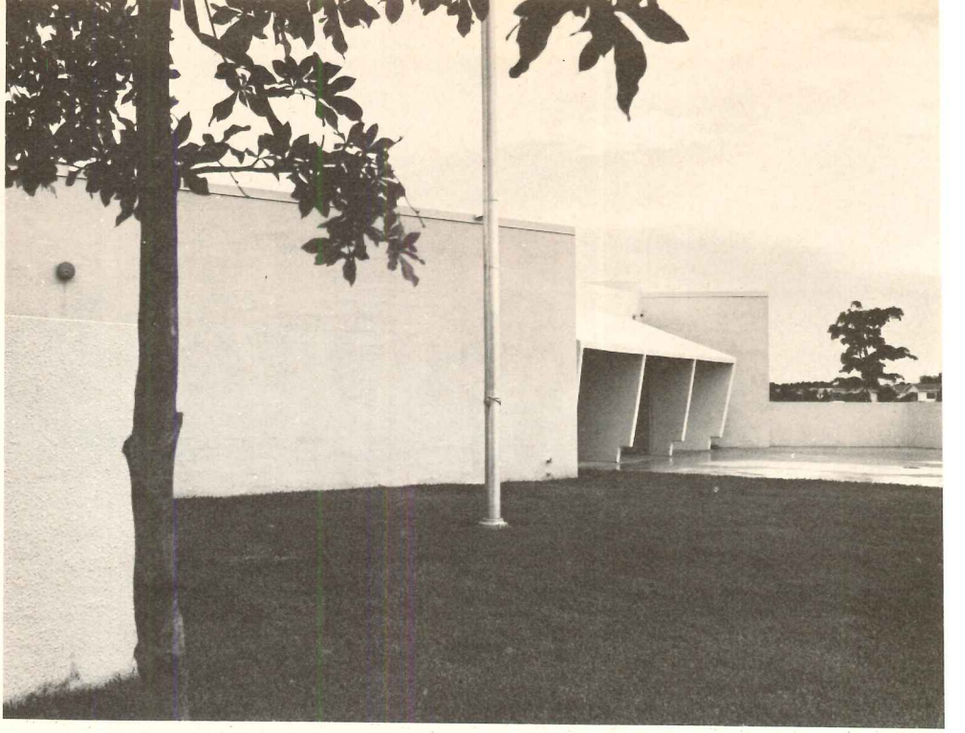
The major objectives of our approach to the new educational institutions are:

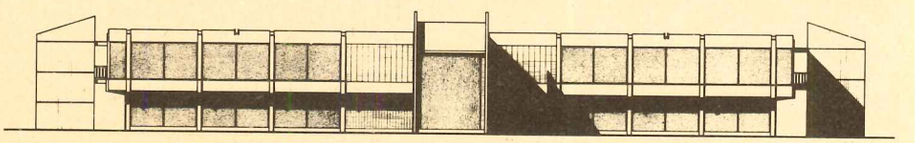
1. The program, through the end of high school, must be both vocational and general in nature, so that the student may develop an economic proficiency and an equal personal and academic proficiency so that (a) he can engage in a meaningful and remunerative occupation, and (b) he can enjoy the fruits of this occupation in his relations with other people and with his leisure time.

2. The program must be dynamic rather than static, which is to say it must operate to accommodate changes in industry needs, and teaching processes. It must anticipate change and forecast its own alternative responses.

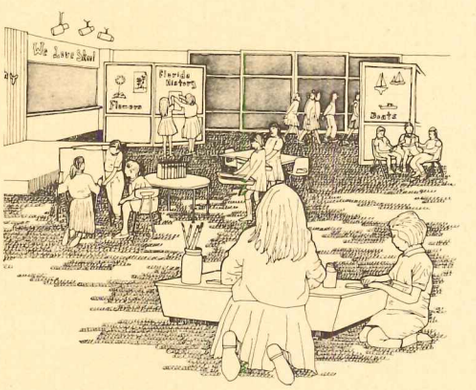
3. The program must be organic rather than fragmented. There must be a high degree of consistency in the choices exercised in coordinating vocational and general educational requirements, teaching processes, and technological and faculty support.

4. The program must be technological-

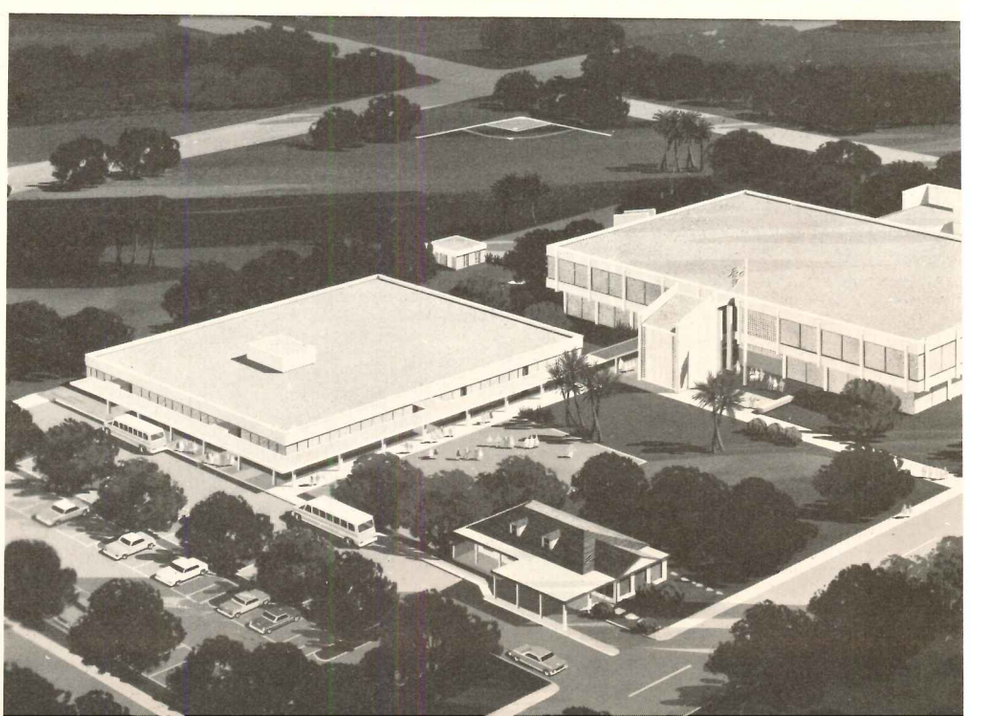


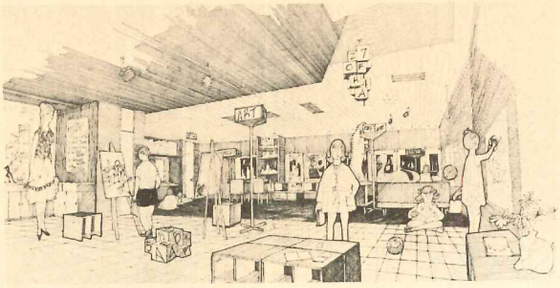


MULTI-MEDIA INSTRUCTION AND TOTAL AIR CONDITIONING are incorporated in this compact demonstration school in Miami's Model Cities area. The school was planned to introduce and evaluate the newest programs developed to improve the quality of education for the disadvantaged. Planned for 840 pupils, the 1968 contract price was $986,000. Four primary level pods are on the main floor, four intermediate pods on the second; a kindergarten is adjacent.



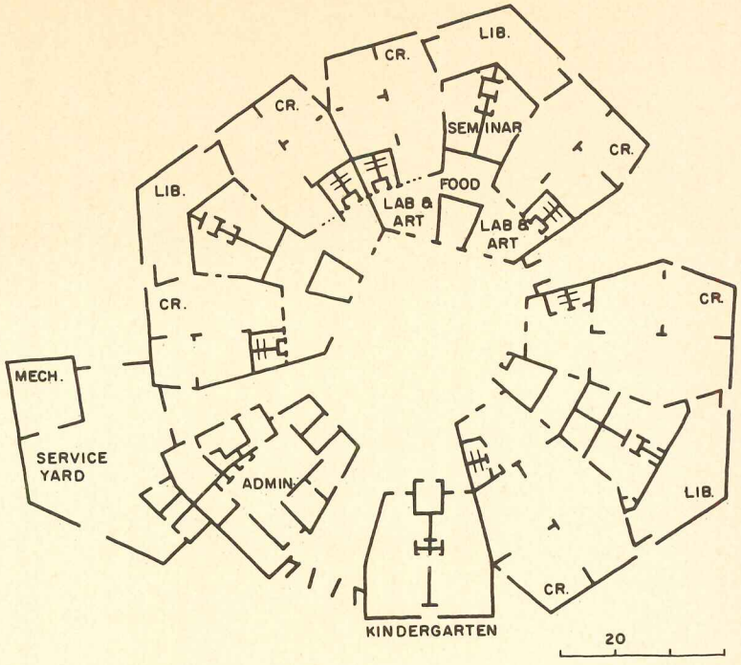
OLINDA ELEMENTARY DEMONSTRATION SCHOOL, Architect: *Murray Blair Wright;* contractor: *Shafer & Miller, Inc.*

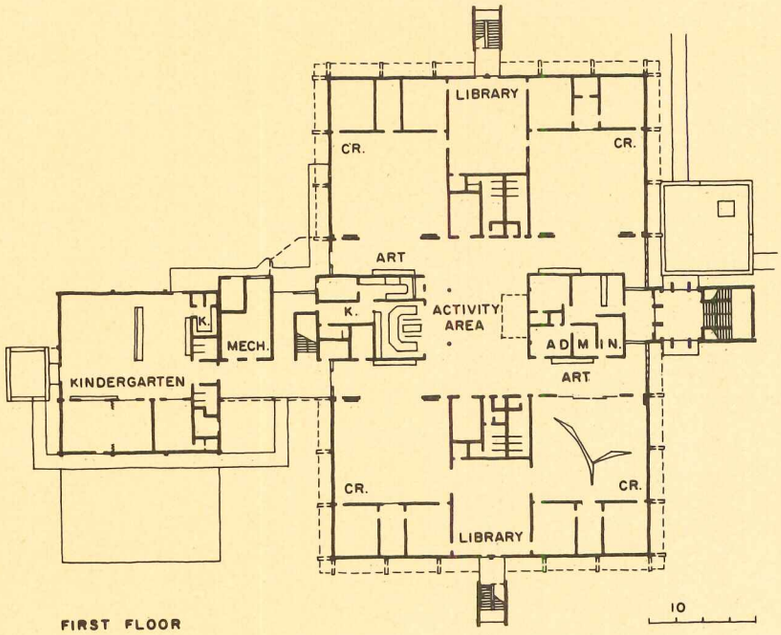




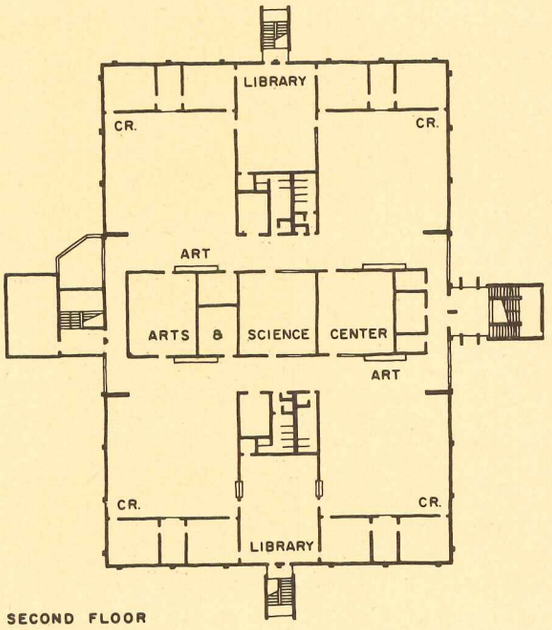
A ROOFED CORE WITH NATURAL VENTILATION through a clerestory serves for circulation and expanded activities in this 640-pupil school. The cost in 1968 was $577,673 and includes air conditioning for the surrounding pods, which are paired to share library and dining.

KENDALE SCHOOL. Architect: *James Deen;* contractor: *Cutchens Construction.*





FIRST FLOOR

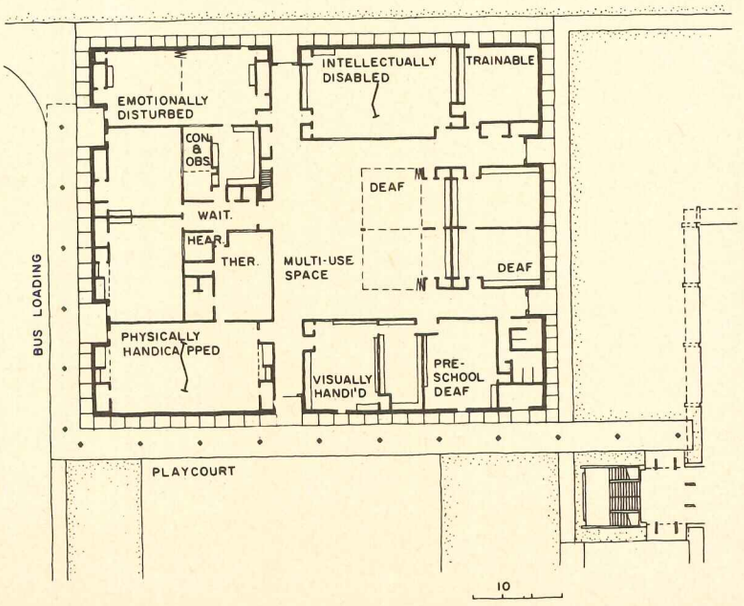


SECOND FLOOR

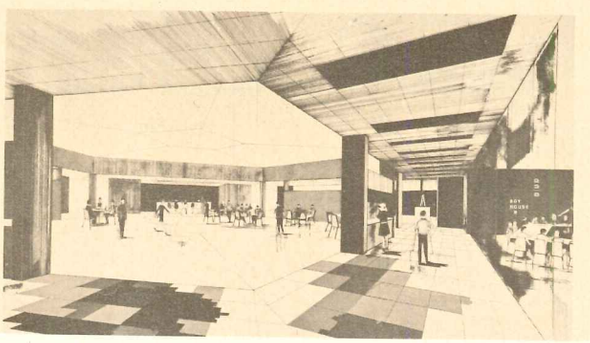
A SPECIAL EDUCATION BUILDING ANNEX provides extensive facilities for the instruction of the handicapped at the Arcola Lake Elementary School. The main school is identical with that of the Olinda School shown above, and was constructed simultaneously with it in 1968. The annex building was commissioned in February, 1969, and has an estimated cost of $510,000.

The annex is similar in design spirit to the main school, though smaller in scale, and is surrounded by covered walks which extend to link with the school.

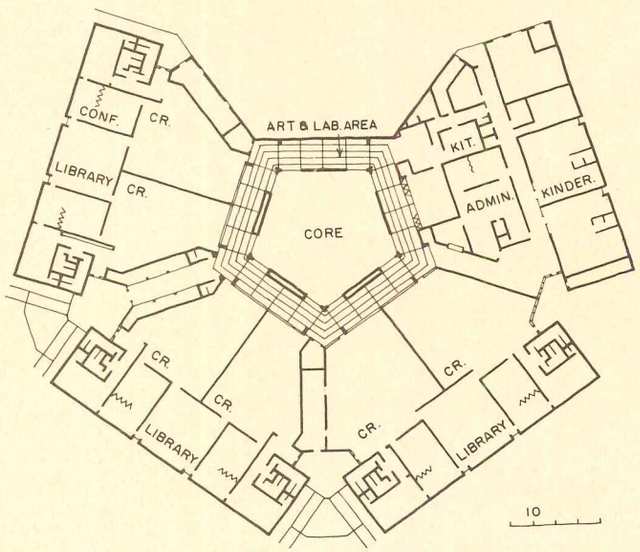
ARCOLA LAKE ELEMENTARY SCHOOL SPECIAL EDUCATION BUILDING. Architect: *Murray Blair Wright.*



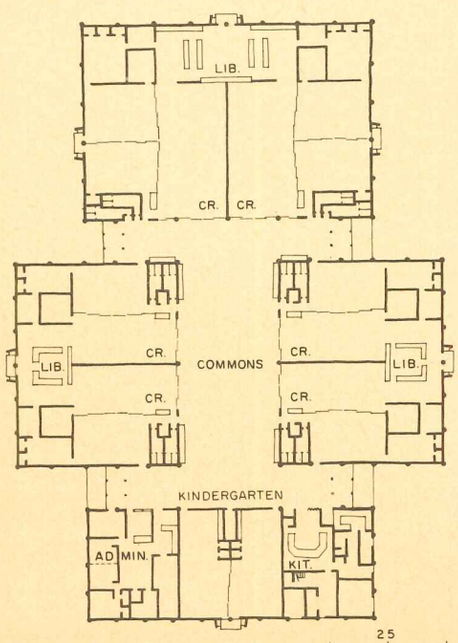
GREATER FLEXIBILITY AND EXPANSION ARE PRE-PLANNED in this school now under construction. Designed for 600 pupils at a contract price of $829,629, it has one intermediate pod for 240, two primary pods for 360 pupils, and one pod for administration and diagnostic services. The plan provides space for the later addition of a second intermediate pod. Each teaching pod is divided into two arena areas by a movable wall. The core forms a multi-purpose area.



MIAMI GARDENS ELEMENTARY SCHOOL. Architect: *Norman M. Giller;* contractor: *Fryd Construction Corporation.*



"20 CLASSROOMS PLUS 2 KINDERGARTENS" IS THE PROGRAM BASIS for this compact pod-and-core school now nearing completion. The conventional classroom space allocations have been redistributed for the non-graded, team teaching system into a simplified, cross-shaped plan. The structure makes a bolder expression of its concrete frame, and is almost windowless—what windows there are form strongly accented design features. The contract for the school was awarded in November, 1968, at a price of $817,789.



NORWOOD ELEMENTARY SCHOOL. Architect: *George Reed;* contractor: *James G. Thompson, Inc.*

scientific. It must be able to take advantage of the speed and mass of data manipulation. It must provide for breadth as well as depth, and must accomplish a distinguishable change of ability and behavior in students to prepare them for the more complex roles in an expanding society.

5. The program must be highly personal rather than autocratically expedient. It must be learner-centered rather than curriculum-centered, process-centered, or teacher-centered. It must relate to current psychological knowledge concerning learning theory and mental health, and must emphasize student success and allow for program change without undue stress or loss of time for the student.

TO MEET THESE NEW EDUCATIONAL OBJECTIVES, NEW EDUCATIONAL PROGRAMS WERE DEVELOPED

In the older schools in Miami, the 700-square-foot room for 30 is common, as it is in many other places in the country. It reflects the opinion that most of the activities of education are performed sitting down, writing, reading, or listening. Generally, it reflects the upper limit of community willingness to finance schools, at so much per square foot. It seldom reflects much concern for human comfort, beyond the humane, and seldom reflects any knowledge or concern for human psychological response to environment.

This new educational program will contain the following differences from other programs:

1. Classical departments will give way to "process-oriented space" which will provide multiple alternatives for the student to deal with things, or to deal with ideas and people, in an unstructured time sequence (see page 167).

2. The new program will provide for educational, physical and medical needs for the total community from age 4 to the elderly, day and evening (see page 163).

3. The new environment will emphasize attractiveness and comfort for the individual. The courses will not be constructed to be limited by some "class time" prescription. It is expected that modularized, individualized schedules would replace the traditional time schedule, and that students would perform by individual contracts to various instructors, rather than perform according to past scope-and-sequence molds. Interaction between student and information would be two-way, and the media and process would become as important to the outcome as the materials they convey. Teachers and students will tend to interact on an advisory basis

more at the call of the student than at the whim of the teacher. Instructors will tend to lead and assist, rather than to feed and insist.

IN TURN, THESE EDUCATIONAL PROGRAMS REQUIRED A NEW KIND OF ARCHITECTURAL CONSIDERATION

These program considerations predict certain characteristics of the architectural problem of designing facilities and materials and supplies:

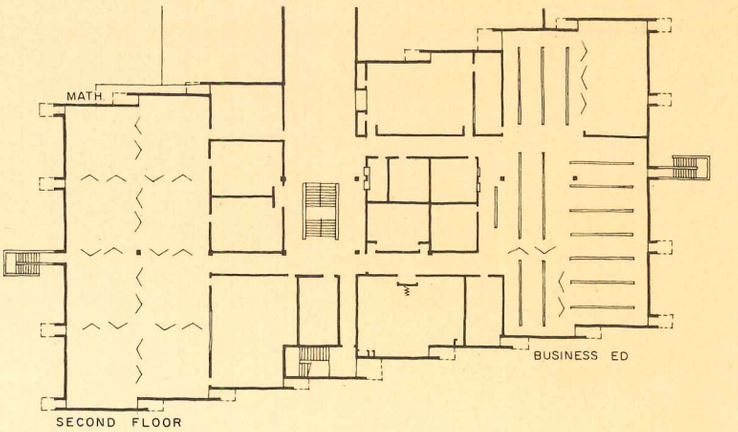
1. Since "class time" will not be defined in hours and minutes, but by random requirements, space may be expected to be largely amorphous, and undifferentiated, and where defined for specific requirements, will be flexible enough for conversion and readaptability.

2. Since time and space are related more to student than to institutional convenience, students will assume major responsibility for their rate of progress and the way thereto. Spaces must provide for this extensive, individual activity with carrels or other work stations.

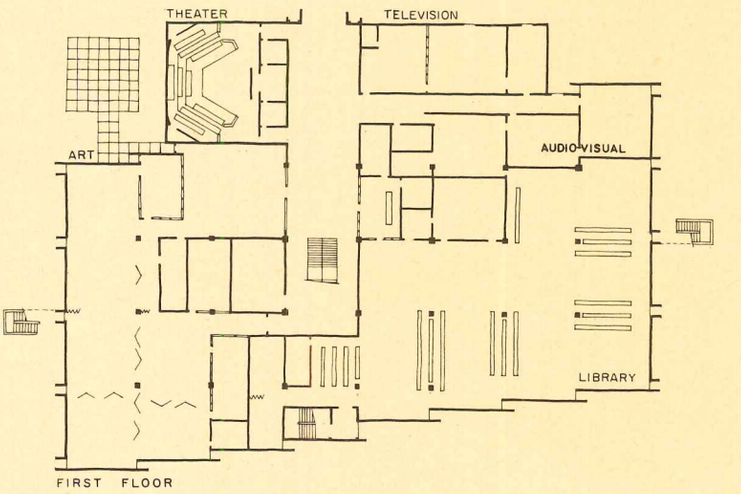
3. Since rapid and random access to comprehensive amounts and kinds of information is indicated, it is obvious that massive development of multi-media, storage and retrieval systems will be required. This forewarns of the need to develop conduit and power outlets, furniture and equipment and computerized data processing systems.

Depending upon the size and/or density of the urban area to be served, any number of organizational patterns may evolve. When density is not too great, elementary school attendance boundaries may extend outward to rarely more than a radius of two miles, so that pupils may attend without excessive transportation. Such schools may be limited to 600 to 800 pupils as they are in Miami. Two or three such schools may feed a junior high or middle school of 1,400 to 1,800 pupils, and two such junior high schools may feed a senior high school of up to 2,800. In Miami, and in other communities in the United States, plans are developing for "educational parks," specifically, in our case, a single complex housing four elementary schools, two middle schools and a high school—perhaps 8,000 students.

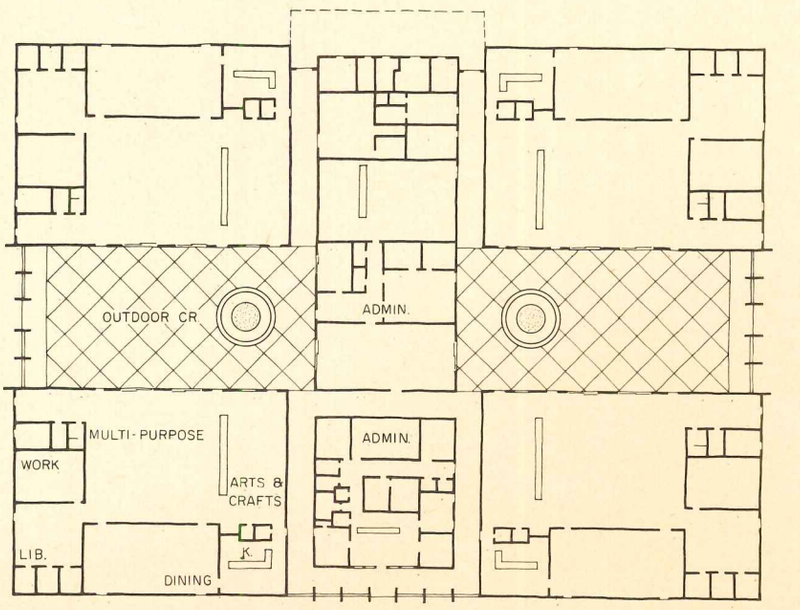
To achieve these goals, communities may either construct new buildings, or when warranted, commandeer sound existing urban structures and convert them for modern programs. In New York, for example, the Joseph H. Wade school, winner in the "New Life for Old Schools" competition (RECORD, October 1967), Frederick G. Frost, Jr. & Associates took an outmoded building and at an estimated cost of 50 per



A HANDSOME ADDITION UPDATES THIS

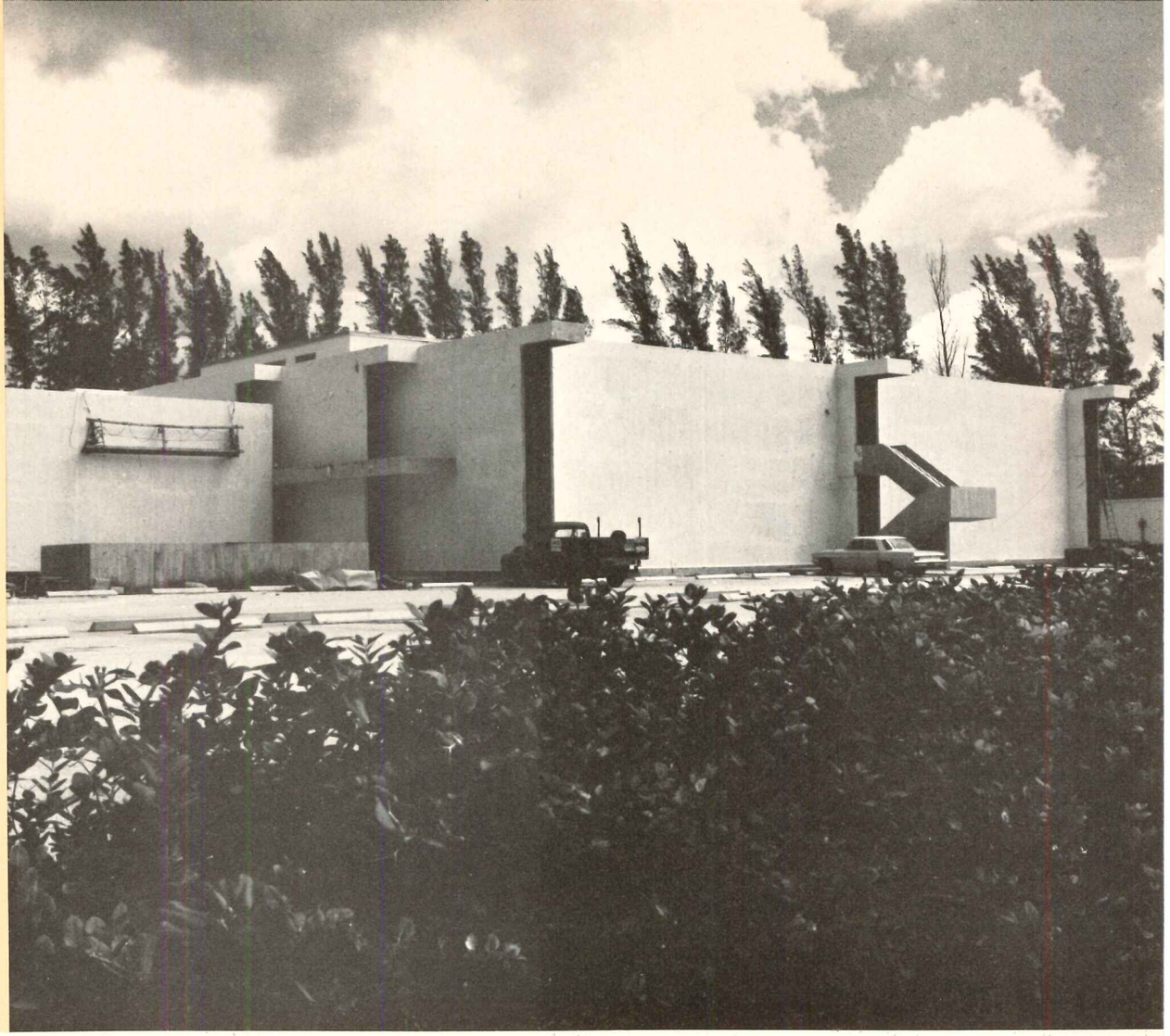


"MINI-SCHOOL" IS



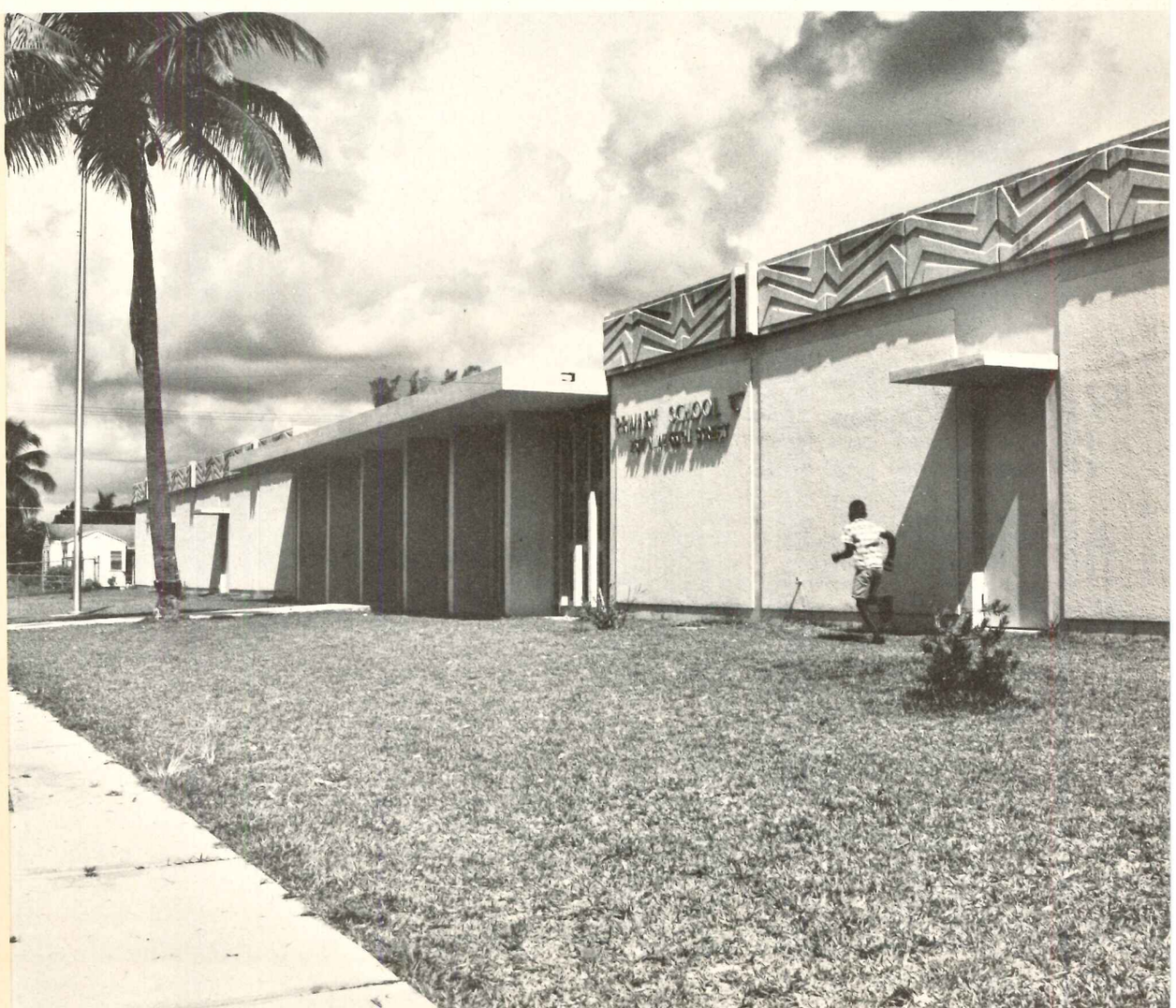
SENIOR HIGH SCHOOL by the addition of extensive, well-equipped facilities for a library, social studies, language arts, mathematics and business education. The new wing completes the school for an enrollment of 2,600 students. Virtually complete, the contract for the structure was awarded in June, 1968, at a price of $990,700. Extensive multi-media instructional equipment, including closed circuit television has been provided for the various departments.

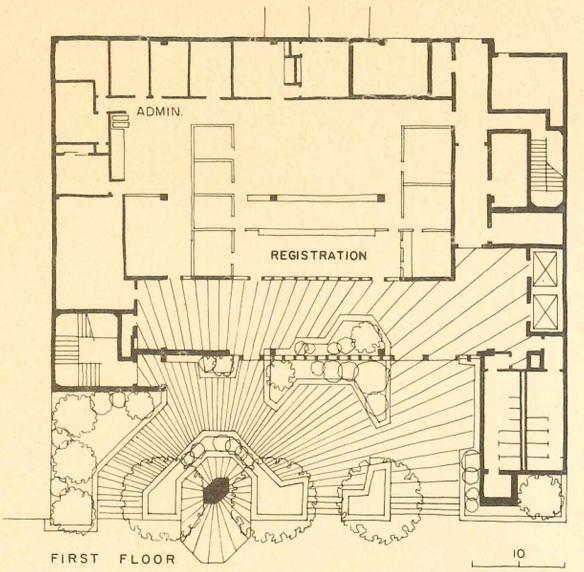
MIAMI SPRINGS SENIOR HIGH SCHOOL. Architects: *Watson, Deutschman and Kruse;* contractor: *Apgar and Markham Construction Company.*

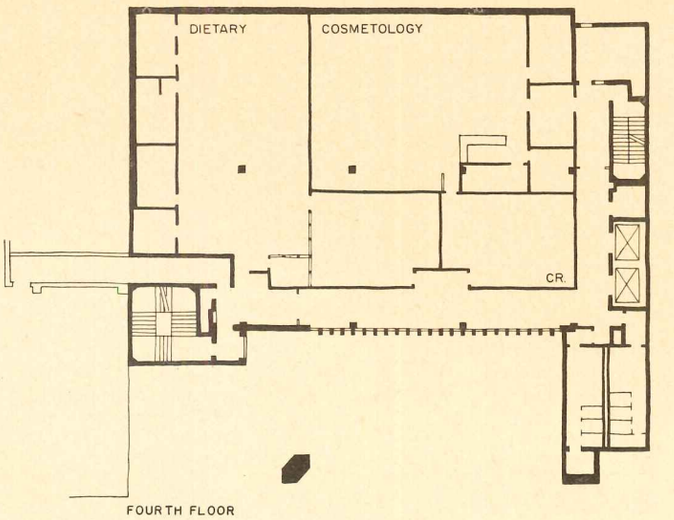


CULTURAL CENTER for a densely populated neighborhood. Planned as a laboratory-type school, it provides an amazingly comprehensive program, not only for disadvantaged children, but with day and night activities planned to involve their families. The children, age four through seven, are divided into four separate groupings, each housed in a pod designed to resemble pleasant, comfortable living quarters. The pods are divided by two outside covered activity areas, and by central administrative, medical, dental and guidance suites. The cost was $434,315 in 1967.

HOLMES PRIMARY SCHOOL "C". Architect: *Murray Blair Wright;* contractor: *SAC Construction Company, Inc.*

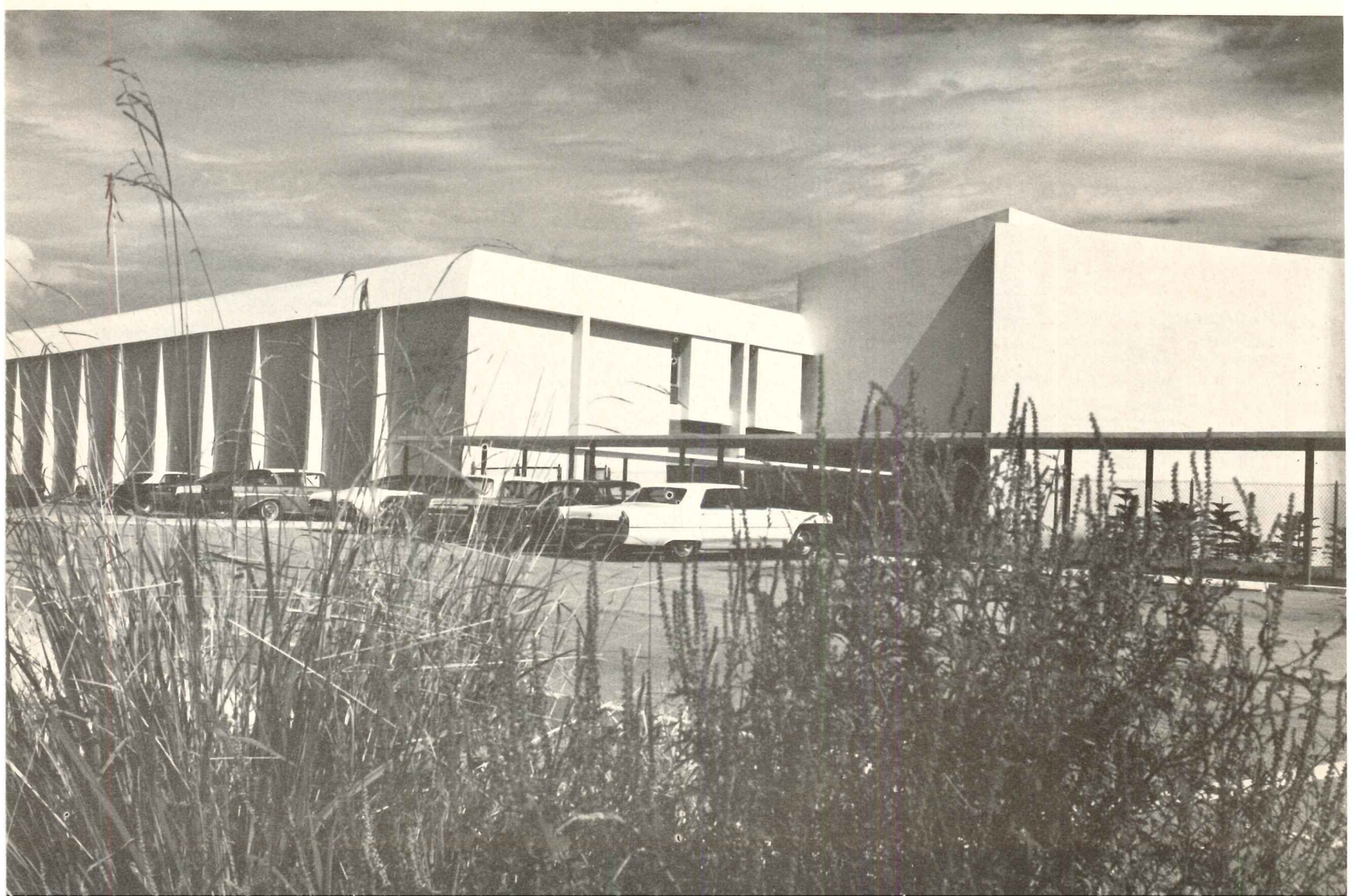


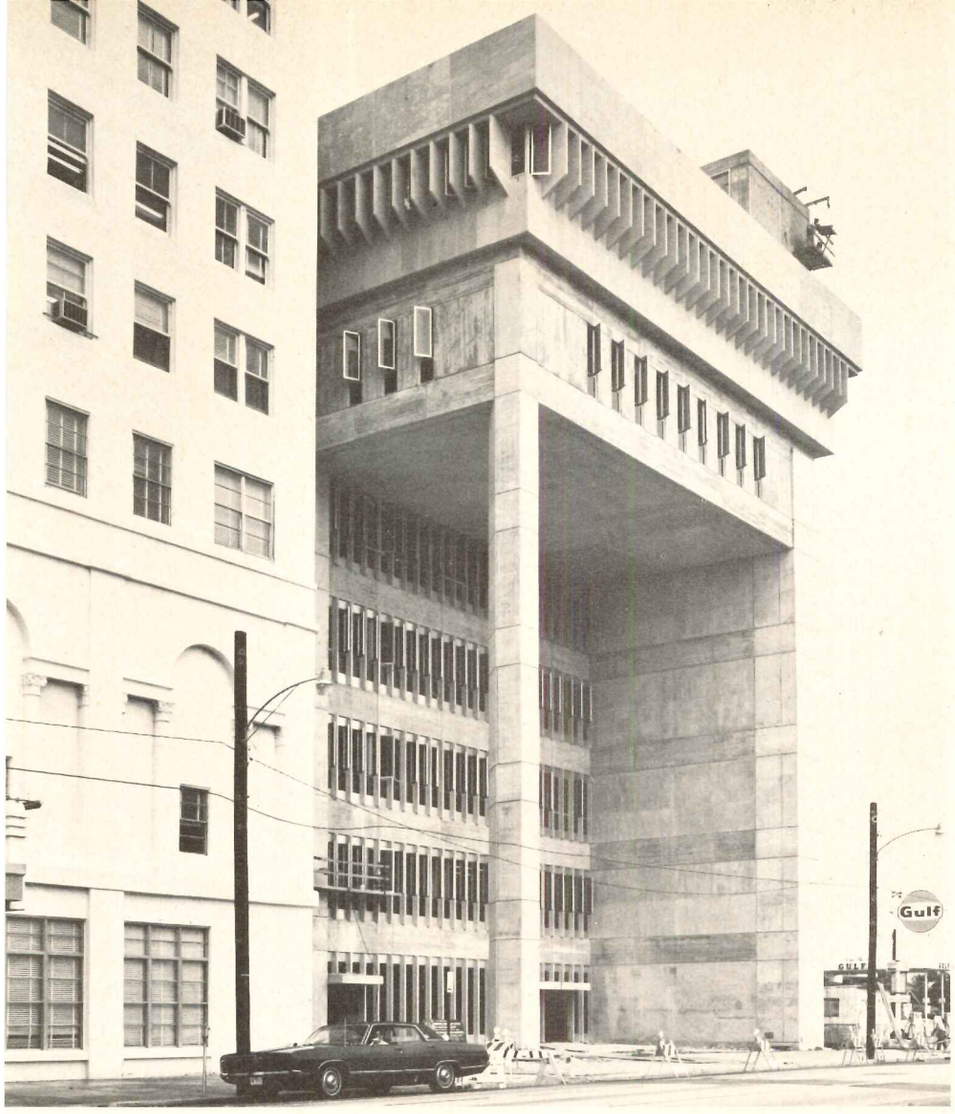


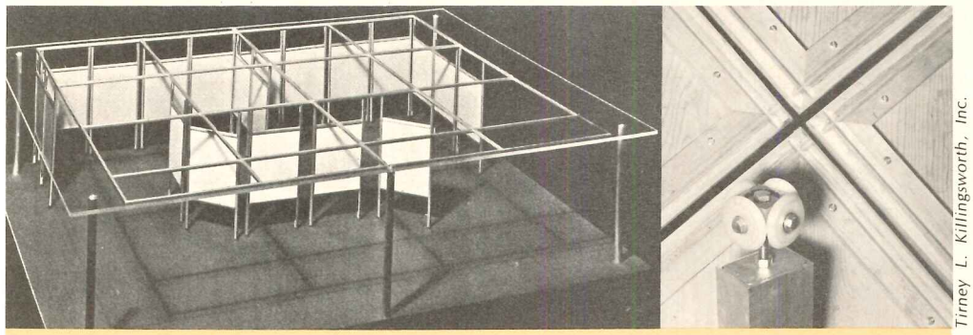


HIGH-RISE ADDITION PROVIDES NEW TRAINING FACILITIES for this vocational training center. The powerfully designed, concrete structure also gives a fresh and dramatic emphasis to the complex. The contract was awarded in February, 1968, at a price of $1,380,000, or $18.64 per square foot for 74,760 square feet. The building is seven stories in height, with services banked to one side; the design expression of this element has been used to create a landscaped entrance court leading into the lobby, registration and guidance facilities on the main floor. Administration and conference facilities are on the second floor. The remaining floors contain well-equipped teaching areas for a wide variety of vocational training: dental technicians and assistants, practical nursing, physical therapy and massage, cosmetology, dietary aide, certified lab assistant, surgical technical assistant. The plan of a typical floor is shown above. The projecting area which roofs the entrance court contains faculty spaces, while above that—among the dentils—are the dental labs.

AREA VOCATIONAL TRAINING CENTER, LINDSEY HOPKINS EDUCATION CENTER. Architect: *T. Trip Russell;* contractor: *Frank J. Rooney, Inc.*

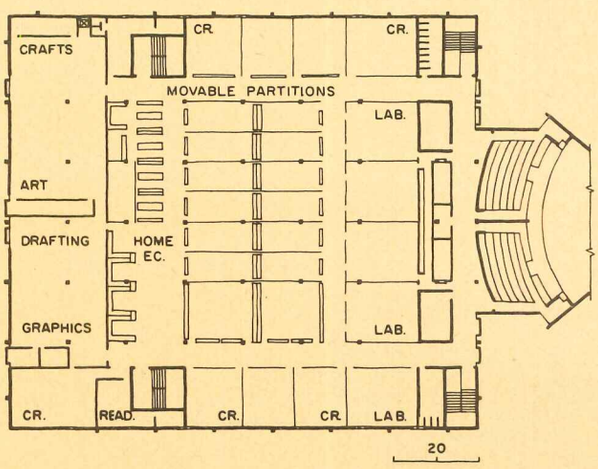






Tirney L. Killingsworth, Inc.

A LOFT PLAN FOR A JUNIOR HIGH provides a great flexibility to the non-graded curriculum. While the first level of the school contains many necessarily fixed-wall facilities—heavy processes labs, band rooms and the like—the second floor is a great open loft without partitions. Divisions are created as required by special-tracked visual barriers developed by Ferendino/Grafton/Pancoast (see model photo above). Team teaching is also used in this school, and though non-graded, the students are divided into three groups by age levels. The contract was awarded in 1966 for a price of $1,793,000.



CHARLES R. DREW JUNIOR HIGH SCHOOL. Architect: *Herbert H. Johnson;* contractor: *Polizzi Construction Co.*

cent of new construction, created a new environment and new student organizational pattern within the school which would be a welcome addition indeed to other urban communities across the land. An F/G/P design took second place in the competition. Miami has made a good start in this direction by the addition of air conditioning, carpet and other improvements to existing schools. New additions have been added to some to update the facilities.

Recently in Miami, as a new concept, we opened a neighborhood mini-school, housing 300 pupils in Head Start, kindergarten and primary grades. This little school (see page 163), built to serve the total community needs in a small neighborhood area, contains medical and dental clinics to raise the physical health of pupils and parents, and houses a center for psychological testing to evaluate and hopefully alleviate problems in the emotional health of local residents. Community rooms have continuous classes in sewing, cooking, and prenatal care for neighborhood mothers. The school remains open 16 hours a day to provide community recreation and education, and to provide study space for older students.

Dade County has also developed a kindergarten program to be instituted county-wide. These buildings, of varying sizes, will require special attention paid to interiors and furnishings. A seminar was recently held in our offices to study the types and variety of furniture available, and graphics appropriate for the very young. The world of the child had to be separated from the world of the adult, and the result is indeed an exciting child's garden.

The concept of bringing the school and other "life services" into the dwelling place is another new idea in urban planning being studied in Miami—the vertical village. In one such concept, floors in a new building would become village "streets," with a "village square" every fifth floor. The over-all site would house "community-wide" functions and activities, while the upper-floor "village squares" would house "village-wide" functions and activities including the little red schoolhouse for the surrounding apartments.

THESE DESIGN CONCEPTS WERE INTRODUCED IN AN EVOLUTIONARY PROCESS OVER MANY SCHOOLS

A few years ago we began to work with the idea that some cooperation among teachers and a consequent change in the all-day 30-to-1 student-teacher ratio would help the educational process. We also felt that air conditioning would contribute to sustained motivation. But we did not want to change too much too fast from the old

patterns, nor spend more money, and we did not overly concern ourselves with acoustics and other factors in motivation. Therefore, we evolved just so far. We opened two rooms together to form a larger teaching space in one school, and air conditioned them; but we did not carpet the space or control sound, and the results, though somewhat better for educational change, did not accomplish much change. A little later, we began to feel that a step toward team teaching was necessary and that more grouping patterns must be allowed in order to improve education.

We had become aware of the need for acoustical control and we were learning to utilize new construction techniques to make both air conditioning and carpeting financially consistent with the costs of "conventional" construction. So we developed lower-cost, open-plan, "pods," housing 3 to 5 groups of 30, air-conditioned, and carpeted (see page 155). This began to get at the problems, but was only one step along the evolutionary path.

The educational planners then began to see the need for more and more activities to be made available to children. But the financial restrictions denied the extra space. In the area of equipment, lighting seminars and research had convinced us that better lighting was essential to prolonged reading or writing. We had to improve lighting, which also cost more.

We eventually overcame the financial parameter by including in each pod facilities for what had once been low-use space (see page 155), such as the cafeteria, auditorium, corridor and (surprisingly) the library. This allowed us to provide students with multi-use space for art, music, science, research, drama, seminars, etc.—which they had not had before—without increasing space or costs. The latest step in this particular development of the pod concept has been to draw all entranceways, overhangs, etc., into a central area, surrounding it with the pods and creating an indoor landscape or "core" with many planned uses—for no increase in financial outlay (see page 159). Improvement in program offerings, groupings, and environment in this fashion opened the way for further evolution.

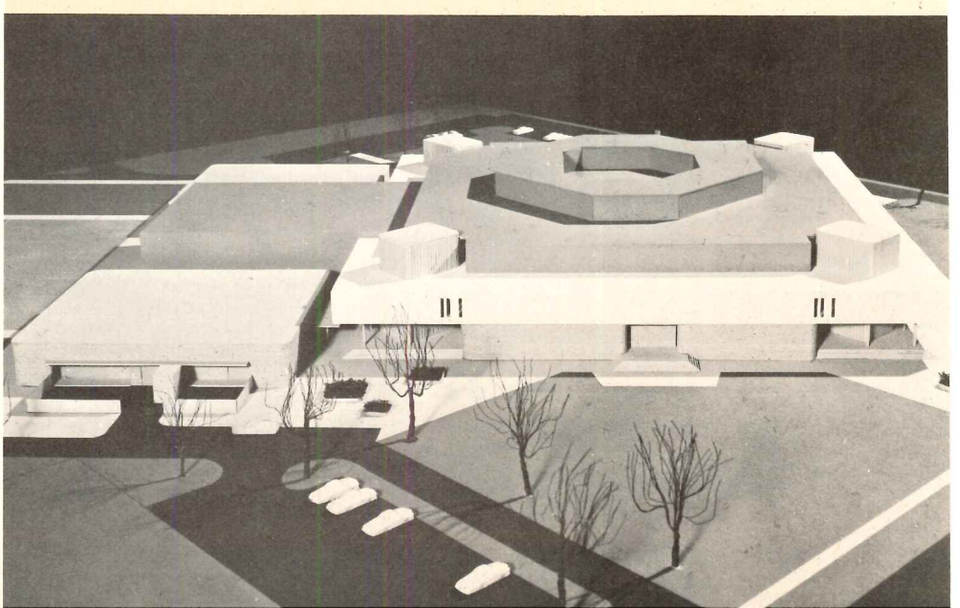
Educational planners saw the need in certain sections of the community to build in the capability to work with other social agencies in overcoming the medical and dental problems which destroyed motivation for children, and in overcoming the problems of isolation which parents of these children passed on to their progeny. The need for on-the-job teacher training was anticipated and provided for. The result was the "mini-school" for 4 to 7 year-olds.

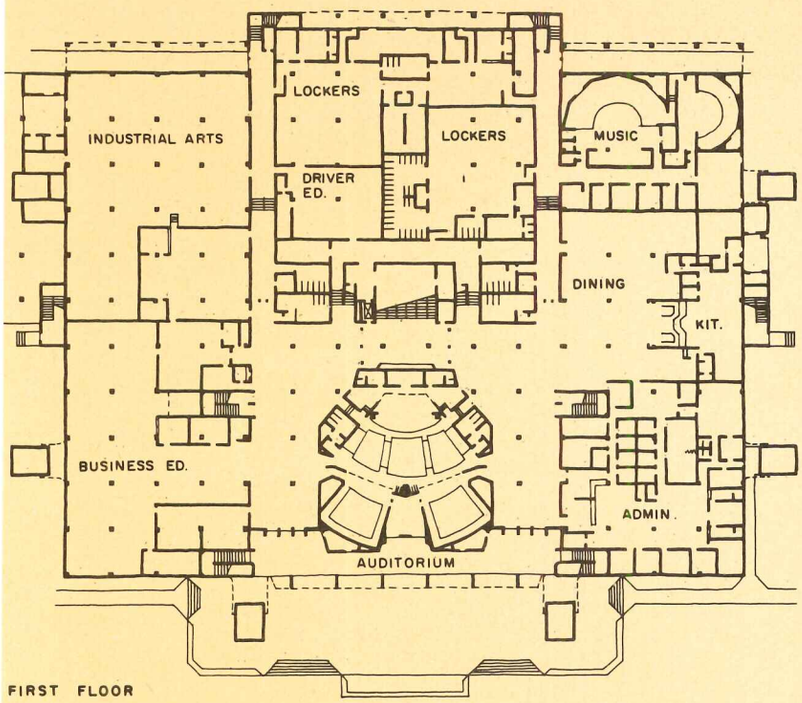
LOFT AREAS HOUSE MOST DEPARTMENTS IN A SENIOR HIGH school for 2,600 students and a gross area of 230,000 square feet. Class spaces in the building have been opened into big, flexible teaching areas (as were developed for the less complex elementary schools), and library space has been developed into an open resource center. Planning on the building started in January 1968, and contracts are expected to be awarded this month. The preliminary cost estimate is about $6,000,000.

NORTH MIAMI BEACH SENIOR HIGH SCHOOL. Architect: *Theodore Gottfried;* engineers: *Cosentino, Gam & Webb* (mechanical), *McGlinchy & Pundt* (structural).

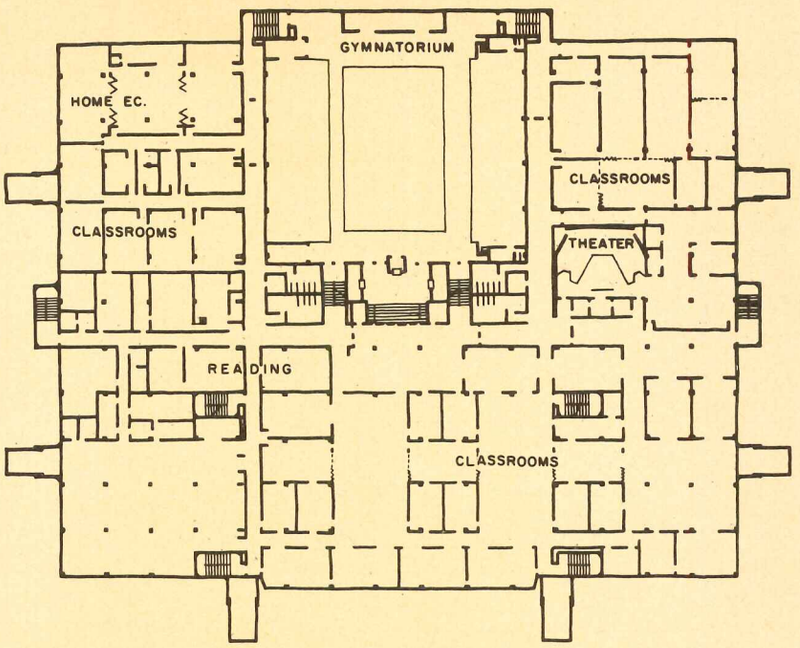
AUTOMATED TEACHING LOFT spaces are used in this big senior high school to create departmental spaces. The building is compact, three-story, air conditioned, and is designed for 2,600 students. The contract was awarded in May, 1969, for a price of $6,001,000. The curriculum is largely academic, with some vocational courses; although fixed partitions define each department, there is great flexibility within for the creation of automated laboratories. Construction is expected to be complete about March, 1971.

HIALEAH-MIAMI LAKES SENIOR HIGH SCHOOL. Architects: *Greenleaf/Telesca;* engineers: *McGlinchy & Pundt* (structural), *Hufsey-Nicolaides Associates, Inc.* (mechanical); contractor: *International Builders of Florida, Inc.*





FIRST FLOOR



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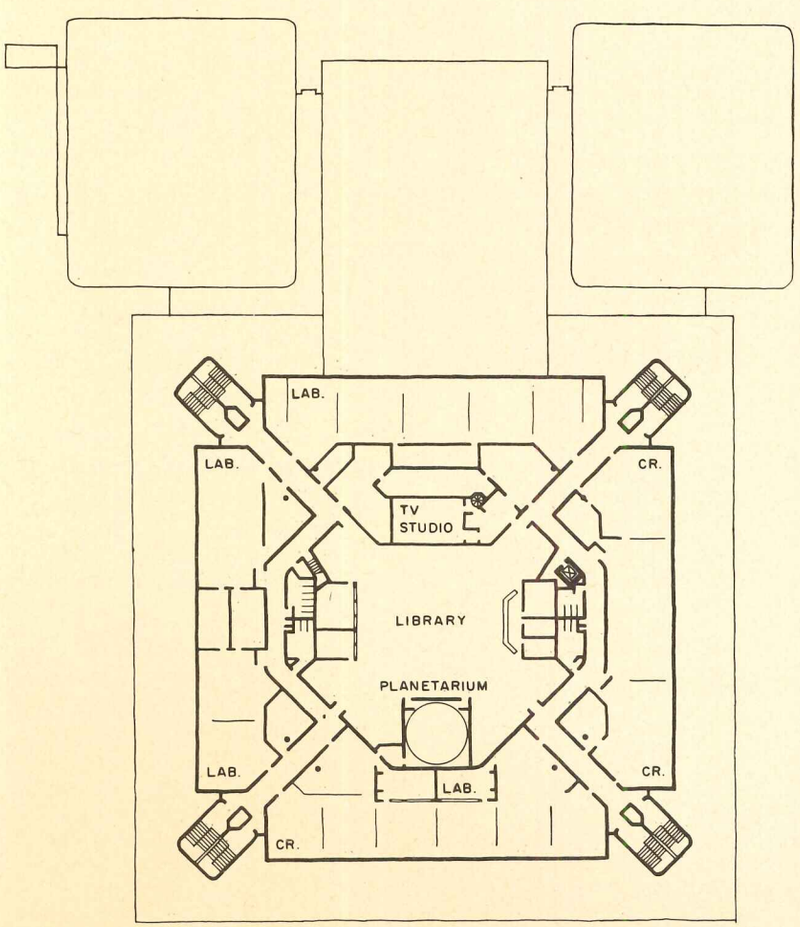

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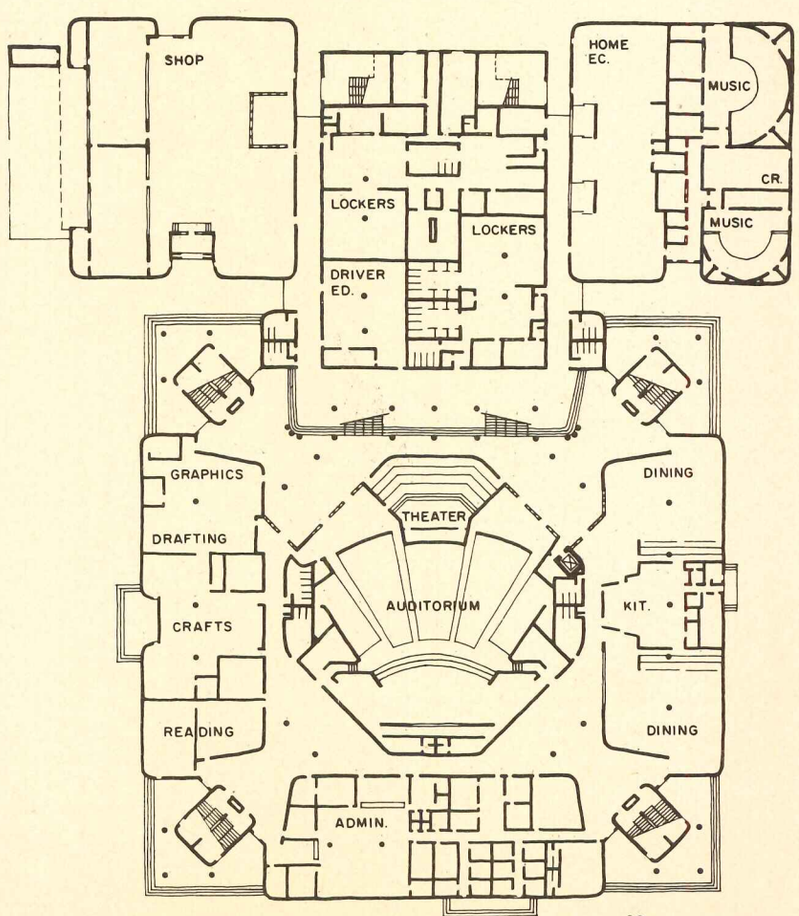


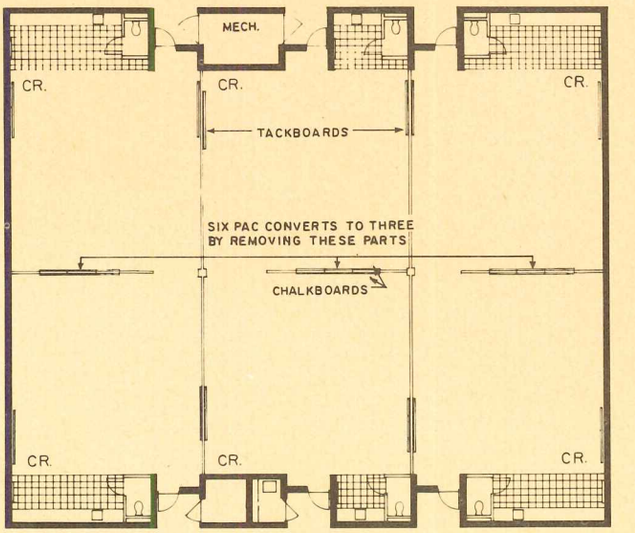
FIRST FLOOR

Feedback from these elementary programs was constant. Old barriers in educational theory, space distribution practices and organizational patterns began to give way at the secondary level. In a junior high school (see page 165), one giant loft pod was designed instead of the usual classrooms. Educational theory was calling for maximum ability to group students as individuals, as members of small and medium groups, and as large groups: lab type experiences became non-departmentalized so that they would allow production of anything the system required. A massive central AV-TV system provides the nerve center of communication for an unbelievably fluid movement of people and processes.

The addition of flexible or modular scheduling to educational theory brought down most of the walls in the next high school (see page 167). Large carpeted cooperative areas began to appear. The compactness which had evolved with the elementary model became a major characteristic in the high school. Expansion of human activity was provided by multiple, small work labs for materials production and AV work. A new psychological imperative began to appear in the evolutionary process: the need for informal, lounge space was recognized as a natural correlation to the less formal program, schedule, and classroom which had evolved. Large informal carpeted lounge and study areas, of 1,700 square feet each, were provided to capture the warmth and freedom so often found in college settings. We have begun to understand that the student becomes more mature as the school system becomes more modern.

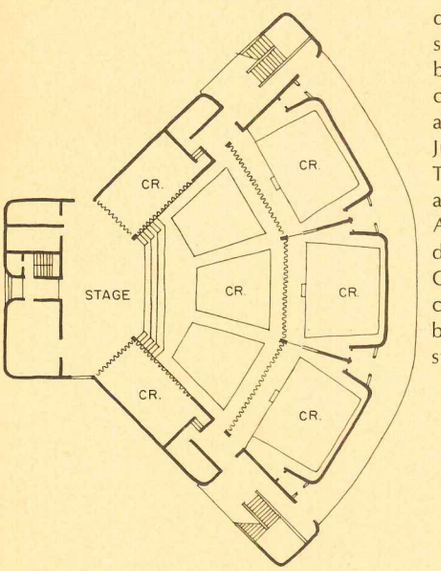
The last evolutionary character to appear in the Miami school system is an interdepartmentalized distribution of secondary space (see page 167), such that a humanities suite contains labs, processes and materials formerly associated with English, social studies, art, journalism and drama. These areas are all fragmented and static in the old school. Now they are flexible and better related.

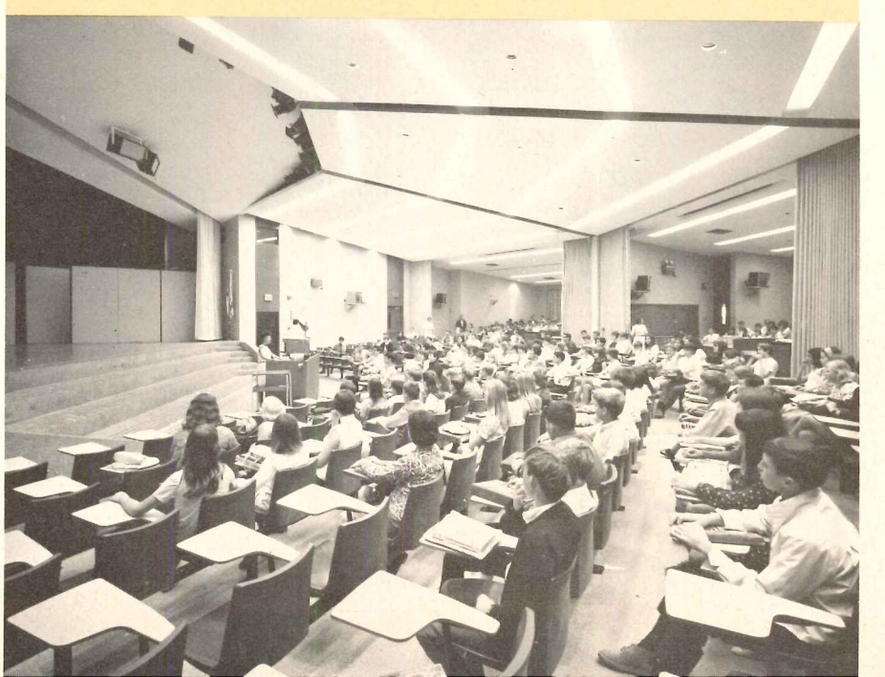
We have made many changes, but must be prepared for more: the environment for learning in the future must emphasize, even more, human dignity, freedom and individual concern, as well as beauty, economic efficiency and comfort. Perhaps it will be possible then to say that the social sciences are beginning to catch up with the physical sciences, that the new educational centers have been the sponsors of that process; and that the architects and educators have been the leaders of that movement. Let us hope so, that we may all share pride.



PREFABRICATED UNITS TO REPLACE MOBILE CLASSROOMS are being developed by Ferendino/Grafton/Pancoast as a more feasible temporary structure. Called the "six pac," the units can be combined into various flexible combinations, complete with mechanical systems and various facilities.

A DIVISIBLE AUDITORIUM REPLACES 8 CLASSROOMS in this scheme developed through a research study and a seminar by Ferendino/Grafton/Pancoast, and subsequently built as an addition to Rockway Junior High School in 1965. The annex has an open stage and is fitted with partial AV-TV components. All auditoriums built in Dade County since this one was completed have been divisible and equipped with open stages.





Russia faces up to the realities of construction industry in reorganizing its approach to producing housing

by Jack Winkler, Chief, Moscow Bureau, McGraw-Hill World News

Despite the fantastic volume achieved using industrialized methods, mounting criticism of results is forcing Russia's central planners to back off from unrealistic goals in an effort to improve overall quality and productivity. At a time when better housing at lower cost is desperately needed in the U.S., and industrialized solutions are being suggested as at least a partial answer,* if not a panacea, then the Russian mistakes in management that have resulted in wide-spread dissatisfaction offer lessons for our own professionals and government officials.

Outside its own country the Soviet construction industry enjoys a brutish kind of glamour built on pictures of enormous dams, vast if monotonous housing projects, and beefy women shoving concrete about. Visitors to the U.S.S.R., even professional builders, count the tower cranes on the skylines of Russian cities and never fail to go away impressed with the dynamism of Soviet construction.

Within the U.S.S.R. itself the industry's reputation could hardly be more different. Privately it is demeaned, publicly abused. It is the dartboard for everyone's frustration with progress in the Soviet economy.

For the average citizen the construction industry means low pay, low skill, and hence low status. The country's 7.8 million construction workers and the further 2 million in the building materials industry are near the bottom of the heap economically and sociologically. Labor turnover is high with people shifting to other kinds of work.

"Because we pay so badly we get only the unskilled," said a leading Moscow builder in a candid moment recently. "All the country boys just up to the city and unable to get any other work come to us. We train them and then they move on to other industries that pay better. We can never build up a corps of skilled workmen."

All those bosomy builders who attract visitors' curiosity are indicative of the trouble. Westerners generally interpret women on building sites here as the result of different Soviet mores on what is suitable work for women. The customs are genuinely different but this is only part of the story. The economic pressures are even stronger. As a result of the Second World War the U.S.S.R. suffers one of the world's most imbalanced sex ratios—54 per cent women, 46 per cent men. Women, including older women, are needed just to make up the labor force. And being relatively unskilled they drift inevitably into lower paying jobs—including construction.

If the private attitude to the industry is passive lack of respect, the public attitude is active and harsh criticism. Everybody has an interest in construction—the U.S.S.R. is spending $73 billion or 20 per cent of the national income in new capital construction this year, including almost $13 billion on housing and $3.3 billion on land melioration. So managers, farmers and ordinary citizens and, of course, the central planners and politicians become complainers when things go wrong. Their most persistent points:

- *Long commissioning times*—Khrushchev once tried to enforce a moratorium on all new capital starts for one year to clear away the backlog, but he couldn't make it stick. Almost any time an industrial minister or deputy minister or deputy makes a public statement, he throws in a dig at the builders who aren't getting his projects completed on schedule and so hinder his ability to meet production targets.
- *Inferior quality*—The mesh awnings that used to extend out from Soviet buildings to protect passersby from falling bits of the facade are now gone. But complaints about low quality in popular newspapers and the

* See also story on Operation Breakthrough, "Toward a Decent Home . . . for every American Family," starting on page on 131 of this issue.

satirical magazine Krokodil are ceaseless. There have apparently been considerable shortcuts with construction standards, but the quality inspectors have until now had little power relative to the contractors.

- *Monotonous architecture*—At present the U.S.S.R. has five basic designs for apartment buildings with little regional variation across its extreme climatic range. Privately, builders acknowledge their so-called "honest architecture" is a euphemism.
- *Unfinished sites*—Clients persistently complain builders leave as soon as the structure is up without bothering to put the site in order. People frequently move into new housing before basic services are installed.
- *Unfulfilled plans*—In a land where most plans are conspicuously overfulfilled, the construction is a noticeable laggard. Overall completion of capital construction targets is something around 95 per cent each year. Urban housing fulfillment is even lower. In the first three years of the current five-year plan, 860, 890 and 860 million sq ft of living space were built toward a five-year goal of 5 billion sq ft, or an average target of over 1 billion sq ft per year.

THE WIDESPREAD CRITICISM: WHAT IT STEMS FROM

These complaints are not the compilation of some diligent but small-minded anti-Soviet researcher. They appear weekly in all manner of Soviet publications, speeches and economic reviews. They reach a peak each December when the economic meeting of the Supreme Soviet takes place, preliminary results of the year are reviewed, and plans and budgets for the coming year announced. Then everyone tries to dump his troubles onto the construction industry.

All this has been going on for years. The criticism has been accompanied by a regular succession of minor decrees on mechanization, manpower supply, training, building materials, wages, accounting methods, etc. But in practice they made little dent in the problems.

Now something is being done. For two years consultations with all bodies involved in the construction business have taken place. As a result the government has just instituted three major reforms—in housing, in capital construction, and in design bureaus (the Soviet combined architectural and structural engineering offices). Previous reforms have been tinkering with the system. This is the attempt to get at the basic problem.

What has emerged is virtually a complete exoneration of the construction industry. The source of the difficulties, it becomes clear, is the central planners—overzealous with their goals, incomplete in their calculations, penny-pinching in vital places, and utterly unaware how contractors at the working level adjust to the myriad rules and indices thrust upon them from above.

With hindsight, the troubles of the Soviet construction industry over the past years form a classic lesson in what happens when excessive demands are put on managers. To a certain point, idealistic goals call forth greater effort. But when the targets become unreasonable, the working managers simply cheat, find ways to get around the system.

Soviet builders have employed many escape devices: starting many projects to give the appearance of compliance even when they hadn't the capital or resources to finish them; scrimping on quality, labor training and finishing work; using capital earmarked for less immediately pressing projects to give themselves liquid funds to keep going on the excessive number of current projects. The diversion of pollution control funds has become a scandal in many areas. But the use of money intended for mechanization or investment in building materials plants has been a form of robbing Peter to pay Paul that has finally caught up with the Russians in the form of perennially low labor productivity growth and gross shortages of materials.

This has brought more than ample criticism down on the heads of builders, while the real culprits, the planners, continued untouched with their ambitious economic schemes and impressive agglomorated statistics. But it was the central planners in Moscow who authorized more projects than could possibly be finished because they never bothered to total up the construction industry's resources and its real capacity to build. It was the planners who scattered capital too thinly among too many projects, who authorized construction starts when they did not have funds on hand to finish. It was the planners who set the total wage funds which ensured that construction wages were persistently below industrial wages. They were the ones who prescribed particularly low rates for various finishing processes in the industry and so gave an incentive to shabby exteriors. It was they who instituted the system of payment for every little bit of work accomplished rather than for whole projects commissioned. The planners so scrimped investment in architectural schools that the U.S.S.R. now has only one-eighth the number of architects of Britain, thereby condemning the country to monotonous standardized building plans. It was central administrators who stressed mass training of building workers in short programs on site instead of proper instruction in equipped schools, thereby foreordaining low-skilled workmen.

Naturally, this distribution of praise and blame is not so explicit in the reform decrees themselves. They rightly concentrate on the future. But the assessment of responsibility is clear from what is being changed under the reform. Realism is prescribed for the planners. For the existing five building ministries under which most of the contracting organizations work—construction, industrial construction, rural construction, heavy industrial construction, and special assembly and building—the reform offers a whole new set of incentives. Obviously too much blame has been put on the construction industry.

THE CHANGES TO BE MADE: IN MANAGEMENT, NOT TECHNIQUE

The new reform still proceeds from the basic socialist premise that building resources must be centrally allocated on the basis of pre-established planning priorities. It does not allow prospective clients to compete for building resources by bidding up the price. But starting from that point, it tries to keep the central authorities from just planning merrily away without regard to fulfillment.

Henceforth, the State Planning Committee in Moscow (Gosplan) will have to draw up estimates of available building materials, construction labor, finance and total building capacity and balance these against new construction authorizations. Total funding must be guaranteed before a project may be begun. Project lists will be drawn up by each ministry and housing authority desiring construction in order to establish priorities. Plans must be made in terms of completion dates instead of starts. There is also supposed to be a complete prohibition on injecting changes into annual plans after February 15. Already the number of new capital construction projects (300) has been cut in half compared with 1968.

Most importantly, however, contracting organizations will now be paid only for completed projects or stages of large works. The transition to this system is expected to be completed by 1972. What contractors will do for liquid capital has not yet been decided, but it appears that a system of credits from "Stroibank," the specialized construction bank already established, is the likely alternative.

The system of supplying contractors with building materials will be "radically reorganized." The new arrangements are far from being final, and much experimentation lies ahead; but the stress seems to lie in establishing a wholesaling network, rather than direct supplier-user contracts, and in allowing contractors supplies on their own demand, rather than forcing them to accept central allocation limits. This reorganization is being accompanied by high priority for investment in building materials plants to overcome shortages.

Even more emphasis will be placed on industrialized building. Last year, roughly a third of all Soviet rural and urban housing, 355 million sq ft, was systems built. The plan is to raise this to about 560 million sq ft, or nearer half the total, by 1975.

Basically emphasis continues to fall on large panel systems. Component-producing factories, previously very specialized, are to have their range broadened and are now in the first phase of a shift to virtually complete open systemization. But the U.S.S.R. has also decided to go resolutely into box-unit construction techniques. Two full production plants are under construction, three

more are being designed, and now 24 more factories, with a capacity of 750,000 to 1,500,000 sq ft of living space per year, have been authorized. Box-built buildings should begin making their appearance in substantial numbers during the early 1970's.

All these component-manufacturing plants, for both panels and box units, are to become the organizational units for buildings in their 60-mile diameter areas, with transport units and several contracting groups subordinated to them. In effect, it's a socialist form of vertical integration in the building industry.

Going in the opposite direction, completely mobile construction teams are to be set up, divorced from any major organization and capable of going anywhere to build with a minimum permanent establishment. They will be used for the settlement building in Siberia, now that the discovery of oil and gas there has made population of previously remote areas desirable. Accompanying them will be 1500-kilowatt portable nuclear power stations, now going into civilian production.

New incentives will accompany the new organization. The bonus for on-time completion of a major project will be raised to 2.2 per cent of total cost (as a national average). Preschedule completion will be rewarded with a sliding scale of supplementary payments up to 50 per cent of the basic bonus for finishing 30 per cent ahead of time. Further, contractors will receive a share of the profits which any enterprise makes during the period they completed ahead of schedule. They may also keep any cost savings below estimates. All construction enterprises will, in the next few years, be transferred to the economic reform system of management which, for practical purposes, means they will have more funds to give to workers as individual bonuses and more latitude in determining how they are earned. Ultimately, the "material incentive fund" from which bonuses are dispensed will account for 10 per cent of a building organization's working funds. The only restriction on their use is that at least 30 per cent of workers' bonuses must come in the form of a completion grant—another stimulus to project finishing.

These increased bonus payments come just after the Soviet government has committed itself in principle to raising building wages to the industrial average—about $125 per month during the current year (converted at official rate of exchange). Rates of medium-paid workers have been increased. The pay raises are obviously in the right direction, but there is a substantial backlog to overcome.

THE MONOTONOUS ARCHITECTURE: INCENTIVES FOR CHANGE

Overcoming the monotony in architecture is another problem just being tackled. There is much to be overcome because builders have been very active with the existing standard designs—over 10 billion sq ft of housing (24 million apartments) have been built in the past decade.

Soviet builders are very aware of the uniformity of their apartment blocks and clearly don't like it. But they feel standard designs, like industrialized building methods, were necessary to solve the acute housing shortage created by the war devastation (1700 cities destroyed, 50 per cent or more) and increasing urbanization (52 per cent now versus 18 before the Revolution). "Our problem was where to live, not what to live in," says the U.S.S.R.'s Housing Chief, Vladimir Butuzov.

But it is now 13 years since the Soviet Government decreed the policy of housing standardization and industrial building, and if the housing shortage is not yet over, at least some of the pressure is off. Enough for a change. The new policy is "centralization in technology; decentralization in design." In practice, that means all elements not relevant to the esthetics of a building (foundations, roofing, panels, separating walls) will be standardized throughout the country. For design of components that could affect esthetics (outside walls, entranceways, staircases, balconies) only dimensions and joints will be prescribed centrally.

The aim is more design variability and use of different facing materials. Regional standard plans have been adopted allowing, for example, larger balconies in the South where people like to sleep outside in the summer, or more bay windows in the North to catch light.

Most importantly, the regional design organizations have been strengthened by one of the new decrees, specifically allowing them to alter Moscow's standard designs and giving them ultimate authority over component manufacturers in the design use of reinforced concrete, aluminum and other structural elements. Designers' bonuses will similarly be increased, and an annual design contest has been started with 60 prizes ranging from $5.50 to $22,000 each. Architectural schools are doubling their enrollments.

Among the other changes in design are an increase in the size of apartments to allow larger kitchens, bathrooms and hallways and more provision for built-in closets, wardrobes and kitchen equipment. Altogether, the improved quality will raise housing costs 18 to 20 per cent per dwelling unit, the government estimates.

Quality is obviously relative, and not many Europeans or Americans would envy the conditions in new Soviet blocks. Only in the next five-year plan, 1971-1975, will new apartments reach the minimum sanitary norm laid down by Soviet law of 100 sq ft per person. Even today, six per cent of new Soviet flats are "communal"—with shared bathrooms and kitchens. And a nation that is only now getting around to closets still has a long way to go. Even new designs will give the U.S.S.R. only eight basic apartment blocks in the early 70's.

On the other hand, almost anyone anywhere would envy Soviet rents—roughly 15 cents per 10 sq ft per month. Anyone paying ten dollars a month is paying a lot in Soviet terms.

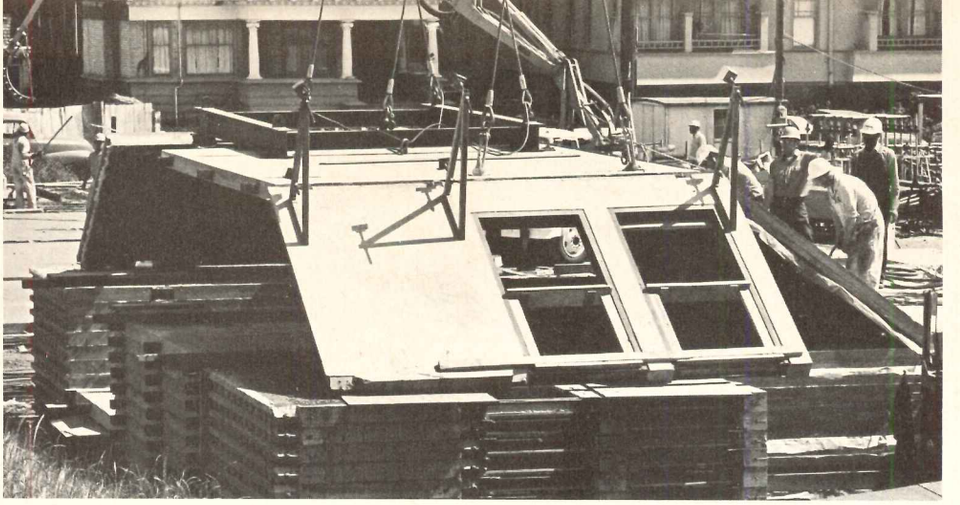
As part of the qualitative drive, the government is now officially supporting cooperative apartment building in large cities—it now accounts for about 10 per cent of all urban house building and will increase 20 per cent this year. It is replacing private building (now largely restricted to small cities and the country) as a more socialist, more "collective" form of private property and allows owners more discretion in their apartments as well as a means of pumping private savings into the housing effort.

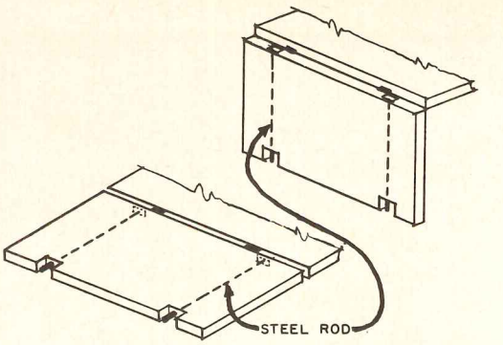
Two other of the reform measures are similarly directed at quality. In the next year 132 vocational schools in Moscow and Leningrad will establish three-year curricula for building workers aiming for 30,000 skilled workers a year. Only a little over a year ago the government had issued a different labor decree, hoping to double a training system that was then turning out a million a year after six months on site courses that were combined with work. The mass approach obviously didn't work, and the push now is for many fewer men who are really well-skilled.

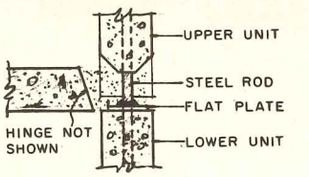
The powers of building inspectors are also being strengthened. From now on they will have authority to suspend construction of any building or stop the manufacture of any components that fall below standards. They will also be able to recommend criminal action against contractors guilty of subquality building.

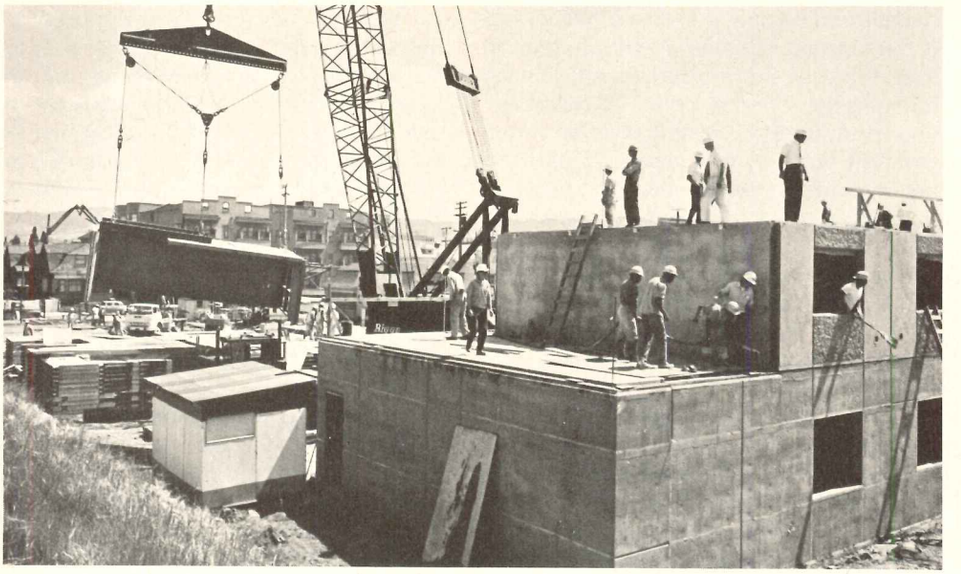
The whole reform package just decreed is manifestly a serious effort to deal with the basic problems of Soviet construction. The question is whether it will mean anything. The U.S.S.R. is rich in impressive-sounding government edicts. They pour out of the Council of Ministers in a regular stream. Normally the problem is enforcement.

In this case the reform has been long and carefully prepared with the builders brought in for consultation all along the way. After being abused so hard and so unfairly for so long, it seems likely the construction industry will fight to defend what is for it effectively a charter of liberation. The new measures accept higher costs in building and lower demands on contractors in the hope of improving quality and speeding completions. Inevitably this will entail a lowering of targets all across the industrial and housing board. In a society still dedicated to maximizing everything material, a lowering of expectations may be hard to accept. The central planners who poured on the pressure in the past may feel compelled to build it up unreasonably again. They are fighting a successful defensive action against those economic reformers in other areas who would take away some of their powers. Whether the realism in construction planning which the new reform prescribes is an enduring idea remains to be seen.

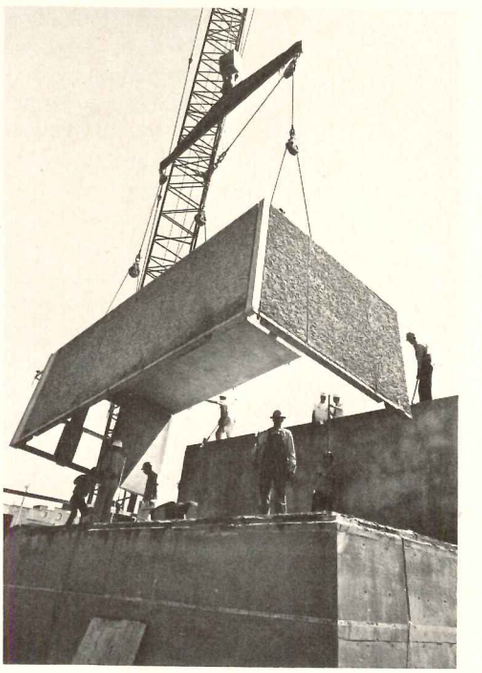


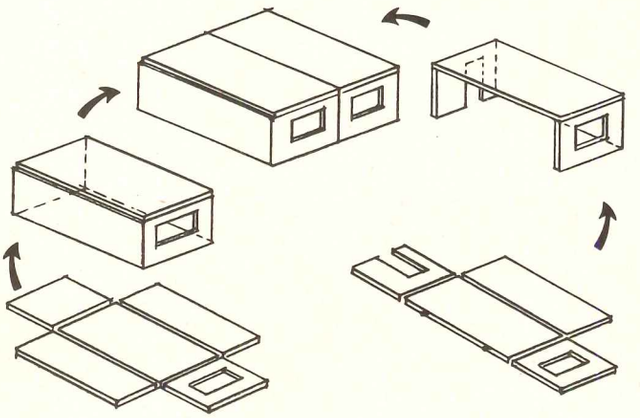






Step-by-step process is shown in the photos and diagram, lower left. Vertical control of building height as well as a structural tie are provided by two steel rods in each wall, welded to a flat plate (see detail) at the top of each wall.





Hinged precast panels fold out to make boxes for a high-rise apartment structure

A new construction process, which offers both economy and architectural freedom of design, permits on-site precasting of entire building and apartment units, which can be lifted by crane and placed in building-block style to a height of 16 stories.

The Foldcrete process, developed by Delp W. Johnson, A.I.A., of the architectural firm, Johnson, Poole, and Storm, San Francisco, and William C. Harr, president of Harvis Construction, Inc., works as follows:

Reinforced precasting forms for components of walls and floors, in whatever design the architect desires, are laid out flat at the construction site. A series of units may be precast one on top of the other. Units are cast with a hinged element between components. When lifted by a crane, gravity pulls the units into the shape of a closed or completed structure. The hinged units make up the walls, ceilings, floors, windows and doors of the apartment unit.

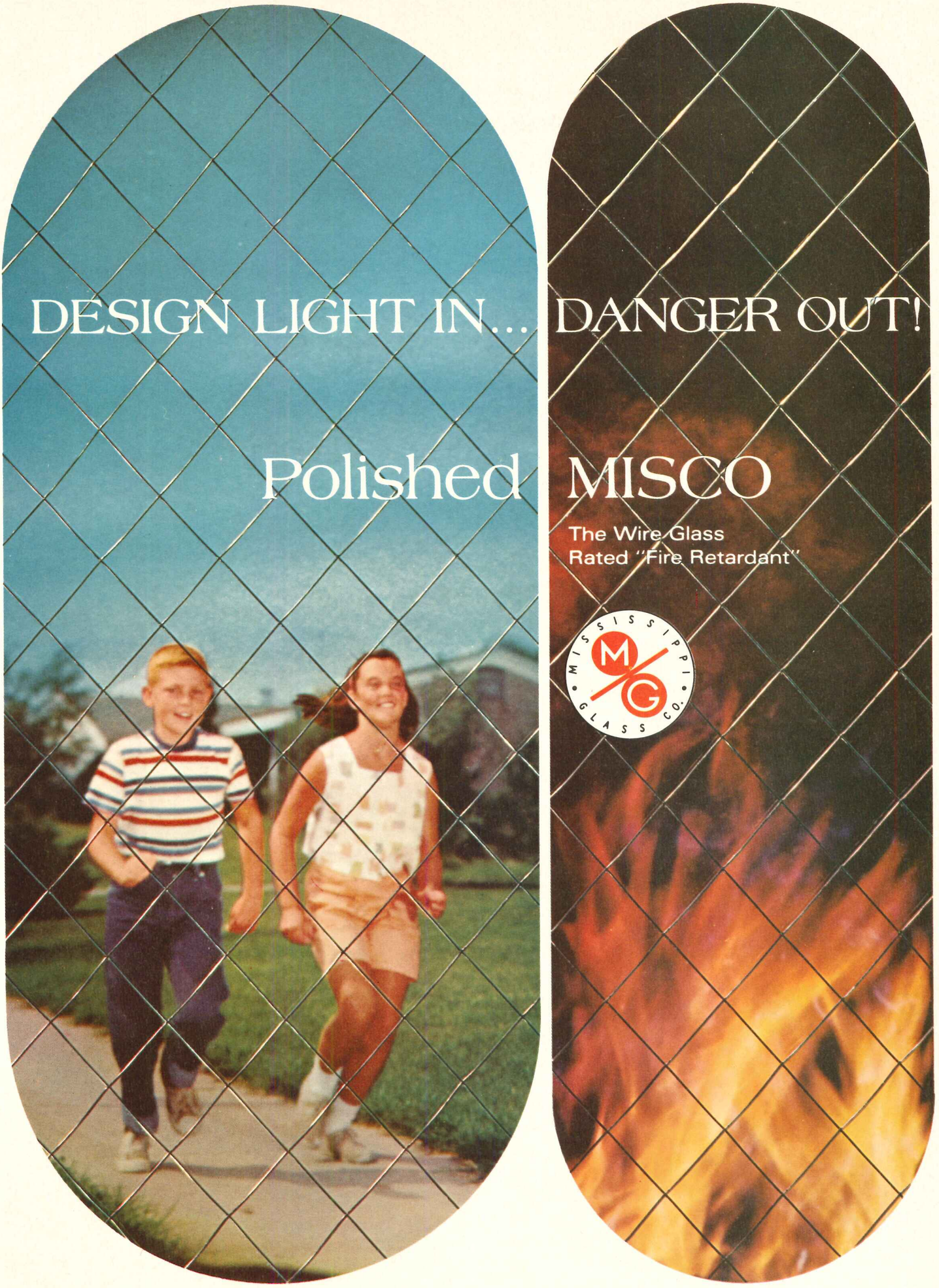
Because all precasting is done in a flat position, various kinds of tile and aggregate finishes can be built into facades. The process eliminates the expense of shoring and forming. It also offers the cost advantages of prefabrication, but eliminates the need for transporting precast units from factory to job site.

The Foldcrete concept is currently being used for an 11-story, 240-unit retirement center in Oakland, California, for the Printing Specialties and Paper Products Union.

Construction contract was awarded for $2,466,000—$200,000 lower than the bids for a "cast-in-place" system. Construction cost of the 110,000-square-foot center will be about $20 per sq ft, including furnishings (but excluding land and fee costs).

Construction will be completed in 10 working months, as compared to 16 months for conventional methods.

With the Foldcrete technique, floors can be lifted at the rate of one a day. At the retirement center, the schedule called for 33 days for pouring, 10 days for curing and 10 days for lifting.



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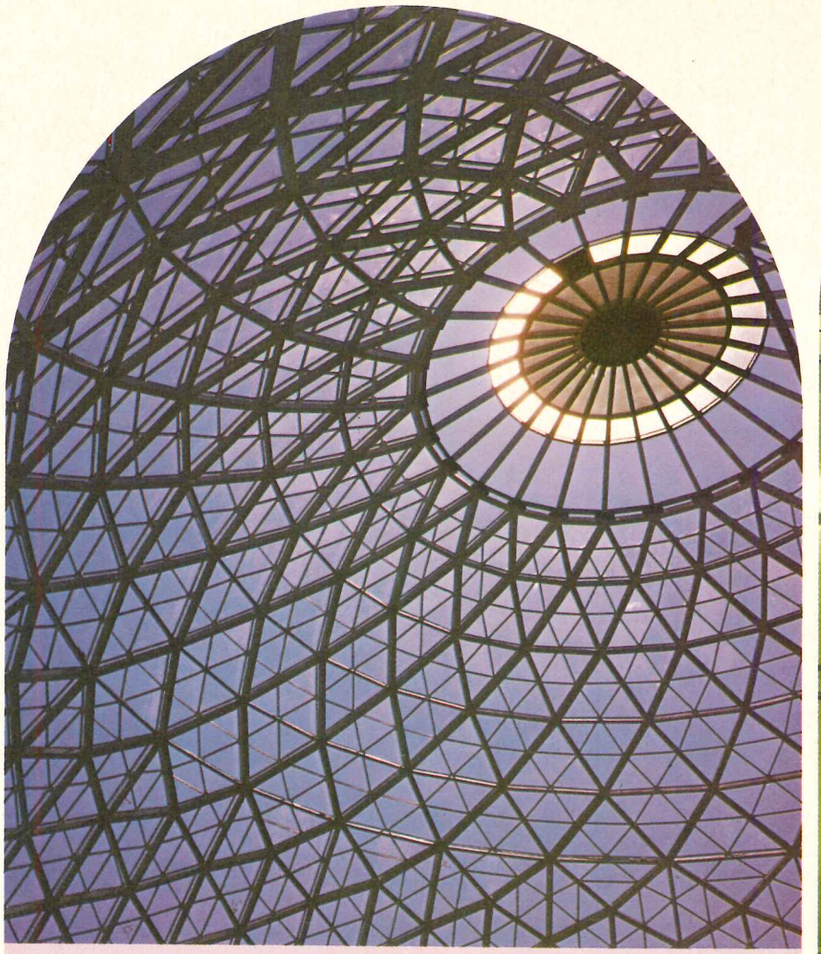

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for clear vision with fire protection

Wherever fire control is part of built-in safety . . . in windows, doorways, walls, skylights . . . wire glass finds growing use in regular specifications. Yet, not all wire glass is listed by Underwriters' Laboratories, Inc. as fire retardant*. Mississippi Glass is one of only two sources for wire glass so listed.

When you design with fire control in mind, specify with confidence in the proved protection of Polished MISCO Wire Glass. It permits full vision and maximum light transmittance. The diamond-shaped netting is inconspicuous, yet protectively visible to alert floor traffic and avert danger from human impact.

*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

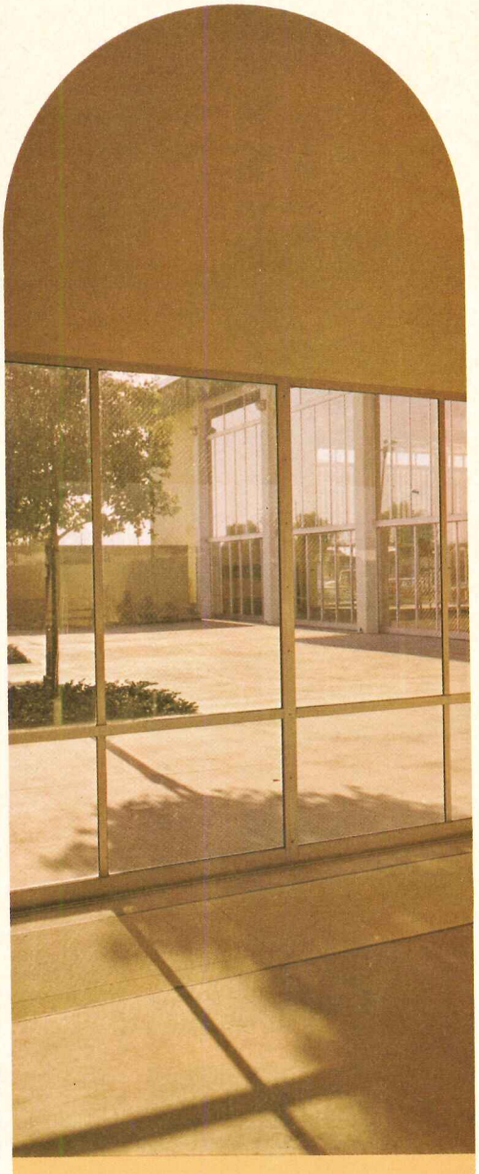
with fire retardant glass

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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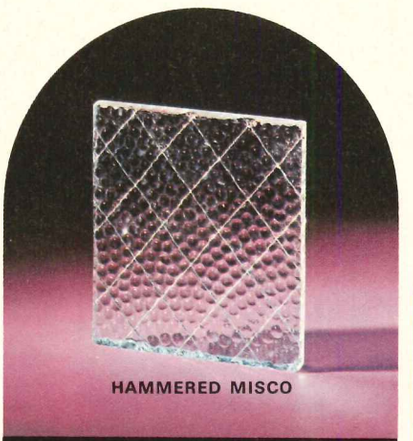
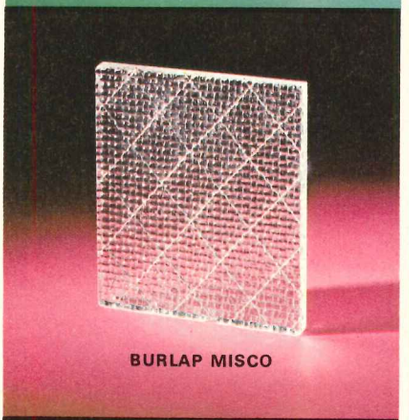
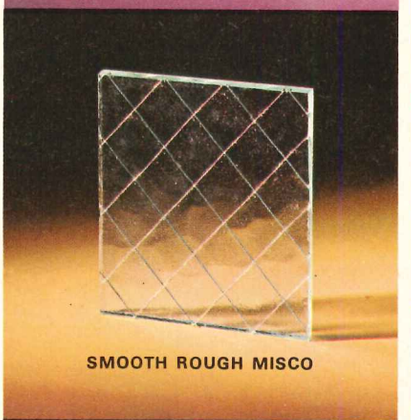
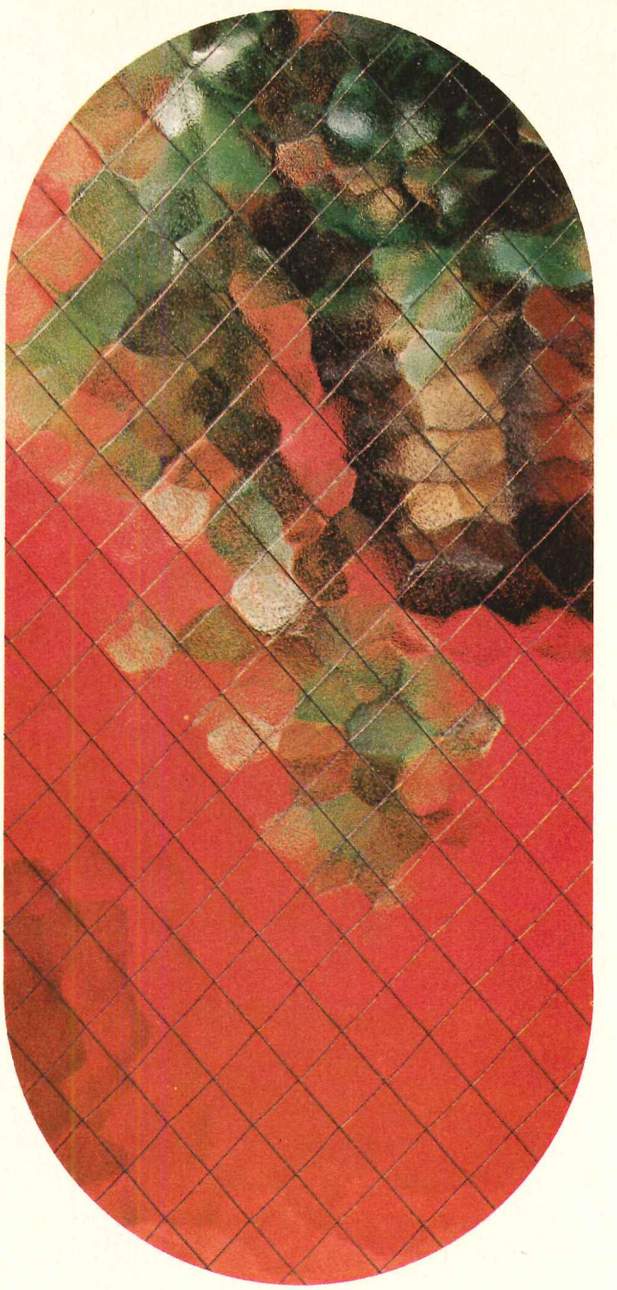
Patterned MISCO

Protection plus diffusion for controlled light direction and obscurity for varying degrees of privacy and heat absorption where required.









All ¼" MISCO Patterned Wire Glass is listed by Underwriters' Laboratories, Inc.

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Heat pump system combines features of unitary and central approaches

Increasingly, inventive applications of the heat pump principle are being developed to cope with new and changing building designs, interior heat loads and types of occupancies; and to provide more efficient year-round thermal comfort. One such system, by using unitary heat pumps and a closed water loop as a heat source or a heat sink, combines elements of both unitary and central approaches. It provides an unusually high degree of flexibility of operation and installation, while also offering means for recovering heat from sun, lighting, equipment and people.

The approach has particular application whenever a combination heating and cooling system is required and when the heating and cooling loads vary from zone to zone.

Its cost is said to be well under the first cost of an average four-pipe fan coil system, frequently being close to the same cost as a two-pipe fan-coil system.

The system uses unitary water-to-air heat pumps in sizes of from ½ to 4 tons. What is unique about this system is that it uses circulating water in a closed pipe loop for either extracting heat or rejecting heat. Thus heat can be transferred from spaces requiring cooling (such as the south side of a building in winter, or interior offices, all the time) to spaces requiring heating (some or all of perimeter spaces). If more heat is needed than is rejected into the pipe loop it is added from a boiler; although local immersion heaters sometimes are used, and the central boiler eliminated. If more heat is rejected by the unitary heat pumps than can be used, then it is removed from the loop by means of an evaporative cooler.

While several manufacturers are licensed to make the type of unitary heat pumps used in such a system, by far the largest number of installations have been made by the California Heat Pump Corporation, whose line was acquired by American Standard Applied Air Conditioning Department late last year and has been further enlarged by them. The American Standard acquisition has been followed up with an expansion of distribution and service facilities and personnel on a national basis. The company's parallel development of a water-cooled unitary air-conditioning console had preceded their active interest in a broader and more flexible water-cooled unitary equipment in the ½- to 4-ton size range. The company's existing basic products, including fans, air handlers, heating and cooling coils, etc., provide a compatible matching line for all components and equipment for the total building.

CHP/American Standard now has six years of experience with all variations of the Electro-Hydronic system, and a continuing series of improvements in refrigerant cycle, operating and safety controls have resulted in a system that is highly dependable. What is more important to architects and engineers is the proven reliability of the units, backed up by a five-year warranty on the compressor and predictable maintenance costs.

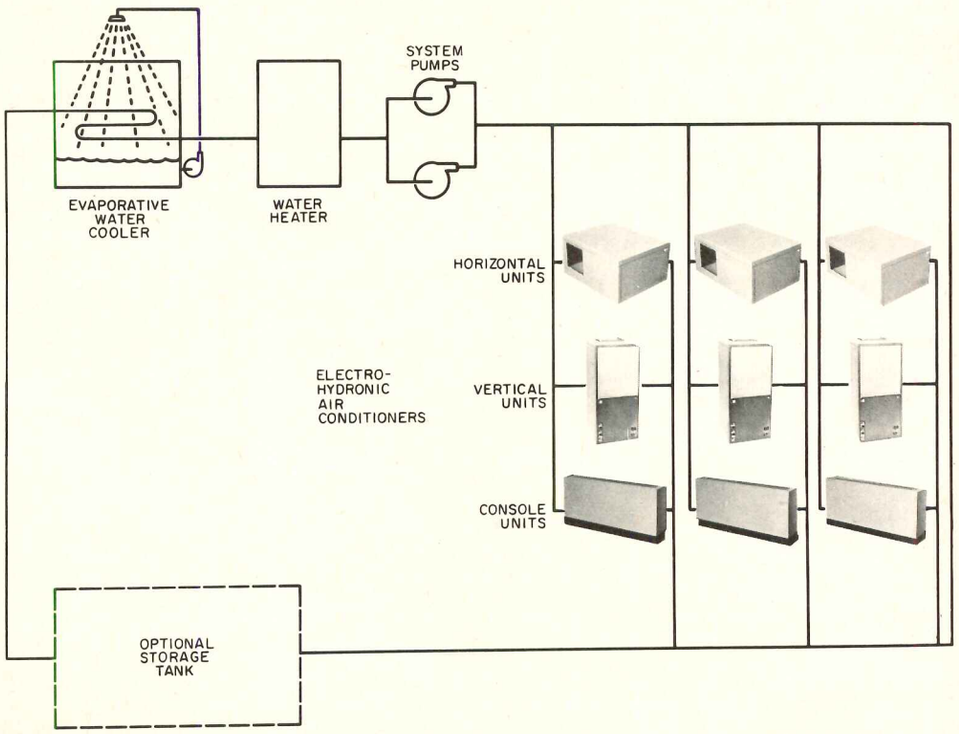
The system has been used in a wide range of climates for office and commercial buildings, hotels and motels, apartment buildings, hospitals and clinics, and schools.

Operational advantages of the system include the following:

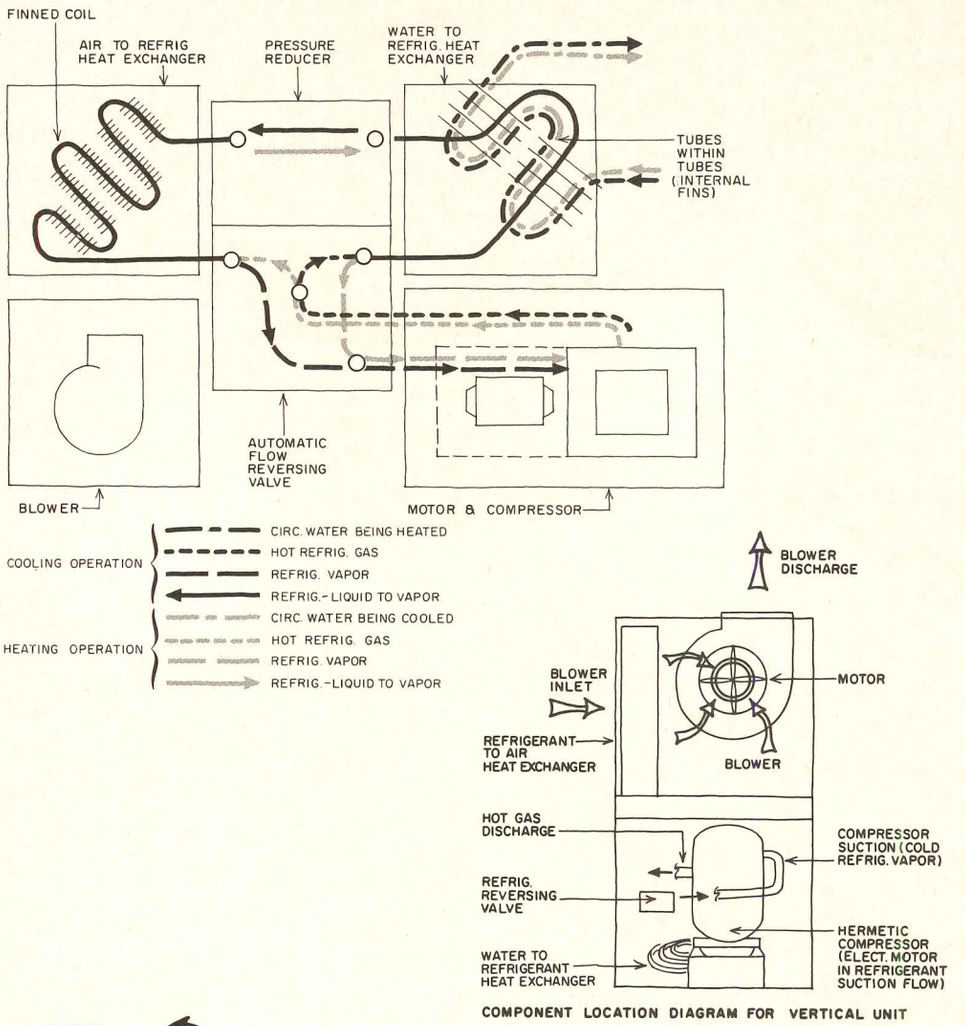
1. Each space has complete individual temperature control regardless of the season of the year or the requirements of other spaces for heating or cooling. There is no seasonal changeover from heating to cooling and vice versa. In other words, heating and cooling capability is always available.

2. If an office building is only partly occupied, as on nights and weekends, only those units in the spaces being used need be operated. And the units can be individually metered. Any unit can be shut down for maintenance without affecting remaining units.

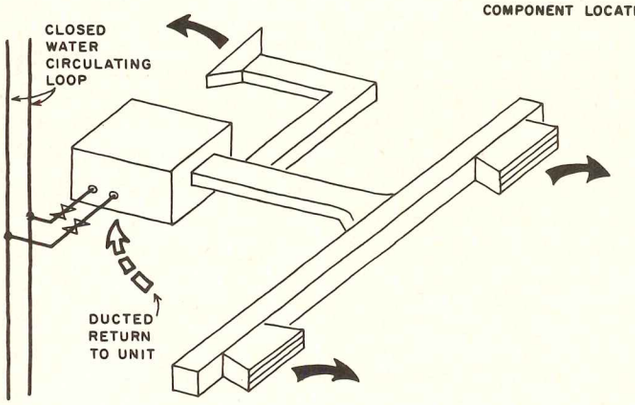
3. Heat rejected to the water loop by units on cooling is available to those re-



Package heat pumps, up to 4 tons, either extract heat or reject it to a closed pipe loop that circulates water within a range of 60 to 90 F, maintained by operation alternately of evaporative cooler or heater.

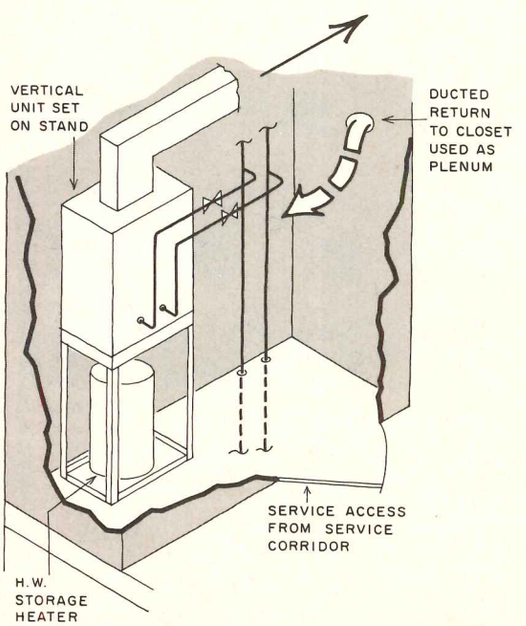


COMPONENT LOCATION DIAGRAM FOR VERTICAL UNIT



How the unitary, water-to-air heat pump works during heating or cooling operation is shown in the schematic at the top of the page. It can be seen how the heat pump either extracts heat from or rejects it to the circulating water, and how the finned coil either heats or cools room air. The sketch directly above shows arrangement of basic components in a vertical-type unit.

These unitary heat pumps are small enough to be easily installed above hung ceilings or in closets, which can be made easily accessible for servicing and maintenance. The closet installation shown has plenty of room for a domestic water heater.



quiring heat, reducing annual operating costs by utilizing heat that some other systems would waste.

Among the installation advantages are these:

1. Because the heat of compression of the refrigerant is removed by water on the cooling cycle, there is no need for outside air for condensing refrigerant. Thus no openings are necessary in the exterior wall as is required for through-the-wall air-cooled air conditioners.

2. Far less ductwork is required than with central systems. The units can be installed above the ceiling, in a closet, or can be floor-mounted, wherever most convenient, for piping and ducting. Console units are available for under-the-window application.

3. Piping for the water loop does not require insulation because the operating range of the circulating water is between 60 F and 90 F.

4. A central water loop can be installed and individual conditioners supplied later to accommodate spaces as they are leased.

5. The boiler used for the water loop can be electric or combustion-fired.

6. A conventional air-conditioning system may be used for interior zone areas or other large spaces, with heat extracted from those areas being added to the water loop for use by the unitary heat pumps for perimeter area heating.

7. The major components are pre-engineered packages, providing a high degree of reliability and quality control.

How the heat-conservation principle works in practice

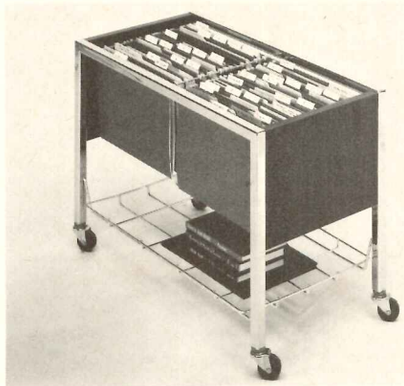
Each unitary water-to-air reverse cycle refrigeration unit has the following elements: 1) a fan for pulling air across an air-to-refrigerant heat exchanger, for introducing fresh air to the room, and for providing positive room-air circulation; 2) a compressor; 3) the aforementioned air-to-refrigerant heat exchanger. When heating, the unit extracts heat from the water loop by the cold refrigerant vapor flowing through the water-to-refrigerant heat exchanger, and adds to it the heat of compression. The refrigerant gives up this heat to the air-to-refrigerant heat exchanger as it heats room air. When cooling, the unit extracts heat from room air by the cold refrigerant vapor flowing through the air-to-refrigerant heat exchanger. The refrigerant then goes through the compressor and is liquified by the water-to-refrigerant heat exchanger, through which water from the closed loop system flows.

The closed-water loop contains only non-refrigerated water that serves as a heat sink circulating at a temperature ranging between 60 F in winter and 90 F in summer. If water temperature falls to the lower limit, the boiler automatically comes on; if water temperature rises to the upper limit, the evaporative cooler comes on.

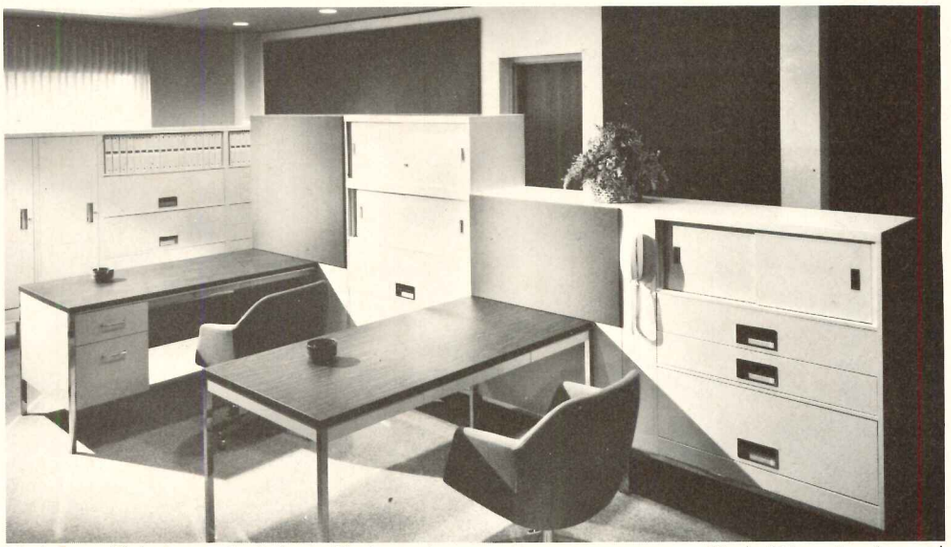
For more information circle selected item numbers on Reader Service Inquiry Card, pages 293-294

Business Equipment Manufacturers Association exposition to include Office Environment Center

Centerstage at BEMA's annual exposition, October 27 through 31 in the New York Coliseum, will be a 5000-plus square-foot Office Environment Center displaying the newest in office furniture in natural settings. The emphasis will be on designs for the future, designs to accommodate new demands of information processing. Shown below are some of the items that will be on exhibition. Those participating in the Center this year: Alma Desk Company, Domore Office Furniture Company, Jens Risom Design, Inc., Marble/Imperial Furniture Company, Myrtle Desk Company, Steelcase, Inc., and Stow/Davis Furniture Company.

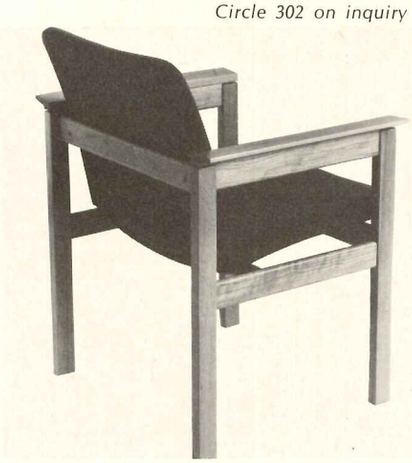


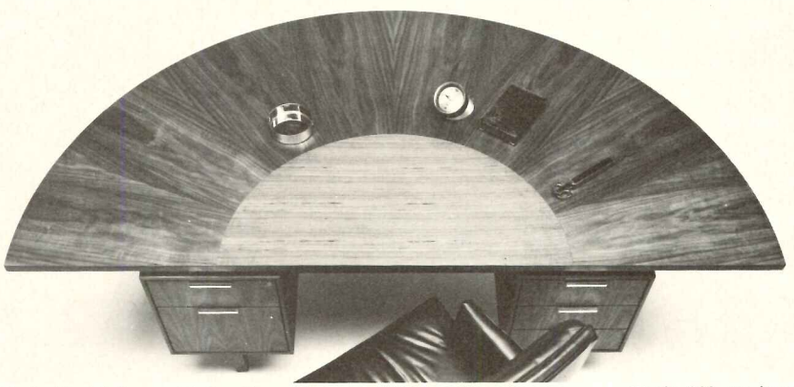
Landscape System File Cart, Domore Office Furniture, Inc. *Circle 300 on inquiry card*



Maximum efficiency work stations, Steelcase, Inc. *Circle 301 on inquiry card*

1166 armchair, Jens Risom Design, Inc. *Circle 302 on inquiry card*





Fan-top Desk, Marble/Imperial Furniture Company. *Circle 303 on inquiry card*

Electra series unit/built-in telephone, Stow/Davis. *Circle 304 on inquiry card.*

Accessory seating, Myrtle Desk Company. *Circle 305 on inquiry card*

more products on page 196

Keene announces the instant-access ceiling.

New Accesso™ Concealed Suspension System for acoustical tiles and pans

Just tilt a tile up and lift it out. Then slide it back in again. It's that easy with the new Accesso fully concealed suspension system.

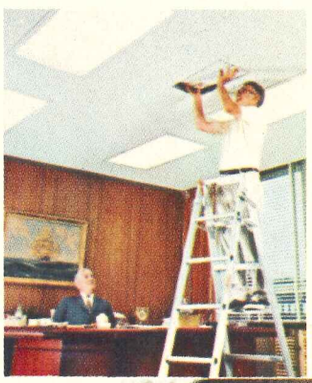
There's no need to strong-arm tiles down with a tool. Or force fragile tile end joints. Or anchor tiles into a grid so rigid the ceiling has to be dismantled for servicing overhead utilities. No need for special access panels, either—*every* Accesso tile is an instant-access panel.

And because Accesso members aren't locked permanently, you're not locked into the building module. You have absolute freedom to locate lighting fixtures and air-handling devices wherever you like—then relocate them as building needs change.

What's more, the Accesso system—exclusively—can also be used to suspend metal-pan ceilings in kitchens, laundries and other high-humidity areas. You can specify just one ceiling system for the entire building!

Any standard tile can be used in the new Accesso system, with no special machining. But for instant beauty to match instant access, specify richly fissured Styltone or other acoustical tiles from Keene. For full details, write Keene Corporation, Sound Control Division, Box 458, Trenton, New Jersey 08602.

Heublein, Inc. selected an Accesso "instant-access" ceiling system for this modern corporate headquarters building in Hartford, Connecticut.



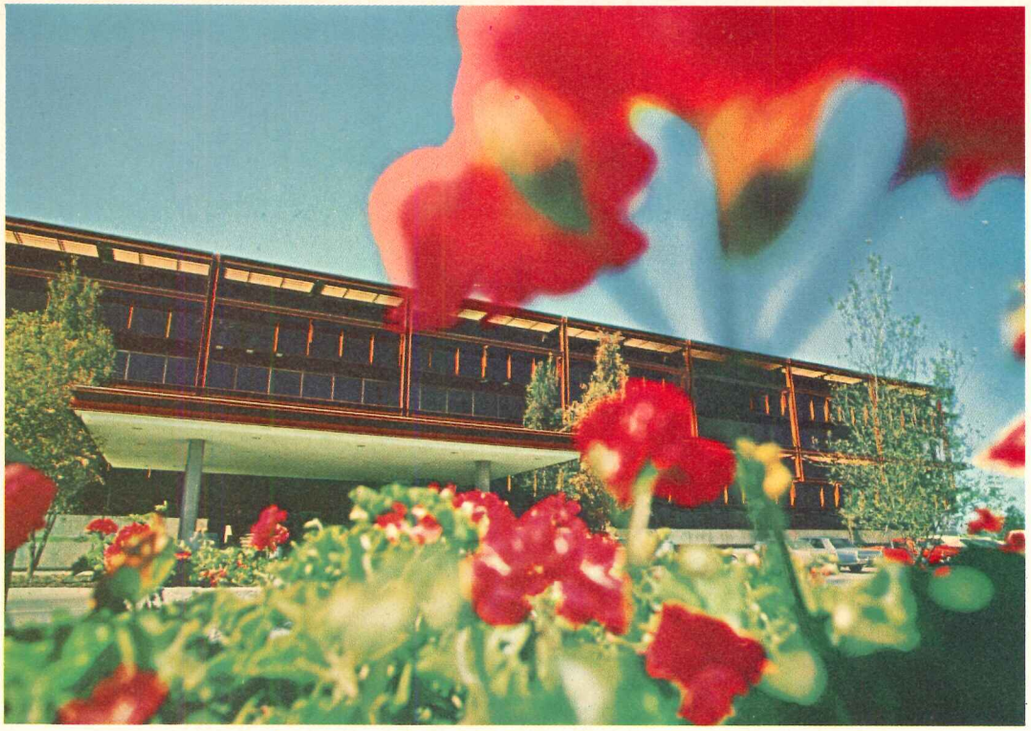
Tiles fit snugly to form a smooth, almost seamless ceiling with Accesso concealed suspension. The design here called for 12"x24" tiles, but 12" squares are equally convenient in the Accesso system. Note that overhead systems can be serviced easily without interrupting office operations. Just push a tile up and lift it out. No tools needed *with the Accesso system. And every tile is an access panel!*

KEENE
CORPORATION

SOUND CONTROL DIVISION

We've just begun to grow.

For more data, circle 82 on inquiry card



USS Cor-Ten Steel...naturally

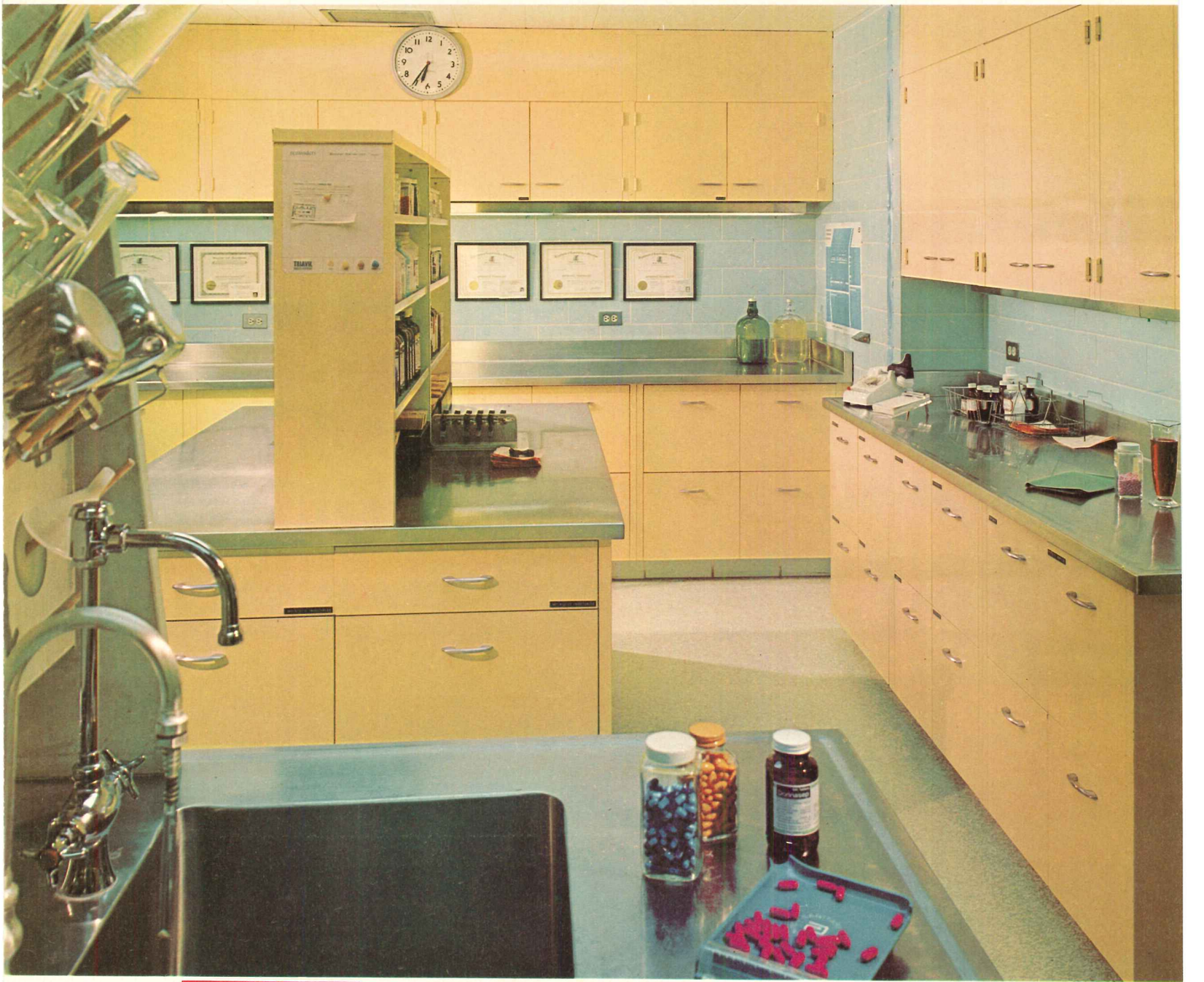
FAIRCHILD CAMERA & INSTRUMENT CORP.
HEADQUARTERS BLDG., MOUNTAIN VIEW, CALIF.
ARCHITECT-ENGINEER: SIMPSON, STRATTA & ASSOC.
SAN FRANCISCO, CALIF.

For information on bare USS COR-TEN Steel, the original weathering steel, contact a USS Construction Marketing Representative through the nearest USS sales office, check your Sweet's Architectural File, or write to United States Steel, Box 86, Pittsburgh, Pa. 15230. USS and COR-TEN are registered trademarks.

"St. Charles" HOSPITAL CASEWORK

. . . custom-blends efficiency with lasting beauty

Creating an air of spaciousness beautifully—yet efficiently—in a new hospital or remodeling project is a matter of putting the specialized experience and talent of St. Charles to work. Here is custom-designed casework to answer unique, specific requirements as in this pharmacy or any area of the hospital. For a lifetime of convenience, economy and easy maintenance, call on St. Charles.

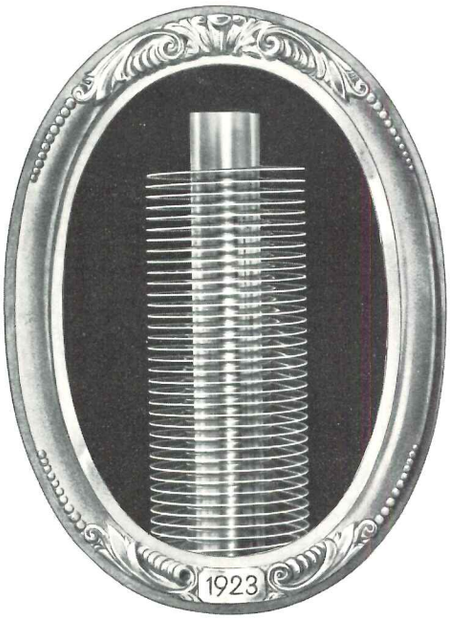


HOSPITAL CASEWORK DIVISION

St. Charles Manufacturing Company, St. Charles, Illinois

30 YEARS OF LEADERSHIP IN CREATING CUSTOM CASEWORK

Write Dept. 200 for our "St. Charles Hospital Casework" Catalog



Aerofin's helical wound fin coil is a first generation idea that's still first in heat transfer application

Amidst our fast-changing technology, it may come as a surprise that a 46-year old fin/coil design still dominates today's high-performance heat transfer systems.

Aerofin's helical fin is wound on its tube under pressure, with fin and tube ending up as an *integral* unit. Each finned tube in the coil is then free to *expand or contract independently* of its adjacent finned tube.

When such expansion/contraction occurs there's no individual tube movement restriction or interference with parallel coils. Aerofin's fin/tube contact is *positive*. Its thermal bond provides constant called for thermal performance.

Back in 1949, Aerofin introduced the smooth, tapered fin design—14 fins to the inch. The taper added tube-contact area, with the entire fin becoming effective transfer surface. And that improvement made a good coil even better.

So you can see why Aerofin and its fan system sales specialists maintain their enthusiasm for the helical wound fin coil. It's been a big factor in our 46 years of coil application problem solving—and keeping Aerofin's first generation leadership.

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

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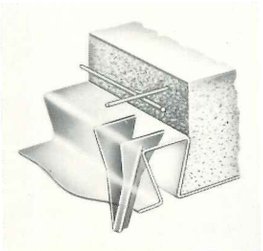
EPICORE™ IS HERE!

EPIC METALS CORPORATION
1844 Ardmore Boulevard
Pittsburgh, Pennsylvania 15221
(412) 242-8343

The new Epicore Composite Floor System brings you an exclusive 2″ depth-plus a big 24″ width that give you wider spans, thinner slabs, and lower structural steel requirements than ever before possible.

EPICORE is the answer to complex and costly conventional floor slab construction. Whether it's a plant, office, apartment, school, hospital—EPICORE makes it go up faster, easier, and at less cost.

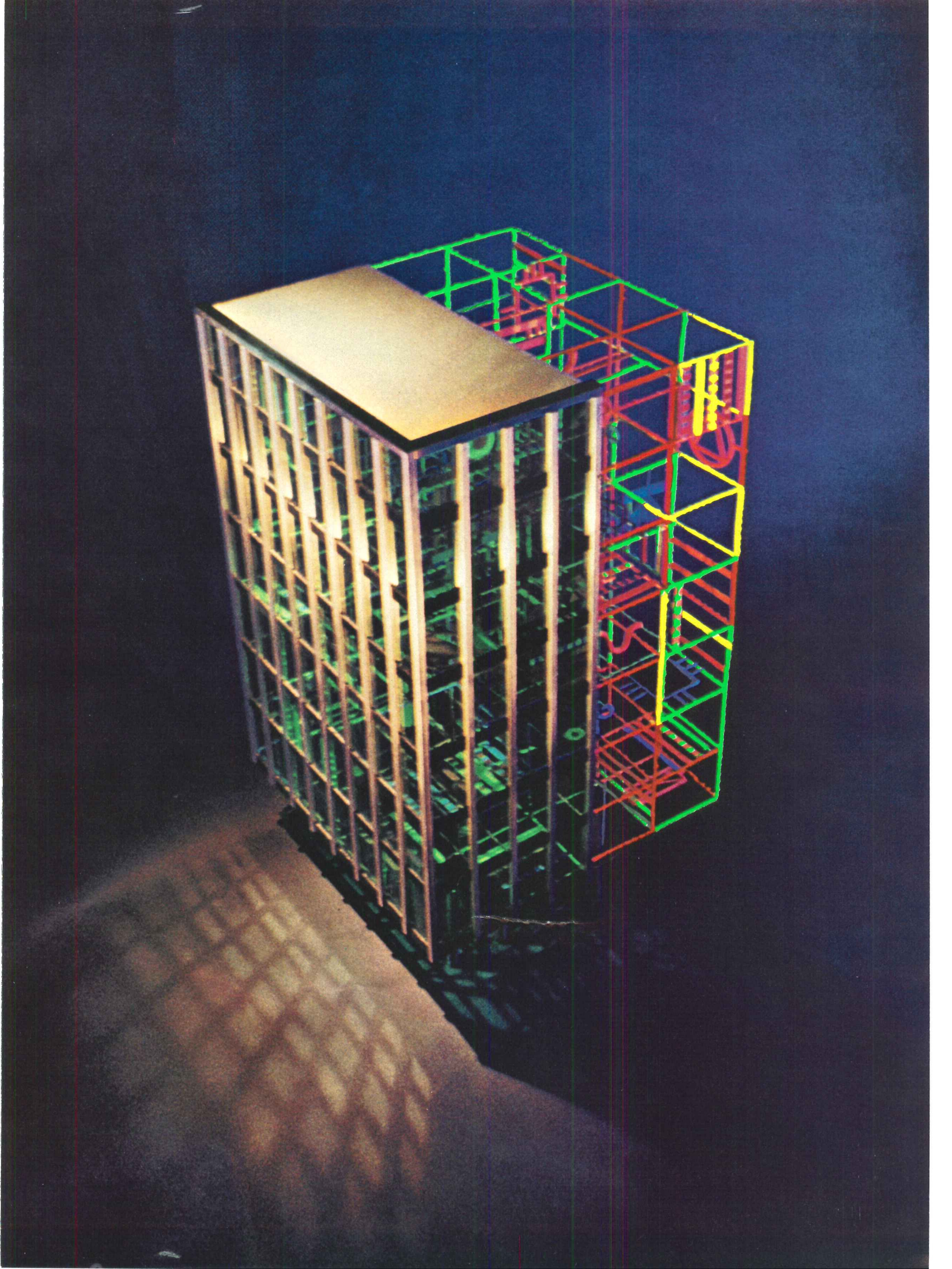
EPICORE'S 2″ depth and lateral bracing action reduce horizontal and vertical structural steel requirements. Its bottom plate acts as tension-reinforcing steel, eliminating rod reinforcement and saving on concrete. The 2″-deep inverted triangular ribs key into concrete, forming a locking action unexcelled for bond strength. And, Epicore offers the industry's strongest, most flexible hanging systems for ceilings, lighting, piping, and other utilities.



Final result — a building that saves you time, labor, materials and money. Ask us today for all the facts.

For more data, circle 87 on inquiry card

For more data, circle 86 on inquiry card



Your building. More than a building. A vital, life-supporting environment, shaped by the design, energized by electricity—an Electro-environment.

Your design. More sophisticated than the last one because that's the nature of technology. Particularly electrical technology.

Your challenge. To profit from the benefits of the Electro-environment—and to make your design statement with the confidence that the industry is ready to support you.

The Qualified Electrical Contractor is ready. Ready to translate your ideas, your designs into a working, functioning reality.

Supplying, installing and maintaining the Electro-environment is his business. The Qualified Electrical Contractor advances with the state of the art.

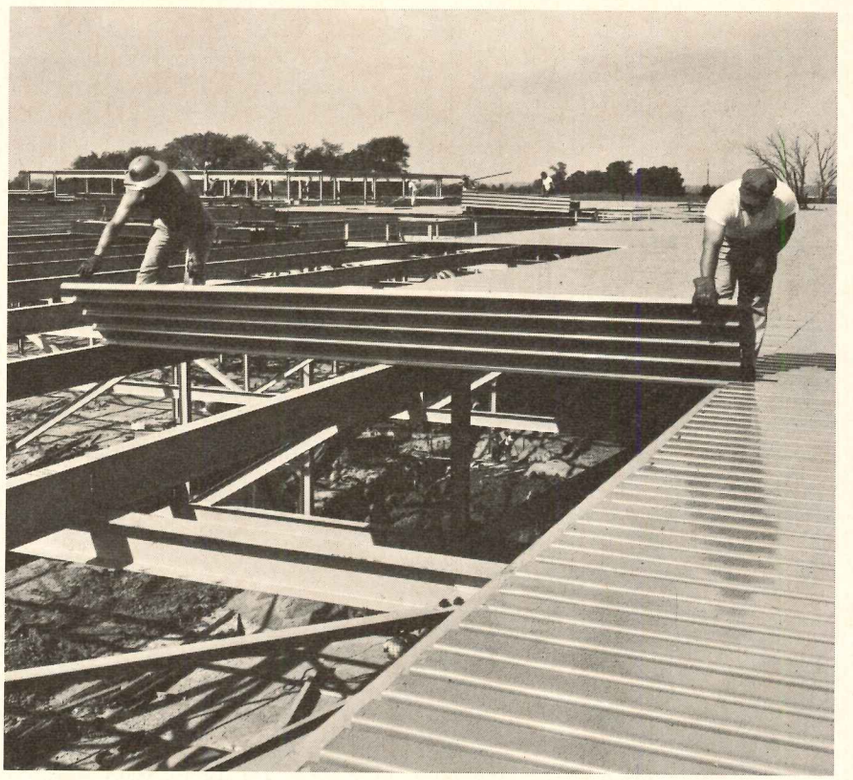
Your challenge is his challenge.

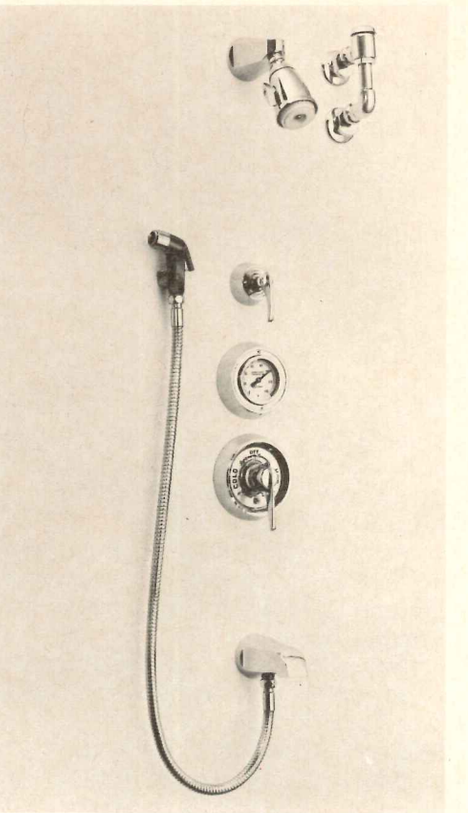
The challenge of the Electro-environment

The Qualified Electrical Contractor makes the Electro-environment work.

NECA. National Electrical Contractors Association.
1730 Rhode Island Avenue, N.W., Washington, D. C. 20036

continued from page 179





SPECIAL SHOWERS / Shown is one of dozens of combinations of shower units designed especially for hospitals and housing for the elderly. Hand spray, thermometers, adjustable sliding bars and vacuum breakers are available. Each unit includes a non-scald mixing valve. ▪ Symmons Engineering Co., Boston.

Circle 306 on inquiry card

WIRELESS THERMOSTAT / *SpaceTemp 100* is a portable, wireless, electronic thermostat that can be taken from room to room, controlling the temperature wherever it is located. The unit is said to work equally well with all systems, and the responder unit, which is fixed to the side of the heating or cooling unit, can be installed in five minutes. ▪ Kimco Laboratories, Inc., Brooklyn, N.Y.

Circle 307 on inquiry card

more products on page 218

Daniel, Mann, Johnson & Mendenhall solved the space design problem at the Leeward Community College with specifications like those below.

When you're solving ceiling design problems, it's comforting to know that Sunbeam has the broadest ceiling system line with more dimensional, architectural, environmental, and performance possibilities than any other company. The module can be any dimension you choose, to a fraction.

Sunbeam ceiling systems, like the IS1000 variation in the picture, totally coordinate all the environmental requirements: illumination, air distribution (exclusive Sunbeam Modu-Flo® Linear Airbar), sound attenuation, and spatial organization.

Write the INTERIOR SYSTEMS DIVISION, Sunbeam Lighting Company, Inc., 777 E. 14 Pl., Los Angeles, Calif. 90021 for your copy of "Concepts on the Interior Environment."

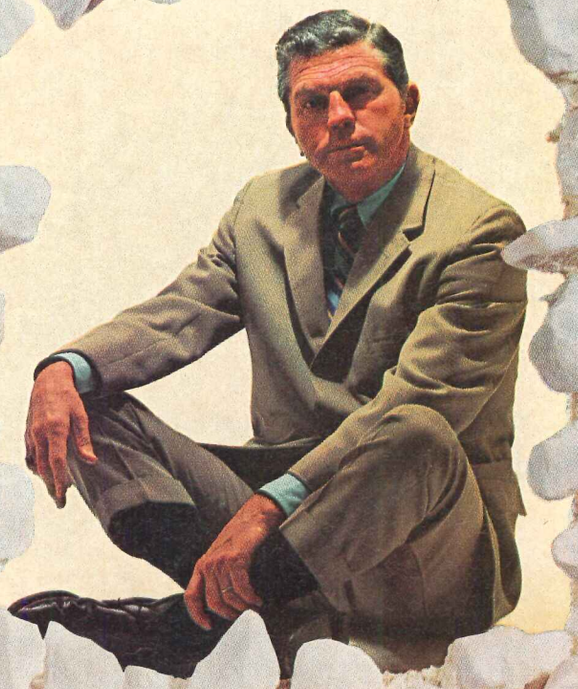
It will show you the industry's longest line of ceiling system design concepts, each of which is unlimited in application.

Sunbeam Lighting Company, Inc.
Los Angeles, Calif./Gary, Indiana

For more data, circle 89 on inquiry card

Beamed Airbars for texture and modular emphasis, 5′ x 5′ modules divided into 3 equal spaces, 5′ x 18″ heat exchanger luminaries… it could have gone a million other ways.

EXPOSED AGGREGATE?



Send for your free Desco Man.

He'll help you solve whatever coating problem you might run into. Desco maintains the most thorough research and development laboratory in the coatings industry.

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Your Desco Man will offer you a comprehensive architectural consultation service. For any coating-oriented problem. No matter how difficult.

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But the point of sending for your Desco Man is this. He is an expert on all kinds of coatings. One to satisfy literally every requirement or building problem.

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PLEASE SEND ME MY FREE DESCO MAN. He sounds like he's one better* than a walking Sweet's Catalog. My only commitment is that I promise to ask him lots of questions.

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*of course we're in Sweet's. But have you ever seen a catalog that answers all your questions?

DESCO INTERNATIONAL ASSOCIATION

DIA

For more data, circle 93 on inquiry card

When there's a cabinet meeting, Stanley will be there.

When a discussion of architectural-type cabinet hardware is on the agenda, let Stanley Hardware call the meeting to order. Stanley offers a full line of architectural cabinet hardware — pivots, hinges, pulls, knobs and catches — to meet all requirements. For clean, uncluttered lines, Stanley provides a variety of styles that are simple, yet functional. And all of these styles are designed for heavy-duty, long-life applications.

You can adjourn the cabinet meeting after specifying Stanley Architectural Cabinet Hardware. Write for our new 12 page brochure, "Architectural Cabinet Hardware," Form #H459R. The address is Stanley Hardware, Division of The Stanley Works, New Britain, Connecticut 06050.

STANLEY®

helps you do things right

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Time & Life Building, Chicago, Illinois
600,000 sq ft of Ceco Steeldome services
Harry Weese & Associates, architects-engineers
James Rudeman, structural engineer
Turner Construction Company, contractor

Ceco Steelform

experience

permits creativity with standardization

The two *are* compatible. Monolithic reinforced concrete joist construction offers incomparable design flexibility. Ceco Steelform experience delivers the economies of standardization in translating architects' design concepts into beautiful buildings.

Ceco forming services, utilizing standard Steelforms, have helped the construction industry create the architectural works of professional designers for nearly 60 years. Thousands of landmark buildings have used Ceco's standard forms to get the job done creatively. One of hundreds of current examples: Chicago's new Time & Life Building shown here under construction. Two earlier examples (among thousands): The Tribune Tower (1925) and the Sheraton-Chicago Hotel (1928), standing proudly in the background to illustrate the test of time.

Ceco covers the nation—the largest company in the concrete floor and roof forming field. Ceco Steelform Service crews are specialists, with the know-how to follow through on your design and coordinate with other trades on the job. You get a firm quotation—a guaranteed in-place cost for forming, including labor, forms, lumber costs and insurance.

Ceco can also help you with rebars, steel joists, steel doors, steel or aluminum windows, custom curtainwalls, metal lathing products and other building components. For information, write: The Ceco Corporation, general offices: 5601 West 26th Street, Chicago, Illinois 60650.

CECO

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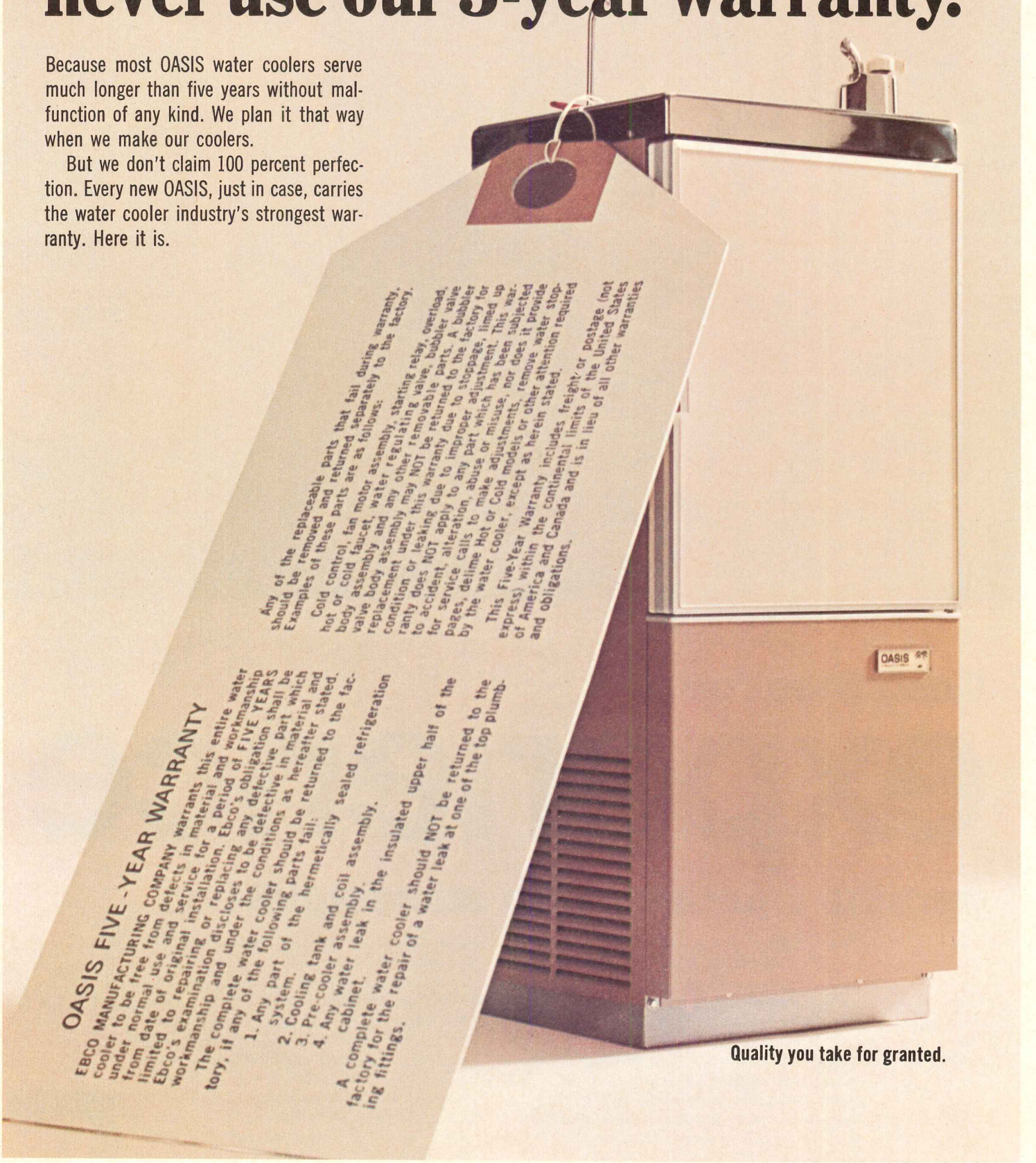
Most customers never use our 5-year warranty.

Because most OASIS water coolers serve much longer than five years without malfunction of any kind. We plan it that way when we make our coolers.

But we don't claim 100 percent perfection. Every new OASIS, just in case, carries the water cooler industry's strongest warranty. Here it is.



Quality you take for granted.

OASIS® WATER COOLERS • HUMIDIFIERS • DEHUMIDIFIERS

Distributors in Yellow Pages, see Sweets' or write: Dept. AR-21, 265 North Hamilton Road, Columbus, Ohio 43213.

For more data, circle 96 on inquiry card

For more data, circle 97 on inquiry card

If you've been holding your breath for someone to come out with a low-cost, high-quality wall system, exhale.

Now you can relax. Hauserman has developed a quality demountable wall system at a price you can afford.

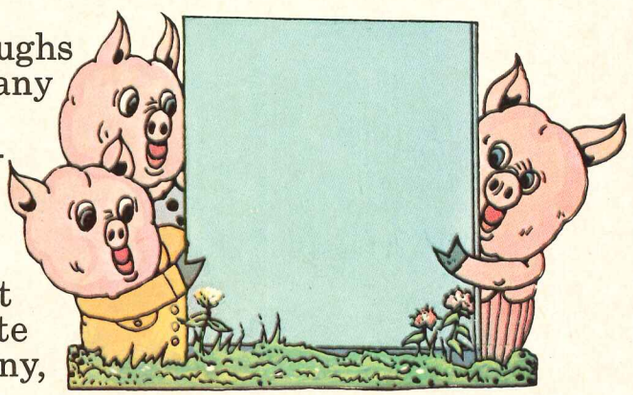
It's Ready Wall. Oh, sure, if it were only a matter of producing a low-cost wall system, we could have done that years ago. But it would have had the quality of the Little Pigs' houses of straw and wood. And the third Little Pig wouldn't have bought it at all.

So we waited until technological breakthroughs made our low-priced system feasible without any sacrifice in Hauserman quality.

Ready Wall has completely re-usable components that can be moved at a fraction of the cost of replacing non-demountable walls. And it does not fasten to the floor.

When you're ready for high-quality, low-cost walls, call your local Hauserman office or write Wall Systems Division, E.F. Hauserman Company, 5711 Grant Avenue, Cleveland, Ohio 44105.

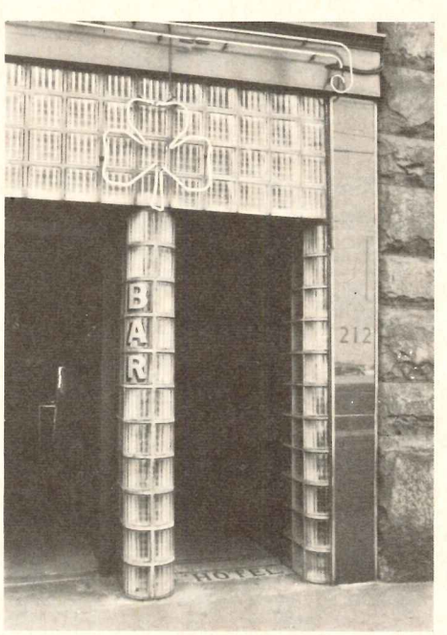
You'll breathe a lot easier.



Hauserman Ready Wall:
Wall systems you can change as your needs change.

For more data, circle 2 on inquiry card

IF YOU THINK GLASS BLOCK STILL LOOKS LIKE THIS



YOU'D BETTER

A lot of new things are happening with this modern, versatile building material: exciting designs, innovative uses in walls and striking sculptured effects adding new dimension to today's buildings.

Pittsburgh Corning Intaglio III glass wall units were chosen for major portions of the perimeter wall at Bancroft Center in Berkeley, California. The architect, John H. Ostwald, created a grill-like effect with the circular patterned exterior while providing attractive natural light for the interior of the stores in this shopping center. A feeling of openness was maintained without loss of space.

PC Intaglio units are available in six unique patterns with glass and masonry textured surfaces. This offers almost limitless design possibilities in the aesthetic use of dimensional wall effects.

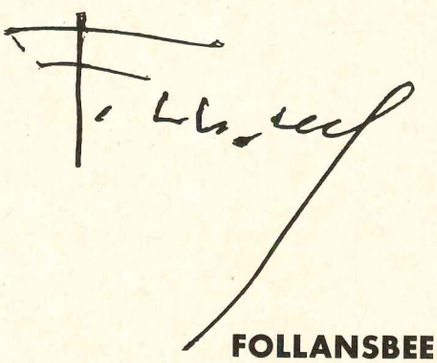
For a closer look at PC Intaglio and new Cameo glass units, or Sculptured Glass Modules, write for our catalog: Pittsburgh Corning Corp., Dept. AR-109G, One Gateway Center, Pittsburgh, Pa. 15222.

FRANK LLOYD WRIGHT

1869–1959

During this centennial of Frank Lloyd Wright's birth when his unparalleled contribution to modern architecture is being honored throughout the world, we are indeed proud to reprint his critical evaluation of Follansbee Terne.

"Imaginative new conceptions in architecture can frequently trace their origin to a basically simple idea. One of the oldest types of roofing, Terne metal, thus lends itself to many dramatic new applications in the contemporary idiom. Because of its inherent adaptability in both form and color, Follansbee Terne permits the visible roof area to become a significant part of structural design. Thus by re-discovering and re-interpreting a time-tested material, we make out of the very old the very new. I have furthermore found Terne superior to other roofing metals in economy, color-adherence, heat-reflection, permanence, workability, and low coefficient of expansion."



FOLLANSBEE STEEL CORPORATION Follansbee, West Virginia

For more data, circle 103 on inquiry card

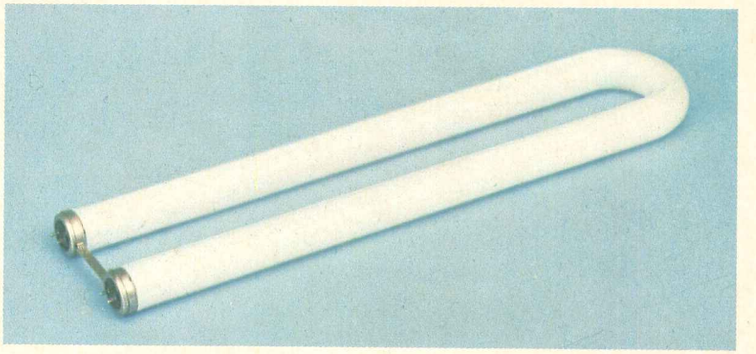
Bright idea

Corridor-installed Bradley Washfountains make supervision a snap, save money in schools! They get students out of toilet rooms quickly. There's no reason for loitering and possible horseplay. And one teacher can supervise wash-up and monitor the corridor at the same time. What's more, Washfountains serve up to 8 people with one set of plumbing connections. So they reduce installation costs up to 80%. In 36 and 54-inch diameter circular and semi-circular models. Available in widest choice of colors and materials. Corridor-installed Washfountains. A bright idea you can use—from Bradley! For complete details, see your Bradley representative. And write for latest literature. Bradley Washfountain Co., 9109 Fountain Drive, Menomonee Falls, Wisconsin 53055.

from Bradley!

BRADLEY

For more data, circle 104 on inquiry card



One great idea

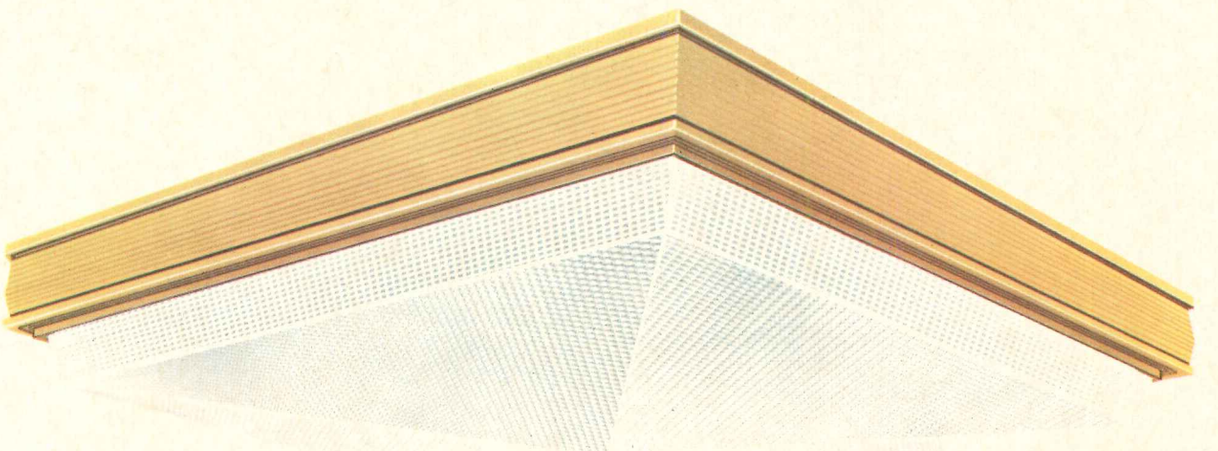
Now there's a way to put all the exciting advantages of 40 watt U-tube fluorescent lamps to work in a new decorative 2′ modular. U-LUME from Benjamin.

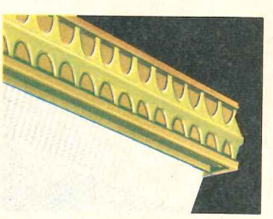
Benjamin engineers designed U-LUME with adaptability and appearance in mind. They began with a 20-gauge steel housing that fulfills UL requirements for low-density ceilings—one that takes any make of 40W U-lamp.

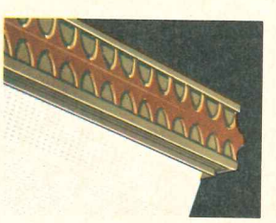
They trimmed it with stylish-extruded aluminum, finished in soft gold or brown suede (or standard white). Then they added an optional, decorative, snap-in panel of impact-resistant material to further enhance the appearance.

Finally, HOLOPHANE was commissioned to design an optically perfect Controlens for the modular. U-LUME is a brilliant idea wherever decorative modular lighting is needed. And best of all, U-LUME can be shipped complete with lamps. For more information about U-LUME, write Benjamin Products, Thomas Industries Inc., 207 E. Broadway, Louisville, Kentucky 40202.

deserves another







THOMAS INDUSTRIES
BENJAMIN PRODUCTS

For more data, circle 105 on inquiry card

THIS FILE IS ONE FOR THE BOOKS.

Or more precisely, our new bookcase is one for the files. This unusual and flexible unit is from the TAG Collection. It enables you to put Agatha Christie and Accounts Receivable in their proper place. And get either extra file or storage space (take your pick) right near your now-uncluttered desk.

In addition to convenience, you get extra peace and quiet because the file (like all vertical surfaces in the TAG Collection) is covered with sound-absorbent Artitex. Artitex looks like velvet, wears like iron and turns harsh noises into the kind of silence you can really work in.

The TAG Collection was designed to function best in the toughest place—the open office. That's why it functions best in every kind of office. Like all Art Metal furniture, it looks beautiful and works beautifully. Write for more information and the name of your nearest dealer.

TAG (The Task Administrative Group). A new kind of furniture for the new way of doing business.

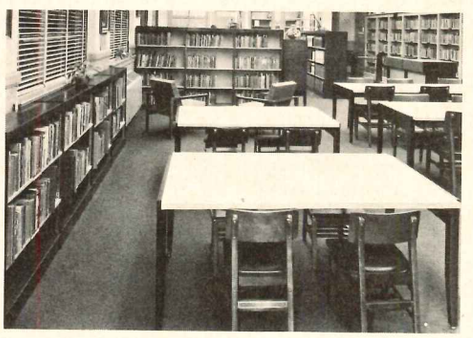
ART METAL
JAMESTOWN NY

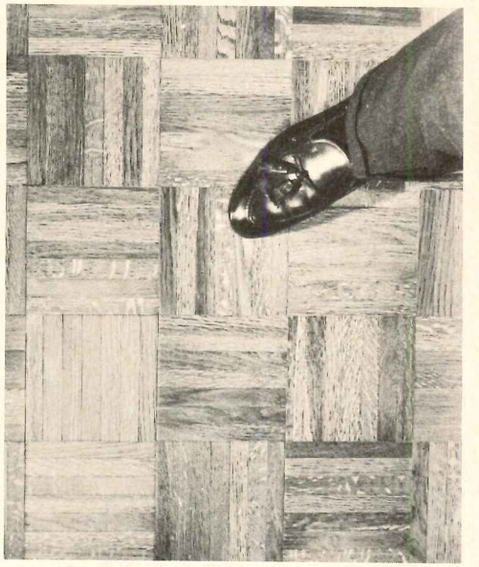
For more data, circle 106 on inquiry card

continued from page 196

LIBRARY FURNITURE / *Solara 700* furniture includes carrels to replace small study tables and provide privacy and facilities for audio-visual aids; apronless tables; and card files with tough plastic trays and increased card space without increased file size. ▪ John E. Sjostrom Company, Inc., Philadelphia.

Circle 308 on inquiry card





FLOORING / "The world's largest commercial nuclear irradiator," with a capacity of 5,000,000 curies of cobalt 60, will be used to produce *Gammite,* an irradiated wood/plastic parquet flooring that looks like wood, but does not require periodic waxing or other resurfacing or finishing. ▪ Radiation Machinery Corporation, Hanover, N.J.

Circle 309 on inquiry card

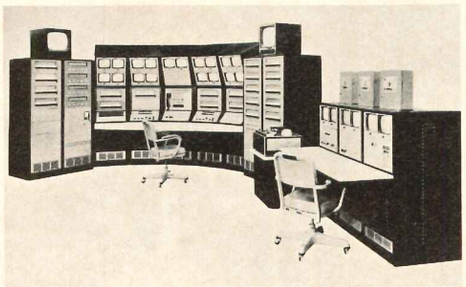
ENVIRONMENTAL CEILING / A total environmental ceiling system installed in the new addition of Loyola University's library is said to have provided a single solution to the various problems of light, air, and partitioning. The *Tec IV* ceiling was designed by Barry & Kay, Inc., Chicago architects, and William T. Brookman, consulting engineers. The cost was $3 per sq ft fully installed and equipped with lamps. The ceiling may be varied (i.e., designed as a coffered ceiling; partitionaire beams available in different materials and color combinations. ▪ Luminous Ceilings Inc., Chicago.

Circle 310 on inquiry card

SCHOOL CARPETING / Shown is carpeted corridor at Benton Junior-Senior High Schools, an educational complex in Fowler, Ind., where 10,000 square yards of sound-reducing carpet were installed. The carpet had proved so successful in experiments

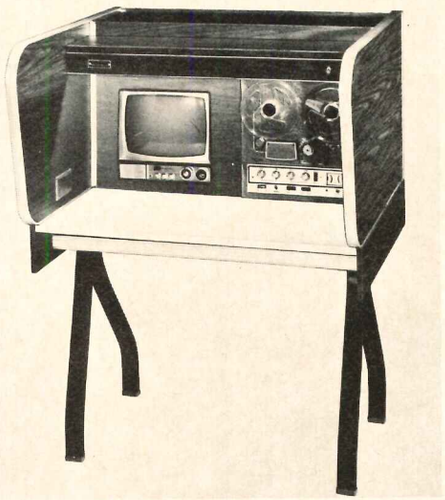
that doors were left off all classrooms and study areas in the new complex. This resulted in an additional lowering of noise—that of opening and closing doors—and actually allowed free access to all but offices and conference rooms, where privacy was desired. ▪ Ozite Corporation, Chicago.

Circle 311 on inquiry card



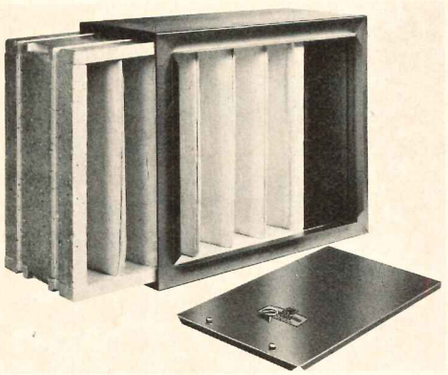
SECURITY SYSTEM / One of the world's largest and most complex security systems for a public building guards the new 60-story headquarters of the First National Bank of Chicago. An elaborate control console with television monitoring screens will operate round-the-clock to detect any intrusions, violations or fires in more than 1,000 locations throughout the building. ▪ Mosler, Hamilton, Ohio.

Circle 312 on inquiry card



STUDY CARRELS / All school levels from primary to college may make use of a wide range of carrels because of the variety of table top heights and student position sizes available. There are various possible arrangements from the single unit position to multiple positions per row. Back-to-back rows, wall mounted and rosette arrangements are all possible. ▪ Audio Visual Products, Inc. Wichita, Kan.

Circle 313 on inquiry card

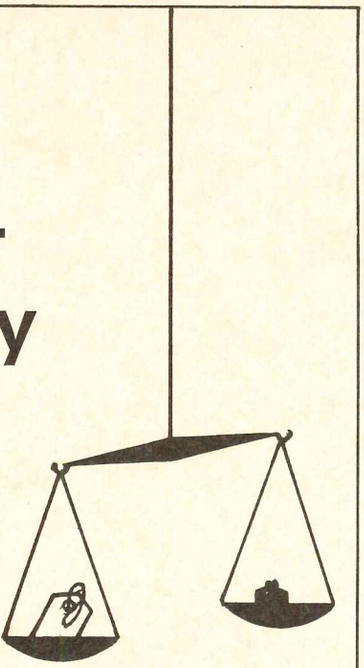


AIR FILTER / A high-efficiency air filtration unit can be adapted to fit most existing warm air and central air-conditioning systems. The *U.S. Vanguard Filter* requires no plumbing or electrical connections and has no moving parts. Under normal conditions, the filter arrests 98 per cent of all dust and pollen. ▪ United States Register Company, Battle Creek, Mich.

Circle 314 on inquiry card

more products on page 228

Sure the price tag is heavier ...but only to save you money!

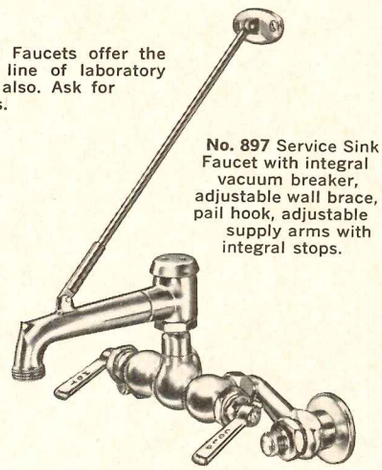


We do put extra metal, extra plating, extra care into Chicago Faucet bodies. For one reason alone: We expect them to last for years and years.

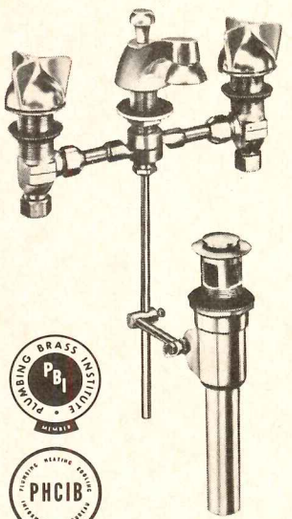
You see, Chicago Faucet design gathers all operating parts into one replaceable unit. This is unusual first because it closes with the pressure—works easier, stays leak-free longer. Then when service is needed you just drop in a spare unit, finish repairs at the bench. Best of all, if ever necessary you can completely renew the operating heart without disturbing the body or connections.

Does this Chicago Faucet idea really work? Can it promise to save you money? Ask anyone who bought Chicago Faucets 20, 30 or even 50 years ago.

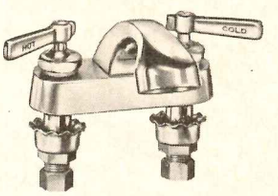
Chicago Faucets offer the biggest line of laboratory fittings also. Ask for catalogs.



No. 897 Service Sink Faucet with integral vacuum breaker, adjustable wall brace, pail hook, adjustable supply arms with integral stops.



No. 1746-E15 Widespread Lavatory Fitting with pop-up waste, in Classic pattern. Available with spray, plain or aerator spouts.



No. 967 Spray Head Lavatory Faucet, for today's public washrooms. Reduces splash and water waste, permits washing in clean running water.

PLUMBING BRASS INSTITUTE PBI MEMBER

PHCIB

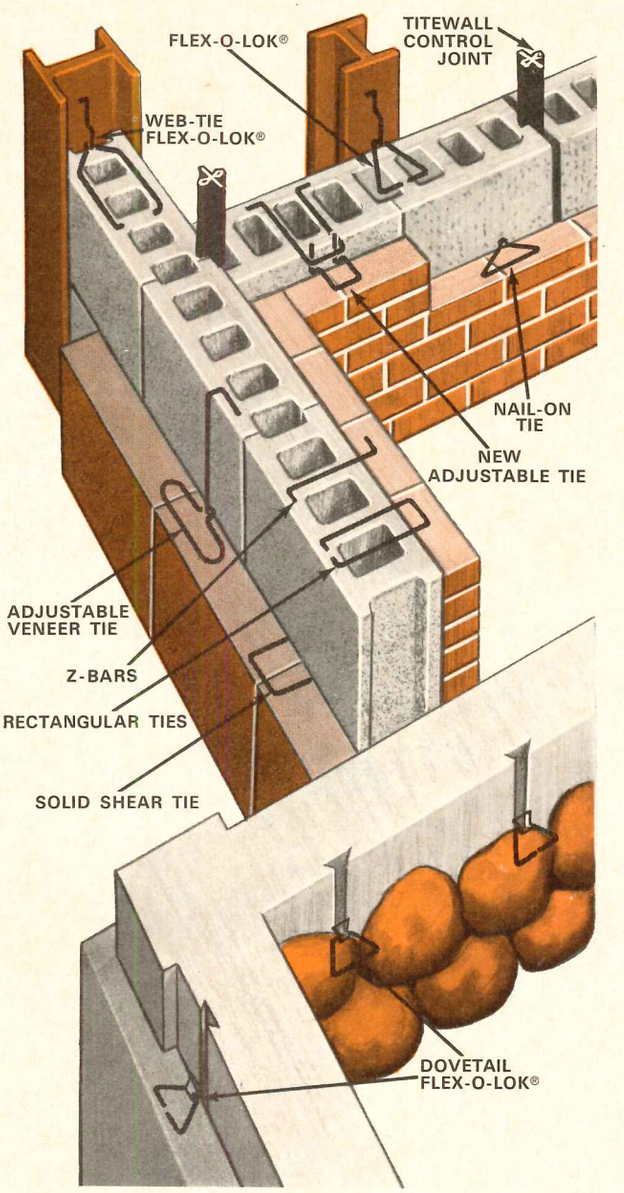
CHICAGO FAUCETS®

LAST AS LONG AS THE BUILDING

THE CHICAGO FAUCET CO., 2100 S. Nuclear Drive, Des Plaines, Ill. 60018

(A Suburb of Chicago)

For more data, circle 108 on inquiry card



AA FLEX-O-LOK® wall systems and AA wall ties assure greater ease of construction plus STRENGTH!

AA FLEX-O-LOK® wall anchorage systems provide complete vertical and horizontal flexibility, easy installation, reduce wall cracking, and remain securely tied laterally for maximum wall strength. Adjustable ties are available in various lengths to fit 4, 6, 8 and 10" block. FLEX-O-LOK and AA wall ties are just a few of the many AA quality reinforcements designed, through research, to do your specific job best . . . and at a savings too. Let AA solve your special wire problems.

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AA WIRE PRODUCTS COMPANY

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Carpet of HERCULON® takes all the unconventional abuse the busiest convention can give it.

Carpet of HERCULON* olefin fiber will give conventioneers the V.I.P. treatment. It'll take the heaviest traffic and still look beautiful. Won't absorb stains or soil and is amazingly easy to clean. Hotels and motels find HERCULON dependable, so, think what great service a carpet made of HERCULON will give you at home—or in the office. It will give you long life at a low price.

For more information, contact Fibers Merchandising, Hercules Incorporated, Wilmington, Delaware 19899.

*Hercules registered trademark.

HERCULES

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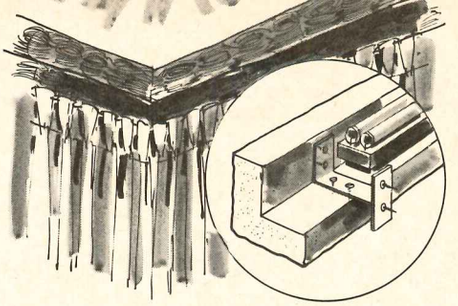
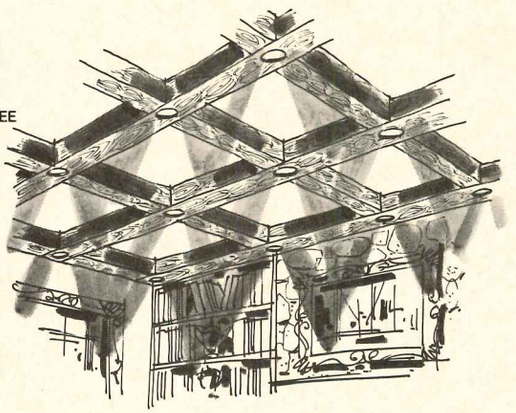


Indirect & Spot Lighting Beams

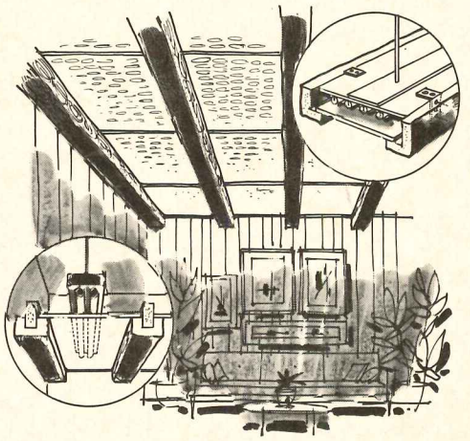
Valance Lighting Beams

GENUINE LITE-BEAM

YOUR GUARANTEE OF QUALITY. *LOOK FOR IT!*



Look what you can do with low cost LITE-BEAMS®



Suspended Ceiling Beams

LITE-BEAMS. Very beautiful. Very practical. Very inexpensive.

Hand-hewn beauty that lasts indoors and out. Applied in mere minutes to any vertical, horizontal or overhead surface. LITE-BEAMS.

Cut them with a knife. Saw them. Nail or drill them. Balance them on one finger. (An 8-foot length weighs less than 4 pounds!)

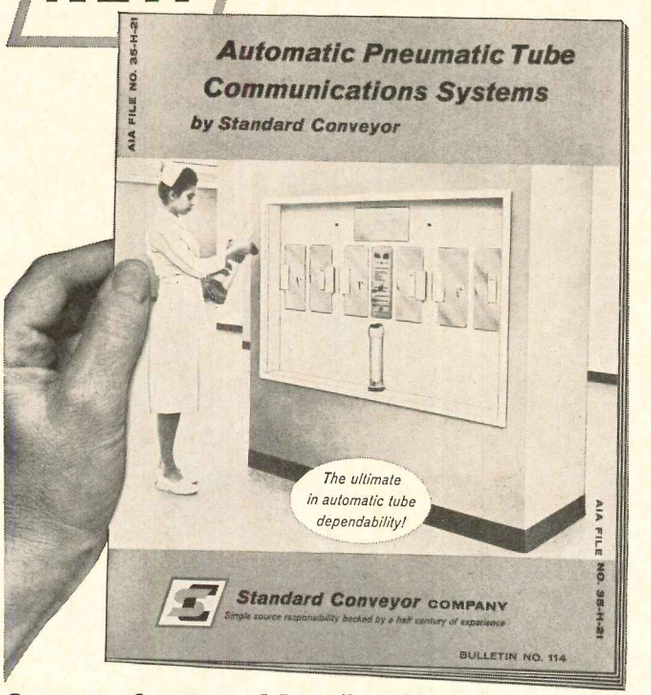
LITE-BEAMS. Wings for your imagination. Pleasure and profit for years.

923

LITE-BEAMS, *Division of Urethane Fabricators, Inc.*
Haddon Avenue & Line Street, Camden, N.J. 08103

For more data, circle 111 on inquiry card

NEW ***All you need to know about***



Get your free copy! Describes, illustrates new type automatic tube systems featuring greater dependability, quieter operation. 12 pages. ***Standard Conveyor Co., 312-K Second St., North St. Paul, Minn. 55109.***

For more data, circle 112 on inquiry card

NEW

FIAT

MOP SERVICE BASIN CUTS COSTS—IMPROVES MAINTENANCE

- Easier to handle and install
- Stainproof/stays cleaner
- Molded under heat and extreme pressure for super strength.

Now you can have upgrade janitor's closets or maintenance rooms. MOLDED-STONE® from Fiat makes this mop service basin modern, attractive and fully functional, with greater utility and cleanliness. Features self-draining mop shelf, molded integral; cast brass drain; stainless steel dome strainer and lint basket; crash-proof, extra-thick shoulders that need no protective cap. Super-strong MOLDED-STONE® cuts weight to 20% of masonry, provides a smooth, easy-to-clean surface.

See Sweets $\frac{25c}{Fi}$ or write for specifications. Dept. FA 109

FIAT PRODUCTS DEPARTMENT
FORMICA CORPORATION
4614 Spring Grove Ave. • Cincinnati, Ohio 45232

For more data, circle 113 on inquiry card

Fire codes insist.
Underwriters' Laboratories approve. But you hold the bag if it doesn't look good. So we offer two contemporary Wire Glass designs to give you some aesthetic elbow room. Above, Diamond Weld® Polished. For specifics on the other one, write Libbey-Owens-Ford Company, 811 Madison Ave., Toledo, Ohio 43624.

L-O-F HI-PERFORMANCE GLASS

LOF GLASS

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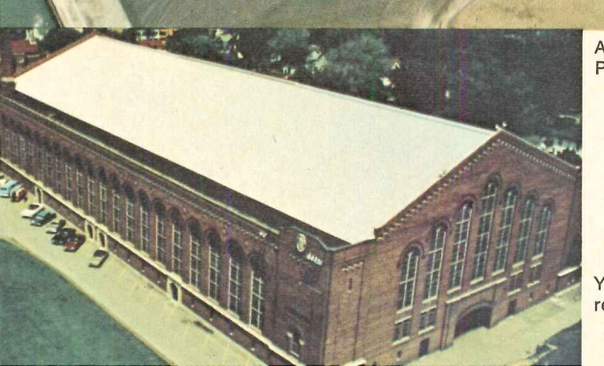
Merrill College, University of California at Santa Cruz: Worley K. Wong, Architect F.A.I.A., John Cambell A.I.D. 200 squares with Fluoropon finish.

Belmont Park Race Track: Arthur Froelich, F.A.I.A. & Associates, architects. 2740 squares.

Army Street Pier Terminal, San Francisco Port Authority, owner and A.E. 8700 squares.



Yost Field House, University of Michigan, re-roofing. 470 squares.

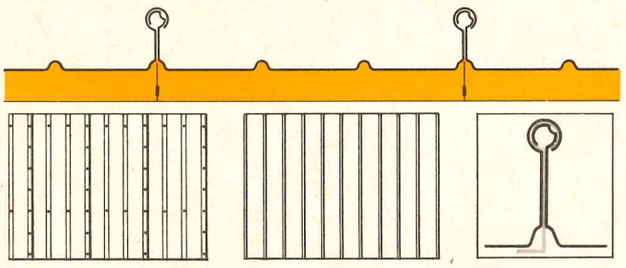
Zip-Rib® roof is long on looks ...zero on holes.

You'll see the beauty of Kaiser Aluminum Zip-Rib roofing and siding on campuses, theatres and commercial buildings.

Continuous ridge-to-eave panels—up to eighty feet long. Architecturally pleasing, bold rib lines. Non-rusting aluminum for lasting protection against staining. Color added for aesthetics.

. . . And you'll see no holes. Because there aren't any. Every Zip-Rib panel is "zipped" tightly to the next. No side laps. No end laps. No through fasteners. This all-metal system eliminates thousands of potential leakpoints. The Zip-Rib configuration plus extra strong alclad 3004 aluminum permits wider purlin spacing, reserve load bearing strength and excellent corrosion resistance. Long lengths go up fast too. For details, see Sweet's Architectural or Industrial Construction Catalog. For more information, contact J. J. Larkin, Room 1619, Kaiser Center, Oakland, California 94604.

NEW ZIP-RIB INSULATED panels are factory foamed with Safecore™ urethane achieving Flame Spread Rating of 25. One inch of Safecore provides a winter U factor of 0.10 and 0.08 in summer.



CONVENTIONAL ROOF, at left, averages 55 fastener holes per square, plus end laps. ZIP-RIB ROOF has no holes, no end laps.

Exclusive Zipper tool closes tops of ribs into tight, continuous seam. Anchor clips locked within rib withstand up to 900 lb. pull.

For more data, circle 115 on inquiry card

Butler County
Community Junior College
El Dorado, Kansas

Architects: Schaefer-Schirmer
& Eflin

Roof: Designer Early American
by Ludowici-Celadon Co.

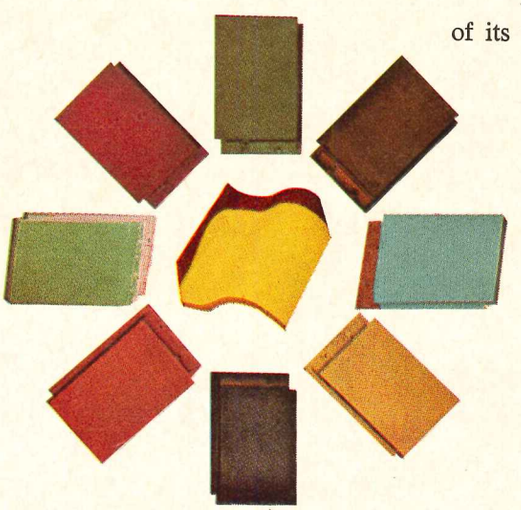
Award-winning Architects Choose

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

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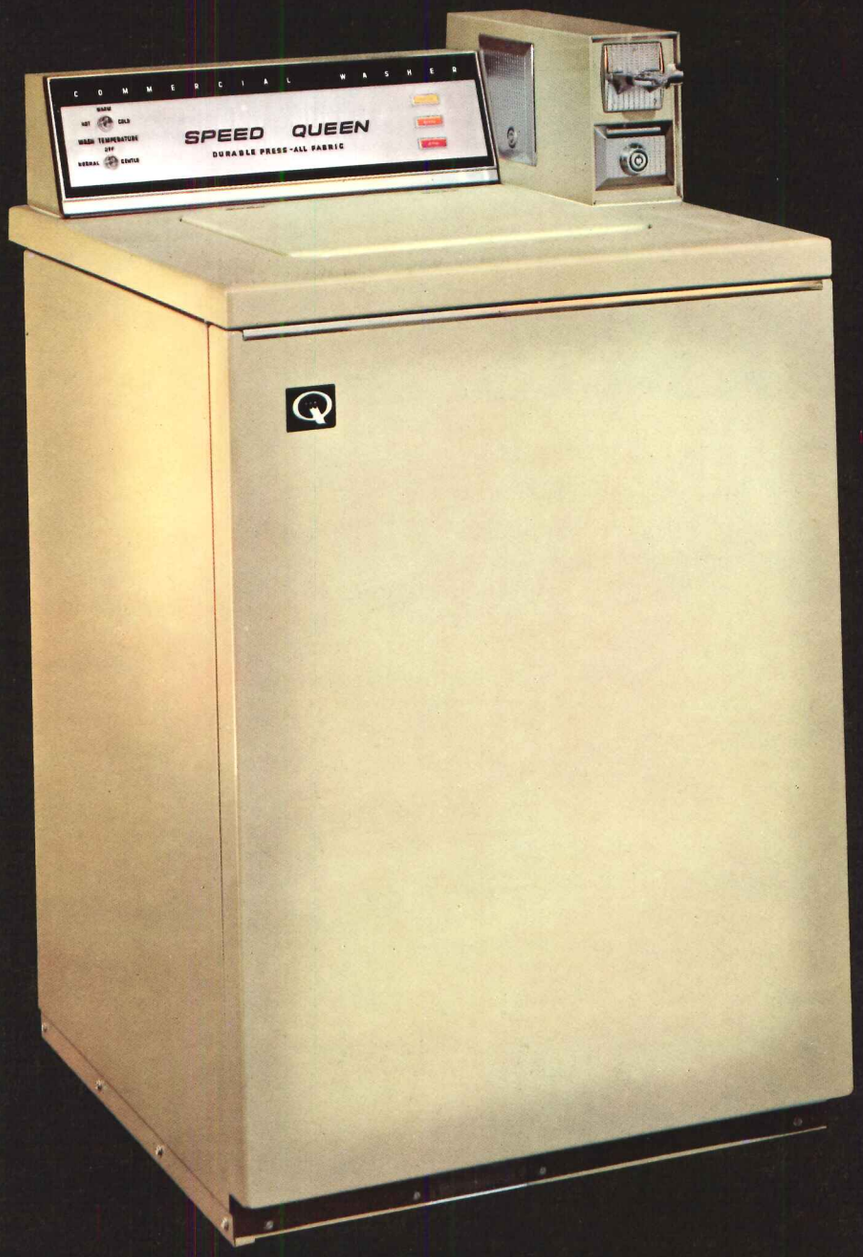
For more data, circle 117 on inquiry card

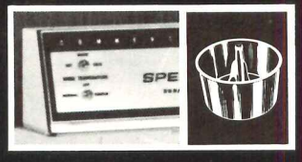


Speed Queen can assist you in planning a coin-operated laundry room. **NO OBLIGATION**

For dormitories, low and high rise apartments.

SPEED QUEEN®

DIVISION OF McGRAW-EDISON COMPANY



Send the coupon for a free brochure which can help you plan a laundry facility. Room layouts, equipment sizes, wiring, venting are discussed.

Mr. E. W. Jess Manager, Commercial Department AR 10
SPEED QUEEN, Ripon, Wisconsin 54971
Mr. Jess, please forward your laundry room design brochure.

☐ I would like a Speed Queen representative to call.

Name and title

Firm name

Address

City State Zip Code

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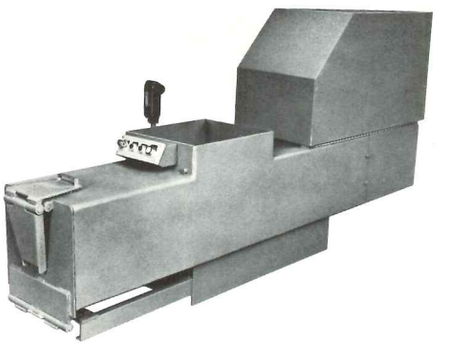
continued from page 219



REFUSE COMPACTION / A new machine is designed to solve the waste disposal problems in apartment buildings, hospitals, schools and restaurants. According to the manufacturer, the *25K Refuse Compactor* is the first system to combine a) widely variable compaction ratios, b) automatic re-cycling to clear even the most unusual obstructions and c) production of a completely sanitized, easily handled block of packaged refuse. In one hour the machine can crush more than 1800 lbs of varied waste including glass, cans, thick bundles of paper and vegetable matter. ▪ International Dynetics Corporation, Greenwich, Conn.

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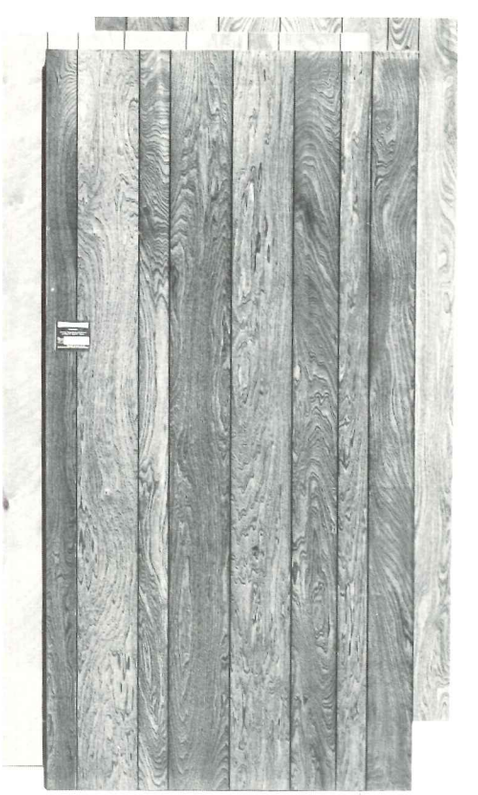
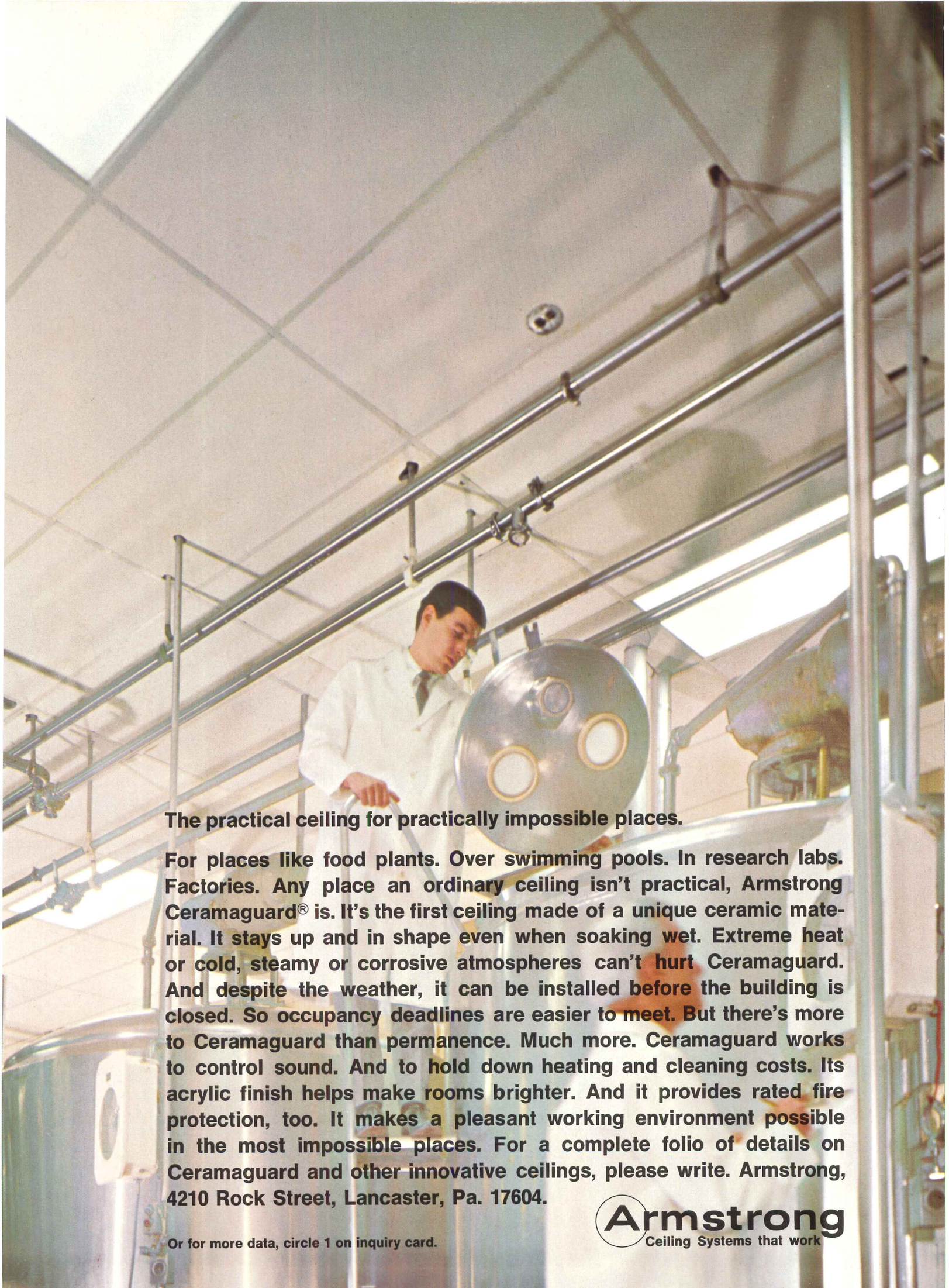


PANELING / A medium-priced line of random V-grooved paneling in birch, elm, ash and oak has a durable semi-gloss finish. The 3/16-in. thick, 4-ft by 8-ft panels are available in a wide variety of finishes. ▪ Anchor Sales Corporation, Brooklyn, N.Y.

Circle 316 on inquiry card

more products on page 234

For more data, circle 118 on inquiry card



The practical ceiling for practically impossible places.

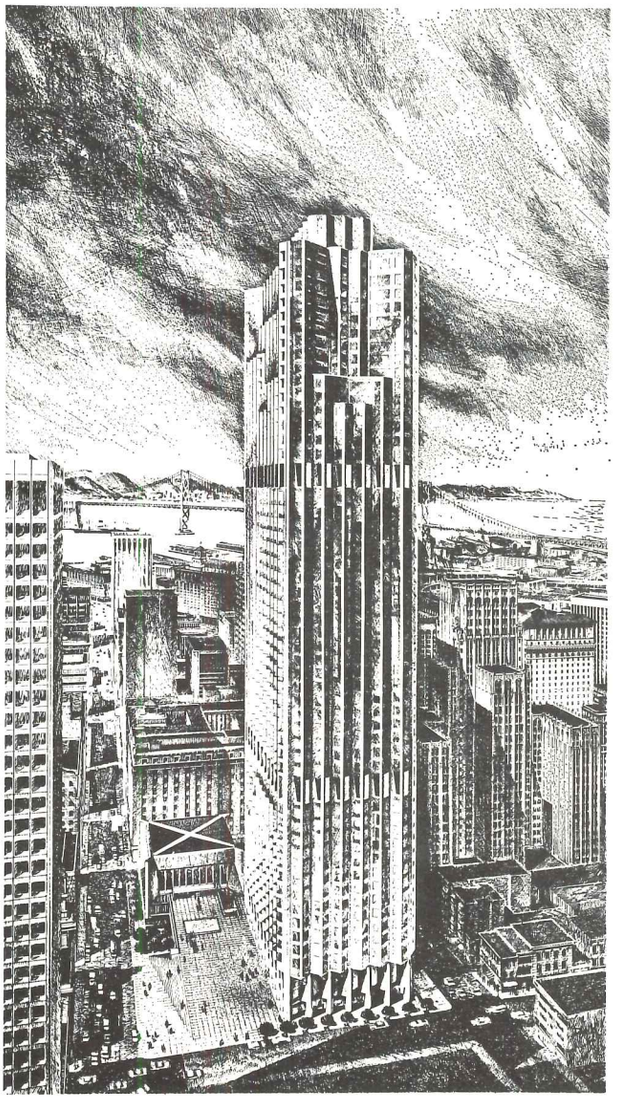
For places like food plants. Over swimming pools. In research labs. Factories. Any place an ordinary ceiling isn't practical, Armstrong Ceramaguard® is. It's the first ceiling made of a unique ceramic material. It stays up and in shape even when soaking wet. Extreme heat or cold, steamy or corrosive atmospheres can't hurt Ceramaguard. And despite the weather, it can be installed before the building is closed. So occupancy deadlines are easier to meet. But there's more to Ceramaguard than permanence. Much more. Ceramaguard works to control sound. And to hold down heating and cleaning costs. Its acrylic finish helps make rooms brighter. And it provides rated fire protection, too. It makes a pleasant working environment possible in the most impossible places. For a complete folio of details on Ceramaguard and other innovative ceilings, please write. Armstrong, 4210 Rock Street, Lancaster, Pa. 17604.

Armstrong
Ceiling Systems that work

Or for more data, circle 1 on inquiry card.

NEW WORLD HEADQUARTERS BANK OF AMERICA

San Francisco, California



Bank of America, the world's largest bank, will consolidate its headquarters in this imposing new headquarters building in San Francisco. This new structure will be the tallest building west of the Mississippi. It will serve as world headquarters for the more than 1000 branches and offices the Bank of America maintains throughout California and 67 foreign countries.

JOINT VENTURE ARCHITECTS:

WURSTER, BERNARDI & EMMONS, INC.

SKIDMORE, OWING & MERRILL

CONSULTING ARCHITECT:

PIETRO BELLUSCHI

GENERAL CONTRACTOR:

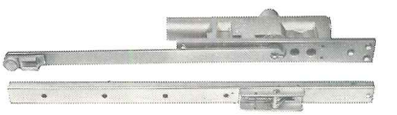
DINWIDDIE-FULLER-CAHILL

DOOR CONTROL WITH NORTON® DOOR CLOSERS

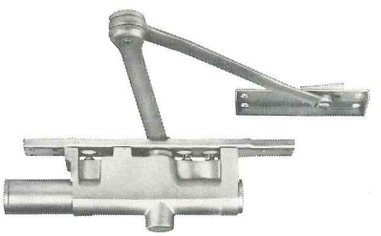
HARDWARE CONSULTANT:

GEORGE R. SILVERS

CALIFORNIA BUILDERS HARDWARE CO.

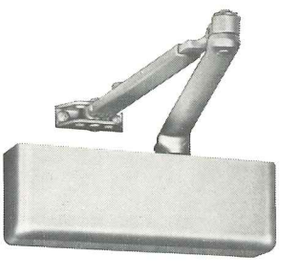


NORTON SERIES 2900
for complete concealment above the door.



NORTON SERIES 900
for complete concealment within the door.

NORTON SERIES 1900
for complete concealment within the overhead transom bar.



NORTON SERIES 7000
with covers to match door paneling or door hardware.

1175

EATON YALE & TOWNE INC.

NORTON DOOR CLOSER DIVISION
372 Meyer Road, Bensenville, Illinois 60106
Available in Canada Norton Door Closer Division

For more data, circle 119 on inquiry card

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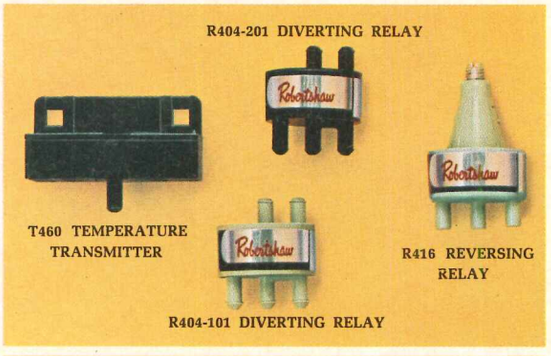
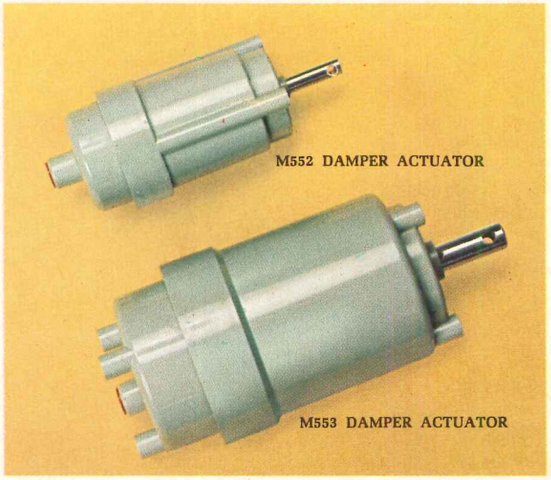
Robertshaw research tackles rising installation and servicing costs

(Actual Size)

MARK II





Robertshaw's new generation of pneumatic controls bring down mounting costs for industrial, commercial and institutional buildings:

1. Field calibration costs are eliminated. The heart of the new Mark II is a logic module that's permanently encapsulated with diaphragms and air passageways locked in solid plastic —no seals to leak. Levers and pivots are replaced by this module, permitting "unflappable" factory calibration.
2. Long life with real resistance to physical damage. Modern materials (tough polycarbonate resin, used in outboard motor propellers) are better than metal and won't corrode. The thermostat is permanently welded together, using a revolutionary new ultrasonic welding technique that eliminates the need for screws, rivets or gaskets.
3. Four years of experimentation and field testing have shown that the new controls possess extraordinary performance capabilities. The Mark II responds to temperature changes twice as fast as older pneumatic thermostats. The low mass of the miniature thermostat plus the poor conductivity of the new material does it!

Mark II's handsome face, just 2″ x 2″, matches contemporary building hardware with its satin-chrome finish, and fits beautifully on standard 2″ mullions.

Robertshaw

MR. CONTROLS

ROBERTSHAW CONTROLS COMPANY
Executive Offices, Richmond, Virginia

Complete automatic control systems engineered and installed for the air-conditioning, heating and ventilating of office, industrial and apartment buildings, schools, hospitals, hotels and stores.

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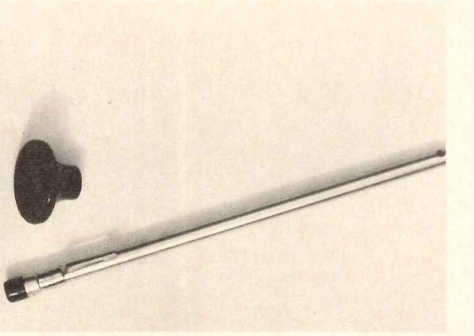
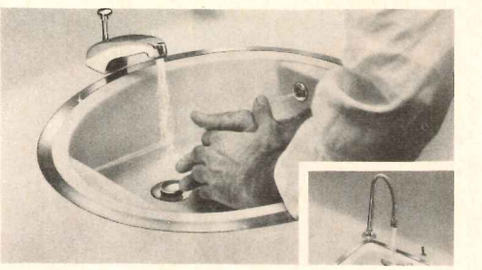
continued from page 228



MODEL VIEWING / A pocket-sized, multi-lensed *Modelscope* for viewing interiors of scale models is being sold for $125. The 7½-in.-long, ¼ in. in diameter *Modelscope Junior* has an angle view of more than 45 deg and a depth of field from 5 mm to near infinity. The instrument comes equipped with a pencil clip for the pocket and a removable eyepiece. ▪ HCI Sales Corporation, New York City.

Circle 317 on inquiry card



SANITARY SINK / Water flows automatically when hand is placed below the spigot of the *Aquatron Electronic Flow Control Sink*. Unit features preset water temperature and pressure that can be regulated. ▪ Scope: West, Inc., Los Angeles.

Circle 318 on inquiry card

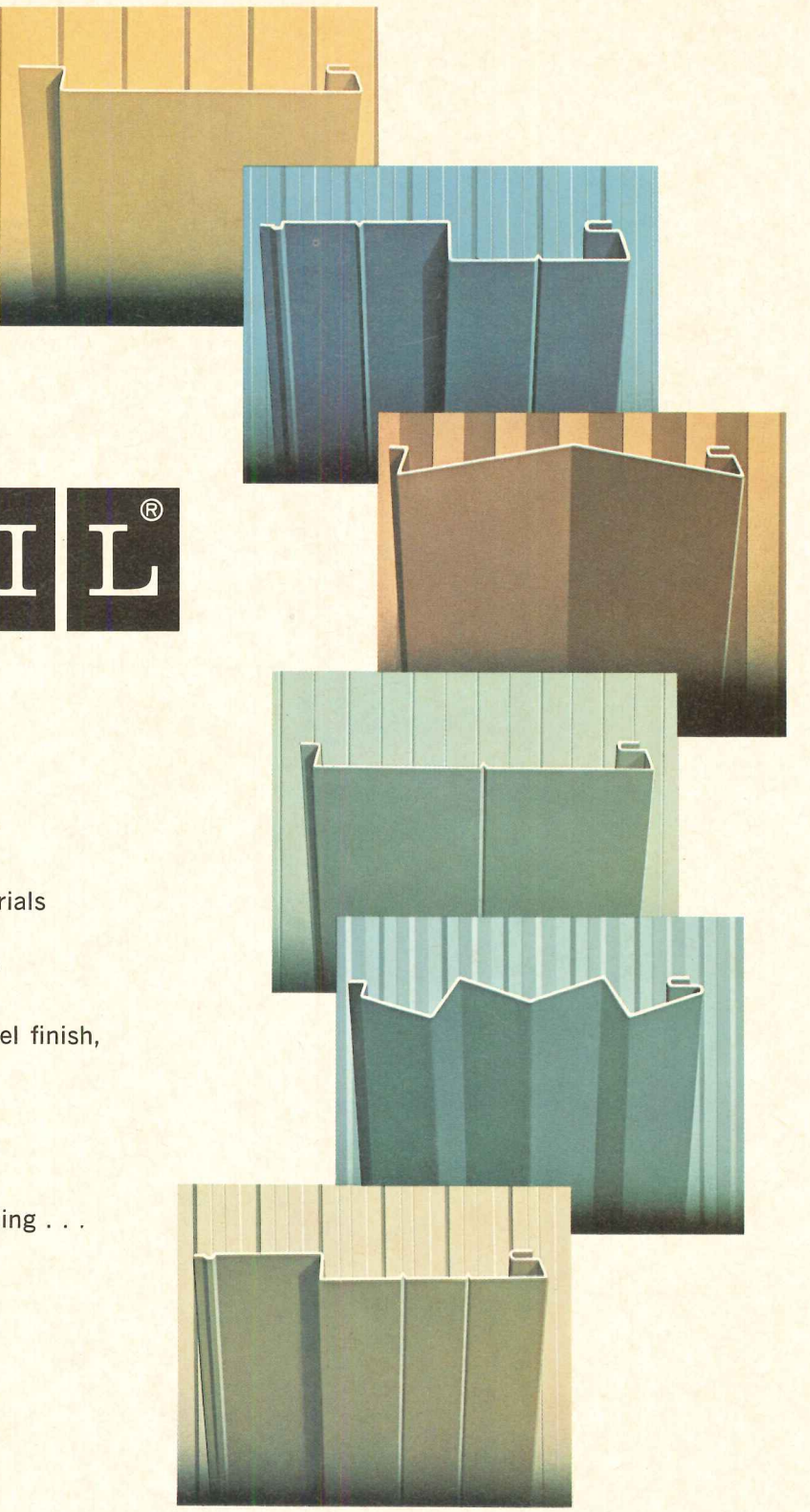
DROP-IN COUNTERLINE / Company announces its entrance into the drop-in counterline market with a complete line of appliances. The griddles, fry kettles, food warmers and hot plates are designed to fit the custom decor of a wide variety of food-service operations from coffee shops to hospitals and commercial and industrial cafeterias. Features: The elimination of the need to fabricate special angles or to drill many small holes; no grease seepage; anti-splash design on fry kettle; and *Teflon* coating on drop-in equipment. ▪ General Electric, Chicago Heights, Ill.

Circle 319 on inquiry card

Robertson has 30,112 recipes, planned to please a designer's palate!

DURASIL®

is one of the magic ingredients.



Did you know that Robertson's wide range of face and liner profiles, colors, finishes and materials offers a selection of more than 30,000 different design combinations for architectural walls?

Durasil, Robertson's silicone-polyester baked enamel finish, plays a colorful role in this presentation of design opportunities. But color is only part of the picture. Permanence is the strong point with Durasil. Factory-applied to Robertson panel shapes, Durasil's 50% silicone formula is proof against fading . . . will not chip, check, crack, blister or peel, even after years of exposure to the elements.

If you would like more information on this low-cost approach to colorful, long-lasting architectural walls, write today for your free copy of the Durasil brochure.

H. H. Robertson Company

H. H. Robertson Company
Two Gateway Center • Suite 1100M
Pittsburgh, Pennsylvania 15222

Please send me a copy of the Durasil brochure.

NAME _____

TITLE _____

COMPANY _____

ADDRESS _____

CITY, STATE, ZIP _____

For more data, circle 172 on inquiry card

* Of course it's a Haws drinking fountain

. . . a beautiful drinking fountain shouldn't be too obvious. Agreed? Carefully-sculpted to enhance your ideas . . . clad in the native splendor of cast stone (five colors, two finishes). The Haws Model 30 outdoor drinking fountain stands exquisitely in harmony with its setting . . . any setting. A fountain? It could almost pass for a work of sculpture. Yet this sly harmonizer is incomparably rugged—a fountain for all seasons, kid-proof, weather-proof, freeze-proof! Write **Haws Drinking Faucet Co., 1441 Fourth St., Berkeley, Calif. 94710.**

The drinking fountain that looks better than a drinking fountain—Haws Model 30 in vivid stone.

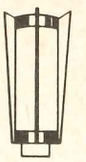
HAWS® **DRINKING FOUNTAINS**

For more data, circle 125 on inquiry card

SPIRES

In unit - molded fiberglass for extra strength and durability. High gloss finish. Graceful designs . . . built to inspire, impress, endure.

From Wiedemann, the originator of the fiberglass baptistry . . . and leading Baptistry Specialist . . . comes quality that is unsurpassed in the church building and remodeling field.

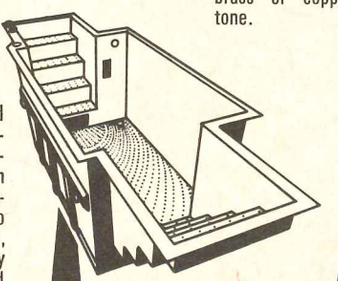


LIGHTING

Aluminum church lighting in five styles, to compliment any style of architecture. Available in natural aluminum or anodized in gold, brass or copper tone.

BAPTISTRIES

Over 150 shapes and sizes of fiberglass baptistries available. FIBERSTRESSING is an exclusive process of interlaminate bridging to give superior strength, lasting beauty. Fully automatic heaters and many optional features available.



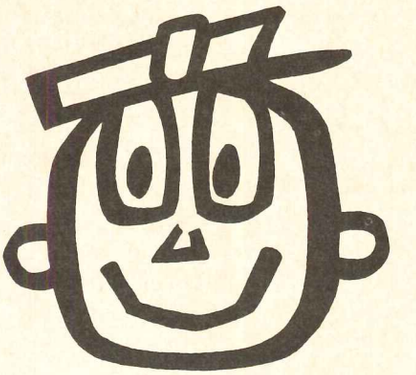
Write for free information kit
See Sweet's
Architectural File
(S)

Wiedemann Industries, Inc.

P.O. Box 672, Muscatine, Iowa 52761 • Phone: 319-263-6642

For more data, circle 126 on inquiry card

I WANT YOU



TO USE ZIP CODE

So that you can have faster, more efficient mail service.

If you slide a door you should specify EPCO

Tracks and Guides of extruded aluminum or plastic for 1/8, 3/16, 1/4, 5/16, 1/2 and 3/4 inch sliding glass and panel doors

In the 42-page EPCO Catalog there is a track to serve your particular needs. They are designed for neat appearance, smooth, silent operation and have no parts to wear, rust or corrode. Several mounting options are possible and installation is quick and easy.

THE ENGINEERED PRODUCTS CO.
P.O. BOX 108 FLINT, MICHIGAN 48501

ENGINEERED PRODUCTS CO. AR469
P.O. Box 108 Flint, Michigan 48501

☐ Please send complete catalog. ☐ Please have your representative call.

NAME_____

FIRM_____

ADDRESS_____

CITY_____ STATE_____ ZIP_____

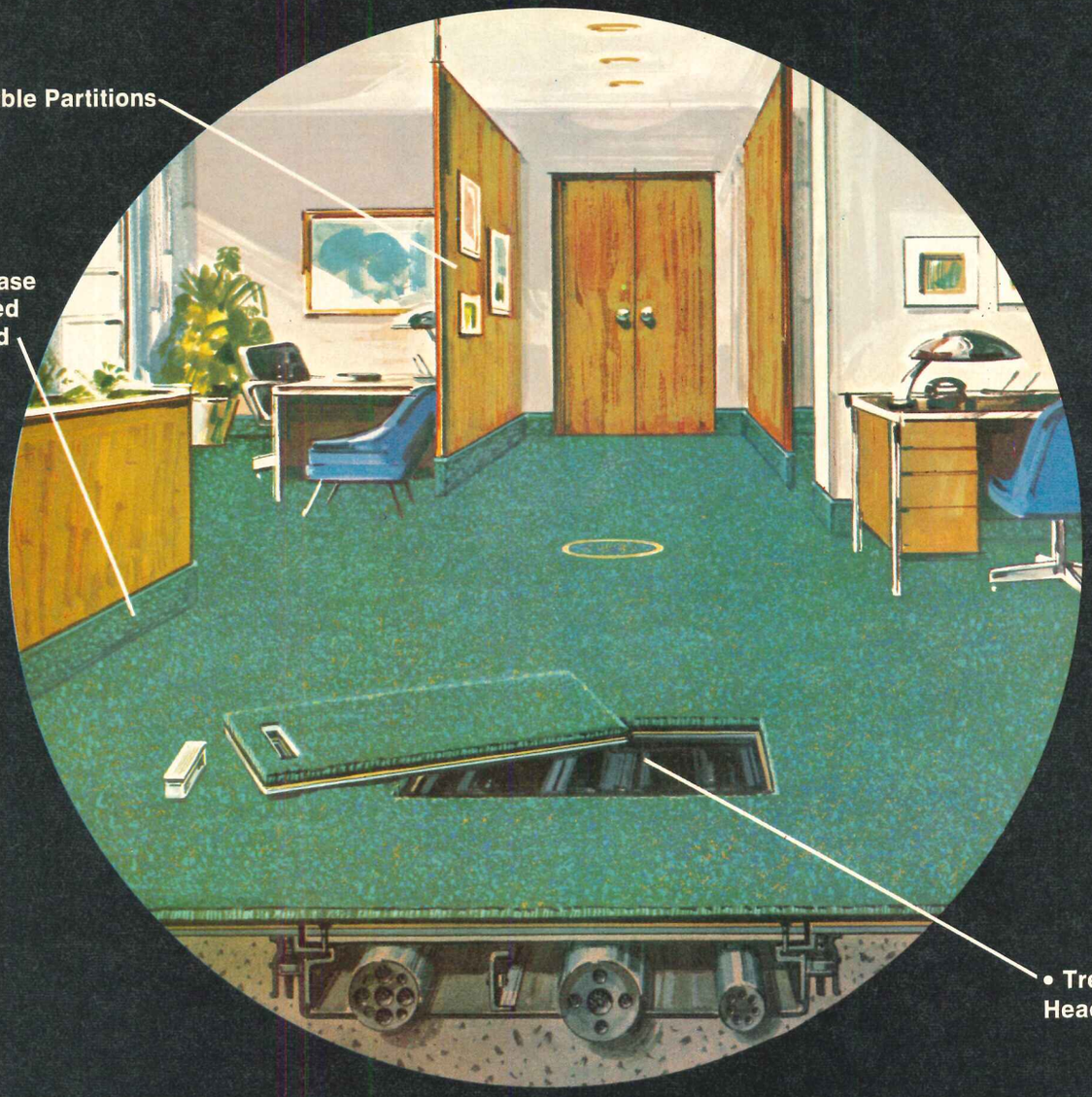
SEE SWEET'S CATALOG

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.

For more data, circle 127 on inquiry card

All systems are go

Carpet Systems from CCC with Acrylic 73... engineered to integrate with all architectural systems.



Carpeting is no longer a simple matter of beautiful floors. The challenge today is to integrate carpet with the total architectural environment.

CCC has this very complex problem down to a precise system—the unique Acrylic 73 Carpet System. We analyze every element involved—right from the blueprints. Recommendations are based on design, function and maintenance factors.

The result of this planning: a carpet system that lets you move partitions, gives you easy access to sub-floor systems and includes built-in static control to end the annoyance of shock.

Acrylic 73 is a total performance carpet. CCC's exclusive blend of 70% long-staple Creslan® acrylic and 30% long-staple commercial nylon combines unequalled stamina with design versatility and appearance retention.

CCC is the world's largest manufacturer of commercial and institutional carpet systems. We would like to tell you more about what we can do for you. Why not send in the coupon today.

CYANAMID Creslan® LUXURY ACRYLIC FIBER

Creslan is a product of American Cyanamid Company, Wayne, N.J.

CCC

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

Attention: Mr. Walter Brooks
Please send me a copy of the booklet, "Office Carpet Systems, with Acrylic 73". ☐ Please have a CCC consultant contact me. ☐

Name_____

Company_____

Address_____

City_____ State_____ Zip_____

For more data, circle 128 on inquiry card

New Facad is so sculptured, it's almost sculpture.

There's a new way to incorporate sculpture and textural relief in building design. It can be done with Facad®.

This sculptured facing system of easy-to-install thin, molded, reinforced cement panels can be used as a total wall element; as spandrel panels, fascias, balcony panels or soffits.

Sturdy, but lightweight (2 pounds/square foot), Facad is easy to handle. It comes in sizes up to 4′ x 10′. No special skills or extra structures are required. Installation is within the competence of carpenters or glazers.

Facad is durable. Because it is all mineral, it is completely incombustible.

Facad comes in a series of standard panel surfaces, one of which is shown above. It can also be custom molded to afford architectural designers a broad choice of texture, color and pattern.

For complete information, call the Architects Service Representative at your nearest U.S. Plywood office or write:

U.S. Plywood

A Division of U.S. Plywood-Champion Papers Inc.
777 Third Avenue, New York, N.Y. 10017

For more data, circle 129 on inquiry card

Automation savings aren't just for skyscrapers . . . with Honeywell's standardized systems.

You might think automation is practical only in the biggest buildings. Not so. Take the Honeywell System 2, for example. It's an inexpensive little automation package made up of standardized components. And it can grow as your client's building grows, just by adding another off-the-shelf module.

Basic System 2 control panel is a mini-automation center, little over 5 feet high and about half that in width and depth. Yet, it can start and stop equipment, detect equipment failures, monitor temperatures, monitor all kinds of alarms. And save enough in operating costs to pay for itself in 3 years!

The 3-year payoff, of course, is the most important feature of a Honeywell Automation Center of *any* size. That's a fact, based on 18 years of Honeywell experience in automating over 4,000 other buildings.

Want building automation help? Send for our planning guides: Honeywell, Commercial Division, G2118, Minneapolis, Minnesota 55408.

Honeywell
AUTOMATION

For more data, circle 130 on inquiry card

OFFICE LITERATURE

For more informaton circle selected item numbers on Reader Service Inquiry Card, pages 293-294

HARDWARE FOR SCHOOLS / A 12-page booklet on architectural hardware for schools and colleges covers a wide variety of items. ▪ Emhart Corporation, New Britain, Conn.

Circle 400 on inquiry card

POST TOP LUMINAIRES / Two eight-page booklets present luminaires for residential and commercial installations and for roadway and area lighting. ▪ Joslyn Mfg. and Supply Co., Chicago.*

Circle 401 on inquiry card

CARPET / A pocket-size booklet titled "The Character of Today's Carpet" is designed "primarily as an inspiration and factual background on carpet in general." Subjects include a brief review of major carpet fibers and a discussion of trends in color. ▪ Berven Of California, Fresno, Cal.

Circle 402 on inquiry card

SPACE-FRAME SYSTEM / A structural roofing and canopy system is the subject of a 12-page bulletin. Of particular interest are the expandability and demountability features of the system. ▪ Unistrut Corporation, Wayne, Mich.*

Circle 403 on inquiry card

CEILING SYSTEMS / *Trilogy,* "the definitive method of selecting and communicating the specific requirements of an environmental illuminated ceiling system" is now available in a two part, four-color guide. ▪ Neo-Ray Lighting Systems, Inc., New York City.

Circle 404 on inquiry card

AUTOMATED DOORS / "Why Your Doors Should Be Automated" details the "dollars and cents advantages of modern door automation." ▪ Air-Lec Industries, Inc., Madison, Wis.*

Circle 405 on inquiry card

COMMERCIAL KITCHEN EQUIPMENT / A 12-page brochure, "Design Ideas," shows examples of restaurant, cafeteria, and kitchen equipment. Featured is equipment which incorporates the pass-through cafeteria concept for maximum flexibility. ▪ Bastian-Blessing, Chicago.

Circle 406 on inquiry card

CONTROL SYSTEM / A 10-page brochure-presents the *Series 250* all-electronic system used to control flow, pressure, level or position in a variety of water, waste water, and industrial applications. ▪ BIF, General Signal Corporation, Providence, R.I.

Circle 407 on inquiry card

* *Additional product information in Sweet's Architectural File*

more literature on page 246

plaza one

Tomorrow's plaza system is in use today! There are seven other systems to complement number one—all developed for different purposes—all designed with All-weather Crete insulation. "System One" has wearing slabs sloped to drain.

These systems are being used today by leading architects throughout the nation. Why? Because no other type of insulation offers so many advantages in plaza construction. Heavy density All-weather Crete acts as an insulating cushion to protect the waterproof membrane, thus solving a failure problem often encountered in other systems. The K Factor is .46; it has excellent load bearing capabilities and can be sloped or applied level. There's other advantages too.

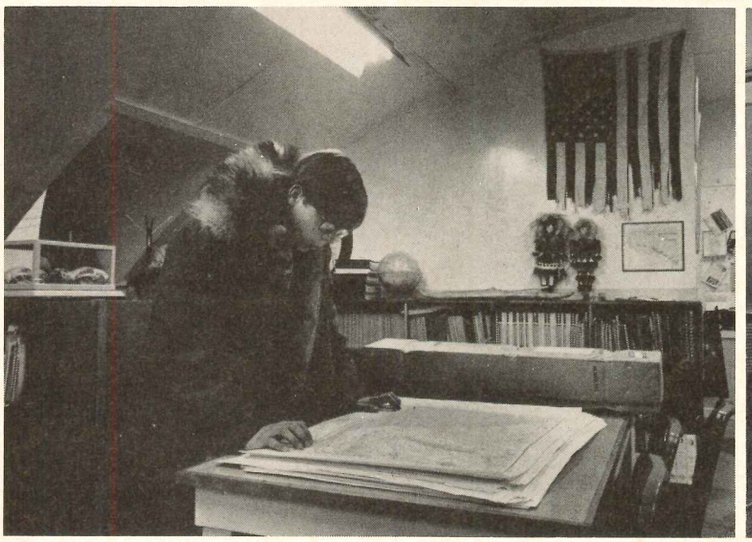
Check out "Plaza One"—Two—Three—all Eight! Write for a full color brochure complete with diagrams and specifications. (You may want to design "AWC Plaza Nine" yourself.)

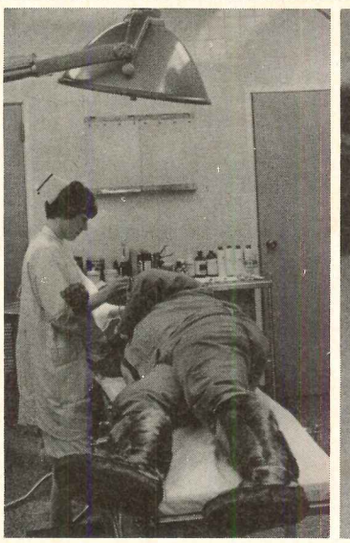
SILBRICO CORPORATION

6300 RIVER ROAD • HODGKINS, ILLINOIS 60525

CHICAGO PHONE (312) 735-3322

For more data, circle 132 on inquiry card





Northern Lights that never go out.

Barrow, Alaska, is the northernmost populated area in the U.S.A. It has at least 170 subzero days a year. Yet its 2,000 Eskimo inhabitants enjoy the inside warmth and light of other towns. And it's all supplied by Solar *Saturn*® gas turbine 750-kilowatt generator sets.

There is power for lighting homes, streets, dance floors, basketball courts, schools, the hospital and supermarket...power to run freezers, refrigerators, appliances, juke boxes.

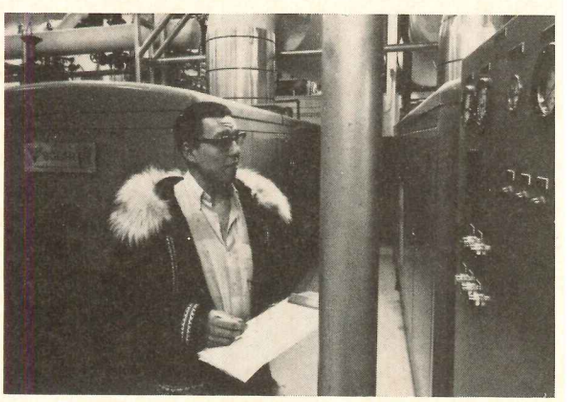
The two Solar turbine generator sets operate on natural gas, which is plentiful, and must function reliably in temperatures down to 60 below zero. As a bonus, their exhaust heat is used to produce fresh water from salt water.

A short distance from Barrow, a third Solar gas turbine set is installed at the Navy's Arctic Research Laboratory, where 200 people are engaged in basic research on plant and animal life.

The Solar 750-kw set is designed to meet requirements for a modern continuous-duty generating plant. The unit consists of an 1100 hp *Saturn* turbine and a generator mounted on a common base. The set is only 17′ long × 5′ wide × 6′ high, and weighs 18,500 lbs. Thus it is easily transportable by truck or plane... quickly and easily installed... and designed for long periods of reliable operation between overhauls.

User records have proven again and again that Solar gas turbine continuous-duty generator sets often have marked economic advantages over reciprocating-engine equipment in many applications.

If you are considering the advantage of adding continuous-duty or emergency power generation equipment to a new plant or an old one, get the facts on Solar gas turbine generators. Write: Solar, Department R-361, San Diego, California 92112.



Solar gas turbine generators at Barrow, Alaska

SOLAR®
DIVISION OF INTERNATIONAL HARVESTER COMPANY

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ARCHITECTURAL ENTRANCE SYSTEMS
FORM ATTRACTIVE FRONT . . .

. . . AND REAR OF NURSING HOME —
ALL FABRICATED LOCALLY BY THE
FENESTRA DISTRIBUTOR

ENTRANCES FEATURE ATTRACTIVE,
MAINTENANCE-FREE
FENESTRA STEEL DOORS AND FRAMES

ST. ANN'S NURSING HOME FOR THE AGED
GRAND RAPIDS, MICHIGAN
ARCHITECT — George F. Ganger & Assoc.
CONTRACTOR — DeYoung & Bagin

For NURSING HOME OWNERS Happiness is an ARCHITECT who designs with FENESTRA Steel Doors, Frames and Architectural Entrance Systems

In fact, **any** building owner is happy when his architect specifies maintenance-free Fenestra steel doors and frames. And costs are well within the ever-important budget. Creativity of the architect combined with the ingenuity of local Fenestra fabricating distributors can provide attractive, economical Architectural Entrance Systems . . . even total walls as shown above. Fenestra stocking distributors also have the most accepted drywall frames in the construction industry — Fen-Dry Frames. Add to this the handsome all-steel Fen-Fold Closet Doors and you have a complete door and frame service to compliment any modern building. And it's available locally. Here's another exciting addition that helps lower job costs. Fenestra Prefinished Doors are available now in your choice of colors . . . factory applied enamels that cover the color spectrum. The swing is to Fenestra. Call our distributor today. He's in the Yellow Pages. Also write for literature or see us in Sweet's Architectural File — 176/Fe.

FENESTRA IS LOCAL EVERYWHERE

FENESTRA
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FENESTRA
DIVISION OF THE MARMON GROUP, INC. (MICHIGAN)
ERIE, PENNSYLVANIA 16505

For more data, circle 134 on inquiry card

contnued from page 242

OPERABLE WALLS / A 12-page booklet presents color photos of some handsome installations in gymnasiums and auditoriums. In addition, a new design, the *Grille Coil-Wal*, offers an attractive means of security, traffic control, ventilation and vision in store fronts, school building corridors and small areas. ▪ New Castle Products, Inc., New Castle, Ind.*

Circle 408 on inquiry card

COMMERCIAL WASHROOM / A comprehensive catalog presents a line of "durable, quality products for the modern commercial washroom." ▪ Philip Carey Corporation, Monroe, Ohio.*

Circle 409 on inquiry card

ARCHITECTURAL FIBERGLASS / A 12-page brochure depicts the suitability of fiberglass reinforced plastics for architectural applications. The company "built the first 55-ft-diameter, four-story geodesic dome designed by Buckminster Fuller, designed and built the tooling for Monsanto's House of Tomorrow in Disneyland, fabricated the ninety umbrella-shaped coverings that comprised the Cultural Pavilion at the U.S. Exposition in Moscow (1959), and fabricated the outer shell structure enclosing the largest building ever made of fiberglass—the Bell System's pavilion at the 1964-65 New York World's Fair." Recently, architectural applications have included ceilings for churches and office buildings, large suspended lighting fixtures, skylight roof sections and modular units for "containerized oceanographic laboratories." Besides custom-molded fiberglass, the company produces a line of flat structural fiberglass-faced sandwich panels. ▪ Lunn Laminates Inc., Wyandanch, Long Island, N.Y.

Circle 410 on inquiry card

LIGHTING FIXTURES / A 72-page color book offers a broad selection of period and contemporary fixtures, including chandeliers, pendant and bathroom fixtures, indoor-outdoor lanterns, and garden and patio lighting. ▪ Diamond F Corporation, Cleveland.

Circle 411 on inquiry card

DORM FURNITURE / A 12-page brochure presents the *Pace Dorm Line Furniture* concept "that liberates dormitory room design." A typical wall has a wardrobe, desk, dressing units with shelves and drawers, and a bed that folds into the wall, but there are variations. ▪ Simmons, Chicago.*

Circle 412 on inquiry card

FURNITURE / A six-page color brochure shows several installations of butcher block furniture. The brochure describes the furniture as "equally at home in a muted, soft mood set in low key or in a come-alive modern college lounge. The designer, by determining shape, scale, size and color, blends the furniture into his over-all design." ▪ THOMPSON Manufacturing Company, Inc., Lancaster, N.H.

Circle 413 on inquiry card

TILE SYSTEM / A brochure entitled "Accessible Tile System" describes a completely accessible, concealed suspension system for acoustical tile ceilings. The system is said to meet the design requirements of a tight tile ceiling and still provide the unlimited accessibility of a lay-in ceiling. ▪ Armstrong, Lancaster, Pa.*

Circle 414 on inquiry card

BAPTISTRIES / An eight-page, two-color catalog was compiled "to assist the architect, builder and clergy in selecting the proper fiberglass baptistry." The catalog has templates of 150 styles and detail drawings of accessories. ▪ Wiedemann Industries, Inc., Muscatine, Iowa.*

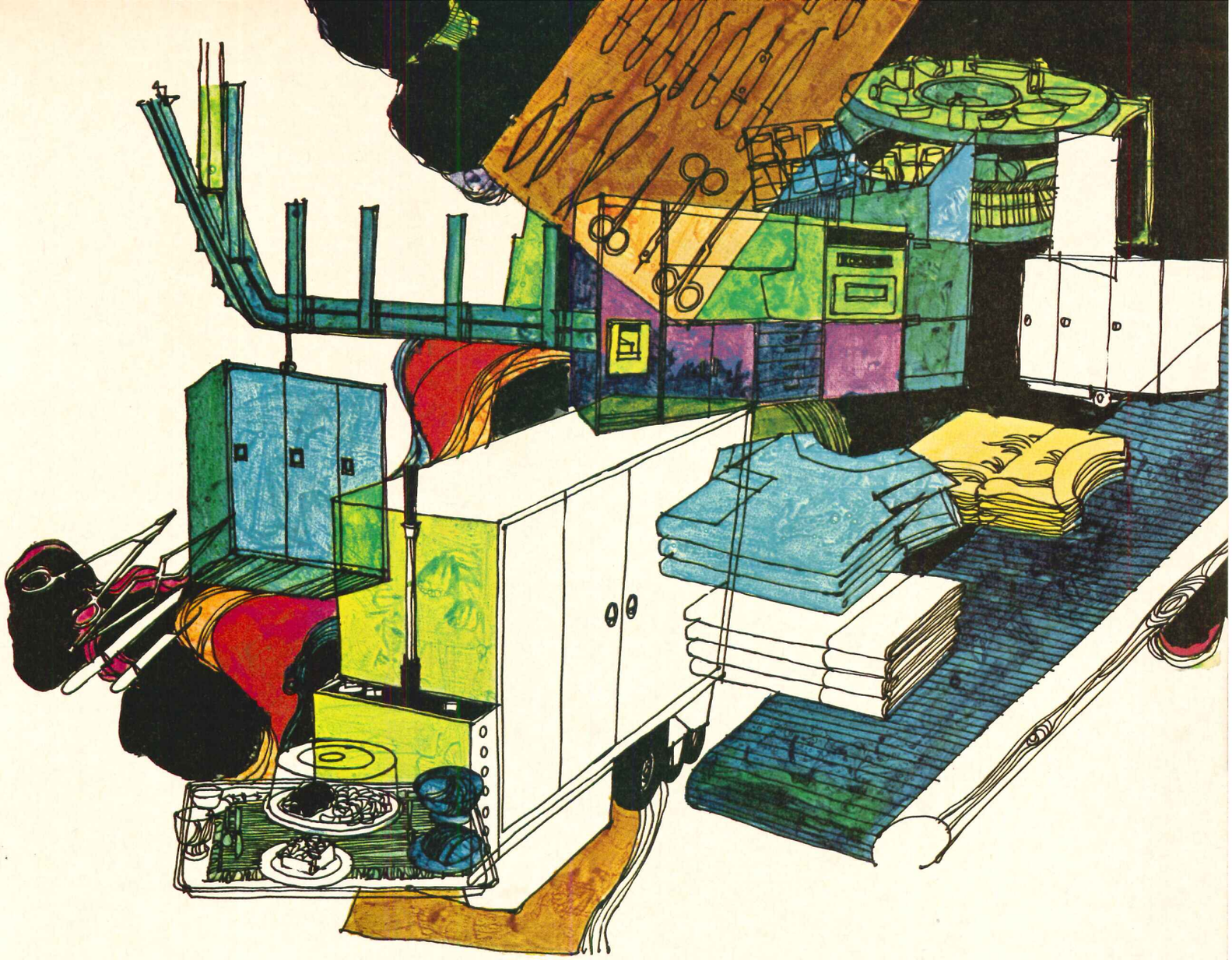
Circle 415 on inquiry card

ROOFING-PANELING-WATERPROOFING / Three catalogs include information and drawings on: 1) built-up roofing; 2) asbestos-cement insulated panels, flat sheets and corrugated sheets; 3) dampproofing-waterproofing and protection course. ▪ Philip Carey Corporation, Cincinnati.*

Circle 416 on inquiry card

* *Additional product information in Sweet's Architectural File*

more literature on page 260



renaissance

One morning this fall, the sun will rise on totally new approaches to hospital patient-support services. That day will see electronically-guided vehicles in actual use. Vehicles that deliver materiel to programmed destinations anywhere in the hospital. Vehicles so advanced they even operate their own vertical lifts.

That day will also see automated processing centers to speed the sorting, washing, sterilization and storage of tons of supplies.

And it will give rise to dietary systems that encompass every stage from preparation through delivery of varied, appetizing meals to each patient's bed. All will be magnificent realities in the autumn of 1969 . . . the outgrowth of seeds planted years ago, and working testimony to the willingness of progressive administrators, architects and consultants to explore new ways to improve patient care while forcing costs significantly downward.

Our brochure, *renaissance*, describes the new birth in hospital planning. It also extends an invitation to join with us in exploring an exciting future. A copy is available on request.

AMSCO SYSTEMS

AMSCO SYSTEMS COMPANY
Division of American Sterilizer Company
2710 West 21st Street • Erie, Penna. 16512

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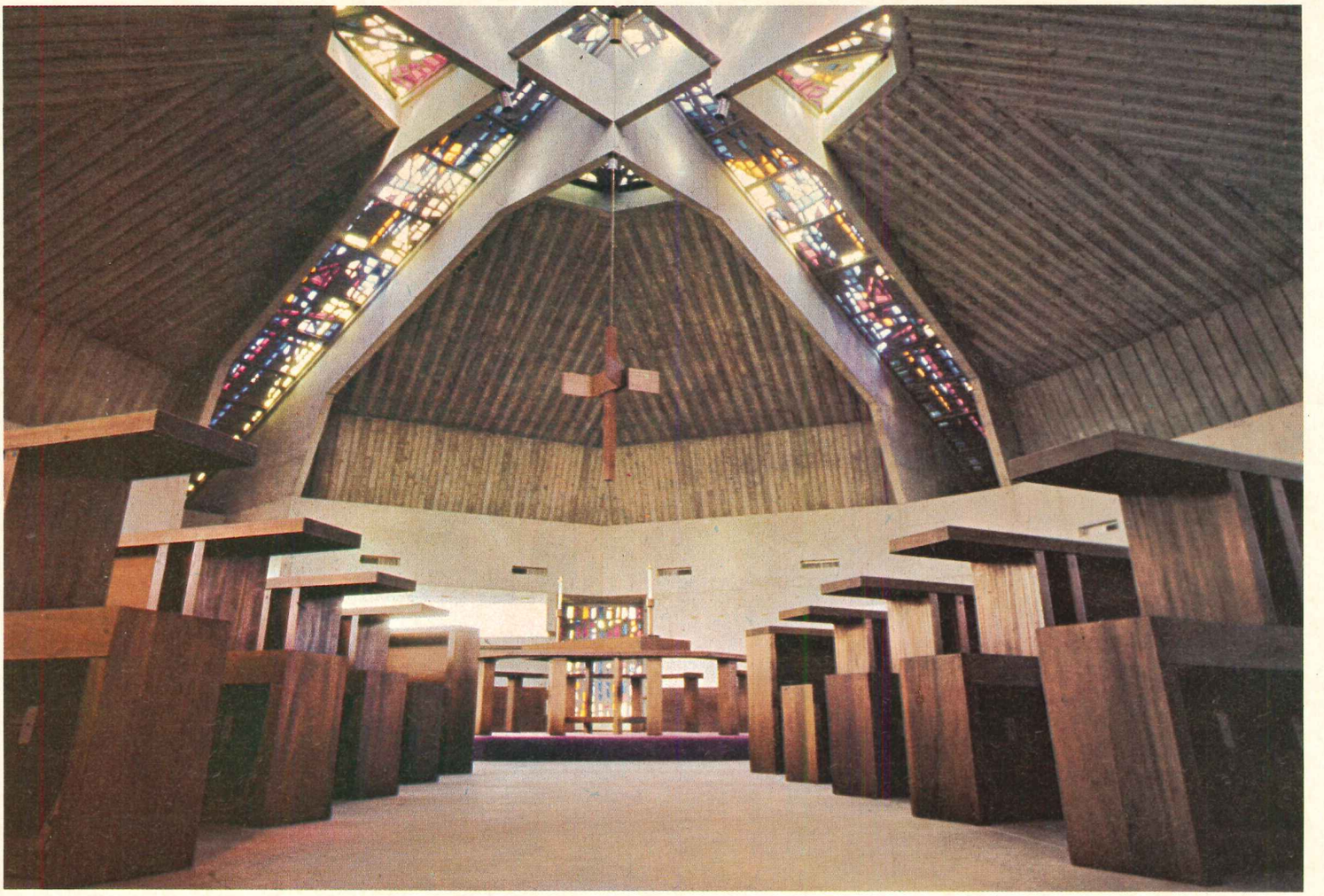

All Saints Episcopal Church
Palo Alto, California

■ ARCHITECT: William Guy Garwood, AIA
■ ENGINEER: Edwin A. Verner ■ CONTRACTOR: Rudolph & Sletten

Striking proof of the broad design capabilities using concrete made with ChemComp cement is seen in All Saints Episcopal Church in Palo Alto, California. Architect William Guy Garwood specified ChemComp cement concrete to minimize or eliminate drying shrinkage cracks, especially in the roof. To make all surfaces reflect the same color, ChemComp cement concrete was also used in the floors, walkways, walls, columns, structural bents and bell tower. The final result is impressively beautiful. ChemComp cement is produced by leading manufacturers of superior quality portland cements and is available nationwide.

- REDUCES size and incidence of drying shrinkage CRACKS
- DIMENSIONALLY STABLE
- LOW PERMEABILITY
- INCREASES BOND STRENGTH TO REINFORCING STEEL
- 20%-50% MORE LIVE LOAD CAPACITY
- SUBSTANTIAL REDUCTION IN NECESSARY CONTROL JOINTS
- NO SPECIAL PLACING PROCEDURES
- LESS SEALING AND CAULKING OF JOINTS
- MUCH LESS LONG-TERM MAINTENANCE

Specify, profit by using

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the shrinkage-compensating cement

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Cleveland, Ohio 44101

Penn-Dixie Cement Corp.
1345 Avenue of the Americas
New York, New York 10019

Southwestern Portland Cement Company
1034 Wilshire Boulevard
Los Angeles, California 90017

Texas Industries, Inc.
P. O. Box 400
Arlington, Texas 76010

For further information contact:
Chemically Prestressed Concrete Corp., 14656 Oxnard Street, Van Nuys, California 91401
or the sales office nearest you.

For more data, circle 137 on inquiry card

For more data, circle 138 on inquiry card ▶

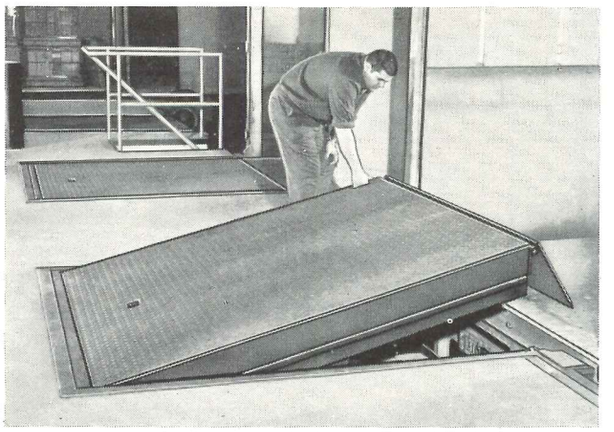
Balmoral Park Race Track: winning new finishes with Armstrong Paints!

Some of today's most exciting sport centers are freshly color styled with Armstrong Paints. Take Balmoral Park which was recently rennovated for winter harness racing. Here you'll find many of the specialized coatings formulated in one of our eight modern laboratories. Coatings like polyurethanes, silicone-alkyds, epoxies and even "Glass-Gard", the new glass flake epoxy that contains millions of self-leafing glass flakes, were used. Let us show you some of our newest products. For coating information and service, write or phone today.

Phone (312) 762-7000

ARMSTRONG PAINT & VARNISH WORKS, INC.
1330 South Kilbourn Ave., Chicago 60623

Balmoral Park Race Track, Crete, Illinois. Painting Contractor: John H. Mosack Company, Chicago. "Glass-Gard" is manufactured under license from William J. Bradley, 245 Upper Toyon Drive, Kentfield, California 94905.



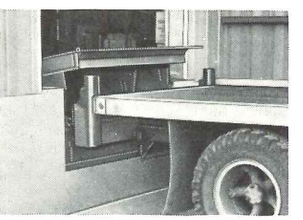
Semi-automatic flush return hinged lip dock leveler

Modern Dock Design hinges on RITE HITE Dock Levelers!

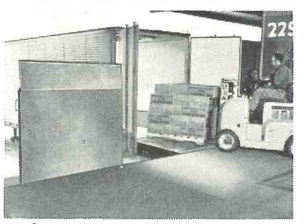
Choose from six fully-mechanical styles and 23 different models to meet your exact dock-side material handling requirements safely, efficiently, and economically.

Rite-Hite pioneered the development of the mechanical dock leveler and has maintained the same high quality standards for nearly 25 years.

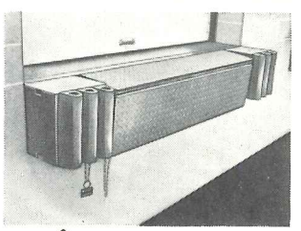
Fully automatic truck-actuated dock leveler



Torsion bar actuated hinged lip dock leveler

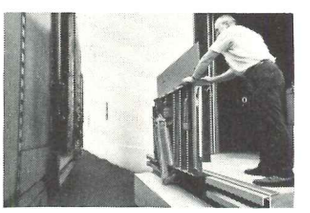


Vertical hinged lip dock leveler for bi-level docks



Edge-of-dock hinged lip dock leveler

Fully mechanical lateral movement track-mounted railcar ramp



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IN CANADA: Matthew Moody Ltd.
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Terre Bonne, P.Q., Canada

For more data, circle 141 on inquiry card

The generation gap: it may be America's best hope.

Millions of young Americans not only stand taller than their fathers—they're aiming higher. Sometimes, in a different direction.

They have a vision of a more equal economy and society, and the will to take part in shaping them.

Over 7,000,000 young men and women are now in our colleges and universities. Keeping up with their numbers, and the challenge of filling their knowledge needs, has brought about a financial crisis in higher education.

Tuitions, on the average, pay only ⅓ the cost of educating a student. The other ⅔ must come from other sources. And the difference in dollars amounts to billions.

Our higher education must keep moving ahead—with more facilities, larger faculties—and academic advances that will help this generation move ahead.

It can't be done without more help from more individuals, more businesses—with gifts and grants that encourage progress and innovation.

To better understand the need, ask a college.

Give to the college of your choice.

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"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.

The crankshaft wouldn't have to be as strong as it is. Bearings could be smaller than we make them. We could knock off $14 by using a second-rate oil pump.

This plant could have paper-thin shielding and a two-bit muffler. We could save the money it takes to test and certify performance before shipment.

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.

It means keeping faith with loyal customers who have made us the world's leading builder of electric power plants.

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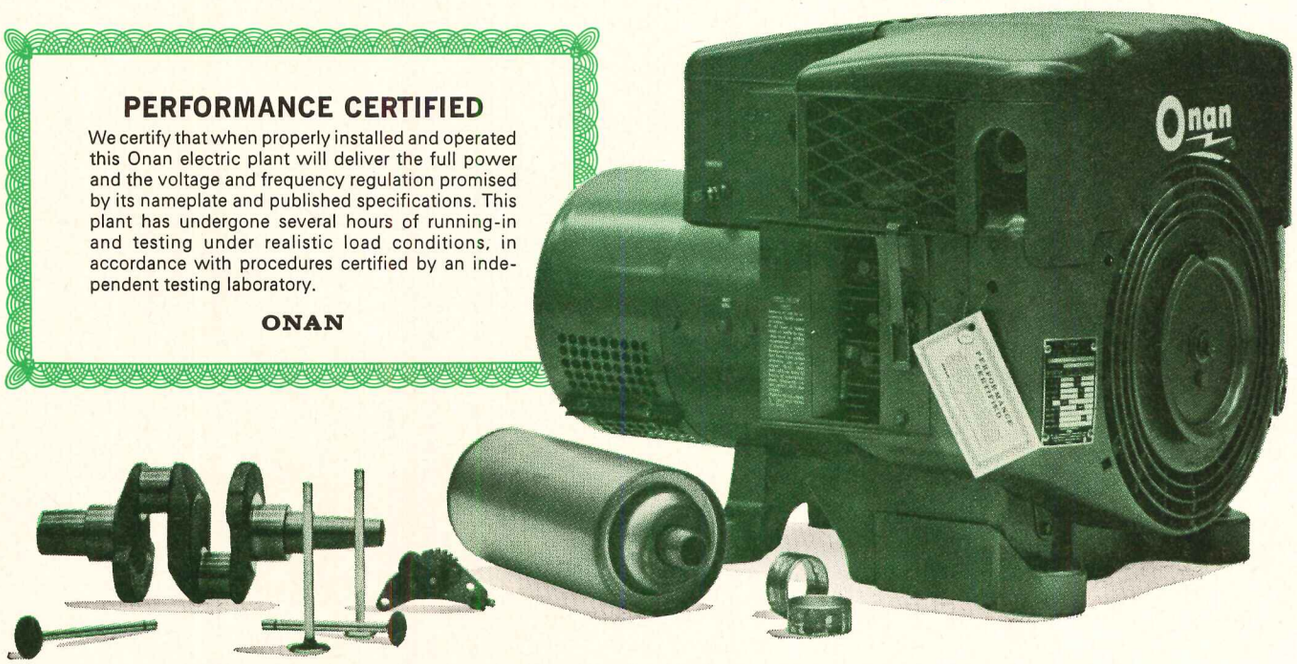
We certify that when properly installed and operated this Onan electric plant will deliver the full power and the voltage and frequency regulation promised by its nameplate and published specifications. This plant has undergone several hours of running-in and testing under realistic load conditions, in accordance with procedures certified by an independent testing laboratory.

ONAN



For more data, circle 143 on inquiry card

For more data, circle 142 on inquiry card

Sylvania

Our Recessed Vanguard fixture is buried in the ceiling.

Our Metalarc/C lamp is buried in the fixture.

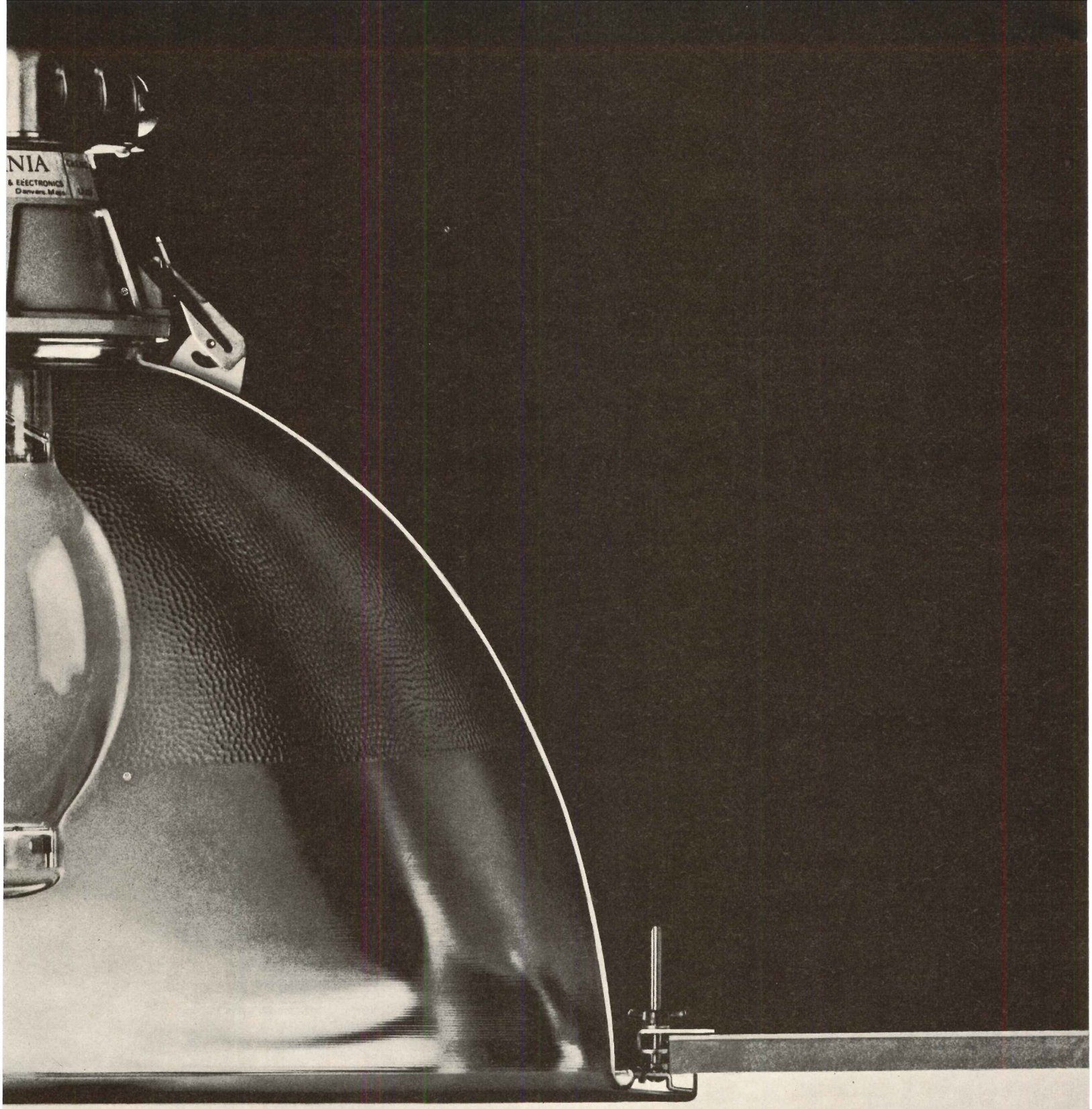
So the glare which would otherwise be giving your eyes a pain in the neck is buried, too.

(Compare this with fluorescent strip that fights for attention with everything in sight and never stops glaring at you.)

With a Recessed Vanguard installation, if you notice the ceiling at all, it's to notice how uncluttered it looks. You get bright, comfortable light over the whole interior of your store, lobby or building. Colors look warm in it: you never get that feeling of the blues.

A Recessed Vanguard installation has just one disadvantage: it costs more at first.

But you don't need as many fixtures



buries the glare.

compared with fluorescent strip lighting, because the light is so powerful.

Which means you don't need anywhere near as many lamps (only one per fixture, not two to four).

And each lamp has a long life (10,500 hours).

So your costs for lamp maintenance go down. Your electric bills also drop, because mercury lamps go easy on power.

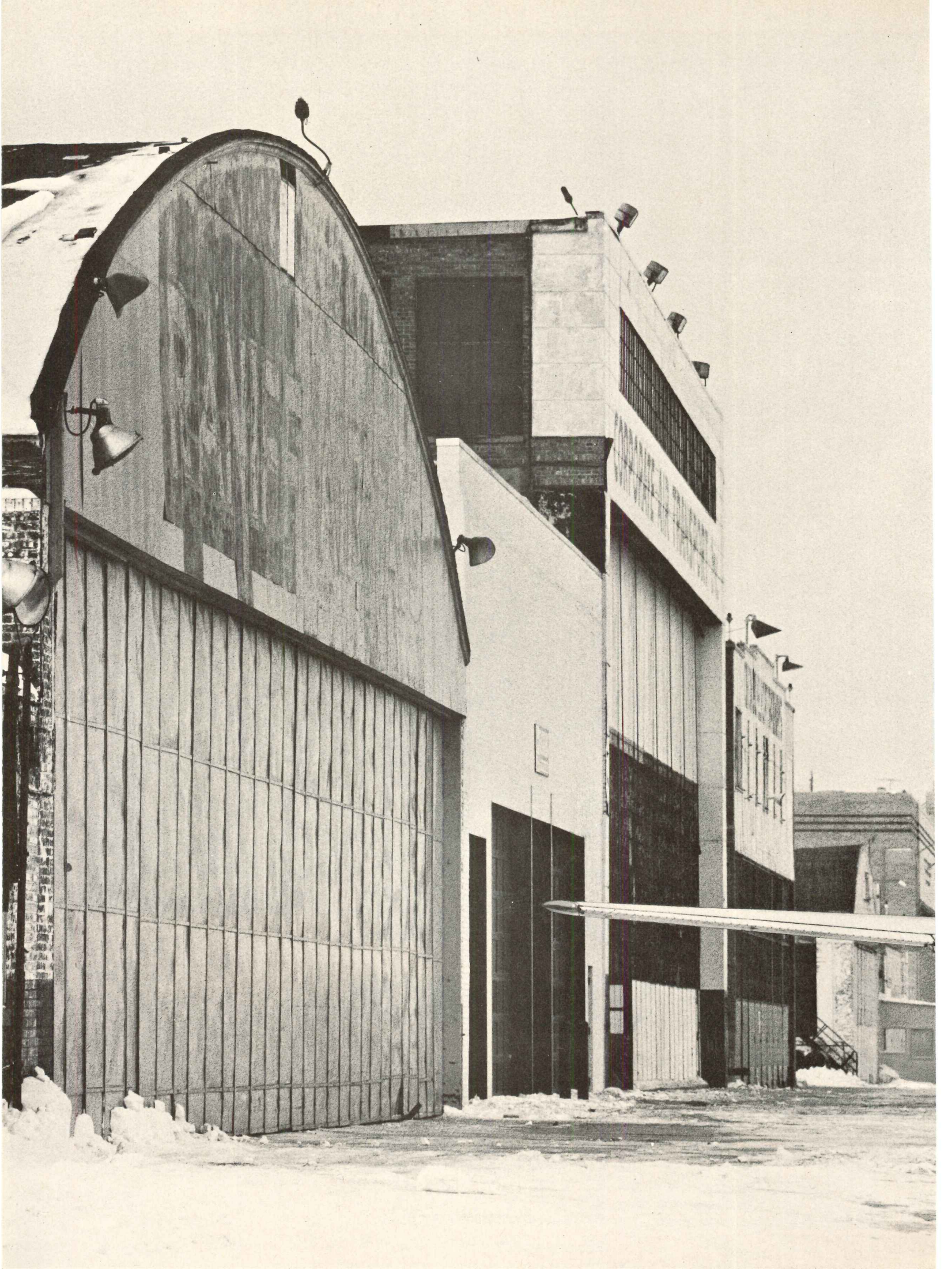
After a few years, a Recessed Vanguard installation actually turns out to be cheaper.

Which for a lighting fixture is quite a silver lining.

For more details—write to: Lighting Equipment Division, Sylvania Lighting Center, Danvers, Massachusetts 01923.

SYLVANIA
GENERAL TELEPHONE & ELECTRONICS

For more data, circle 144 on inquiry card



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.

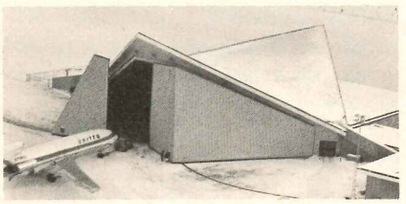
Way back in 1963, he had an idea. Why not build a hyperbolic paraboloid out of steel? As an architectural design, the H.P. was nothing particularly new. But building one of steel—that was unheard of.

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.

Got any neighborhoods *you* want changed? Send for our free design manual on steel H.P.'s. And start changing.

Inland Steel Company, 30 West Monroe Street, Chicago, Illinois 60603. AC 312 FInancial 6-0300.

Inland High Strength Steels

For more data, circle 145 on inquiry card

continued from page 246

VINYL FABRIC / A swatch card "prepared especially for the contract market" displays the new *Decor Perforated Royal Naughahyde* in ten colors, as well as some standard patterns. ▪ Uniroyal, Inc., New York City.*

Circle 417 on inquiry card

CERAMIC TILE / A 20-page color publication shows more than 160 individual tile colors and over 100 patterns and color combinations for residential, commercial and institutional use. Also in the book is an exciting range of special glazes "expressly oriented toward the architect and designer." ▪ United States Ceramic Tile Company, Canton, Ohio.*

Circle 418 on inquiry card

PAINTS AND COATINGS / A practical manual, *Paints and Protective Coatings,* recently developed for use by the Departments of the Army, Navy and Air Force is now available to the profession. The manual furnishes information on "products, practices, procedures, materials, equipment and safety measures in the coating of buildings and other permanent structures and facilities." Also available is another manual, *Organic Coatings,* which, besides presenting practical information on the properties, selection and use of organic coatings (and certain inorganic coatings), discusses basic principles in a number of important areas such as polymer structure, coatings formulation, pigment function and others. The first manual, 225 pages and bound in a sturdy loose-leaf format, is priced at $7.25. The second, 187 pages, is $2.50. Please order direct. ▪ Superintendent of Documents, U. S. Government Printing Office, Washington, D.C. 20402.

OFFICE FURNITURE WITH TRIM / A six-page folder contains metal samples of four earth color finishes for steel and aluminum trim and hardware. *Smoked Chrome* and *Antiqued Bronze* are plated on steel trim for desks, files and other office furnishings. Aluminum finishes of *Mellow Black* and *Umber* for chair bases are achieved "through a new hard-coat anodizing system in which the color becomes an integral part of the metal." ▪ The General Fireproofing Company, Youngstown, Ohio.*

Circle 419 on inquiry card

AIR HANDLING / A 40-page engineering booklet covers roof-mounted multi-zone air handling equipment for schools. The publication describes 2,000- to 12,000-cfm units with electric, gas or self-contained boiler hot water heating and direct expansion or chilled water cooling. Views of each section of the equipment show inner workings and construction features. ▪ American Air Filter Company, Inc., Louisville, Ky.

Circle 420 on inquiry card

REGISTERS-GRILLES-DIFFUSERS / A 28-page catalog lists over 50 styles in over 650 sizes to meet the requirements of residential applications. ▪ U.S. Register Company, Battle Creek, Mich.

Circle 421 on inquiry card

STAIR FORMS / Prefabricated steel stair forms for concrete or terrazzo stairs, welded into rigid one-piece units, are featured in an eight-page catalog. Included is technical information on components and the combination of component parts to permit the greatest flexibility of design. ▪ American Stair Corporation, McCook, Ill.

Circle 422 on inquiry card

SHELVING / A 24-page reference catalog contains photos and information on shelving to meet "today's varied business, institutional and industrial storage needs." ▪ Lyon Metal Products, Inc., Aurora, Ill.*

Circle 423 on inquiry card

CEILING TILES-BUILDING PANELS / Three booklets cover four commercial, industrial and institutional ceiling panels and tiles. Another booklet explains *Pyro Plus PP-25,* a new translucent fiberglass panel with a Class 1 fire rating recommended for schools, public malls and industrial buildings. ▪ Johns-Manville, New York City.*

Circle 424 on inquiry card

* *Additional product information in Sweet's Architectural File*

more literature on page 264

DO YOU DREAD A BID OPENING?

There's nothing pleasant about a low bid which is thousands of dollars over the estimate. That's one reason why architects have had to become the first line of defense against soaring building costs.

A TRUS JOIST roof or floor system can do so much to keep your project "in the money." No cure-all, but the light weight cuts the cost of footings, foundations and bearing walls . . . makes the construction of any building far speedier and less costly.

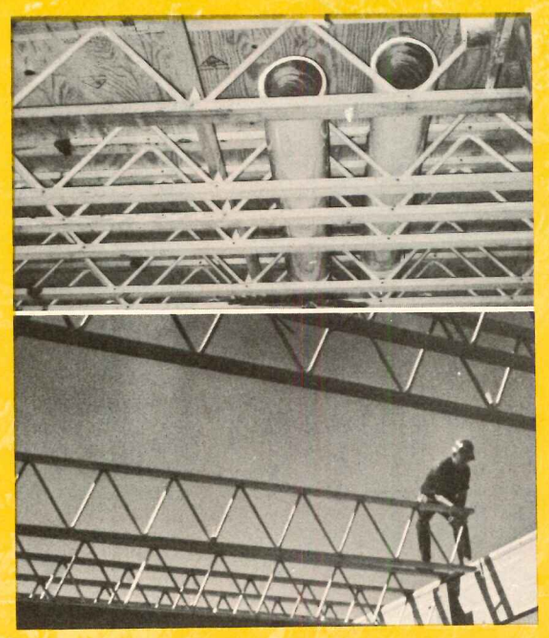
The wide, wood chords provide a perfect nailing surface for low-cost roof decking and ceiling materials. The open webs allow fast installation of duct work, plumbing and wiring. Long spans, up to 100 feet, can eliminate many bearing walls. And if it's an unusual profile you're after, TJ can provide it more economically than any other system.

For example, a subcontractor after building two TJ apartment projects in Albany, N.Y., credited 17 cents a square foot to the builder of a third project for using TRUS JOIST instead of 2 x 12 floor joists (details available on request).

TRUS JOIST guarantees that the original joist quotation will be the final price unless there are intervening changes in plans or specifications during the period specified.

More information? Free design manual or cost estimate? Just call. Wouldn't it be pleasant if the bids came in under the estimate?

TRUS JOIST could make the difference.



trus® tj joist

9777 Chinden Blvd. Boise, Idaho 83702

Plants at: Boise, Ida. □ Portland, Ore. □ San Francisco □ Dubuque, Ia. □ Phoenix □ Calgary, Alt. □ Soon in Ohio

For more data, circle 147 on inquiry card

continued from page 260

METAL DOORS AND FRAMES / Now available is the 16-page "Specifications for Custom Hollow Metal Doors and Frames" published this year. ▪ The National Association of Architectural Metal Manufacturers, Chicago.

Circle 425 on inquiry card

HARDWOOD SCREENS / An eight-page, color brochure shows various types and installations of *Sculpturewood* decorative hardwood screens and paneling for home, office and commercial applications. ▪ Penberthy Architectural Products, Los Angeles.

Circle 426 on inquiry card

INTERCHANGEABLE TILES / An eight-page booklet presents detailed information and color photos of typical installations of *Heugatile Carpet Squares,* which are loose laid and can be rotated. ▪ Van Heugten U.S.A. Inc., Kenilworth, N.J.*

Circle 427 on inquiry card

PORCELAIN-ON-STEEL / Four sets of CSI SPEC-DATA sheets describe insulated, and veneer panels, and 1½-hour fire-rated building panels, plus chalkboards. ▪ AllianceWall Corporation, Wyncote, Pa.*

Circle 428 on inquiry card

BATHROOM ACCESSORIES / Two brochures present an assortment of contemporary and "old-world" bathroom accessories. ▪ Miami-Carey Division, Philip Carey Corporation, Monroe, Ohio.*

Circle 429 on inquiry card

CEILINGS AND PARTITIONS / Designer-oriented ceilings and landscape partitions are featured in a 12-page color brochure. Pictures show a range of design situations including an art museum, a governor's office, a banking floor and a hotel restaurant. ▪ Conwed Corporation, St. Paul.

Circle 430 on inquiry card

AIR POLLUTION / Solutions to 15 specific in-plant air pollution problems are described in an eight-page brochure. ▪ The Torit Corporation, St Paul, Minn.

Circle 431 on inquiry card

DETERMINING GLASS THICKNESS / A flat, compact slide chart determines the maximum recommended glass thickness, according to wind load requirement and window opening size. ▪ Libbey-Owens-Ford Company, Toledo.*

Circle 432 on inquiry card

SECURITY RADIATORS / A four-page bulletin shows units for prisons, mental hospitals and other institutions. ▪ Shaw-Perkins Manufacturing Company, Pittsburgh.

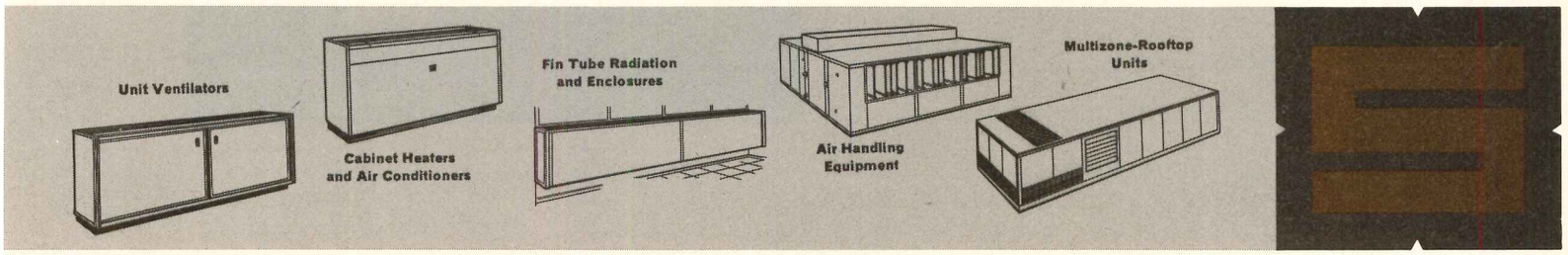
Circle 433 on inquiry card

* *Additional product information in Sweet's Architectural File*

naturally it's **SCHEMENAUER**

Comparison is still the surest way to measure quality. And we're confident our classroom unit ventilator will pass the test because it's the finest available today. But don't take our word. Convince yourself with a fair comparison. Compare the heavy extruded aluminum air outlet grille, the exclusive wall-aligning strip, the student-proof plastic laminate top, the 12 contemporary colors. Compare the heavy insulated doors and end caps, the slide-out fan board, the special long-life motor with only one moving part, and the extruded aluminum construction on all leading surfaces. Then compare the superior design and construction of our matching auxiliary units . . . bookcases, sinks, tray racks. We could go on and on, but we'll let **you** do it. It's hard to stop when you start comparing, but we're convinced you'll finally stop at Schemenauer. Call your nearest Schemenauer representative for comparison details, or write directly to us. Schemenauer Manufacturing Company, Holland, Ohio 43528

For assurance of quality in heating, air conditioning and ventilating equipment, insist on this Schemenauer benchmark.



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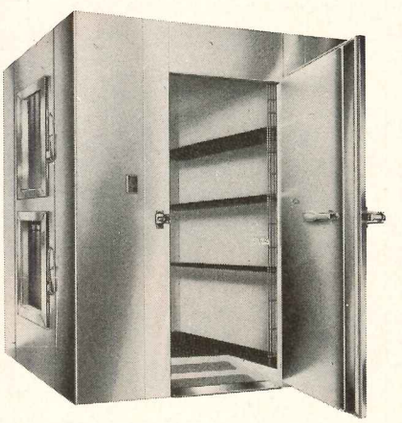
I want a walk-in with one full-length stainless steel door and a steel plate, Ramp-In floor and adjustable wire shelving and an Automatic Defrost-Vaporizer and two half-length glass service doors and an Alarm System and I want it yesterday.

You want Nor-Lake. With a full range of components and options, the only thing we won't change is the quality.



NOR-LAKE INC.
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Pride is contagious at Nor-Lake

Over 270 models—all designed to NSF configurations.
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And I want more information about Nor-Lake Walk-Ins.

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I need Refrigeration Equipment for_____

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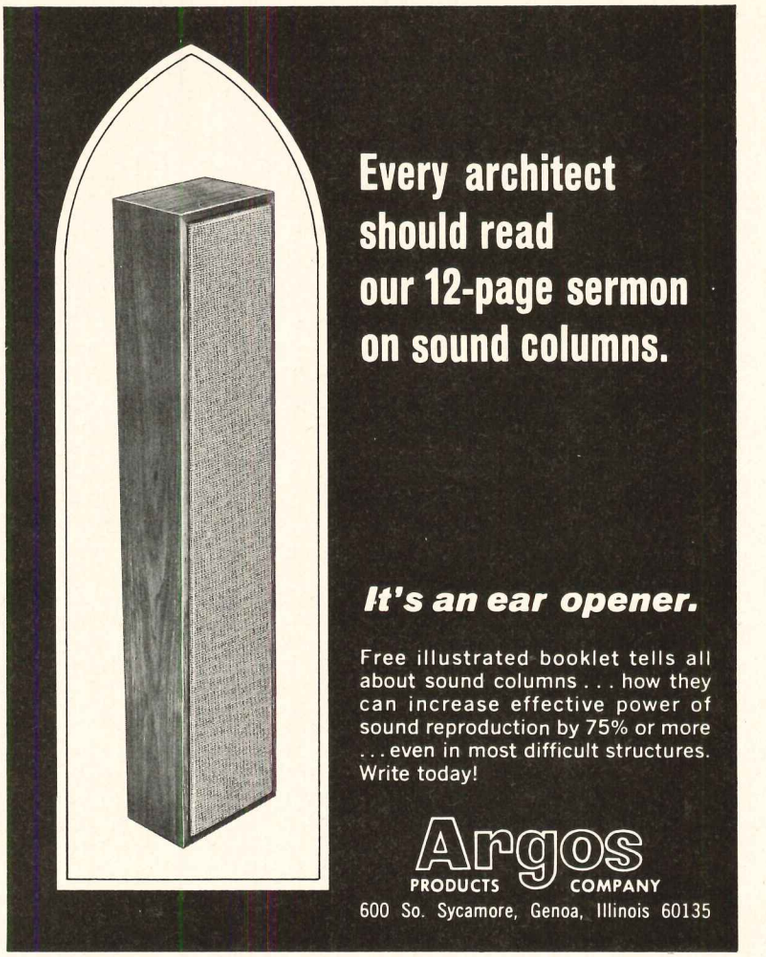

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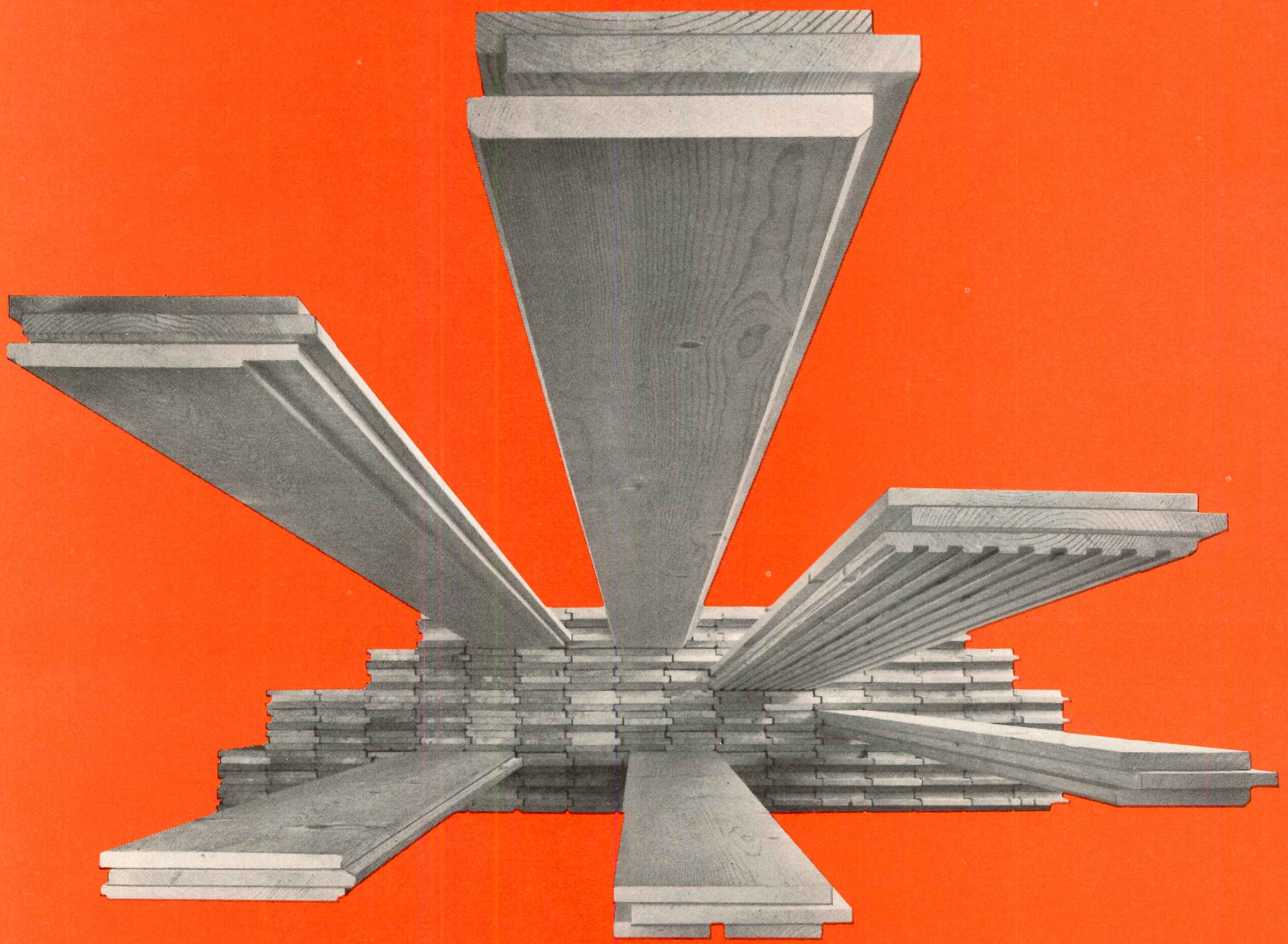
For more data, circle 152 on inquiry card



Just six of many ways Weyerhaeuser helps to make your deck designs a little more exciting.

Weyerhaeuser has broadened the design choice in laminated decking with more options than ever in surface textures, thicknesses and appearance grades.

And we've added Ponderosa pine to our cedar and hemlock lines. Now you can specify Ponderosa in 8, 10 or 12-inch widths that go down quickly and look stunning.

In addition, we're introducing a prestaining service. We're offering six standard Olympic® stain tones for hemlock and pine, with a custom-matching staining service available, too. With this service you can enjoy the efficiencies of factory finishing, and at the same time get an exact match on site-finished trim.

Your local Weyerhaeuser Architectural Specialty Dealer can give you the full story on our laminated products and the services that go with them. In the meantime, send us the coupon for complete technical data.

For more data, circle 153 on inquiry card

To: Weyerhaeuser Company, Box B-5738
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Please send me complete details on your complete line of laminated wood products.

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Firm_____

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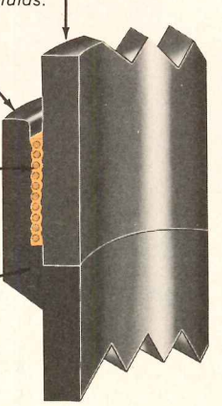
THE "INSIDE" STORY

GSR FUSEAL fittings and polypropylene pipe offer a unique combination of physical and chemical properties for safe handling of corrosive fluids.

Precision-molded GSR FUSEAL fittings assure perfect fit and easy assembly — available in all standard configurations.

Plastic-sealed resistance coil applies heat to the interface between pipe and socket — fuses 95% of socket area.

Exclusive countersink socket design assures easy seating of pipe — prevents melted plastic from obstructing pipe line.



90 SECONDS of controlled heat—applied by the exclusive, patented GSR FUSEAL process—joins GSR FUSEAL polypropylene fittings and pipe into a leakproof, distortion-free, homogeneous unit. Add the superior chemical resistance of polypropylene and the certainty of this improved joining technique—and you have the ideal method of handling corrosive wastes.

The GSR FUSEAL process applies exactly the right degree of heat for exactly the right time—right where it is needed. An electrical resistance coil, imbedded in polypropylene to form a fusible collar, imparts a "full circle" of heat to fuse the interface between pipe and socket.

The exclusive design of GSR FUSEAL fittings makes it almost impossible to seat the pipe improperly or misalign the joint. In the rare event of a misalignment or a leak, the GSR FUSEAL process "forgives" the mistake. Detailed operating instructions are included in GSR FUSEAL Brochure, Form FS101, available on request.

Pipe corrosive wastes the modern way—with GSR FUSEAL Fittings and polypropylene pipe joined by the GSR FUSEAL process. Write today for complete information. R. & G. SLOANE MFG. DIV., THE SUSQUEHANNA CORP., 7606 N. Clybourn Ave., Sun Valley, Calif. 91352.

GSR® FUSEAL® JOINT FUSION PROCESS

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WAREHOUSE AND SALES OFFICES: 3126 Brinkerhoff Road, Kansas City, Kan. 66115 · Tel. (913) 371-0412 ☐ 1669 Litton Dr., Stone Mountain, Ga. 30083 · Tel. (404) 939-6644

For more data, circle 154 on inquiry card

continued from page 70

William A. Rose, Sr., P.E., Daniel Beaton, P.E. and **William A. Rose, Jr., R.A.** recently announced the formation of a new architectural and engineering partnership, **Rose, Beaton & Rose.** The new firm's headquarters office is in White Plains, New York, with an additional office in New York City.

Emery Roth & Sons, New York City, has advanced the following associates to the new title of senior associate: **Victor Gorlach, Fred Halden, Gelal Kent, Bernard Kessler, Philip Martines, Joseph Solomon, Joseph Vassallo** and **Philip Zinn.** The firm has promoted the following to associate: **Douglas Fernandez, Seymour Fish, Seymour Gellar, Benjamin Gladstein, George Harju, Arthur Hecht, John Leotta, Joseph LoSchiavo, John Miller, John Secreti** and **Paul Ugo.**

Lawrence A. Samuelson, A.I.A. has joined **Reifel Engineering Company,** Houston, as vice president.

Eugene C. Scheff has joined the Birmingham, Michigan engineering firm of **Hoyem, Basso, Adams and Martin** as an associate and project engineer.

Architect **Wallace P. Hagestad** has joined **Schmeer, Harrington & Bana, Architects** as a partner. The firm, now known as **Schmeer, Harrington, Bana, Hagestad, Architects and Planners,** is located at 907 Oregon Bank Building, 319 S.W. Washington Street, Portland.

Otto F. Seeler, A.I.A. is now vice president and chief architect of **Roland Salk & Associates, Inc., Architects and Engineers,** South Bend, Indiana. Dr. Seeler is also professor of architecture at the University of Notre Dame.

Wold Associates, Inc., Architects, St. Paul, announce the appointment of **Fred Shank** as an associate member.

Charles W. Sherman, A.I.A., Aleksander Markiewicz, A.I.A., Donald Osgood, A.I.A., Donald Semancik, A.I.A. and **Robert Tucker, A.I.A.** are the principals of a newly formed firm, **Charles W. Sherman Associates, Inc.,** 860 West Long Lake, Bloomfield Township, Michigan. All five members are former principals or associates of **O'Dell, Hewlett and Luckenbach, Inc.,** Birmingham architectural firm.

Frank H. Sherwood has become an associate in the Fort Worth, Texas firm, **Preston M. Geren, Architect-Engineer and Associates.**

The SMS Partnership/Architects has announced the retirement to private practice of **Thorne Sherwood, F.A.I.A.** Mr. Sherwood, a founding partner of SMS's forerunner **Sherwood, Mills and Smith,** continues with the partnership as a consultant. Three new associates have recently been named by the Stamford, Connecticut-based firm: **Lee A. Duran, Theodore E. Felker** and **Robert C. Steinmetz.**

Howard F. Sims, A.I.A., Architect recently announced the association of **James**

continued on page 277

Low-investment packer replaces incinerator for high-rise refuse . . .

You can replace an on-site incinerator for under $3400 and still handle all the trash from a high-rise building.

The answer? The PowerMite™ Stationary Packer—a small, powerful hydraulic compactor that compresses high-rise refuse into standard detachable containers.

Place this amazing, small packer under an existing incinerator chute, attach a chute connection, hook-up a refuse container, and PowerMite's ready to go to work.

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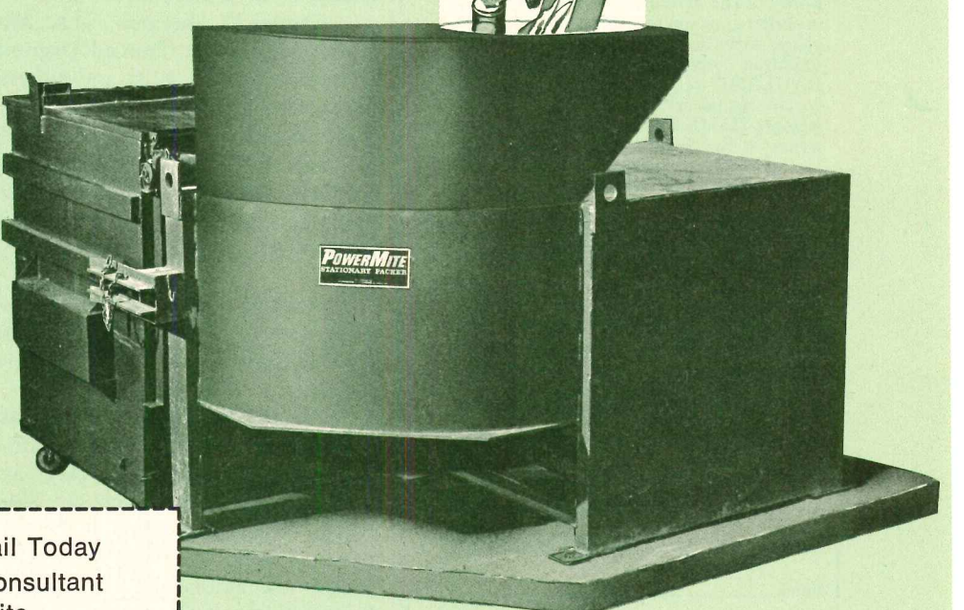
PowerMite fits in tight places like boiler rooms because it takes up only 29 square feet of space. Also, PowerMite powerpacks any refuse container and can be connected to a wide variety of refuse chutes.

Send for complete information. Better yet, have a Dempster Consultant help you design a refuse disposal system for your building—at no obligation. Write today! . . .



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☐ Send name of nearest Dempster Consultant
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NAME_____

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Mail to: Dempster Brothers, Inc., Knoxville, Tennessee 37917 Dept. AR-10

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We're the best in the laminate business because we're first in the design business.

There are more than 120 reasons why General Electric Textolite decorative surfacing is the best laminate you can specify. Colors that are bolder and sharper. Abstracts that are more exciting and modern. Woodgrain patterns that set style trends. To see them, write General Electric Co., Laminated Products, Department. Dept. AGD Coshocton, Ohio 43812.

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NOTICE TO LIGHTING PANEL SPECIFIERS—For your protection, we've given our K-Lite Lighting Panels new designations. K-5 becomes KSH-5, K-12 becomes KSH-12, K-15 becomes KSH-15 and so on for all the original "K" number products.

Why the change? K-S-H originated all the "K" number specification quality lighting panels. We believe you specified them because you wanted the performance and quality they assure and will continue to specify them for these reasons.

The problem: Other panel manufacturers have produced "cheap" versions of the "K" panels. They've lowered the standards, compromised on performance, cheated on material thickness... even given their panels similar numbers so they can be slipped in on your specifications.

The solution: Specify KSH-12, etc. Remember, KSH stands for the original with the performance, the quality, the satisfaction you expect and trust. "K" could stand for "KOPY" from some fixture manufacturers who don't think you care. Ask if they intend to furnish KSH or "KOPY" from an unknown source. Your client won't know the difference until he turns on the lights.

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On any job where a specifier has specified "K" number panels and is disappointed in the results or feels he has been furnished "KOPY" panels, K-S-H will be happy to investigate the problem and assist in the solution of it. Please contact us.

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continued from page 269

B. Jones and **Richard J. Reinholt** and the reorganization of the firm as **Howard Sims & Associates, Architects,** 758 Detroit Trade Center, 1200 Sixth Street, Detroit.

Dale R. Johnson, David H. Lee, A.I.A. and **August St. George** have been named associates of **Smith, Hinchman & Grylls Associates, Inc.,** Detroit.

The Miami architectural and engineering firm, **Smith, Korach, Hayet, Lippack, Haynie & Associates** has announced the appointment of **Eric Maspons** as an associate.

Michael Harris Spector, A.I.A., architect, Great Neck, New York, announced recently that **Alexander E. Hadaro, Charles G. Lobell** and **Eric N. Singer** have become associates of the firm.

Stapert, Pratt & Sprau, Inc., Architects, Kalamazoo, Michigan, have named three associates: **Robert B. Tower, A.I.A., Helen I. Johnston** and **Jerry Pinkster,** and announced the change of the firm name to **Stapert, Pratt, Sprau & Associates, Inc.**

George T. Rockrise and Associates, San Francisco, have announced that **Alfred A. Stone, A.I.A.** is now an associate.

T. J. Stoutenberg has been named an associate in the firm of **Hirsch, Kaestle, Boos, Architects,** New Britain, Connecticut.

Jeremi J. Strachocki, A.I.A. has been appointed supervisor of production of the Encino, California firm of **Howard R. Lane Associates, A.I.A.**

Arne W. Leppanen, P.E., Alex J. Violassi, P.E. and **Weslie J. Hofland, Associate A.I.A.** have been named associates of **Swanson Associates, Inc., Architects, Engineers and Planners** located in Bloomfield Hills, Michigan.

Nicolay Terziev has been named associate with **Knorr—Eliott and Associates, A.I.A., Architects and Planning Consultants** of San Francisco.

Kermit J. Lee Jr., A.I.A., William H. Scarbrough, A.I.A. and **Louis Skoler, A.I.A.** have announced the formation of **The Architects' Partnership,** 1004 University Building, Syracuse, New York.

Thomas & Johnson, Architects, A.I.A. have announced that **Webb Isley** has joined the firm as a partner. The firm, which is located at 2713 West 29th Street, Topeka, Kansas, is now known as **Thomas, Johnson & Isley, Architects.**

LeRoy E. Tuckett, A.I.A. recently announced the formation of a new firm, **L. E. Tuckett Associates, Architects & Engineers.** Associated in the firm are architect **Bennie Thompson** and structural engineer, **Herbert Resnicow, P.E.** Offices are at 441 Lexington Avenue, New York City.

Barry L. Wasserman, A.I.A. and **Robert G. Herman** have formed **Wasserman-Herman Associates, Planning, Urban Design, Architecture. Jerold R. Voss, A.I.P.** is consultant planner for the firm, located at 529 Commercial Street, San Francisco.

Every apartment an environmental island... by All-Electric design.

Again All-Electric design provides a superior solution to an environmental control problem: how to counteract solar load during blustery spring and fall seasons, when heating is required on one side of a building, cooling on the other. The project: the world's tallest apartment building . . . Lake Point Tower, Chicago.

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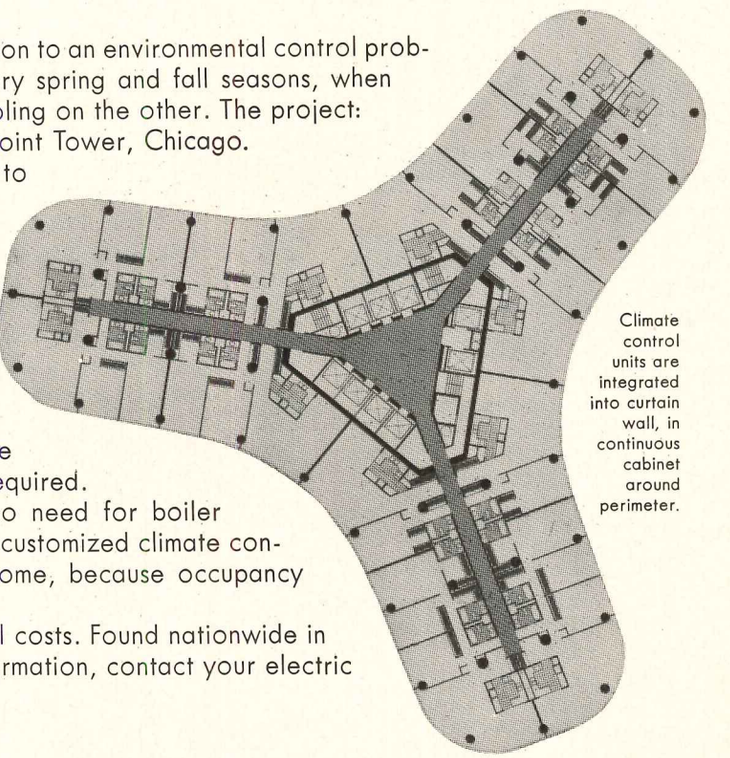
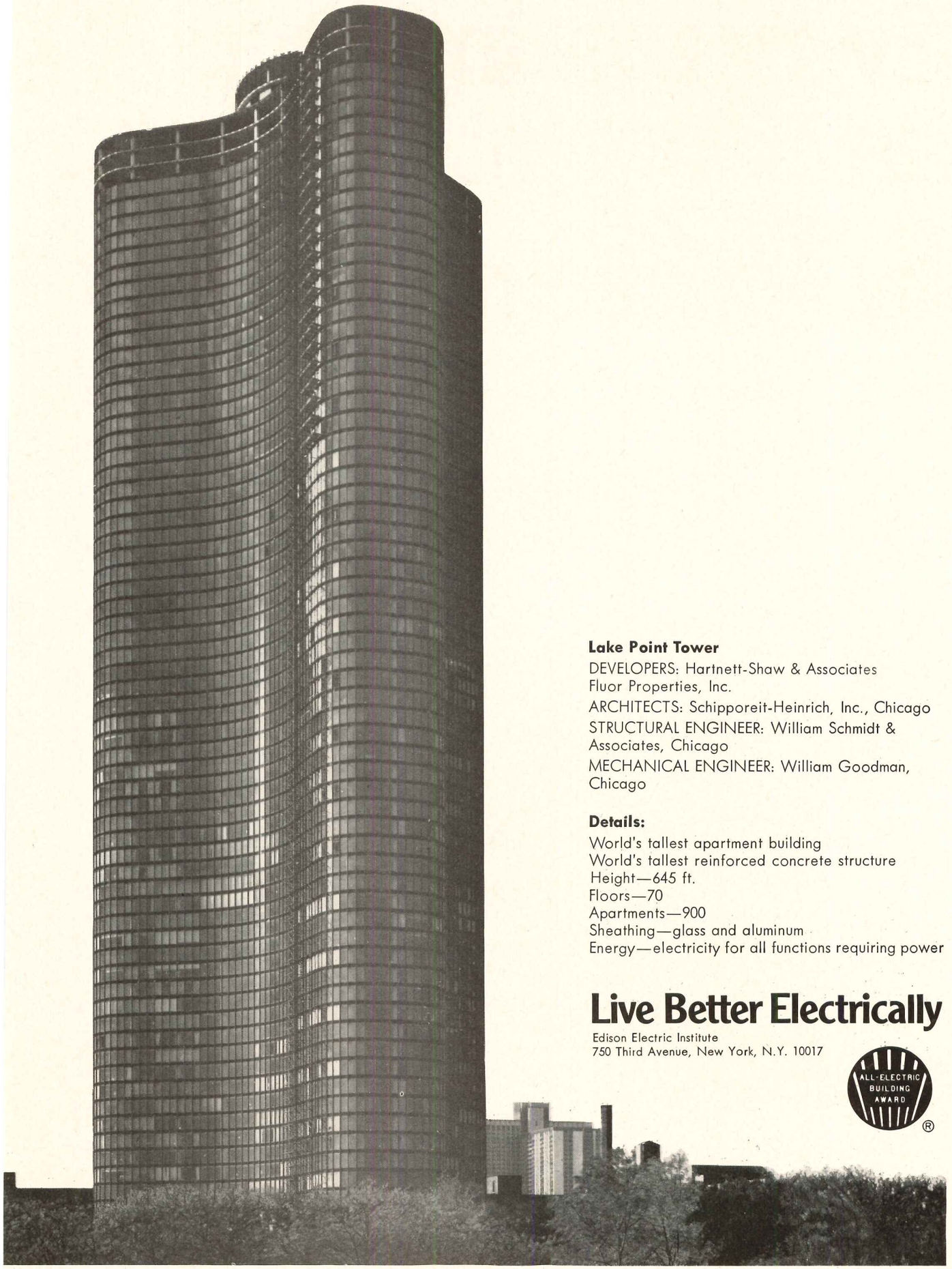


Climate control units are integrated into curtain wall, in continuous cabinet around perimeter.



Lake Point Tower

DEVELOPERS: Hartnett-Shaw & Associates
Fluor Properties, Inc.

ARCHITECTS: Schipporeit-Heinrich, Inc., Chicago

STRUCTURAL ENGINEER: William Schmidt & Associates, Chicago

MECHANICAL ENGINEER: William Goodman, Chicago

Details:

World's tallest apartment building
World's tallest reinforced concrete structure
Height—645 ft.
Floors—70
Apartments—900
Sheathing—glass and aluminum
Energy—electricity for all functions requiring power

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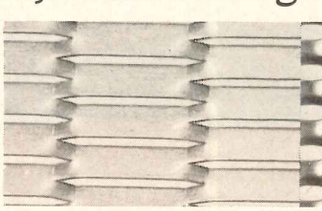
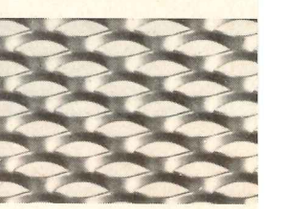
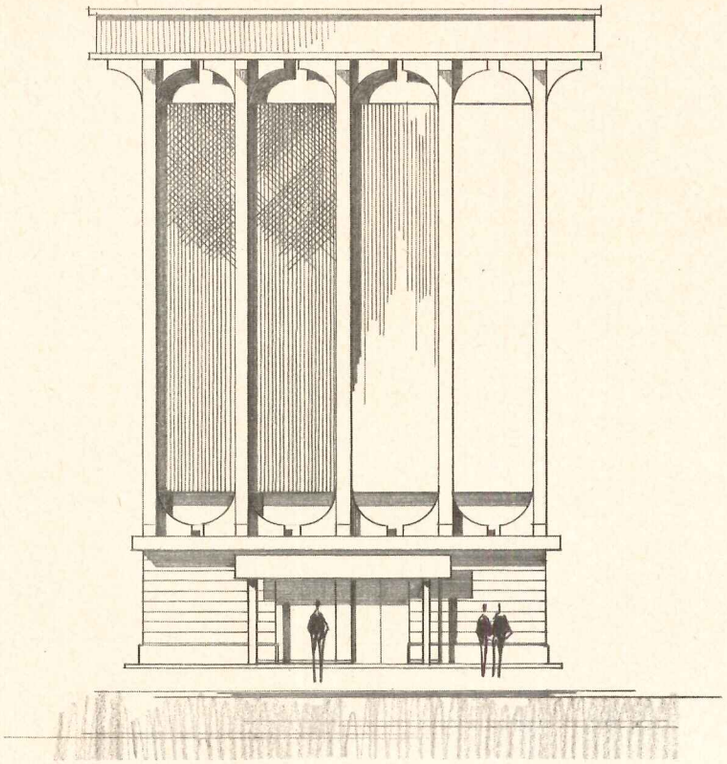
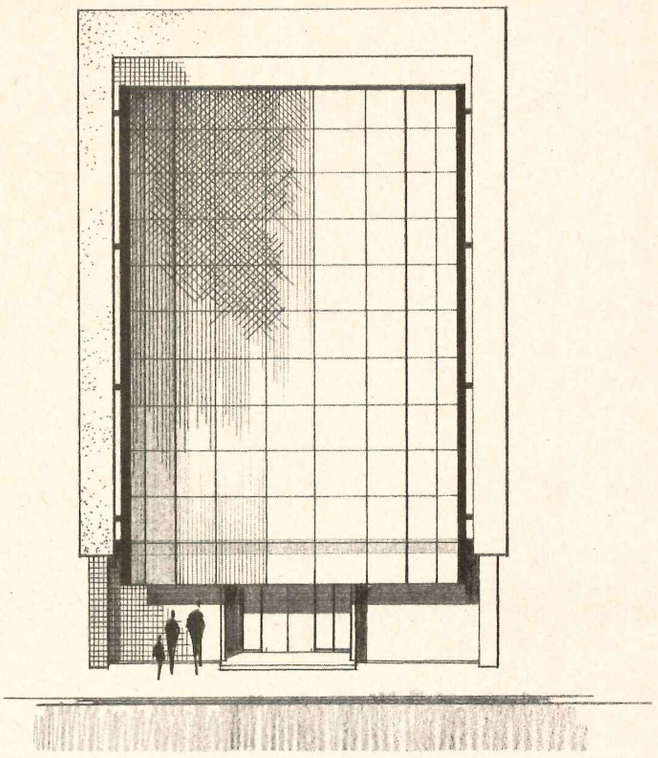


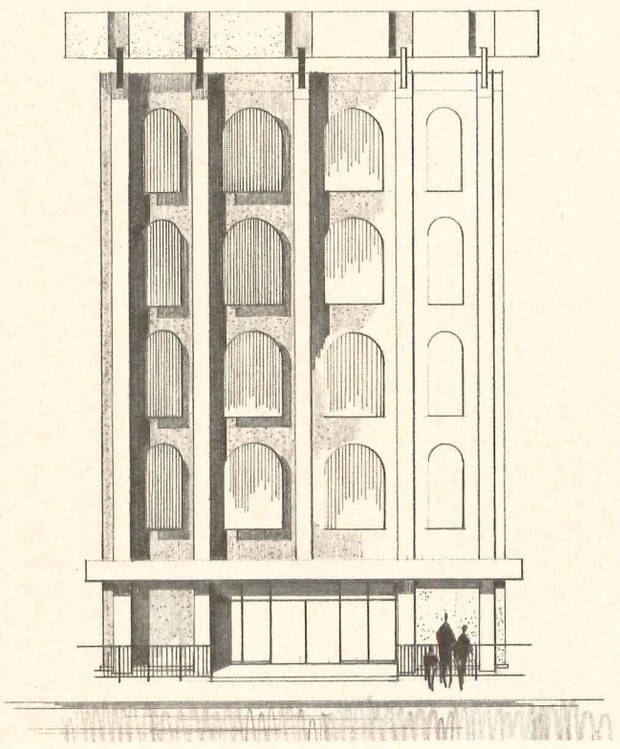
Louver mesh

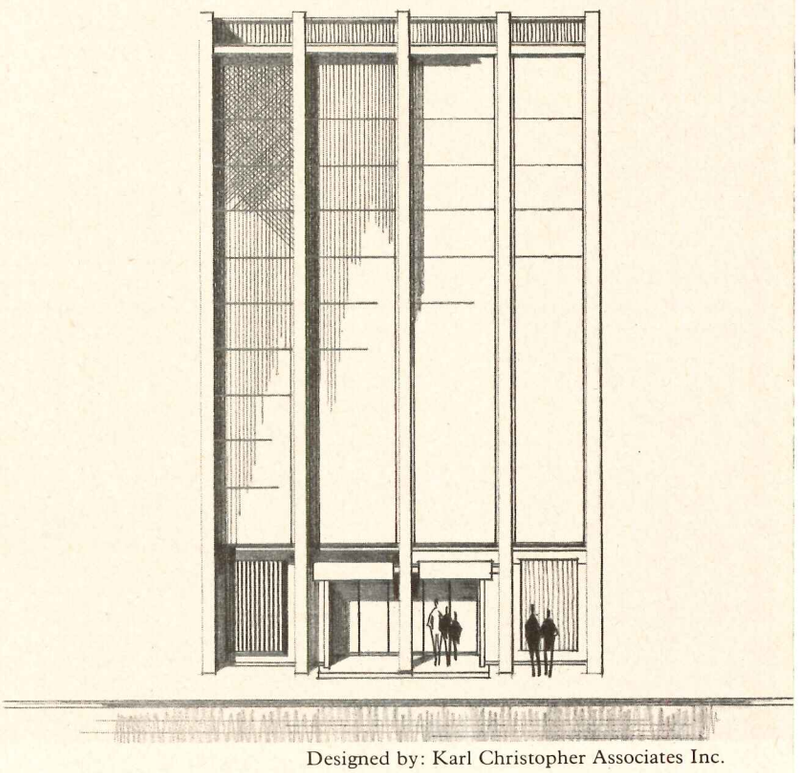


½" facade





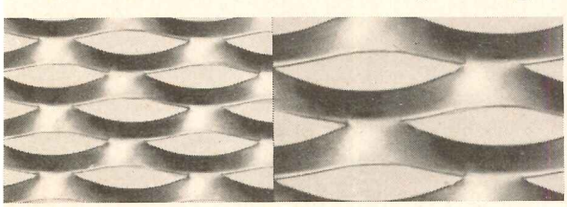




Designed by: Karl Christopher Associates Inc.

only material that can so easily and economically alter the appearance of an old building and still let in light and air.

Wheeling's expanded steel facade comes in four configurations, in the sizes and modules you specify. For more information, see your nearest steel service center or write us for free brochures.



1½" facade No. 4 facade

Wheeling Expanded Metal.

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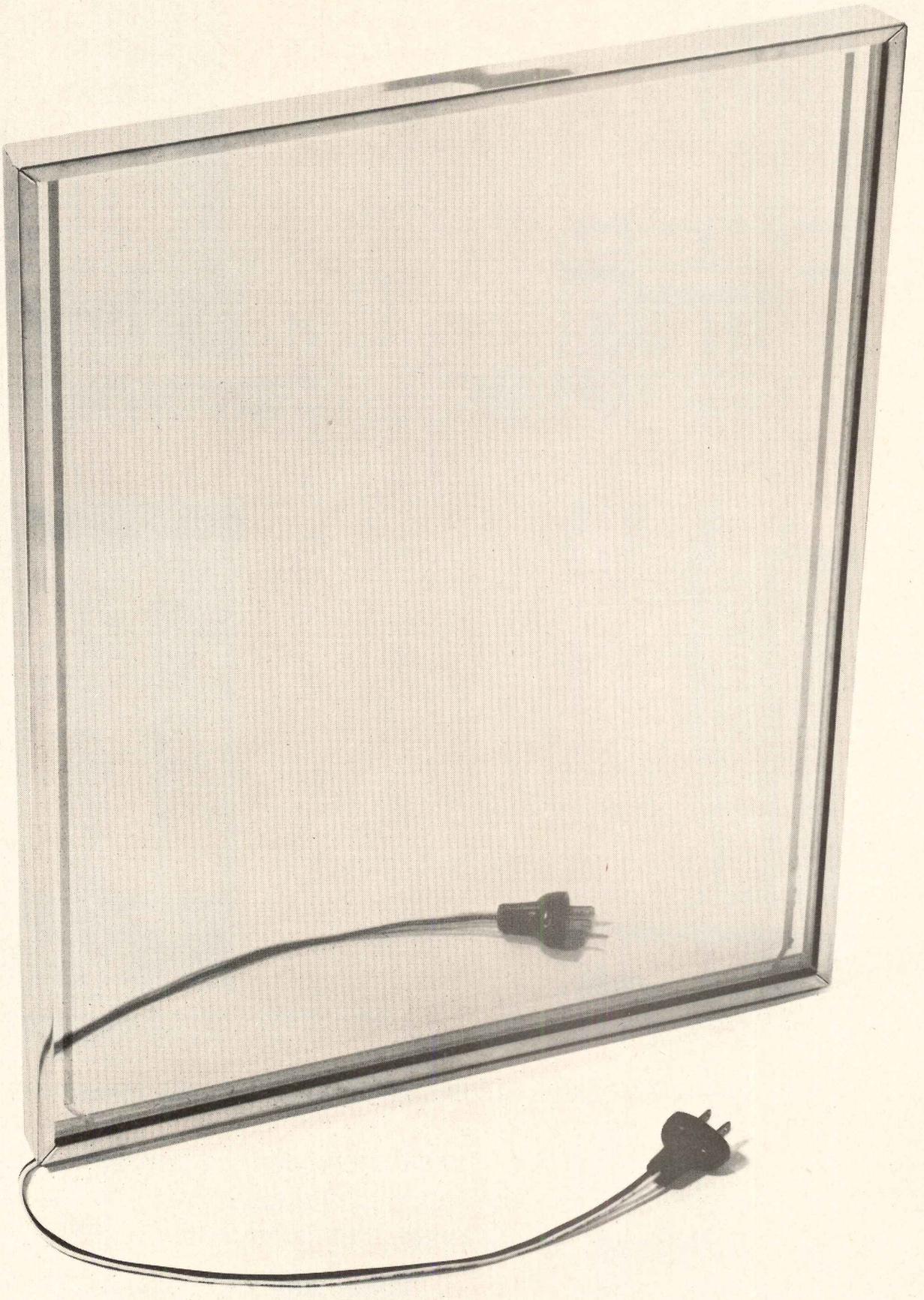

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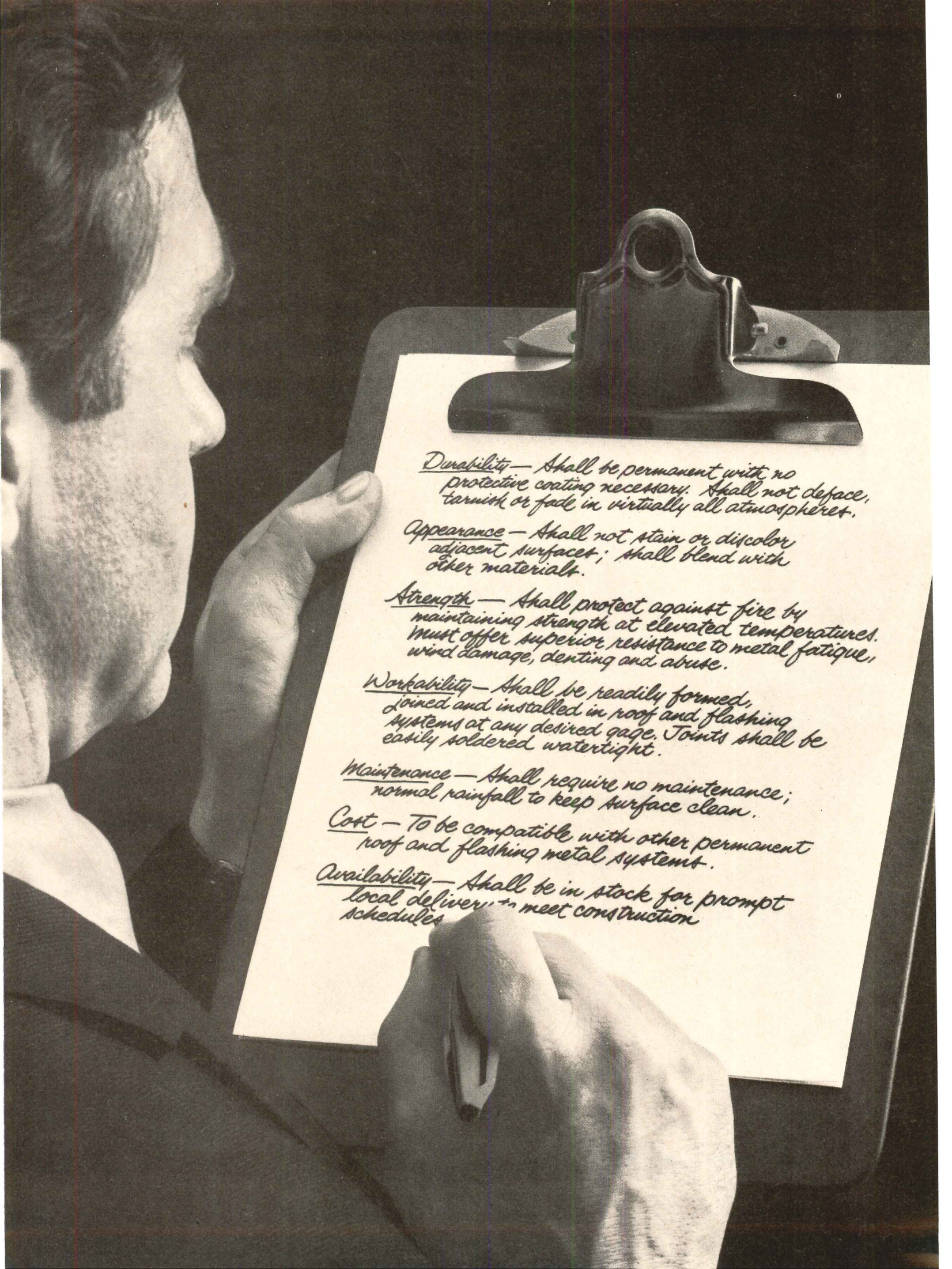
Durability — Shall be permanent with no protective coating necessary. Shall not deface, tarnish or fade in virtually all atmospheres.
Appearance — Shall not stain or discolor adjacent surfaces; shall blend with other materials.
Strength — Shall protect against fire by maintaining strength at elevated temperatures. Must offer superior resistance to metal fatigue, wind damage, denting and abuse.
Workability — Shall be readily formed, joined and installed in roof and flashing systems at any desired gage. Joints shall be easily soldered watertight.
Maintenance — Shall require no maintenance; normal rainfall to keep surface clean.
Cost — To be compatible with other permanent roof and flashing metal systems.
Availability — Shall be in stock for prompt local delivery to meet construction schedules

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You can, you know...

what you'll get is a Republic stainless roofing system

And you'll get further benefits, too. The high strength-to-weight ratio of stainless allows lighter, more economical gages to replace heavier, more expensive (and less available) gages of copper in most roofing and flashing specifications.

Now Republic offers this surprisingly economical material in two tempers: a roofing grade type 304, and a new strong, yet easy-to-work, stainless flashing grade, Republic DUROFLASH®, a soft stainless.

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Leading architects have already accepted Republic soft stainless. On the 41-story Federal Office Building at Foley Square in New York City, more than 55 tons of stainless steel were used for spandrel and through-the-wall flashing. Republic stainless was also used exclusively in the complete new roof installed on the Birmingham, Alabama, Municipal Auditorium.

Designing and Specifying Stainless Steel in Built-up Roof and Moisture Protection Systems.

The newest information on stainless steel in roofing systems is now in a new booklet which is yours for the asking. It contains complete specifications and details plus tables comparing the properties of roofing and flashing metals.

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This table illustrates the recommended applications of regular Republic 304 grade stainless, and new Republic DUROFLASH, the soft stainless.

Stainless Steel Types, Gages, Finishes, and Tempers FOR ROOF AND FLASHING SYSTEMS

Use	Product Description and Finish
Exposed Flashing	Where a semibright reflective treatment is desired . . .
Roof Trim Roofing	Specify temper rolled AISI type 304 No. 2 (strip) or No. 2B (sheet) conventional annealed finish. — OR —
Roof Drainage Accessories	Where a softer, less reflective treatment is desired . . .
Expansion Joint Covers	Specify temper rolled AISI type 304 No. 2 rough rolled (Republic No. 2 RSK) conventional annealed finish.
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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CLEVELAND, OHIO 44101

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Holiday Inn
MEMPHIS
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GE ZONELINE

75 Holiday Inns are warmed as well as cooled by GE Zoneline

Holiday Inns, Inc. has chosen GE Zoneline air conditioning units for many of their latest Inns; 10,000 rooms, from Rochester to Miami, from Hartford to Honolulu.

One good reason—GE Zoneline gives Holiday Inns a lot of choices. Over 3000, in fact, and all will fit a standard 42″ opening.

There are models with cooling only. Or cooling, and heating with electric heat. Or cooling, and heating with a heat pump.

Why should *you* choose GE instead of some other zonal system?

For one thing, GE service is nearby... a comforting thought to any inn keeper.

And you can keep a spare Zoneline unit on hand for instant "do-it-yourself" replacement. It's easy.

Now consider the outstanding GE features.

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Also nice to know, the unique GE spine-fin coils use continuous tubing to eliminate many of the brazed joints found in most air conditioners. Every brazed joint is a potential refrigerant leak. Who needs headaches like this?

Zoneline controls are prominently located on top of the chassis and so simple, even a tired businessman can operate them without his glasses.

For added reliability, GE keeps the electrical connections of each unit on the room side of the weather barrier. Why give weather a chance to get at them?

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Maybe the same features are what you're looking for in your next motor inn.

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Progress Is Our Most Important Product

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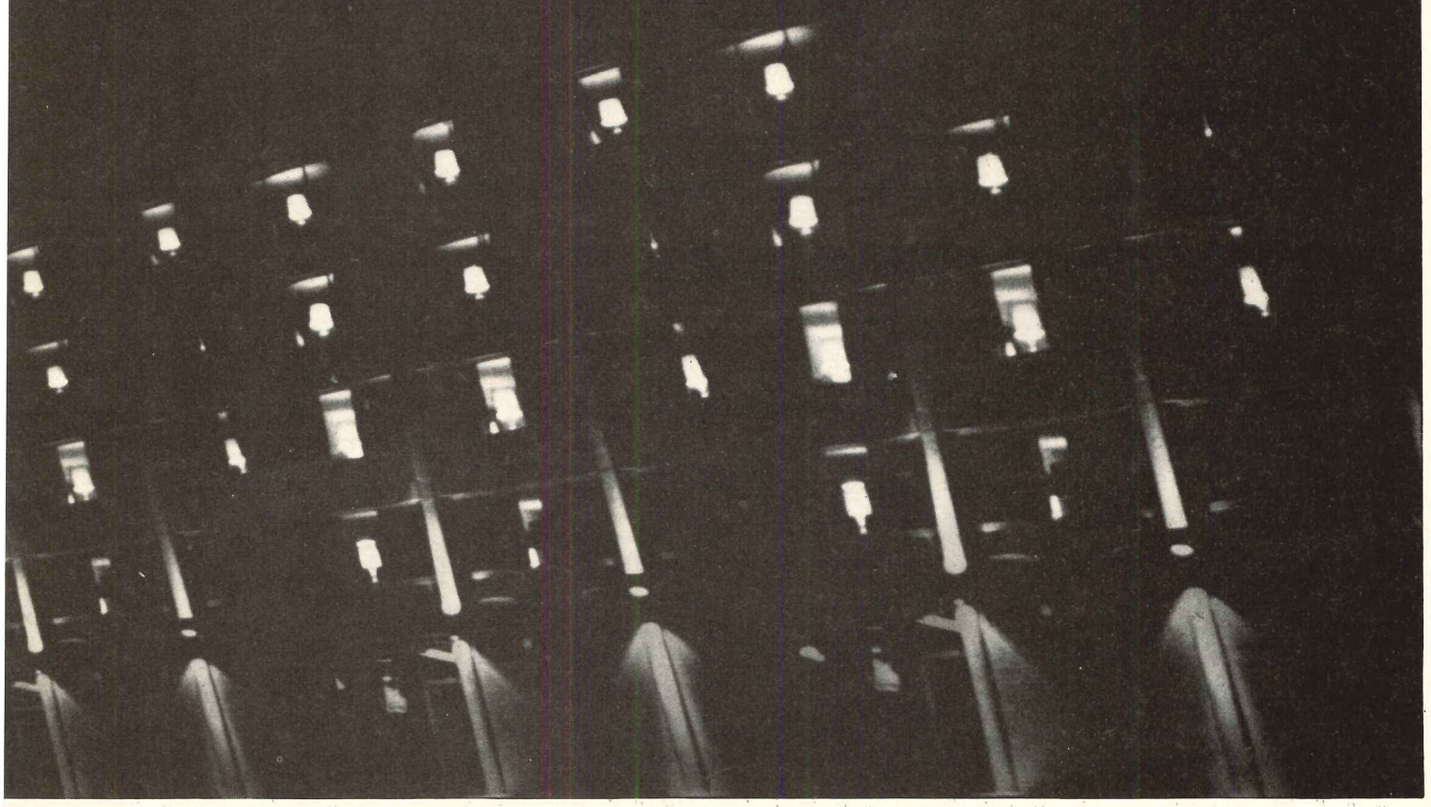

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Illinois Bell Telephone Long Lines Building, Illinois
Over 11,000 tons of fabricated steel for the framing.

John F. Kennedy Memorial Hospital, New Jersey
Milcor® metal lath products. Structural and non-bearing steel studs. Access doors.

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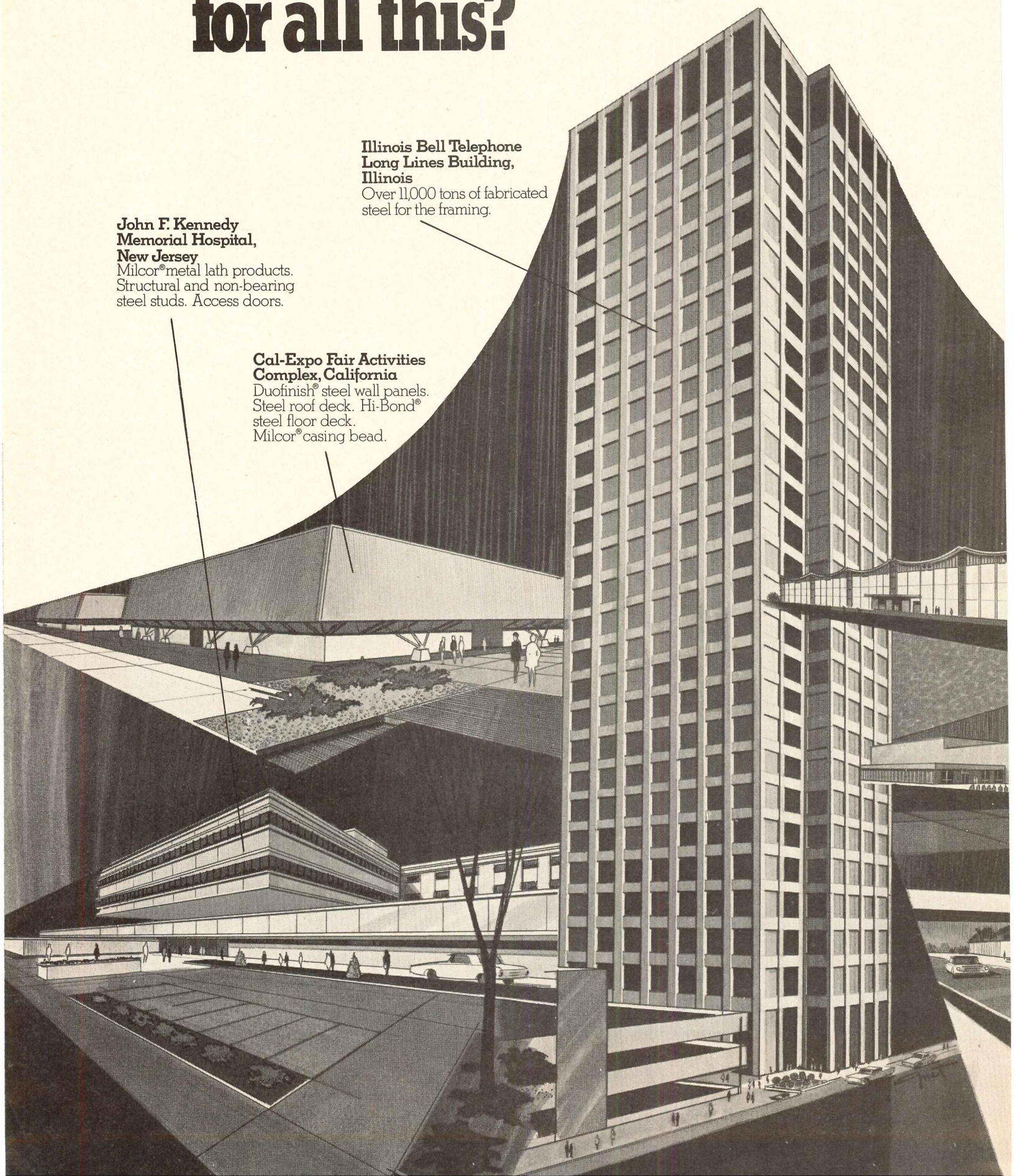
Duofinish® steel wall panels. Steel roof deck. Hi-Bond® steel floor deck. Milcor® casing bead.



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In this one organization, national in scope but local in ability to serve your needs, you can now find construction systems and skills for almost every project.
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Olin Conductors Manufacturing Facility, Missouri
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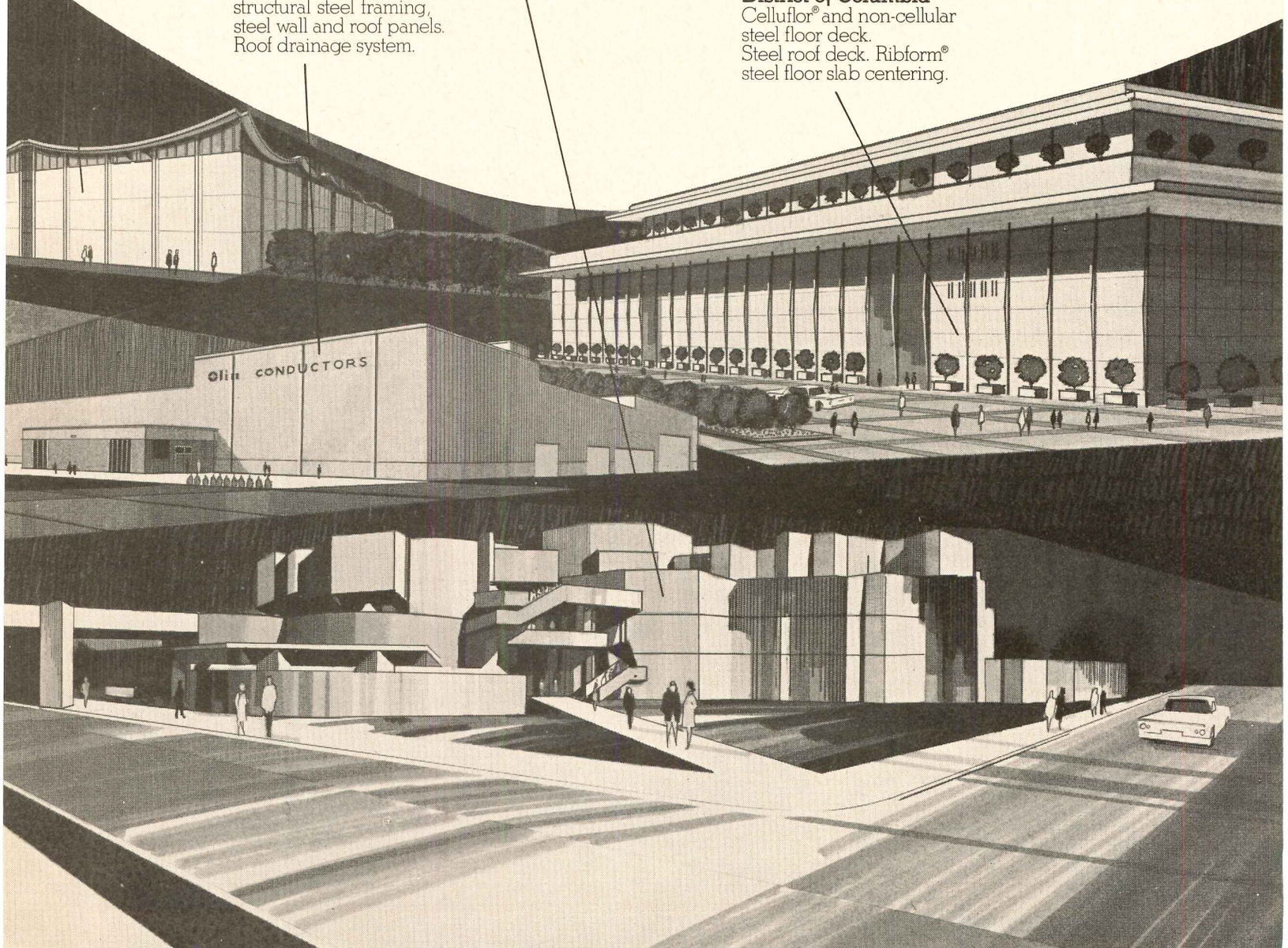

ADVERTISING INDEX

Pre-filed catalogs of the manufacturers listed below are available in the 1969 Sweet's Catalog File as follows.

A Architectural File (green)
I Industrial Construction File (blue)
L Light Construction File (yellow)
D Interior Design File (black)

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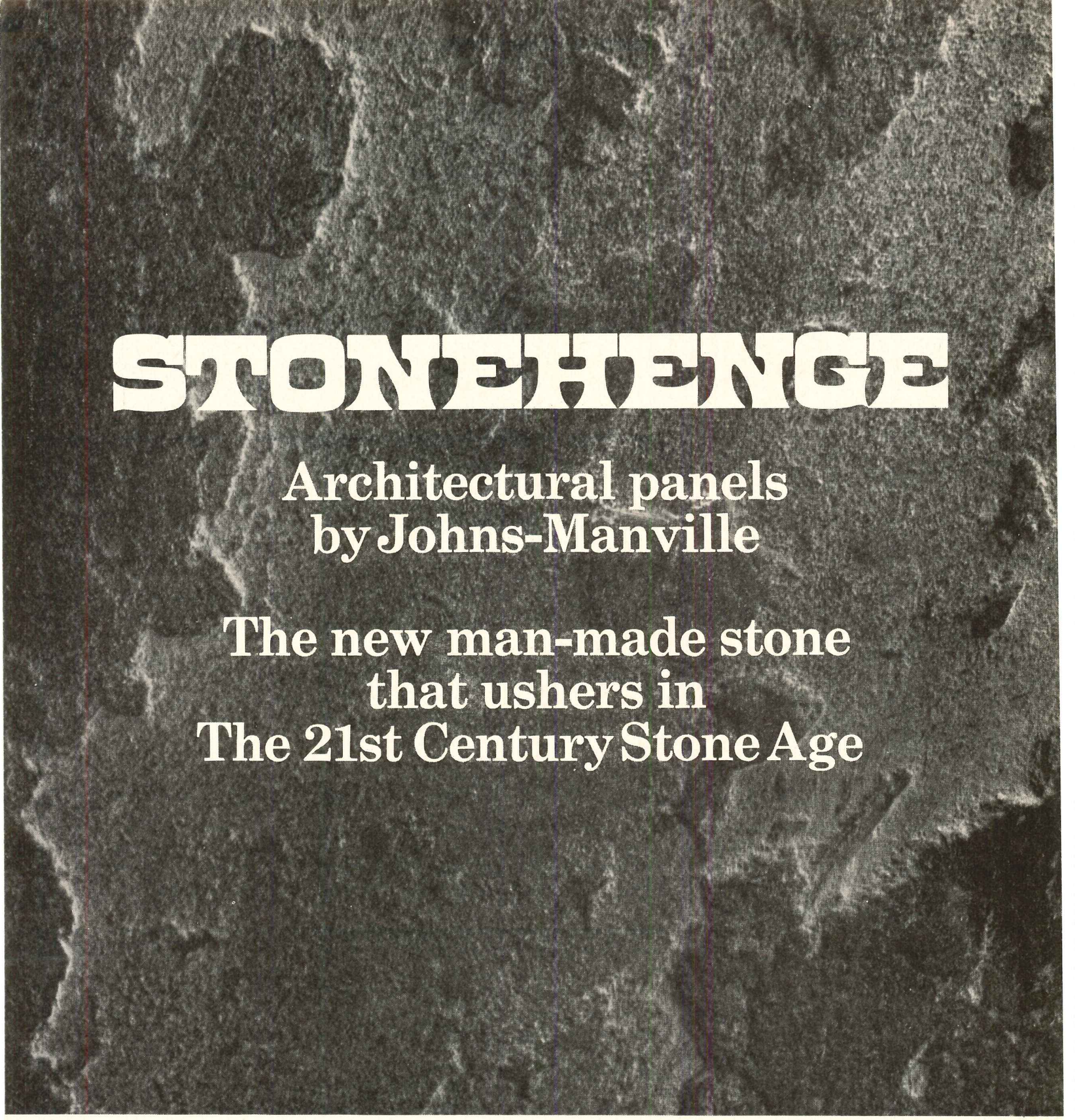
San Francisco 94111 — Robert L. Clark, 255 California St., (415) 362-4600



Stonehenge™... lighter, tougher, more versatile, less expensive than natural stone.

J-M Stonehenge has a deep-relief surface with the rugged beauty of nature. And Stonehenge has unique virtues of its own.

Stonehenge is easily and quickly erected, has superior screw holding ability. Its simple mounting systems mean less labor.

Stonehenge provides uniform strength without extra thickness. Stonehenge can be used in panels up to 4′ x 8′ in thicknesses as little as ½″.

Use Stonehenge for facings, spandrels, lobbies, accent panels—anywhere—indoors or out—where you would use natural stone. And many places where natural stone's weight makes it impractical.

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Superior design and performance characterize the work of the National Aeronautics Space Administration . . . and superior design and performance also characterize the floors of Azrock Premiere Series which serve NASA in its Lunar Receiving Laboratory at the Manned Spacecraft Center in Houston. Premiere's subtle patterning and color put resilient beauty underfoot in offices, conference rooms and halls . . . beauty that endures, because Premiere's patterning is distributed through the full thickness of the tile. Premiere Series: beautiful, practical proof that Azrock vinyl asbestos tile outperforms all other types of floor covering in initial cost, low maintenance cost and life expectancy. Available in 12" x 12" modular size.

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For an independent research report, write today for a free copy of the Wharton School of Finance and Commerce study, "The Economics of Carpeting and Resilient Flooring: An Evaluation and Comparison." Azrock Floor Products, 517 Frost Building, San Antonio, Texas, 78206 — the HemisFair'68® City

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Nation's largest non-government facility adds new unit to an already outstanding medical center

■ From its modest beginning of 100 beds in 1912, Baptist Memorial has grown to become the nation's largest non-government hospital in terms of patient admissions. When all areas of its present $18,500,000.00 expansion program are completed, it will have a capacity of approximately 1,750 beds to meet the growing health care needs of Memphis and the tri-state area of Tennessee, Arkansas and Mississippi.

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10. Radiation Therapy

Baptist Memorial now has the finest and most modern concepts available for diagnostics, medical treatment, staff utilization and patient comfort and care.

Each patient room has individual climate control. Bedside consoles contain a clock, electrical outlet, controls for television, room lights, examining lights and nurse call.

All bathrooms are equipped with special patient conveniences, such as nurse call switches, grab bars, and doors that open both ways. All baths as well as public wash rooms have Sloan Quiet-Flush II Flush Valves, famous for their quietness, dependability and low maintenance costs. As in Baptist Memorial, your building, too, can have this same Sloan Quality—specify and insist on SLOAN.

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