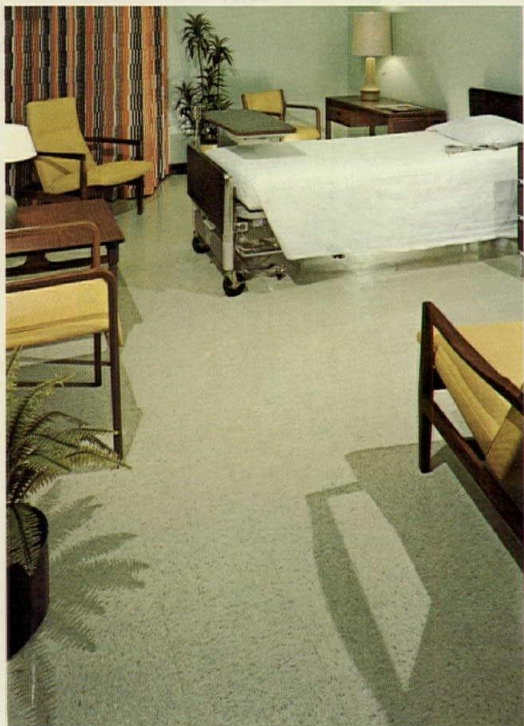




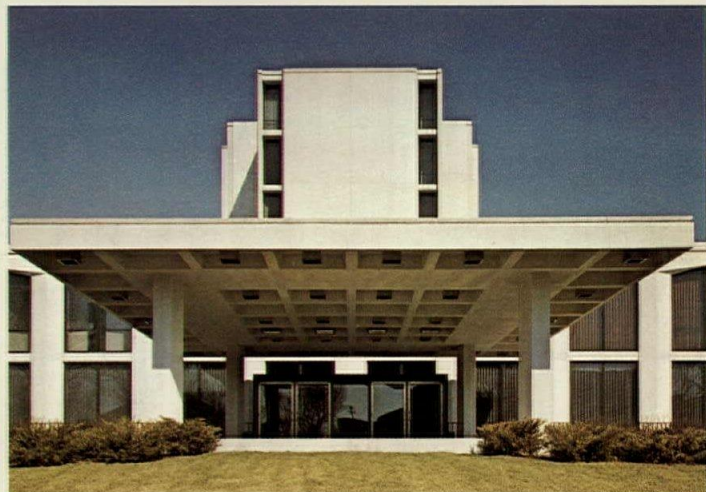
NEW DEVELOPMENTS IN JAPANESE ARCHITECTURE
A PLANNING AND DESIGN STUDY FOR THE BRONX
THE FIRST NATIONAL BANK OF CHICAGO
BUILDING TYPES STUDY: APARTMENTS
FULL CONTENTS ON PAGES 4 AND 5

ARCHITECTURAL RECORD

SEPTEMBER 1970 **9** A MCGRAW-HILL PUBLICATION TWO DOLLARS PER COPY



The clean, modern feel of the Center's exterior carries over to the interior components with the help of Armstrong Imperial Modern Excelon Tile. Imperial Modern's selection of 12 soft colors in a tight-mottled graining make it a natural choice for commercial and institutional interiors.



This is the Loyola University Medical Center in Maywood, Illinois. A center in the truest sense, it houses medical and dental schools and a fully equipped hospital.

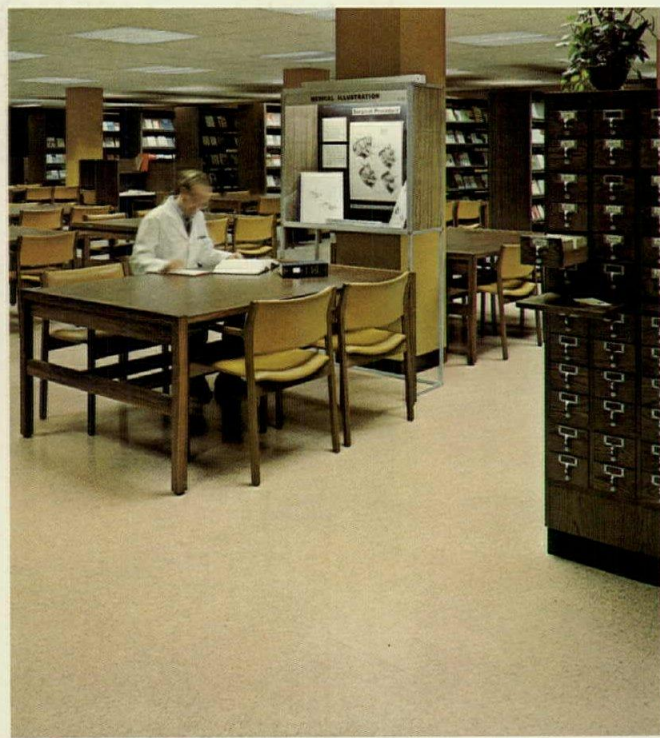
ARCHITECT: Alexander H. Bacci, FAIA, of Schmidt, Garden & Erikson, 104 South Michigan, Chicago, Illinois

INTERIOR DESIGNER: Miss Ruth M. Flaks of Schmidt, Garden & Erikson

GENERAL CONTRACTOR: M. A. Lombard Co., Chicago (Dental School); George Sollitt Construction Company, Chicago (Medical School)

FLOOR CONTRACTOR: Johnson Floor Company, Inc., 3107 South Oak Park Avenue, Berwyn, Illinois

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Imperial Modern Excelon offers a rich appearance at no premium in price, so the installed cost is ideal for controlled budgets. Put this together with Excelon's proven reputation for economical maintenance, and the total cost picture is outstanding—a key consideration for any building planner.



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109 Japanese architects and their current work

Expo '70 heralded the rising political and economic strength of Japan and gave notice to the world of the broad and dynamic social changes that have accompanied this growth. Because of Expo '70, increasing attention is being paid to the work of the nation's leading architects whose best work gives bold physical reality to Japan's accomplishment. The projects shown have been selected to typify current trends and suggest future developments.

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Under the auspices of the City Planning Commission, this young Manhattan firm has prepared an intensive and comprehensive plan for the transformation of the Morrisania section of the Bronx. The study includes an organized plan of development for new and renovated housing, commercial development and industry, public spaces and parks.

137 The First National Bank of Chicago

This curving tower by C. F. Murphy and the Perkins and Will Partnership rises from the very center of the Loop. It is part of a distinct change in scale for Chicago's center-city, both in the size of its public plazas and in the height of its buildings.

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143 Apartments

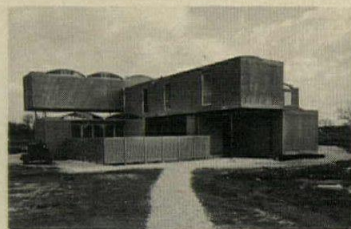
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Refreshing design and practical solution for a Turnkey project.

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Low-budget, high-density and good design for families with—and without—children.

154 Park Newport

High-density land use plus landscaped open space—public, semi-public, private—for a high-quality living environment.

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157 Round-the-clock vocational school runs on total energy

Air conditioning was a necessity in the Wilkes-Barre vocational technical school because of the high internal heat load and because the school was to be operated throughout the year. The school operates 22 hours a day for nine months a year, and adult courses are given during the summer. The continuity of power usage was a factor in determining the selection of a total energy system.

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tion Reports (Los Angeles)—Dodge Building Costs Services—Dodge Construction News (Chicago, Denver, San Francisco)—Dodge Construction Statistics—Dodge Reports—Dodge Spec-Fax—Management Control Service—Sweet's Construction Catalog Systems—Sweet's Canadian Construction Catalog Services—Sweet's Information and Library Centers—Sweet's Microfilm Systems.
 THIS ISSUE is published in national and separate editions. Additional pages of separate edition numbered or allowed for as follows: Western Section 32-1 through 32-4.
 POSTMASTER: Please send form 3579 to Fulfillment Manager, ARCHITECTURAL RECORD, P.O. Box 430, Hightstown, N.J. 08520.





Lake Point Tower conquers the Windy City's weather— with an assist from Butyl sealants.

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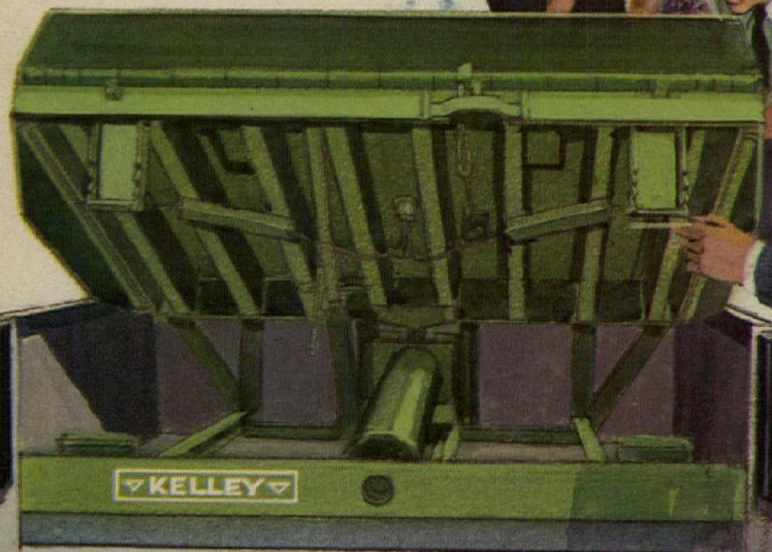
Lake Point Tower • Developers: Hartnett-Shaw & Assoc. Inc., Chicago and Fluor Properties Inc., Los Angeles • Architect: Schipporeit-Heinrich, Chicago • Glazing Contractor: National-Hamilton-Division of Bienenfeld Glass Corporation, Chicago • Sealant Manufacturer: Protective Treatments, Inc., Chicago • Windows are Butyl sealed Polarpane insulated glass. Polarpane is a Division of Combustion Engineers, Inc. John Hancock Center • Owner/Developer: John Hancock Mutual Life Insurance Co. Architect: Skidmore, Owings and Merrill • Glazing Contractor: National-Hamilton-Division of Bienenfeld Glass Corporation, Chicago • Sealant Manufacturer: Protective Treatments, Inc., Dayton, Ohio •

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Housing: this time architects can't just boo from the stands

It does look as though, at last, housing is starting to feel its way out of the horrendous slump that it has been in for the past four years. Item: Preliminary estimates for June show privately owned housing starts at an annual rate of 1.36 million, up from 1.225 million for May. Figures for July put starts at a 1.585 million annual rate—the highest in 17 months. (Note: those figures *do* include mobile homes, without indicating how many are mobile homes—and shame on HUD and Commerce for that.) And while that may not seem such a startling increase, many economists see this upturn as a signal. It encouraged NAHB's economist Mike Sumicrast to forecast a 1.6 million annual rate by year's end. Item: Congress—Presidential "anti-inflation" vetoes or no—is pushing emergency mortgage credit measures: the newest authorizes \$250 million for use by the Home Loan Bank Board to reduce interest charges; expands Fannie Mae special assistance funds by \$750 million; authorizes \$105 million a year for three years as interest subsidy payment for middle-income families; and sets up a secondary market for conventional mortgages. Estimates vary as to how much housing this will stimulate—HUD probably overestimates at 400,000 units; homebuilders probably under-estimate at 100,000 units. But somewhere in the middle would be a meaningful addition to starts. Item: More and more economists seem to be predicting a drop in the cost of mortgage money—not much, but maybe 1 per cent and maybe as much as 1½ per cent; and every point counts when you start figuring the real cost of housing and are trying to qualify buyers.

Item: See "Increased housing produc-

tion forecast for 1971," page 89 this issue, which lists several more indicators.

But let's suppose that these figures and indicators are, for this awful year, whistling in the dark. No one—architect, builder, lender, government official—must forget for a minute that the need for housing is measurable and absolute and huge. Housing—and of course especially housing for low- and middle-income families—is in short supply almost everywhere; and in many cities the situation is desperate and getting worse. In New York City, where the total supply of housing is currently going down (as the result of building abandonment at a nearly 40,000-unit-per-year rate), 25 per cent of the housing is sub-standard. Fewer than 1 per cent of the city's 2.1 million apartments (including the substandard stuff) is vacant. Conditions are such that low-income families are attempting—in considerable numbers—to take over buildings slated for renewal (when money is available to renew) as squatters. Those kinds of facts—true in proportion in many cities, not just New York—make fooling around with statistics and "emergency" planning and budgeting a crime: "Emergency" is no longer a strong enough word.

To avoid millions of personal disasters, which surely add up to a national public disaster, professionals and government and the people—the taxpayers—are going to have to face up to the idea that increases in housing production are needed on an enormous scale. Whether the real need is 2.6 million units a year (as the Federal government figures) or 2.2 million units a year (which is the most conservative estimate I've seen), we're talking about little short of

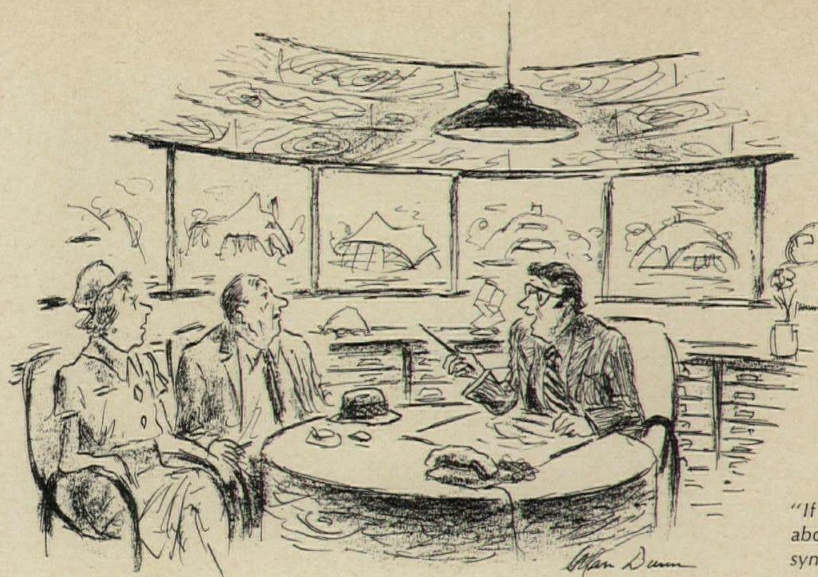
doubling present production.

And the government and the taxpayers are going to have to face up to the fact that—Breakthroughs notwithstanding—housing costs more money than many (are we getting to most?) of the people who need the housing can afford to pay for it, and begin to add the cost of massive continuing subsidy to all of the other costs with which the government (and the taxpayers) are now faced. That's a lot of facing up, but. . . .

And what of the architect and his role when all this demand and pressure really unlock the brakes on housing (whether that's in the fourth quarter or, alas, later). It's terribly important for architects in general (and individually, in terms of their own businesses) to analyze this huge coming market. Because the kind of housing that will be built will be very different from the kind of housing built in any previous boom, and all of the changes put this new housing very much in the architect's domain. There's nothing very complex about the reasoning.

1) A very high and growing proportion of the housing units built in the coming boom will be multi-family, and high-density projects at that. The reasons: the scarcity of land in many areas where housing is needed, the high cost of land almost everywhere, and a major shift in the population from the 30- to 45-year-olds who buy single-family houses to the under-30s and over-60s who want apartments. And such projects are architects' territory. The chips are too big for the least-sensitive builder to risk "designing it" himself, as so many do in the single-family market.

2) In the area of urban housing, many (and an ever-increasing number of) architects have earned their experience points in working with CDC's, with low-income (and sometimes) militant neighborhood groups, in struggling through with city bureaucracies. A new kind of expertise and sensitivity is needed that was not needed when we were urban sprawling; and architects will be in a stronger position for having that exper-



"If it's status you folks want, how about a tetrahedral space frame in a synclastic shell?"

tise and sensitivity.

3) If we assume (and as noted here many times, I don't) that experiments in the direction of massively industrializing housing do succeed, the architect will have a critical role. In the first place, for example, most of the groups (or corporations) which develop such housing will have architects as key members of the development team—as in the case of almost all the Type A Break-through proposals and all of the Type B's we've been able to get a look at. In the second place, the corporations who will be producing the industrialized housing—many of which have people enormously skillful at market analysis, at production control, at cost control, at management—typically do not have the kind of architectural and planning staff necessary to create designs and land plans for individual sites on any large or scattered scale.

4) It may be (and again I'm not ready to assume this) that a "new esthetic" is needed for housing. Many young architects are arguing that traditional design (whether the "traditional" tradition of most developers or the contemporary "tradition" of most architects) is invalid—that we need design disciplines that are more adaptable, more flexible, more tolerant, to get the job done. Perhaps megastructures, perhaps loft space, perhaps . . . what? "Who cares about 'esthetics' when people are squatting in abandoned slums with no heat, no water, and no windows." At any rate, if there is to be a "new esthetic" that solves any of our existing housing problems, there is no one it can come from except architects.

5) And then there is the newly respectable (under the new Ethical Standards) possibility that many architects will move into housing on their own account.

At any rate, it seems clear that the new housing boom will be a new ball game—and this time architects must field a great team and not just boo from the stands.

—Walter F. Wagner Jr.

How about making decisions "on the basis of our hopes"?

Samuel Jackson, HUD assistant secretary for metropolitan planning and development, recently made a speech in which he argued well for the development of a truly effective urban growth policy, while pointing out the many problems. The (to me) most important passage:

"I do believe that we can develop an effective urban growth policy, but it will be effective *only* if we as a nation are prepared to accept certain basic changes in our institutions and in our traditional ways of managing urban growth. However, there are major obstacles to this kind of institutional change. . . .

"First, there is the problem of recognizing the seriousness of problems. We are a pragmatic people and little short of a crisis will sway us to modify our institutional heritage. . . .

"In designing national programs and getting them adopted by the Congress, there is evidence of this pragmatism in our efforts to prove the merit of the programs in reduced costs, taxes, or both.

Thus, urban sprawl, though ugly and often depressing to the human spirit, is attacked more as a wasteful user of land resources and an extravagant user of public facilities and services. . . .

"We are compelled to support our policies and programs with cost/benefit analyses. New communities, for example . . . receive much of their official support from the fact that they save development costs when measured against urban sprawl pattern of growth.

Yet, I think that many of the benefits of new communities—or any pattern of orderly development—will always remain elusive of the economists' attempts to measure and price them. What is the dollar value of a decent environment. . . ?"

Coming next month: a look at what will happen in the 1970s

In October, the entire issue will be devoted to just one subject: "Architecture in the '70s: Gearing Performance to Meet the Needs."

We've departed from our normal format only one other time in the memory of the oldest resident: That, RECORD's 75th Anniversary issue in 1966.

Why this time? Because we felt a pressing need to try to put into perspective what's happening—and what's going to happen—to architecture and building.

At a time, for instance, when "systems building" has become a sort of mystique (everybody seems to be for it but almost nobody knows what it means), we're going to try to put what's real and what's happening in perspective with what a lot of promoters of common-sense-made-difficult and proprietary technology are pushing.

We're going to try to put into perspective all those "new management tools" and analyze the real problems of running an architectural office these days. We're going to talk about whether we ought to stop joining in the howls about high costs and face up to them. Or will they go away as we all wish they would? We're going to talk about what's wrong—and what's right—with architectural education; how clients are making decisions these days about what gets built—and how well. And we're going to talk—since we still believe in professionalism in a "what's-in-it-for-me" world—about professionalism.

We've thought a lot about what's going to be in this issue—and I hope when you read it you'll write—preferably praising it, but (if necessary) debating the critical issues and understandings.

—W. W.

Submissions for RECORD INTERIORS 1971 (awards to be presented in the RECORD, January) are due October 1st. Entries must be completed, architect-designed.



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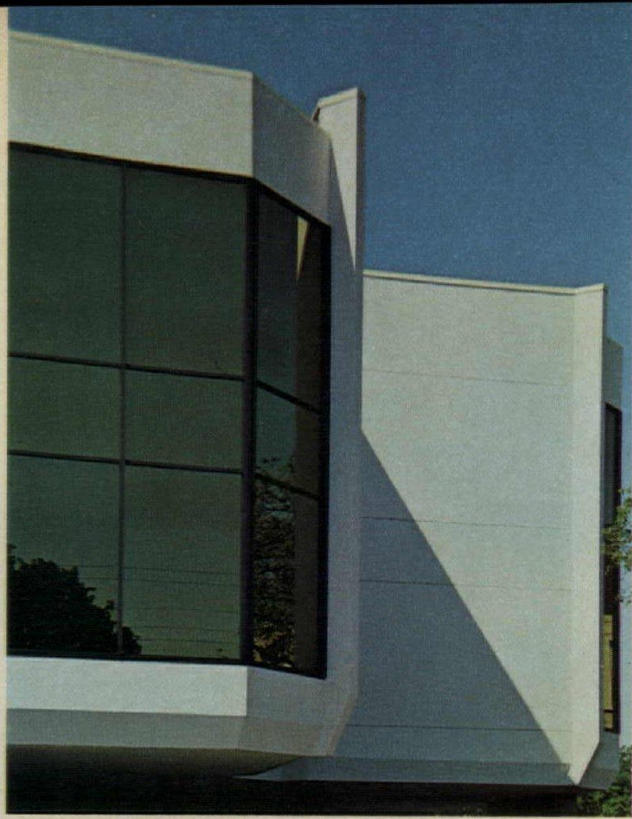
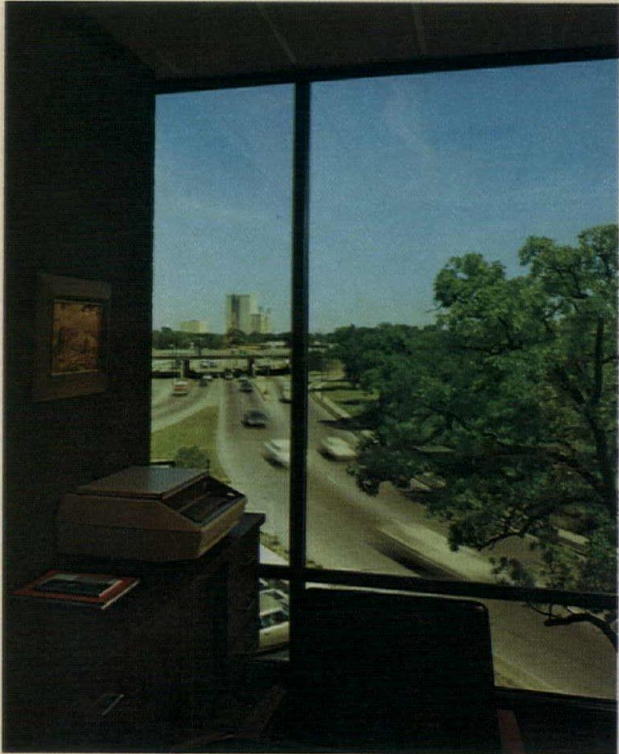
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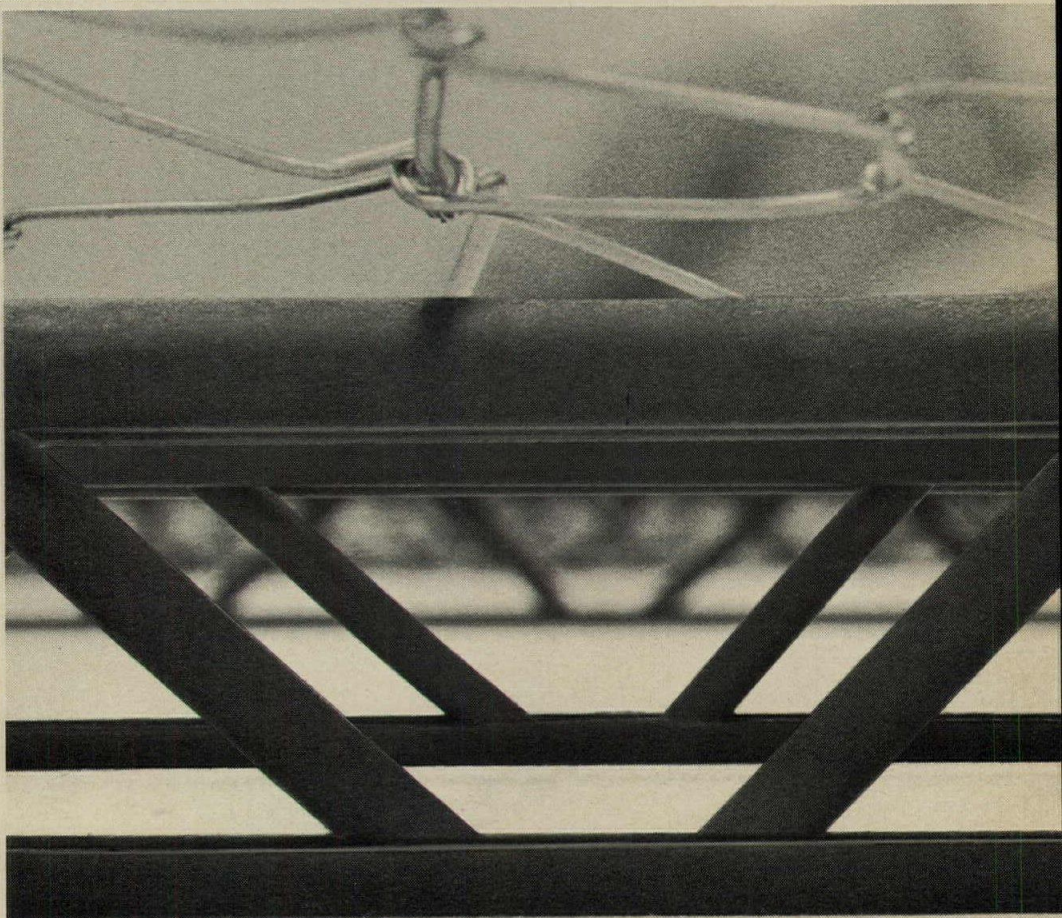
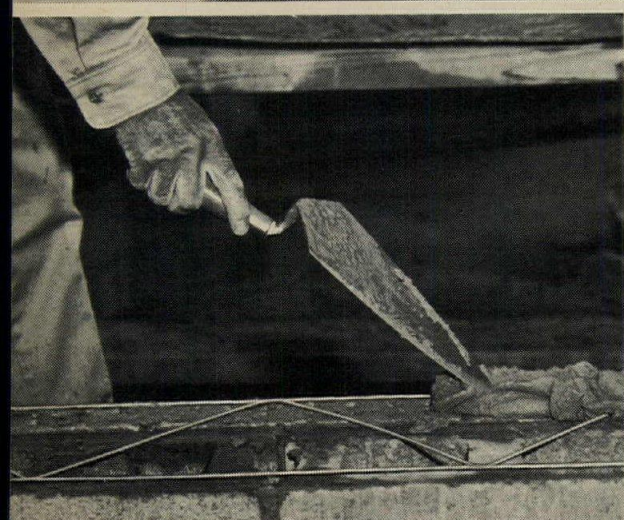
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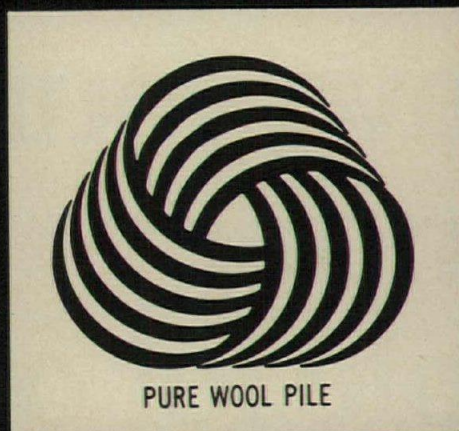
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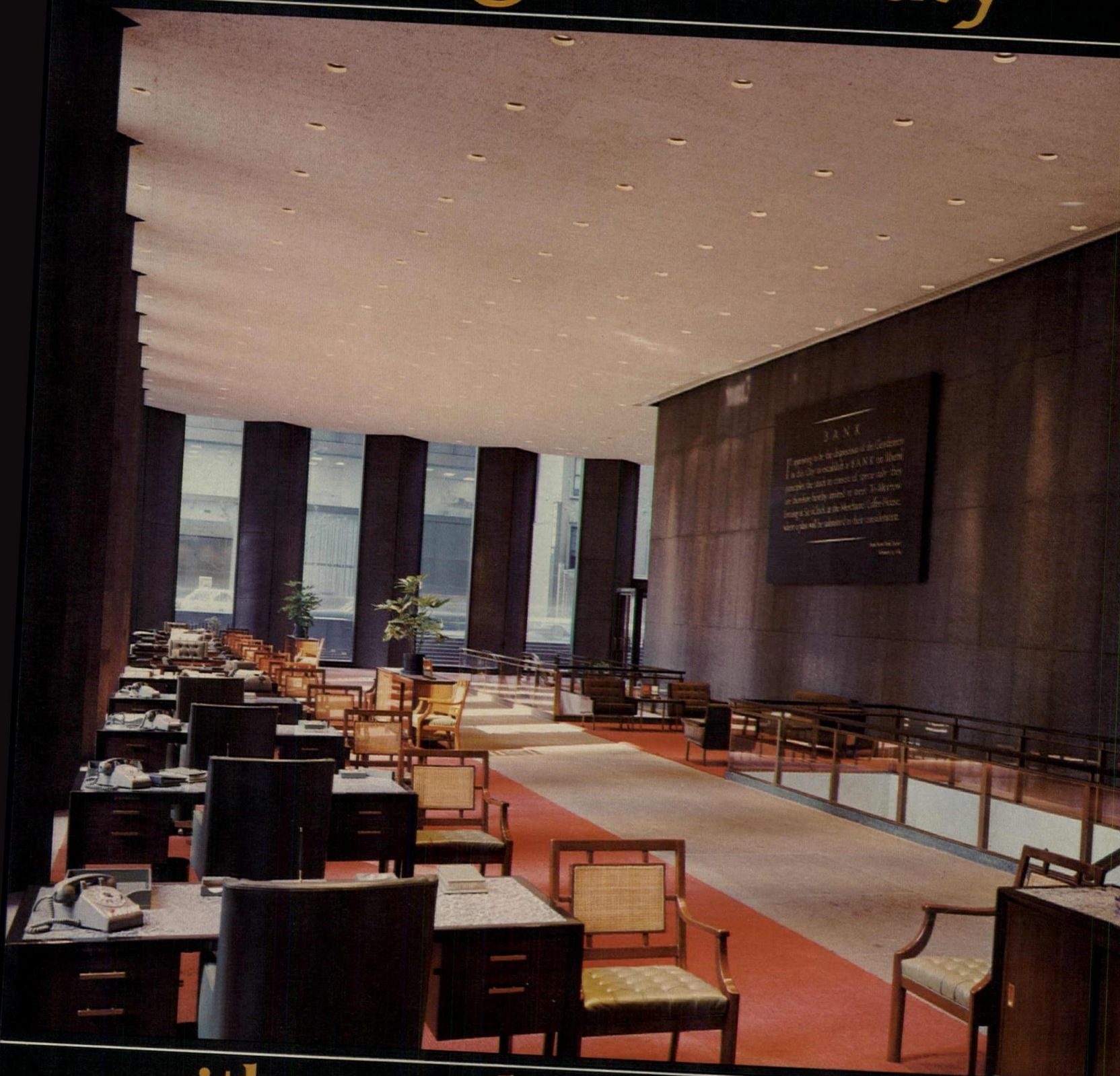
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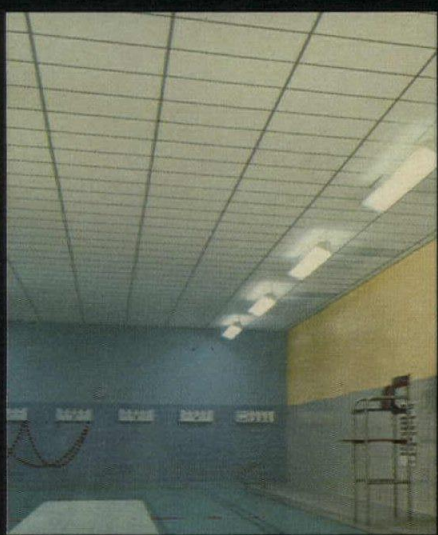
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If your plans do not provide for total protection . . . go back to the drawing board! No building is finished or functional unless you have specified full protection against fire and burglary, and have provided for supplementary communications and sound systems.

By planning for total security and sound systems in the initial stages, you guard against costly construction adjustments if the need for any of these systems has been overlooked.

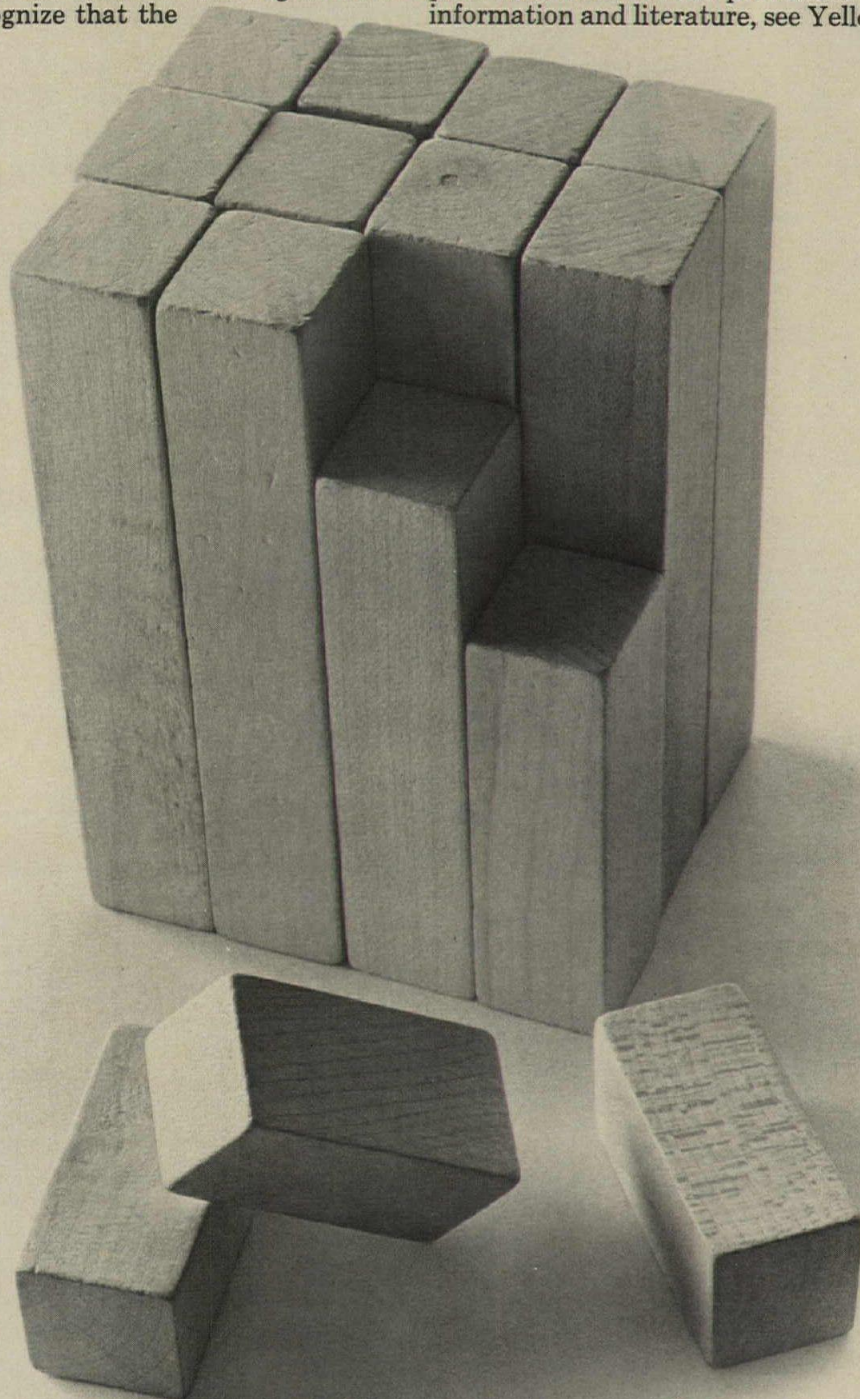
We know you are aware of fire regulations. You should also recognize that the

need for security systems today is equally important.

ADT protection consultants will work with you in the planning stages. They will assist you in integrating total, custom-built protection and sound systems into your building.

And with ADT you get the entire protection package. ADT designs, manufactures, installs and maintains its own systems. ADT service keeps them in top operating condition.

Progressive architects with a sense of security plan with ADT . . . the protection professionals. For information and literature, see Yellow Pages or write.

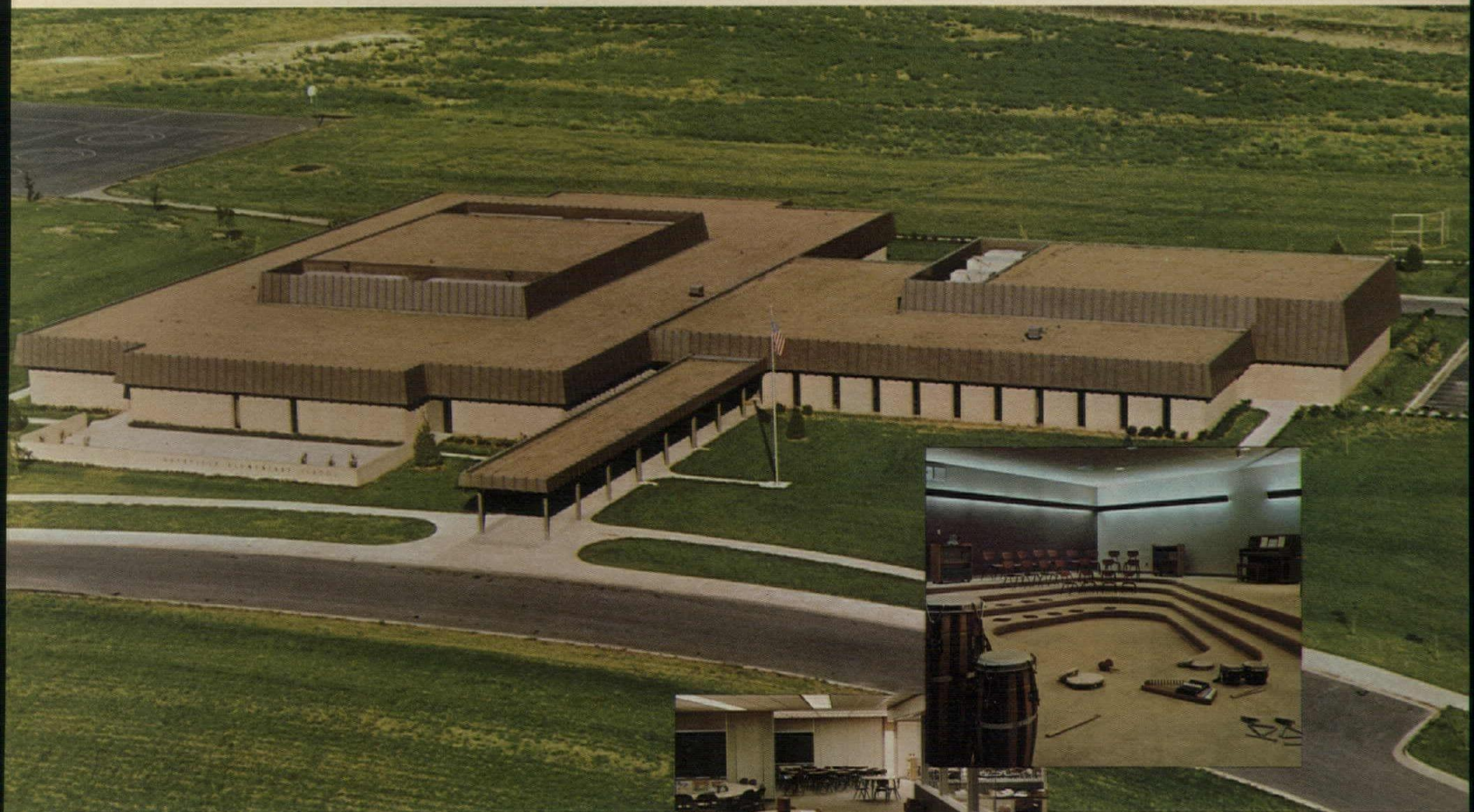


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Educational change: moving target for school designers



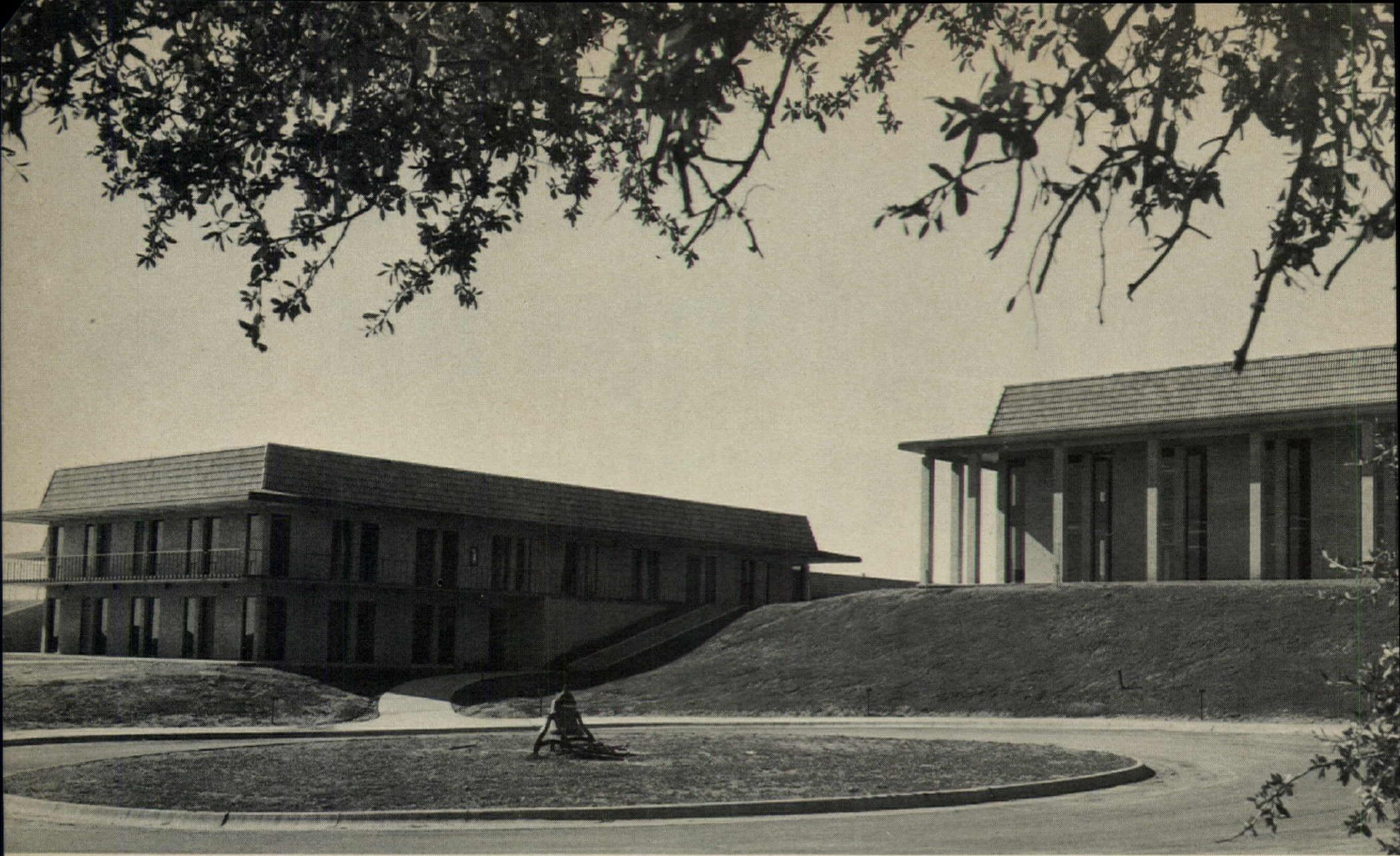
DEERFIELD SCHOOL: Deerfield, a Lawrence, Kansas, elementary school follows modern, open-space concepts to permit team teaching, high student mobility, and easy change in the size of groups. The entire school is carpeted. Four Lennox DMS rooftop units, each providing individual control for six separate zones, heat and air condition the 29,900 square foot building.



Lennox opens more options

Tomorrow's school. A place to teach? Or to learn? A place of discipline? Or demonstration? Or democracy? Education, as it re-examines its missions, poses shifting challenges to school planners. Architects seek to shape environments firm enough to help mold the process yet fluid enough to be shaped by future unknown change.

continued overleaf . . .



WEATHERFORD: Parker County Junior College ranges over 35 rolling Texas acres, shaping quiet views, reflecting the mingled heritage of Spanish and Old South. Buildings presently completed cover 95,316 square feet, and are designed to serve 2,500 full time students. The Lennox rooftop modular HVAC units are equipped with POWER SAVER™ to cool the building free on days when outside temperature drops below 57°F.

educational change ... continued

Lennox cooling-heating-ventilating systems not only expand the architect's design options but offer maximum opportunity for future change. Acoustics, space division, space changes, color, fenestration, orientation, security, privacy, all offer greater choice, and opportunities for economy, when the decision to air condition is made early in the design process.

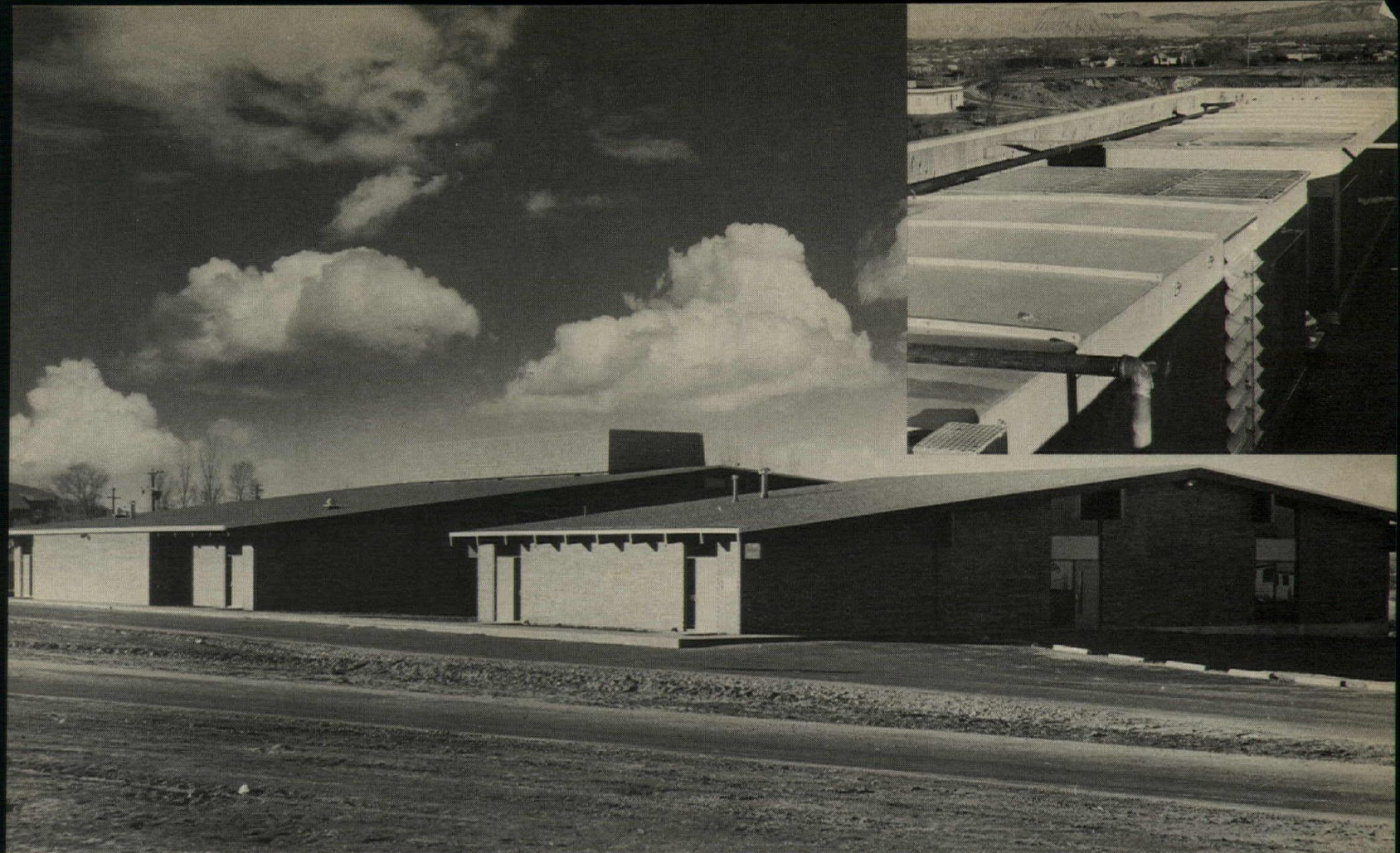
Lennox offers special opportunities. Units are roof mounted. Flexible ducts allow walls to be



Uncommon. In the Arabi Park Middle School, St. Bernard Parish, La., this spacious planetarium reflects education's response to man's new and intensified awareness of space.

ARABI SCHOOL: Open, uncrowded spaces, excellent illumination, continuous-flow carpeting, soft coloring compensate for lack of window views in this Arabi, La., school where high humidity and high temperatures dictated a minimum of glass exposure. 315 tons of Lennox air conditioning serve 62,960 square feet of conditioned space. POWER SAVER™ unit cools free when outside temperatures drop below 57°F.





SCENIC ELEMENTARY: Scenic Elementary, a K-6 split level for 600 students, nests into the side of a canyon outside Grand Junction, Colorado. Lennox DMS rooftop units, dual-ducted, with mixing dampers provide heating, cooling, ventilation to a score of different zones on three levels.

added, moved or eliminated, and still provide space-by-space control. As a school grows, you simply add units. And because equipment is factory assembled and wired, including controls, we offer you single-source responsibility for performance. And your costs are fully predictable. First costs. Cost of owning. Comprehensive service contracts are available.

Planning a school? Write us. We have representatives specially trained to talk schools with you. Lennox Industries, Inc., 806 S. 12th Avenue, Marshalltown, Iowa 50158.

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ARCHITECTURAL & ENGINEERING
CREDITS:

Deerfield: Architects and Engineers:

Robertson, Peters, Ericson & Williams.

Arabi: Architect: M. Wayne Stoffle & Assoc.

Engineers: J. E. Leininger & Assoc.

Weatherford: Architect: Albert S. Komatsu

& Assoc. Engineers: Adams Reid & Assoc.

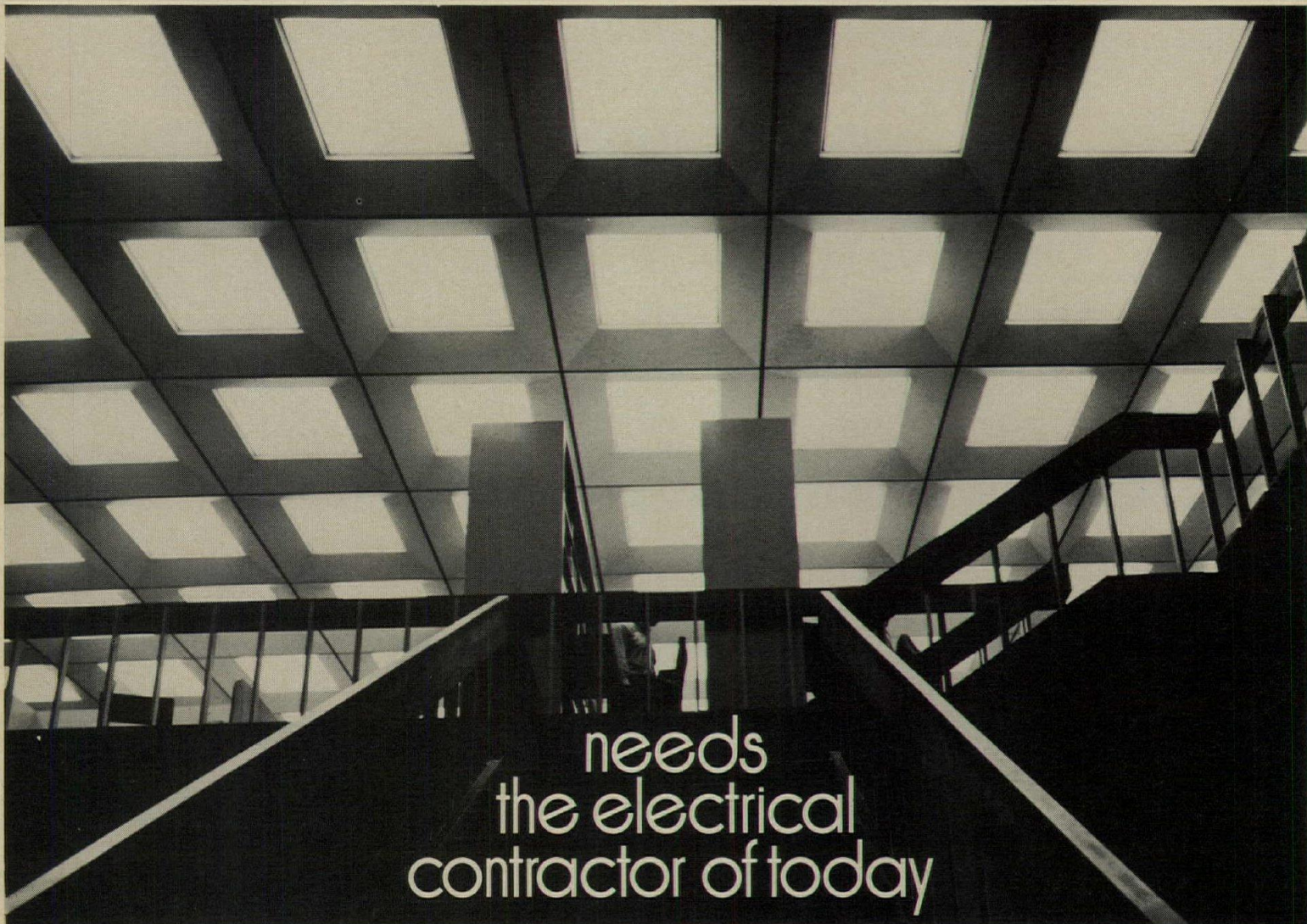
Grand Junction: Architect: Robert A.

VanDeusen & Assoc.

Engineers: James Burke & Assoc., Inc.



The electrical promise of tomorrow...



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The integrated electrical ceiling. Offering great design flexibility, it promises comfort and efficiency for years to come. It heats, cools, lights, and carries communications . . . thanks to electricity.

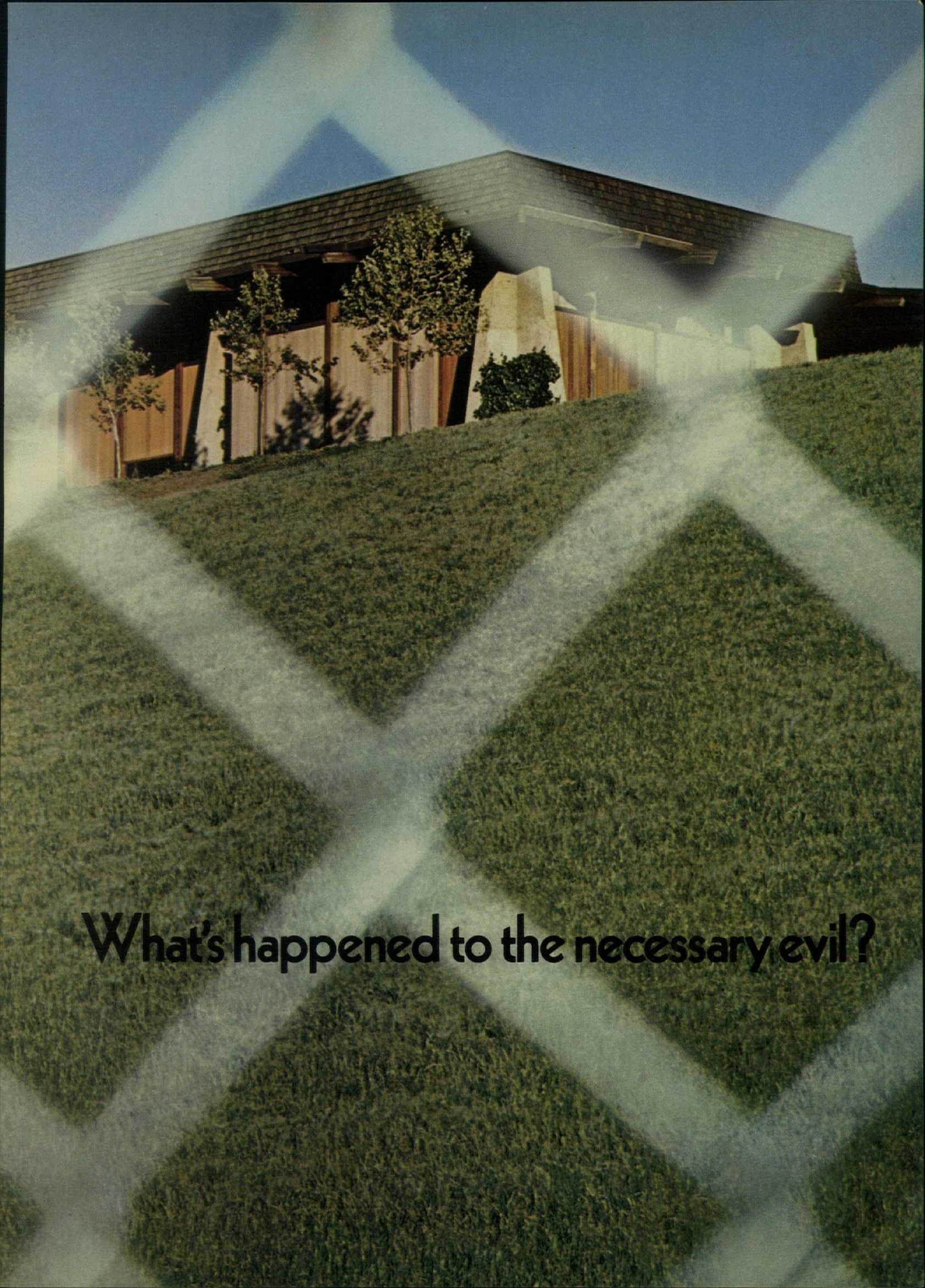
Your buildings need a lot of power—electrical power—to sustain a modern Electro-environment. An environment properly heated. Properly cooled. Properly lighted. An environment where intercoms and business machines and background music can all get along together in harmony . . . thanks to a qualified electrical contractor.

He, and he alone, possesses the theoretical and technical skills to translate new designs and concepts of electrical technology into working, functioning realities. Trust the qualified electrical contractor to wire your building safely. To anticipate future as well as initial power needs. To coordinate the work of other specialists—carpenters, sheet metal men, heating and refrigeration experts—while he himself handles everything electrical in such installations as integrated ceilings.

Remember: your qualified electrical contractor guarantees performance not only on the electrical functions, but on the entire ceiling installation he oversees as well.



National Electrical Contractors Association
Washington, D. C. 20036

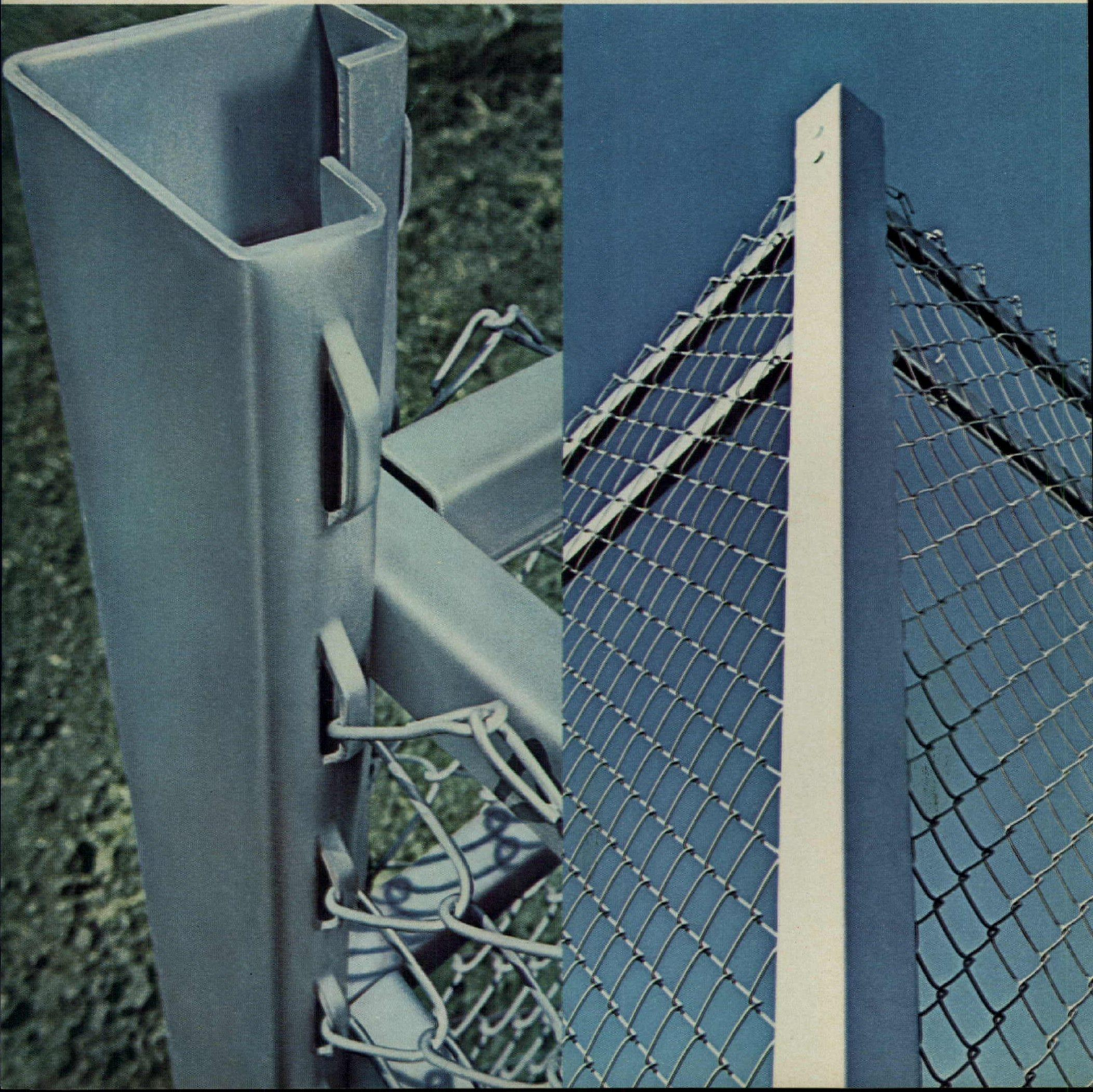


What's happened to the necessary evil?

There's a whole new technology to the necessary evil...the fence. Take 1½ minutes and catch up with it.

The usual chain link fence uses pipe posts. Not USS CYCLONE Type II. Look at this terminal post. It's one-piece, box beam construction. No hidden places where moisture can collect and cause corrosion. And notice the fabric isn't just fastened on . . . it's woven right into lock loops, each with 1200 lbs. holding power.

Result: the new look in chain link fence. A clean, neat, architectural appearance. Posts and top rails have a functional, square configuration. No protruding fittings, nuts, or bolts. Very compatible with modern design. It also means a more vandal-proof fence and lower maintenance costs.

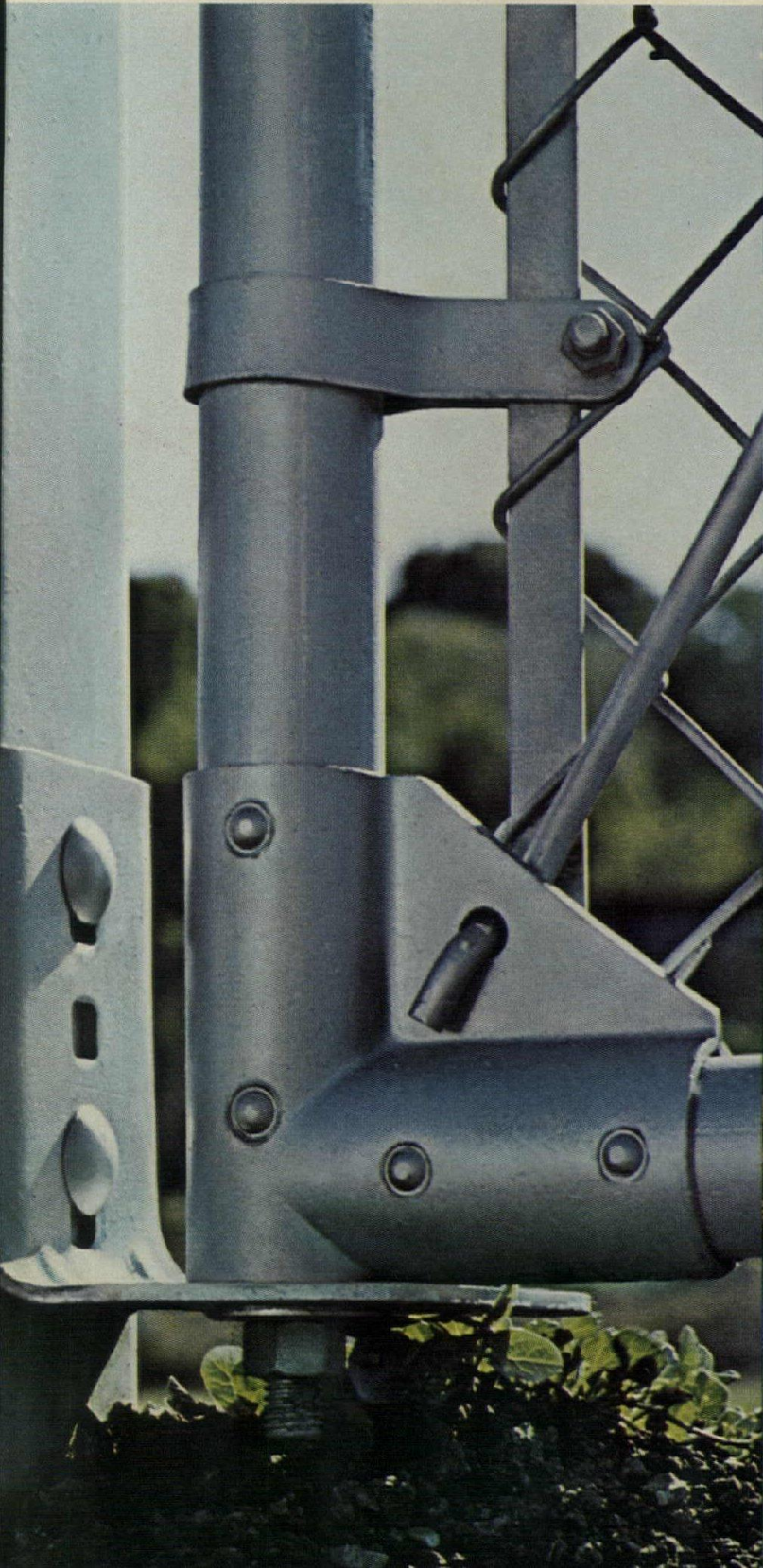


USS Cyclone Fence

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Gates are a key to fence quality. Most industrial gates are welded. This not only invites rust at the weld . . . it makes for expensive repairs. CYCLONE gates are riveted. Remove a few rivets, replace any damaged part, and you have a new gate. And our adjustable truss rods make it easy to correct sag.

Corrosion protection in a fence is directly proportional to the amount of zinc coating. CYCLONE doesn't take shortcuts. CYCLONE terminal posts, line posts, and top rails, for instance, have a 2-oz. coating . . . not the 1.2-oz. coating often used. Gates and fittings are heavily galvanized. Complete specs on the next page.



How to specify the new technology in fence:

Basic Specifications* (Circle one of each):

Height: 6', 7', 8', 9'

Fabric 2" mesh: 6 ga., 9 ga., or 11 ga.

Barbed Wire: 3 strands, 6 strands, none

Top rail or Top Tension wire, Bottom rail or Bottom Tension Wire

Line Posts: 2.7#H or 4.1#H

Fabric shall be zinc coated class II chain link per ASTM specification A-392-68 or shall be aluminum coated per ASTM specification A-491-68. Fabric shall be connected: to line posts with 6 ga. wire clips every 14"; to top rail with 9 ga. wires every 24"; to terminal, corner, and gate posts by integrally weaving into the post or by using 1/4" x 3/4" tension bars tied to the post every 14" with 11 ga. 1" wide steel bands and 3/8" diameter bolts and nuts; to tension wire with 11 ga. hog rings every 24".

Barbed Wire shall have a class 2 aluminum coating per ASTM A-585-69 or a class 3 galvanized coating per ASTM A-121-66 and consists of two 12 1/2" gage stranded line wires with 14 gage barbs and a 4 point pattern on 5" centers.

Top rail shall be 1 1/4" (1.66" O.D.) standard weight pipe or 1 5/8" x 1 1/4" roll formed sections. Top rail shall pass through intermediate post tops and form a continuous brace within each stretch of fence and be securely fastened to terminal posts.

End, corner, and pull posts shall be 2 7/8" O.D. pipe, 5.79 pounds per foot, or 3 1/2" x 3 1/2" roll formed sections with integral fabric loops, 5.14 pounds per foot. Posts for swing gates shall be according to the following gate leaf widths:

		Lbs. Per lineal Foot
Up to 6'	3 1/2" x 3 1/2" roll formed section or	5.14
	2 7/8" O.D. pipe	5.79
Over 6' to 13'	4" O.D.	9.11
Over 13' to 18'	6 5/8" O.D.	18.97
Over 18'	8 5/8" O.D.	24.70

Gate frames shall be 1.90" O.D. pipe connected with fittings riveted at each corner. Each frame shall have 3/8" diameter adjustable truss rods. Gates shall have positive type latching devices with provisions for padlocking; and drive gates shall have a center plunger rod, catch, and semi-automatic outer catches.

All posts, rails, and appurtenances shall be hot-dipped zinc coated steel per ASTM specifications A-120-65, A-123-66 or A-153-65, whichever is applicable. Pipe posts shall have tops which exclude moisture. End, corner, pull, and gate posts shall be braced with the same material as top rail and trussed to line posts with 3/8" rods and tighteners. Each post shall be set in a concrete foundation of 1-2-4 mix having a minimum diameter of 9" or three times the diameter of the post and at least 36" deep. Line posts shall be evenly spaced 10' or less apart.

Standard tolerances apply. Installation shall be by experienced fence erectors, on lines and grades furnished by owner.

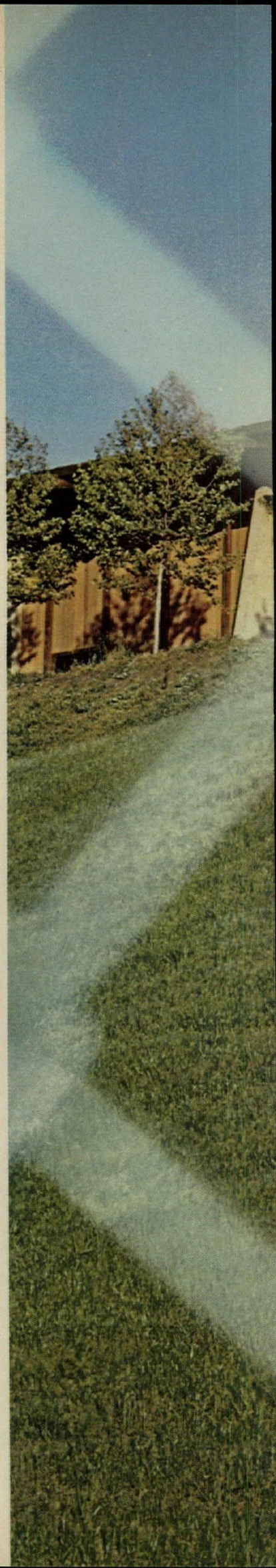
*Non-restrictive specifications



Cyclone Fence

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ASG Industries Inc.



NEW NAME ON THE DOOR

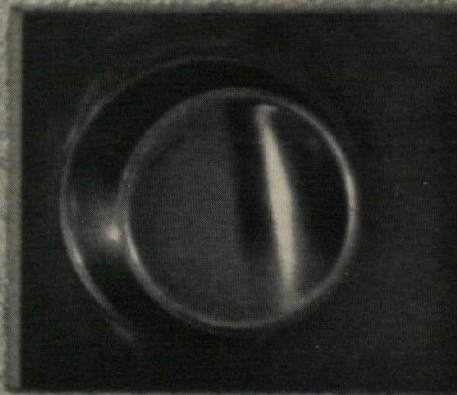
Our new name ASG Industries Inc., (formerly American Saint Gobain Corporation) reflects more than just a change on the door. Behind it lies over a century of combined experience in flat glass manufacture.

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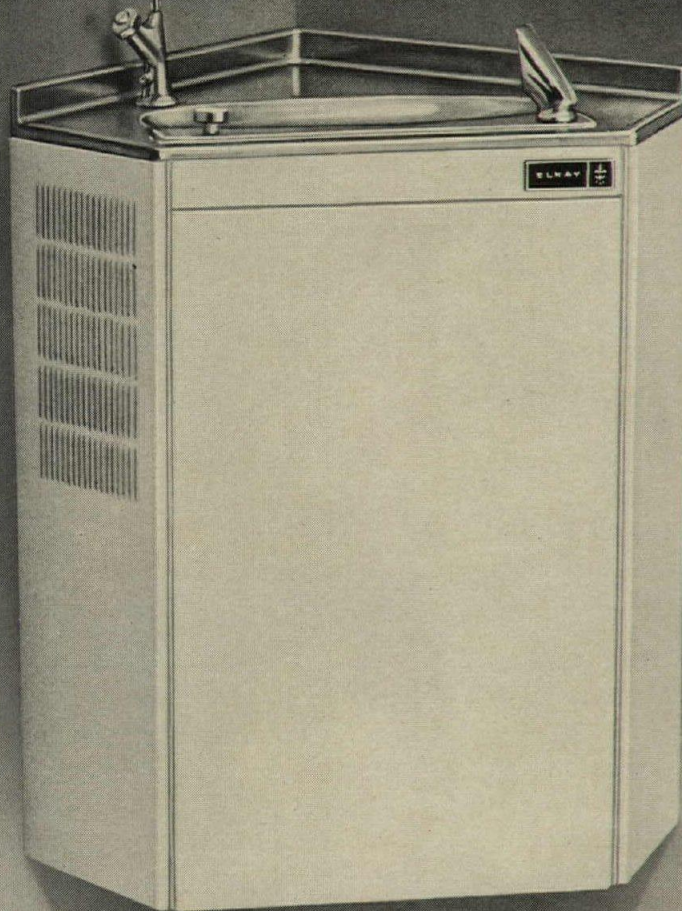


SALES OFFICES:

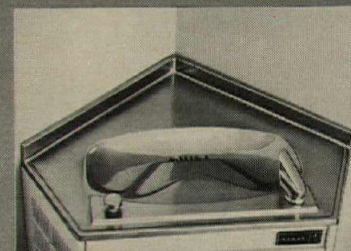
Allanta, Georgia; Boston, Massachusetts; Chicago, Illinois; Dallas, Texas;
Detroit, Michigan; Los Angeles, California; San Francisco, California;
Stamford, Connecticut.

Elkay discovered how to turn a corner into useful space with this water cooler. Corner location keeps it out of the way of traffic and makes it more pleasant to use. It is designed to meet the standards of the Hill-Burton program for corridor safety in hospitals. Like all Elkay water coolers, the corner model has a unique cascade design, splash-proof, stainless steel basin with hooded stream projector and remote control. Interchangeable panels... nine colors in vinyl and two in baked enamel, available from stock at no extra charge, allow user complete decor flexibility. Stainless steel panels are also available at a slight extra charge. Elkay fills corners with a great idea in water coolers.

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Model EWT-8



Stainless steel sink top incorporates cascade design basin and hooded stream projector. Protective apron for most stringent institutional needs.



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see our catalog in Sweet's 

For more data, circle 20 on inquiry card

News in brief

Congress has slashed HUD's research and technology budget almost in half to \$30 million. \$35 million was to have gone to Operation Breakthrough alone. Two Breakthrough prototype sites, in Texas and Delaware, were cancelled as a result of the cutback, and more reductions may be necessary. Numerous Breakthrough contracts will be renegotiated, and others terminated, says HUD. However, all 22 housing system producers will be represented at the remaining sites.

The President's new Domestic Council will combine the functions of the Council for Urban Affairs, the Cabinet Committee on the Environment and the Council for Rural Affairs under the leadership of John D. Ehrlichman, with the help of Daniel P. Moynihan, Robert Finch, Bryce N. Harlow, and George P. Shultz. Observers predict a shift away from new towns and toward existing city improvement under the new Council.

Congress has over-ridden the President's veto and provided \$2.7 billion for an extension program for construction and modernization of hospitals. The veto on the \$4.4 billion Office of Education measure was also over-ridden, opening up large quantities of construction funds. Mr. Nixon's veto of the \$18 billion Independent Offices bill, which would have allotted hundreds of millions in construction for HUD and the General Services Administration, was upheld.

The Environmental Protection Agency, set up by President Nixon (unless vetoed by Congress by September 9), will lump Federal environmental activities into single operation including: Federal Water Quality Administration; National Air Pollution Control Administration; Bureau of Solid Wastes Management and Bureau of Water Hygiene; pesticides-related functions; studies on ecological systems; radiation criteria standards; and noise control.

The Arkansas Supreme Court has upheld a four-year statute of limitations covering design and construction professionals, specifically rejecting the reasoning of a 1967 Illinois Supreme Court contrary decision.

A \$2.9 million program to get minorities into contracting has been started by the National Urban Coalition, under John Gardner. Detroit, Los Angeles, New Orleans, and Atlanta are the first cities involved. The program will provide capital and technical aid.

Director of Community Development/Design Center Services of the American Institute of Architects will be Vernon A. Williams. Mr. Williams, whose background includes work with the city of Chicago and advocacy planning in neighborhoods, will concentrate on generating funds from the Federal government, national institutions and local foundations to help the CDCs already operating in around 50 neighborhoods (April, page 41; August, page 37).

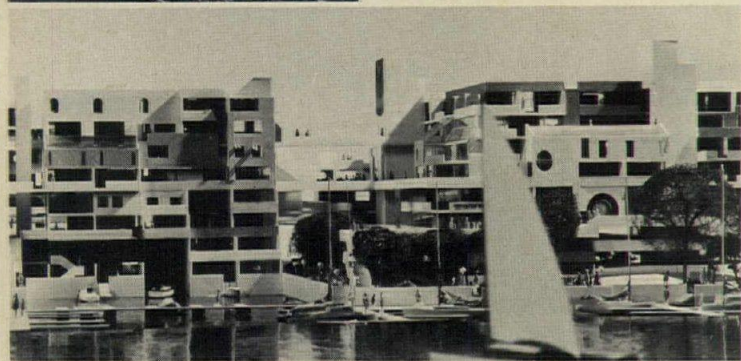
An International Symposium on Low Cost Housing Problems related to Urban Renewal and Development will be held October 8, 9 at the University of Missouri—Rolla. Contact Dr. Oktay Ural. **The XIII Pan American Congress of Architects** will be held in San Juan, Puerto Rico, September 13-18. About 600 architects are expected. **The seventh annual Architect-Researchers Conference**, co-sponsored by the A.I.A. and the Department of Architecture of the University of Cincinnati will be held in Cincinnati November 1-3.

"A Capsule Space as A Personal Space," system design of a prefabricated house, is the theme of an international contest sponsored by Shinkenchiu-Sha Co., Ltd., Japan, 31-2 Yushima 2-chome Bunkyo-Ku, Tokyo 113, Japan. November 24 deadline. 1 million yen (\$3,300) first prize. **Rome Prize Fellowship** (worth \$4,500) applications are due at the American Academy in Rome's New York office by December 31. **Applications to the Low-and-Moderate-Income Housing Awards Program** of the A.I.A. (with other groups) are due September 11 at the A.I.A.'s national headquarters.

The Commission on Chicago Architectural and Historical Landmarks, hampered by a weak preservation law (February, page 42), and attacked from all sides, needs all the help it can get, writes a concerned Chicagoan. Local ignorance is a major difficulty (former owners of the Old Stock Exchange announced their intention to build "a modern, commercial building which would be worthy of the replacement of the Lewis and Sullivan [sic] outmoded structure"), so the Commission asks for letters of support: 320 N. Clark St., Chicago, Ill., 60610.

Toronto and Montreal plan new subcenters

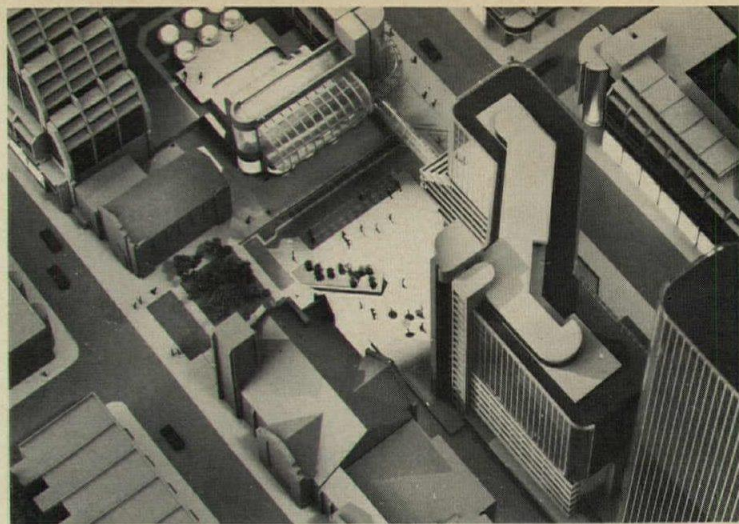
Toronto architects Craig, Zeidler and Strong designed Harbor City (left, below) for the Ontario government to demonstrate that "humane" housing could be built cheaply. They went far beyond housing to design a complete sub-city for 60,000 on Lake Ontario. 1120 acres of water and land, 900 of



which would be created by dredging and fill, would contain low-rise housing intermixed with commercial spaces.

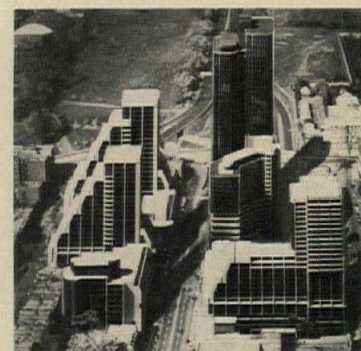
The project would also intermix income groups, except for the rich, providing for families, single people, the young and the old. A typical dwelling would face accessible water on one side, protected pedestrian walks on the other. Rapid transit and roads would connect the islands with one another and with the city. Downtown Toronto would be five minutes from Harbor City.

Harbor City would be the same size as central Venice, though 1/3 the density. Venice? A chimerical scheme? It's a political question now, but chances for construction appear good.



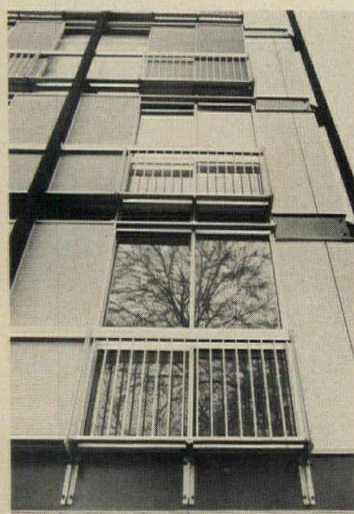
Cité Concordia in Montreal (above, right), designed by a team headed by architect Dimitri Dimakopoulos and urban planner Roger Montgomery, will also be a complete sub-city. It will contain about 1,500 units of housing for varying age groups and family sizes, a 500-room non-luxury hotel, an office tower, recreational spaces, stores, restaurants, cinemas, parking, and several gathering places, "maintaining the area's cosmopolitan and youthful character." (Hotel and "L'Esplanade" appear above.) Concordia will contain Montreal's second major weather-pro-

ected pedestrian system, expected eventually to encompass much of the central city. Pedestrian and vehicular traffic will be separated. The Ford Foundation is a major investor in the \$250 million project.



Rouen housing wins Reynolds Award

A \$25,000 R. S. Reynolds Memorial Award, administered by the American Institute of Architects, has gone to a 500-unit low-cost housing development designed by the Paris firm of Lods, Depondt, Beauclair. Components were factory-produced, field labor being only 15 per cent of the total cost. The French firm has joined with The Engineers Collaborative (Chicago) to develop similar projects for the United States.



Skyscraper fire raises questions

A fire last month in Manhattan's 1 New York Plaza (April, 1967, page 42) killed two, injured 35, and raised serious questions about building codes. The Fire Department blamed hard-to-open, nearly unbreakable windows for their great difficulty in putting the fire out. Temperatures rose to an estimated 2,000 degrees, allegedly twisting beams and melting fixtures because heat could not escape. Emergency devices in the building, designed by William Lescaze and Associates, functioned; but the firefighters (27 of the injured were firemen)



claimed these weren't enough. The building was not required to and did not contain a sprinkler system. However, it met local codes in every way. The city is investigating.

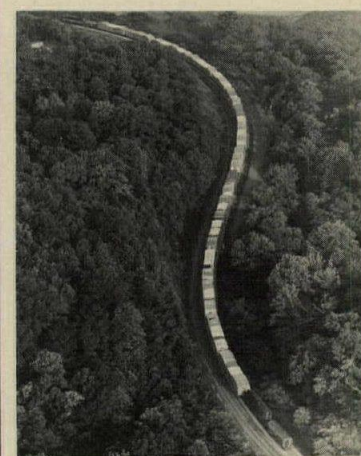
UNESCO symposium hits mass housing

Twenty-six architects, town planners and social scientists from twenty-three countries meeting at a recent UNESCO symposium in Helsinki have proposed a more flexible approach to housing. In a less than unanimous statement, the symposium suggested people change their homes in mass

housing projects to suit their own needs on a do-it-yourself basis. A Singapore architect pointed out that his city's central slum had less crime than the rest of the city, and a Swiss sociologist argued the shantytown may be a necessary transition to city life. The symposium recommended planners envision cities in terms of feelings, rather than maps.

Housing modules speed to Mississippi disaster area

A trainload of housing modules made by the Avon, N.Y. Stirling Homex Corp. traveled to Corinth, Miss. to replace homes destroyed by a tornado in July. A total of 130 modules for the building of 33 townhouses, to be completed within a month, went to the town. The Tennessee Valley Housing Authority and HUD arranged and financed the project. It was said to be the first time trains, rather than trucks, were used. Adding to the general satisfaction was strong trade union support.



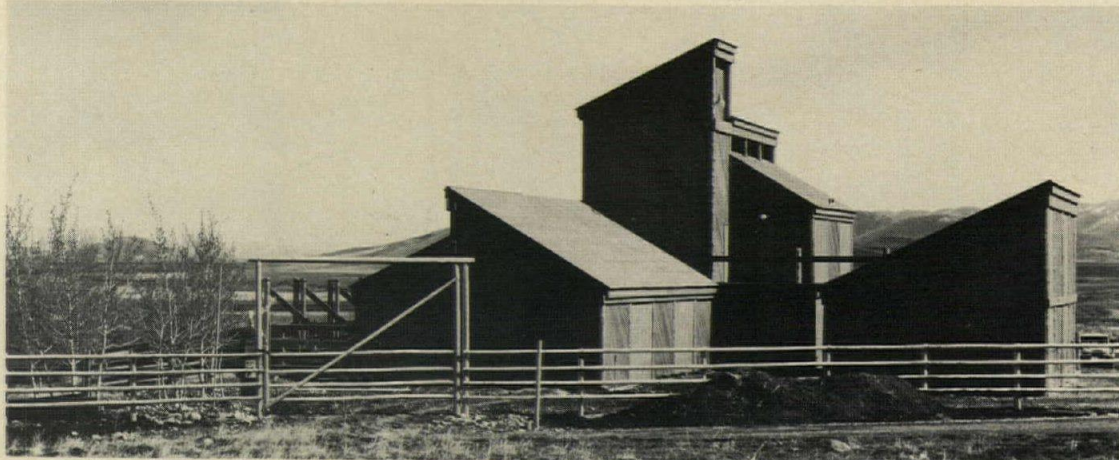
Samaras Studios

Utah architects receive 1970 A.I.A. chapter design awards

Eight buildings by Utah architects were chosen. Award-winners not shown were: **Robert Frost Elementary School**, Salt Lake City, Edwards and Daniels and Associates, architects; **Pembroke's store remodeling**, Salt Lake City, Boyd A. Blackner, architect; **Terracor**

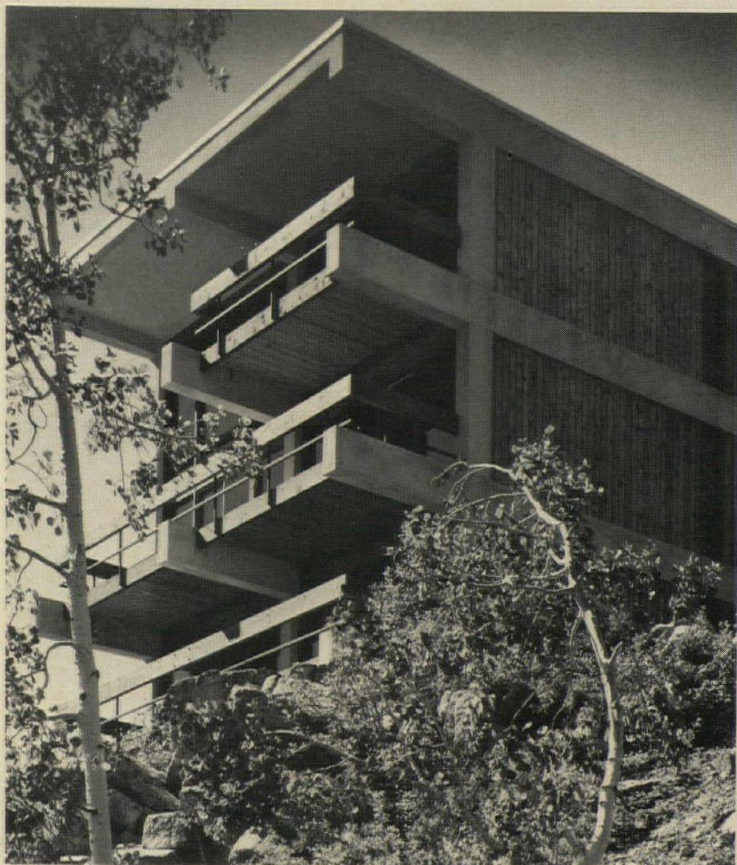
Office Complex, Salt Lake City, Environmental Design Group, architects; and **University of Utah Natatorium**, Young and Fowler, Associates, architects. The jury, headed by William C. Muchow, F.A.I.A. of Colorado, gave one Honor Award, seven Merit Awards.

Patrick King photos



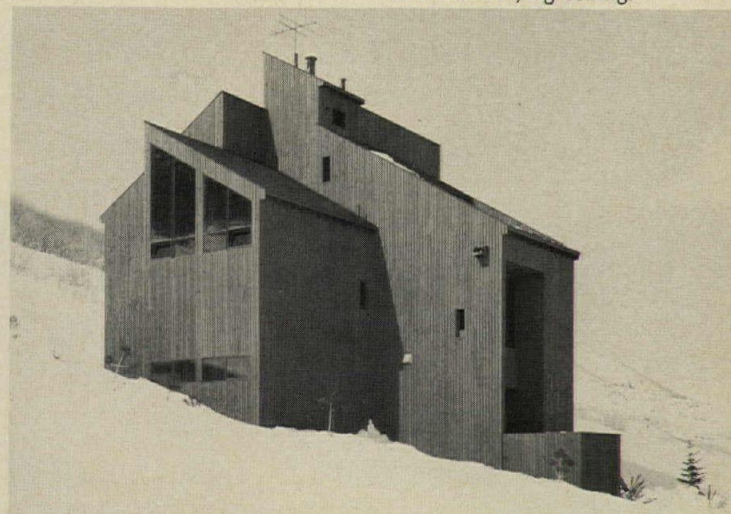
Bailey Creek Stables, Soda Springs, Idaho, Environmental Design Group, architects, received the Honor Award. It is a social gathering place for a summer community, as well as a stable. Structure is of lodge pole pines braced by cedar sheathed panels.

Ski Shack, Park City, Utah, by Robert A. Fowler Associated Architects, is "a sequence of ascending rooms, nooks, balconies, and lofts clustered about a central core, each at a different level, each a different size with varying ceiling."



Multi-use building for Snowbird Corporation, Alta, Utah, Brixen and Christopher, architects, provides office space, exhibits, and apartment displays for a year-round recreational village. Site is left natural; entrance is by bridge from above.

Stables for Sundance Resort, Provo Canyon, Utah, Brixen and Christopher, architects, has diagonal cedar siding and cedar roof shingles. Cost: \$3.33 per square foot.

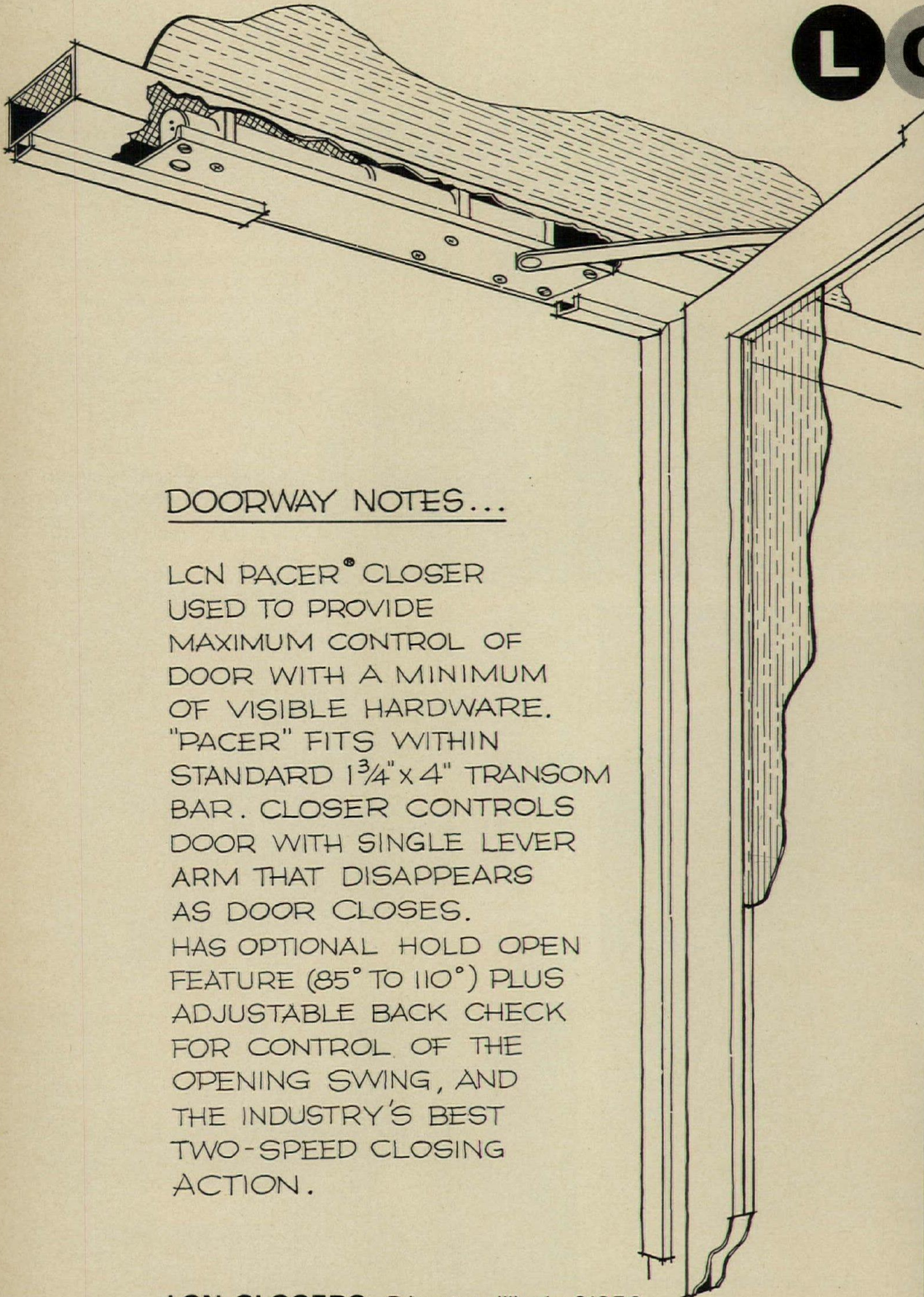


Gordon Perry



Photograph Courtesy of
Chicago Marriott Motor Hotel, Chicago, Illinois

LCN



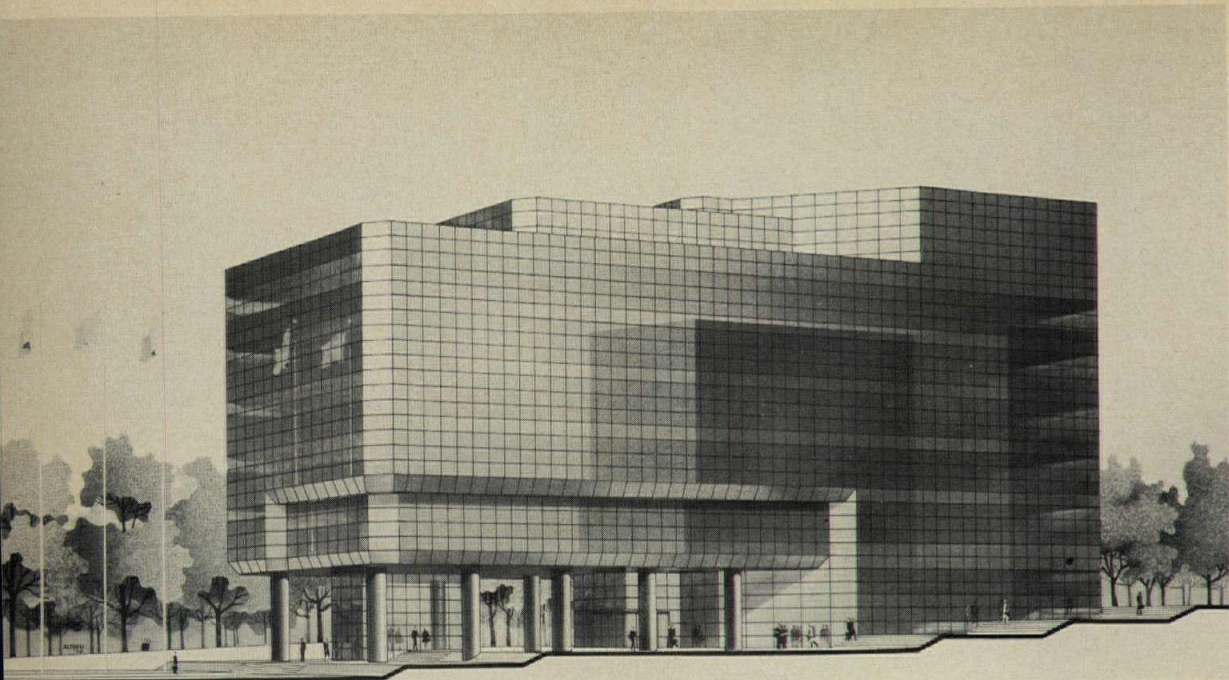
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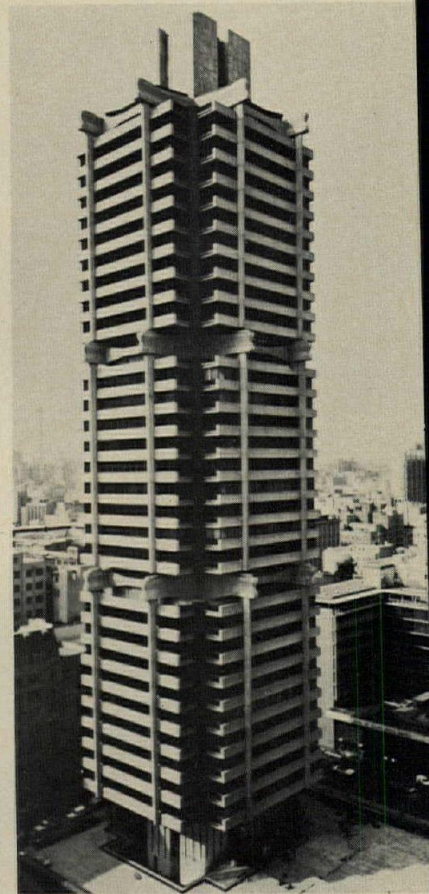




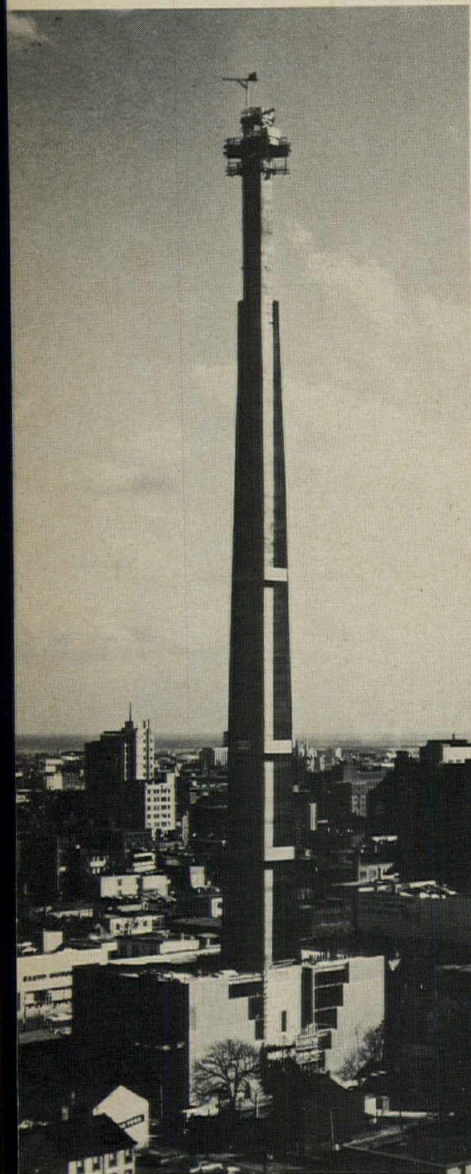
San Bernardino City Hall, San Bernardino, California, will be focus of a Civic Center, part of a major downtown revitalization program

planned by Gruen Associates. Cesar Pelli was architect in charge. Center also contains a theater, a hotel, offices, and housing.

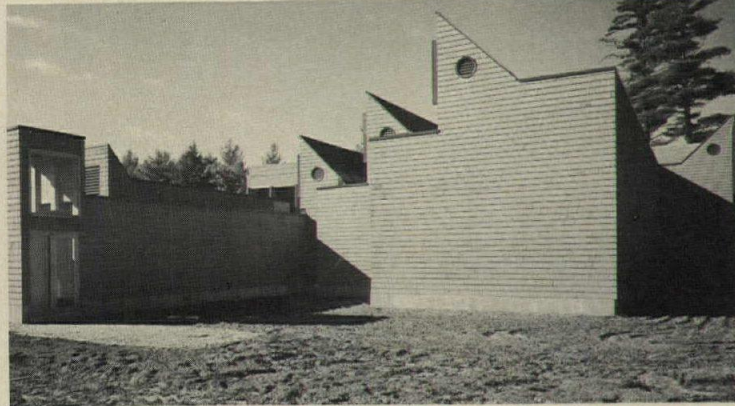
Phokion Karas



Standard Bank Centre, Johannesburg, South Africa, hangs three nine-floor stages from cantilever beams. Highly flexible suspended glass screen surrounds lobby. Architects: Hentrich, Mallows, Stucke, Harrison, Ritchie, and Partners.



Walton Street steam plant, Toronto, Canada, was designed to minimize pollution—air and eye—by architects Mathers and Haldenby. Concrete chimney is 450 feet high, floodlit at night.



Bartsch Athletic Complex, Holderness School, Holderness, New Hampshire, was designed by archi-

tects Perry Dean and Stewart to retain scale and harmonize with existing rural campus buildings.

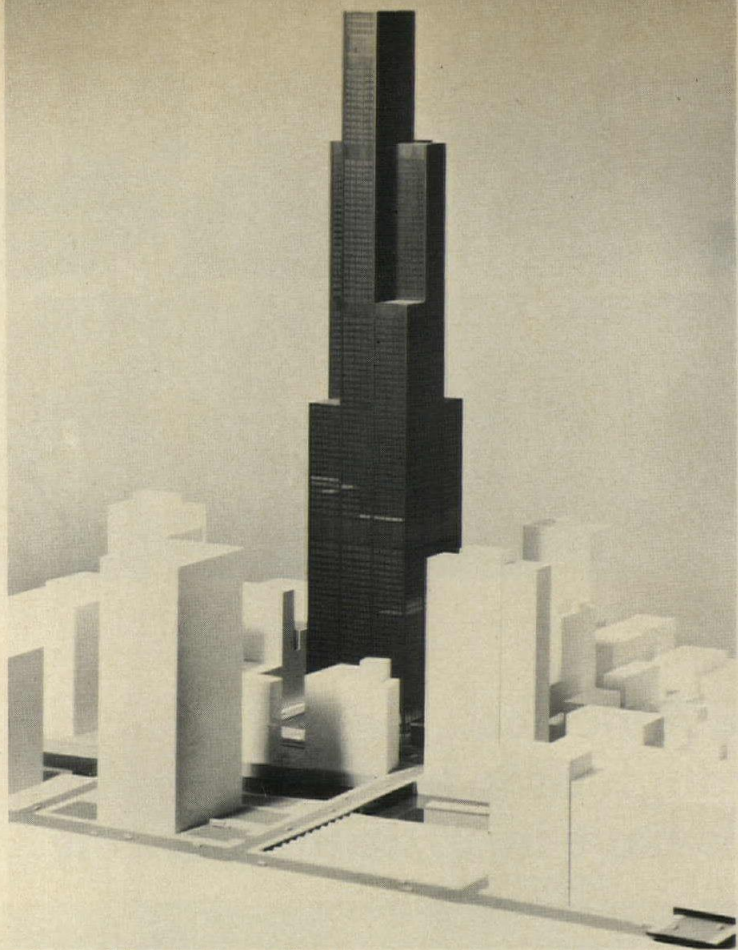


St. Mary's Church, Red Deer, Canada, grows from the skylit altar in the manner of a sea shell, accord-

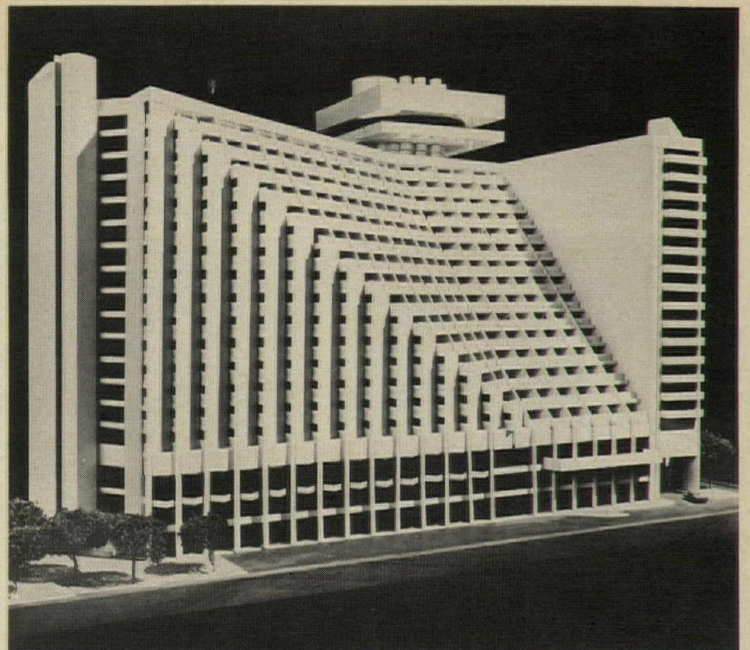
ing to architect Douglas Cardinal. Curving rows of pews surround the altar in a half-circle. A spider-

web inspired the concrete roof. 81,000 computer equations made the roof design possible.

C. Moore Ede



Tallest building in the world, the Sears Tower in Chicago, was designed by Skidmore, Owings and Merrill. It will be 1,450 feet high, 109—count 'em—stories, covered in black aluminum and bronze glass, based on nine 75-foot column-free squares surrounded by welded steel frames.



Embarcadero Center Hotel in San Francisco, John Portman, architect, will contain 840 rooms and a revolving restaurant. It will be the

second building in the \$200-million Center, of which Mr. Portman is master planner as well as managing partner.

Schauspielhaus in Duesseldorf, Bernhard Pfau, architect, holds two theaters within its undulating white

polyester-covered sheetmetal walls. Curves contrast with adjacent triple slab Thyssen skyscraper.

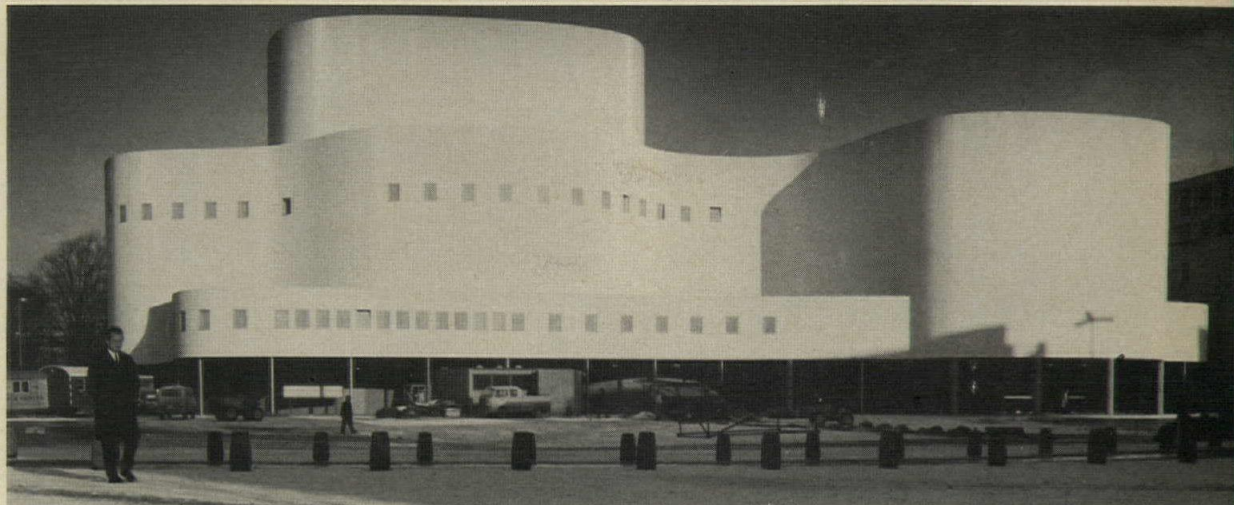
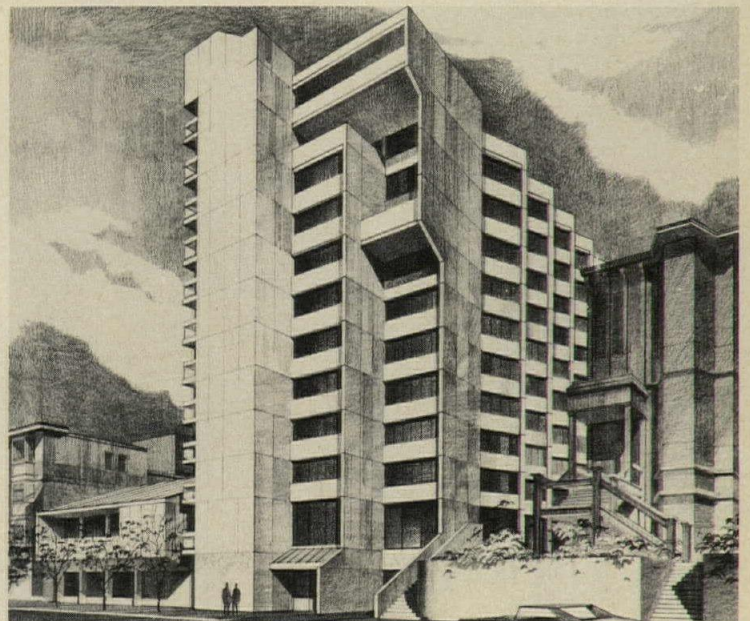
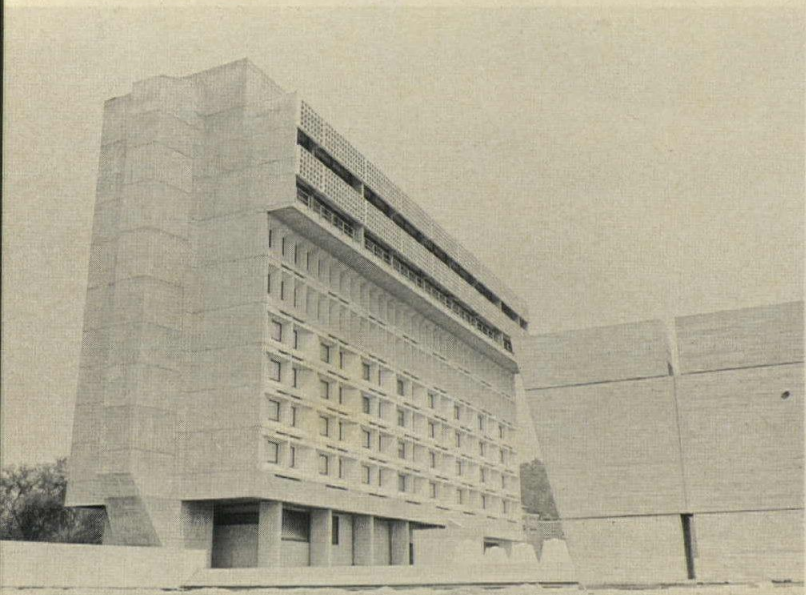


Foto-Gräf

Murray D. Lincoln Campus Center, University of Massachusetts at Amherst, Marcel Breuer and Herbert Beckhard, architects, will be a conference, continuing education and student activities facility. It will also be a 116-room hotel. Structure is of exposed concrete.

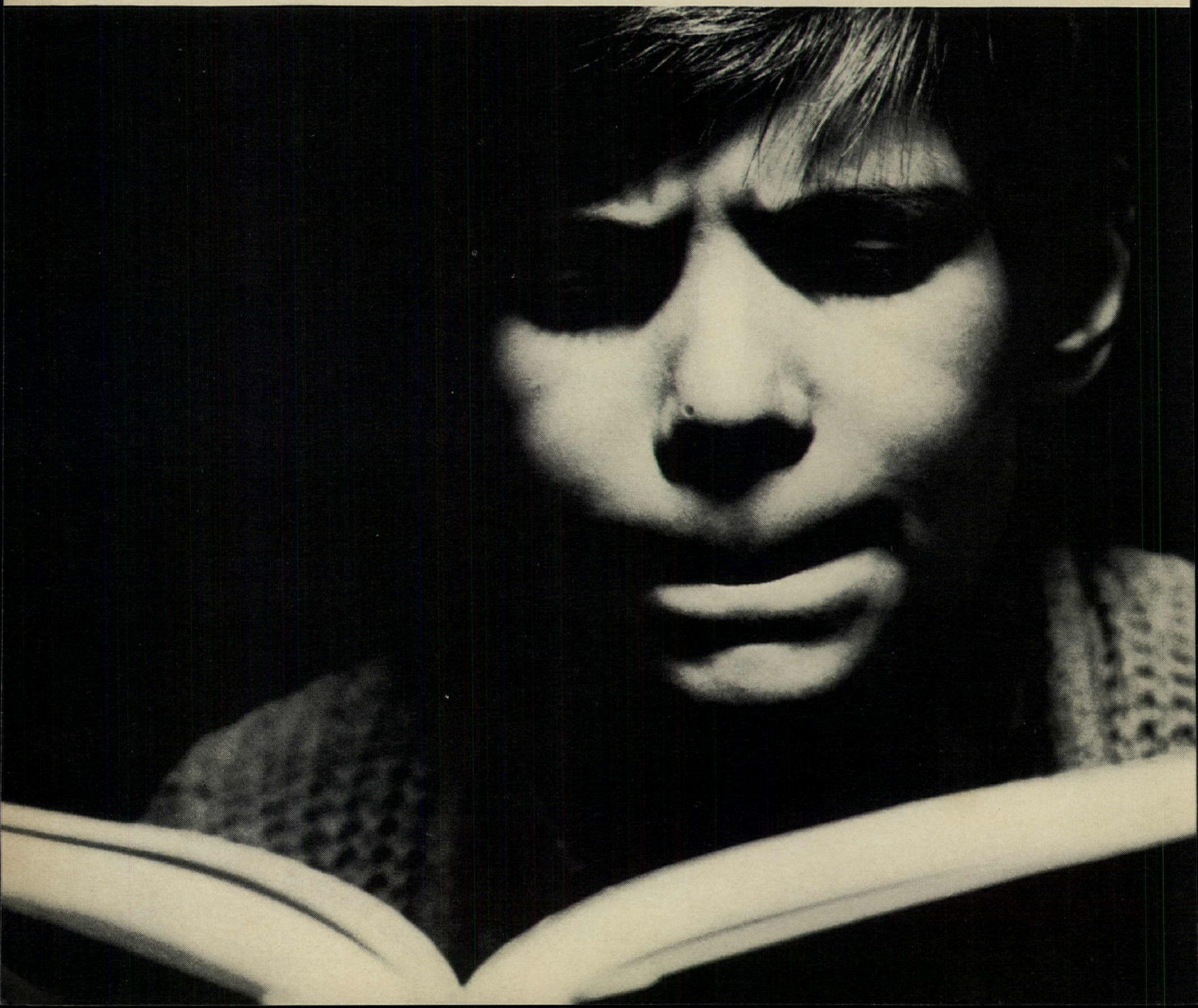


Senior citizens housing in San Francisco, Chan/Rader Associates, architects, will contain 113 units.

Structure of the 12-story building will be steel frame and reinforced concrete.

AMERICAN THE BURN

Wake up, America.
Our kids have a rough time learning
because 90% of our schools have insufficient lighting.



34 million handicapped kids.

Here are the dismal facts: the minimum recommended lighting level for a classroom is 70 footcandles.* More than one million classrooms in the U.S.A. struggle on 30 footcandles. And 34 million students struggle to learn in them. But they're lucky.

Over 4 million American children work in ancient schools right out of the Oliver Twist era—with lighting that is often little better than candlelight.

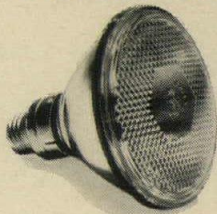
Our new schools are brighter. But still not bright enough. It's estimated that even the newly built schools have only a sad average of 35 footcandles. Far below what's needed.

Poor lighting may make poor students.

Insufficient lighting is like draining a child of his will to learn. It may tire him. It handicaps him. When he has to squint five hours a day to see the blackboard—don't expect him to be a fast learner. When he can't see correctly what he's supposed to learn correctly—then you have a slower student.



Are there any solutions?



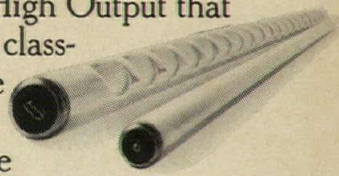
The GE PAR lamp. No more dull blackboards.

Plenty. We have a long list of lighting suggestions that could help American kids learn easier and faster.

We have lamps for better blackboard illumination. They spotlight or floodlight.

We have eight-foot fluorescents called Power Groove® and High Output that could boost American classrooms to a comfortable 100 footcandles.

They both offer the most brilliant solutions to getting more light at lower operating costs.



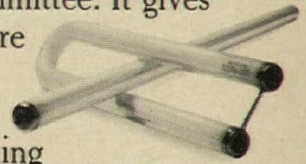
The GE Power Groove and High Output—make indoors brighter.



Five cents per pupil per day. That's all it costs to light up a classroom to today's modern standards.

The low cost of lighting.

Or again, we have a four-foot fluorescent that should get a loud round of applause from the School Budget Committee. It gives more light per watt, more life, and no other 40-watt costs less to run.

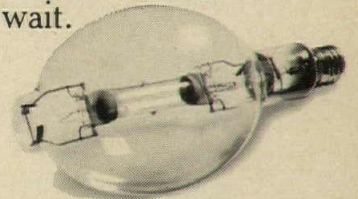


The GE Mainlighter† and the curved Mod-U-Line.

We have a strange-looking Mod-U-Line** fluorescent that's all twisted up so that you can fit two or three of them into those nice-looking two-by-two-foot fixtures.

We have lighting suggestions for school gyms and stadiums. For example, our high-intensity Multi-Vapor† lamps—which are currently lighting up many major-league ball parks—at a fraction of the normal cost.

We have the answers waiting for problems that can't wait.



The GE Multi-Vapor. The lamp that helps thousands of sports fans see better.

General Electric—so America can see.

GENERAL ELECTRIC

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* ILLUMINATING ENGINEERING SOCIETY.

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

† TRADEMARK OF THE GENERAL ELECTRIC CO.

Amazing...what you can do with REVERE COPPER...

Let's face it! In building construction there is not another metal or material that has the all-around versatility of copper.

COPPER'S design possibilities are virtually unlimited. COPPER'S lasting qualities have been proved for centuries. COPPER is the most easily formed. COPPER can be left to age gracefully to produce the unmatched, natural patina so many architects desire, or the popular bronze tones may be accomplished with oiling. COPPER needs no painting or other maintenance. COPPER is rated at the lowest cost per year of actual service of all roofing and flashing material when properly designed and installed. The reason is: it lasts so long!

WHY QUILTED DESIGN?

Original specs. on this Skidmore College job called for the walkway roofs to be of copper sheets of 18" x 24" with pre-tinned edges, cleated and soldered. Because the roofs were readily visible James Ackroyd & Son thought they could be made more striking by "quilting." On seeing Ackroyd's proposed design the architect agreed.

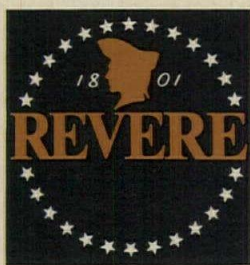
Sheets were cut 18" square with 3/4" locks bent on four edges, four cleats being used on each sheet. The design creates a unique pattern and still remains watertight without the use of soldering or caulking. Also, the diagonal seam pattern allows water to flow over all edges. These roofs have been through five winters without a single sign of trouble.

See how flexible you can be when you "Design with Revere Copper in Mind?"

Roofs of all common buildings at Skidmore—library, dining halls, lounge, music center, and walkway roofs, are covered with 94,000 pounds of 20 oz. Revere cold rolled copper.

For additional information, send today for your free copy of the 76-page brochure, "The Application of Copper and Common Sense" and its companion piece, "The 4 Revere Improved Systems of Easy-to-Install Flashings," for complete weather-proofing of masonry buildings.

Revere Copper and Brass Incorporated, Founded by Paul Revere in 1801, Executives Offices: 605 Third Avenue, New York, N.Y. 10016.



SKIDMORE COLLEGE, Saratoga Springs, N.Y.
 Architect: **FORD, POWELL & CARSON**, San Antonio, Texas
 Project Architect: **L. D. CLOUD, A.I.A.**, Saratoga Springs, N.Y.
 Planning Consultant: **S. B. ZISMAN**, San Antonio, Texas
 General Contractor: **WADE LUPE CONSTRUCTION CO., INC.**, Schenectady, N.Y.
 Roofing Contractor: **JAMES ACKROYD & SONS, INC.**, Albany, N.Y.

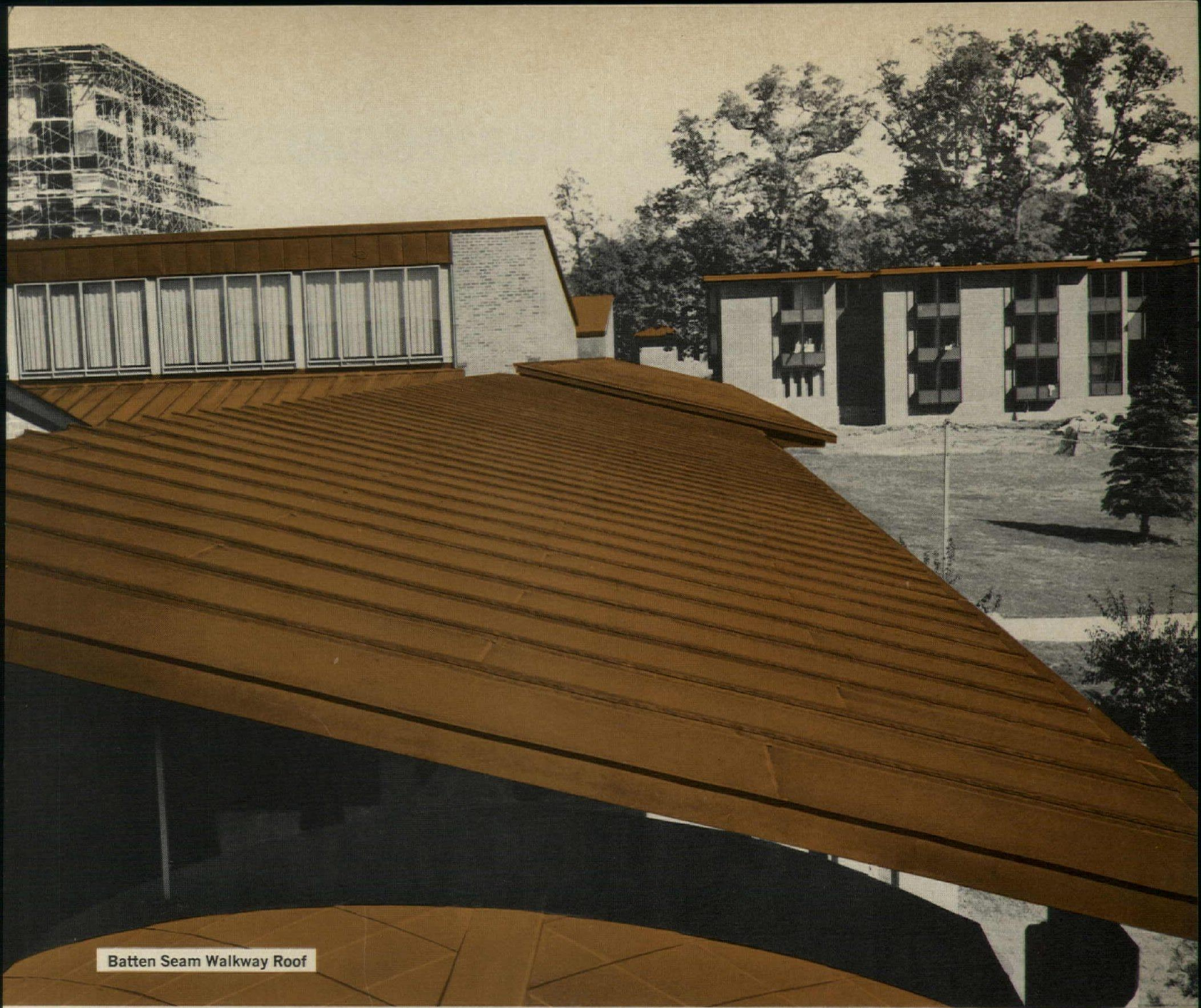
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Dining Halls Building



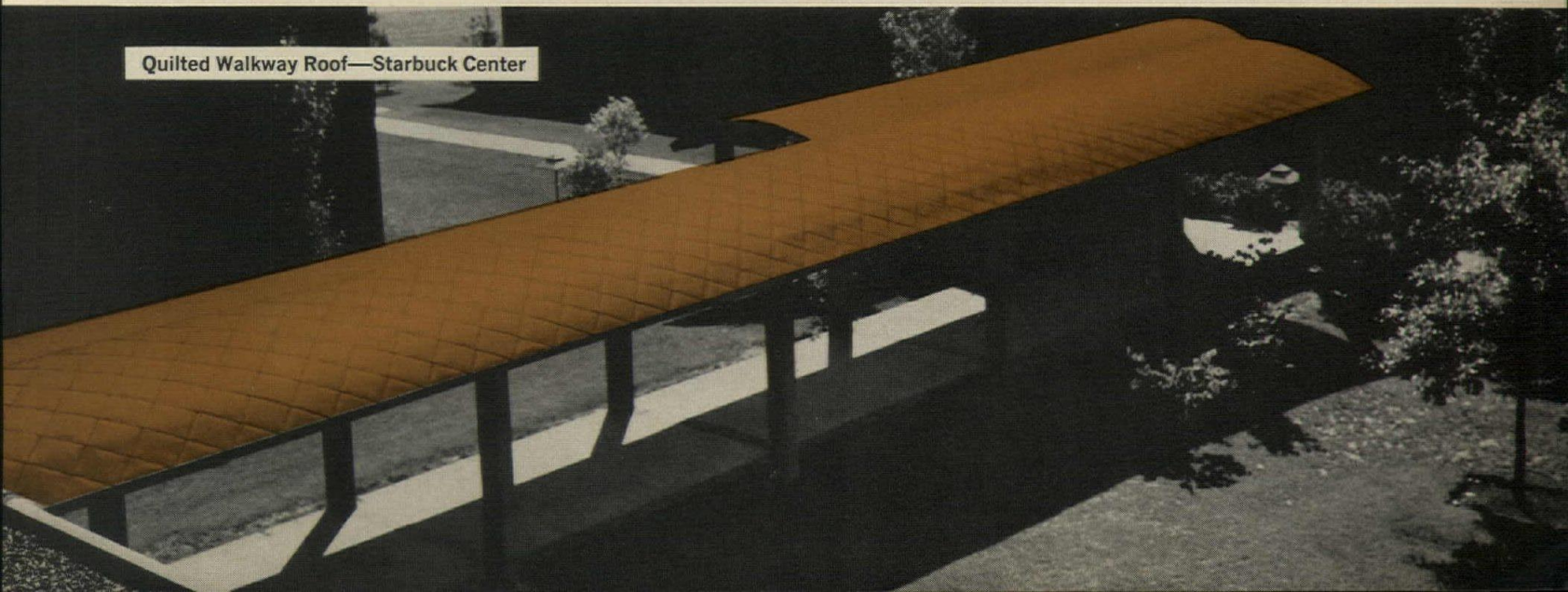
Lucy Scribner Library





Batten Seam Walkway Roof

“quilt it” for instance!



Quilted Walkway Roof—Starbuck Center

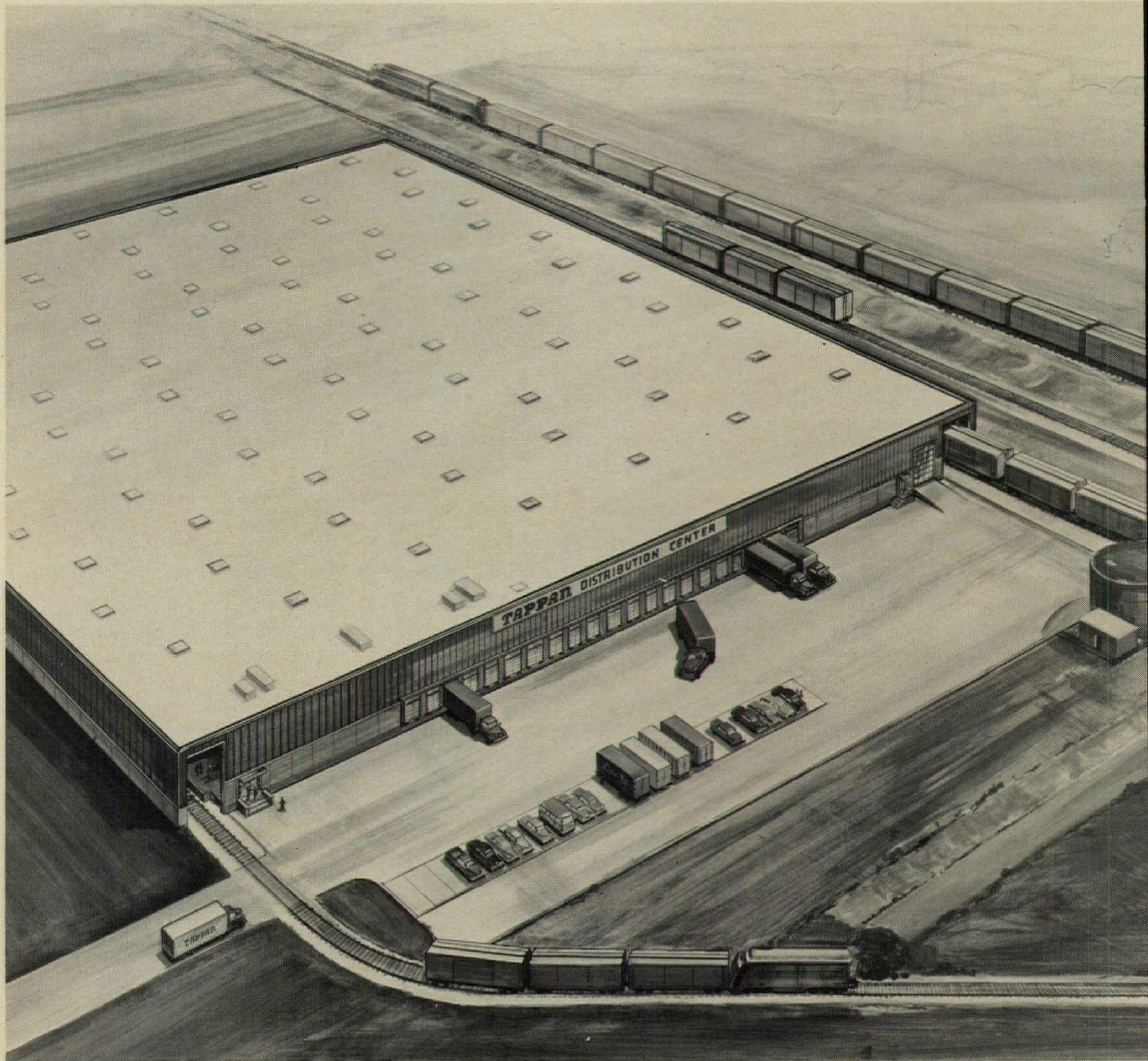
Tappan begins 240-acre expansion with

The Tappan Company has placed a full vote of confidence in its own future by beginning construction on a 240-acre site located in the village of Ontario, Ohio, just west of Mansfield.

Tappan, leading manufacturer of the full line of kitchen appliances and cabinets, also placed a vote of confidence in Macomber Incorporated by employing Macomber steel framing and decking in the first building on the site, a 300,000-square-foot distribution center.

"The Macomber Modified V-LOK System gave us just what we asked for," says Douglas Brunk, facilities engineer for Tappan. "We needed 25 feet of clear height to allow for high stacking of our products. Macomber's open-web steel joists allowed passage of

Tappan's new distribution center, Ontario, Ohio.



Macomber Modified V-LOK[®] System

all ducts, conduits and wiring through the ceiling sandwich, leaving the interior clear. Otherwise, we would have had to go to the considerable expense of adding square feet."

Although Tappan is best known for its gas and electric ranges, both built-in and free-standing, the Tappan line also includes dishwashers, refrigerators, disposers, vent hoods, central vacuum systems and small kitchen appliances.

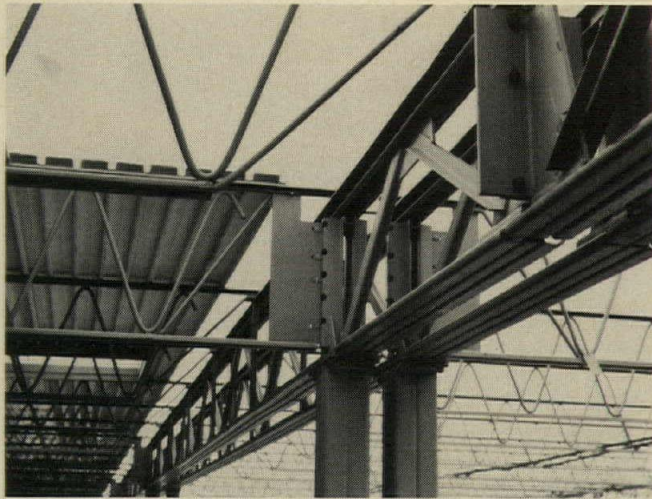
Mr. Brunk is enthusiastic about the new complex projected for his company. "We bought the whole 240 acres for our own future expansion," he says. "We moved one million yards of earth to prepare the site. We'll probably build a manufacturing facility there next."

Kokosing Construction Co., Inc., served as both designer and general contractor on the Tappan distribution center. President William B. Burgett explains why he chose Macomber products: "The Macomber Modified V-LOK System allowed us flexibility of design and simplicity of erection. The V-LOK connectors on the open-web members provided fast erection and accuracy in overall dimensions.

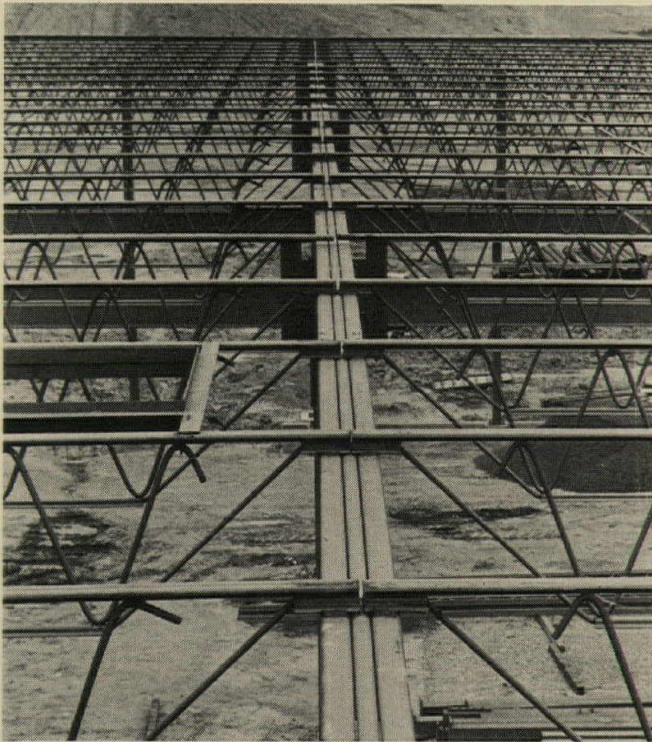
"Macomber's fabricating capacity was another important consideration. It's unusual for one supplier to take on total responsibility for all the steel for a job of this size, but Macomber was able to give us fast delivery on framing and decking. On top of all that, the price was very competitive.

"I've been working with Macomber V-LOK systems for 15 years," Mr. Burgett concludes. "It's been a very happy relationship."

Quality, flexibility, service, speed of erection and overall economy are the reasons why Tappan and Kokosing Construction Co. chose Macomber. If these reasons are good enough for you, call your nearest Macomber representative. For your copy of Macomber's V-LOK Design Manual, write to Macomber Incorporated, P.O. Box 8830, Canton, Ohio 44709.



Macomber V-LOK connectors at the column lines . . .



. . . facilitate true alignment of girders and purlins.



Open-web construction allows passage of pipes, conduits and ducts through the ceiling sandwich, leaving stacking area free of obstructions.

MACOMBER
INCORPORATED

SUBSIDIARY OF SHARON STEEL CORPORATION

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What makes balmy air balmy?

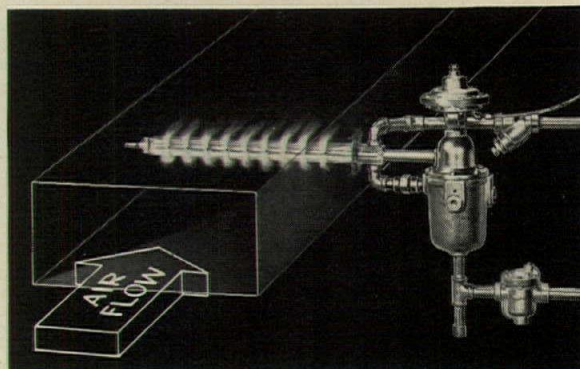


*the right humidity...
and you can have it in any building
if you specify controlled humidification*

You can put the soft comfort of a Caribbean winter breeze into any building you design by simply specifying controlled wintertime humidification. The right combination of temperature and relative humidity is what does it. And now you can control humidity as easily as you control temperature.

Comfort is only one of the advantages of controlled humidification—medical experts tell us that relative humidity at the right level shortens the life of certain airborne bacteria and improves respiratory health—experience tells us that relative humidity at the right level prevents the accumulation of annoying static electricity charges—and relative humidity at the right level extends the life and well-being of wood, textiles and all hygroscopic materials.

Complete background information is given in The Armstrong Humidification Book. Ask for a copy.



The many problems of adding moisture to the air that once existed have been solved with Armstrong Dry Steam Humidification. It provides accurately controlled humidification without drip, mess or maintenance.

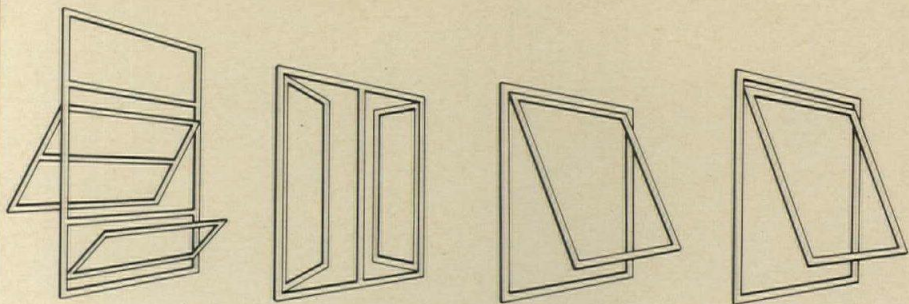


ARMSTRONG CONTROLLED HUMIDIFICATION ARMSTRONG MACHINE WORKS

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Manufacturers of specialties for the mechanical trades

913-MH

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New Kawneer 2" Sealair Window System

Stop "window shopping" for windows

No longer do you have to make decisions as to dimensions—1½" or 2". The new Kawneer 2" window system maintains a two inch depth yet meets specific budget requirements for both commercial and monumental installations. A system that has multiple vent and frame joinery options, solid or tubular vents, various metal thicknesses and all within the 2" dimension, incorporates pressure equalization, has the best quality hardware, weatherstripping options and is inside bead glazed. A system certified to meet or exceed AAMA requirements at every performance level—A2, A2.50,

THE KAWNEER CONCEPT:
Attention to detail

A3 (including high performance ratings). From a single source pick the projected, casement, top hinged, drop head or unit window wall with the exact variations you need or modify from an almost limitless list of options.

Choose from a variety of finishes: 201R1, 204R1, 215R1, plus Permanodic® hard colors in #28 Medium Bronze, #29 Black or #40 Dark Bronze. Kawneer lets you match the window to the job.

Discover this new measure of window worth for any job you name. Get the facts on the Kawneer 2" Sealair window system. Write Kawneer Product Information, 1105 N. Front St., Niles, Michigan 49120.

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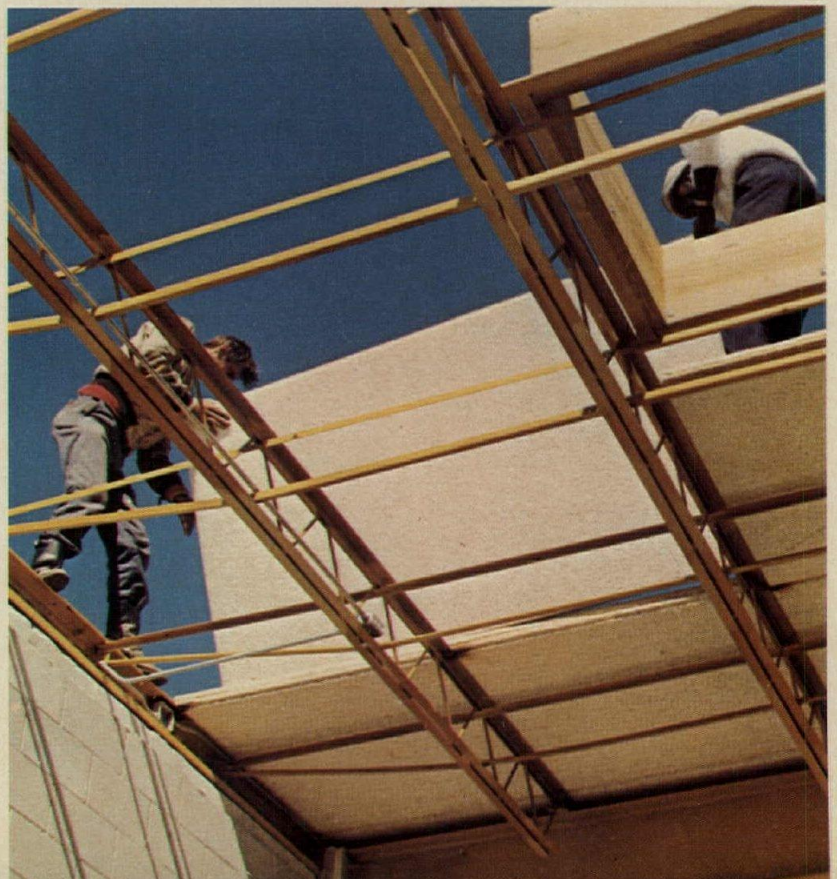
NEW

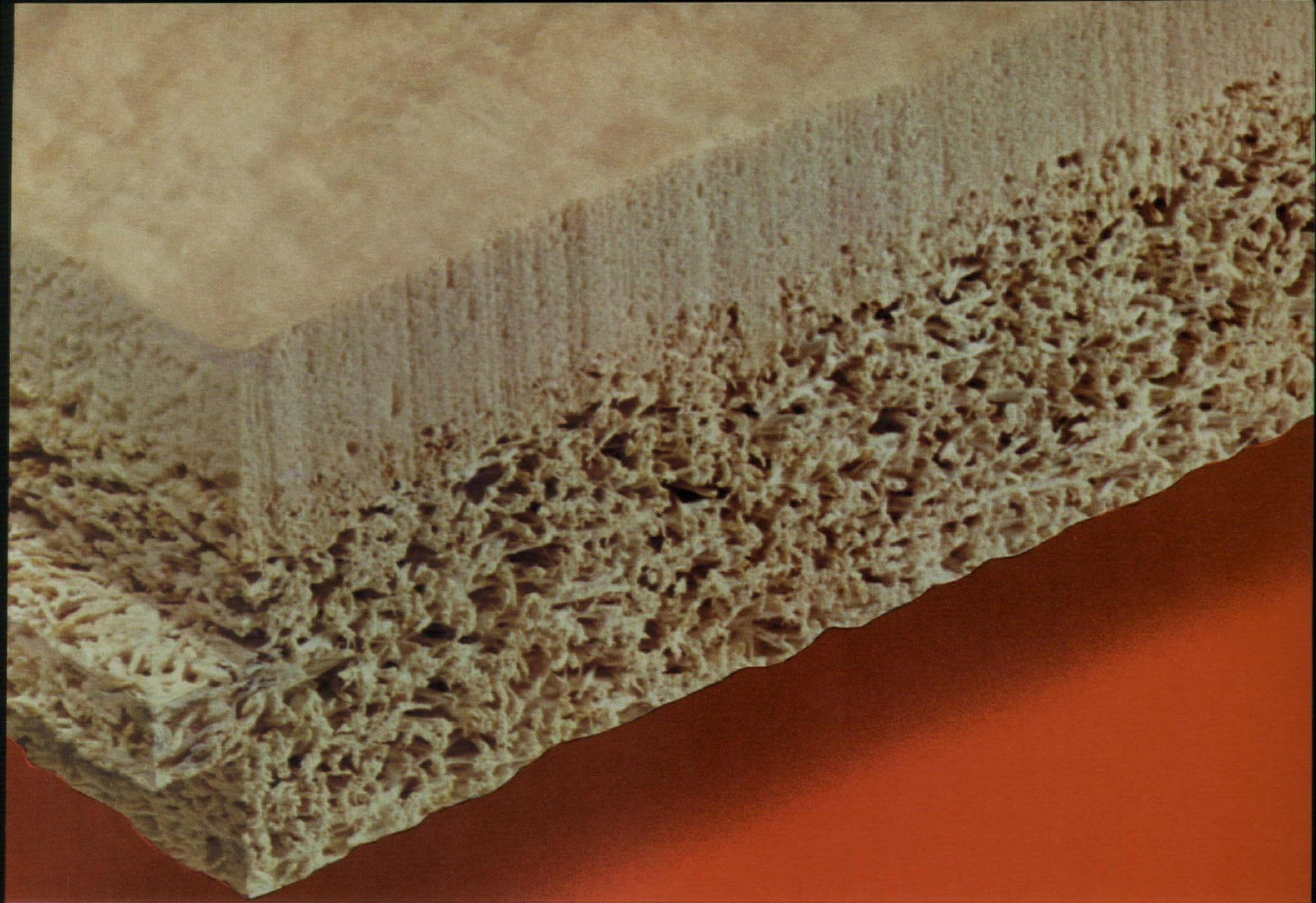
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Tectum II roof decking with

Now, one of the most versatile building products you ever specified is more useful than ever.

TECTUM II with factory-applied urethane foam eliminates on-site insulation, can be installed quickly, is immediately ready for the application of any conventional roofing system.





factory-applied polyurethane foam.

TECTUM II with factory-applied urethane foam is roof deck, acoustical ceiling, vapor barrier and more; all in one beautiful, strong, lightweight, non-combustible, fully insulating material.



TECTUM II can insulate twice as efficiently as Tectum. The $\frac{3}{4}$ " of polyurethane foam doubles the insulation value of 2" Tectum producing a low "U" value of .10 and better thermal control. And inside — same beautiful Tectum texture to dress your ceiling. May we send you details?

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is a National responsibility.**
Gypsum Company



The name Gold Bond identifies fine building products from the National Gypsum Company. For further information on Tectum II, write Dept. AR-90T, Buffalo, New York 14225.

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RALSTON PURINA COMPANY
CHECKERBOARD PLAZA TOWER OFFICE, ST. LOUIS.
Architect: Hellmuth Obata & Kassabaum, Inc.
Contractor: J. S. Alberici Construction Company, Inc.

NEW DESIGN FREEDOM!

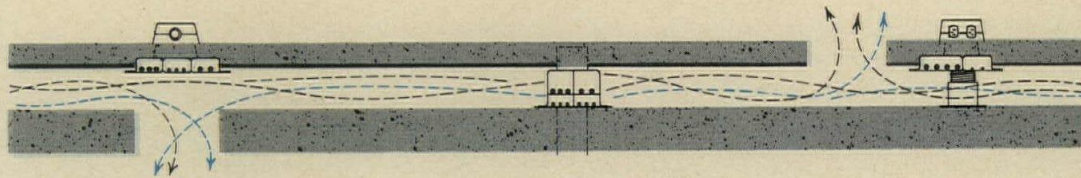
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Ugly, bulky ducts, piping and other obstacles to design freedom need no longer stand in your way. Granco's A-E (Air-Electric) Floor System puts all mechanical and electrical services into a slender sandwich floor slab. Air, telephone, power and signal distribution are artfully concealed.

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A-E Floor gives you new freedom to create and to innovate. *It's the only system compatible with both concrete and steel frame construction.* It's the only system that gives you such scope for expressing your most advanced architectural concepts.

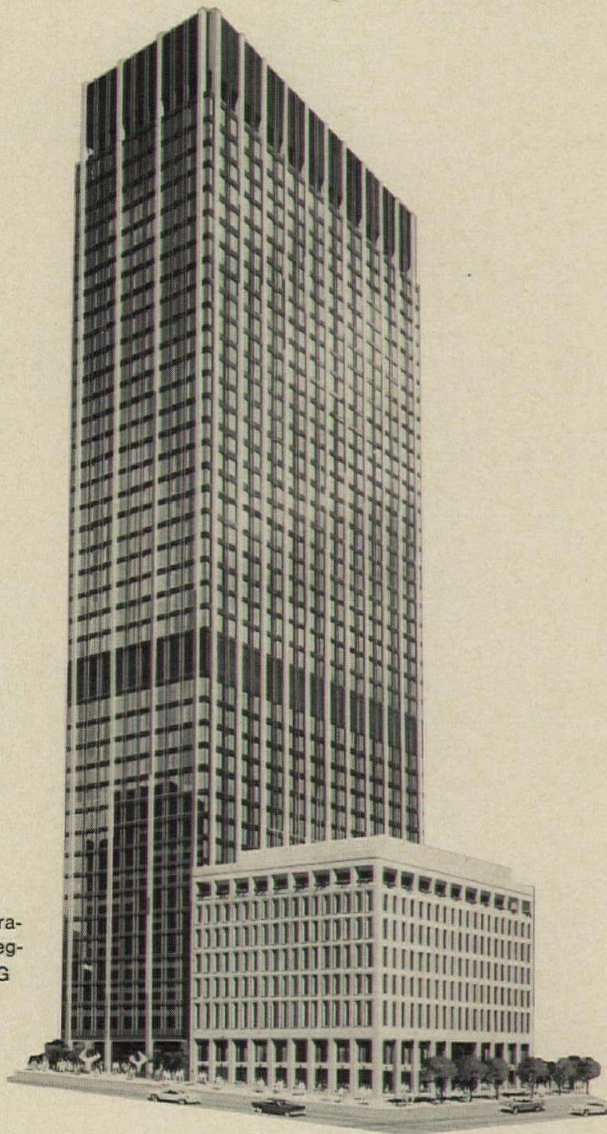
Send for our new A-E Floor Systems brochure. This 24-page, award-winning booklet shows how A-E Floor brings new versatility and freedom to architectural design. Granco Steel Products Company, 6506 North Broadway, St. Louis, Missouri 63147. A subsidiary of Granite City Steel Company.



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Each floor features multiple temperature control zones with individually regulated HEATING/AIR-CONDITIONING

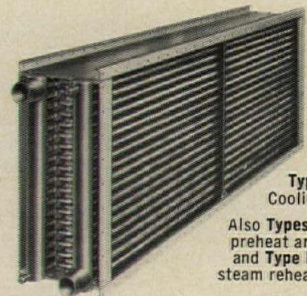
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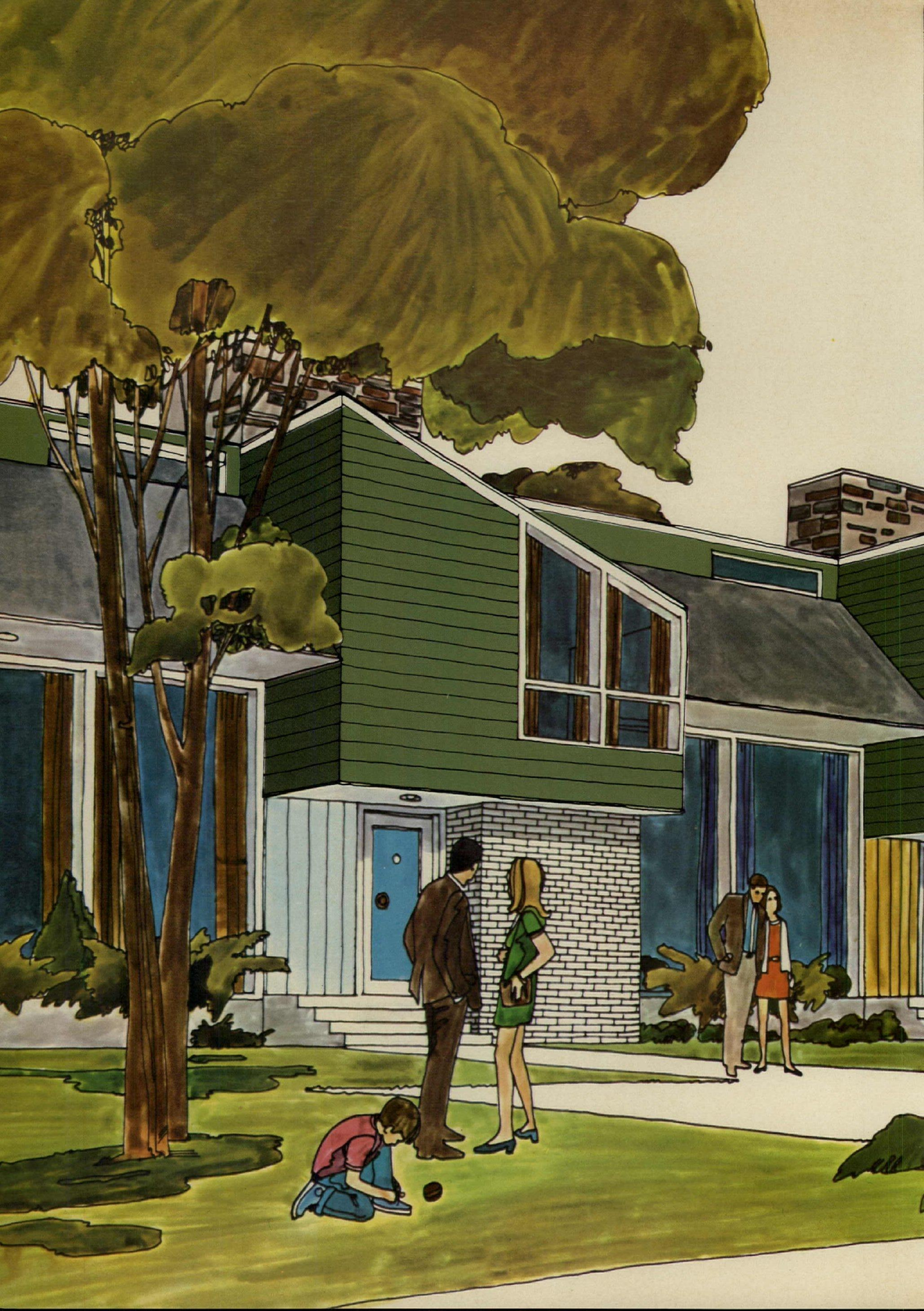
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PPG DURACRON® Coil Coatings say it loud and clear— this is quality construction

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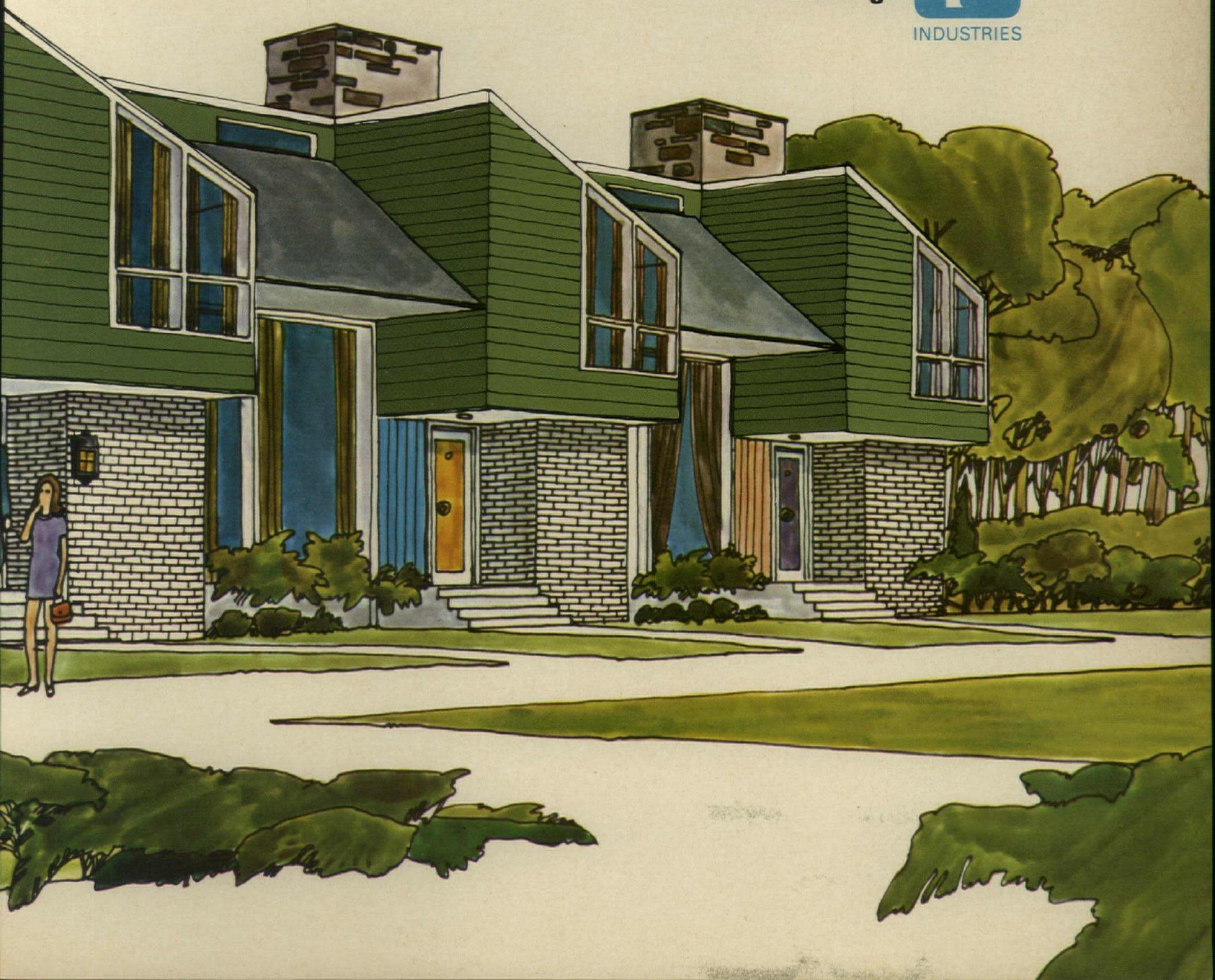
fresh appearance.

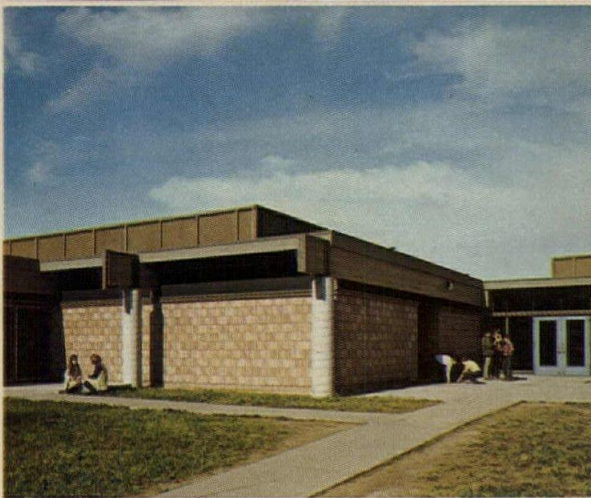
Get the complete sales-building quality story on aluminum products finished with PPG Coil Coatings from Sweet's Architectural File, your siding manufacturer or PPG INDUSTRIES, Inc., Dept. 16W, One Gateway Center, Pittsburgh, Pa. 15222.

**PPG is Chemicals, Minerals,
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So far.**

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Architects: Frederick Confer & Associates, Concord, Calif.

Breakage resistance and safety

PLEXI



Air conditioning should keep your ceiling unlimited.

Another great ceiling. This one at Coatesville Senior High School in Coatesville, Pennsylvania.

Architect: Campbell, Rea, Hayes & Large.

Air Conditioning: All-air, Carrier Moduline® System.

Basic system component: The Moduline air terminal. 12" x 48". Flush-mounted. Interconnectable plenum for quick installation. Automatic controls regulate flow of air (15-180 cfm) through linear slots in response to room temperature. The air discharged at the ceiling mixes evenly with room air for cool, comfortable conditions.

Design advantages: Inconspicuous. Draftless. Sensitive to any temperature change in immediate area. Eliminates wall thermostats and wiring. Allows complete flexibility in arrangement of units, future altering of interior space.

Client advantages: Unequaled climate control throughout building. Low initial and operating costs, and lower renovation costs.

Applications: Office buildings, department stores, schools, hospitals, any multi-room building.

Moduline design data: write Carrier Air Conditioning Company, Syracuse, New York 13201.



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We help keep buildings in business.



Every day Square D products make it possible for millions of office building tenants to perform their duties efficiently and comfortably. Square D switchgear accepts electrical power for the whole building. From there our busway carries the electricity to the top floor, bringing power to the elevators, to the lighting system on each floor and to the business machines. Our motor control centers are likely to control the central air conditioning. A new Square D pump control system maintains constant water pressure on all floors no matter how high the building. And if it is completely modern, the building will have our underfloor duct to take care of expanding communications and data processing systems. These are just a few of the ways Square D products can help keep a building in business. In industry, on the farm, in the home—wherever electricity is distributed and controlled—you can count on Square D for practical, efficient solutions to almost all your electrical needs.



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personalize multiple dwelling.

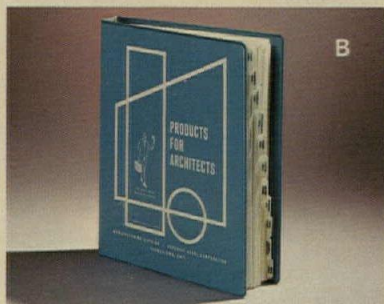
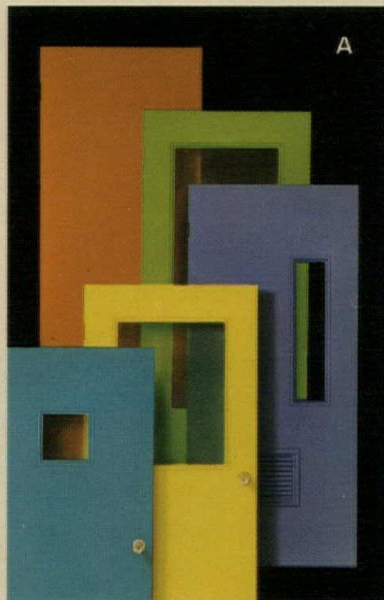
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A. Republic doors are available in eight standard styles. And unlimited styling possibilities.

B. Write for our architectural product manual.

Republicsteel^{*}
Manufacturing Division

*A Trademark of Republic Steel Corporation

For more data, circle 43 on inquiry card

A photograph of a white, perforated rectangular object, possibly a filter or a piece of equipment, resting on a yellow surface with a grid pattern. The object is positioned diagonally across the frame, with its top-left corner pointing towards the upper left. The surface it rests on is a bright yellow color with a grid of thin, white lines. The lighting is bright, creating a strong shadow of the object on the surface below it.

For the well-



The sidewall prismatic lens.

It's by Holophane. And it's one in a new family of injection-molded acrylic lenses called "Perm-Align."

This model—with 1-inch sidewalls—directs light upward and outward as well as downward. It delivers balanced illumination that eliminates dark areas on ceilings and walls. And, because of its esthetic appeal, the lens is a design element in itself.

Perm-Align lenses—there is a flat, ceiling-flush model, also—are self-framing. In addition to side rails, these lenses have end rails,

too. So they seat themselves firmly on *four* sides: resting lengthwise on the ledge of the troffer and, at the ends, on the troffer's special seating hinges.

They won't sag. Won't leak light. Can't fall or be knocked out.

They're structurally engineered with minute cone prisms for quality lighting. That means greater lamp obscuration. Low brightness. Maximum uniform illumination—and comfort.

Maintenance? As simple as with any lens. There's no metal frame to remove before washing. Nothing that will rust or be scratched.

Relamping? The retractable end supports simply fold back into the troffer and the Perm-Align lens swings down on two hinge pins.

For complete information on Perm-Align lenses write: Dept. A6, Holophane Company, Inc. 1120 Avenue of the Americas, New York, N.Y. 10036

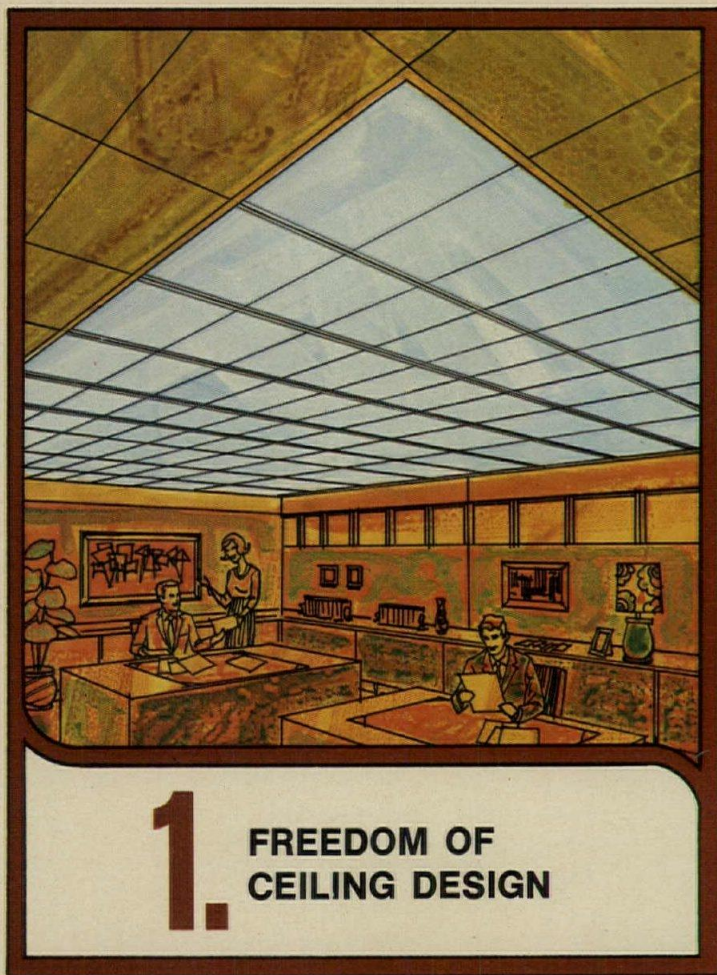
HOLOPHANE

Perm-Align . . . the all-acrylic prismatic lens that seats itself on *four* sides.

For more data, circle 38 on inquiry card

dressed ceiling

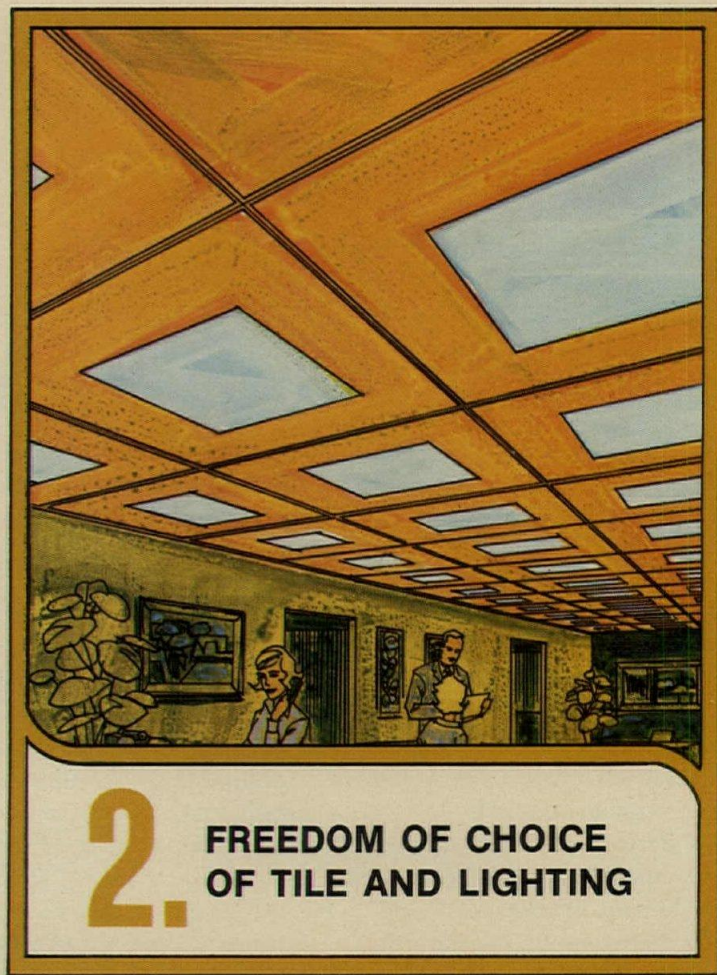
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1. No other ceiling system offers so many *architectural* design possibilities! T-Line is available in any size module; linear or modular types for luminous, coffered or tiled ceilings.

2. Your complete freedom to choose any type or brand of ceiling panels, lighting and partitions gives T-Line Ceilings the greatest architectural, environmental and performance possibilities of any ceiling system.

3. Titus manufactures only the air diffusion and

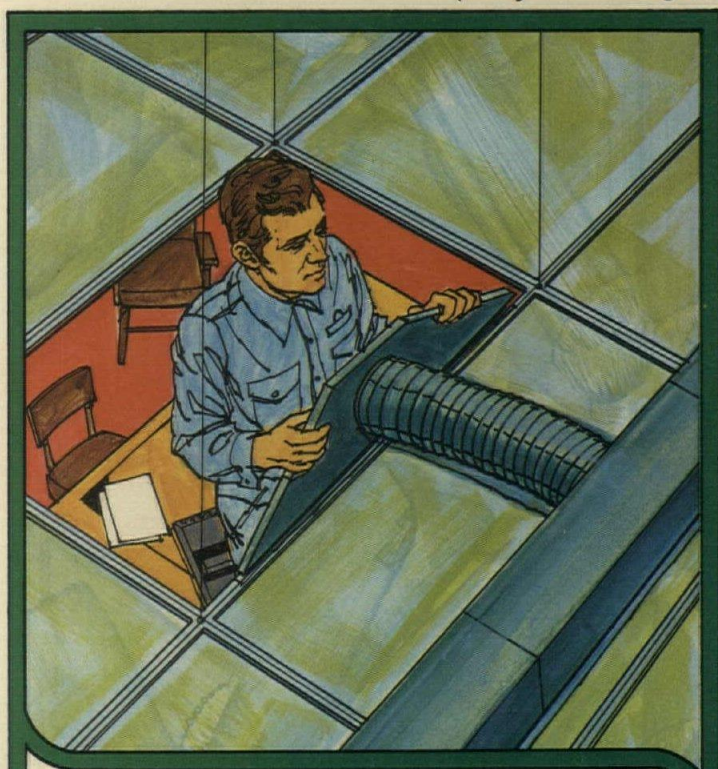


ceiling suspension components of T-Line. You have complete freedom to specify any type or make of other components. This permits installation in the conventional manner with a clear-cut division of the trades.

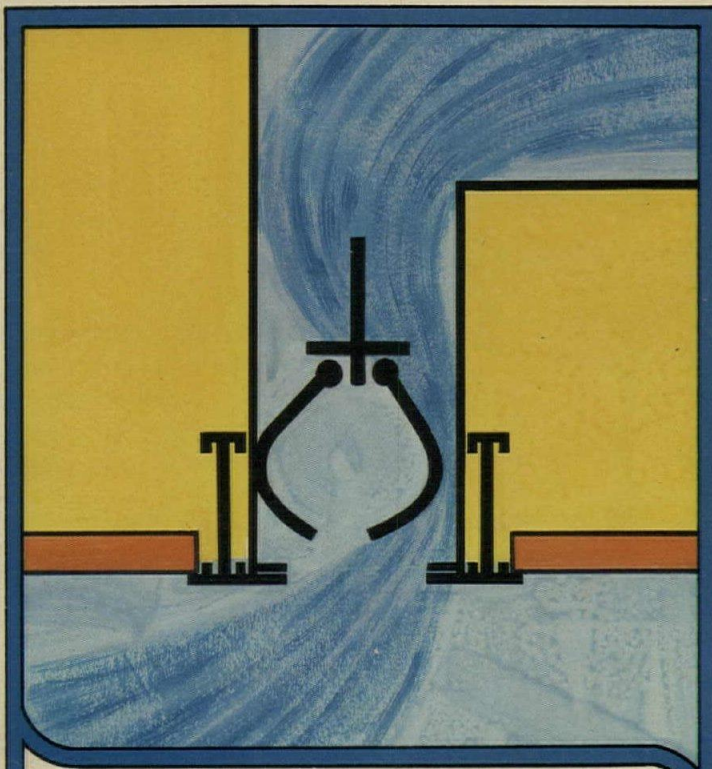
4. *Titus knows air distribution*, having manufactured air diffusion products over 24 years. With T-Line, the air pattern is adjustable a full 180° — can provide each modular unit of space with the air distribution to fully satisfy *any present or future* room requirements.

...when you specify TITUS T-LINE Coordinated Air Diffusing Ceiling Systems

(only T-Line gives you *all* these freedoms)



3. FREEDOM FROM
CONFLICT BETWEEN
BUILDING TRADES



4. FREEDOM FROM
AIR DISTRIBUTION
PROBLEMS

THE AIR DISTRIBUTION PEOPLE

TITUS[®]

- Rush new Catalog on Titus T-Line Coordinated Air Diffusing Ceiling Suspension Systems.
- Have your Representative call me for appointment.

NAME _____

TITLE _____

COMPANY _____

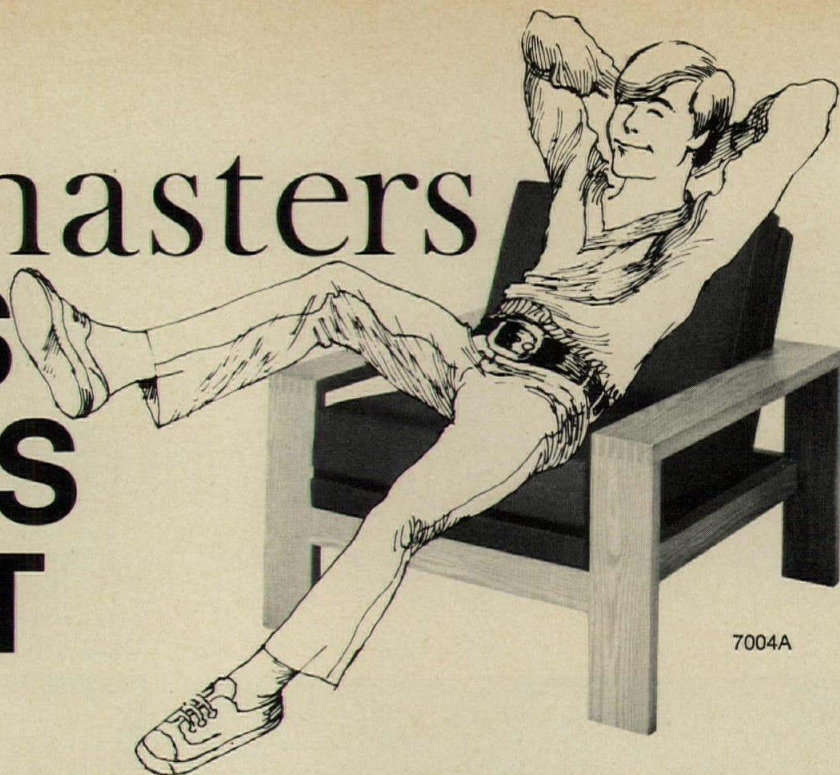
ADDRESS _____

MAIL TO: TITUS MANUFACTURING CORPORATION
Waterloo, Iowa 50704

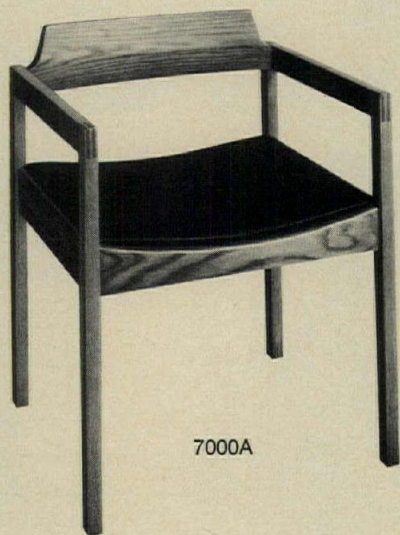
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chairmasters

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7004A



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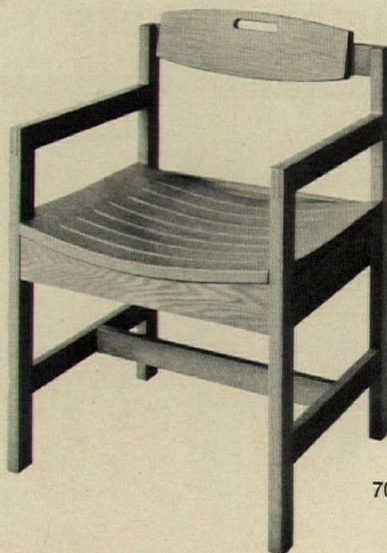
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Timberline won't rot, crack, warp or split. It's fire-resistant. And Timberline has a special self-sealing adhesive that helps to keep it down in high winds.

As for beauty, you have to see Timberline to really appreciate it. Its unique double-layer, staggered-cut de-

sign remarkably duplicates the deep uneven shadow pattern of a wood shingle roof. And it comes in five subtle wood-tone colors. All with the rich varied shadow line that can do wonders for the appearance of a building.

Timberline roof shingles are fast and easy to apply. Warranted for 25 years by GAF, one of America's leading manufacturers of building materials.

For further details, call your GAF Building Products dealer or send the coupon. In Sweet's, see GAF Building Materials insert.

For more data, circle 41 on inquiry card

GAF Corporation
Building Products Division, Dept. D-90
140 West 51 Street
New York, New York 10020

Yes, I'd like more information on
GAF Timberline Roof Shingles.

- Please send further details, including specifications and application data.
 Please have your representative call.

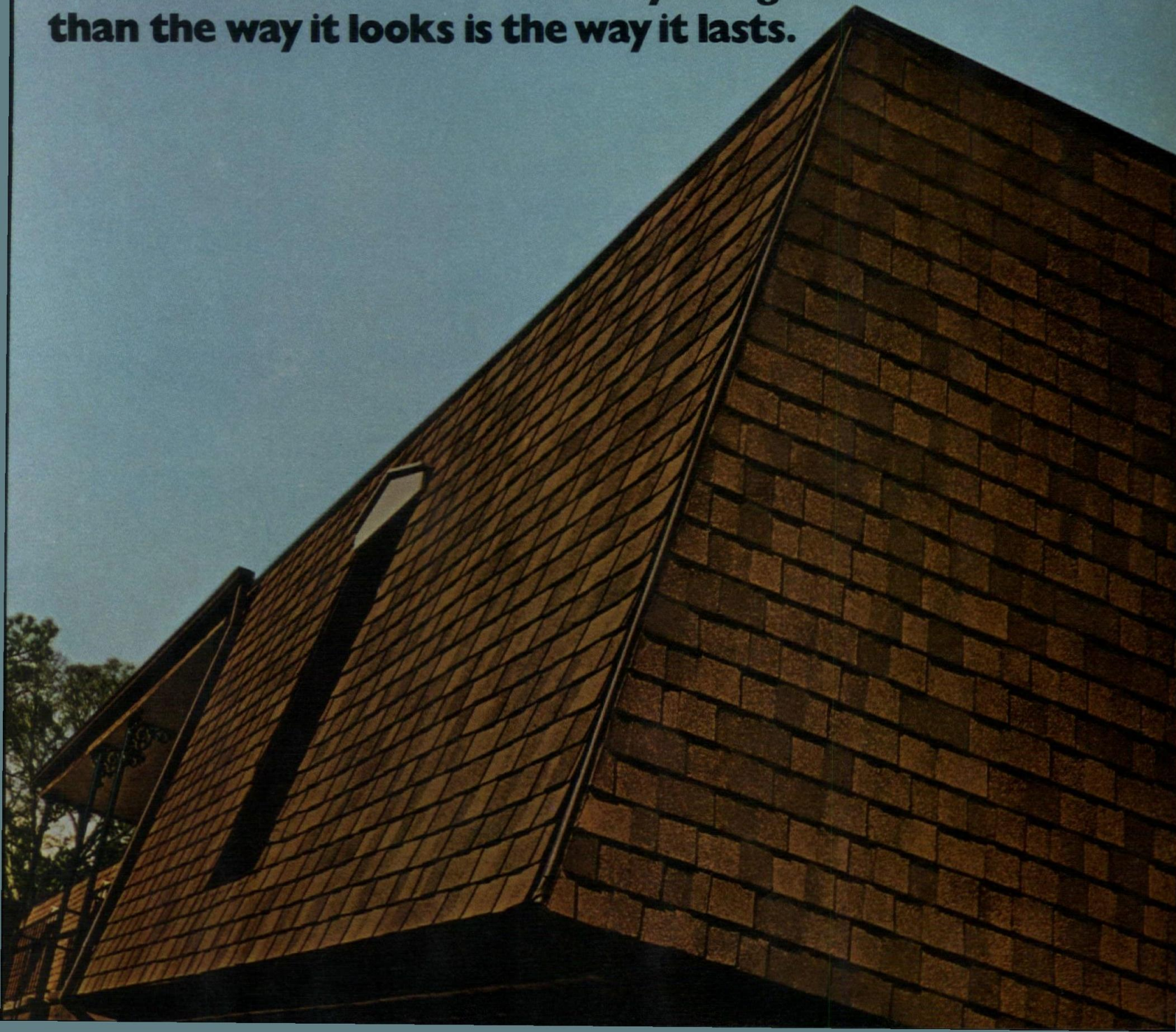
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 **Timberline**TM
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A GAF TimberlineTM roof. The only thing better than the way it looks is the way it lasts.





Wilson Walls

For Total Environmental Control



Low initial cost and zero-maintenance make this high pressure plastic laminate wall system the ideal choice for permanent beauty. Quality-engineered tongue-and-groove installation displays perfect continuity of pattern. Also available with decorative reveals.

Illustrated

Wilson-Art

Brown Indian Teak (1323).



Speaking of beauty and economy, let's talk about Wilson Wall Systems with Wilson-Art plastic laminate.

Wilson Wall Systems provide quiet dignity in the most luxurious office setting, yet are durable enough to maintain their beauty in heavy-traffic commercial areas.

COMPETITIVELY-PRICED Wilson Wall Systems usually cost less initially—always cost less ultimately.

You can forget maintenance costs when you specify Wilson-Art high pressure plastic laminate in new, modular Wilson Walls.

So, whether your primary concern is beauty, durability, or economy, Wilson Wall Systems with Wilson-Art give you all three.

Wilson Wall Systems are composed of high pressure plastic laminate with melamine overlay adhered under pressure to a 43# density particle board with phenolic backing sheet. Available in 8' and 10' panels, 15½" and 24" widths, Wilson Walls come in the commonly used thickness of 7/16" (total thickness) in both tongue-and-groove and reveal systems.

To see the complete selection of Wilson Wall Systems with Wilson-Art high pressure plastic laminate, call the Wilson-Art Architectural Design Representative nearest you.

Atlanta: 404-373-2223
Chicago: 312-437-1500; 312-625-7590
Los Angeles: 213-723-8961
Miami: 305-822-5140
New Jersey: 609-662-4747; 215-923-1314
New York: 914-268-6892; 212-933-1035
San Francisco: 415-782-6055
Seattle: 206-228-1300
Temple, Texas: 817-778-2711

For more information, consult Sweet's Catalog or Spec-Data Sheet.

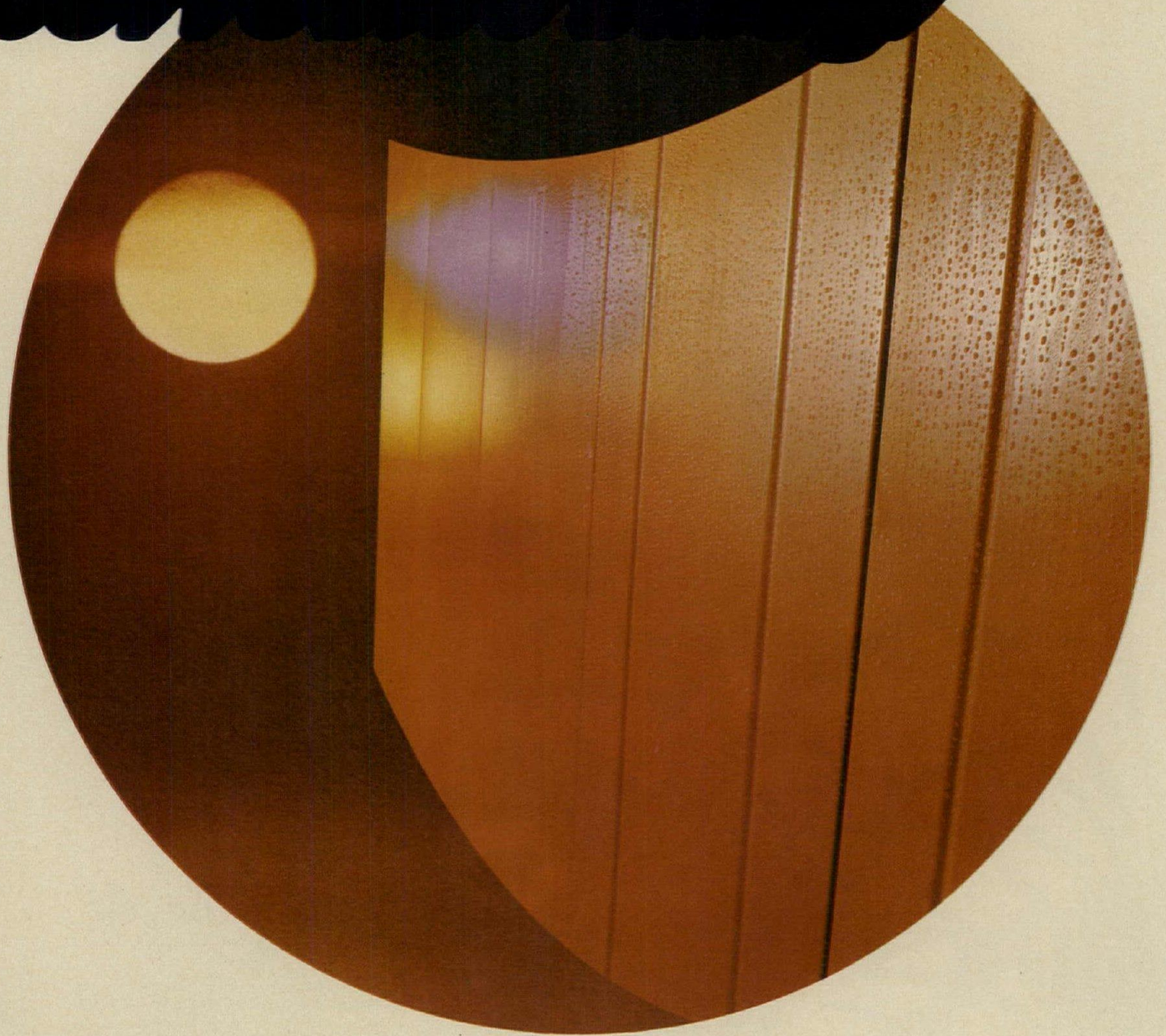


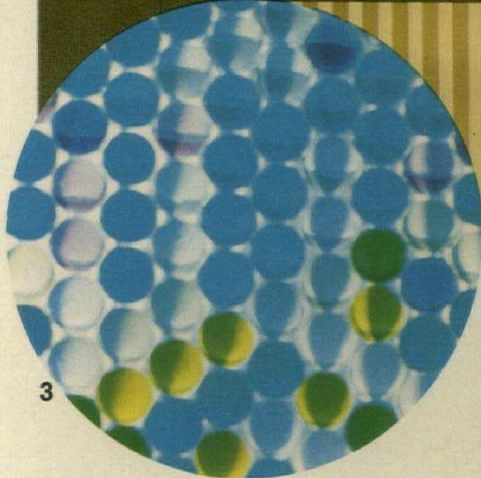
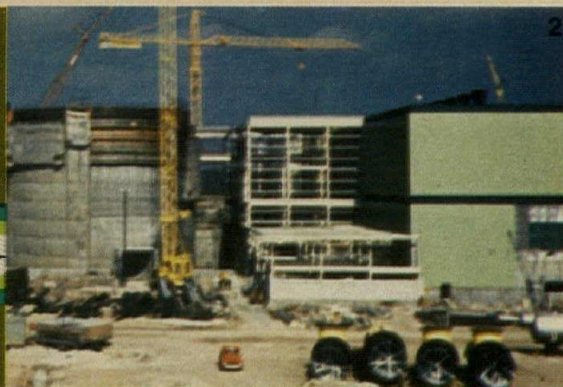
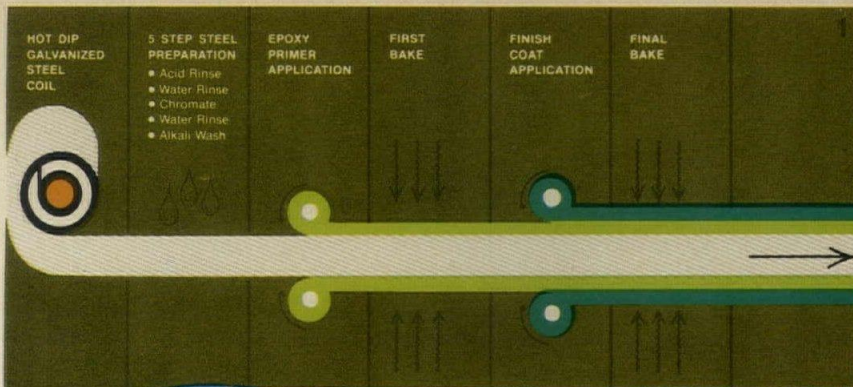
RALPH WILSON PLASTICS COMPANY . . . TEMPLE, TEXAS
ARCHITECTURAL PRODUCTS DIVISION **DART**
INDUSTRIES INC

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**Inryco:[™]
the wall panels
that shun
corrosive smog.**





New Duofinish 500™—a polyvinylidene fluoride coating that's highly resistant to chemical pollution and slippery enough to shed dust, smoke and abrasive particles found in airborne industrial wastes. Designed to maintain color fidelity for 20-plus years, Duofinish 500 provides exceptional resistance to chalking and fading. When chalking does ultimately occur, it will be in the same color as the base paints, since Duofinish 500 uses inorganic earth pigments.

Withstands severest exposure tests. In actual laboratory tests, this surprising finish has shown outstanding resistance to fumed nitric acid and concentrated hydrochloric acid. When subjected to Twin Arc and Sunshine Arc tests, Duofinish 500 showed no signs of color change or chalk face development after thousands of hours of exposure. Alkyd and Acrylic finishes showed deterioration in one fourth the time. In sand abrasion, Duofinish 500 proved to have better than a seven to one advantage over ordinary finishes.

This remarkable performance is due to a great extent to the Duofinish 500 two-coat process. (See process diagram in Figure 1.) The first coat, applied over chromated galvanized steel, is an epoxy primer, noted for its superior adhesion to the base metal. This primer forms a pliable film that stretches under impact and absorbs the stresses of forming. This second coat (polyvinylidene fluoride), available in a wide range of colors,

is an organic resin consisting of millions of microscopic particles that melt and fuse into a continuous finish. (This is shown in symbolic form in Figure 3.) *For details and full description of test data, send for the Duofinish 500 Catalog.*

Non-fade panels pay off on long term construction. Many structures, such as power plants (as shown in Figure 2), are under construction for five years or more. Produced with the highest standards of quality control, Inryco wall panels can be added to the structure throughout these extended periods without variations in appearance.

Duofinish™—a finish that combines economy and durability. New improved Inryco Duofinish provides a hard, weather-resistant surface. Like Duofinish 500, this is a two-coat finish with epoxy as the first coat. The second coat, in this case, is a modified silicone polyester with good strength and hardness characteristics.

This weather resistant surface has a color retention life of ten years or more. Duofinish is available in a wide range of standard and selected preformulated colors. *For details, send for the Duofinish Catalog.*

For added design freedom a wide range of panel profiles.

New IW Series for true blendability. Available in six 12" wide profiles that can be used in any combination for countless kinds of textural and shadow effects. (An example is shown in Figure 4.) Unique U-shaped lock system assures weather proof tightness, conceals wall fasteners for a beautiful appearance.

New M Series combines attractiveness with economy. Four styles of wall panels provide interesting variety of surface effects. Broader widths (30" and 36") cover wall


areas faster, reduce erection time.

More series to choose from. The 24" AW and the 12" wide EW, either insulated or uninsulated. And the insulated factory assembled YYW panels. More proof that Inryco wall systems do offer optimum design flexibility.

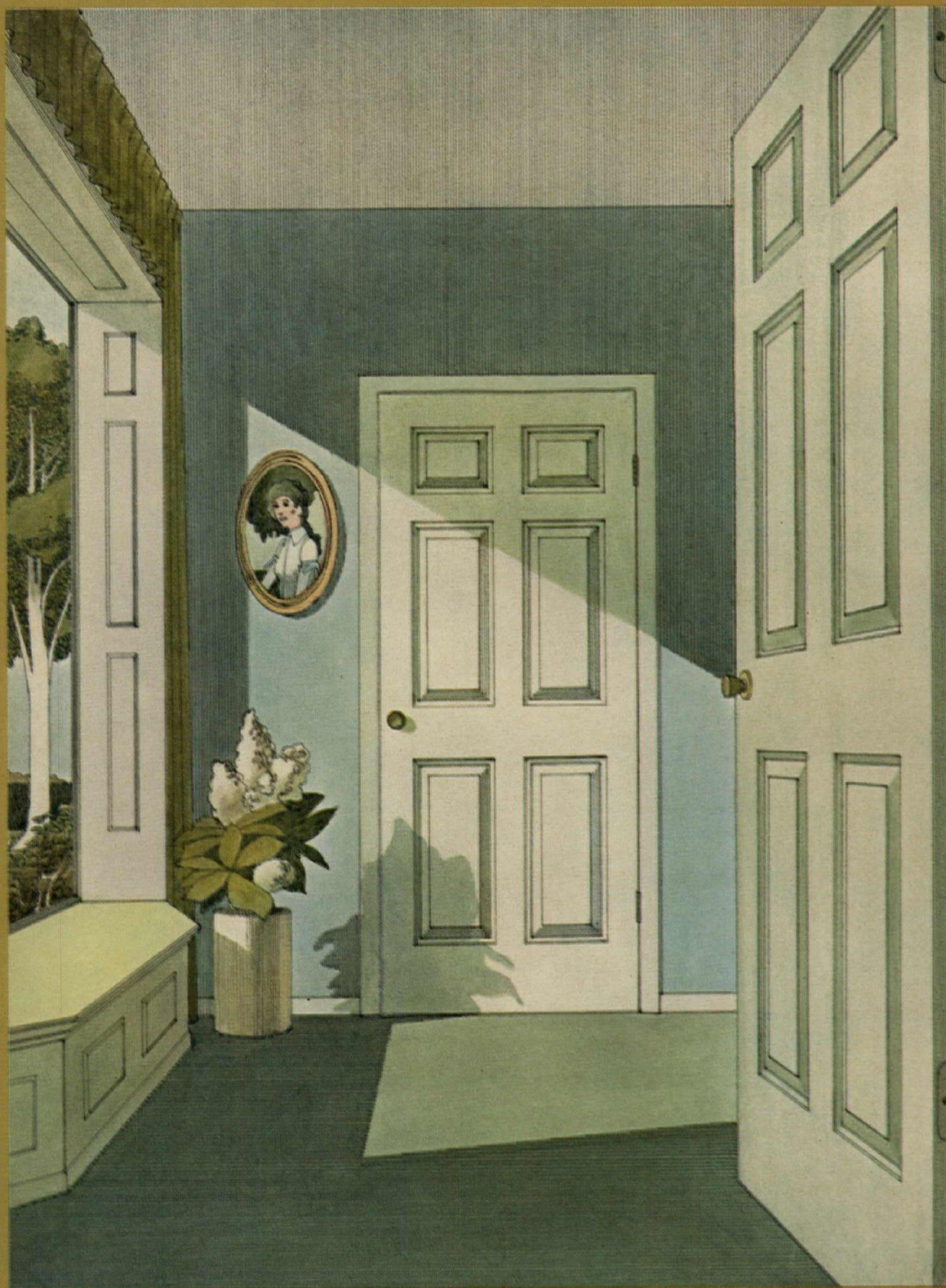
Inryco responsibility based on complete control. The exclusive ten step strip coil finishing process shown above is typical of Inland-Ryerson's approach to wall systems production. Inland-Ryerson engineers realized that superior adhesion and surface hardness could not be achieved by a single coat of paint, and since no two-coat finishes were available at the time, they developed a unique continuous process painting technique that fulfilled the two-coat requirement with exceptional efficiency.

Besides in-plant painting, Inland-Ryerson assumes total responsibility for quality in all phases of wall system production. This begins with the mining of raw materials through steel production, coil rolling, painting, shipping and handling. It even extends, when desired, to installation. Single source responsibility pays off in maintaining controlled quality, and this assures a consistently reliable product to meet your most demanding specifications.

Inland-Ryerson Construction Products Company. General Offices: Chicago, Illinois. Address inquiries to Dept. I, 4033 West Burnham Street, Milwaukee, Wisconsin 53201.

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General Offices: Chicago, Illinois
A member of the  steel family

New from Caradco... a revolutionary Colonial Door



**The
Molded
Door
with the
deep-carved
look.**

The style is from a period known for graceful forms. You get authentic six-panel colonial door beauty and elegance. Only now it's molded by a new Caradco process into one-piece faces that can't split, check or shrink—all factory primed. And you get it for less than the cost of conventional panel doors. Feature these doors as a major interior design extra. Show homebuyers the steeply beveled panels that yield deep shadow lines like handcrafted doors of colonial days. Let them feel the wood-textured surface. You'll find tremendous buyer appeal in Caradco molded doors. Write us for full details.

CARADCO® **SCOVILL**

Dubuque, Iowa 52001
Eastern Assembly Plant, Pemberton, New Jersey
Ohio Assembly Plant, Columbus, Ohio

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Meet Miss Adrienne Craig, former security risk. (And key loser.)

People lose keys. Keys get stolen or misplaced. It's a fact of life.

Miss Craig managed to lose 4 keys last year. Who knows where they are?

But who cares? Her employer has installed Cypher[®], the Electronic Access-Control system.

Cypher is a better idea in locking mechanisms. Subtler, more efficient. Easier and more convenient. (It's the one others are trying to imitate.)

Cypher has five "rocker keys" in

a heavy-duty stainless steel housing—each with a number on each end. (1 to 10, of course.) Push four of them in the right sequence and the door is unlocked.

Push the wrong ones—or the right ones in the wrong sequence—and it isn't. It's as simple as that.

Miss Craig doesn't have to fiddle with keys, hunt for them, find the right one, put it in, etc.

And she can't "lose" a number.

There are a number of subtle

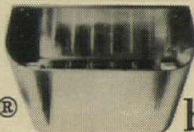
refinements—"Variable Time Penalty" and "Variable Door Open Interval"—which we don't have time to discuss.

Instead, we suggest *you* take a moment to think about your security arrangements. Are they good enough? How many keys (or cards) are in circulation? Who has them?

Do you have a couple of Miss Craigs—wonderful, brilliant people who are not too good at holding onto things?

Then, Cypher.

Cypher[®]



by Continental Instruments Corporation

3327 Royal Avenue, Oceanside, New York 11572

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Introducing the gas record player.

The switch to Gas Total Energy is on.

At 10:30 Monday morning, Janet Hunter gave her sixth-grade class a French lesson on record players that were plugged into the gas company. And her class is not unusual, because every day more and more schools are using teaching aids run by gas.

Explanation? Gas total energy. The use of natural gas prime movers to produce electric power on-site,

right where it's used for lights, television, motors and, you guessed it, record players. And that's just the beginning. While the engine/generator sets turn out the power, engine heat is recovered to heat or cool the building, to heat water and maybe for processing. Furthermore, vital natural energy resources are conserved through direct, efficient conversion of BTU's into usable work.

But the real clincher comes in

two parts: (1.) cost economies not possible ten years ago, but practical now due to the high operating efficiency of gas total energy systems. (2.) the self-sufficiency of a total energy system — it acts as its own power standby. Sold? If not, you soon will be. For complete information, contact your gas company or Bob McChane, Northern Natural Gas Company, 2223 Dodge Street, Omaha, Nebraska 68102.



For more data, circle 46 on inquiry card

CURRENT TRENDS IN CONSTRUCTION

James E. Carlson
 Manager of Economic Research
 McGraw-Hill Information Systems Company

Regions in perspective: Part 1, what's built where?

Construction trends in Tulsa, Oklahoma, were quite a bit different from construction trends in Manchester, New Hampshire, last year. This shouldn't come as a surprise to anyone, but quite often, the segmented, regional nature of construction markets is obscured in discussions of national activity.

A region shapes its identity from its physical geography, its sources of livelihood, and the ideas, values and needs of the people who live there. The only constant in this formula is physical geography. Changing technology and changing economic conditions impose subtle shifts on a region's sources of livelihood. The transmission belts of the mass media tend to mold sectional ideas and values into more homogeneous forms. And a segment of the indigenous population moves to a new region each year. But, change never occurs very rapidly. Regional identities can exist, with only minor modifications, for considerable periods of time. This gives us an opportunity to study trends.

The kinds and types of structures that are being built in a region at any given time will usually reflect this regional identity. The Northeast's economy, for instance, is heavily oriented towards the commercial, financial and service industries. The fact that office building consistently accounts for a larger share of the Northeast's building dollar than it does in any other region makes sense within this framework. In 1968 and 1969, in fact, close to half of the value of office contracts awarded in the nation turned up here. The Northeast's share of all building (total residential and non-residential) was slightly more than one-fourth of the U.S. total in those two years.

In the same vein, the Midwest, the "industrial heartland" of the nation, should be expected to have a larger share of its building capacity committed to manufacturing plants and related structures than is true of other regions. This has generally been the case. Over the past five years, the proportion of manufacturing contracts in the Midwest (Midwestern manufacturing contracts as a per cent of total U.S. manufacturing contracts) has averaged five per cent larger than the proportion of all buildings (Midwestern total building contracts as a per cent of U.S. total building contracts) in the region.

Offices and manufacturing plants are two of the more obvious examples of a region's personality shining through to its building markets. Other building types afford similar examples of such a relationship: The number of college enrollments in the Northeast and Midwest is slightly higher relative to the proportions of college-age youths in these regions, indicating an influx of students from other areas. In addition, both the Northeast and Midwest have experienced some of the most pronounced urban-suburban population shifts in the recent past. These factors, plus the need to upgrade existing older facilities, have given the educational building market in each of these regions a consistently larger share of the national total than the share of building in the regions generally. This has occurred despite the fact that both the Northeast and the Midwest have rates of population growth lower than those of the South or West. One further note on educational building: the proportion of dormitory construction in the West has been consistently below the West's share of college classroom construction. This is a direct result of the region's more highly developed community college system.

Hospital building in the Northeast and Midwest has also outperformed total building in these regions. This trend has been supported by the renovation and expansion of both regions' large stock of older buildings, greater emphasis on mental health facilities than elsewhere, and the construction of nursing homes to meet the needs of the regions' elderly population.

When it comes to residential building, the regions with the fastest rate of population growth should have the strongest hand. In this respect the West and the South hold all the high cards. But this is an area where change, or the potential for change, becomes an important factor. Both regions have spent proportionally more on one- and two-family houses over the past five years—the South averaged a full five per cent more, in fact, than the proportion spent on all types of building. But, during the mid-sixties, the Northeast, with its large, tightly-packed core cities, was not only putting up more apartment buildings in proportion to other types of building in the region, but more apartments than any other region. In 1968, the lead in apartment building shifted dramatically to the South, and has remained there since. Credit availability, trouble with building codes and zoning laws, and frustrated public programs figure in any listing of the Northeast's apartment building problems, while new contractual arrangements like the cooperative and the condominium have enhanced the apartment's position in the South. This is particularly true in the retirement and vacation areas of the region. And, while we're on the subject of vacations, the fact that people are spending more of these in the South's resort areas than they used to has given the region a dominant position in hotel and motel construction too.

Religious structures have been of greater importance to the building totals of the South and Midwest than they've been to other regions. Public building, on the other hand, accounts for a proportionally larger share of the building dollar in the Northeast and West. Most other building types, however, are conspicuous by the lack of any clear-cut regional pattern.

Each region's share of the total building pie has not really changed much over the past five years, though. Growth in office buildings in the Northeast and manufacturing plants in the Midwest almost balanced out a generally slow housing performance, while the South and West counted housing as their strong suit. Things might be somewhat different during the next five years. A discussion of regional construction trends anticipated in the near future will be presented in next month's article.

REGIONAL MARKET SHARES, 1965-1969

Selected building types

	North East	Mid- west	South	West	Total U.S.
Stores	26%	27%	28%	19%	100%
Offices	38	23	21	18	100
Mfg. plants	22	32	32	14	100
Educational	34	29	22	15	100
Hospitals	28	27	27	16	100
Public	35	21	24	19	100
Religious	23	32	31	14	100
Apartments	26	26	29	18	100
I & 2 Fam.	22	24	34	19	100
Total Bldg.	27	26	29	18	100

Components may not add to totals due to rounding.

Every night at sundown something happens to good old American ingenuity.

We Americans have the best highways in the world but only during the daytime. At night headlight glare virtually puts us back in the dark ages. There was never any adequate answer before but now we've invented one: Glare Barrier.

Glare Barrier is a new kind of anti-glare screen for divided highways and it costs less to install and less to maintain than anything else. But it's not the only thing we make for the

building and highway construction industries. We make more than 120 other products.

We make Bridge Form, for example. It's used in the construction of road surfaces on bridges. Besides being a big money-saver—compared to wood forms—it's faster and safer to work with.

And, for another example, we make Steelcrete—a fiendish tangle of expanded metal and concrete reinforcing bars. It's

also another money-saving product. It stops bank vault robbers from robbing bank vaults.

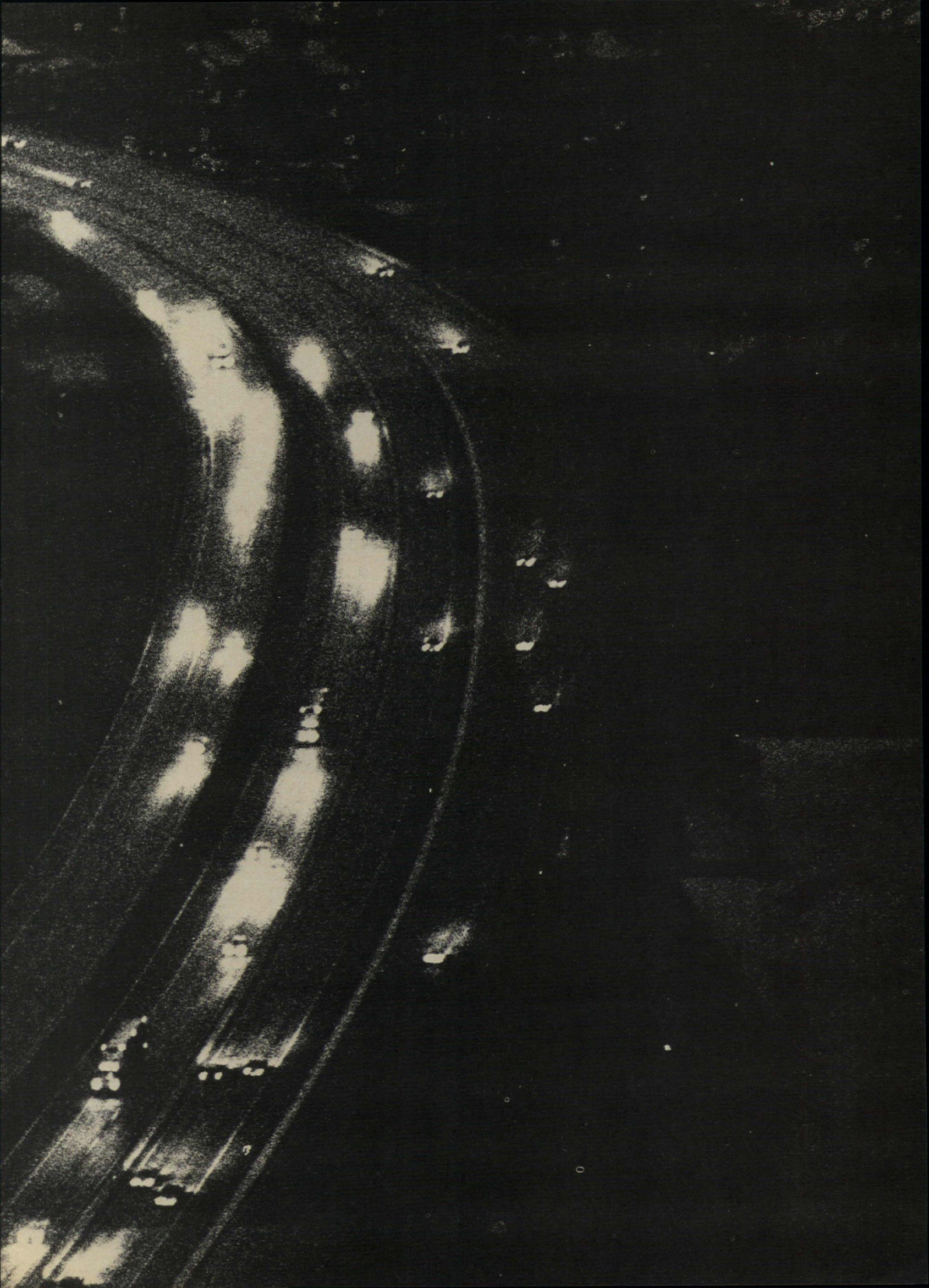
But just saying we're big isn't enough. Here are some facts: We have 53 sales offices, warehouses and fabricating plants covering every major marketing area in the country. Plus a field force of nearly 300 people.

And our research staff is busy working on 28 new products. So take advantage of our size. And our ingenuity. Specify Wheeling.

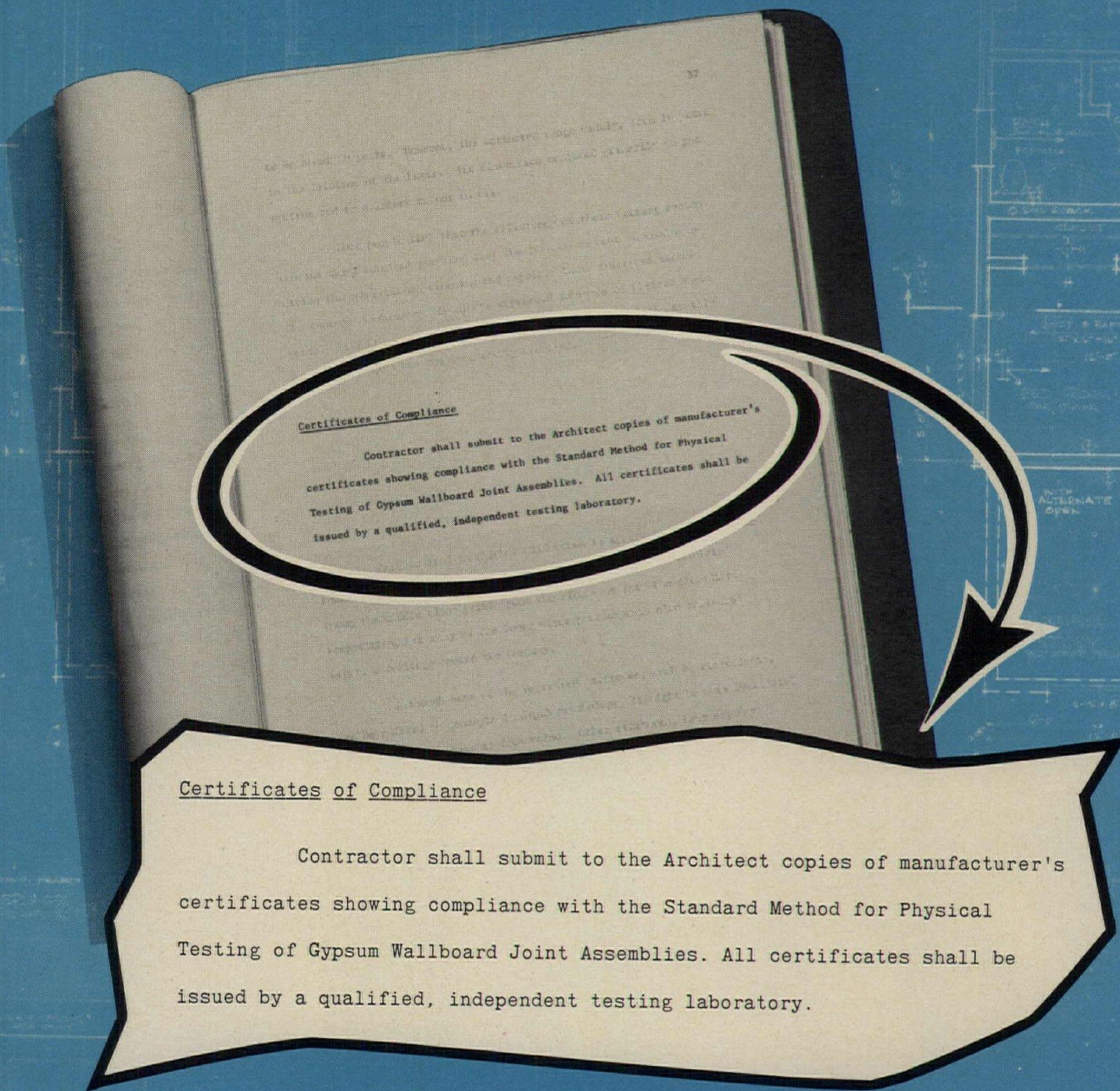

Wheeling Corrugating Company
A DIVISION OF WHEELING-PITTSBURGH STEEL CORPORATION

96% of what we make builds highways, buildings and reputations.

For more data, circle 48 on inquiry card



Insist that the sub-contractor furnish a letter of certification for every job he does with gypsum wallboard.



SPECIFY CERTIFICATION.

What does certification mean to you? It assures stronger joints, walls and ceilings that stay smooth. It means you can now specify for wood or steel framing, a gypsum wallboard tested against an established performance standard. These tests proved this board far superior to ordinary tapered edge wallboard.

Reminder: The gypsum wallboard used by the sub-contractor should be tested and the results certified by an impartial testing firm.

To be sure: specify a certification on every job. See your U.S.G. Architect Service man for details, or write to us at 101 S. Wacker Dr., Chicago, Ill. 60606, Dept. AR-09.

UNITED STATES GYPSUM

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INDEXES AND INDICATORS

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

INCREASED HOUSING CONSTRUCTION FORECAST FOR 1971

Economists and other professionals are attempting to predict construction industry activity for next year. Here are some predictions of a coming housing "boom" in 1971: The Wall Street Journal states, "... in 1971 ... increased housing construction will give the industry 'the biggest shot in the arm' ...". The NAHB Builder's Economic Council says, "The worst of the housing decline is over ... a turnaround in starts should begin within the next three or four months. ..." Former presidential adviser Gardner Ackley forecasts housing starts "... up close to two million by next year". Optimistic securities dealers are recommending securities of select building materials manufacturers who most likely would be positively affected by the anticipated boom.

Even if the average dwelling unit basic cost is a low \$15,000.00, about \$20 billion of mortgage money will be required by the industry during 1971. With tight money and high interest rates across the country, the situation will have to ease materially in the next three months to realize these forecasts.

Building cost indexes

The information presented in the tables indicates trends of building construction costs in 35 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, and prices of four basic building materials are included in the index for each listed city.

Differences in costs between two cities can be compared by dividing the cost differential figure of one city by that of a second.

1941 average for each city = 100.00

SEPTEMBER 1970

Metropolitan area	Cost differential	Current Index		% change year ago res. & non-res.
		residential	non-res.	
U.S. Average	8.5	304.4	324.3	+ 3.69
Atlanta	7.5	384.2	407.6	+ 5.56
Baltimore	7.6	311.8	331.7	+ 1.72
Birmingham	7.2	288.0	309.7	+ 1.53
Boston	8.4	289.9	306.8	+ 3.45
Buffalo	9.2	336.6	358.5	+ 4.13
Chicago	8.8	351.8	370.1	+ 3.20
Cincinnati	9.0	319.5	339.6	+ 3.62
Cleveland	9.8	345.9	367.6	+ 1.91
Columbus, Ohio	9.0	325.4	346.6	+ 3.45
Dallas	7.7	305.6	315.6	+ 2.09
Denver	8.3	329.1	349.8	+ 2.83
Detroit	9.5	343.0	360.1	+ 1.60
Houston	8.1	297.8	317.2	+ 5.75
Indianapolis	8.8	289.2	308.0	+ 2.43
Kansas City, Mo.	8.3	291.1	308.1	+ 3.68
Los Angeles	8.3	326.1	356.8	+ 2.17
Louisville, Ky.	8.1	300.9	320.4	+ 4.26
Memphis	7.6	291.2	310.2	+ 1.66
Miami	8.6	328.7	345.0	+ 4.25
Milwaukee	9.2	359.5	382.8	+ 4.20
Minneapolis	8.9	327.4	348.0	+ 4.66
Newark	8.9	299.8	319.3	+ 4.28
New Orleans	7.9	294.3	311.8	+ 4.13
New York	10.0	335.8	361.2	+ 3.16
Philadelphia	8.6	319.4	335.3	+ 4.02
Phoenix	8.2	169.9	181.0	+ 3.90
Pittsburgh	9.1	303.7	322.8	+ 3.40
St. Louis	9.2	323.0	342.2	+ 4.75
San Antonio	8.1	124.9	133.1	+ 7.11
San Diego	8.2	124.4	132.4	+ 5.50
San Francisco	8.9	427.9	468.2	+ 4.69
Seattle	8.6	301.1	336.4	+ 3.93
Washington, D.C.	7.9	279.7	297.9	+ 4.78

Cost differentials compare current local costs, not indexes.

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

1941 average for each city = 100.00

Metropolitan area	1962-1968							1969 (Quarterly)				1970 (Quarterly)			
	1962	1963	1964	1965	1966	1967	1968	1st	2nd	3rd	4th	1st	2nd	3rd	4th
	Atlanta	298.2	305.7	313.7	321.5	329.8	335.7	353.1	364.2	365.9	382.8	384.0	399.9	406.2	
Baltimore	271.8	275.5	280.6	285.7	290.9	295.8	308.7	311.4	313.0	321.8	322.8	323.7	330.3		
Birmingham	250.0	256.3	260.9	265.6	270.7	274.7	284.3	288.4	289.9	302.4	303.4	303.5	308.6		
Boston	239.8	244.1	252.1	257.8	262.0	265.7	277.1	278.2	279.6	294.0	295.0	300.5	305.6		
Chicago	292.0	301.0	306.6	311.7	320.4	328.4	339.5	340.4	342.1	354.9	356.1	362.2	368.6		
Cincinnati	258.8	263.9	269.5	274.0	278.3	288.2	302.6	309.8	311.5	324.8	325.8	332.8	338.4		
Cleveland	268.5	275.8	283.0	292.3	300.7	303.7	331.5	334.9	336.7	357.1	358.3	359.7	366.1		
Dallas	246.9	253.0	256.4	260.8	266.9	270.4	281.7	287.2	288.7	307.6	308.6	310.4	314.4		
Denver	274.9	282.5	287.3	294.0	297.5	305.1	312.5	317.9	318.5	337.9	339.0	343.4	348.4		
Detroit	265.9	272.2	277.7	284.7	296.9	301.2	316.4	326.8	328.5	351.8	352.9	355.2	360.5		
Kansas City	240.1	247.8	250.5	256.4	261.0	264.3	278.0	281.0	282.3	294.5	295.5	301.8	306.8		
Los Angeles	276.3	282.5	288.2	297.1	302.7	310.1	320.1	323.7	325.4	343.0	344.1	346.4	355.3		
Miami	260.3	269.3	274.4	277.5	284.0	286.1	305.3	309.6	311.2	328.3	329.3	338.2	343.5		
Minneapolis	269.0	275.3	282.4	285.0	289.4	300.2	309.4	310.6	312.2	330.1	331.2	341.6	346.6		
New Orleans	245.1	248.3	249.9	256.3	259.8	267.6	274.2	285.5	287.1	296.6	297.5	305.4	310.6		
New York	276.0	282.3	289.4	297.1	304.0	313.6	321.4	324.9	326.6	343.4	344.5	351.1	360.5		
Philadelphia	265.2	271.2	275.2	280.8	286.6	293.7	301.7	304.6	306.2	320.0	321.0	328.9	337.7		
Pittsburgh	251.8	258.2	263.8	267.0	271.7	275.0	293.8	297.0	298.6	310.0	311.0	316.9	321.6		
St. Louis	255.4	263.4	272.1	280.9	288.3	293.2	304.4	306.8	308.3	323.7	324.7	335.2	340.8		
San Francisco	343.3	352.4	365.4	368.6	386.0	390.8	402.9	415.6	417.5	439.9	441.1	455.4	466.9		
Seattle	252.5	260.6	266.6	268.9	275.0	283.5	292.2	296.1	297.5	316.8	317.8	325.4	335.1		

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

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

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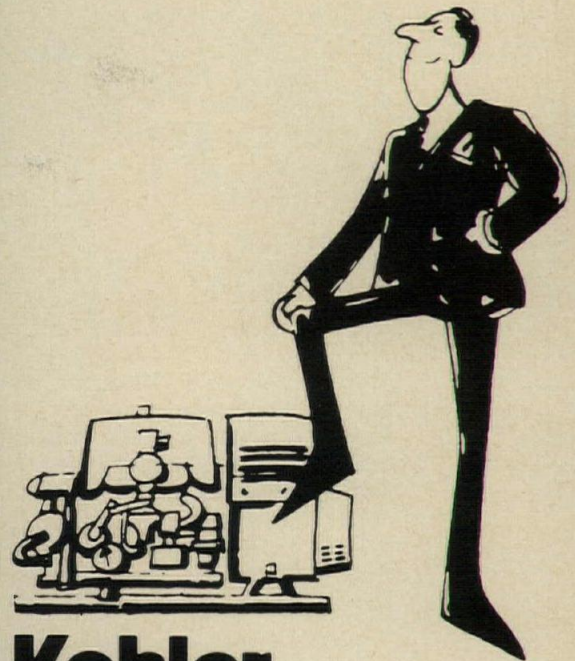
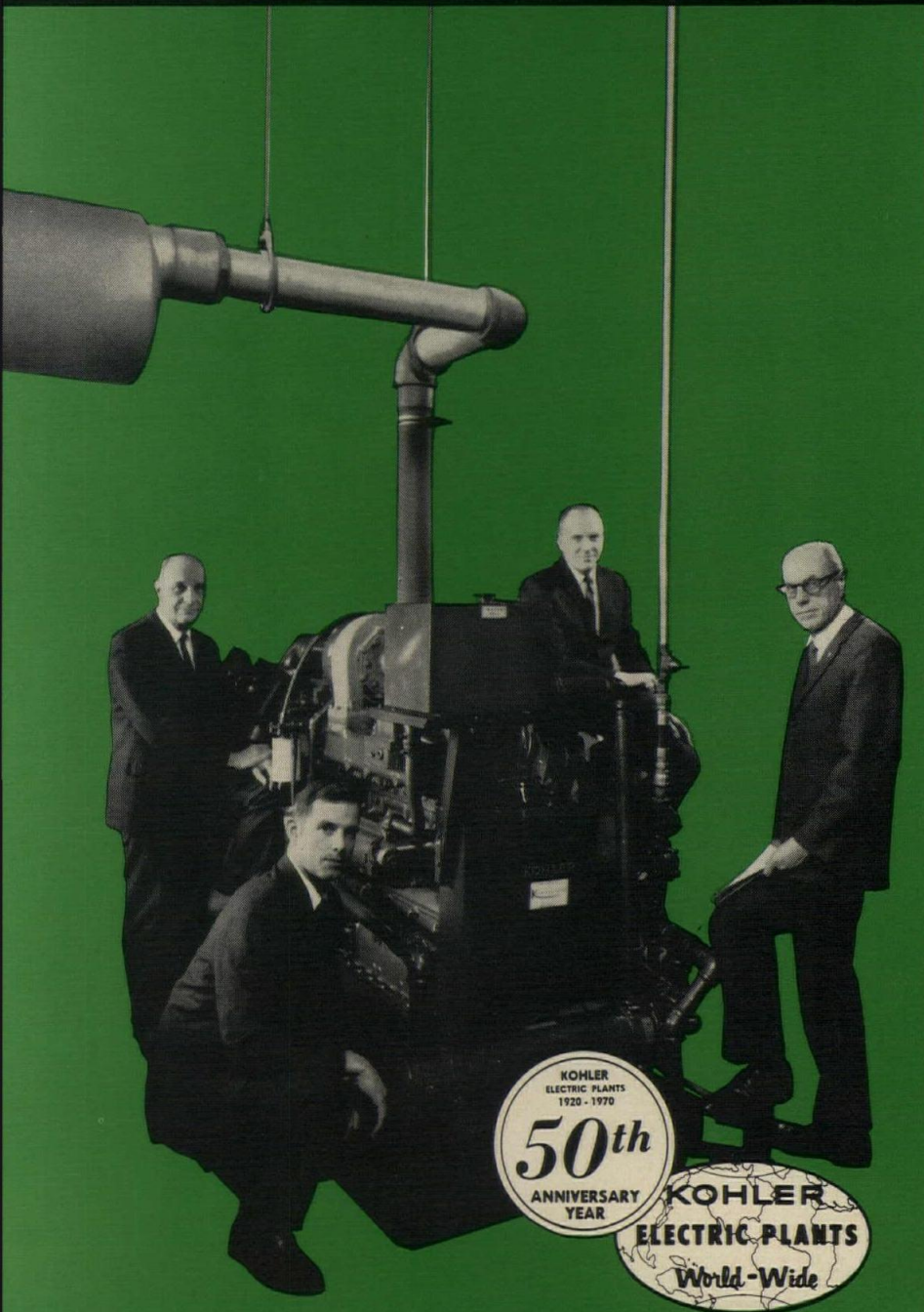
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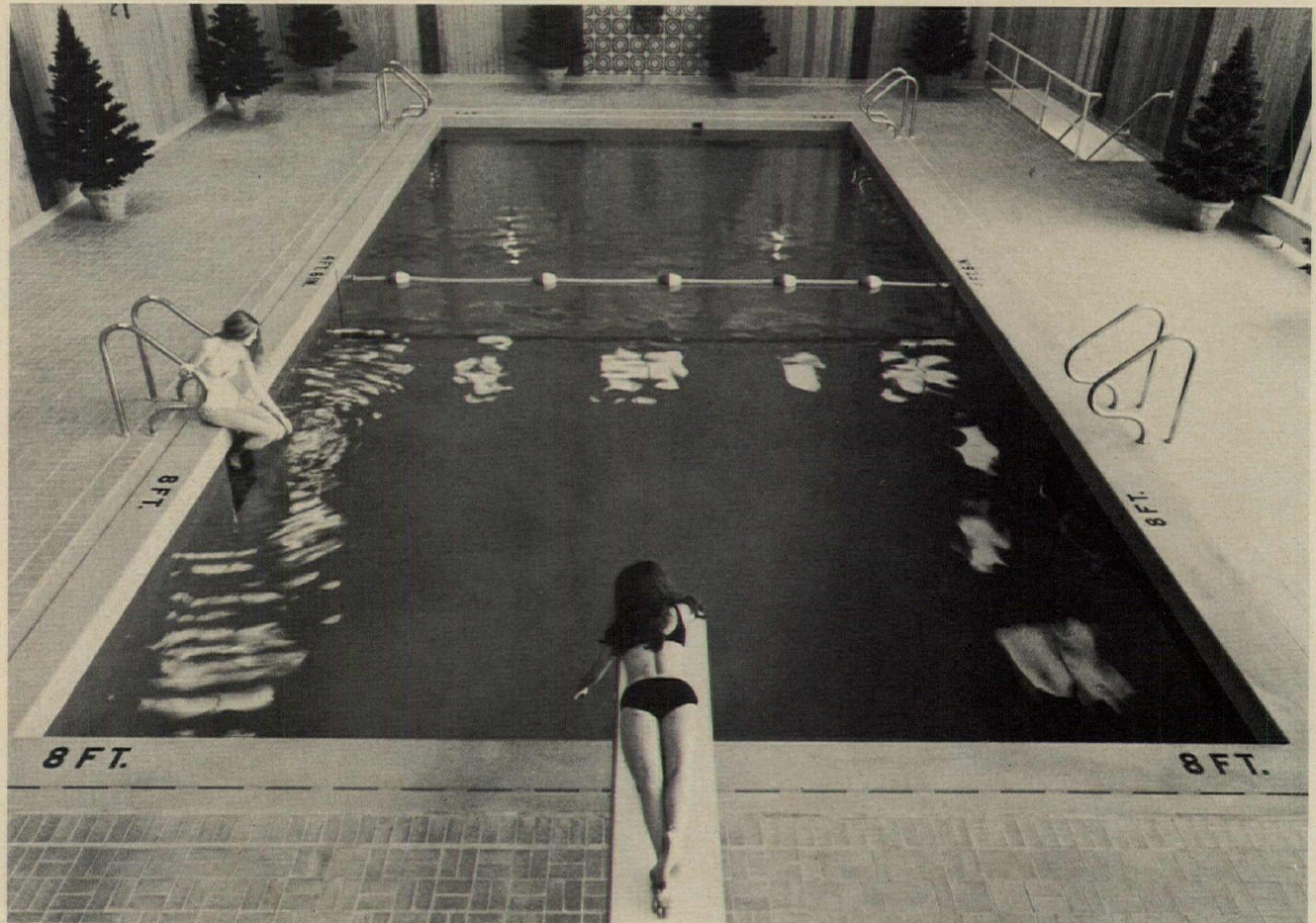
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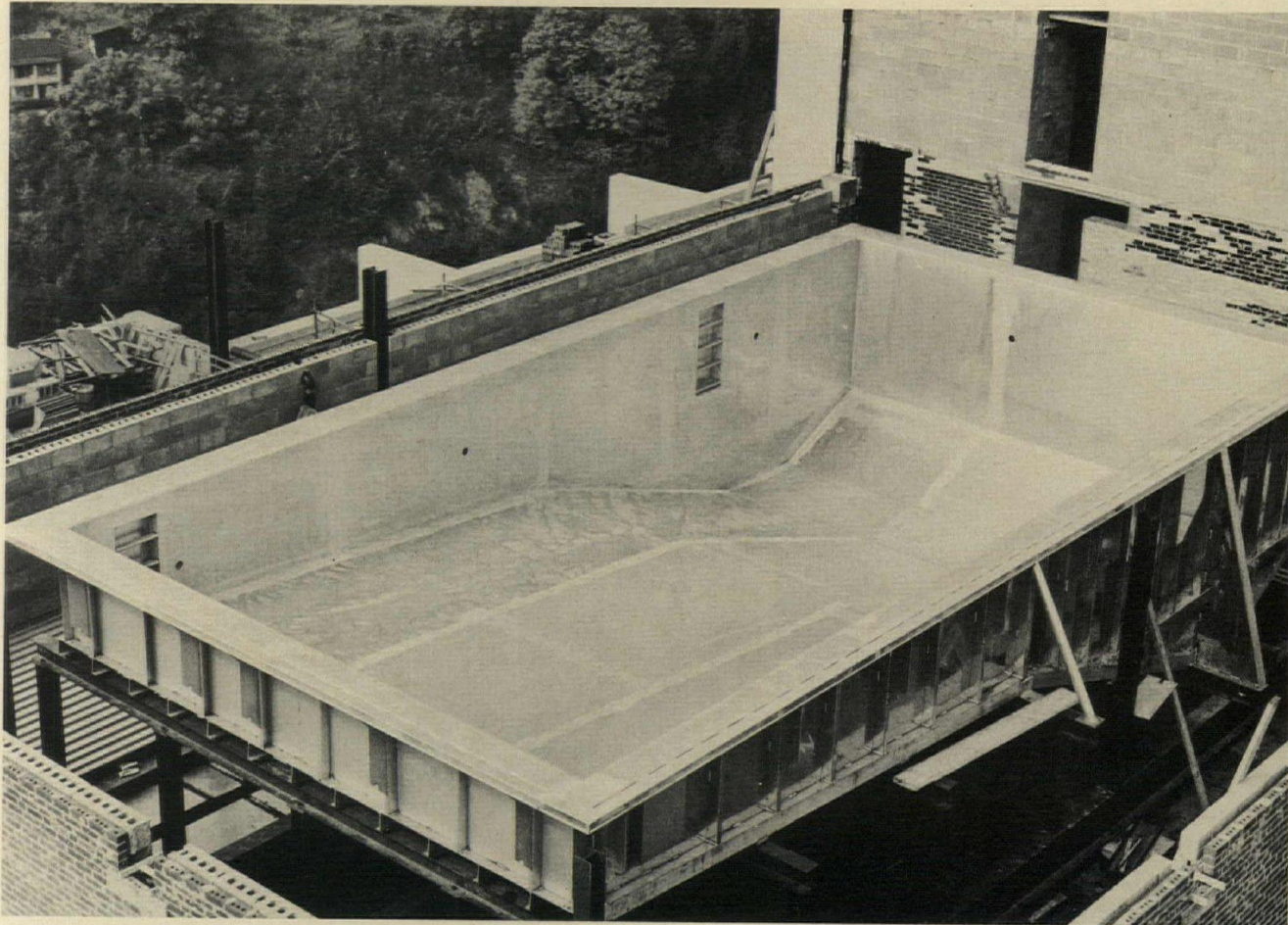
An apartment-top pool has to be aluminum.



The 20 ft x 40 ft, 32,000-gallon, all-aluminum pool atop the luxury Penn Towers Apartments* near Pittsburgh was designed and built by the Overly Manufacturing Company, assembled at its Greensburg, Pa. plant and delivered to the job site in only seven sections.

To make the pool leakproof, Overly used welded construction, then vacuum seam-tested each weld. And that's important in preventing water damage to interiors below. For toughness and durability, Overly chose extra-strong Alcoa® alloy 5050-H34 for the sides, end and bot-

tom, and 6063-T6 for the extrusions, knowing full well that aluminum also offers additional advantages. *Aluminum* pools resist corrosion . . . *aluminum* pools don't crack or spall, so you don't have to repatch and repaint them constantly.



Looking at this construction shot, you can see why the architect specified aluminum: because lightweight aluminum *saves tons of dead weight*. Also, since aluminum can be prefabricated, *form work is eliminated* and the amount of *reinforcement* required is reduced.

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Overly Manufacturing Company,
Greensburg, Pa. 15601.
Phone (412) 834-7300.



*Architect: Hoffman, Loeffler & Wolfe.
General Contractor: Wilpenn Construction Corp.

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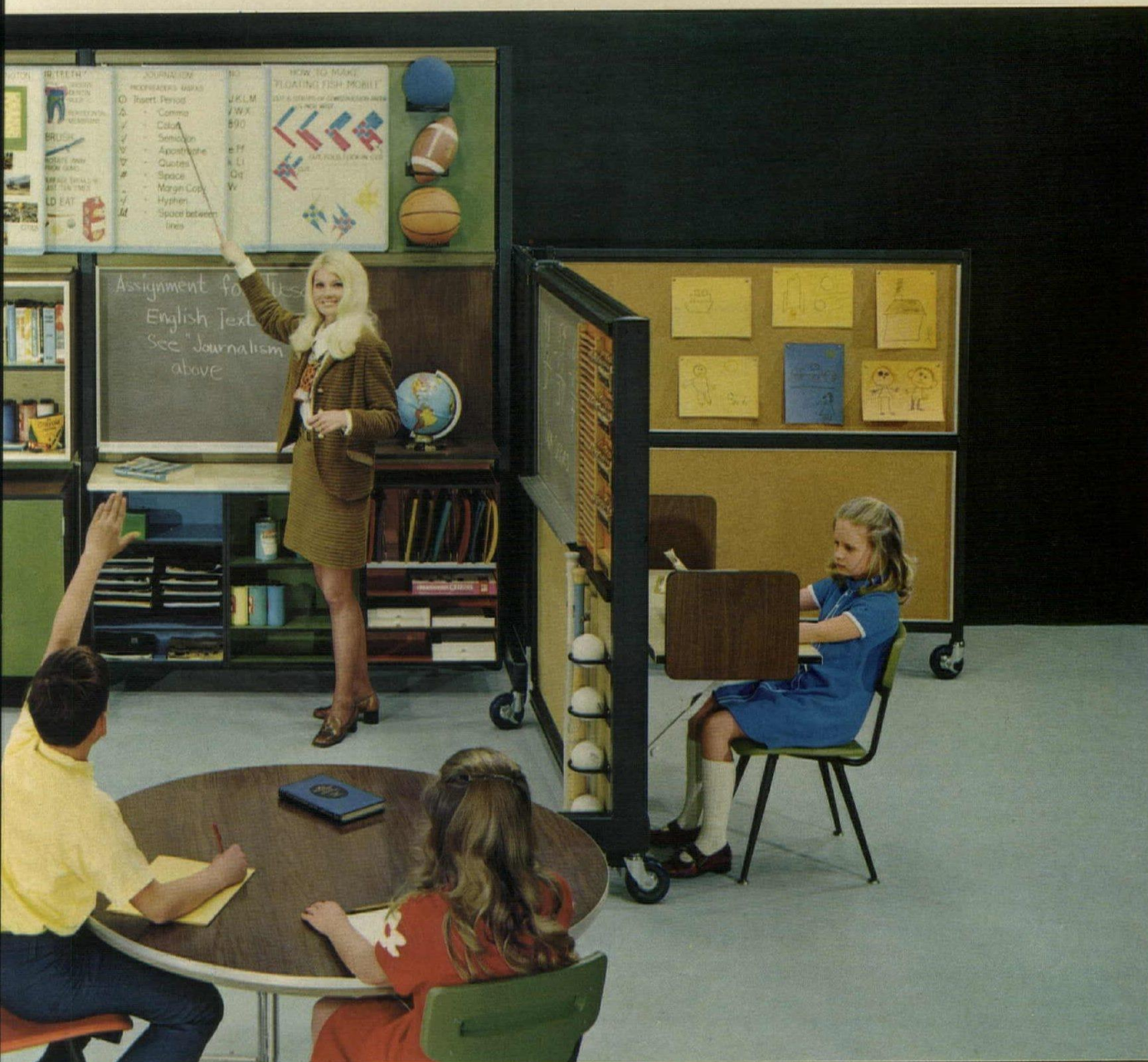


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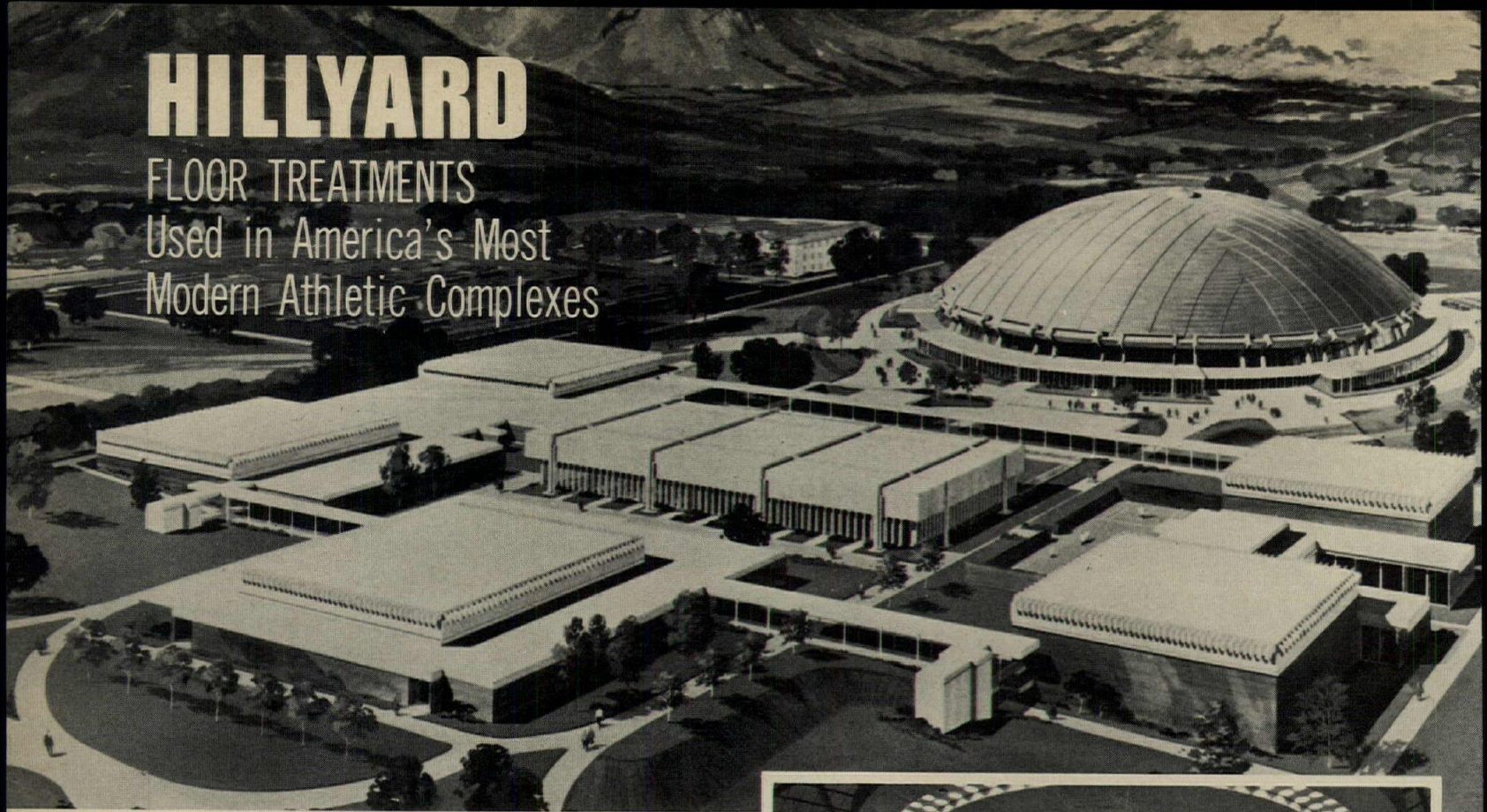


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Used in America's Most
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New Sports and Special Events Center and Physical Education Complex at the University of Utah, Salt Lake City. Architect: Robert A. Fowler, Associated Architects, Salt Lake City.

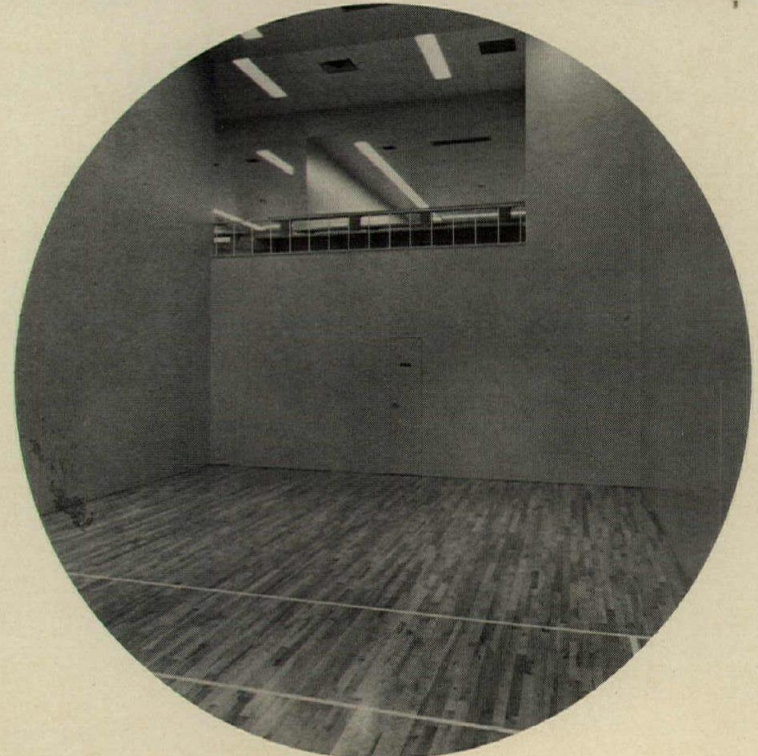
TROPHY[®] Gym Seal and Finish has again contributed to the beauty and utility of one of the newest and finest athletic plants in the nation.

Built at a cost of \$10 million, this complex at the University of Utah consists of five individual buildings connected by hallways at the lower underground level. The Special Events Center, a circular facility with 15,000 permanent chair seats, will serve for athletic events, lectures, entertainment, conferences and commencements.

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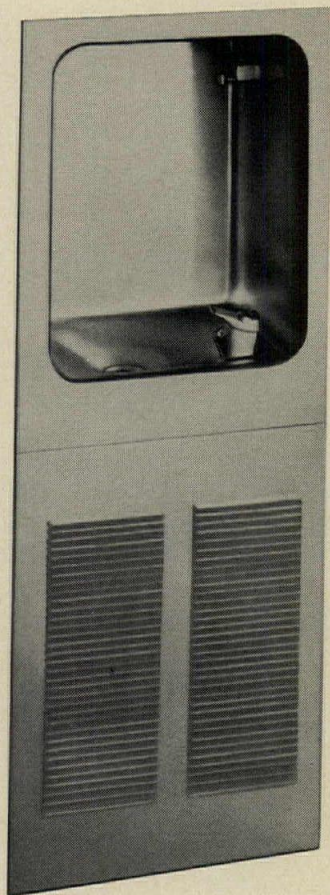
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No bumping in the aisles when you install this Westinghouse Totally Recessed Water Cooler. It's completely flush to the wall. Ideal for hospitals, schools, or public buildings. Stainless steel or bronze-finish basin, grille and bubbler. Plenty of headroom. And our exclusive mounting box lets you reverse the cooling system so the grille won't show when you put this cooler in a location backed by a utility room or closet. 10 G.P.H. cooling capacity.

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There's an
evolution in the
kitchen



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BALLY PREFAB PANELS . . . FIRST TO PASS UNDERWRITERS' LABORATORIES (UL) FIRE TEST!

Automation: the fourth generation.



New! Delta 2000 by Honeywell delivers more building automation for the same dollar.

It happens once in a blue moon. A technological thrust that leaps years ahead in a single stroke.

Such a moment is *now* . . . in building automation. Where Honeywell did it in two words: **Delta 2000!**

A *fourth-generation* system that will make your client's building control center a show-case.

And give him new levels of performance that accelerate automation's traditional one to three-year payoff in manpower savings alone.

Puts more into controls, less into installation.

Imagine. Delta 2000 operates on just two wires instead of the usual 40 to 80 wires.

Puts *more* of your client's dollar into productive hardware . . . performance and capacity. *Less* into complicated wiring. Total *installed* cost is no more than ordinary systems! Probably less.

Born in computer technology.

Delta is different. It's *digital*. New to building automation. But old hat as far as satellites are concerned. Or computers. *Digital* is the way computers talk.

And Delta is *all* digital . . . designed from scratch to provide a "timeless" system. Solves the problem of obsolescence by anticipating it from the very beginning.

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Add peripheral hardware such as systems graphics. Pilot lights. Intercoms. One or more printers for hard-copy records.

Grow all the way to full computer control!

Computer capability is already built in by Honeywell . . . "the other computer company".

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Low-cost reach building-to-building.

With Delta it costs *less* to automate several office buildings, stores, plants from one central point.

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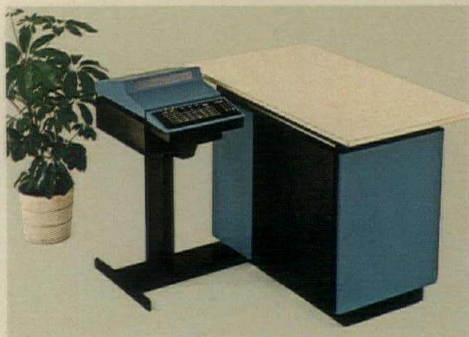
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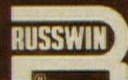
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NEW DEVELOPMENTS IN JAPANESE ARCHITECTURE

Almost from the beginning of the post World War II construction boom in Japan, the work of that country's leading architects has impressed and fascinated the architects of the West. Many U.S. architects have visited Japan to study the works of the founders of the modern movement there—Kunio Mayekawa and the late Junzo Sakakura; the work of the next generation led by the great Kenzo Tange, and the work of the younger Metabolist group of which he has become the leader. Admirers of Japanese work have the prolific Japanese architectural press as an untiring guide. Excellent magazines and sumptuously printed books lead the Western architect to the offices of Metabolists Kinoru Kikutake, Masato Otaka, Fumihiko Maki, Noriaki Kurokawa and Sachio Otani. Also important and extensively published for its quantity, variety and cosmopolitan excellence is the architecture of Yoshinobu Ashihara.

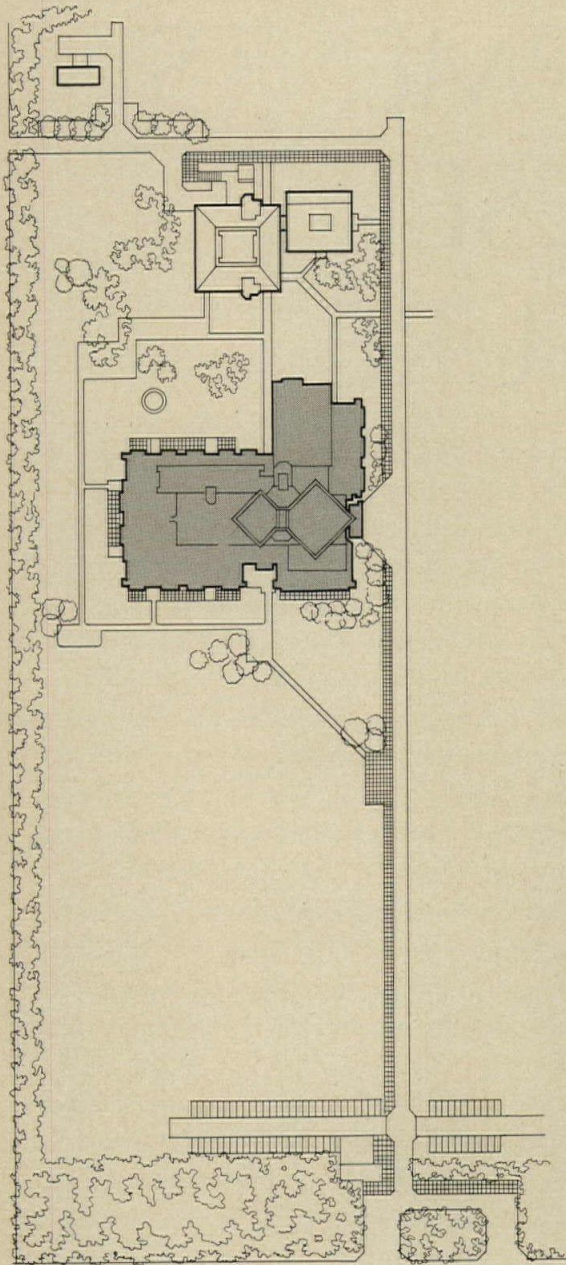
Many Westerners as well as Japanese find great esthetic satisfaction in the work of those architects such as Junzo Yoshimura who produce a blend of traditional and modern in the design of expensive private houses, elegant ryokans and Western style hotels. Among others who currently work in this vein, but extend it to a broader variety of smaller structures are the firm of Yoshioka and Tajima and the office of Kunio Hashimoto.

Visitors to Japan soon discover that the quality of the architecture produced by the design sections of huge construction firms such as the Kajima Corporation far exceeds that of similarly anonymous design staffs employed by U.S. package builders. This is fortunate to the degree that in terms of dollar volume all but an insignificant amount of large scale building construction is done and will be done by these essentially conservative firms which are oriented to short term, immediately profitable design and planning solutions. It is unfortunate, however, that Japan's leading architects, in spite of their enormous efforts to shape and direct the vast physical changes taking place in Japan's cities and regions—changes which in some ways mirror our own—have yet to persuade Japan's business and political leadership of the urgency and validity of their long term, visionary solutions. For the Japanese politician and businessman, art appears to be one thing, technology another. If he is cultivated, architecture—like haiku, Nôh drama, the art of

flower arranging and the tea ceremony—is part of the older Japanese tradition from which he draws strength. Architecture is the enclave into which he withdraws from his crowded, unplanned, unzoned, traffic-paralyzed, hideous cities and towns with their inadequate housing, overcrowded schools, insufficient sewage facilities and lack of other public utilities, and of course their notorious air and water pollution. It has been said before that the Japanese have a sense of beauty but no sense of ugliness. If this is true it helps to explain why they have yet to make a significant attempt to establish an esthetic framework with which to fully exploit, yet curb, their galloping technology and thus, literally save themselves. Tragically this has not been for lack of models since the leading Japanese architects, and especially Tange, lead the world in the endeavor to create a new synthesis between art and technology to make survival possible.

Tange's most important current completed project is the site plan and theme pavilion for Expo '70 (June 1970; pages 115-128). Since Tange's current work is at a scale so broad that it cannot be shown within the scope of this article, a report on his latest projects will be done later.

Included on the following pages is a current selection of built work or projects underway, only some of which, notably Kurokawa's pavilions at Expo, contain visionary promise. The best buildings in Japan come from a very few professional offices and include a limited number of building types—city halls, culture centers with auditoriums and museums, religious buildings, hotels, hostels and recreational structures, college buildings, custom-built private housing, a small amount of low- and middle-income housing and a mere fraction of the large scale commercial and industrial buildings which get built. Within the architect-designed building types the quality is astonishingly high and except for low- and middle-income housing, so is the volume of work. From such abundance it was very difficult to make a selection for this short survey, nor was it possible to visit and report on all of the firms which are doing good work. This article attempts to give a sampling of the variety and merit of Japanese architecture in the latter half of the 1960's and to encourage the reader to visit and spend enough time in Japan to see for himself. —Mildred F. Schmertz



SACHIO OTANI

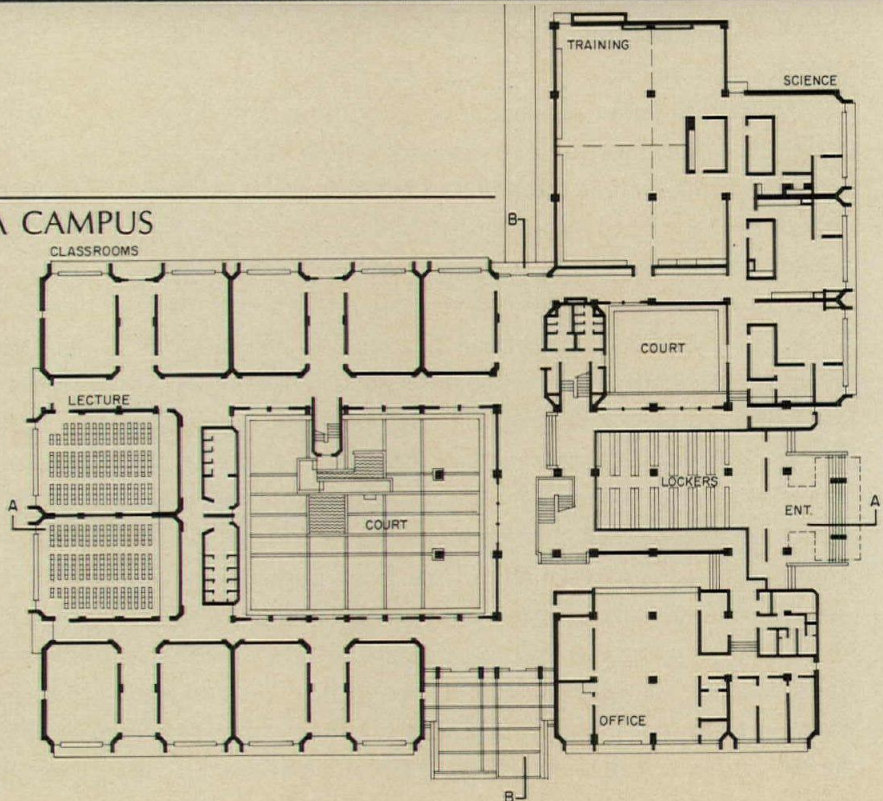
THE KITAZATO UNIVERSITY SAGAMIHARA CAMPUS

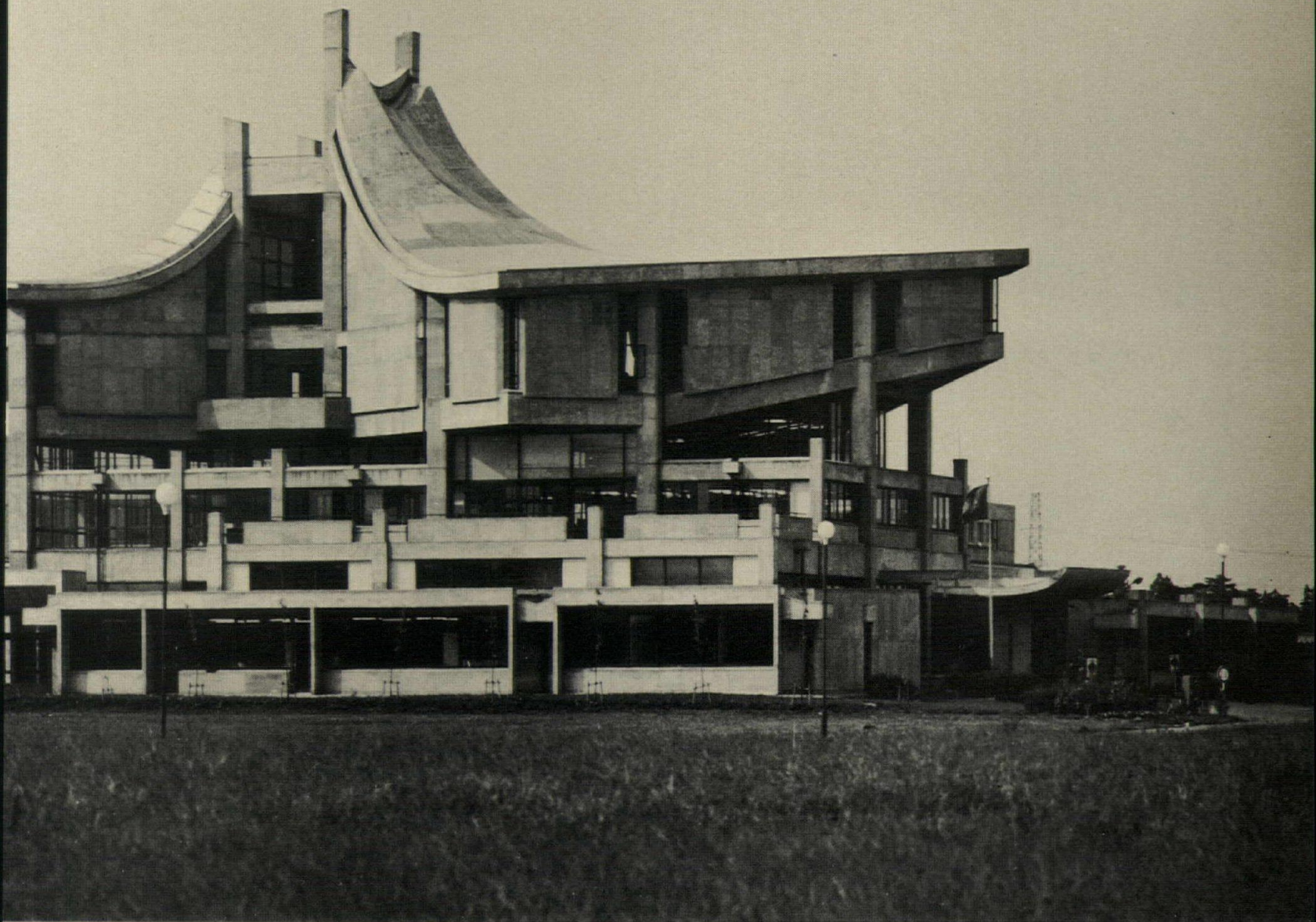
Sachio Otani at 46 is one of the best architects of the generation immediately following Tange's. Now an associate professor of urban engineering at Tokyo University, he worked with Tange for 14 years before establishing his own practice. He is best known abroad for his brilliant Kyoto International Conference Hall completed in 1965.

The bold, masculine forms shown above belong to the classroom wing of a recently finished campus group in the Kanagawa district.

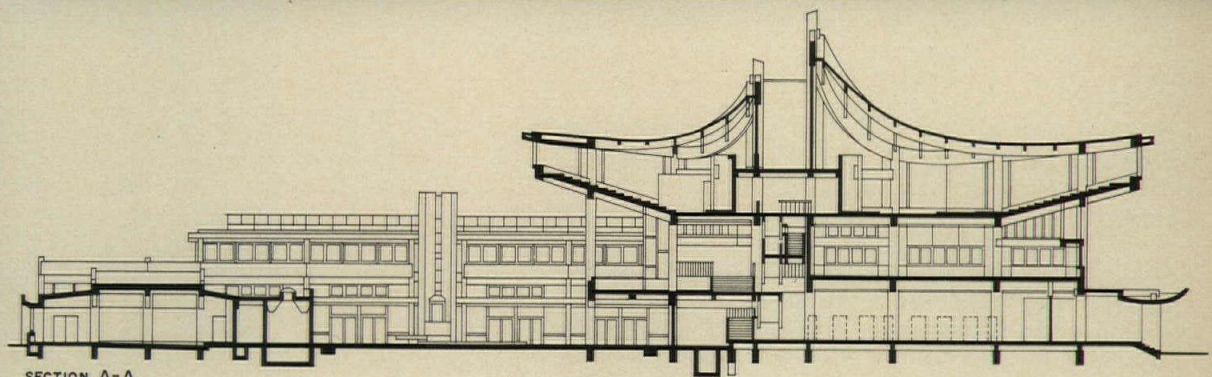
Otani has written that he

believes the process of designing or organizing space to be as follows: "First we must affirm what seems to be clear and certain and thus we achieve conditions within which we are able to confirm what is uncertain and unknown. We must guarantee the existence of the uncertain. Thus the question of qualities gained must be supplemented by the question as to what qualities have been given possibility. Architecture must do more than make permanent the existing reality. It must join the present with the future."

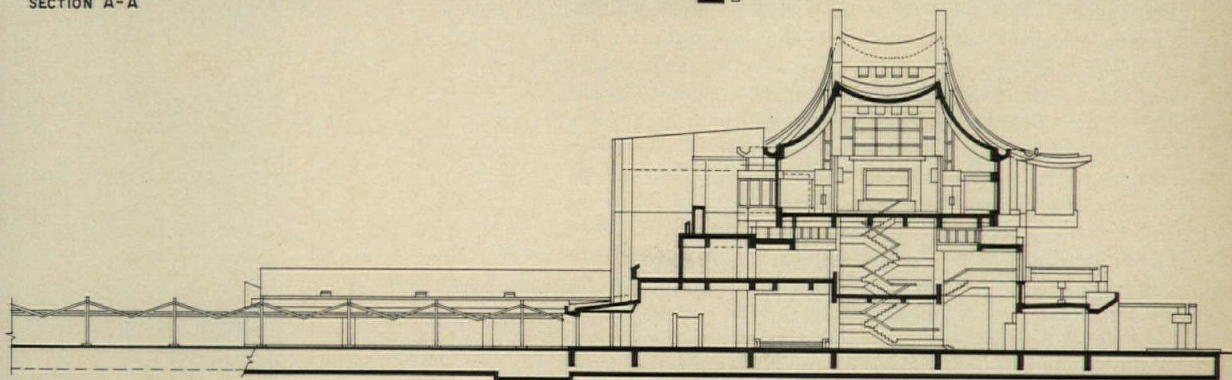




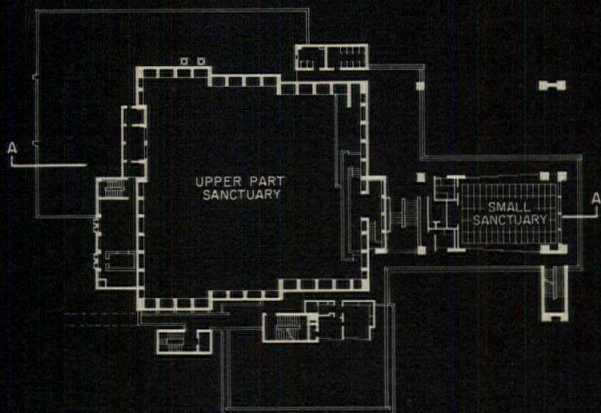
The great curving concrete roofs, which link this vigorously avant garde structure rooted in the teachings of Le Corbusier to the beautiful curving overhangs of Japanese traditional architecture, enclose a large and small lecture hall, both hexagonal. These halls which can be seen in the plot plan and sections give access to broad roof terraces. Beneath these powerful elements which soar, yet shelter, is a library and lounge. The library overlooks a small courtyard garden while the lounge opens upon a broad terrace with a commanding view of a large courtyard garden surrounded by nine classrooms and two medium sized lecture halls. At this lower level, beneath the library-lounge floor and extending out from it are lockers, administration space and laboratories. The structure combines poured-in-place and precast concrete. The interior circulation network makes the complex expandable.



SECTION A-A



SECTION B-B



SANCTUARY HALL 4TH FLOOR



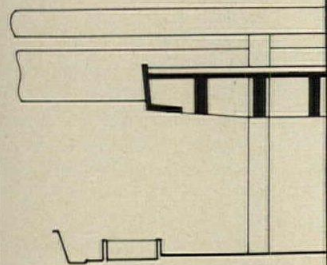
SACHIO OTANI AND TANEOKI OKI

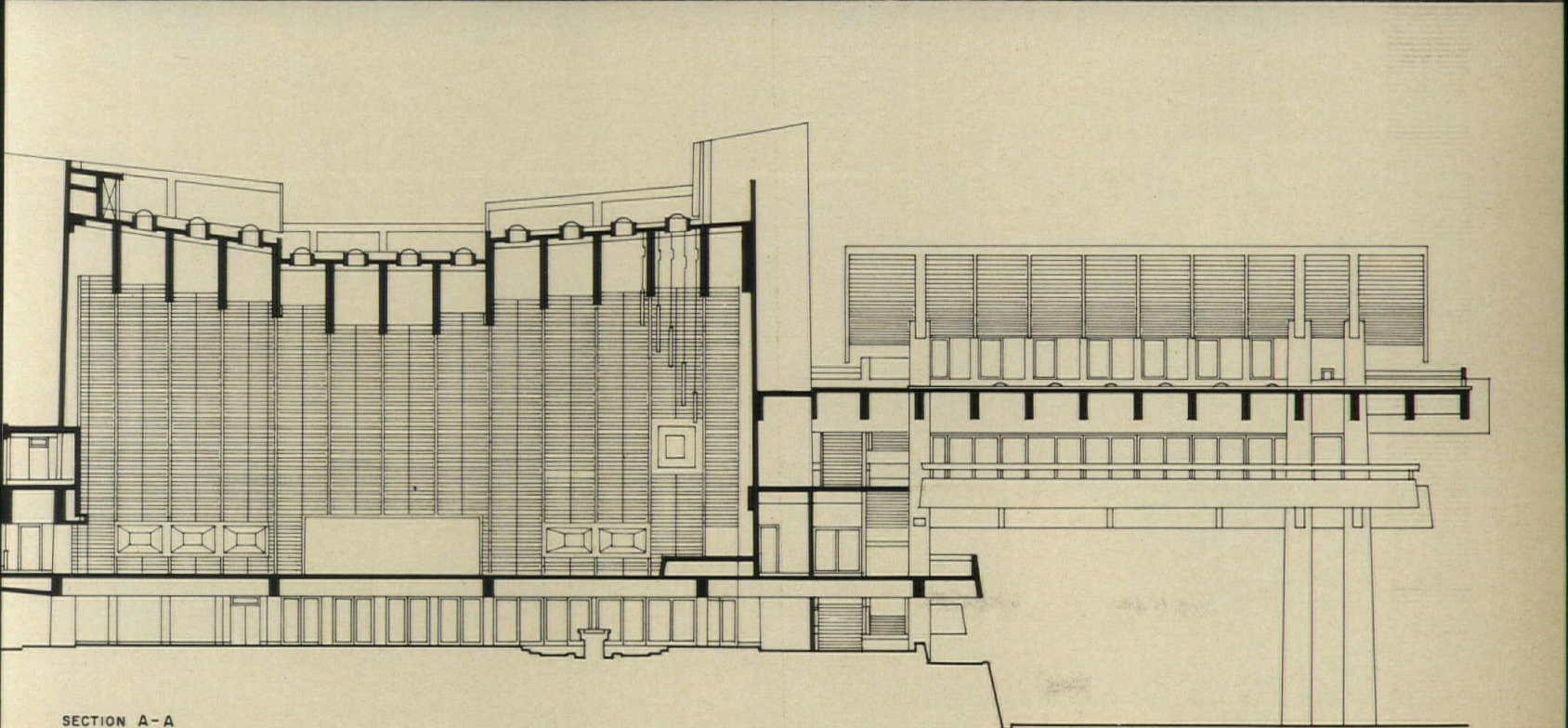
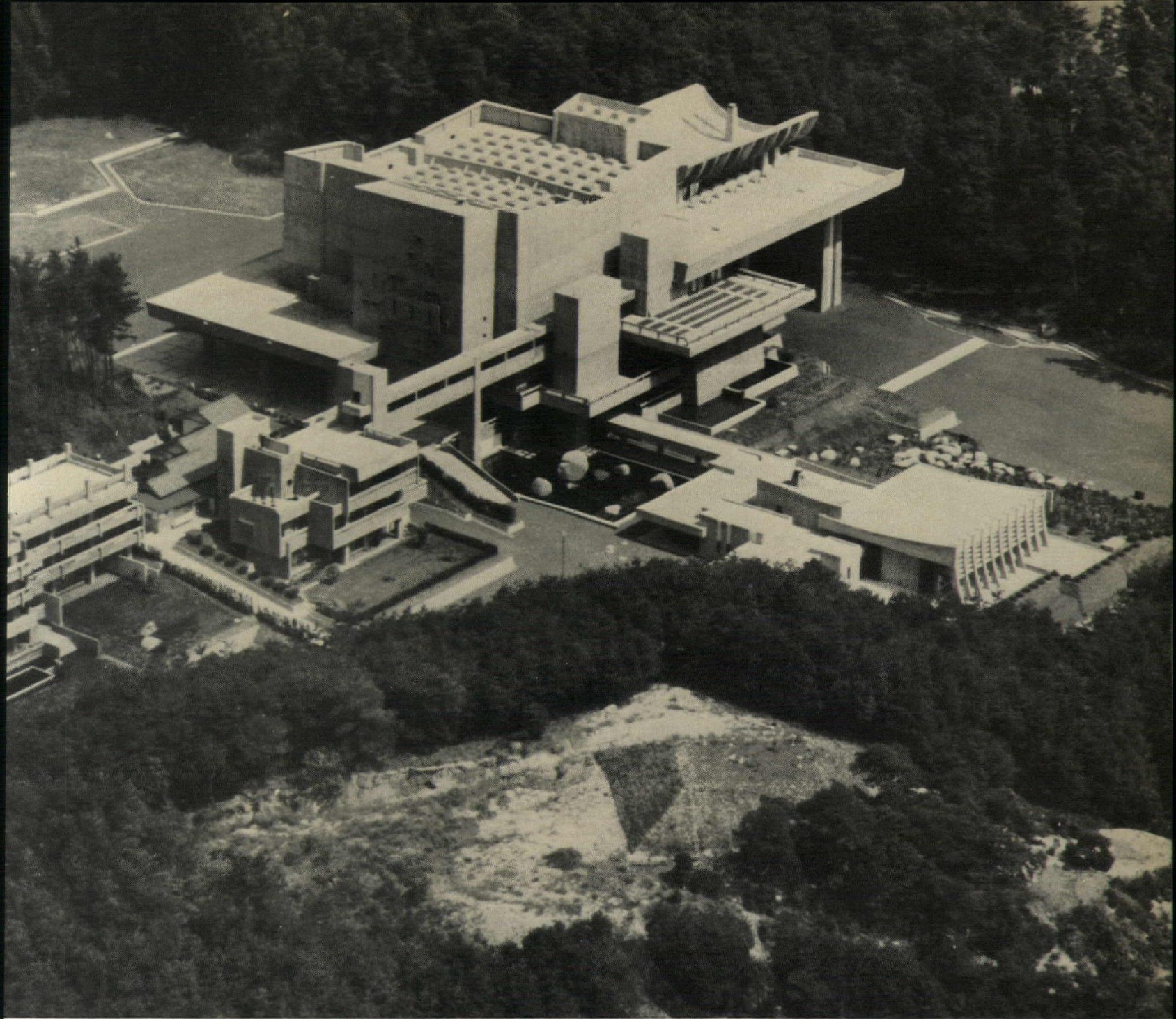
TENSKO KOTAI JINGU SECT HEADQUARTERS

This religious sect, founded shortly after World War II and based on Shintoism, required a structure designed to accommodate their ceremonial practices. As the overall plan indicates, the plan of this religious complex in the Tabuse District of Japan's Yamaguchi Prefecture is divided into four parts and includes the founder's residence—an important symbolic structure as he is the spiritual head of this 300,000 member sect; living quarters separated by age, sex, and standing within the order; the administration building

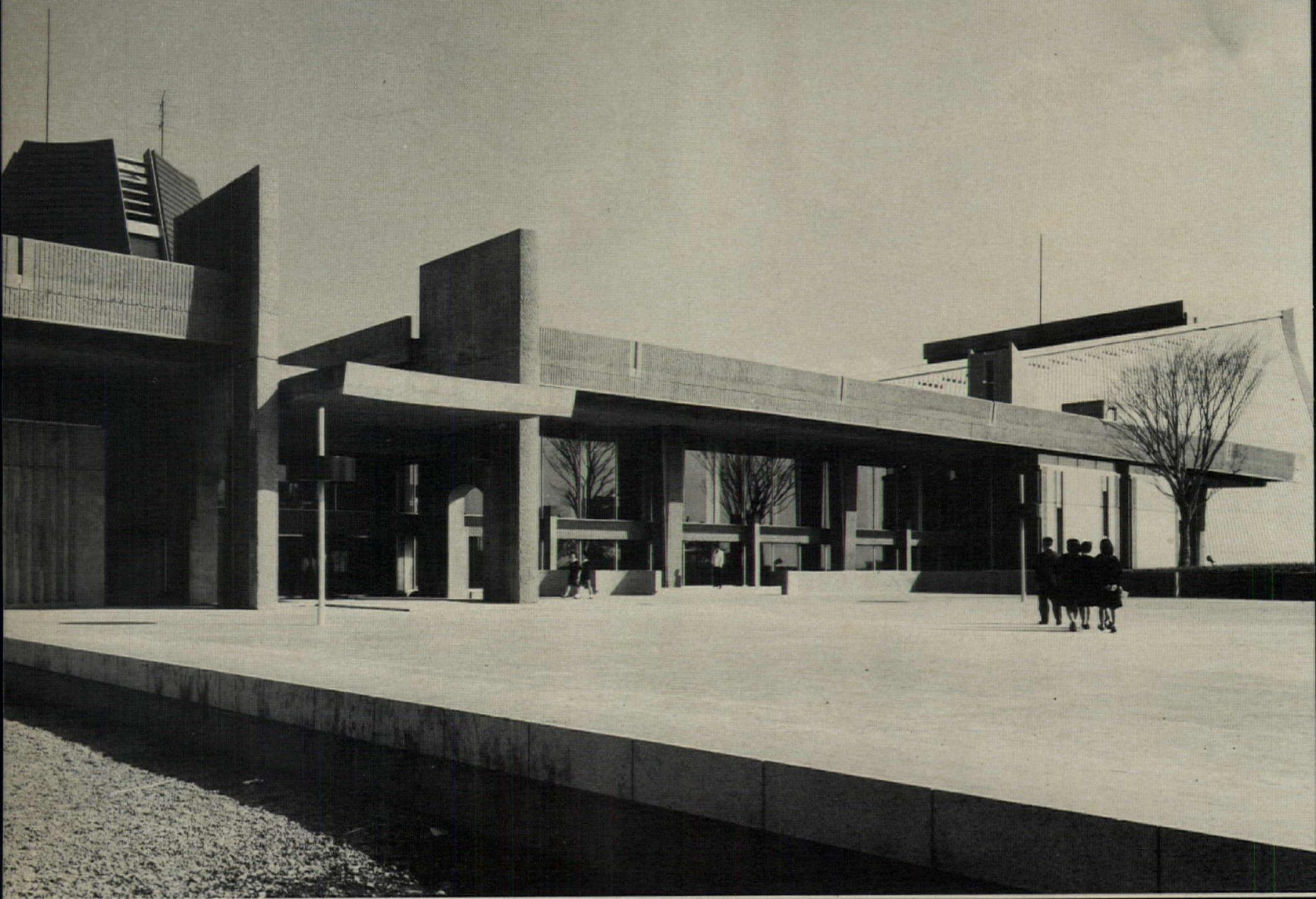
and the sanctuaries proper. Placed on a broad plateau carved out of the hillside, the elements containing the large and small sanctuaries dominate the composition at the eastern end of the east-west axis of the complex. The elements which project southward contain the administration functions. Closer to the main axis but also projecting southward is the founder's residence. Following the downhill slope toward the west are the women's pavilion, the men's pavilion and the foreigners' pavilion which open onto broad terraces.

To the north of the great sanctuary is a large plaza. Below the smaller sanctuary is a vast sheltered open space as indicated in the section. Roofs of the lower elements serve as broad terraces and both interior and exterior spaces are linked by broad staircases. The entire complex has great plastic interest, and Otani has here achieved one of his principal design goals—the successful shaping of negative as well as positive space.





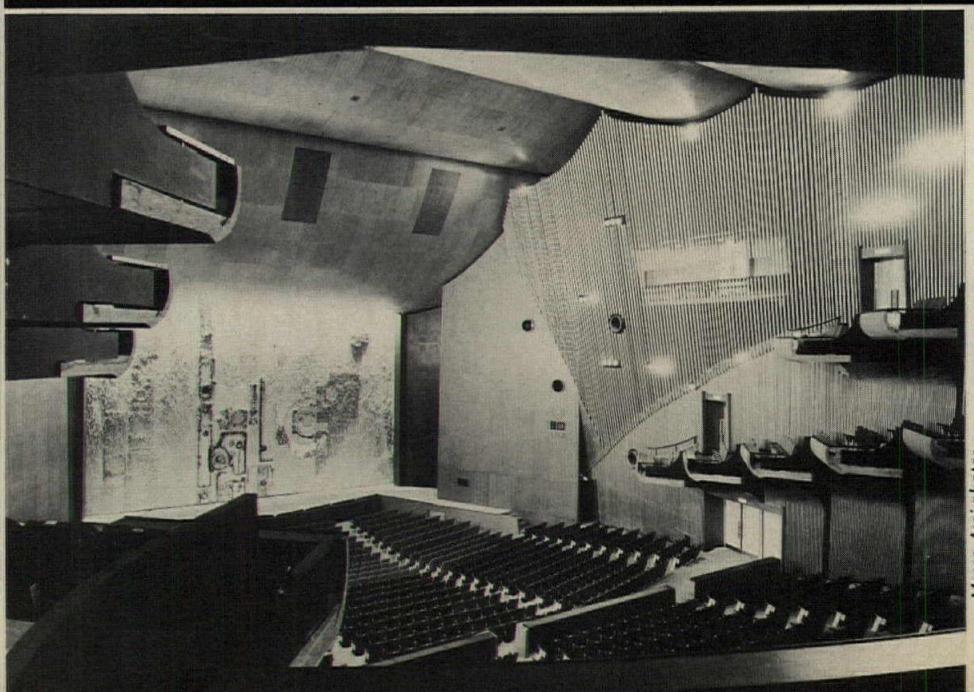
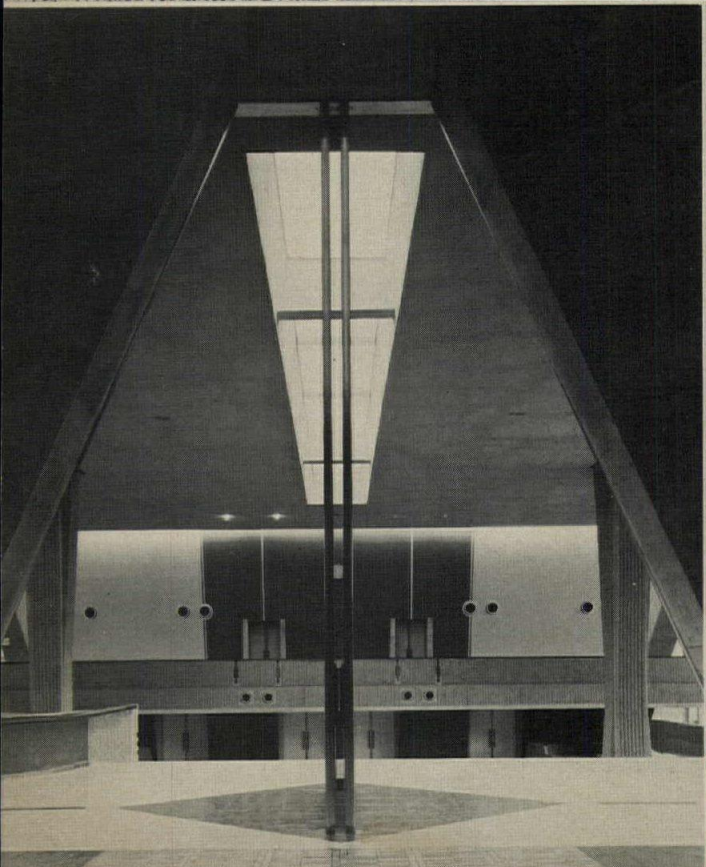
SECTION A-A

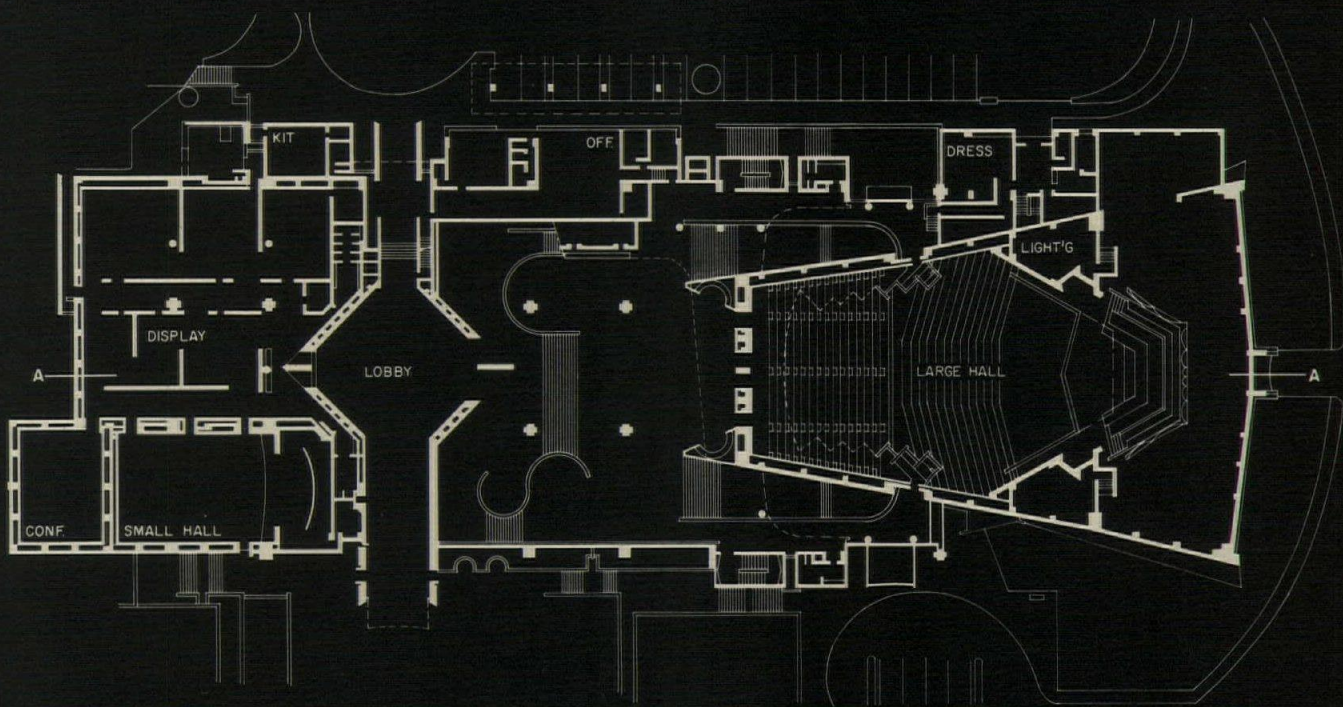
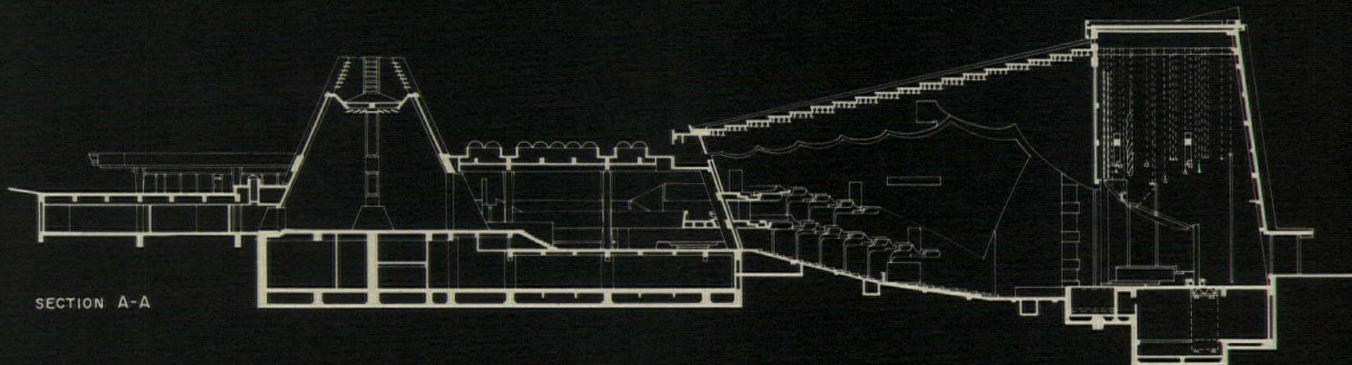


Shown above is the southwest entrance of the Hall of Culture facing the plaza it shares with the library. Huge windows provide a visual connection with the building's broad foyer and

the plaza. The auditorium is trapezoidal in shape and its walls are hyperbolic paraboloid shells, clad on the exterior with striated concrete panels. The auditorium interior has a

ceiling of ribbed plywood. The walls are most unusual, being surfaced with closely spaced aluminum pipes which form a lattice which conceals flexible sound absorbent boards. Since





this auditorium must serve many purposes—lecture, drama, concert, dance and film projection, it can be volumetrically adjusted and its degree of sound absorption can be

adapted to the type of performance taking place. It seats 1,800 people. The building also includes a smaller lecture room for 250 people, an exhibition room, and offices.

MASATO OTAKA & ASSOCIATES

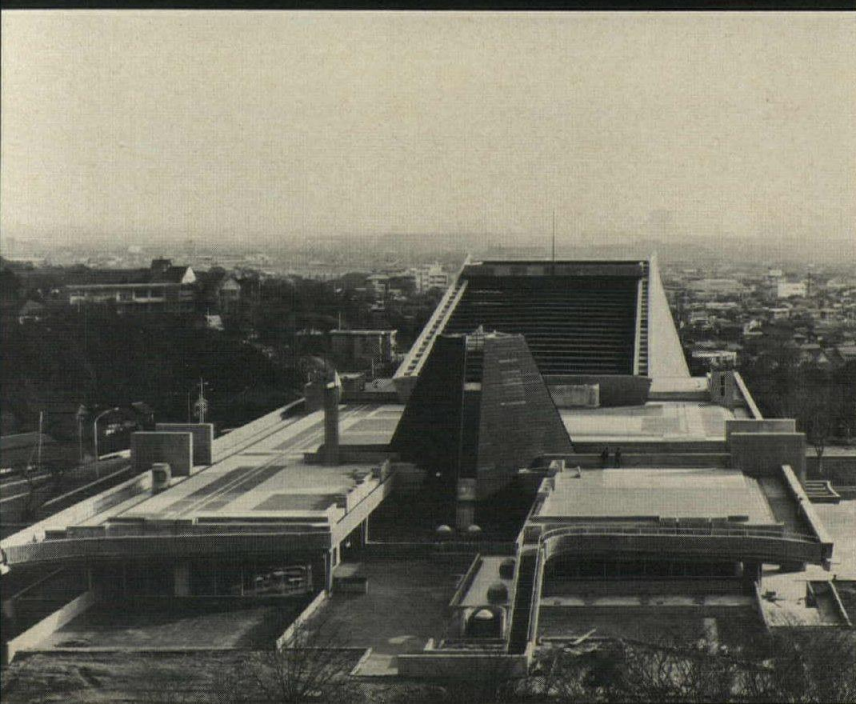
CHIBA DISTRICT HALL OF CULTURE

Masato Otaka, one of the older Metabolists, founded his own office in 1961, after a twelve year apprenticeship in the office of Kunio Mayekawa. He participated in Metabolism's first manifesto of 1960, 'The Proposals for New Urbanism,' but like his fellow visionaries he has yet to see any significant part of his broad solutions to urban problems implemented.

Like them he has been eminently successful in the design of large building complexes of which the Chiba District Culture Center's Hall of Culture is a distinguished

example. This structure will eventually be one of four buildings.

In this building Otaka creates space which serves and expresses the fact that it is part of a concentrated cultural center with functional and spatial links to the other buildings. The entrance lobby, which joins the huge library plaza to the southwest and the ceremonial building to the northeast, culminates at its center in a great octagonal ceiling (opposite page bottom left) which becomes a dominant pyramidal form on the exterior (left).





MASATO OTAKA

THE CHIBA DISTRICT CENTRAL LIBRARY

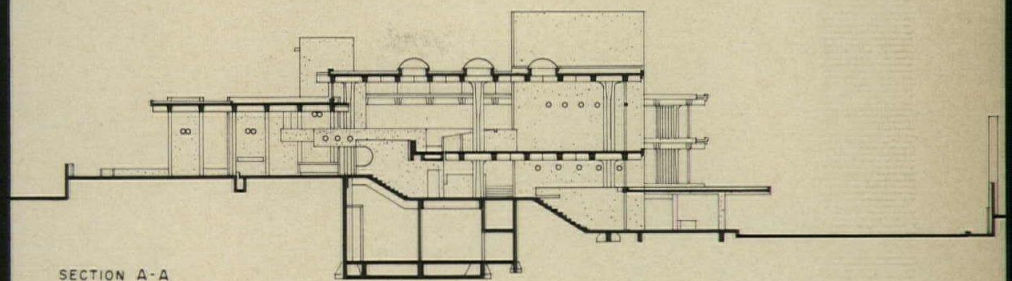
The Chiba Library, like all of the best current Japanese architecture, is a vigorous and handsome as well as technologically interesting building. A genuine esthetic has been derived from its structural rigor, which proves Otaka's contention that modular planning need not be insipid if one can "develop a higher level modular system that will link parts and the whole in a fluid fashion."

For this library Otaka has developed a new structural module of precast concrete which he has also used for the main gate at Expo '70 and

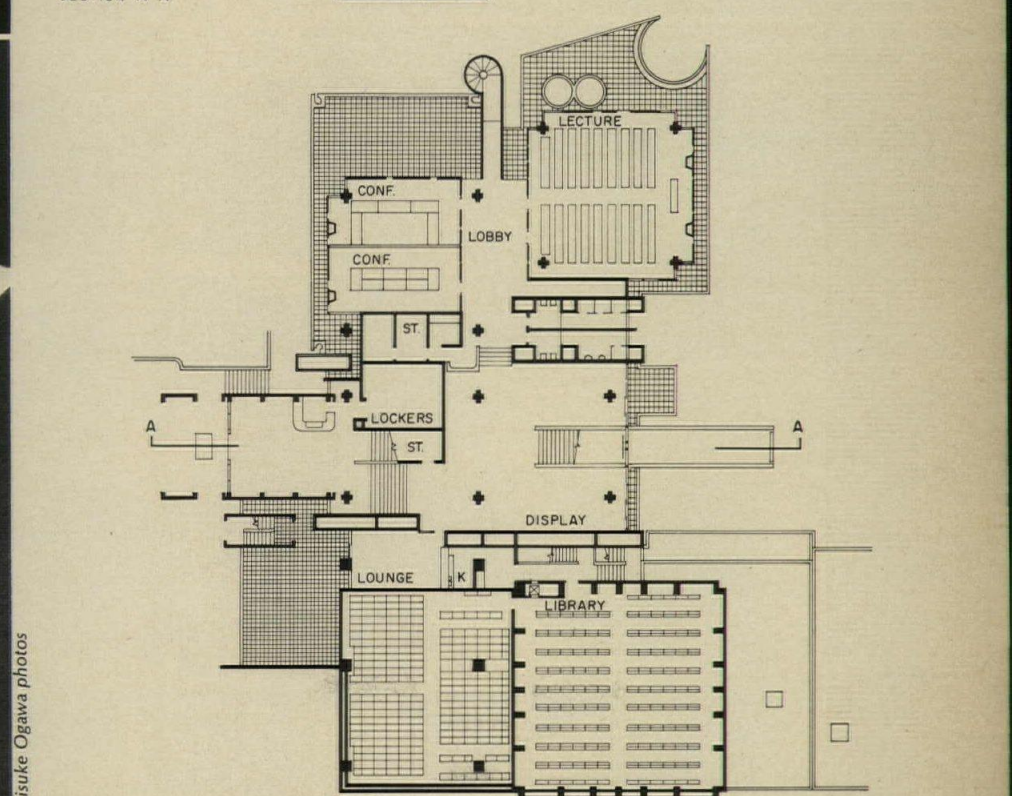
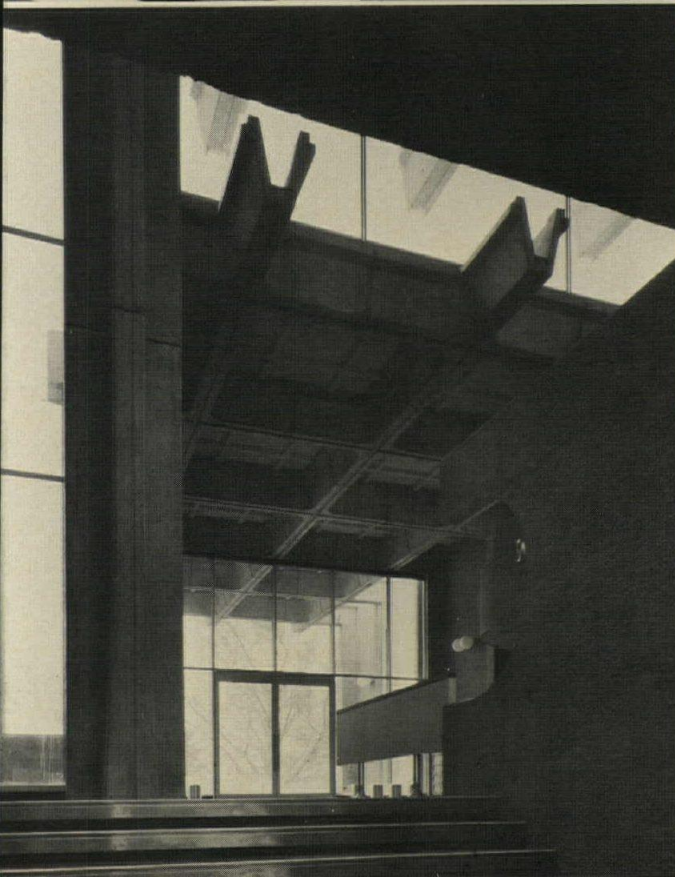
which has broad applications for use at an urban scale. This system permits a high degree of freedom of assembly including multi-level combinations and almost infinite expansibility by direct coupling of parts. The basic floor and ceiling unit is a precast concrete cross with a V-shaped section. The required number of sections for any given part of the building is assembled in rows at the factory and submitted to prestress before being hauled to the site. They are then joined to the required width and submitted to post tension.



The columns, cross-shaped in section, consist of two identical units which connect by rigid joints at mid-height. The flared end of the upper unit joins the ceiling, and the flared end of the lower unit joins the floor. For greater heights straight units are inserted between the flared units. The cross-shaped column capitals are joined to the grid openings by post-tensioning and rigid joints.



SECTION A-A

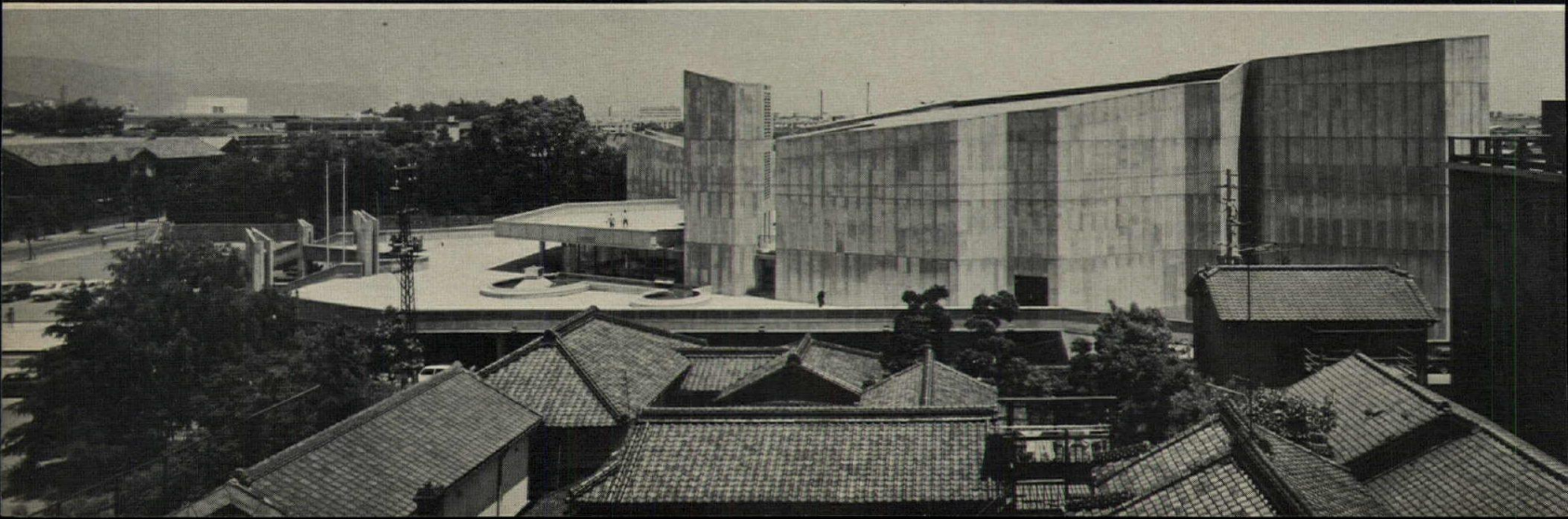
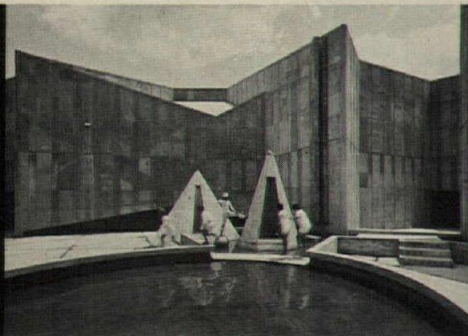


FIRST FLOOR

Taisuke Ogawa photos



This structure has an exuberant form which suggests that Kikutake's conception of form appropriate to function is a broad one and that in his view a public auditorium which is also essentially a community center should divert and amuse by means of its shapes. All of his work reveals this strong image-making skill.





Osamu Murai photos

KIYONORI KIKUTAKE & ASSOCIATES

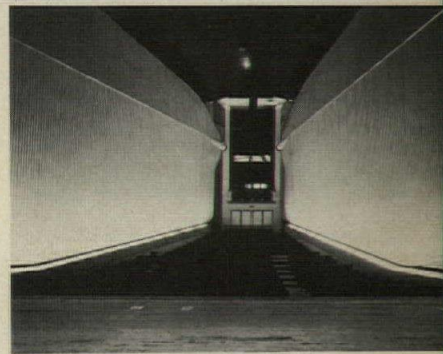
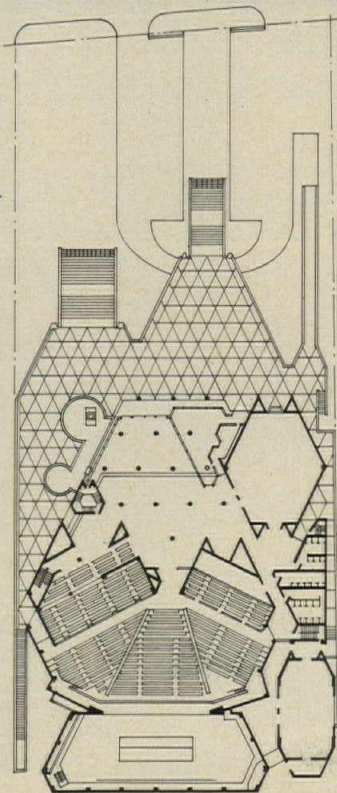
KURUME CITY HALL

Kikutake, now 42, was born in the city of Kurume for which he designed this city hall completed in 1969. (A number of Japan's leading architects have been invited by their native cities or prefectures to design a new city hall, library, auditorium or museum.) Like most of the other leading architects of his generation he is a Metabolist and like Tange and Kurokawa is internationally known for his visionary cities to be built over water. Like them also he is pragmatic and a realist and gets good buildings built.

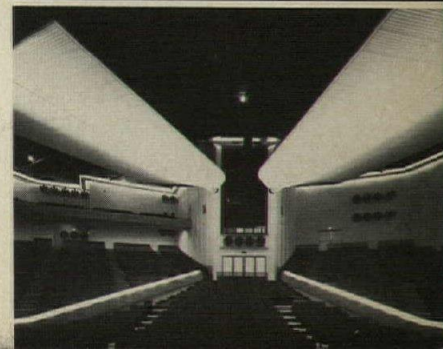
Though called a city hall,

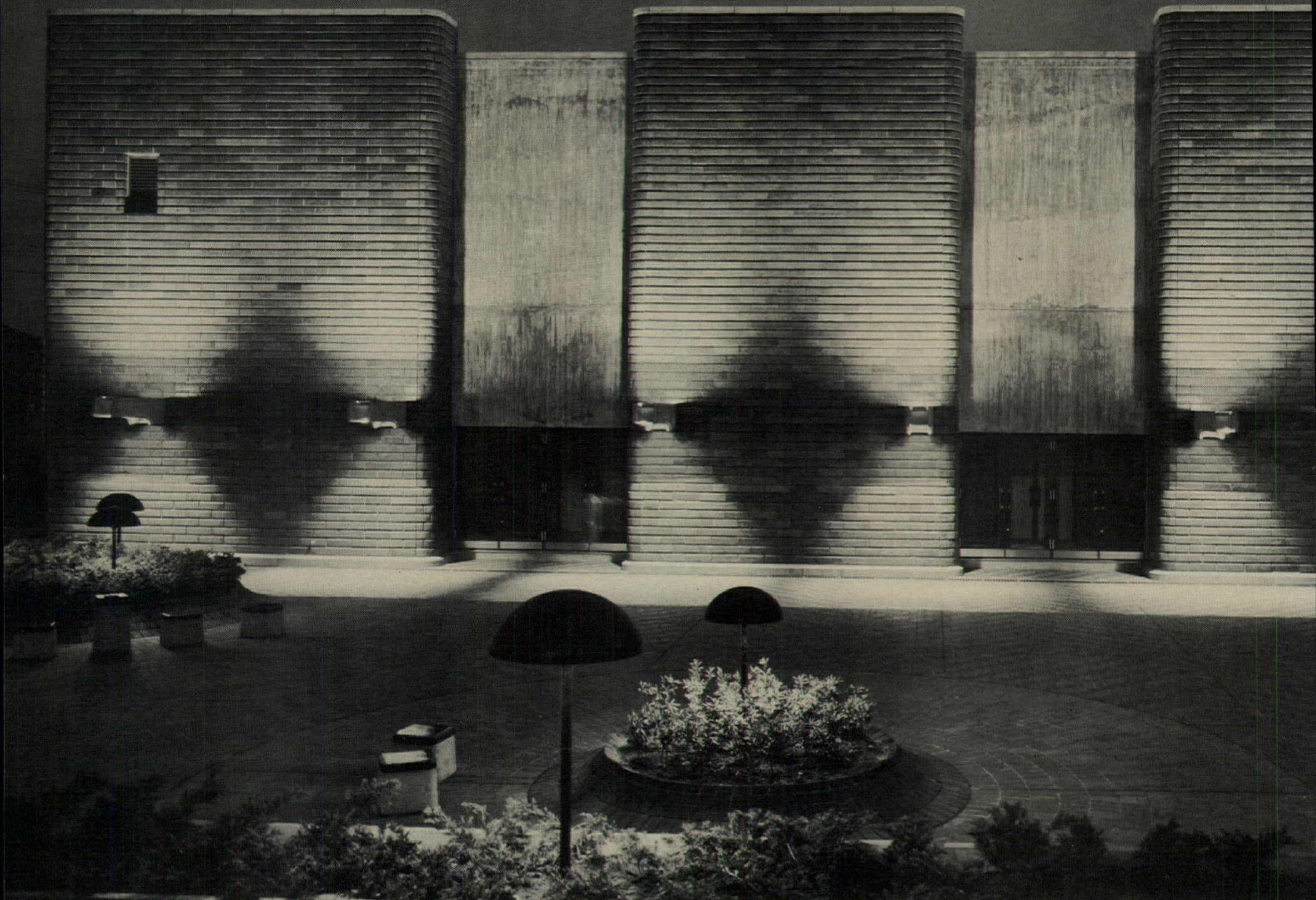
the new building at Kurume is not a center of government but is actually a municipal auditorium placed on a broad public plaza which contains the main hall which seats 1,500 people, a secondary hall, a restaurant, a children's area and an old people's room.

As the plan indicates, the structure has been designed on a triangular module. The auditorium can be subdivided into three smaller spaces by two great pivoting walls, like huge palm leaves shown closed (right top) and raised (right bottom).



The pivoting walls are shaped like an airplane wing in cross section, are framed in steel and covered with lightweight corrugated metal.

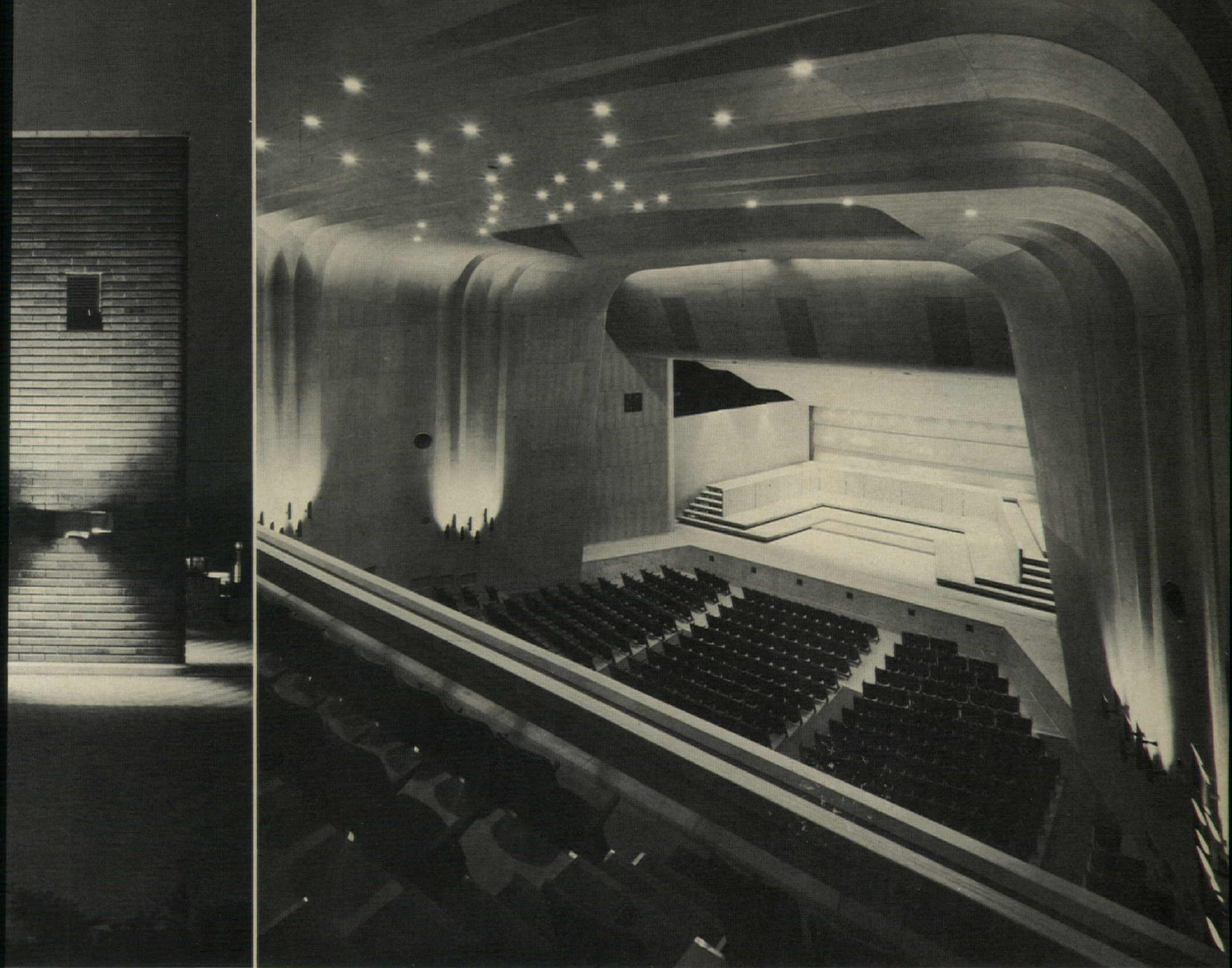




This community center consists of three buildings including a nine-story office tower for public administration and a 1,500 seat auditorium shown in the plan (right) and photos. A smaller auditorium (not

shown) which seats 500 adjoins the office tower. The square is paved with tiles similar in color and texture to the veneer of the buildings. This time Mayekawa exposes only a small portion of raw concrete.





Yoshio Watanabe photos

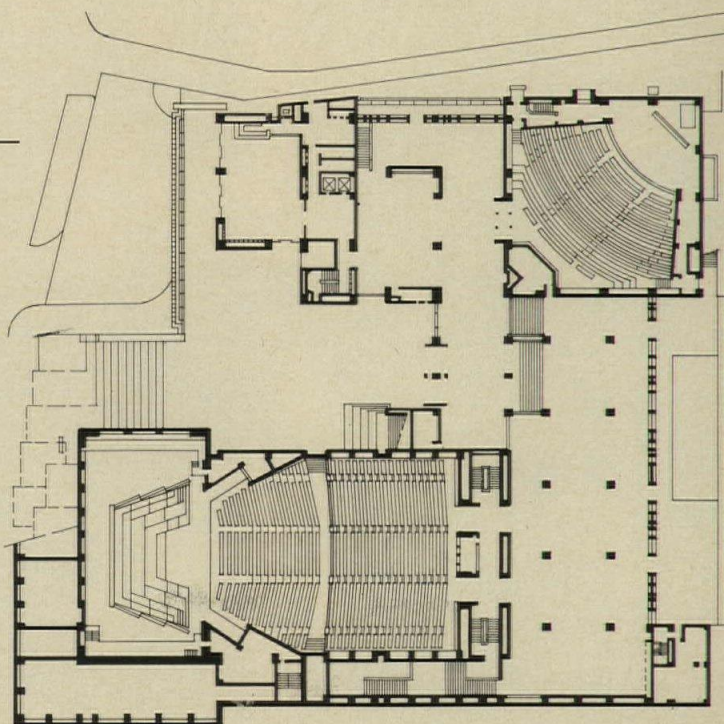
KUNIO MAYEKAWA & ASSOCIATES

SAITAMA DISTRICT COMMUNITY CENTER

Mayekawa, who spent two years (1928-30) in the office of Le Corbusier, and at 65 is the leading Japanese architect of his generation, was the key figure in the establishment of the modern movement in Japan and a pioneer in the use of reinforced concrete. His famous Tokyo Metropolitan Festival Hall of 1961 marks a partial break with Corbu and the establishment of a uniquely Japanese expression. This building was a prototype for the architecture of the sixties.

In the Saitama complex, Mayekawa once more takes

a new direction. He has come to believe that too many of the public buildings of the recent past have turned out to be monuments to their architects rather than buildings which invite the participation and enjoyment of the community. To achieve the latter goal he has designed quiet forms within this complex and created handsome public spaces between them. This focus upon public amenity is rare, for the Japanese traditionally create a private esthetic only — within the house, walled garden or temple precinct.



tinuousness and translucency of film. To this end he has minimized the thickness of the anodized aluminum curtain wall mullions and selected bronze-colored glass. Entrance hall partitions are of mullionless suspended glass panels. A few bright colors are used effectively.

Although the design approach and structural system have much in common with the best international work, and the materials and techniques are available in every developed country—this office tower nonetheless possesses an elusive Japanese quality especially in its handling of interior space and finish. While Ashihara asserts that his interests lie solely in the realm of function and use, he does concede that if this building looks Japanese it is "because I am a Japanese and my cultural background naturally stamps my work."





Photos courtesy Japan Architect

YOSHINOBU ASHIHARA & ASSOCIATES

MAIN OFFICE FOR FUJI FILM

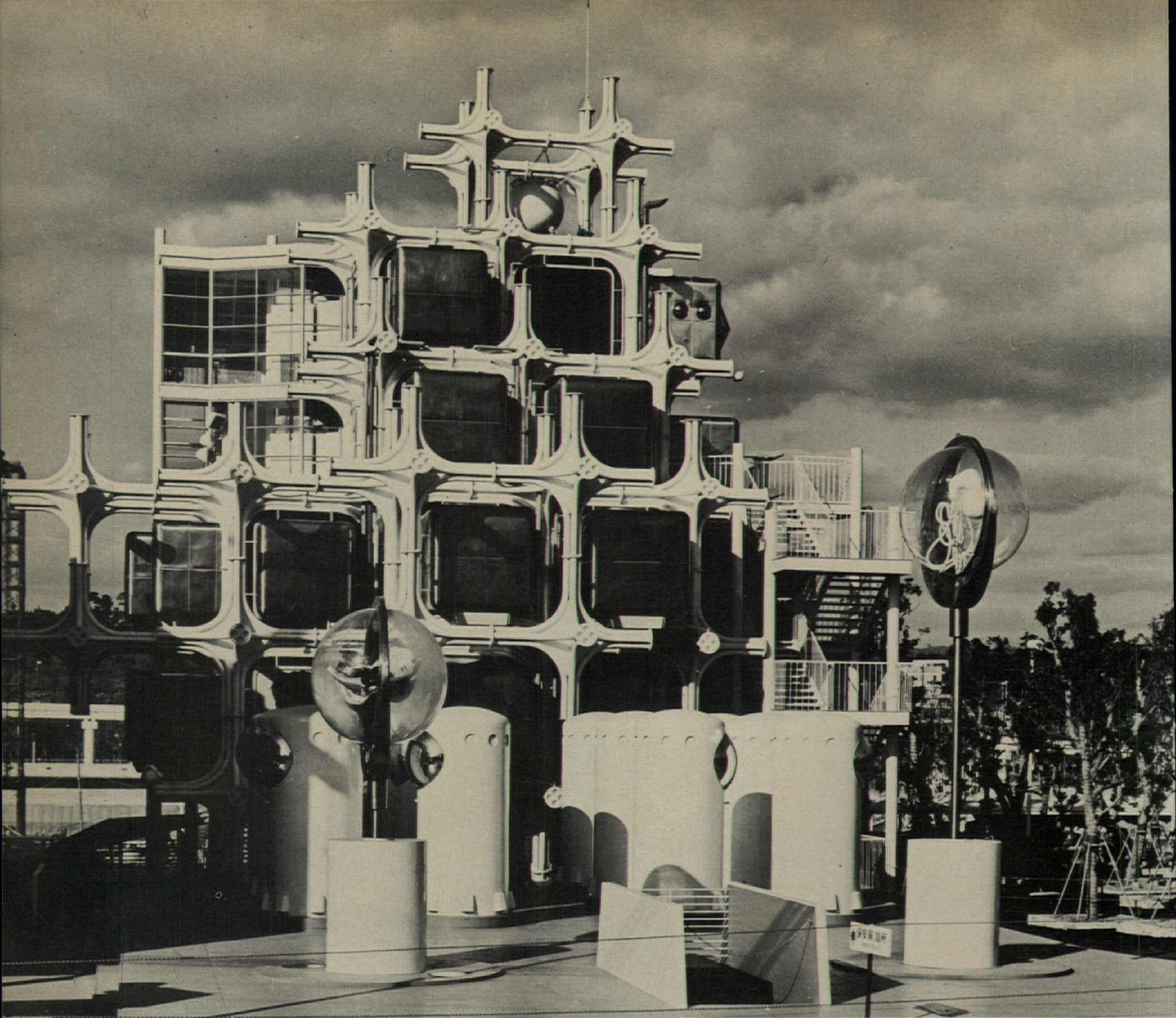
Ashihara, now 52, is one of the leaders of the second generation of Japanese modern architects. Graduated from Tokyo University he apprenticed with Sakakura, then began on his own. In 1952 he came to Yale on a Fulbright, took his master's degree at Harvard under Gropius, worked briefly with Marcel Breuer, then traveled in Europe. He returned to Japan in 1956.

His cosmopolitan background is reflected in his architecture which has more in common with the best work of the West than with the

Japanese modern movement. The 18-story main office building for the Fuji Photo Film Company is the second and handsomest of the first three skyscrapers to be completed in Tokyo. (In 1963 the metropolitan building code was made more flexible following major breakthroughs in construction technology and anti-seismic design. The law restricting buildings to a maximum of 10 stories was lifted and now it is possible to build as high as 50 stories if four-fifths of the site is not built upon and 20 stories if half the lot is used.)

TYPICAL FLOOR

MAIN FLOOR



Tomio Ohashi photos

The Takara Beutilon (top and below) is an infrastructure and capsule system as is the Toshiba IHI Pavilion (opposite page bottom). The latter structure was calculated by a computer in one week, but it took a year to program.

NORIAKI KUROKAWA

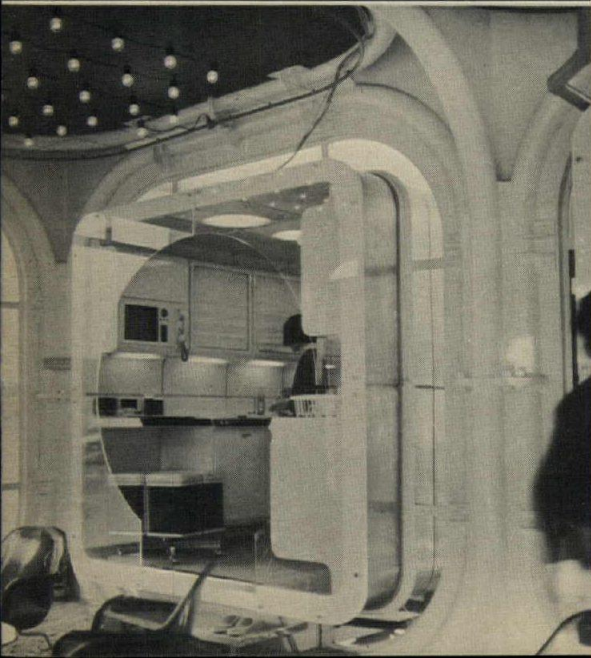
METABOLIST STRUCTURES

Kurokawa at 36 is the youngest of the founders of Metabolism. At 26 he helped to produce the first Metabolist manifesto and has been a lively visionary ever since. Many are familiar with his Project for a Walled City, his Helix City and his Agrarian Town. Further, he actually builds buildings in which some of his more advanced ideas receive incipient form. He is now engaged in town planning ventures for Japanese industrialists and developers which embody his Metabolist principles yet promise to become more than

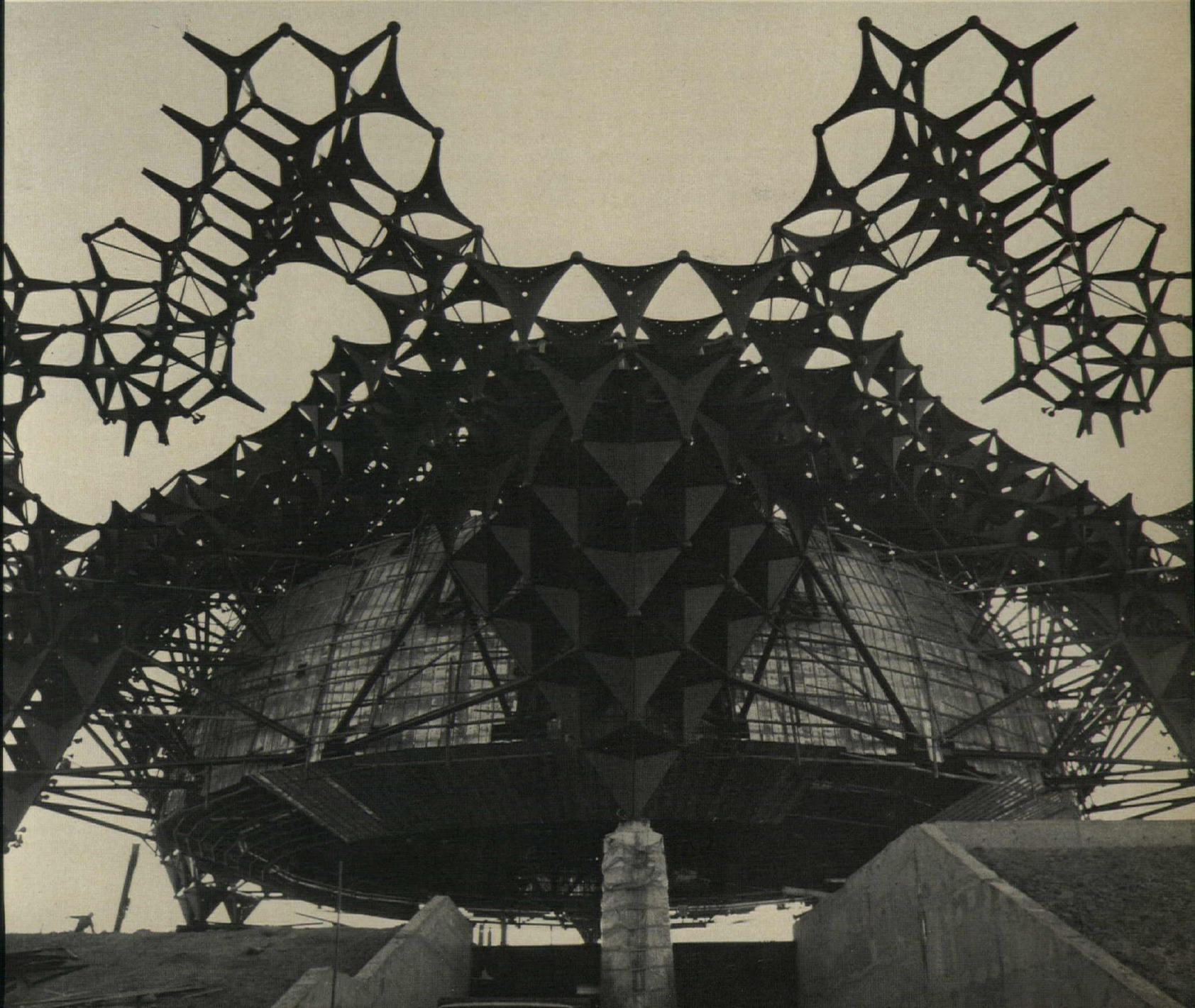
'paper architecture'.

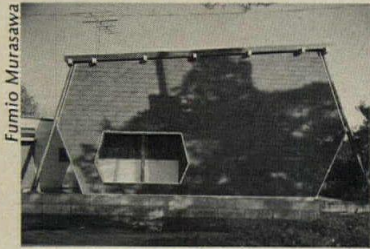
In an article "Two Systems of Metabolism" which appeared in *The Japan Architect*, Kurokawa tells how to design a Metabolist building or city: 1. Divide the spaces into basic units. 2. Divide the units into equipment units and living units. 3. Clarify the difference in those metabolic rhythms among the unit spaces. 4. Clarify the connectors and joints among spaces.

Expo '70 gave Kurokawa his chance to implement his more advanced ideas. Shown are two fair pavilions and a Tokyo discothèque.

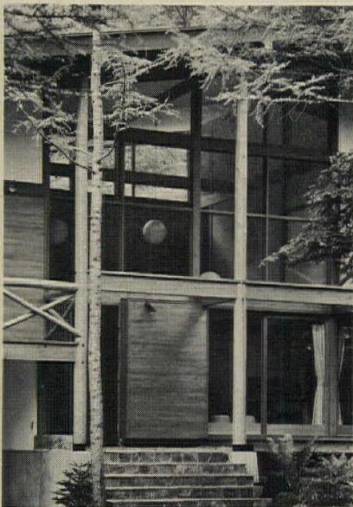


Mildred F. Schmetz





1



Shigeo Okamoto



2



Studio Murai R. Hata

3

Among those architects whose work comprises the design of smaller structures, the buildings of Kunio Hashimoto & Associates have great quality. His **Trapezoidal House (1)** in Tokyo has a broad sloping roof which covers the structure completely, giving the house an image which resembles that of an old Japanese farm house. The house site is shaped like a half-opened fan calling for a trapezoidal-shaped plan. It is a wooden post and beam structure with plaster walls and a shingle roof.

Hashimoto's **House for Mr. Ito (4)** in Tokyo is an excellent small building in reinforced concrete. Eight two-story high posts support deep concrete beams expressed on the exterior. The skeleton construction permitted the interior spaces to be freely arranged. His **Rice Sale Shop and House (3)** in Tokyo, a wooden structure, is a sensitive modern adaptation of the traditional Japanese building style.

The design of the firm of Yoshioka and Tajima is well rooted in Japanese traditions. A typical example of their current work is the **Summer Hostel for the Mitsui Real Estate Company (2)** located in Karuisawa, a famous summer resort about one hundred miles west of Tokyo. Mitsui is one of Japan's largest real estate companies and follows the Japanese custom of providing resort facilities for its employees and families. The architects have succeeded in achieving harmony between the building and the surrounding nature and have created pleasant interior spaces.

The **Higashi-nakano Protestant Church (6)** was built on a very tight site in a crowded Tokyo district. In order to fit the church into this limited space architects Yoshioka and Tajima put the church itself, together with the lobby, choir room and audio room on the upper level on top of the meeting hall, classrooms and kitchen. The hexagonal choir gallery is on the mezzanine level forming a canopy over the passage between the narthex and the nave. The roof is an elongated hexagonal pyramid. The plan is hexagonal with a triangular module which has lent itself to the creation of interiors which possess an exciting spatial quality. The ivory colored slanted ceilings with skylights at both ends of the

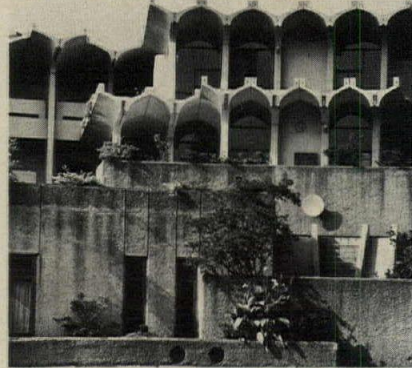
ridge give the interior subtle changes of light from time to time, and the natural glow from the windows behind the free-standing teak paneled back screen of the chancel gives the cross, the sole ornament, a floating and silhouetting effect. From the outside the church resembles an old Japanese farmhouse. Its steep silver-gray roof is covered with baked enameled metal sheets. The white exterior walls are precast concrete panels with cement paint sprayed on. Said architect Yoshioka: "Christianity has been planting a deeper root in the hundred years it has been in Japan. I felt in designing this church that now is the time to achieve something Japanese, something which is our own instead of going after pseudo-gothic expressions. In this respect I feel this church is successful esthetically and practically."

The **Yukari Kindergarten (5)** in Tokyo was designed in 1966 by Kenzo Tange. The portion which has been erected was completed in 1967. Fan-shaped in plan, the roof vaults form the segments of the fan. They are precast, prestressed elements each of which forms a half shell. Two combined together look like a bisected barrel vault. The kindergarten has 40 three-year-olds, 120 four-year olds and 120 five-year-olds, and the spaces are determined by this age structure. The lower levels are reserved for the three-year-olds. The interiors are beautifully designed to the scale of children.

The design staffs of several of Japan's huge construction firms do work of very high quality and among the best of these is the Kajima Construction Company. Under the design direction of architect Shin'ichi Okada they have erected a **Gymnasium for the Japan Dental College (7)** in Tokyo which is a handsome and unusual structure. The athletes are visible to passersby in the street so that they may enjoy watching the sport and welcome the gymnasium as part of the neighborhood. An eloquent architect, in love with his building, Okada has written: "The mirror-like walls of the main gymnasium spaces connect the interior with the surrounding neighborhood, as I saw clearly, to my great satisfaction, one twilight as the flashing images of the town swarmed over the glass surfaces,



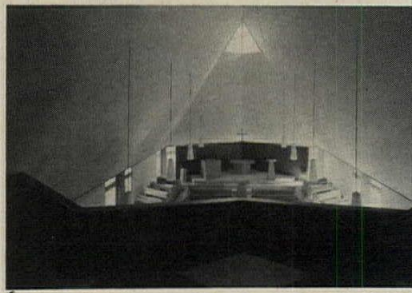
Lloyd Pearson



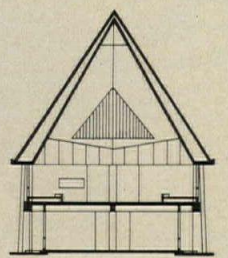
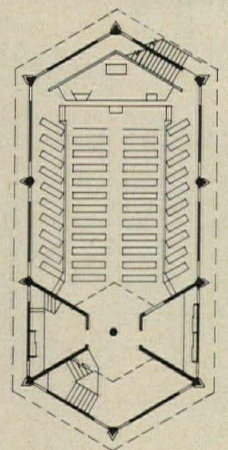
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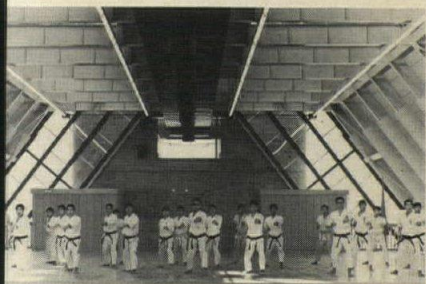
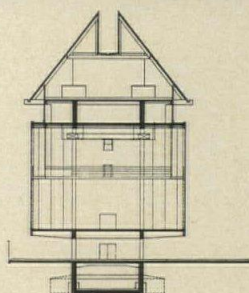
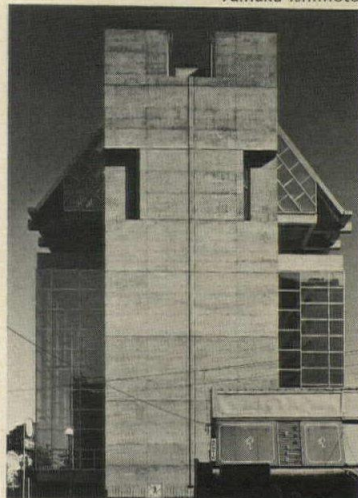
T. Ohashi



6



Taihaku Ishimoto



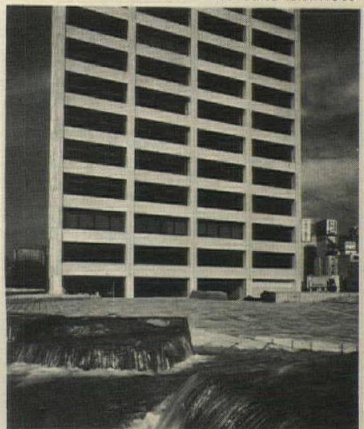
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Osamu Murai



8

Taihaku Ishimoto



9

bathed in the soft grey of the dying light. Inside apparently disembodied students and objects seemed to float about, but as night drew near and the interior lights came on, the activities in the gymnasium not only became clearly visible, but also flowed outward into the darkness."¹

The organization of the elements of this building can easily be seen from the photographs and section. At opposite ends of the structure are two massive concrete walls which serve as structural supports and mechanical cores. These are connected by two sets of heavy beams. These beams divide the structure vertically into three spaces, the pilotis, the main gym approximately 50 feet high, and the upper training room with its steeply pitched roof and skylight shown at left.

The **Home Office Building of the Kajima Construction Company (9)**, also designed by the firm itself under the direction of Shin'ichi Okada, is distinguished by its plaza (see cover) which is elegantly Japanese and its clean, elegant facades which are uncompromisingly Western. The associate designer who worked on the plaza was Seiji Shimizu.

Architect Junzo Yoshimura, noted for his elegant modern adaptations of the Japanese architectural traditions, has associated with a younger architect and fellow teacher in the Architectural Department of the National University of Fine Art and Music, Tadayoshi Fujiki, in the design of the new **Elephant House at the Ueno Zoo (8)** in Tokyo. An amusing and cheerful yet complicated structure it is the work of the two teachers and their students, and is part of a master plan for the redevelopment of the zoo and its environs which the group has prepared for the Tokyo Metropolitan Government.

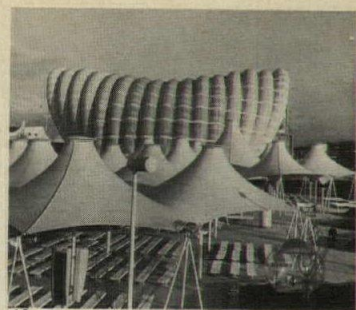
Yutaka Murata, designer of two of the most interesting pneumatic structures for Expo '70, the **Fuji Group Pavilion (10)** and the floating theater of the Electric Power Pavilion, devotes much of his time to self-financed research and development of air supported structures. "There must be an esthetic be-

yond reinforced concrete" he asserts. Further he envisions a broad practical need for these structures. In a country like Japan which is transforming vast acres of scarce agricultural land into industrial and urban sites it will be necessary to establish climate controlled environments for agriculture on sites which are not naturally suited to farming. Single membrane air supported structures are potentially the least expensive way to create the huge environmental enclosures which will be required. Double membrane structures such as the Fuji Group Pavilion need further technological development also, for although they cannot provide enclosure at the environmental scale, they are applicable at building scale for industrial and shipyard construction, as they may be used for walls and floors as well as roofs. Murata is also studying combinations of net and membrane structures.

Yoshinobu Ashihara's work is distinguished by the attention he pays to negative spaces not occupied by buildings, as in the forecourt of the **Ibaragi Prefecture Cultural Center (11)** in Mito. Says Ashihara: "We regard the entire building site as a large piece of architecture and treat any uncovered space on the site as exterior space."

The **Kawaramachi High-rise Housing Estate (12)** to be constructed in Kawasaki between 1970 and 1974 has been designed by Sachio Otani and exhibits the densities at which the Japanese must build housing if they are to begin to conserve their rapidly diminishing land. It will contain 3,600 dwellings for 15,000 persons at a density of approximately 445 persons per acre. The development will have two nursery schools, one elementary school, a neighborhood center, a swimming pool and a commercial and office building area. According to Otani the inverted 'Y' form of the structure achieves a good residential quality within the high-density framework and will encourage urban social interaction rather than isolation.

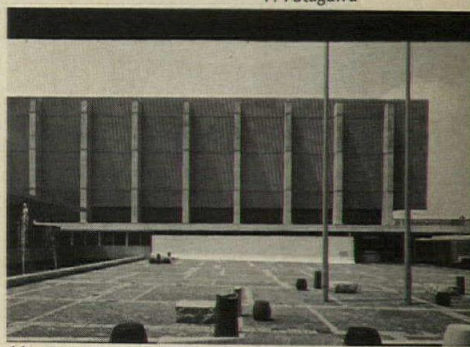
The **Kanazawa Institute of Technology Campus (13)**, designed by Sachio Otani, boasts two completed structures, the main classroom building shown in the photo and the faculty building. Also planned to en-



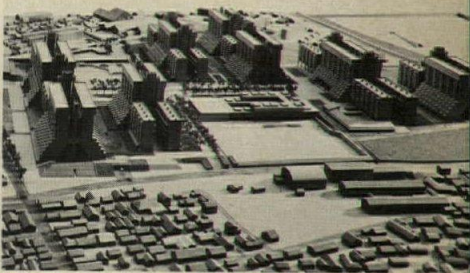
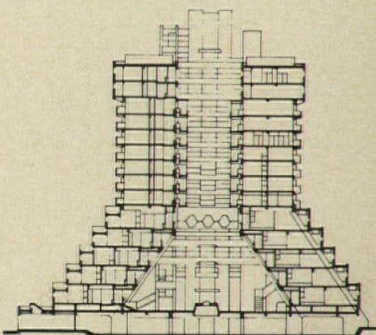
Mildred F. Schmertz

10

Y. Futagawa



11



12

Hirayama



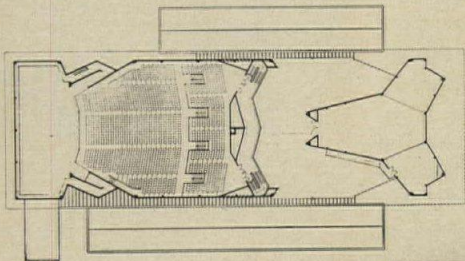
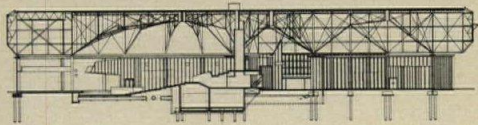
13

Hirayama

1. Japan Architect, April 1970



Hirayama



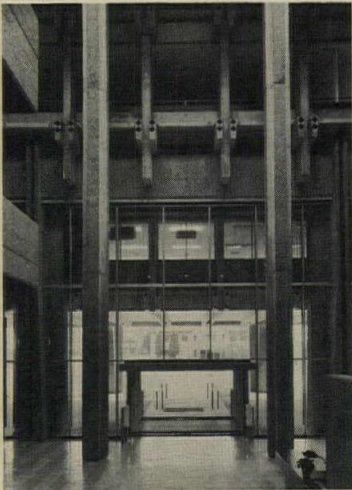
courage social interaction and high intensity of use, the buildings have great plastic and spatial interest. A strongly sculptural effect has been attained by placing the theater, with its sloping roof and floor, on the top level of the structure.

The **Hagi City Hall (14)** by Kinoru Kikutake is a public auditorium rather than a building for the local government and has been recently completed. The great roof is framed by light steel members in a manner which is varied to accommodate the spaces and functions beneath it. Except where concealed by panels for acoustical purposes, as in portions of the auditorium, this light steel framework is exposed. At the level of the bottom chords are strung networks containing thousands of tiny lights. Kikutake has used this device to good effect in a number of his recent public buildings but never with such success as here. As the plan indicates, the building consists of the major auditorium and, in addition to the lobby, a secondary space divisible into three meeting halls.

The **Tochigi Prefectural Assembly Hall (15)** by Masato Otaka is located in the city of Utsunomiya, the center of administration, commerce and industry of the district. Constructed near the heart of the city in a section which has become uncomfortably crowded, it has been designed to provide as much public open space as possible. Otaka has put the building on pilotis and opened the deeply set back first floor of the building to the public. The pilotis carry deep precast concrete girders which carry the third floor and from which the second floor is hung. Precast concrete is used throughout except for staircases and the assembly hall which are poured in place. An effective contrast has been achieved between the poured-in-place and prefabricated elements.

A great skylit interior court thrusts upward through the central space to a height of three stories, in a manner which suggests the influence of Boston City Hall. The precast structural system is boldly expressed on the interior. Architect Otaka has made a strong and repetitive design element of the column and beam connections.

15



Masao Arai



14

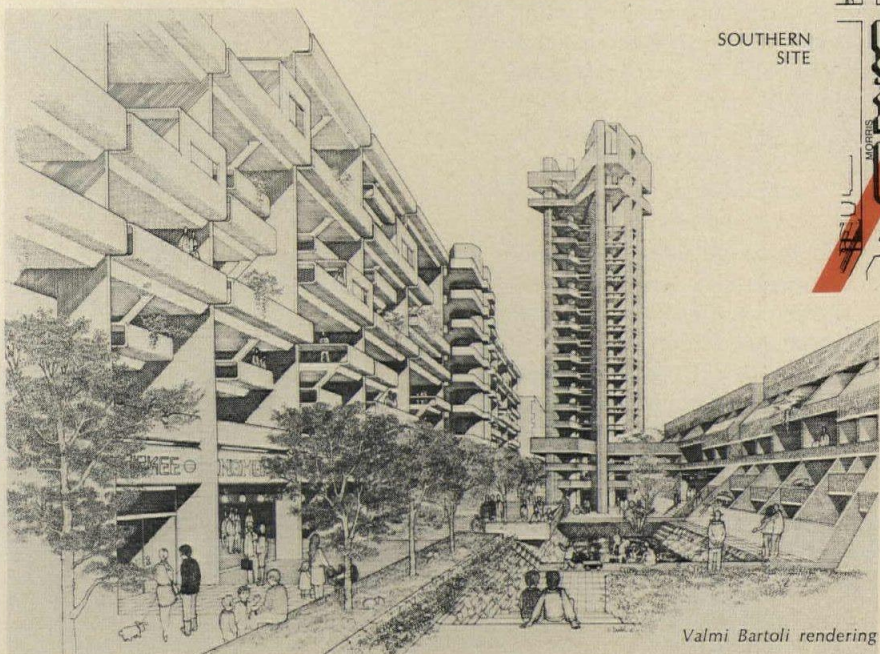
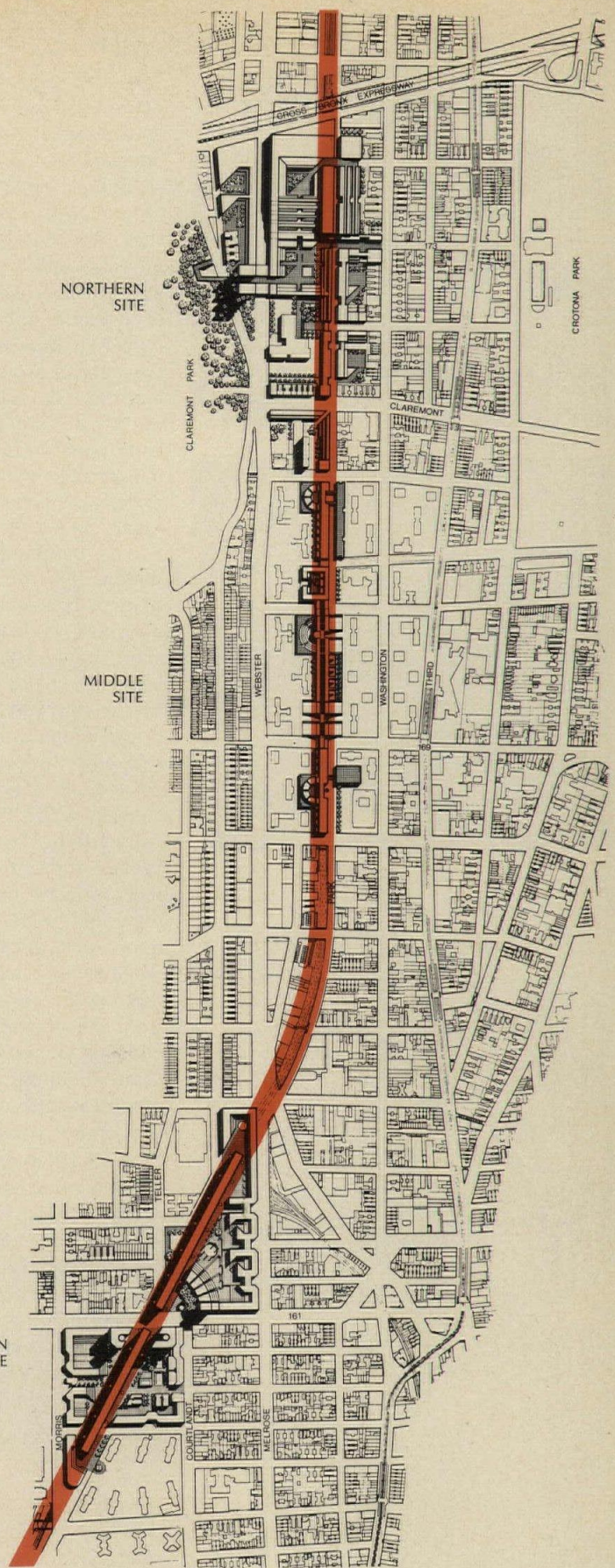
WEINER AND GRAN A BRILLIANT DESIGN FOR THE BRONX

A great corridor of space runs north-south through the Morrisania area of the Bronx, in sharp contrast to the many narrow, overcrowded, and often deteriorating streets that intersect it. The corridor rivals in scale the Grand Concourse not far to the west, and Park Avenue in Manhattan to the south. The corridor is the counterpart of what Park Avenue was earlier in the century—an open cut in the earth in which trains run.

But in the course of an intensive block-by-block study of the area undertaken for the New York City Planning Commission, Weiner and Gran soon saw that neither the Grand Concourse nor the Park Avenue type of solution had any application in the present case. Instead, their major proposal was to utilize the air rights over the Penn Central tracks as the major source of new development. Carefully planned, and with little or no dislocation of present tenants, the use of the air rights could answer the most pressing needs of the community and provide a strong thrust toward the redevelopment of the entire area.

The Commission then asked Weiner and Gran to elaborate on their ideas by considering three specific sites (plan, right). A capsule account of the firm's imaginative, socially perceptive and visually exciting response to this challenge appears on the following pages.

—Donald-David Logan

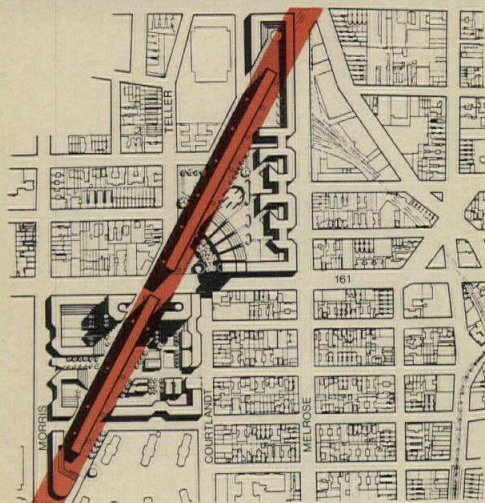
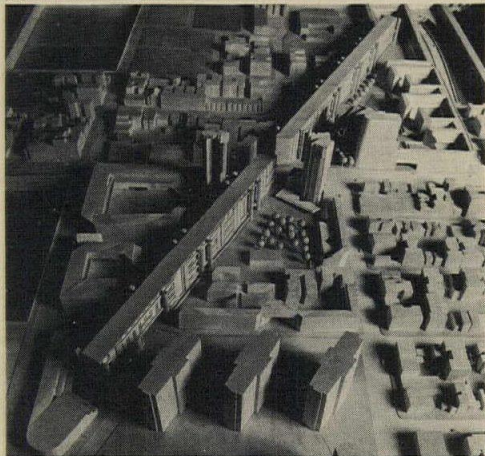


Valmi Bartoli rendering

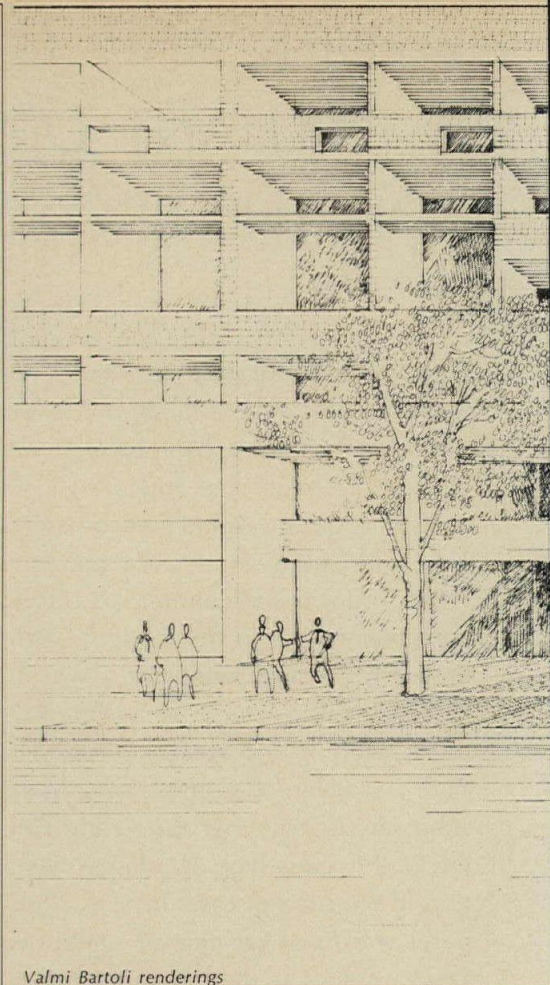
A PRIMARY DISRUPTION BECOMES A NEW BACKBONE



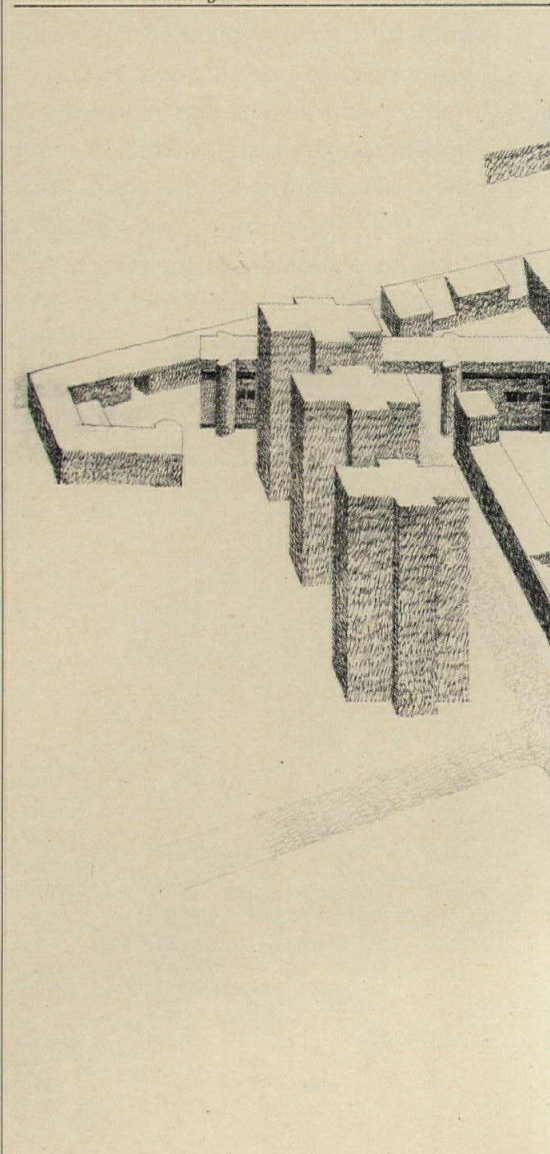
Marty Greenberg photos of present Morrisania

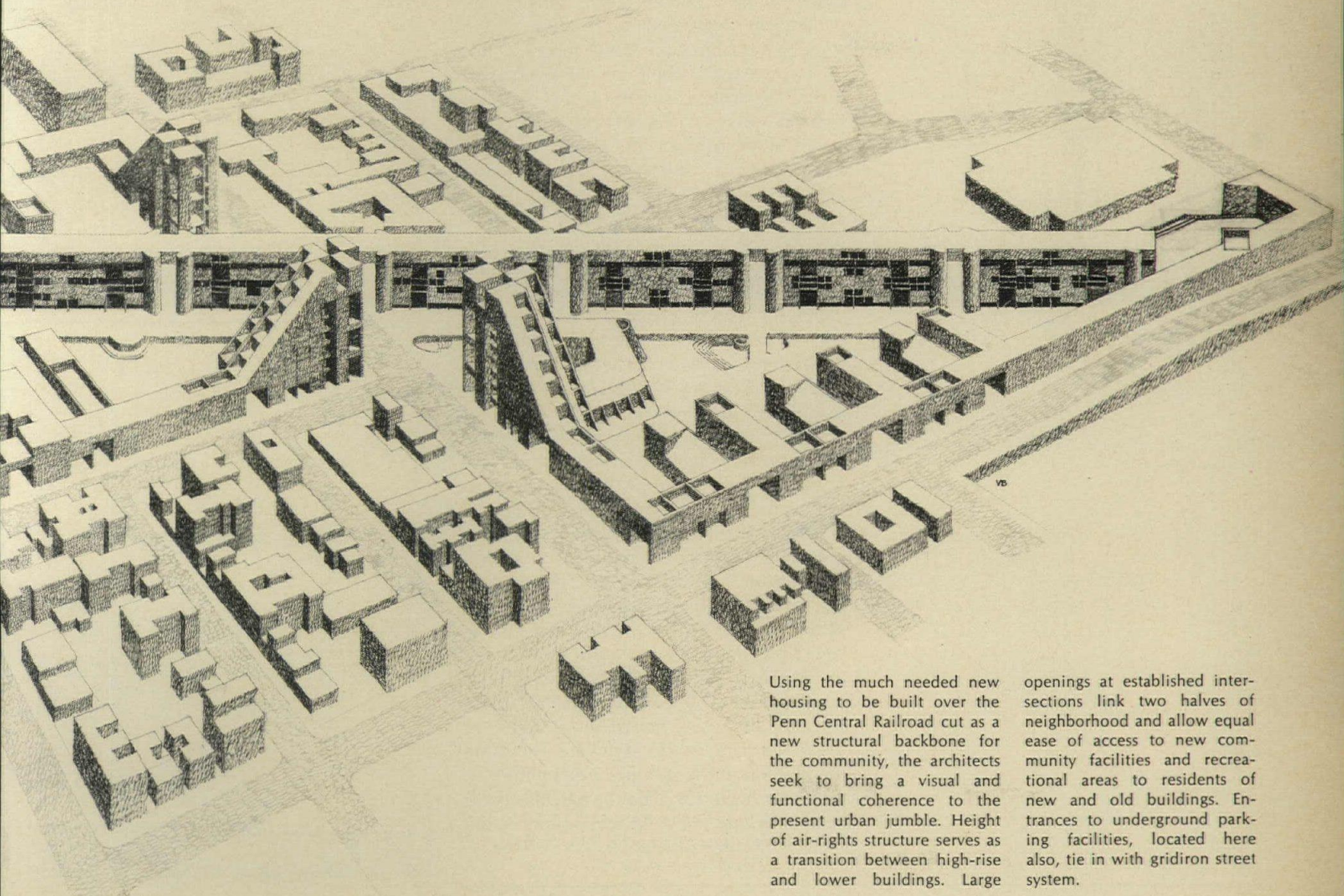
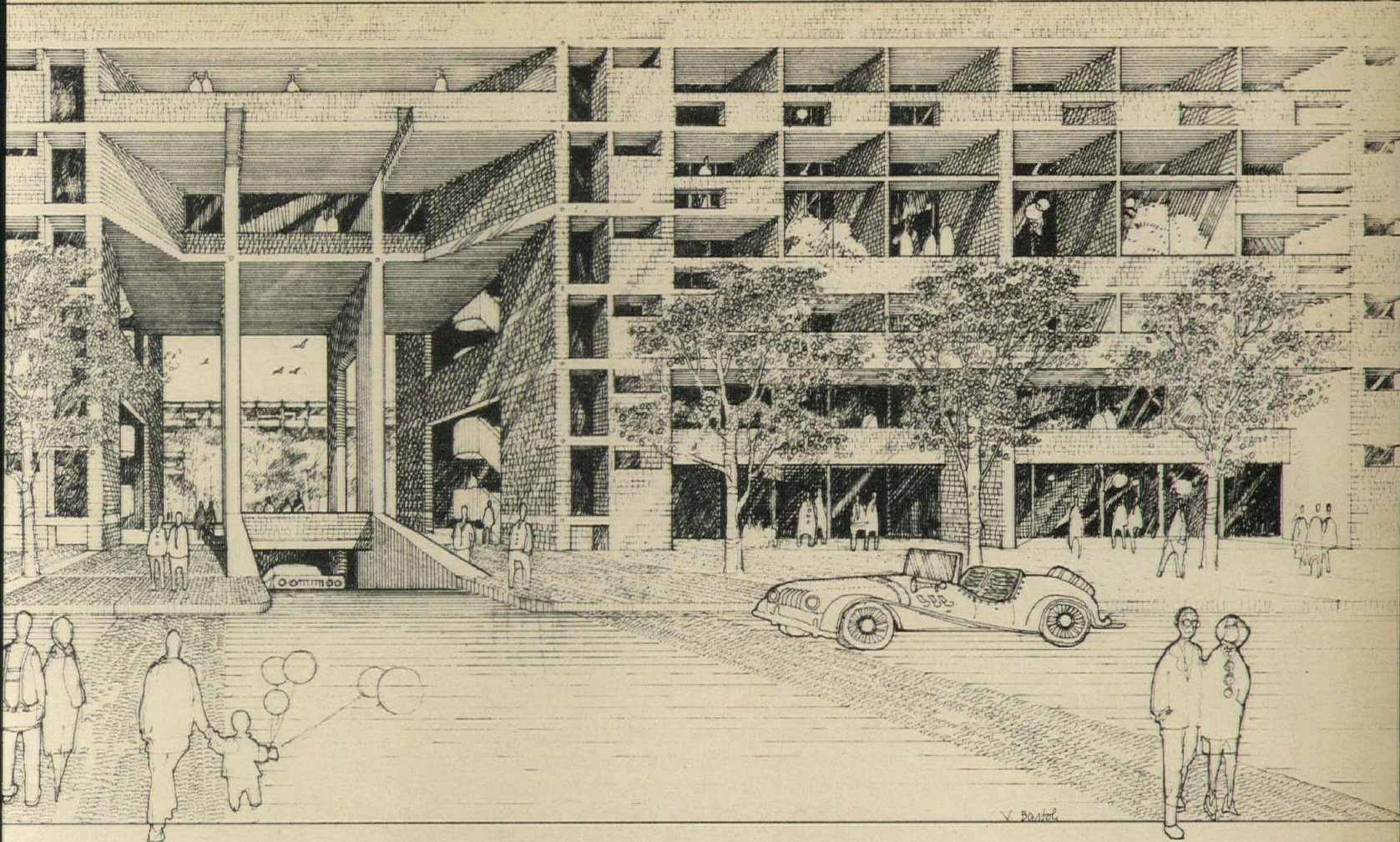


The southern site is a microcosm of the entire Morrisania area, although it contains an even greater proportion of deteriorating housing than the area as a whole. These residential units are mixed, helter-skelter fashion, with random small-scale industrial sites. The streets are narrow and too numerous, and the depressed Penn Central Railroad cuts diagonally through the grid-iron system, not in a spatially dynamic way—such as Broadway does through Manhattan—but in a disruptive manner as the cut and the trains using it only serve to divide the neighborhood into two related but separate parts on either side of a broad, ugly, dangerous, and often noisy chasm. With the exception of an occasional building in good repair, and several public housing projects, a type discussed in connection with the middle site, the typical housing is an old or new law tenement. Community, shopping and recreational facilities are all in short supply. There is no focal point for the area, and no over-all architectural character. There is very little vacant land. The only outstanding physical characteristic with any real possibilities for major redevelopment, on a scale that would bring meaningful change, is the Penn Central cut. The utilization of the air rights over this cut became Weiner and Gran's primary goal. The architects estimate that 900 units of new housing could be built here, obviating the even temporary displacement of any of the neighborhood's present residents. As buildings over the tracks are completed, tenants from the immediate area would move in, allowing demolition or renovation of vacated buildings to begin. Hopefully, this process would continue and spread through the entire community. The planning of these areas would take place in stages and correspond to various needs and programs. A new pedestrian circulation system and a network of recreational spaces are planned for, the architects suggesting that these goals can be achieved more creatively by first pooling the open space required under the zoning laws with present recreational areas. Community facilities such as day care and health centers, schools, etc., would be located so as to form links between the new air-rights housing and the older portions of the neighborhood. Parking and service would be located below grade under new construction outside of the railroad cut, and connected at strategic points to the vertical transportation systems of the high-rises. Extraneous streets would be eliminated, with more efficient traffic patterns more than compensating for their absence. Generous passageways through the air-rights buildings at all intersections aid pedestrian access and circulation. The scattered industry in the area would be relocated in the new industrial development in the northern section (page 134) to further strengthen the residential and pedestrian character of the southern site.



Valmi Bartoli renderings

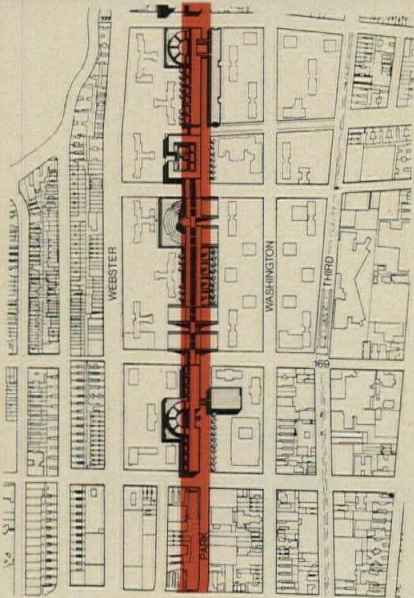
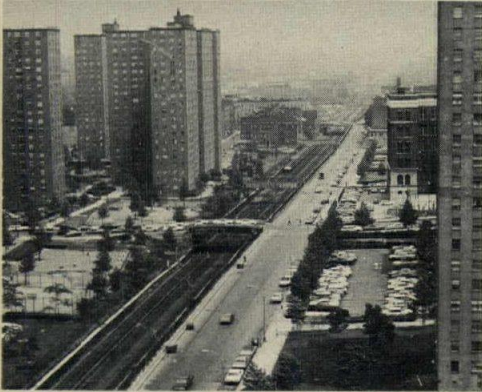




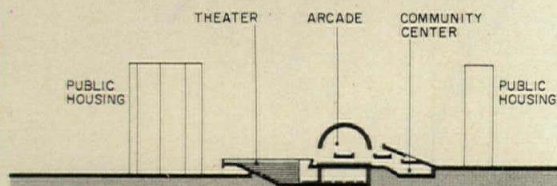
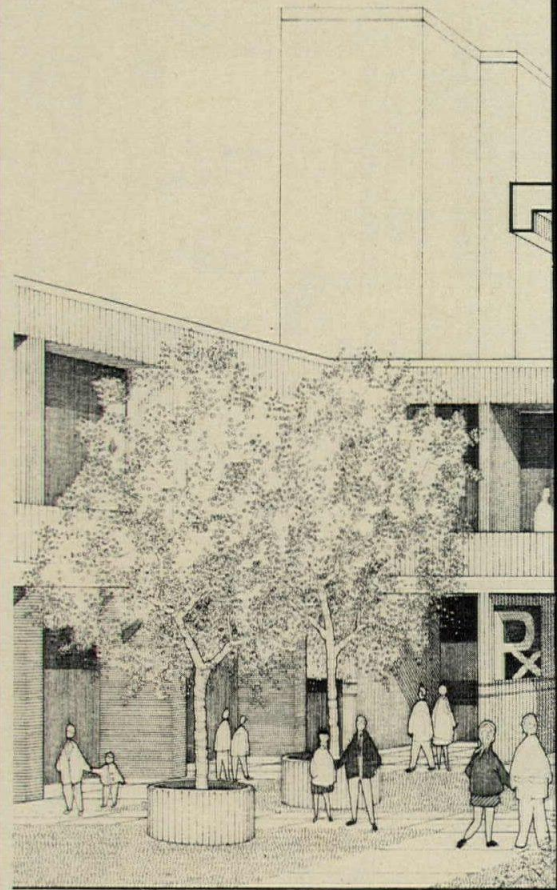
Using the much needed new housing to be built over the Penn Central Railroad cut as a new structural backbone for the community, the architects seek to bring a visual and functional coherence to the present urban jumble. Height of air-rights structure serves as a transition between high-rise and lower buildings. Large

openings at established intersections link two halves of neighborhood and allow equal ease of access to new community facilities and recreational areas to residents of new and old buildings. Entrances to underground parking facilities, located here also, tie in with gridiron street system.

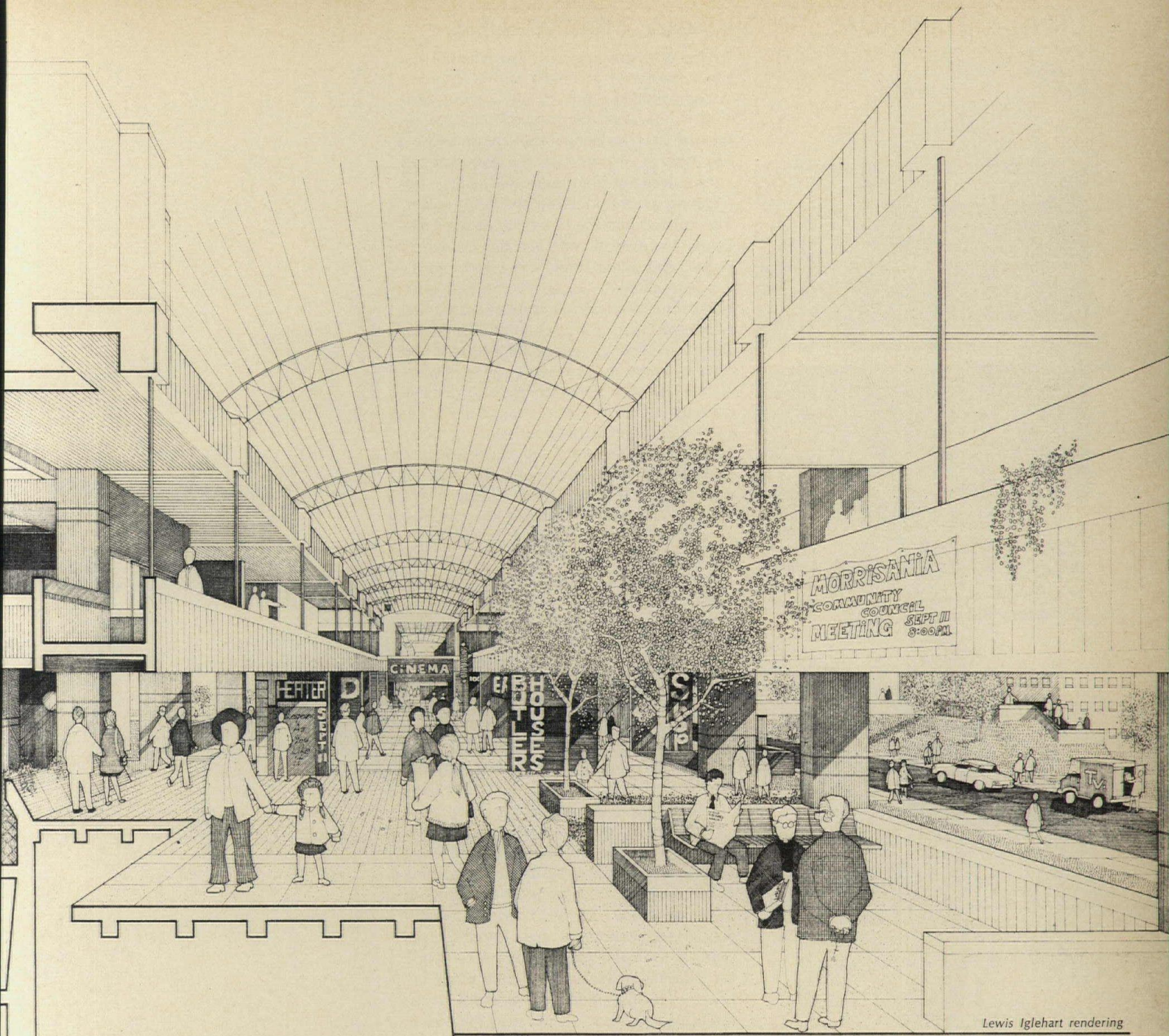
A COMMUNITY CENTER-GALLERIA BUILT AS A BRIDGE



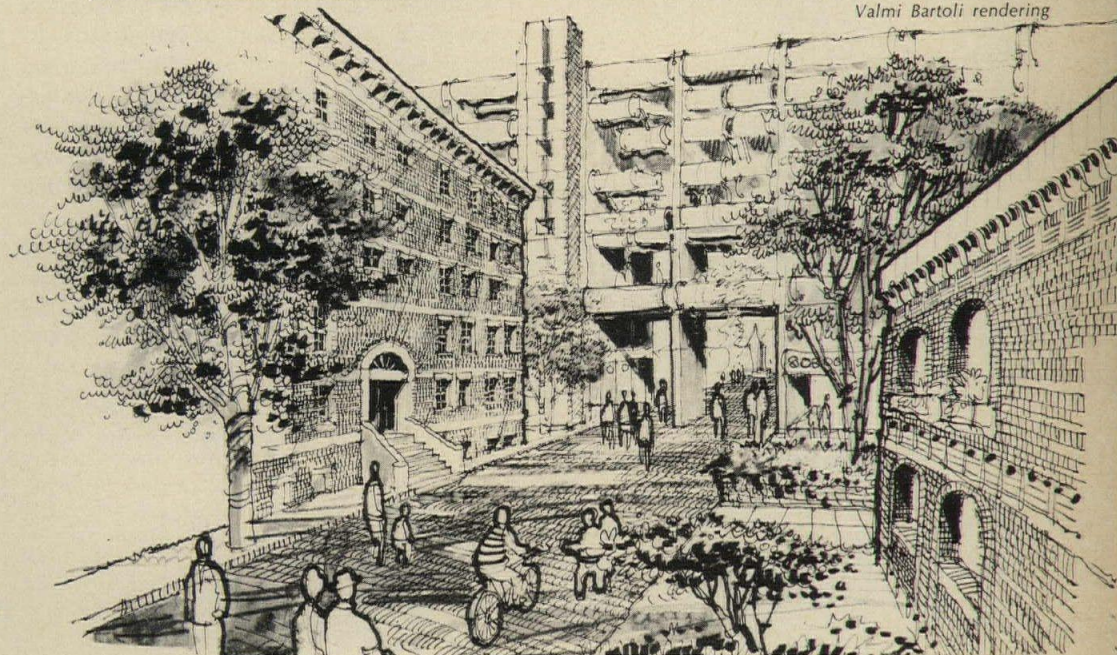
The middle site proposed for closer scrutiny consists for the most part of by-now standard public housing towers that stare hostilely at one another and at their exact counterparts on the other side of the tracks. The scale of the buildings and their stark setting deals a death blow to any positive sense of "neighborhood." On the contrary, there is an over-all sense of anonymity. The rigidly determined, repetitive public spaces around them are mostly occupied by innumerable parked cars. To the noise of the Penn Central trains there is added the noise—and the dangers—of the speeding traffic along Park Avenue that parallels the tracks, which is used as a main route by motorists on their way to and from the Cross Bronx Expressway. The area lacks community facilities, and shopping is generally remote except for a few stores in the buildings. Yet these buildings are in good condition and provide clean, light, well-ventilated living units for some 4,000 families in no need of relocation. To provide the area with what it lacks—community, identity, unity, amenities and a strong interesting visual focus—Weiner and Gran propose that the railroad air rights be used for a linear galleria or "indoor street" that would link together, and serve as access to, the needed new facilities. These would be built as part of the spine, over Park Avenue, or in the public housing parking areas (moving the parking to below grade). Access to the spine, a valuable community meeting spot in its own right, could be via overpasses across the avenue, and through new facilities, in order to avoid pedestrian-high speed traffic conflict. The variety of facilities—stores, a day-care center, meeting rooms, youth center, movie house, etc.—would assure the galleria's night as well as daytime use, and the particular attraction of each facility would add to the strength and use of the others. In addition to providing the middle, public-housing site with a much needed communal focus, the complex would serve a much wider area and could provide an impetus to far-reaching neighborhood improvement. Each end of the spine, away from the center of the galleria's greatest activity, would end in new housing planned especially for large families, as there is a need for this type of unit which the present public housing does not completely meet. The construction system for the housing would be the same as that for the southern site (see page 136); the system for the galleria would be parabolic steel space frames spanning the tracks. Here, as in the other two sites, it should be remembered that the solutions the architects are proposing not only have value in their own right, but in each case in healing the division of the area by bridging the cut, they also make for a better neighborhood by eliminating the sight and sound of the trains from the community.



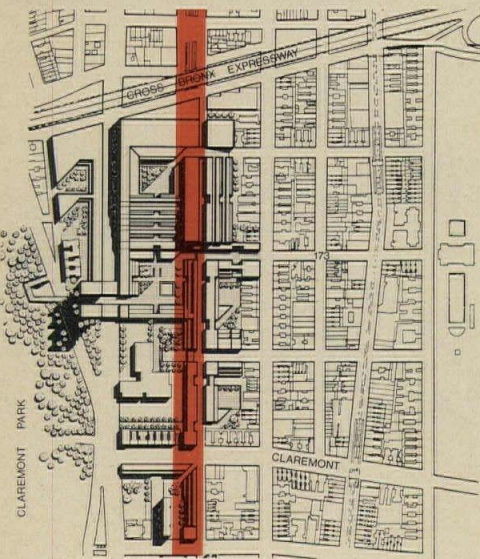
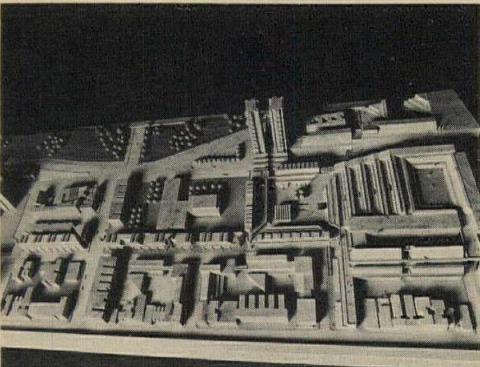
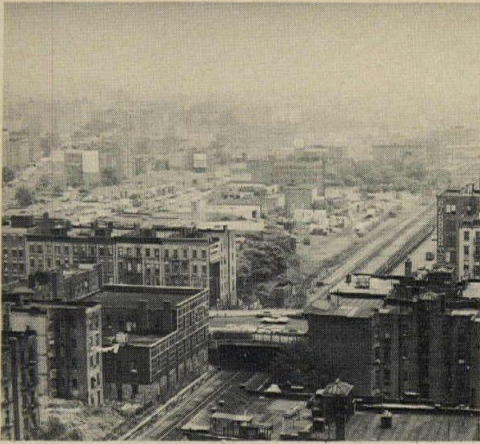
EAST-WEST SECTION THROUGH MIDDLE SITE



In the middle site the divisive railroad cut would be bridged by a spine-like, glass-roofed galleria. It would provide a much needed focus for the area which consists mainly of high-rise public housing. As an indoor main street, free from inclement weather, it would be an important community meeting place in its own right while at the same time serving to connect a variety of new community facilities branching off it. The rendering at right, which properly should be seen with the material for the southern site, shows that, where they are not needed, certain side streets would be converted to recreational purposes, for the use of tenants of old and new housing alike, thus contributing, spatially and functionally, to the sense of one neighborhood.

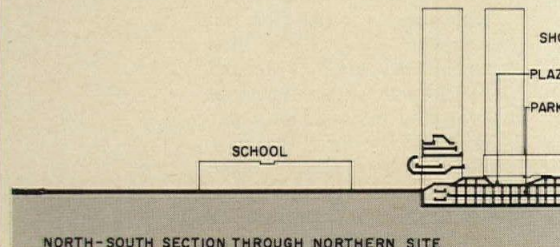
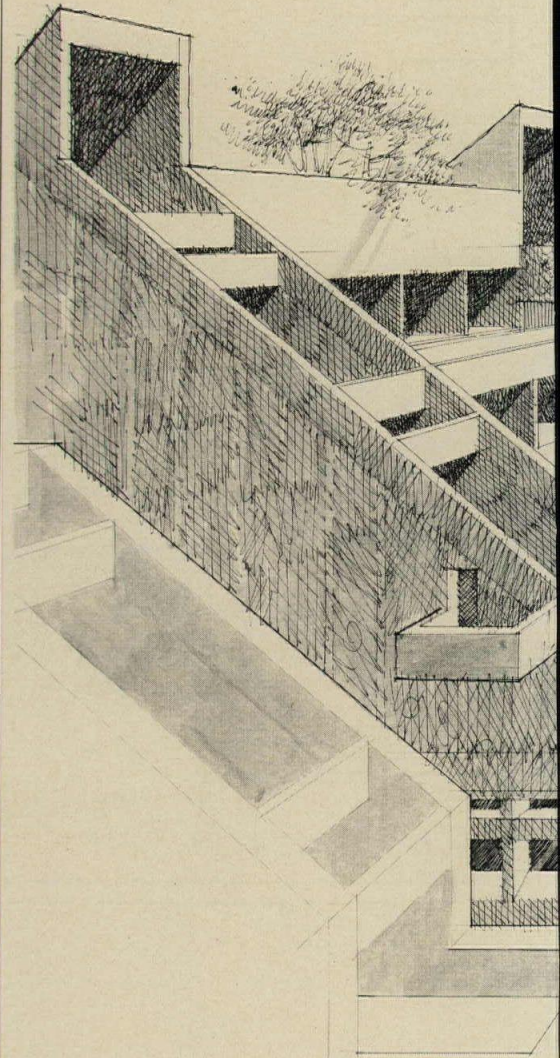


USING THE RAILROAD TO ORGANIZE MULTIPLE USES



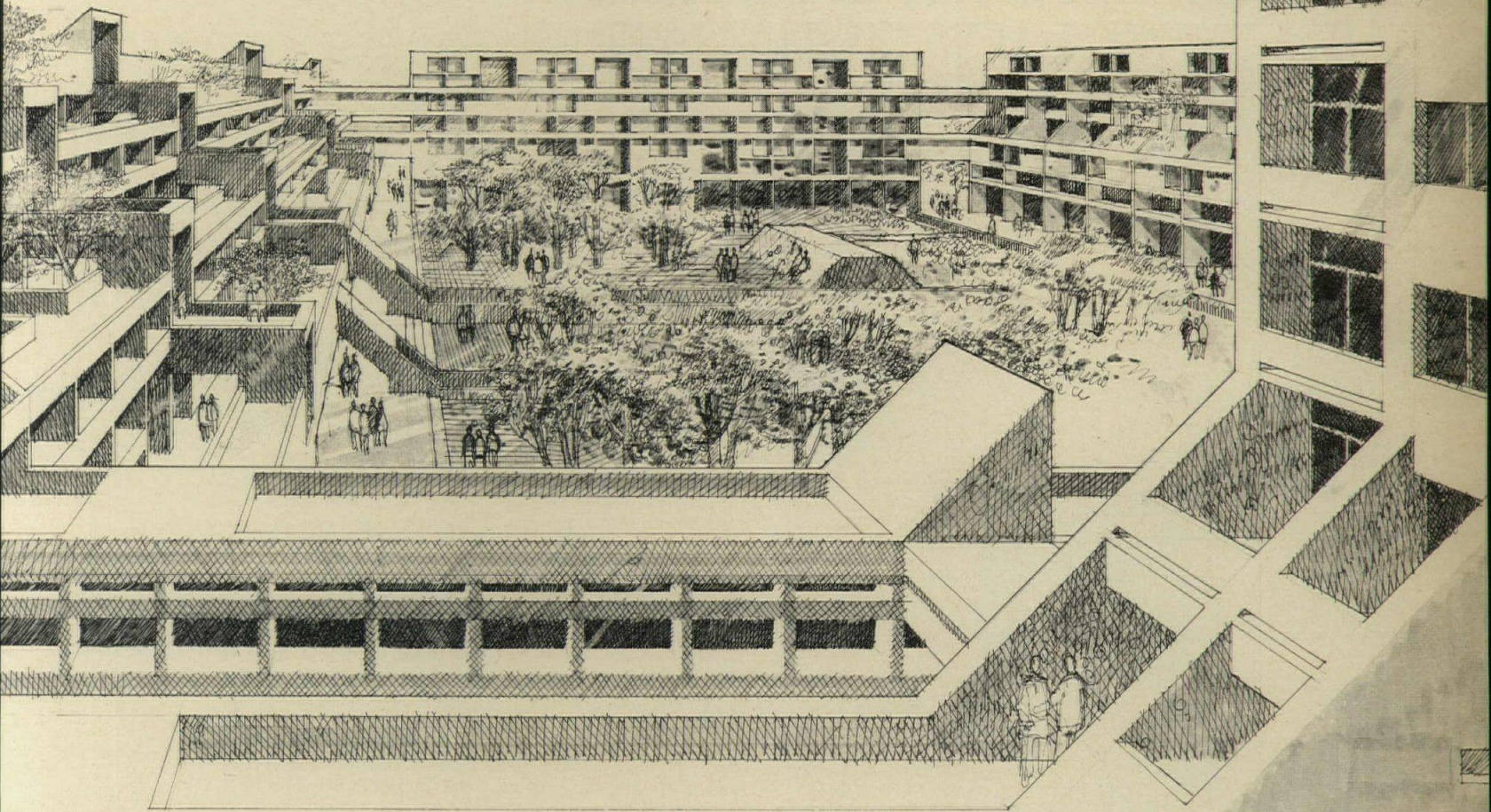
In the northern site the Penn Central cut might well serve as an apt symbol for a less visually dramatic but equally serious division in the area: the conflict between industrial and residential-use areas. Lacking any type of organization the two types of sites are chaotically intermixed, each contributing to the inefficiency of the other. The railroad and the proximity of the Cross Bronx Expressway and Webster Avenue (a major and increasingly important north-south truck route to Manhattan) serve industrial needs ideally. If industry were to be eliminated many jobs would go with it. On the other hand the area is flanked east and west by parks and is slated to get a new intermediate school. The elimination of the housing, already in short supply, in the direction of an industrial-park-type arrangement, makes no sense either. Instead the architects have sought to organize industry and housing for the good of each in a scheme that would eliminate the negative aspects of the railroad cut, improve traffic circulation, and make the best use of the residential amenities. In so doing they have gone outside the present zoning code, but they feel that solutions for this type of urban area, of which there are many examples, demands new approaches. By stacking industry over the railroad cut near the expressway and servicing it with a limited-access loop system the architects seek to separate these activities from the residential areas while using the former as a buffer between the latter and expressway traffic. A lower grade level here also allows for direct truck service at two levels and railroad access at the lowest level—all related to the same vertical transportation system. New housing would be built atop the industrial (and, in some cases, parking) levels oriented in toward new pedestrian spaces (renderings, right) or outward toward the parks. These recreational areas would also be easily accessible to the industrial workers. Reinforced concrete structural systems strong enough to span the railroad cut and support the multi-layered system above already exist, while housing built over the tracks near the school and non-contiguous with industry would be constructed as described for the southern site (page 136). Weiner and Gran see this quasi-megastructure for the northern site as a city-within-the-city. Incorporating a majority of urban services and facilities in a new and in many ways independent system, it is at the same time carefully linked to the larger surrounding area at strategic circulation points.

Planning Study for the Morrisania Section of the Bronx, New York City, Phase Two. *New York City Department of City Planning*, Donald H. Elliott, chairman; Saul Nimowitz, chief, Bronx Office; Jittu Bhatnagar, project supervisor. Architects: Irv Weiner, Warren W. Gran and Associates—John Sloan and Martin Greenberg, project architects; consultants: Paul Gugliotta (structural), Dalton & Dunne (mechanical), Nasco Associates (costs).



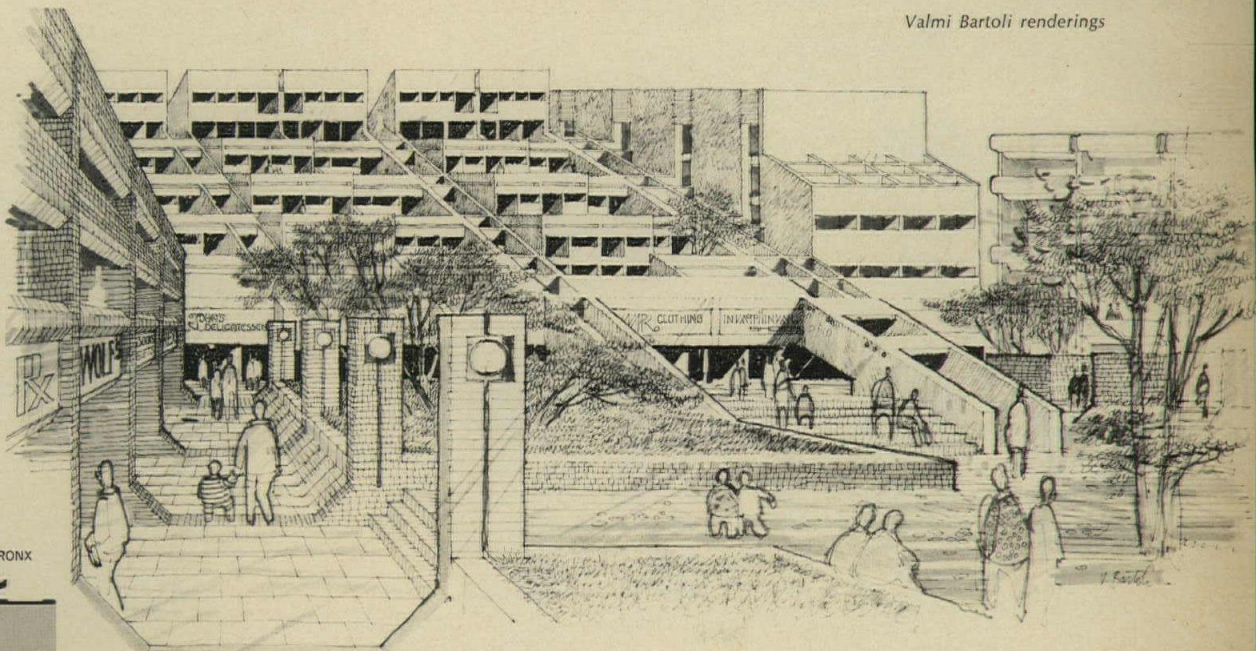
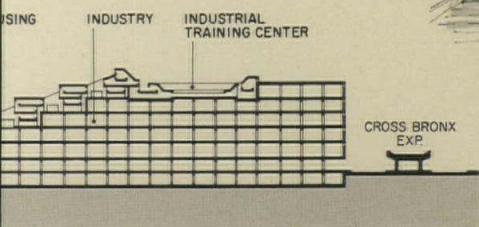
NORTH-SOUTH SECTION THROUGH NORTHERN SITE

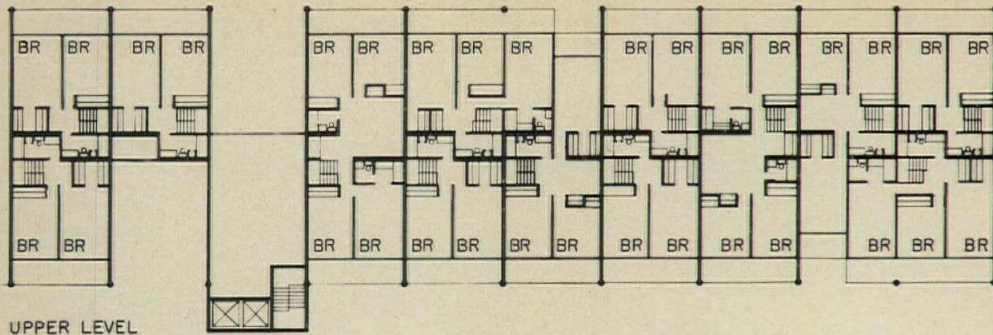
The main plaza development, to the west of the railroad cut, serves as a type of town square, a hub of activity for both parts of the community—both old and new, and both residential and industrial. Existing grade levels at the site will allow for two or three levels of parking, as well as service access from both truck and train traffic, beneath new construction, without significant additional excavation. Both residential and commercial uses surround plaza. The plaza is also designed as a forecourt and pedestrian traffic overpass to Claremont Park, hopefully encouraging greater community use of this facility.



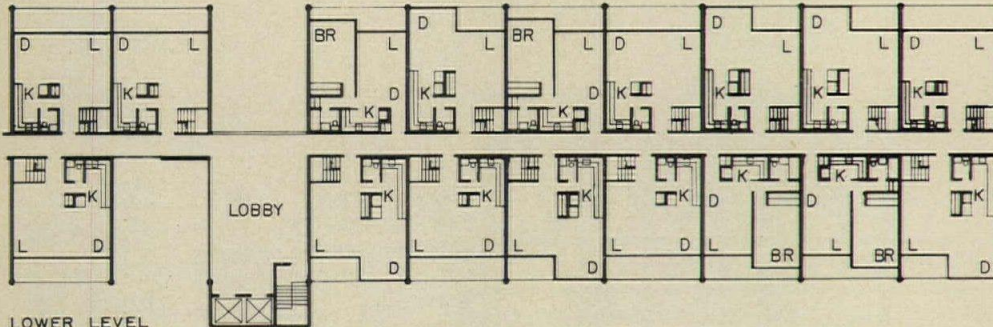
Valmi Bartoli renderings

The architects feel that residential and industrial functions, both of which are necessary to the vitality of the northern site, can co-exist successfully in the same development if properly organized. This is achieved in a plan where new housing, open to the sunlight and views, is built atop industry. Industry acts as a buffer between residential areas and street and rail traffic, while at the same time it is in the best location to be serviced efficiently by the latter.

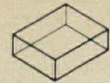




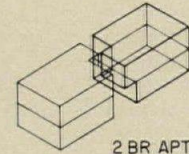
UPPER LEVEL



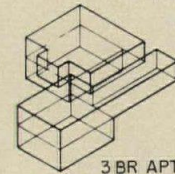
LOWER LEVEL



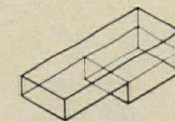
1 BR APT.



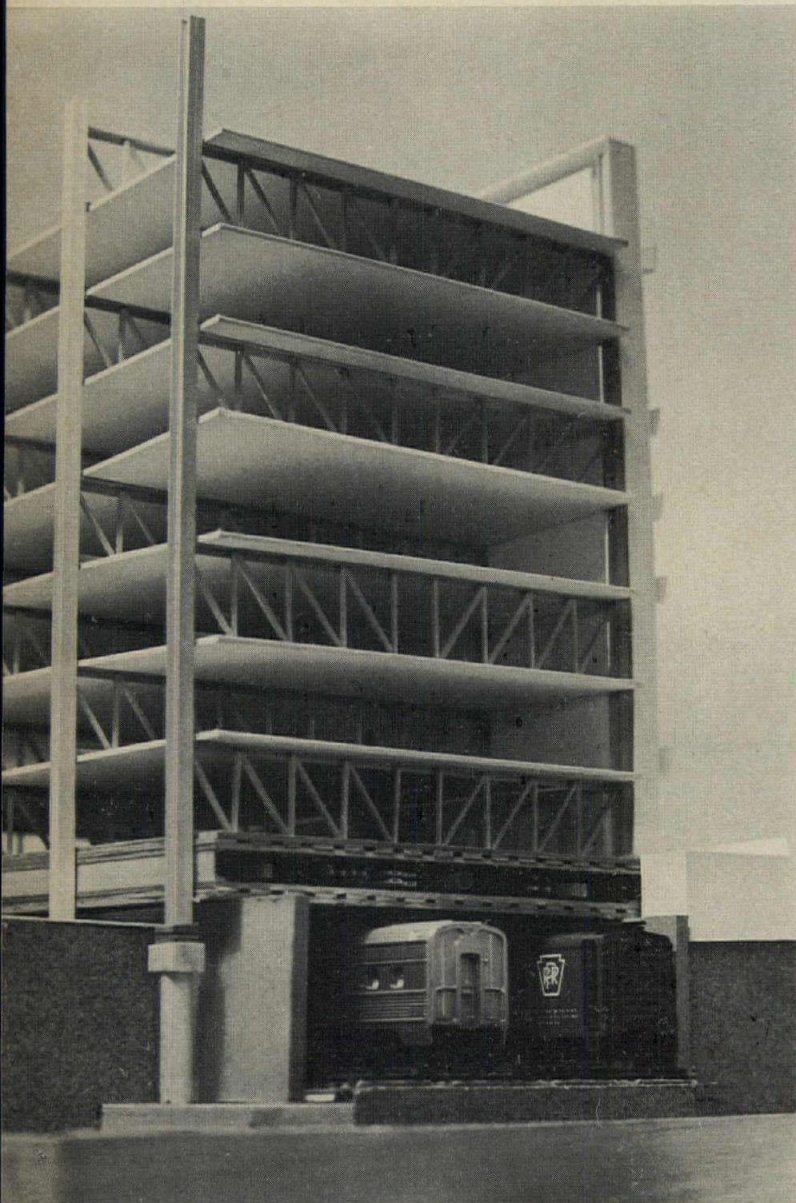
2 BR APT.



3 BR APT.

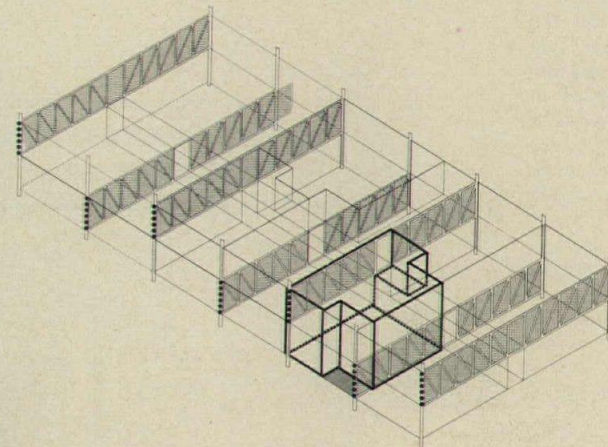


4 BR APT.



Housing construction over the tracks is accomplished by one-story-high steel trusses that span the width of the tracks at each floor (for a total height of ten stories) and are staggered vertically, a system that the architects' studies showed to be cheaper than either conventional reinforced concrete systems or steel girdered framing. Floors span continuously between alternate top and bottom of trusses. Trusses are connected to steel columns on piles driven on either side of the railroad cut. Towers containing elevators and fire stairs are built off the cut. This system is appropriate here because of the limited width of

the tracks—only fifty-five feet. The system conforms to all existing building code requirements. The building's skin would be light-weight, insulated prefabricated metal panels and glass (rendering, page 129). The savings inherent in this lightweight, easy to erect, structural frame help to offset the costs of building over the railroad right of way. Additional savings might be realized by utilizing rail transportation to deliver building materials directly to the site. Substantial savings are in the cost of air rights as opposed to improved land costs—including cost of land, buildings, demolition, relocation.



VERNACULAR ARCHITECTURE: A MODERN VIEW

SHELTER AND SOCIETY, edited by Paul Oliver
Praeger Publishers, Inc., 111 Fourth Ave., New
York, N.Y. 10003, 1969, 164 pp., \$12.50.

In *Shelter and Society: Studies in Vernacular Architecture*, editor Paul Oliver, Arts and History department head at the Architectural Association and folk-musicologist/author (*The Birth of the Blues*), has enlisted the studies, many of them scholarly, unfortunately, some of them not at all, of a wide gamut of contributors, mostly professors at the A.A., but also including an anthropologist and a Colorado "drop-out", in studies varying from traditional Norwegian "laft" (timber) farmhouses to still-existent village compounds in Ghana.

Three of the serious studies (there are eleven) dealing with traditional Oriental houses (of Baghdad, Old Delhi and Ra-

jastan) heap blame, apparently deservedly, upon those new housing forms now being proposed by the resettlement and development planners of those regions. Apropos such efforts, comments editor Oliver:

Today, Western-trained architects are cheerfully prepared to embark with confidence, on the resettlement of diverse ethnic groups and cultures in many countries. They are planning, replanning, rehousing, rehabilitating people throughout the world in buildings often alien to the way of life and in totally inappropriate structures for the climate and environment. . . . So far, however, there is little evidence that these new developments have contributed to the sum of human happiness. They may have added to the quality of "architecture," "they have added little to the quality of life."

Beyond this, editor Oliver asks in his introduction: "Have vernacular studies

anything to reveal to us of our approach to building within our own society?" Aren't there qualities in those Greek Island villages, say, to which so many tourists retreat more and more often from a seemingly increasingly fragmented world, to which intuitively we all respond—to human scale, to human dimension, human values, human society? The answer of course must be yes.

In one of the best of the scholarly essays we are treated by Amos Rapoport, architect-author, to a comparative examination of the Navaho hogan and the Hopi pueblo, that perfect architectural expression of a civilization, characterized by a life every part of which, as anthropologists such as Edward Sapir have long known—economic, social, religious and esthetic—is bound together into an all-embracing, significant whole, and holds a lesson for all. —A.B.

PAUL RUDOLPH IN MID-CAREER: AN ASSESSMENT

THE ARCHITECTURE OF PAUL RUDOLPH, introduction by Sibyl Moholy-Nagy.

Praeger Publishers, Inc., 111 Fourth Ave., New York, N.Y. 10003. 239 pp., \$20.00.

This book has beautiful photographs and drawings and is handsomely designed and well printed as are most books which display the work of leading architects. Unlike most publications of this type however, this collection of Paul Rudolph's complete work to date is more than a self-serving, lavishly produced picture book. It is eminently readable and often fascinating particularly when Rudolph himself chooses to be his own devastating critic. Of a Florida guest house he writes: "(it is) an exercise in structural exhibitionism"; of the arts center at Wellesley College he states: "the interior spatial sequence is unclear, overly detailed and in many cases badly proportioned"; the forestry building at Yale fails to the degree that "the relationship between the enclosed nature of the various rooms and the pavilion-like character of the building is unresolved"; a high school in Florida has some good things to be said for it "but alas, it has no sense of the particular uniqueness of the Florida climate."

These negative comments have been culled from short and succinct critiques by

Rudolph for each of the projects shown. He discusses the nature of each problem, his attitude and approach to it, the reasons for what he did and where he believes himself to have failed if he so believes.

His wit and clarity, however, are more than merely self-deprecating. Of a big government client he says: "Too many specialists and bureaucrats with overlapping authority created a vacuum which left the way open for an idea"; on the matter of collaboration he states: "Let's face it, architects were never meant to design together. . . . Architecture is a personal effort, and the fewer people coming between you and your work the better. . . . If an architect cares enough and practices architecture as an art, then he must initiate design—he must create rather than make judgments"; about his role as a department head at Yale: "It was up to me to hold everything together. I am very proud that I never had a major argument although I had brought the most diverse representatives of architectural ideas together at one time or another. I tried to be two different people—one unopinionated, interested in other's ideas, helpful to their work, trying to relate everything to the general forces at play—but knowing all the time that this is the opposite of the life of a creative architect." He repudiates his professional education succinctly: "Action has out-

stripped theory. The last decade has thrown a glaring light on the omissions, thinness, paucity of ideas, naivete with regard to symbols, lack of creativeness, and expressiveness of architectural philosophy as it developed during the twenties." He has strong words for architects who have abandoned their role as form givers on an urban scale: "Civic architecture is the glaring lack of the twentieth century. I believe that architects have abdicated from the traditional role they have played in large-scale three-dimensional design. We mistakenly thought the planners were civic designers. They are not and never will be, for their heart is elsewhere."

Sibyl Moholy-Nagy is at her very best in her generous introduction in which she places Rudolph in an historical context, focuses on his break with Mies, Gropius and the International Style and assesses his role as one of the great architects of the age. She subjects each of his major works to serious critical evaluation, which paradoxically is enhanced by her friendship with him. Little known and highly pertinent facts of his early life and education are combined with illuminating personal insights to give her essay qualities of warmth and depth which are almost totally absent from today's architectural writing. A good book with much to teach. —M.S.

ADDITIONAL BOOKS

LANDMARKS OF DUTCHESS COUNTY, 1683-1867: Architecture Worth Saving in New York State. Dutchess County Planning Board. The third in a laudable series of paperback county-by-county surveys of historic architecture in New York State (Onondaga, 1964; Rensselaer, 1965). It is also the most handsome of the three, in terms of the books' design, and the buildings themselves. Over ninety buildings and monuments are presented in excellent photographs and a well-ordered arrangement (by historical period, and then by type), and accompanied by individual short texts, four guide maps and related background material.

New York: New York State Council on the Arts, 1969. 242 pp., \$4.00.

THE MODERN CHAIR: 1850 TO TODAY. Gilbert Frey. Ninety-five examples of modern chair design, a high proportion of which are architect-designed. There are full-page line drawings of each example by Sylvia Frey, and construction diagrams in many cases. The text is divided into historical and biographical notes. As the cover copy admits, it is harder to pick from more recent designs, and there is much room for discussion as to the author's choices in the last third of the book. Each reader will have his particular favorites, which he may find missing. Far less understandable is the absence of an example from the many fine designs of Hans Wegner.

New York: Architectural Book Publishing Co., 1970. 187 pp. \$14.75.

PLAY AND INTERPLAY: A Manifesto for New Design in Urban Recreational Environment. M. Paul Friedberg with Ellen Perry Berkeley. *As Friedberg so aptly puts it, the common practice today is to consider recreation in terms of left-over time and left-over spaces. After reading this book, it is not possible to feel complacent about the left-overs that urban America serves up in the name of play.*

But this is not a book that just tears down. It establishes a whole new way of looking at the complicated business of play, and shows that its very complexity and its different meaning for people of different ages is a source of new ideas.

As at time when many persons feel that cities are no longer any good or any fun, this readable volume carries a message of hopefulness and commitment.

From the introduction by Thomas P. F. Hoving.

New York: The Macmillan Co., 1970. 192 pp., \$10.00.

THE STRUCTURE OF PRAISE: A Design Study—Architecture for Religion in New England from the Seventeenth Century to

the Present. Arthur Mazmanian. The author, a sculptor, graphic artist and design teacher, is responsible for the design, photographs and text of this beautiful book. The photographs are excellent, the layout superbly integrated, witty and imaginative. The introduction and a short essay give Mr. Mazmanian's reasons how and why the historic religious structures he has chosen to show us have something to tell the contemporary architect. Examples of recent work are included. The author sees a greater continuity between some of these and their fore-runners than many readers may find credit-



able, but it is fitting that this book should appear just as religious architecture has made a full circle and is now returning to the multi-purpose structures typical of the earliest period with its meetinghouses. A book of greater sensitivity or uniqueness is difficult to imagine.

Boston: Beacon Press, 1970. 151 plates. \$19.95.

THE LONG-LEGGED HOUSE. Wendell Berry. Wendell Berry combines a position on the faculty at the University of Kentucky with two other roles—those of farmer and writer (two novels and three collections of poems). This moving collection of essays is also a sum of several things: citizenship, ecology, man's inner life: the war in Vietnam; the despoiling of large sections of one of our most beautiful states by the ruthless ravages of stripmining; what it is like to rebuild and live in an abandoned home, itself built piece by piece by an ancestor. The latter is hardly an experience common to very many of us, but Berry's book is built nevertheless on a universal theme: the house is a symbol for life. Moved from its original site by a flooding of the Kentucky River, the author accepted the river's choice of a new site for the house, built new foundations, cleaned it out, moved back in. *The Long-Legged House* is the story of the re-integration of the intellectual and the natural, of man and his world, in one man's life. The reader shares Berry's very personal thoughts and experiences, is grateful for his finely honed ability to communicate them, and cannot be but enriched by them.

New York: Harcourt, Brace and World, Inc., 1969. 213 pp. \$5.95.

ARCHITECTURE IN BRITAIN TODAY. Michael Webb. Contrary to what most Americans must think, there are other excellent living English architects besides James Stirling. The author however has wisely organized his selections by geography not individuals. One hundred and forty buildings planned or completed in the last decade are surveyed, culminating in an extremely fine example of a planning and new addition commission—Robert Maguire and Keith Murray's work for St. Mary's Abbey at West Malling, Kent. Half of the buildings are from the London area; the rest represent a broad geographical representation. Sixteen examples of individual houses are included.

Levittown, N.Y.: Transatlantic Arts, Inc. (in England: Country Life Books) 1969. 254 pp. \$15.00.

LE CORBUSIER: LAST WORKS. Edited by Willy Boesiger. The contents of this the eighth and final volume of a uniformly handsome series contains few if any commissions that have not already been published, but much of the material on them is new, and the coverage extensive, particularly with regard to Chandigarh. There are also a large number of colored plates, and new biographical material.

New York: Praeger Publishers, 1970. 208 pp. \$25.00.

EXTERIOR DESIGN IN ARCHITECTURE. Yoshinobu Ashihara. A Japanese architect is likely to be particularly knowledgeable about exterior order and design, and with this attribute Ashihara possesses a long list of professional credits and distinctions and extensive travel experience. Using mainly examples from his own country, and including examples of his own distinguished work, the author has created a basic handbook.

New York: Van Nostrand Reinhold Company, 1970. 143 pp. \$12.50.

THE WORK OF G. RIETVELD, ARCHITECT. Theodore M. Brown. This is a historical and critical study of the leading 20th-century Dutch artist and architect's total production, ranging from small lamps and typography to large industrial buildings and housing. His work is presented in a text illustrated by almost 200 photographs, several of them, of the famous Schroeder House (which gets a full chapter), in color.

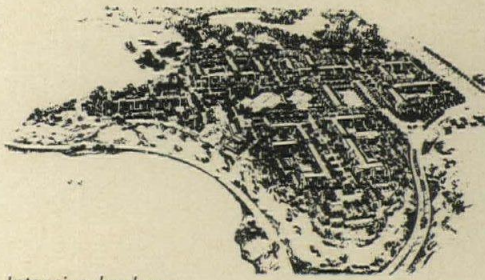
Cambridge: The MIT Press, 1970. 198 pp. \$12.50.

THE NECESSARY MONUMENT: Its Future in the Civilized City. Theo Crosby. Arguing along Jungian lines in pop-art language, "positively astonishing and marvellous, super-real," the English architect, designer and environmentalist pleads with great persuasiveness for a place in our cities for the illogical, irrational object or building, not as an obstruction, but integrated non-bulldozer fashion into a growing urban fabric.

Greenwich: New York Graphic Society, 1970. 128 pp. \$8.50.

—D. D. L.

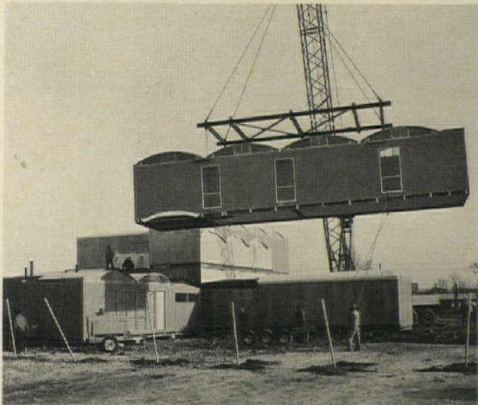
APARTMENTS



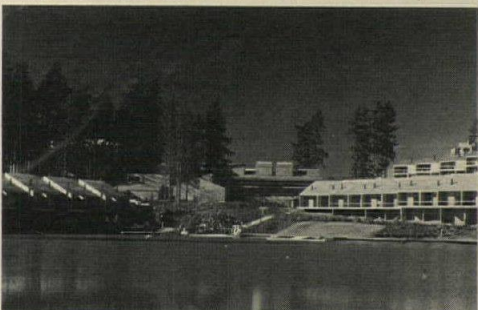
Intensive land use



A place for children



Components and modules



Water to make open space



Architects as developers

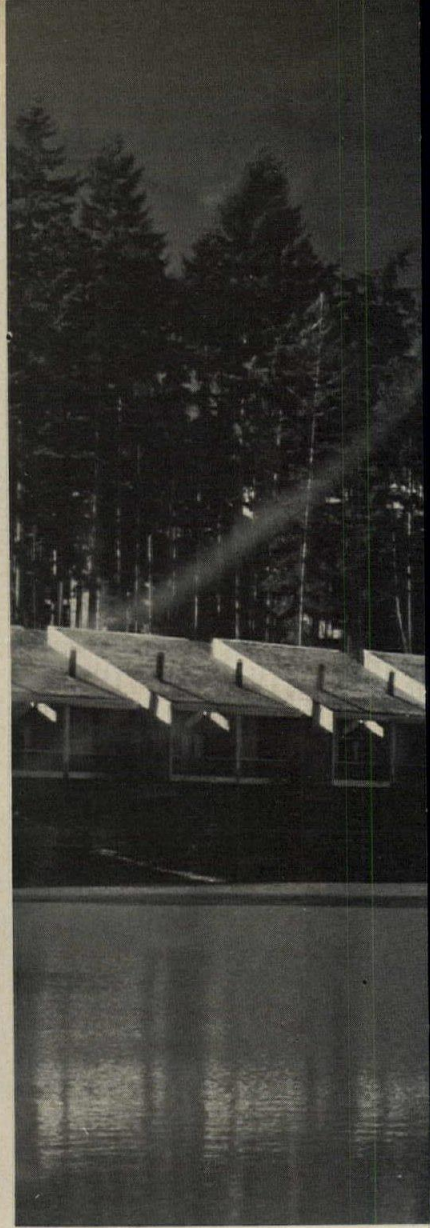
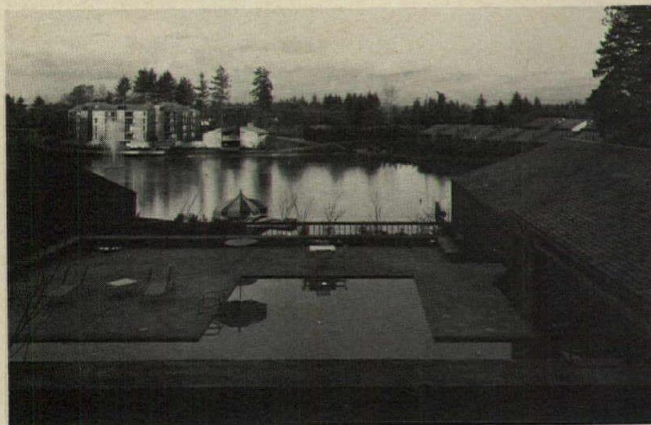
More units on less land, less land and higher costs, more demand and need for quality environment: that sums up the apartment picture today. That apartment projects—small, medium and large—are increasing in number and single-family homes are a diminishing percentage in building statistics is a phenomenon in this land of the individual home. Blame or praise—depending on your point of view—population pressures, a changing population mix (a greater percentage of under-30- and over-60-year-olds), high costs—of money, land and construction—and the increasing scarcity of easy-to-build-on land, close to population and employment centers: there will clearly be an increasing number of multi-family living places in the years to come (see also editorial, page 9). This means that *how* these places are developed, what quality for living is designed into them, is of the greatest importance. The high cost of land means that more units will have to be placed on it to return the warranted investment in the project. Can higher density of land use and quality of environment be achieved at the same time? Some developers think so—and are showing, with their architects and consultants, that these are not incompatible goals. The projects shown on the following pages make the point that, however small or large the site, however dense the land use, amenity and quality—even in low-income housing—are possible if there is will, initiative, ingenuity and imaginative design. The combination of a courageous and innovative developer and an able architect can and does produce pace-setting results. New planning techniques such as the planned unit development (Sixty-01, on pages 144-147, is an example of this) and old technologies such as prefabrication need better acceptance and fewer restraints if they are to make the contributions of which they are capable. Paul Rudolph's project (pages 148-149) using "mobile home" units on a large scale for the first time, is an example of the initiative and stamina required to use even a known technology in the face of political opposition. The opportunity for architects to participate as developers, allowable under old A.I.A. standards but seldom used, may be more accepted now that the new standards are more permissive on this point. The story of a small (12-man) office's partnership in a development group, and of what they have been able to accomplish on a very small urban site in a large city in designing for low-income families (pages 150-151) should be an especial encouragement to other architects interested in this extension of their practice and in helping to solve the great need in this sector of housing. Just emerging trends for apartment developments—in addition to the well-established trend toward "total environment living," pioneered by developer Gerson Bakar in projects like Park Newport (pages 154-156) and in earlier Woodlake and Northpoint (RECORD, January 1966 and September 1969)—suggest that better provisions for children are the next step. Since most apartment complexes so far are for adults, this represents quite a change. Already one builder in Southern California has included both a nursery school and a day care center in a new complex, and other builders have projects on the boards which will include similar or other provisions for children. Only a few, like Shadowood (pages 152-153), presently provide protected, easily supervised play areas. But all these are middle-income projects. If new ways of practice and new approaches to design—as MLTW/Turnbull Associates suggest on page 150—have to be devised to provide needed low-income housing—this is the architect's responsibility. So be it.

—Elisabeth K. Thompson

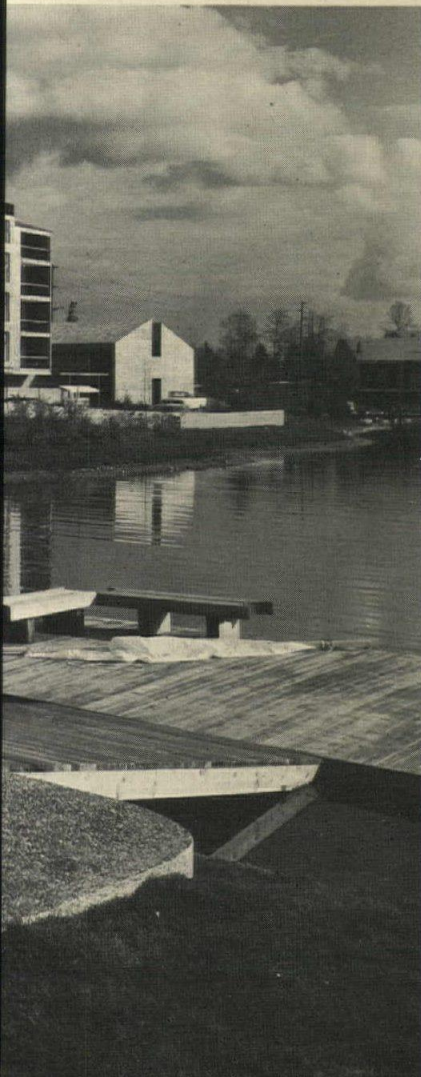
**A planned unit development
where water is open space
and recreation resource**

Water has become a major feature in large-scale housing, for both visual and recreational reasons and for its value in solving difficult site problems. At Sixty-01 near Seattle, problems were serious enough to have prevented use of the land: a one-time hog farm, it consisted largely of peat bogs. Regraded, with the bogs converted to lakes, and the lakes usable for flood control, irrigation and drainage as well as for recreation and enhancement, the site became highly desirable property. But its location in a single-family zone of the city of Redmond, Washington made it ineligible for multi-family development until the architects for this project suggested—and assisted in drafting—a Planned Unit Development ordinance not unlike that in their own city, Newport Beach, California. Sixty-01 received the first permit under the ordinance. The development was originally conceived by the developer as a garden apartment community, with a density of 10 units per gross acre. This density proved impossible to achieve using only one- and two-story units, without changing the site and losing most of the existing trees. The feasibility of the project was assured, however, by the introduction of a number of four-story multi-family apartment buildings. The siting of these buildings, with their bold uncompromising forms, gives strength to the whole area, and punctuates the rhythmic pattern of the smaller townhouse apartment units. Each of the three lakes is a focus for a section of the project and each section represents a development phase: 351 of the projected 770 units, and the Village Hall (recreation and community center) have been completed; the second phase (more of all kinds of units) is under construction; the third phase—the commercial center—is in design.

SIXTY-01, Redmond, Washington. Developer: *W-O Company*. Architects: *Riley & Bissell*; engineers: *Hugh Goldsmith & Associates*; landscape architects: *John Lantzius & Associates*; contractor: *North Coast Construction*.



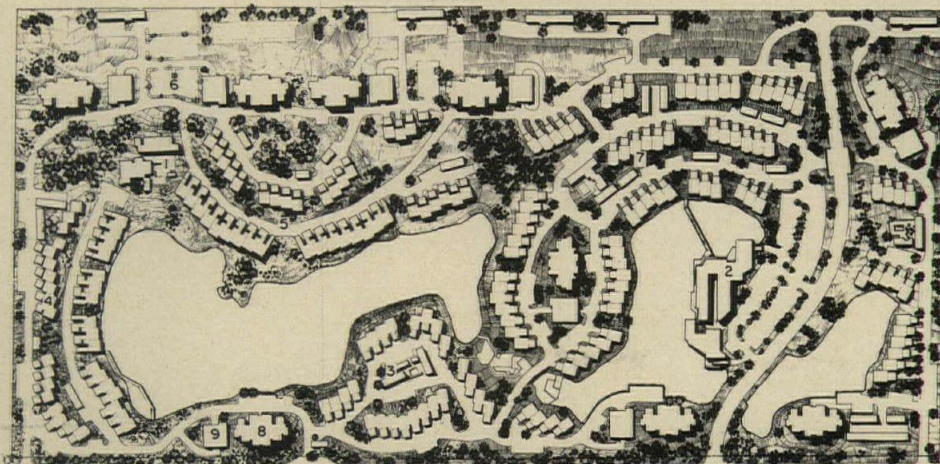
James K. M. Cheng photos

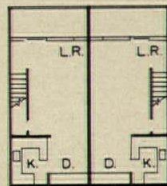
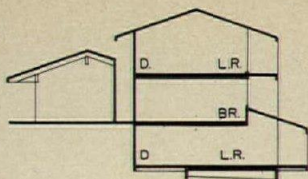
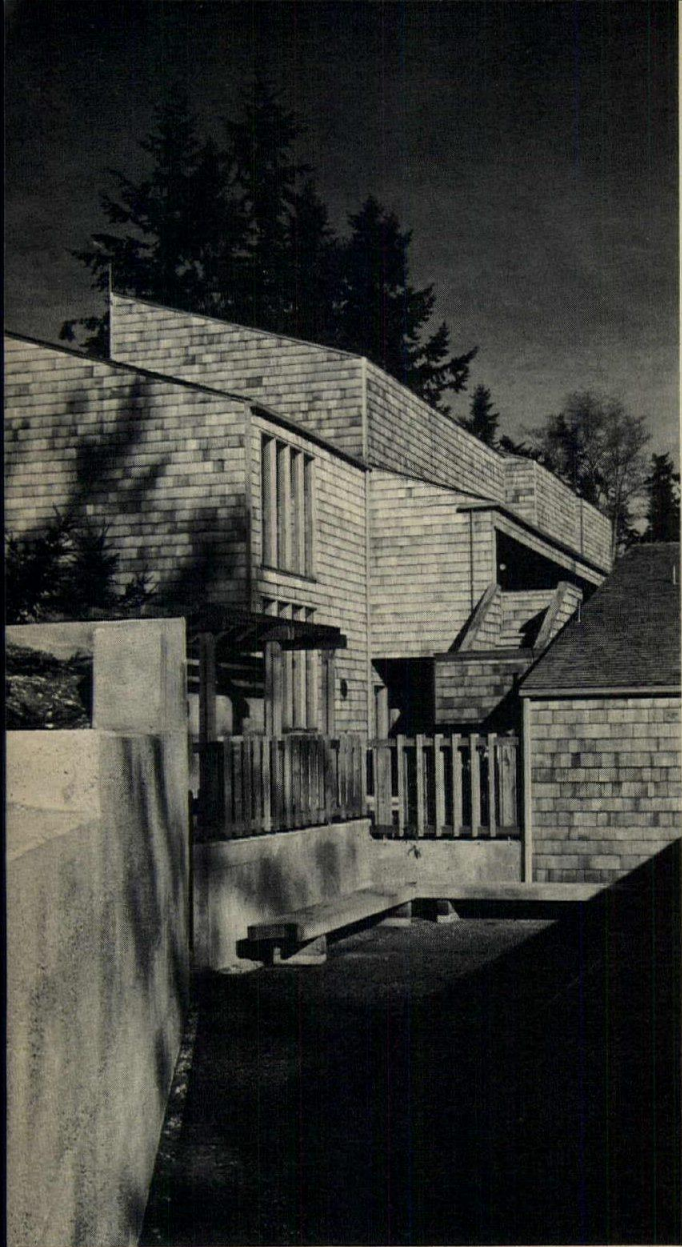


The master plan uses the three man-made lakes as focal points, and breaks the units—townhouse and elevator buildings—into village-sized groups, each with its own kind of unit “mix”. The community center (above, center) is centered on the largest of the lakes, and the commercial center is located between the two small lakes on a road permitting public use of the shops and restaurants while maintaining the security of Sixty-01 residents.

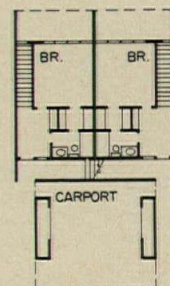


1. Village Hall & Spa
2. Commercial center
3. Townhouses (2 BR), Bachelor flats
4. Apartments (1 & 2 BR), townhouses (1 & 2 BR), penthouses (1 BR)
5. Townhouses (1 & 2 BR), penthouses (1 BR)
6. Apartments (1 & 2 BR), penthouses (3 BR)
7. Typical townhouse cluster
8. Typical elevator apartments
9. Typical parking garage

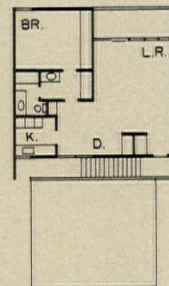




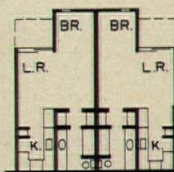
TOWNHOUSE
UPPER LEVEL



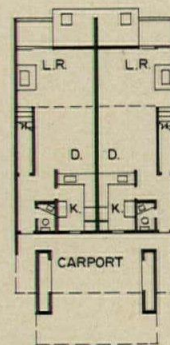
TOWNHOUSE
LOWER LEVEL



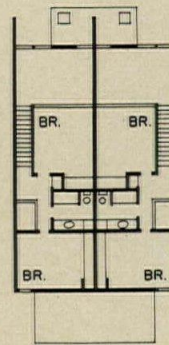
APARTMENT
THIRD LEVEL



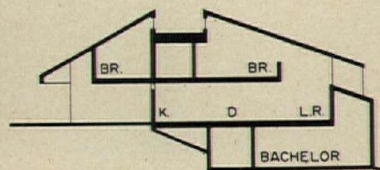
BACHELOR
GROUND LEVEL



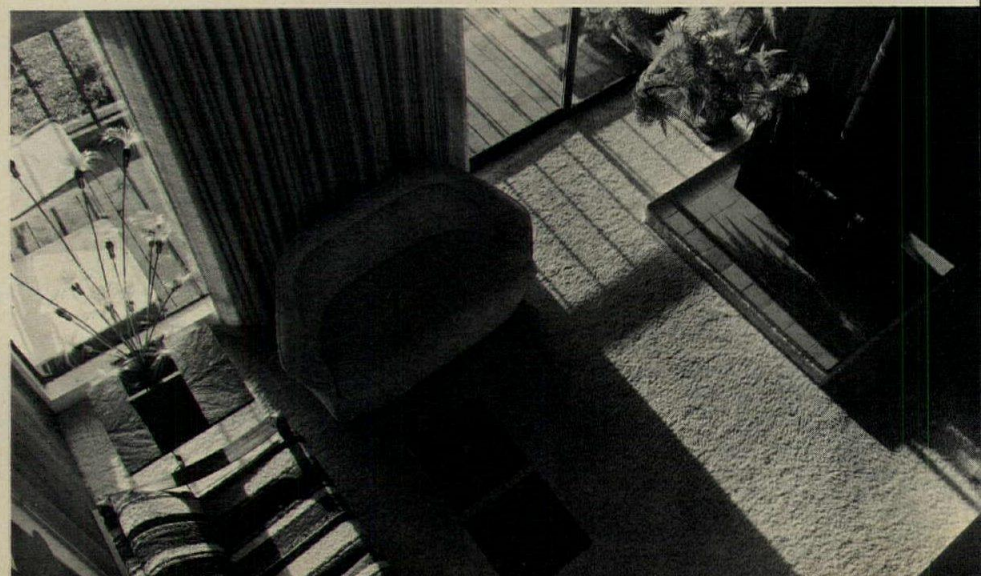
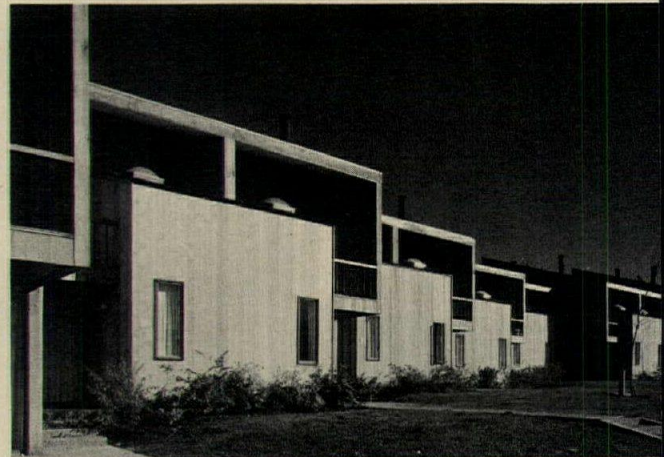
TOWNHOUSE
LOWER LEVEL



TOWNHOUSE
UPPER LEVEL

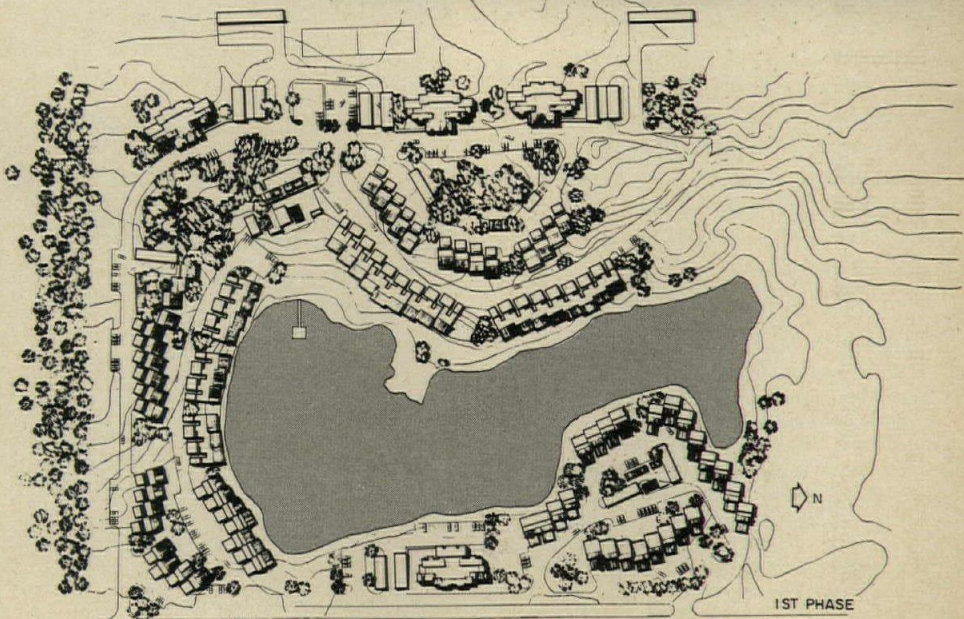
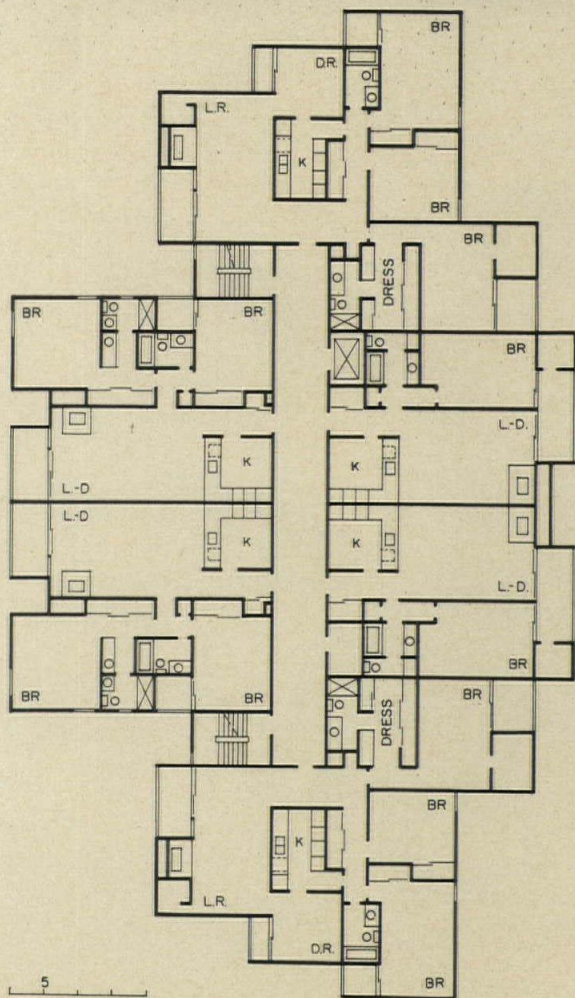
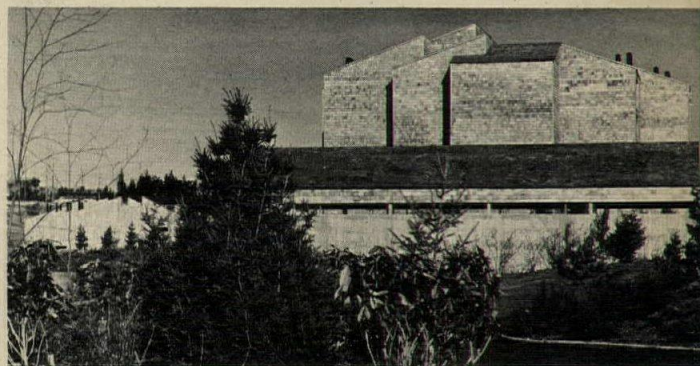


Four basic plans were devised for flexibility in suiting the units to the varied topography of the site, which ranges from almost level to almost steep, and to permit different densities as well as different mixes of units. Townhouse units are offset from each other to follow the curving roads. Each unit has a view of the water. Top left, stairs lead to a penthouse apartment; below, one type of townhouse, with bachelor apartment. Right and below, interiors of same townhouse.





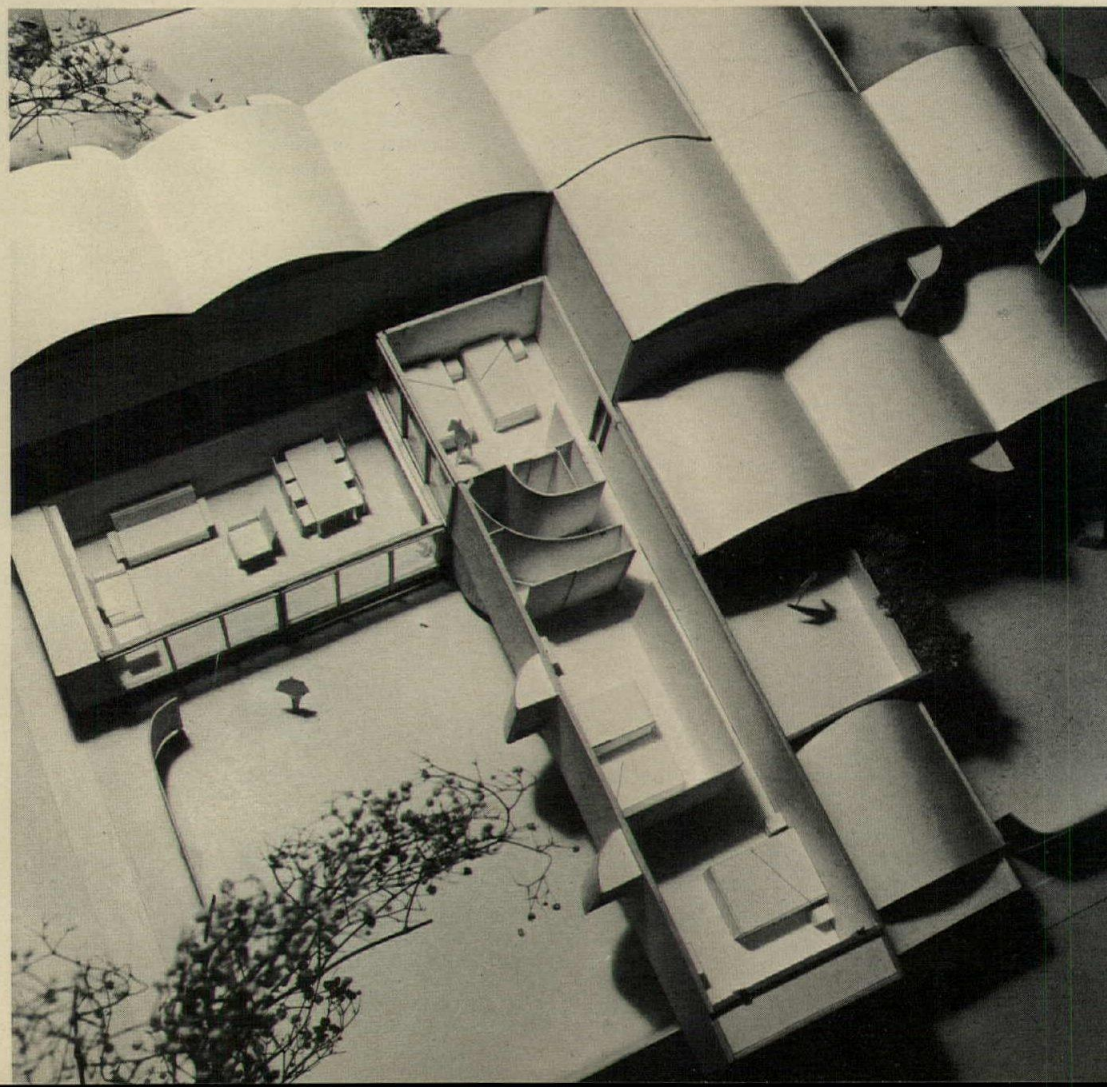
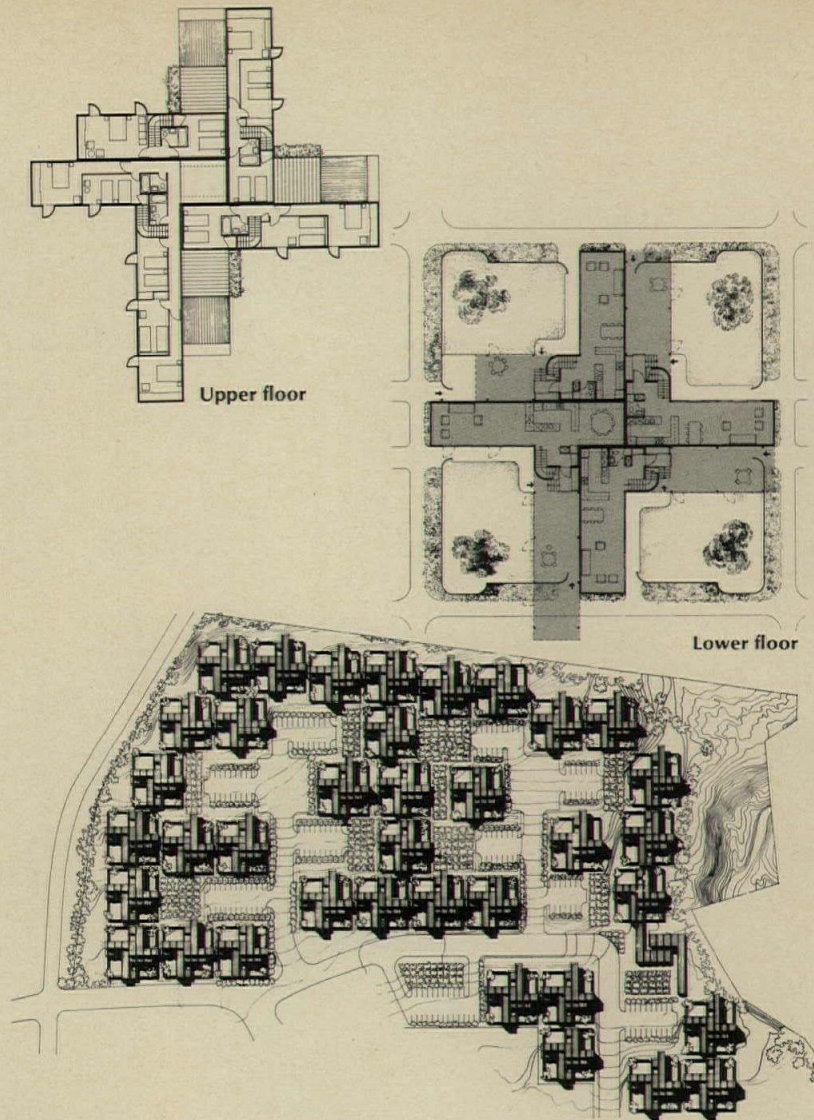
Cedar siding is used on some units, cedar shingles on others, including the four-story elevator apartment buildings (shown above and right) and the adjoining parking garage buildings. The first phase of the project, now completed, includes 351 units and the recreation facilities.

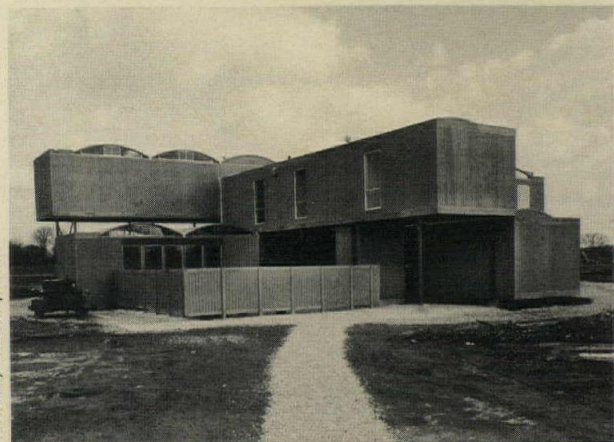
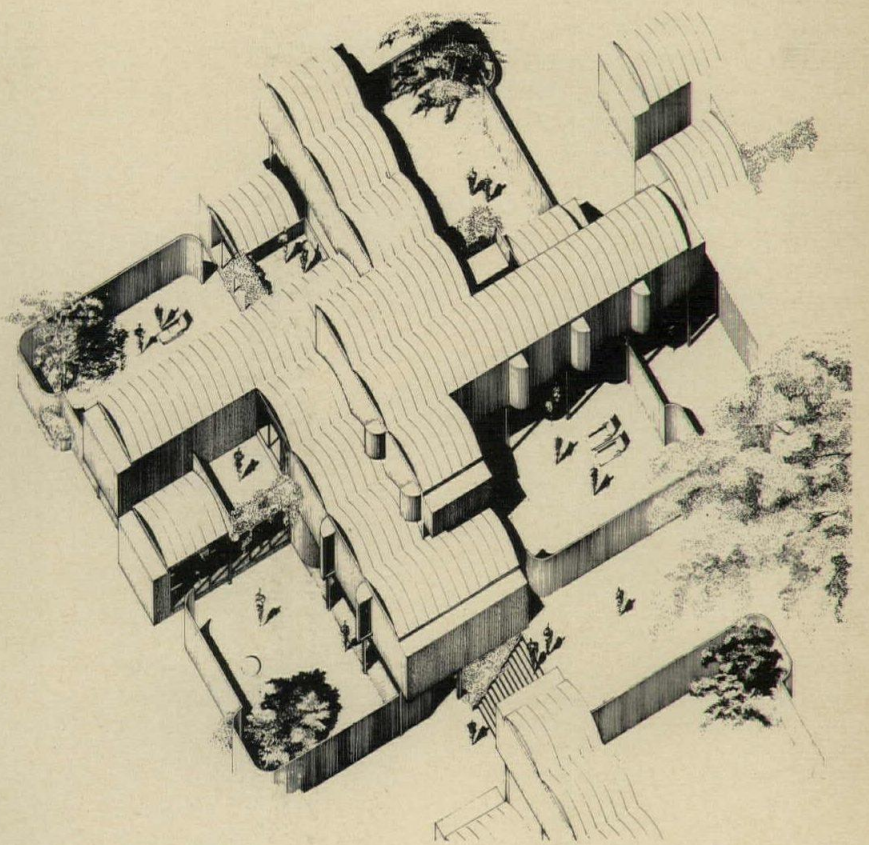
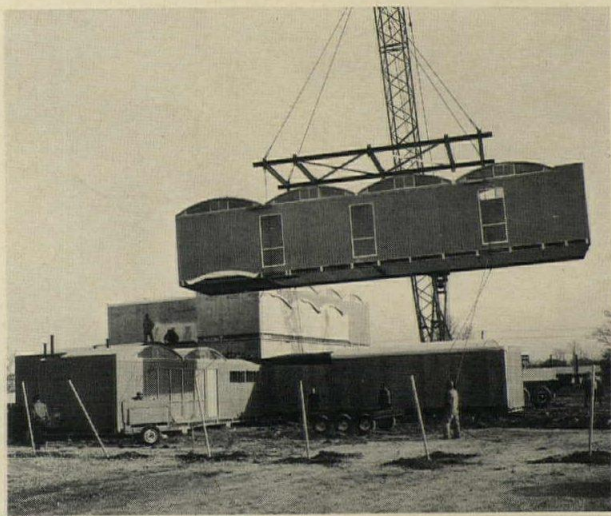
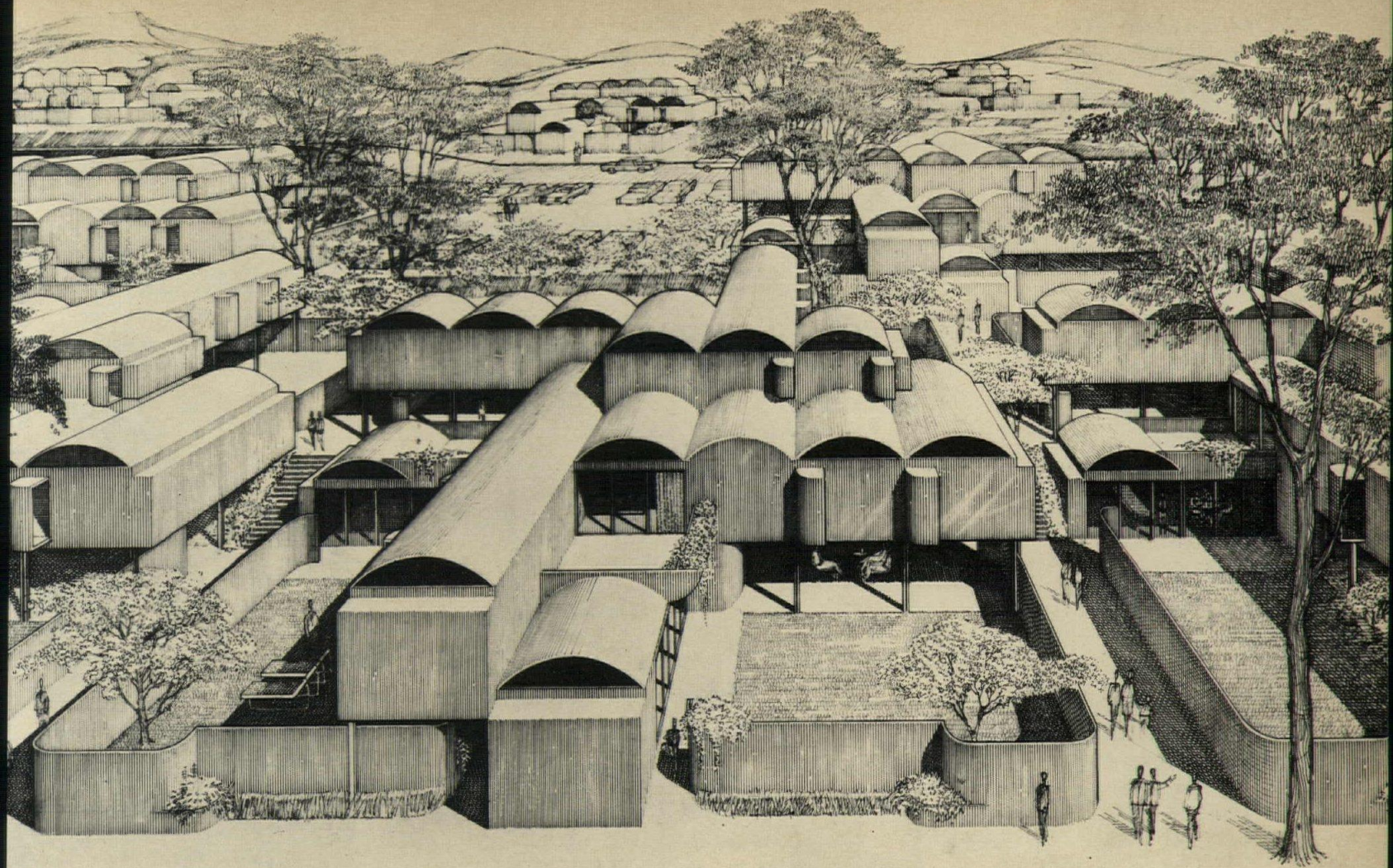


**Paul Rudolph's
"20th century brick"
used in cluster apartments**

On his fifth attempt to build a project with mobile home units—or, as Rudolph calls them, "20th century brick"—as the basic element for housing, 148 of an eventual 333 townhouse-apartments are being completed on a 15-acre site in New Haven, Connecticut. These unusual apartments, intended for sale as co-ops to the low- and moderate-income market, represent no technological breakthrough, says Rudolph, although they are the first buildings to make use of such prefab units. "But they are a political breakthrough," he says. "Unions and codes made it excessively difficult to get these units built. That they have been built is due to a great deal of finesse and to the extraordinary efforts of Mayor Richard S. Lee of New Haven." The apartment units are clustered in a pinwheel plan which gives each unit its own private outdoor space and its individual entrance, thus breaking the project into human scale. The collection of these units on a slightly rolling site has the effect of a large village, comprehensible in size and scale, the rhythm of the vaulted roofs providing a visually entertaining vista. Each apartment consists of two or three modules, depending on the number of bedrooms in the unit: from two to five are possible in this project. Modules are 12 feet wide and vary in length from 36 to 60 feet. Modules are of wood (except for a concrete firewall between each pair of units), sheathed on the exterior with vertical-grooved plywood. It was difficult to get what the developer wanted at his price, Rudolph reports. The figures (per square foot) are interesting: module cost: \$10.75, including freight; site work, \$5.90; miscellaneous, \$.43; total, \$17.16/sq. ft. Units will sell for \$16,000 (two-bedroom unit) up to \$29,000 (five bedrooms.)

ORIENTAL MASONIC GARDENS,
New Haven, Connecticut. Sponsor:
Oriental Housing Development Corporation. Architect: Paul Rudolph; engineers: Paul Gugliotta (structural); Hubbard, Lawless & Osborne (mechanical); Technical Planning Association (site); prime subcontractors: modules, Coastal Trailer Co.; site work, erection, G. H. Macomber Co.; contractor: Hercoform Marketing, Inc.



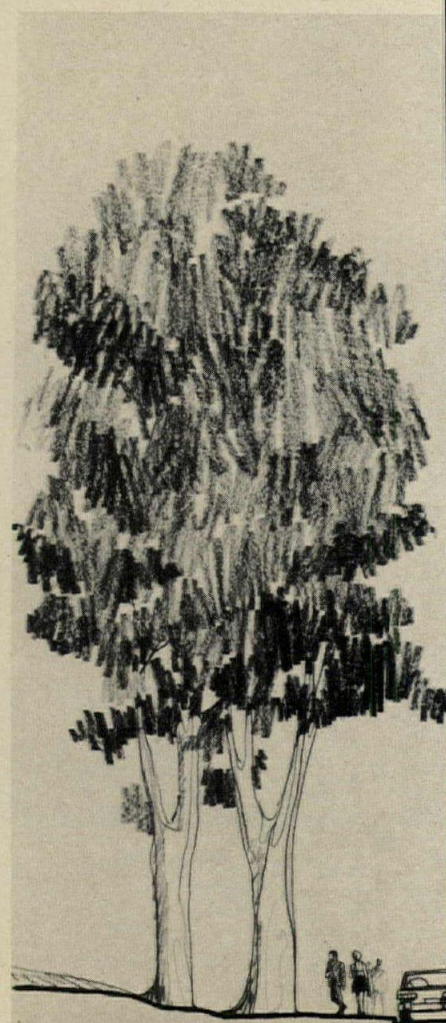
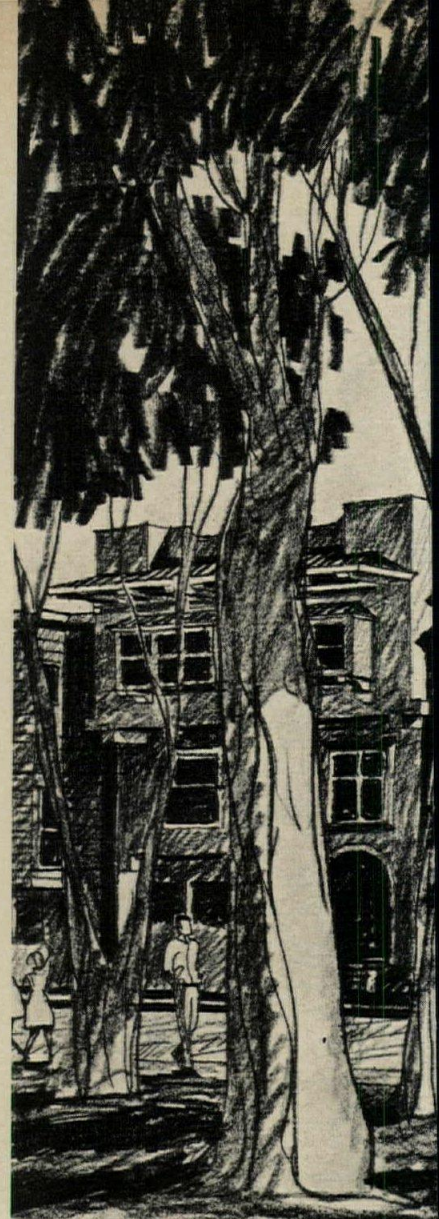
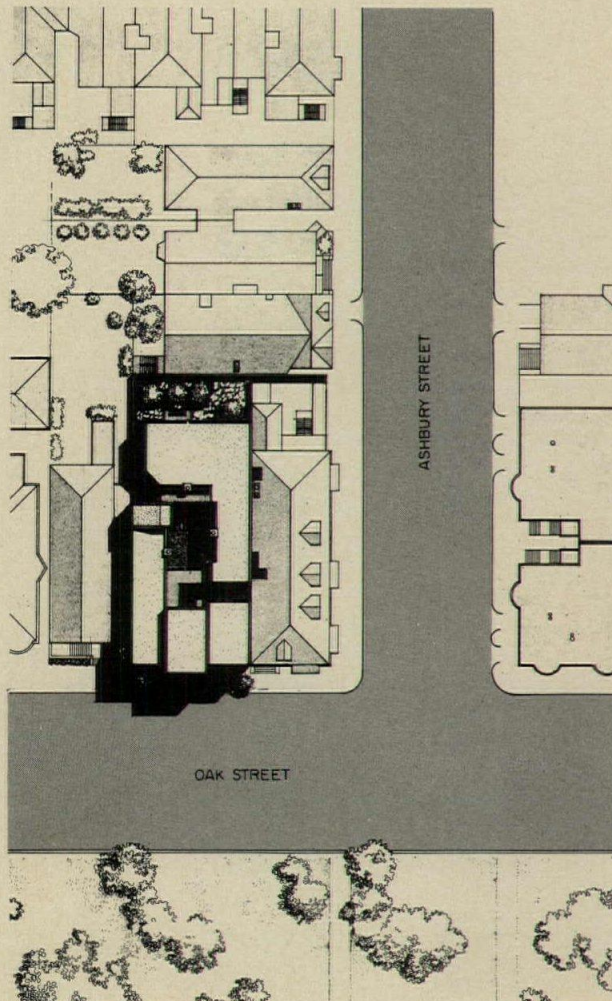
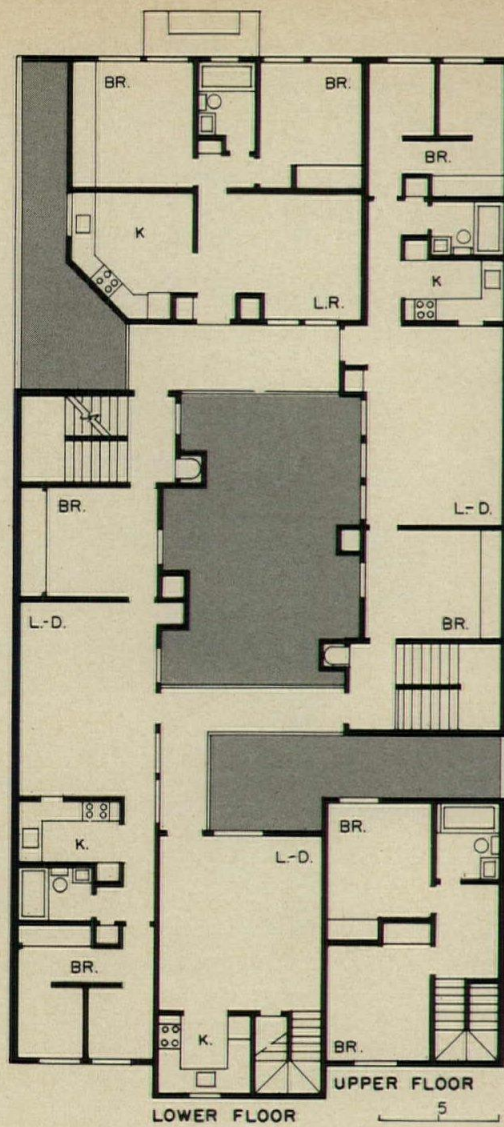


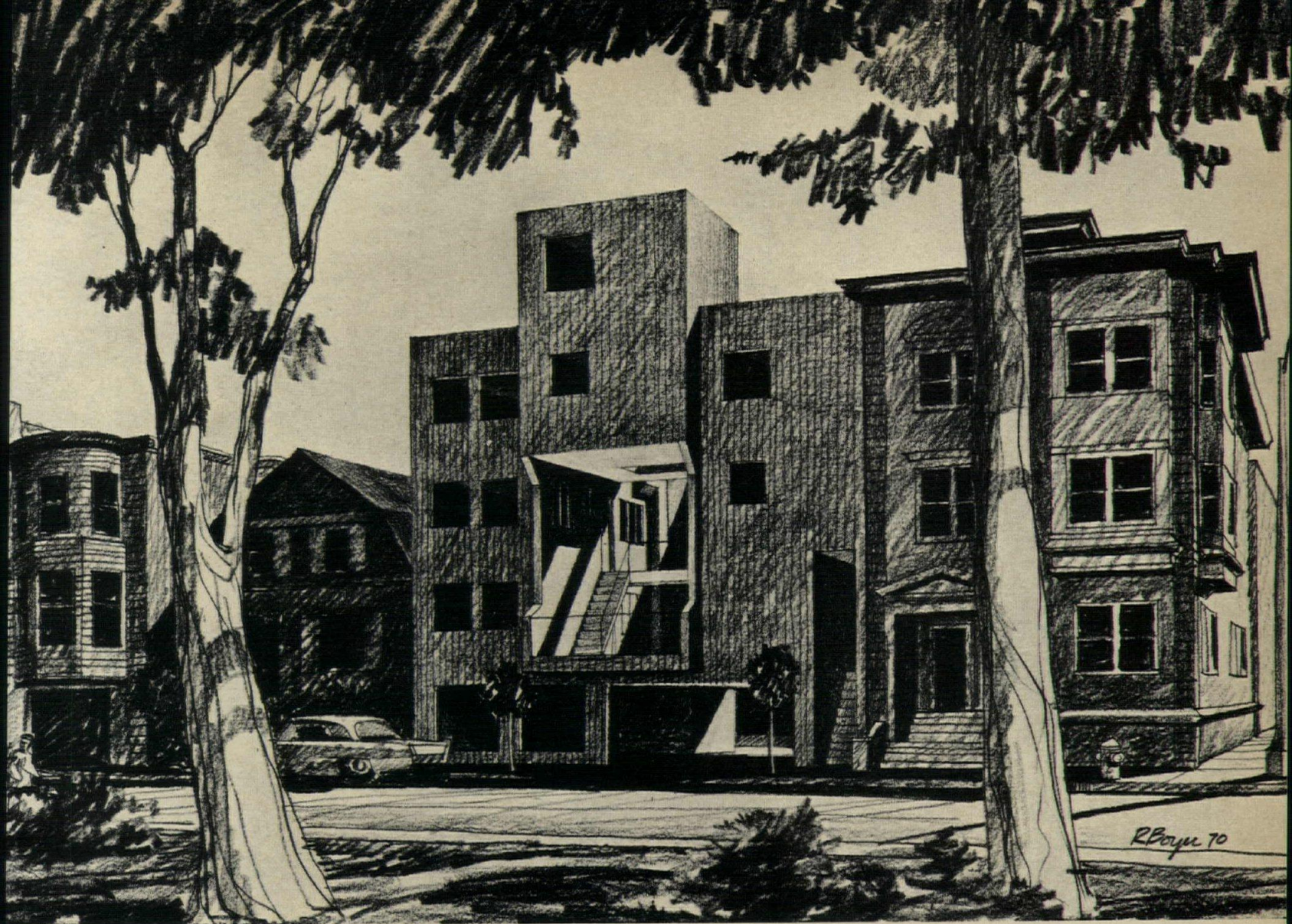
Northway Studio photos

**Architects as developers:
Low-income housing on an
urban site**

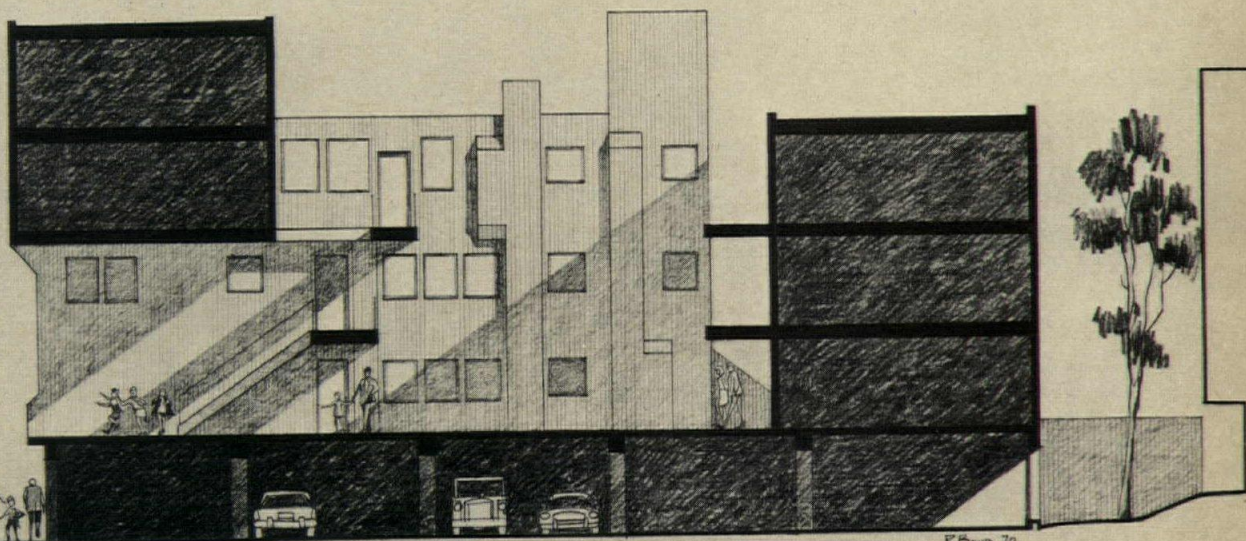
Designed to fit unobtrusively into the neighborhood, this 11-unit building suggests in no way what it is: public housing for low-income families. In size, scale and density, it will cause no visual or social disruption to the area. If it is a surprise that so refreshing a project should be done under the Turnkey Housing program, it is even more surprising that the prestigious firm of MLTW/Turnbull Associates is both architect and development partner. The architects were leaders in the project and assembled the development group. Initially they hoped only to be commissioned by the developers as architects for the project but soon decided to participate as partners. The development group then hired them as architects on a cost plus fee with guaranteed maximum. As developers they participated in all decisions, set the developers' criteria (instead of having to accept them ready-made), obtained invaluable input from other partners (each an expert), evaluated proposed sites in terms of actual Turnkey requirements and exercised unusual budget control through design. Within the "different vocabulary" of low-income housing design, in which "sizes are small, space is tight, less variety is possible and whimsy goes by the board," according to project manager Richard Garlinghouse, this project achieves a high degree of livability, an architectural statement that has strength, if not whimsy, and precision of form without monotony, as well as a novel solution for openness and outlook. City and HUD requirements in design were carefully respected, since the developers will offer the project to the San Francisco Housing Authority under Turnkey. If the Authority accepts the project, additional design criteria may be prescribed.

OAK STREET APARTMENTS, San Francisco. Developers: *HD Associates (McHugh Properties, Robert McHugh; Jackson Cortright; Lambert & Wells Construction Company, Inc., Arthur Lambert, Benjamin Wells; MLTW/Turnbull Associates, William Turnbull, Jr.)*. Architects: *MLTW/Turnbull Associates—Richard Garlinghouse, project manager; structural engineers: Forell & Elsesser—Nicholas Forell, partner in charge; contractor: Lambert & Wells Construction Co., Inc.*





The site is small—45 by 109 feet—but advantageously situated across the street from a narrow but pleasant park, called “the Panhandle” by San Franciscans because it is an extension from Golden Gate Park. The central unit is raised above the second floor to open up the court so that most units will have some outlook to the park. This also gives unexpected variety to the exterior form of the building. A break at the rear of the court opens up a view from the inside windows toward a fine old monkey tree near by. All units have two bedrooms, but with three types of units, there is considerable variety of plan. In some units one bedroom is designed to provide separate areas for two children, though spatially it is one area. The building has been designed for construction in wood frame with either a stucco or a wood board finish—whichever the housing authority feels will most appropriately fit into the neighborhood.



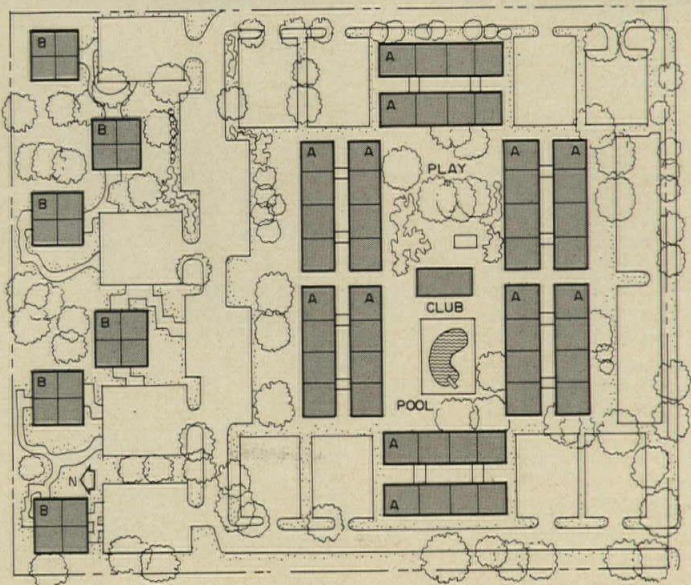
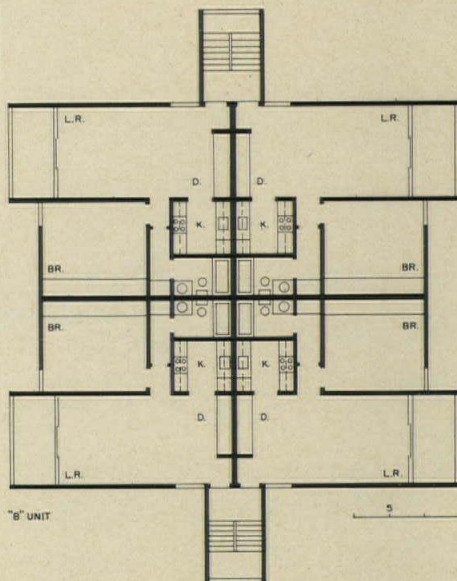
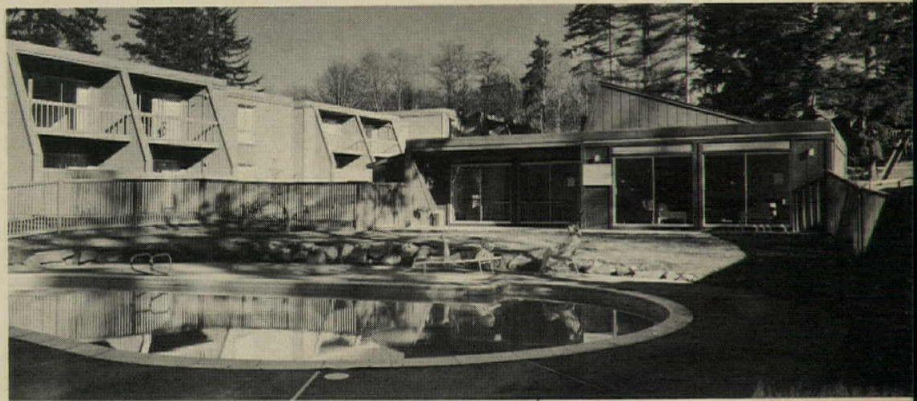
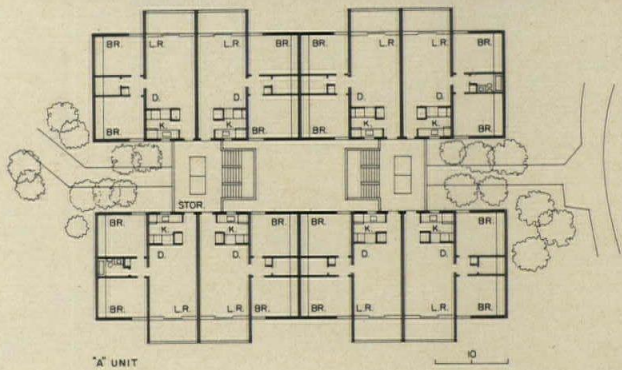
Few apartments program for children, but these were designed to attract families

Shadowwood is one of the rare examples of an apartment project designed to attract young families, with children as much as without, particularly in the low- and moderate-income group. It is the kind of housing and amenity at an agreeable rent that meets the need of a growing number of people. But it does this only by staying strictly within the developer's budget and by using a high density of units per acre. (The architects concede that the density is necessary for the economic feasibility of the project, but consider it "too high" from the social point of view.) This density—20 units per acre and a parking requirement of two cars per unit, make the available open space all the more important and its quality an essential in the success of the project. Fortunately the site was naturally endowed with some fine trees which were invaluable in minimizing the amount of landscaping needed to make the site attractive, although it was necessary to design around them. The apartments are in two groups: those for people with children (the two-to-three-bedroom units) are arranged around the central community space with its play area, clubhouse and pool, so that supervision of children playing outdoors is easier. One-bedroom units are in an area of less activity at one side of the site. To keep within the limited budget, only standard details and readily available materials were used. "The challenge for us," say the architects, "was the use of simple, conventional construction techniques which are easily understood and inexpensive in combination with careful site design. We put a lot into designing simple, warm, human-scaled forms." The buildings are of wood, with exteriors of rough-sawn plywood, stained, and battens. Roofs are flat.

SHADOWWOOD APARTMENTS, Lynnwood, Washington. Owner: *Environmental Properties*. Architects: *Zaikl/Miller*; landscape architect: *William Teufel*; contractor: *Environmental Properties*.



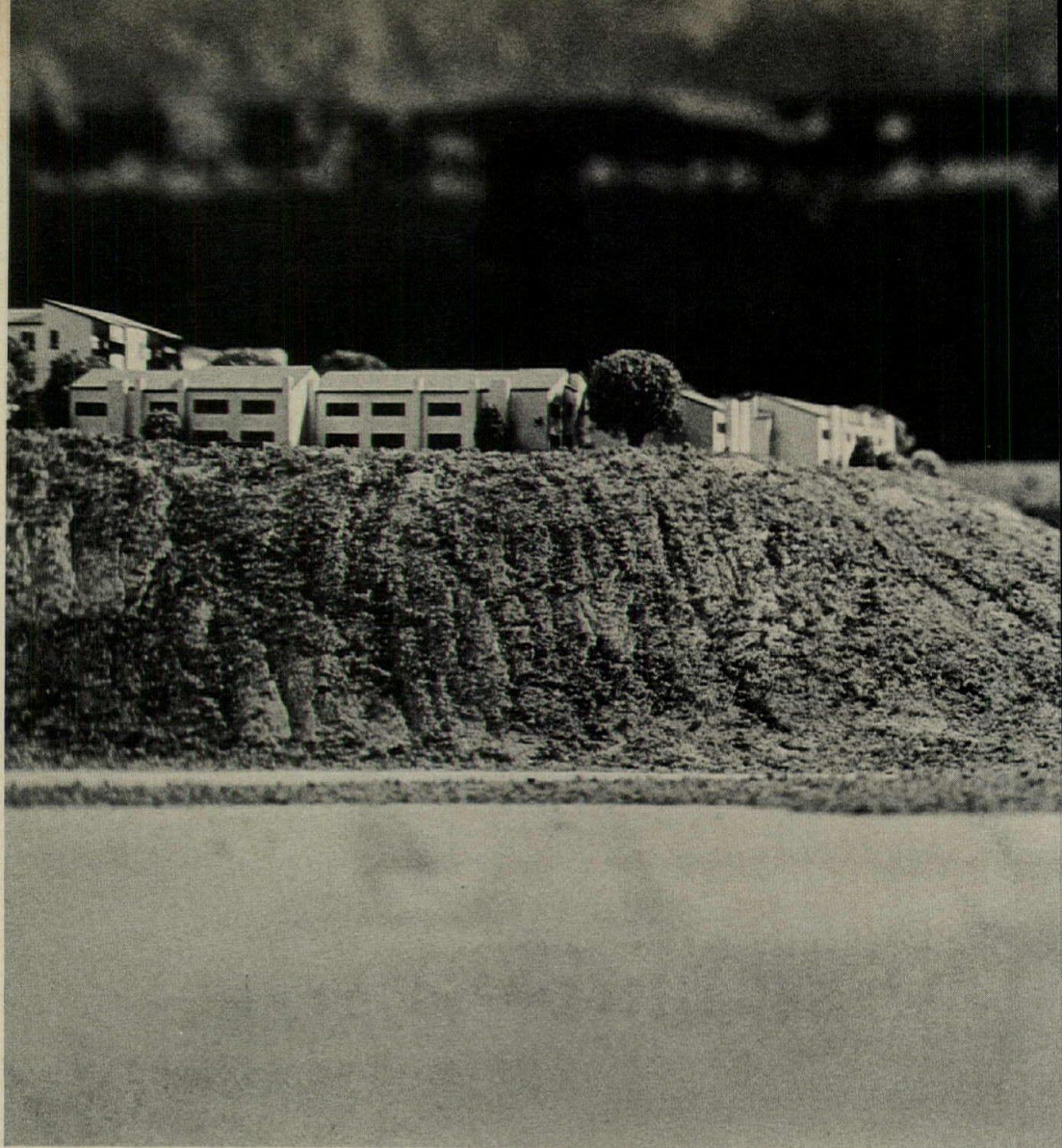
Art Hupy photos



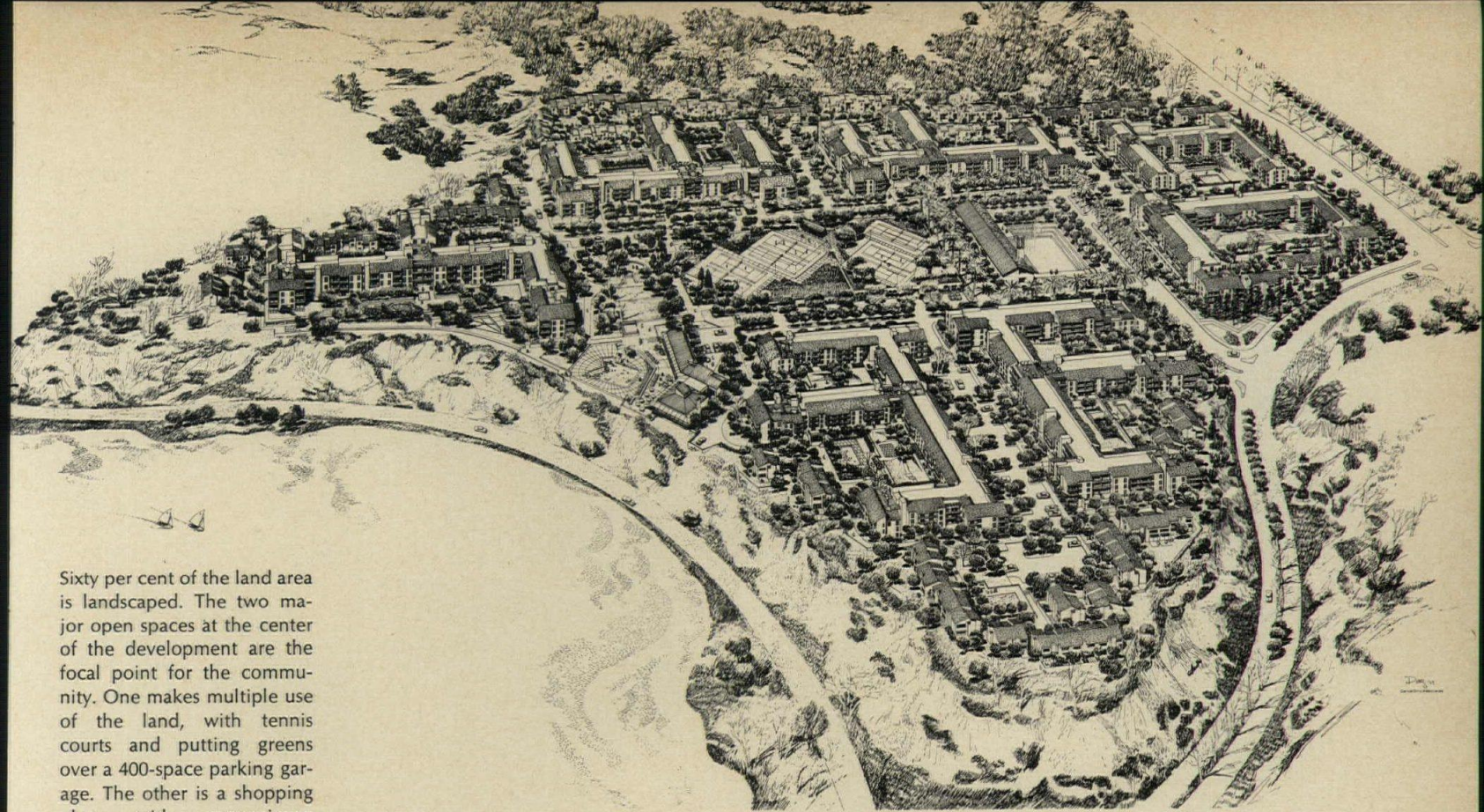
**Park Newport, a California
"total environment"
on a unique site**

Park Newport is more than a large-scale housing development; its developer calls it "total environment design." This newest of California's extraordinary living places manages, because of high standards of performance and insistence on a greater than usual amount of open space, to use the land on which it is being built to a surprising degree of density. But the density is only possible because of the fact that 60 per cent of the site is landscaped open space. The site, part of the famous Irvine Ranch, is a bluff above Newport Bay in Southern California, with views to the Pacific Ocean and over rolling meadowlands. Twelve of the site's 50 acres are unbuildable—but invaluable in their guarantee of open space on all sides—leaving 38 acres on which to put the project's 1302 units. Despite a density of 26.2 per gross acre, a sense of openness and human scale is achieved. Extensive landscaping, variety in kinds of open space, and low (though long) buildings make this density workable and livable. No building is higher than three stories; townhouses are two stories. There are two major open spaces at the center of the project; each apartment complex has its own swimming pool and landscaped court; and individual units have balconies on the upper floors, patios at ground level. The apartment buildings themselves are quite large—180 to 200 units in each—but their size is mitigated by providing more than the usual number of entrances, with only 40 units served by each. This reduces traffic per entry and eliminates long corridors inside buildings. Circulation through the development is minimal for cars, maximal for people, another way by which the project gains amenity.

PARK NEWPORT, Newport Beach, California. Developers: *Gerson Bakar & Associates*. Architects: *M. Arthur Gensler & Associates, Karl Treffinger & Associates*; consulting architects: *Wurster, Bernardi & Emmons (also architects for Spa)*; engineers: *David Alan Welisch (structural)*; *G. L. Gendler & Associates (mechanical)*; *Edward S. Shinn & Associates, Inc. (electrical)*; *Raub, Bein, Frost & Associates (civil)*; contractor: *M. J. Brock & Sons, Inc.*

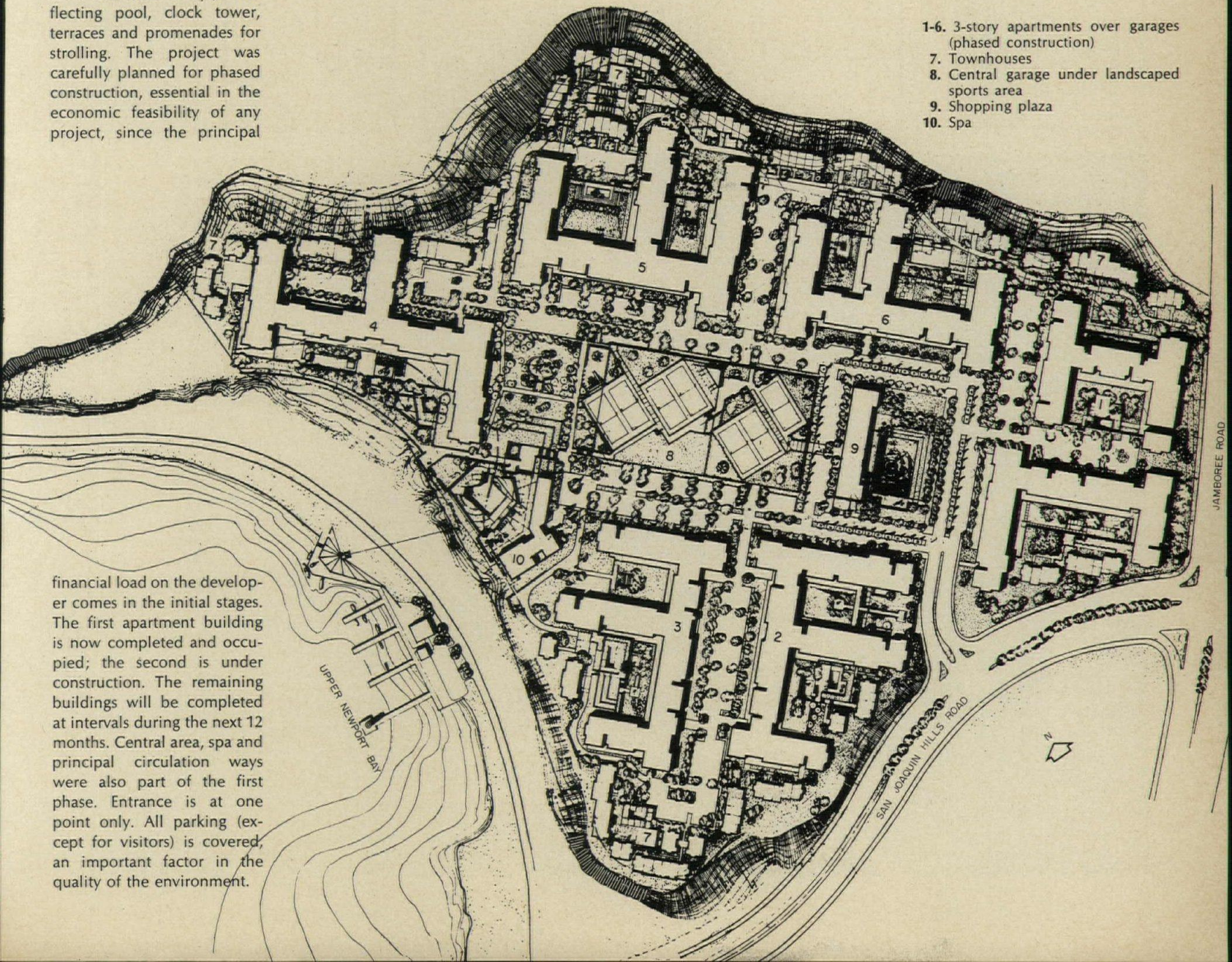


Gerald Ratto photos

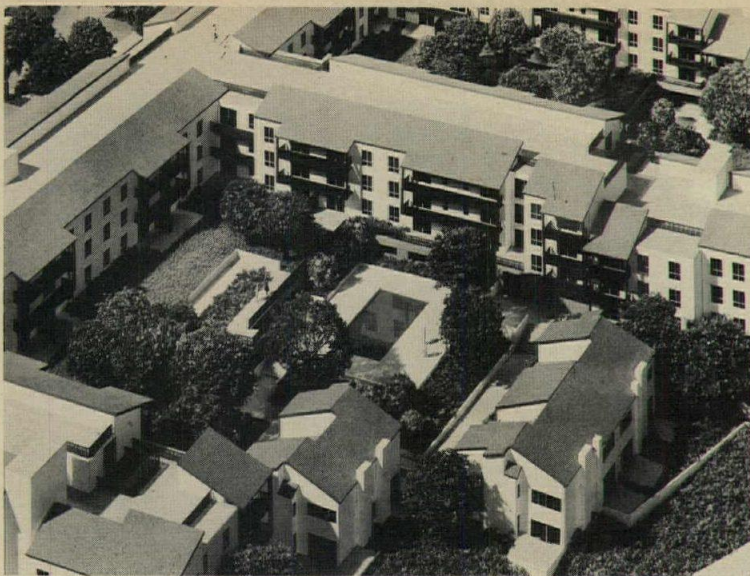


Sixty per cent of the land area is landscaped. The two major open spaces at the center of the development are the focal point for the community. One makes multiple use of the land, with tennis courts and putting greens over a 400-space parking garage. The other is a shopping plaza with convenience shops (supplementing the major regional shopping center a few miles away), a reflecting pool, clock tower, terraces and promenades for strolling. The project was carefully planned for phased construction, essential in the economic feasibility of any project, since the principal

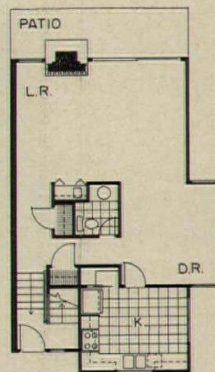
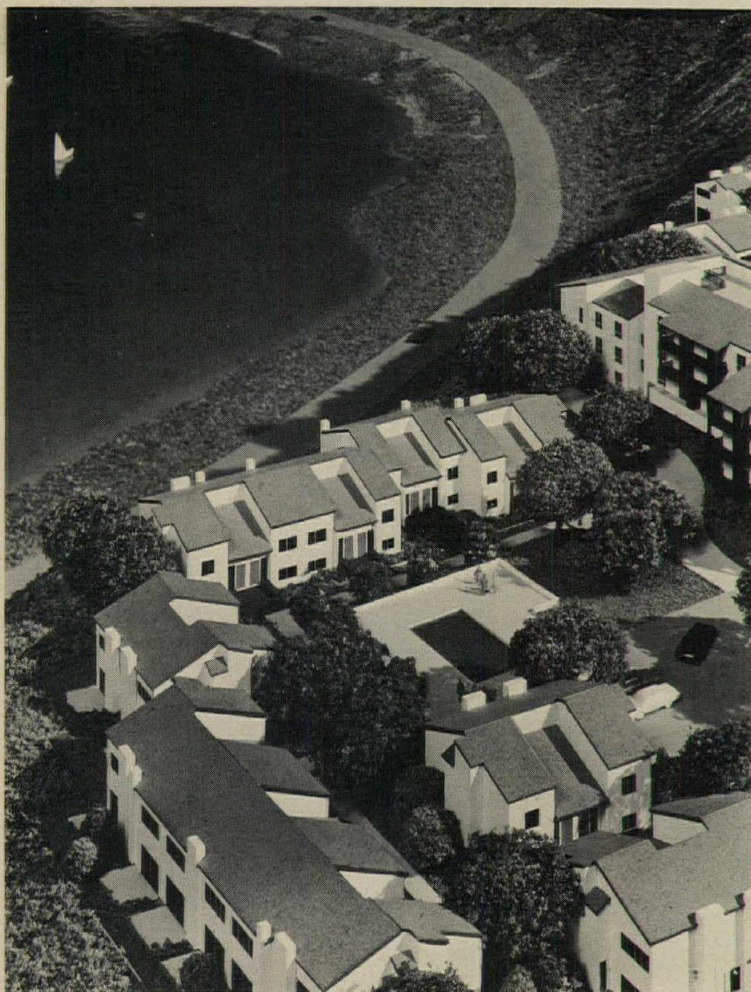
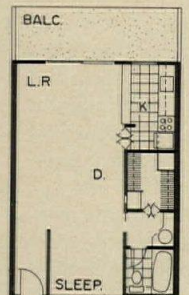
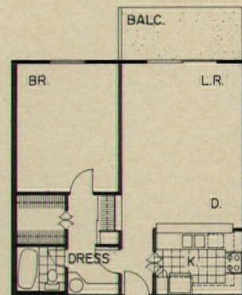
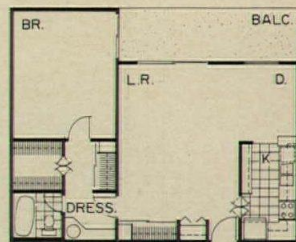
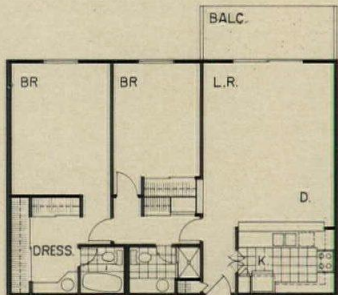
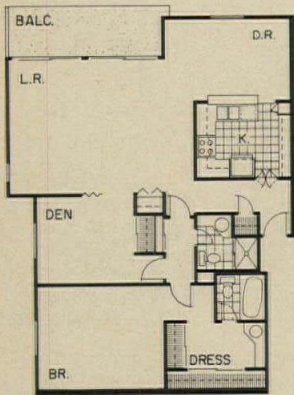
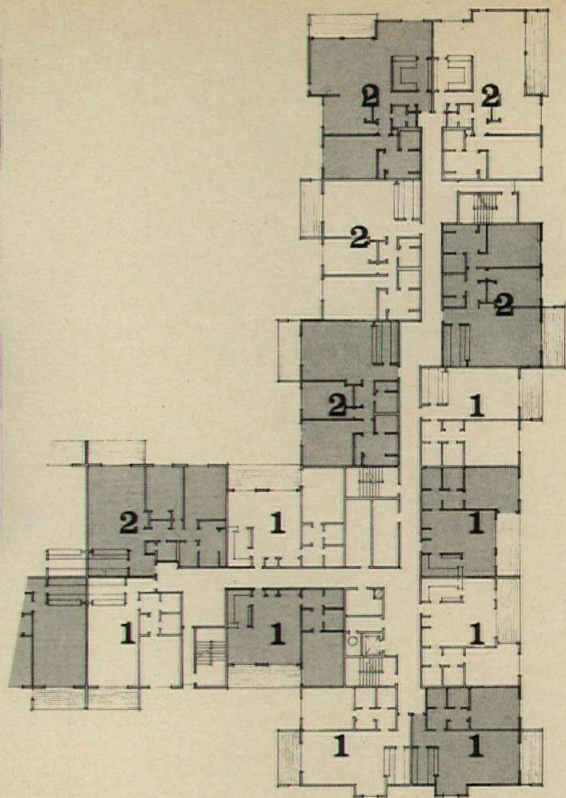
- 1-6. 3-story apartments over garages (phased construction)
- 7. Townhouses
- 8. Central garage under landscaped sports area
- 9. Shopping plaza
- 10. Spa



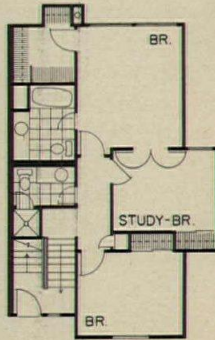
financial load on the developer comes in the initial stages. The first apartment building is now completed and occupied; the second is under construction. The remaining buildings will be completed at intervals during the next 12 months. Central area, spa and principal circulation ways were also part of the first phase. Entrance is at one point only. All parking (except for visitors) is covered, an important factor in the quality of the environment.



Gerald Ratto photos



FIRST FLOOR



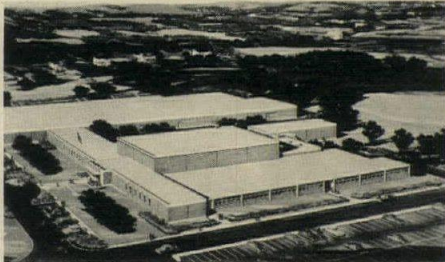
SECOND FLOOR



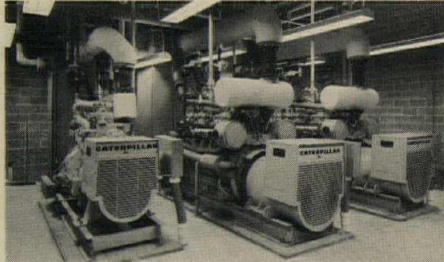
Construction economy was important, but few corners were cut. Instead, careful planning and ingenuity were used to obtain quality environment: assemblages of units in L-shaped elements (a typical assemblage is shown above) permit various "mixes" of apartment types, from the 513 sq. ft. efficiency unit to the 1221 sq. ft. two-bedroom unit. The variety in assemblage, use and orientation and the provision of balconies or patios for each unit, give a strongly articulated appearance to the three-story apartment buildings which vary in shape and form if not in actual design. Townhouses are of two sizes: 1221 sq. ft., with two bedrooms; 1518 sq. ft. with three bedrooms.

Round-the-clock vocational school runs on total energy

Summertime use and high internal heat gain called for air conditioning. Continuity of use was a factor in favor of a total energy system to serve all requirements for power.



\$2½ million facility designed by Roushey, Smith & Miller has generating capacity of 750 kilo-



watts. School operates 22 hours a day nine months a year; adult classes meet in summer.

Air conditioning was a necessity in the Wilkes-Barre West Side Area Vocational Technical School because the school was to be operated throughout the year, and because the school's advisory committee recommended a minimum lighting level of 100 footcandles. The fact that the school was to operate throughout the year and for at least 17 hours a day suggested that a total energy system might yield considerable economies.

Three energy plans were considered

- System A provided for purchased electrical energy at a cost of 1.1 cents per kwh, with no demand charge. Electric power, however, was not suitable for incinerators, heat-treating ovens, and laboratory burners. An emergency lighting system employing internal combustion engine drive would be required to supplement the purchased power in case of an outage. The investment cost for this conventional system was \$68,415, with an annual owning and operating cost of \$78,107.

- System B provided for on-site power generation using a gas total energy plant with 100 per cent fuel standby service, using liquid propane. 100-ampere electric service for emergency lighting was to be installed. Natural gas service was interruptible at 50 cents mcf. The first cost of this system was \$205,899, with an annual owning and operating cost of \$45,165.

- System C, generally referred to as the

"split energy system," provided for purchased electric power under a rate having inherent demand charges for general lighting and power. Emergency lighting was to be supplied by LP gas fueled engines. Heating of water and the energy for environmental control was provided by natural gas under the firm service institutional rate of 90 cents per mcf. Investment cost for this system was \$84,622, with an annual owning and operating cost of \$59,892.

Approved as the most economical for a 23-year bond issue was System B. System A was lower in first cost, but it was more expensive to operate. System B was higher in first cost, but lower in operating cost. It was found that savings in operating costs would amortize the additional investment for hardware in four years and eight months. System C was cheaper than System B in first cost, and lower than System A in operating cost, but higher energy rates for both gas and electricity would have required a longer pay-off period than for System B.

Purchased power for System A (all-electric) would have cost \$7,636 per month, based upon actual energy used, as metered over a period of six months in System B.

The average monthly fuel bill (including LP gas) for the gas total energy system (System B) during the first six months of operation was \$1,489.

A key to the low costs of operating the

gas total energy system is the use of energy that is normally "exhaust heat." Reciprocating engines that drive the electrical generators for the system use about one-third of their fuel's energy content to produce electricity. The other two-thirds are passed into both the jacket cooling water of each engine and the exhaust gases produced by each engine.

The heat recovery system that serves each engine extracts much of the heat from the jacket water before recirculating it to the engine, and also removes much of the heat from the exhaust gases. This heat is transferred to a system that provides "free" energy to two 253-ton absorption refrigeration machines and two storage heaters. A supplementary steam boiler can provide extra steam if the system's demands exceed the supply available from the heat recovery systems serving engine-generator sets.

Electrical supply system

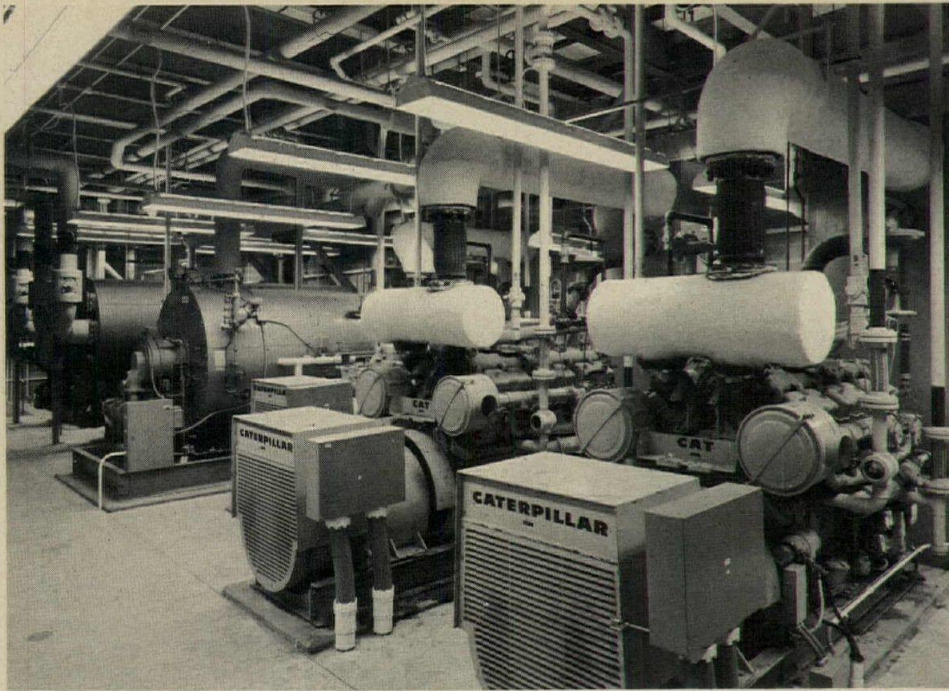
The equipment used at the West Side Area Vocational-Technical School includes two 300 kw engine-generator sets and one 150 kw engine-generator unit. The engines use natural gas as the primary fuel. They are direct-connected to electric alternators, having an 80 per cent power factor and wired for 277/480 volts, 3-phase, 60-cycle.

Power panels in the gas total energy plant contain controls for starting and stopping, as well as synchronizing of the engine-generator sets. Also included are load sensing and tripping of the air handling apparatus motor circuits.

Total connected electrical load amounted to 1,421 kilowatts. This consisted of 329 kw for lighting, 855 kw for shops, etc., 107 kw for kitchen loads, and 130 kw for miscellaneous applications. Demand was approximately 263 kw for lighting, 298 kw for power, 43 kw in the kitchen, and 91 kw for miscellaneous applications, or a total of 695 kw. With an over-all diversity of 1.2, the estimated maximum demand was calculated at 580 kw. Installed generating capacity is 750 kilowatts.

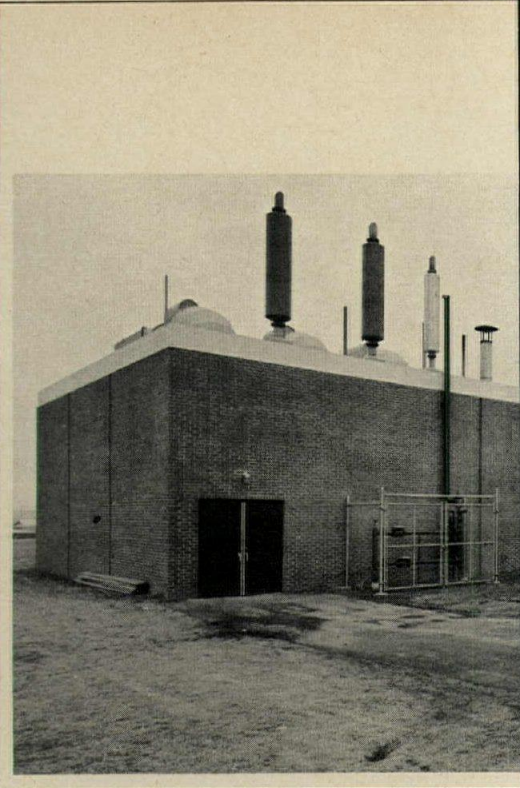
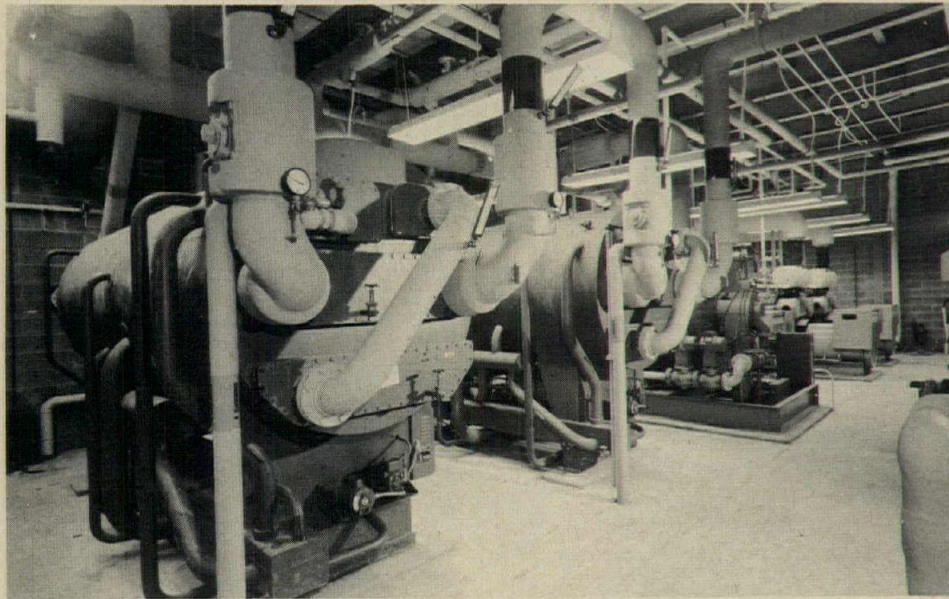
Steam supply system

The recovery systems consist of vertical-type, fire-tube, waste-heat boilers. Engine jacket water is circulated between boiler



Total energy plant designed by Ray Roushey has two 300-kw and one 150-kw engine-generator sets (above). Heat from engine exhaust gases and jacket cooling water is captured by heat recovery units at the rear of each unit. Steam from recovery units serves

two 253-ton absorption refrigeration machines (below) as well as a hot water converter for space heating, and storage heaters which supply domestic hot water. Schematic diagram at bottom of page shows equipment arrangement and piping.



and engine by gravity. The boilers also act as exhaust mufflers. Gases pass from the system through vent pipes at the roof, each equipped with a rain shield.

A common steam header serves all three heat recovery systems and is isolated from the main service header through a back-pressure-type regulating valve. There are three such valves located on the engine service header: the first feeds the service header at a maximum rate of 3,500 lb per hour; the second provides heat-sink flow to storage hot water coils (maximum rating of this valve is 1,000 lb per hour); the third valve serves as an emergency release and feeds an air-cooled condenser located in the air exhaust stream of the machine room ventilation system.

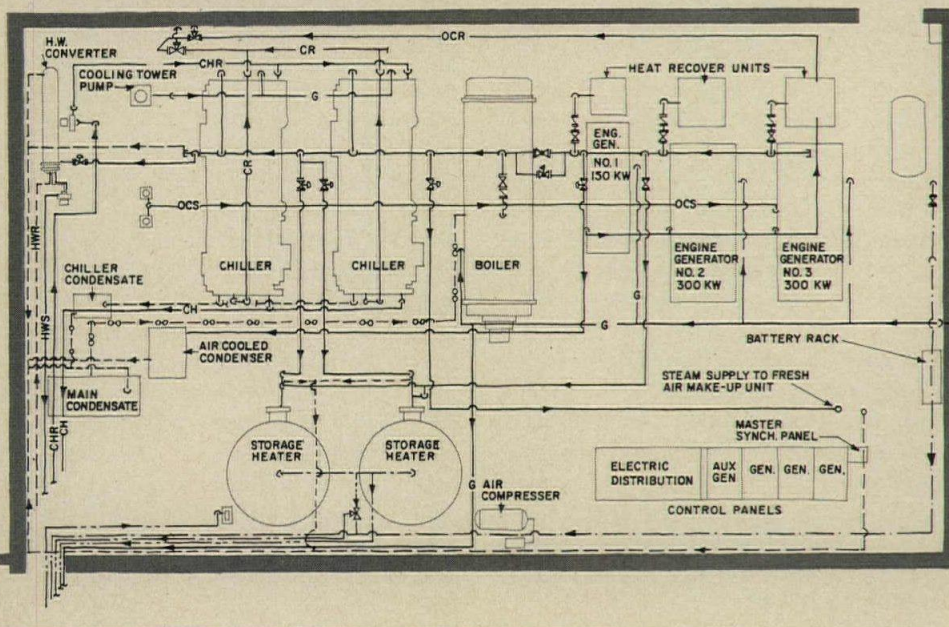
Auxiliary steam during summer peak loads is supplied by a 200 horsepower, low pressure, fire-tube, packaged boiler. Because the school is air conditioned, the peak energy usage is in the summer.

Natural gas provides energy for the engines and also fuels the kitchen cooking, incinerator burners, laboratory burners, and heat-treating ovens in the shops. The only energy other than gas in the building complex is a 100-ampere electric service providing for emergency lighting in accordance with the fire code.

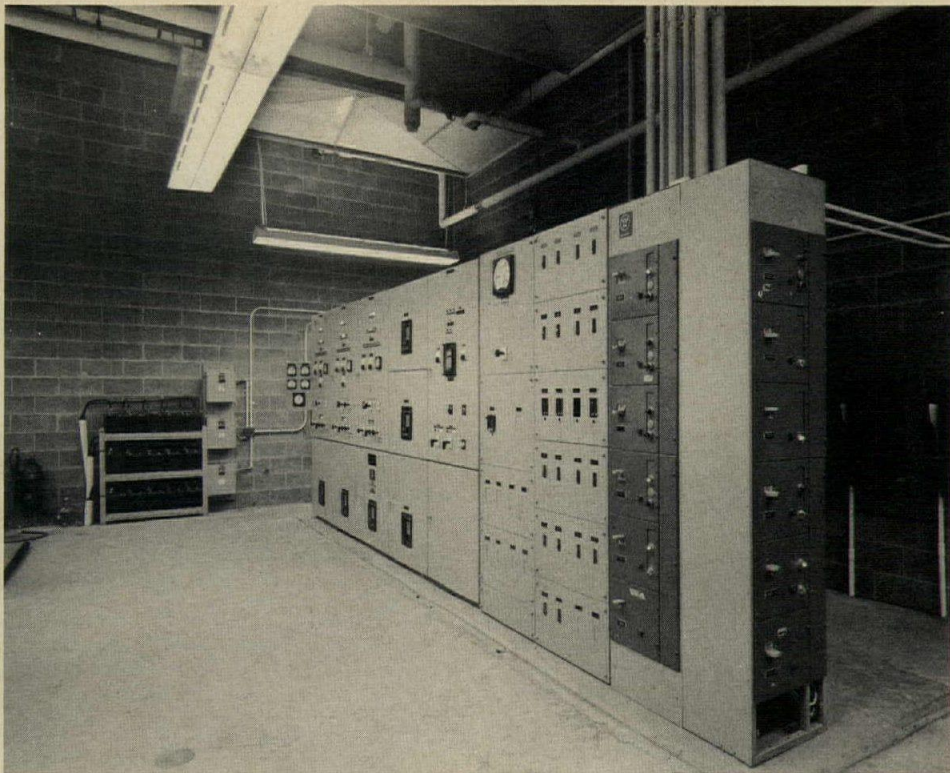
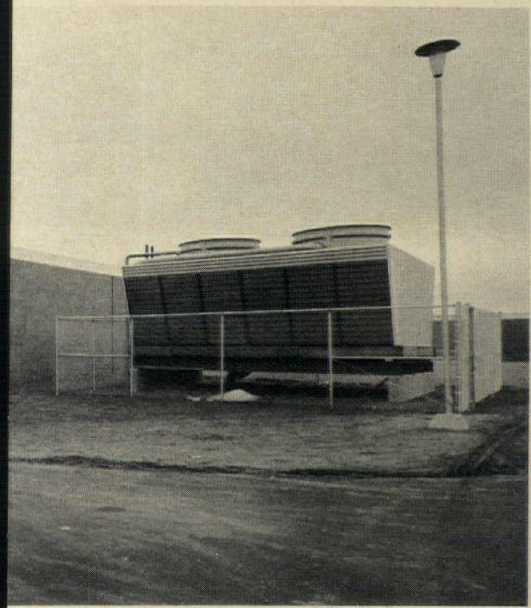
Air conditioning system

With adequate insulation at both wall and roof, combined with the sensible heat from the 100-foot-candle lighting, the engineers expected to balance the heat losses of the school building with the internal heat gains when the outdoor temperature was at 3 degrees above zero.

A four-pipe, fan-coil system was proposed and designed, but the estimated owning and operating cost was more than a dual-duct system, which was selected

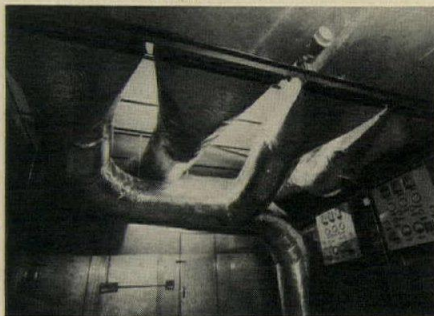


Portion of the building housing the total energy plant. Vent stacks equipped with rain shields exhaust the engine gases to the atmosphere. Cooling towers are at right in photo.



Controls for the total energy plant are housed in this free-standing power panel. Engine-starting batteries can be seen at left in the photo.

Three high-velocity, dual-duct air distribution systems supply air to 42 constant-volume mixing boxes plus 42 variable-volume mixing boxes. Below is one of the duct systems leaving a fan room.



Most heavily used area of the school is the machine shop, which is occupied 22 hours each day, five days a week. Air supply to the shop is from overhead units dropped down from lateral ducts run between joists.

In addition to this shop, the school is comprised of 15 other laboratory-shop course areas, 7 regular classrooms, 4 science rooms, library, music room, gymnasium, offices, cafeteria and kitchen.

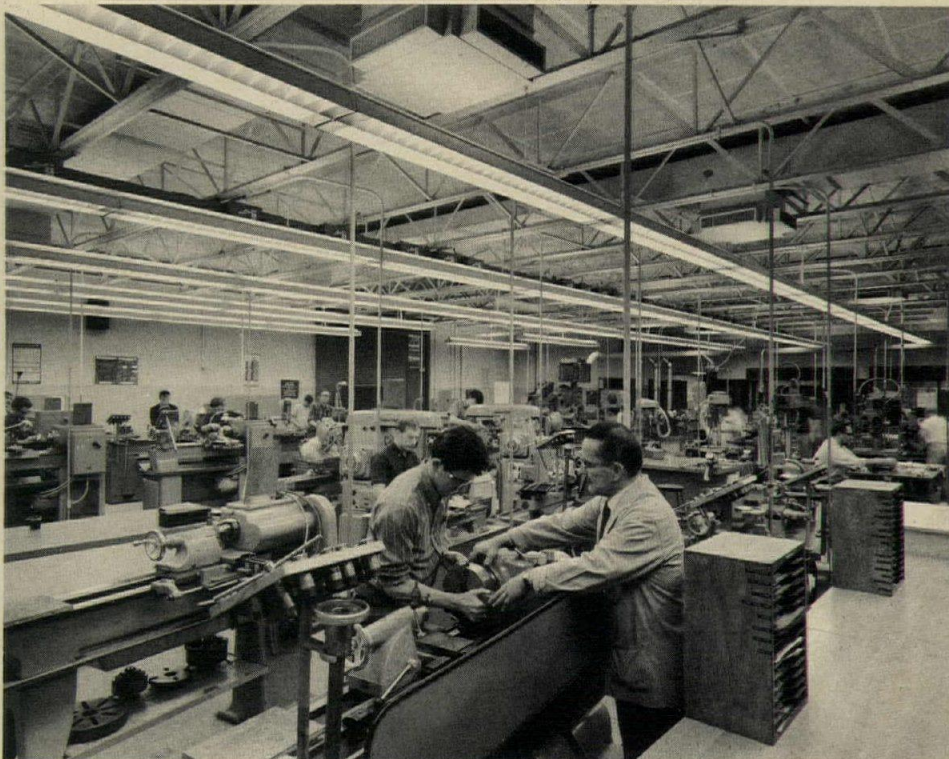
and installed. This high-velocity air distribution system employs constant volume mixing boxes in areas of constant load, or variable volume mixing boxes in the areas where load fluctuates.

The high velocity dual-duct air distribution system is divided into three main zones. Zone one has 12 variable volume and 20 constant volume mixing boxes; zone two, 19 variable volume and 14 constant volume boxes; zone three, 11 variable volume and 8 constant volume units. In shops, science labs, the gymnasium, etc., variable volume mixing boxes were used whenever applicable so that air volume was automatically reduced when cooling needs were lowered.

The school operates around the clock

The occupied time cycle of the building was originally planned as 17 hours, but is now 22 hours per day. This is programmed through the master clock system. From 8:30 a.m. to 3:30 p.m., the school is occupied by 650 high school students in grades 10, 11, and 12. From 3:45 p.m. to 9:45 p.m. classes are given for 160 full-time adult students. In addition, 361 evening school students attend classes from 7:30 p.m. to 11:00 p.m. From 10:30 p.m. to 6:30 a.m., about 22 students in the Federal government's Manpower Development Training Program are taught machine shop skills. On Saturdays, 22 community college students participate in a 15-week program from 8:00 a.m. to 12:00 noon. Custodians are on duty around the clock, Monday through Friday, and about five hours each on Saturday and Sunday. The teaching staff has 44 members.

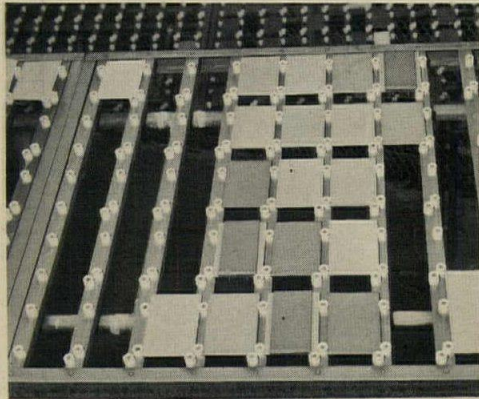
Total area of the school is 106,400 sq ft, and the total volume is 1,600,000 cu ft. The cost per square foot was calculated at \$23.52.



Climate and copper finishes: how to get what you want

Tests in progress yield useful information about the weathering of copper and copper-alloy finishes

Adapted from a report by D. H. Thompson, Senior Research Metallurgist, Research and Technical Center, Anaconda American Brass Co.



Six years ago, at its Research & Technical Center at Waterbury, Connecticut, Anaconda American Brass Company embarked on a 25-year experiment. They exposed samples of six architectural copper metals on standard test racks, 30 degrees from the horizontal and facing south (photo above). These samples were left to weather naturally and have been carefully observed at periodic intervals with the following results:

ETP Copper 110. Slight mottling was observed during the first few weeks but at four months the metal was a deep, uniform russet brown. At three years there was a faint blush of gray-green patina. At six years there was a finely mottled, gray-green patina through which the dark brown background was faintly visible.

Commercial Bronze, 90 per cent—220. Similar to the copper but the brown color was chocolate rather than russet. The first faint patina was detected after two years and the patina at six years was more fully developed than on the copper.

Red Brass, 85 per cent—230. Identical with the Commercial Bronze except that the patina at six years was a uniform green without the grayness of copper or Commercial Bronze.

Muntz Metal, 60 per cent—280. After the initial mottled phase, the metal was a uniform dark gray-brown at eight months. This color persisted through the sixth year.

Architectural Bronze—385. About the same as corresponding Muntz metal panels and a good match with them.

Nickel Silver, 65/10—745. At four months, a uniform gray-brown. A gray-green cast was faintly discernible at two years. At six years the finely mottled gray-green patina covered the medium brown background which was still evident. Does not match the patina on other alloys.

It was long thought that this typical

gray-green patina was basic copper carbonate (malachite $\text{CuCO}_3 \cdot \text{Cu(OH)}_2$). In fact a debate arose recently in the pages of a technical journal regarding the exact composition of the gray-green patina encrusting the Statue of Liberty in New York Harbor. A sample was analyzed and discovered to be composed almost entirely of basic copper sulphate (bronchantite $\text{CuSO}_4 \cdot 3\text{Cu(OH)}_2$), the result of fuel-burning wastes in nearby Manhattan. The specimen also contained traces of basic copper chloride presumably from surrounding seawater. The speed with which patina will form is therefore a function of the particular atmosphere to which the metal is exposed. Architects expectantly awaiting the formation of a handsome patina on their copper roofs must be patient unless they are building in an industrialized neighborhood where sulphates are present in the air in significant concentrations. In Waterbury, Connecticut, as we have already seen, the samples showed a rich patina in six years. In rural Connecticut, however, similar samples were exposed for twenty years without the appearance of any green color. The impatient can take heart from the knowledge that researchers are working on an instant, shop-applied patina that is now approaching commercial readiness. Earlier efforts to patinize buildings artificially have been frustrated in the field by erratic climatic conditions.

Maintaining the finish

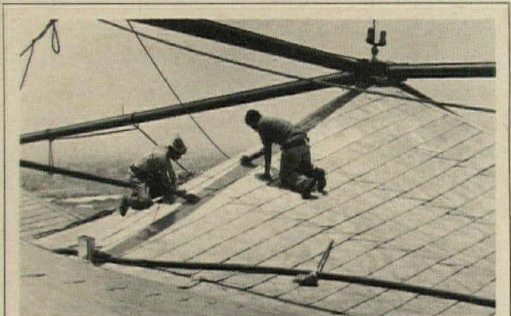
To those who wish to keep their copper roofs in mint condition, various excellent lacquers are available. Most have high ultra-violet absorption, and the baking lacquers tend to outlast the air-dry varieties. But none is permanent. Before relacquering, the old lacquer must be stripped and the metal cleaned. In areas where lacquering is not practical yet metals must be kept bright, oil and elbow grease are traditional. Both lemon oil and lemon grass oil are widely used. Which is better? There has been no general agreement. Both are expensive and Anaconda wanted to develop an essential and inexpensive substitute. New test panels were set up. The metals selected for study were copper, red brass, nickel silver, Muntz metal, and Muntz metal to which a statuary bronze coating had been applied. In the first phase of the study the sample panels were oiled, some weekly, some monthly, with a variety of different oils. Two paraffin oils were selected as bases. These were Atlantic Re-

fining Company's *Topaz B* and *Ultrasene*. The test also included pure lemon oil and lemon grass oil as well as mixtures of these with the paraffin oils. Two silicone oils were also included. *Benzotriazole*, a powerful tarnish inhibitor, was added to some of the oils.

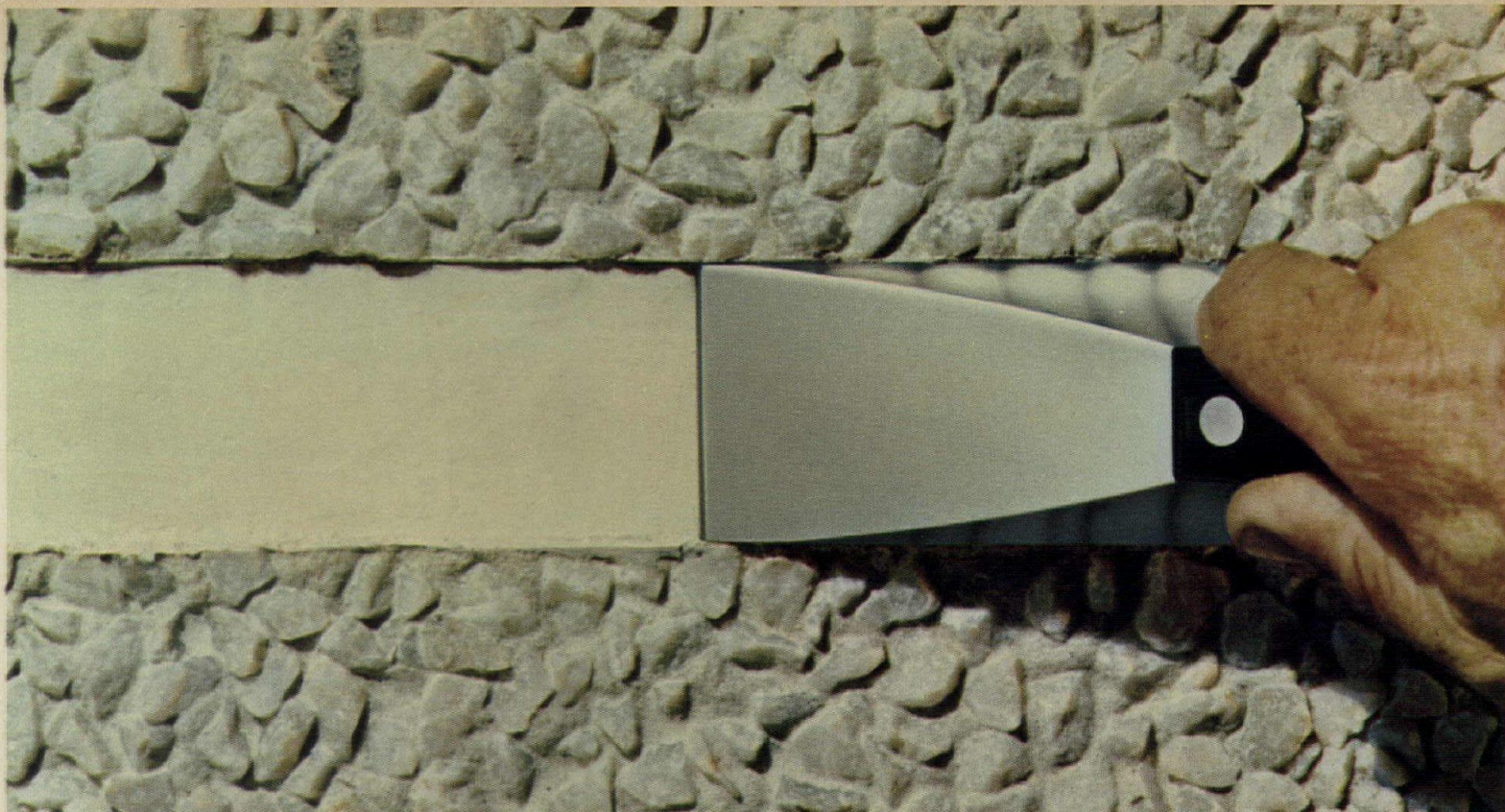
After frequent and careful examination of all test samples over a five year period, certain conclusions were apparent:

1. Neither lemon oil nor lemon grass oil proved as effective as paraffin-based oils.
2. A heavyweight paraffin oil leaves copper surfaces with a rich luster that will last only a few days but can be restored with a rag between oilings.
3. Lightweight paraffin oils appeared to evaporate quickly and were suitable for only those surfaces not subject to close inspection.
4. Oil cleans a copper or copper-alloy surface but does not contribute to uniformity of surface color.
5. Any oil inhibits the appearance of a green patina.
6. Protective oils, in general, are not very effective. Such oils will lead to a mottled or streaked effect as they begin to break down under weathering.

The Anaconda Brass Company is embarked on a long-range experiment. They will continue to examine these particular samples another nineteen years, for much remains to be learned about the protection and enrichment of copper surfaces.



"**INCRALAC**," a finish developed by the International Copper Research Association, is a transparent, air-dry lacquer containing an acrylic ester resin dissolved in toluene and inhibited with *Benzotriazole*. Intended primarily for use on outdoor architectural metal work, it preserves the natural color of copper and copper-alloys for long periods. 1200 gallons of the product were recently used to coat the four and one-half acre roof of Mexico City's Sports Palace (photo above).



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□ The Tremco Manufacturing Company, **TREMCO**
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For more information circle selected item numbers on Readers Service Inquiry Card, pages 253-254

"Designers Saturday" announces its open house date to introduce contemporary contract designs

"Designers Saturday" is an organization of New York contract furniture manufacturers who periodically appoint a special "open house" day to present their latest designs.

This year, the date is Saturday, October 31, when showrooms of 20 member firms will open to contract designers and architects. Designers Saturday's "open house" will be followed by a reception at the Whitney Museum of American Art. An

estimated 1800 will attend.

For additional information on Designers Saturday's "open house '70", contact Julian Ross, Designers Saturday, 366 Madison Avenue, New York City, 10017.

Shown below and on page 188 are some designs that will be exhibited during the open house.

Member firms: John Stuart Inc., Stendig, Inc., Janet Rosenblum Inc., Edward Axel

Roffman Associates, Inc., Harvey Prober Inc., The Pace Collection Inc., Lehigh-Leopold, Knoll International, JG Furniture Company, I.C.F., Fritz Hansen Inc., Eppinger Furniture Inc., Dunbar/Dux Furniture Company, Directional Contract Furniture Company, Cumberland Furniture, CI Designs, Brickel Associates Inc., Atelier International, Helikon Furniture Company, Jens Risom Design Inc.



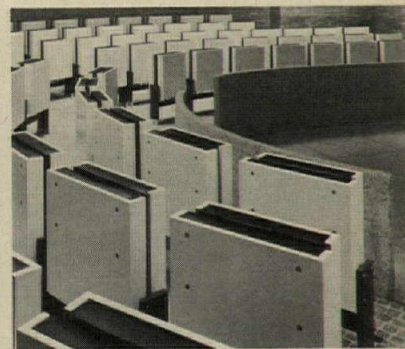
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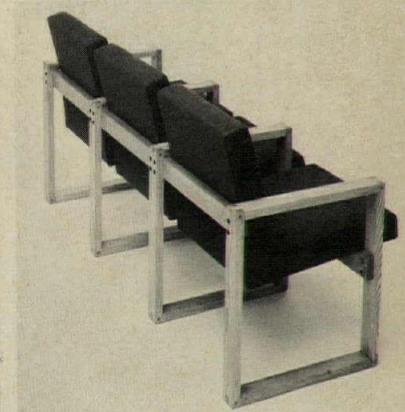
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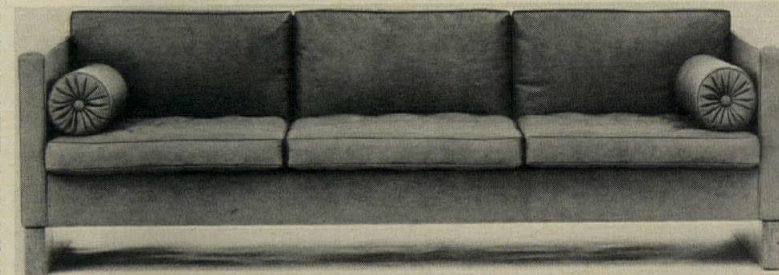


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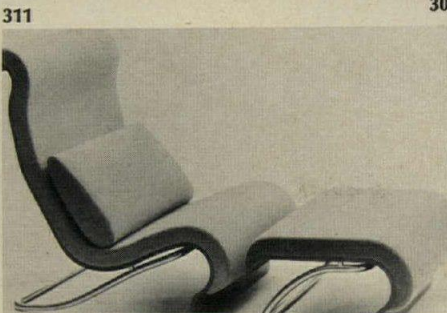
Circle bracketed numbers on inquiry card. Arm chair, E.A. Roffman Assoc., Inc. (300). Upholstered chair, International Contract Furnishings Inc. (301). Lounge chair/table, Dunbar/Dux (302). Mounted chair, JG Furniture Co., Inc. (303). Stack chair, Atelier International Ltd. (304). Lounge chair, Stendig Inc. (305). Side chair, Brickel Assoc. Inc. (306). Lounge module, CI Designs (307). Sofa, Knoll (308). Lounge chair, J. Rosenblum Inc. (309). Block chair, H. Prober Inc. (310). Lounge chair, F. Hansen Inc. (311). Swivel chair, Cumberland Furniture Corp. (312).



308



310



311



312



309

Continued on page 188

PRESTRESSED CONCRETE

gives you design flexibility
and goes up fast!

Prestressed concrete is a unique structural and design medium with inimitable, innate characteristics which can be as bold and exciting in use as the creative mind can imagine.

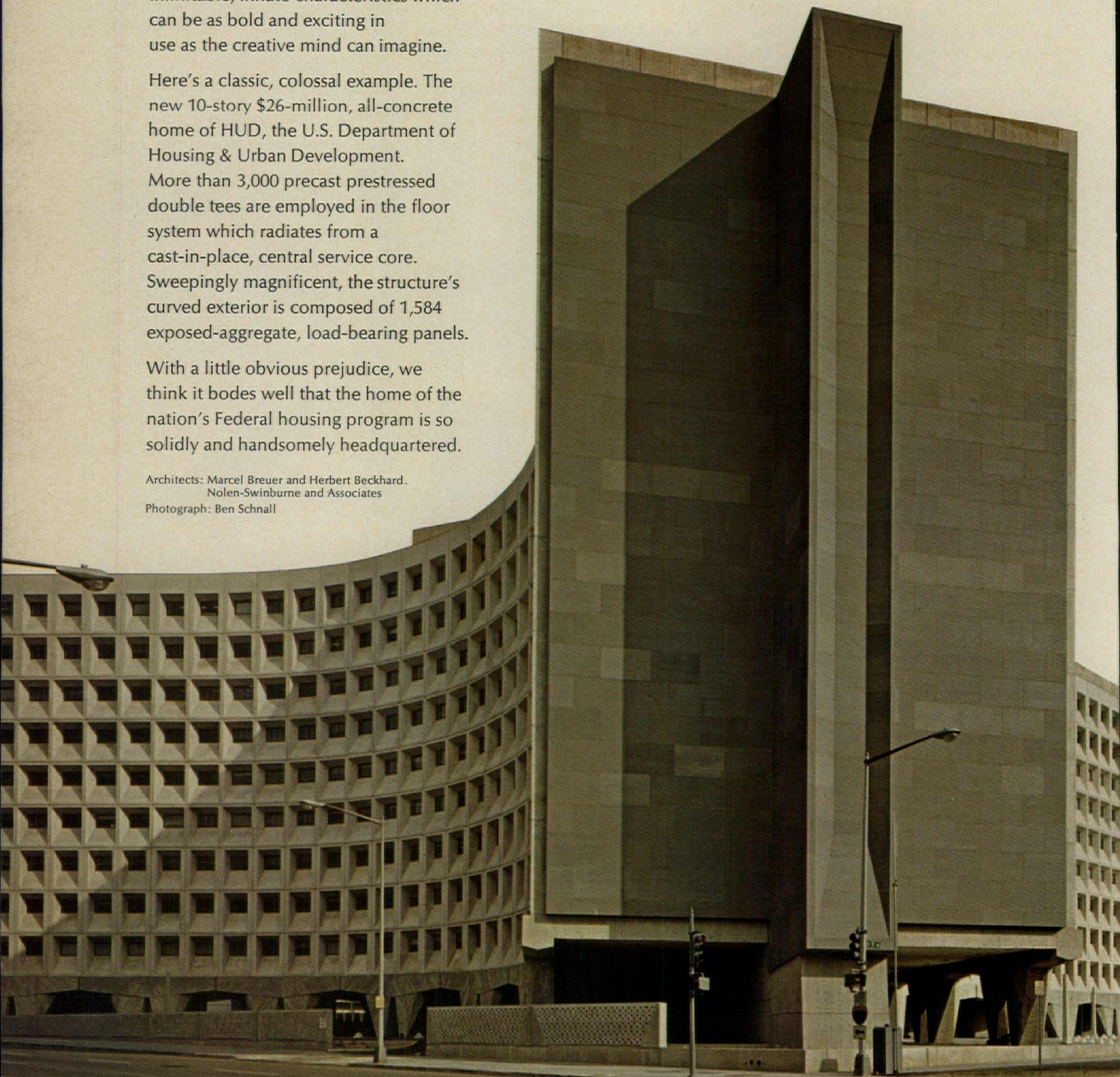
Here's a classic, colossal example. The new 10-story \$26-million, all-concrete home of HUD, the U.S. Department of Housing & Urban Development.

More than 3,000 precast prestressed double tees are employed in the floor system which radiates from a cast-in-place, central service core. Sweepingly magnificent, the structure's curved exterior is composed of 1,584 exposed-aggregate, load-bearing panels.

With a little obvious prejudice, we think it bodes well that the home of the nation's Federal housing program is so solidly and handsomely headquartered.

Architects: Marcel Breuer and Herbert Beckhard,
Nolen-Swinburne and Associates

Photograph: Ben Schnall





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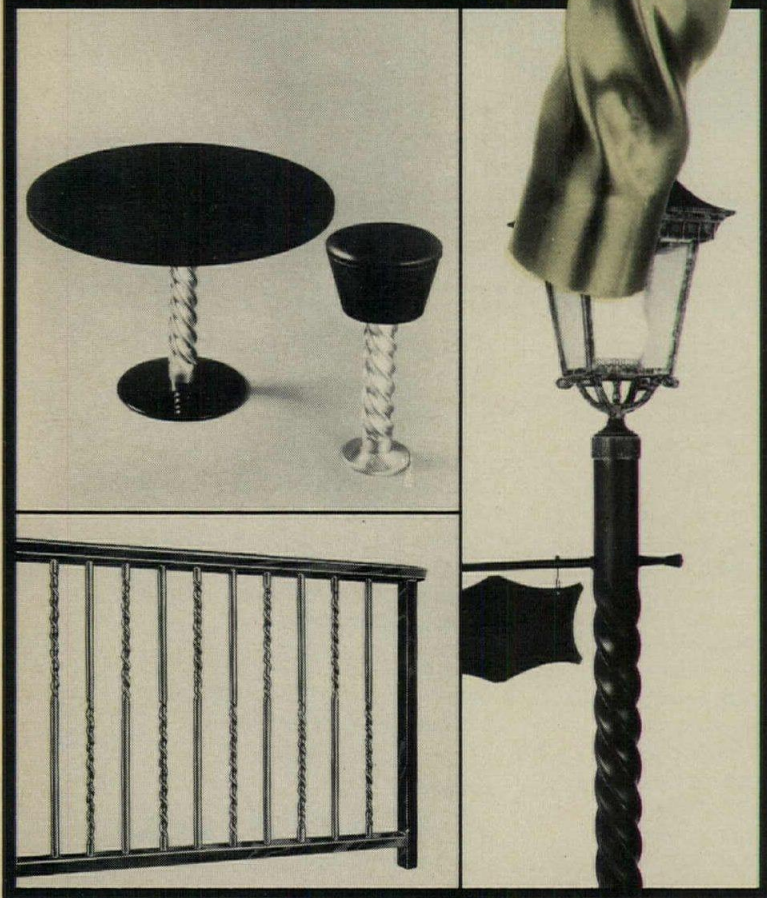
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and flow.

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**Also specify Unatap spray mixing faucets—
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Phone: (212) 683-0745

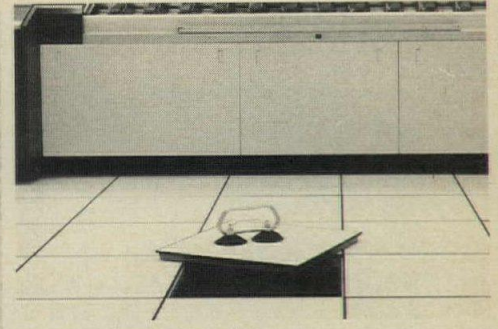
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Enjay Fibers And Laminates Company,
Odenton, Maryland 21113

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Title _____
Firm _____
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That's right. You never, never wax this extra-wear laminated plastic floor tile. No wax, so no wax dust to cross up computers or cause costly downtime.

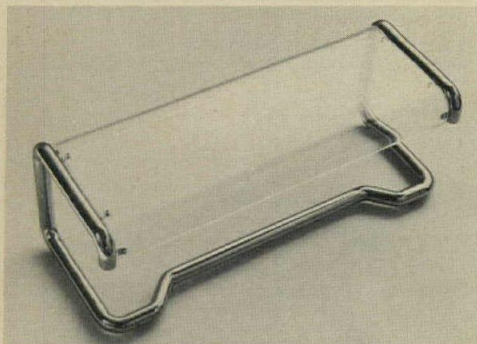
Damp mopping is all the cleaning required, and scuff marks come right off. Think of the maintenance savings from this alone!

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**NEVAMAR
LAMINATED
FLOOR TILE**

Presented below are several more contemporary contract furniture designs which will be exhibited in showrooms during the coming one-day Designers Saturday event.



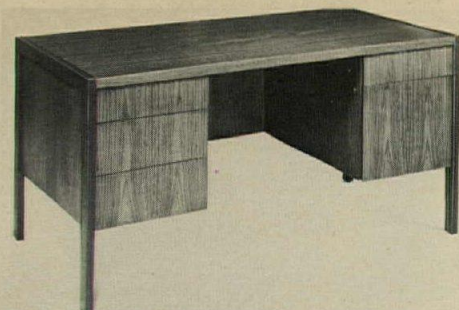
DESK / This double pedestal desk with legs of solid walnut is one member in a line including single pedestal desks, secretarial and executive returns and cabinets. Its oiled walnut finish highlights its graceful appearance. ■ Lehigh-Leopold Furniture Company, New York City.

Circle 314 on inquiry card

CLEAR TOPPED BENCH / This simply designed bench features a one-piece stainless steel base and a clear acrylic top. It was designed by Frank Majore and measures 48 in. (width) by 18 in. (depth) by 16 in. (height).

■ The Pace Collection Inc., New York City.

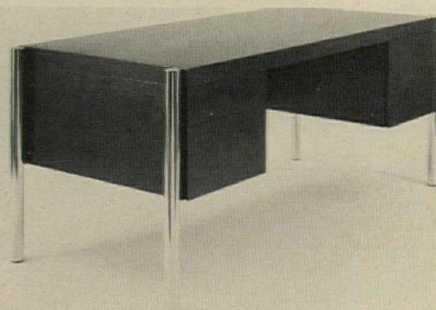
Circle 313 on inquiry card



DESK AND CABINET ENSEMBLE / Both desk and cabinet are figured in French walnut. The executive cabinet is fitted with a telephone panel and recessed letter trays.

■ Eppinger Furniture Inc., New York City.

Circle 315 on inquiry card



DESK / This double pedestal desk with polished chrome legs and Cordovan finish on walnut is available in wood paneling with wood leg ends. ■ Directional Contract Furniture Co., New York City.

Circle 316 on inquiry card



CONFERENCE DESK / This conference desk houses a built-in conference table 35 in. wide and 110 in. long. Automatic controls glide the table in and out of the desk. ■ John Stuart Inc., New York City.

Circle 317 on inquiry card

more products on page 192



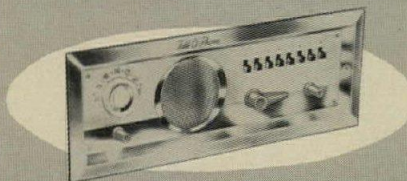
*Saves time...
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*Instant and direct
2-way conversation
between any 2 points*

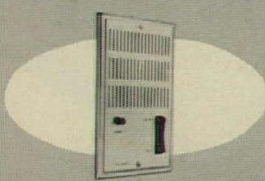
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“ has a lot of good things to say for itself ! ”

For one thing, this Hager-developed rack and pinion pivot hinge* makes a door seemingly disappear. Put one anywhere without cluttering the wall with trim or interrupting the plane with protrusions.

The door fits snug, right up to the jamb. Only the thinnest line defines door limits. Banks of doors can now line a corridor or fit flush in room paneling and you hardly know they're there.

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Closed, the door fits jamb close, right and left, and RACONTEUR goes completely into hiding.

Get details from your Hager representative on this new designer challenge for fine interiors.



*Patent No. 3,394,428



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**You shape the audience.
We'll shape the sound.**

**With consultation, design,
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That's DuKane's Professional Sound.

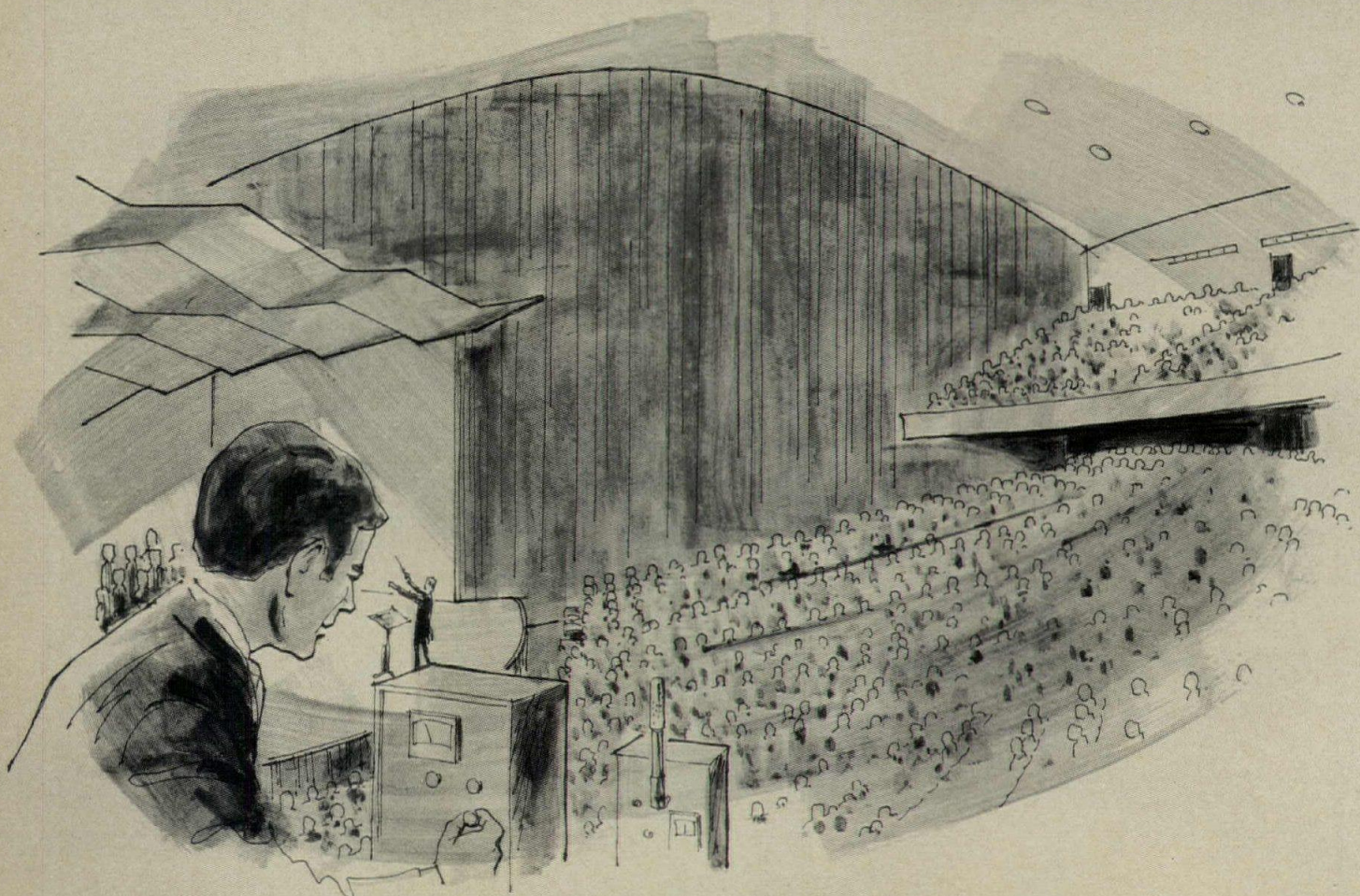
Regardless of the shape of your structure, or its acoustic uniqueness, DuKane works every step of the way to guarantee a sound system precisely matched to your building. We call this service *Professional Sound*. It starts with counselling and design. Continues with the proper selection of superb DuKane sound equipment, the finest components made today. Each component is precisely chosen to complement the characteristics of your facility. And, following in-

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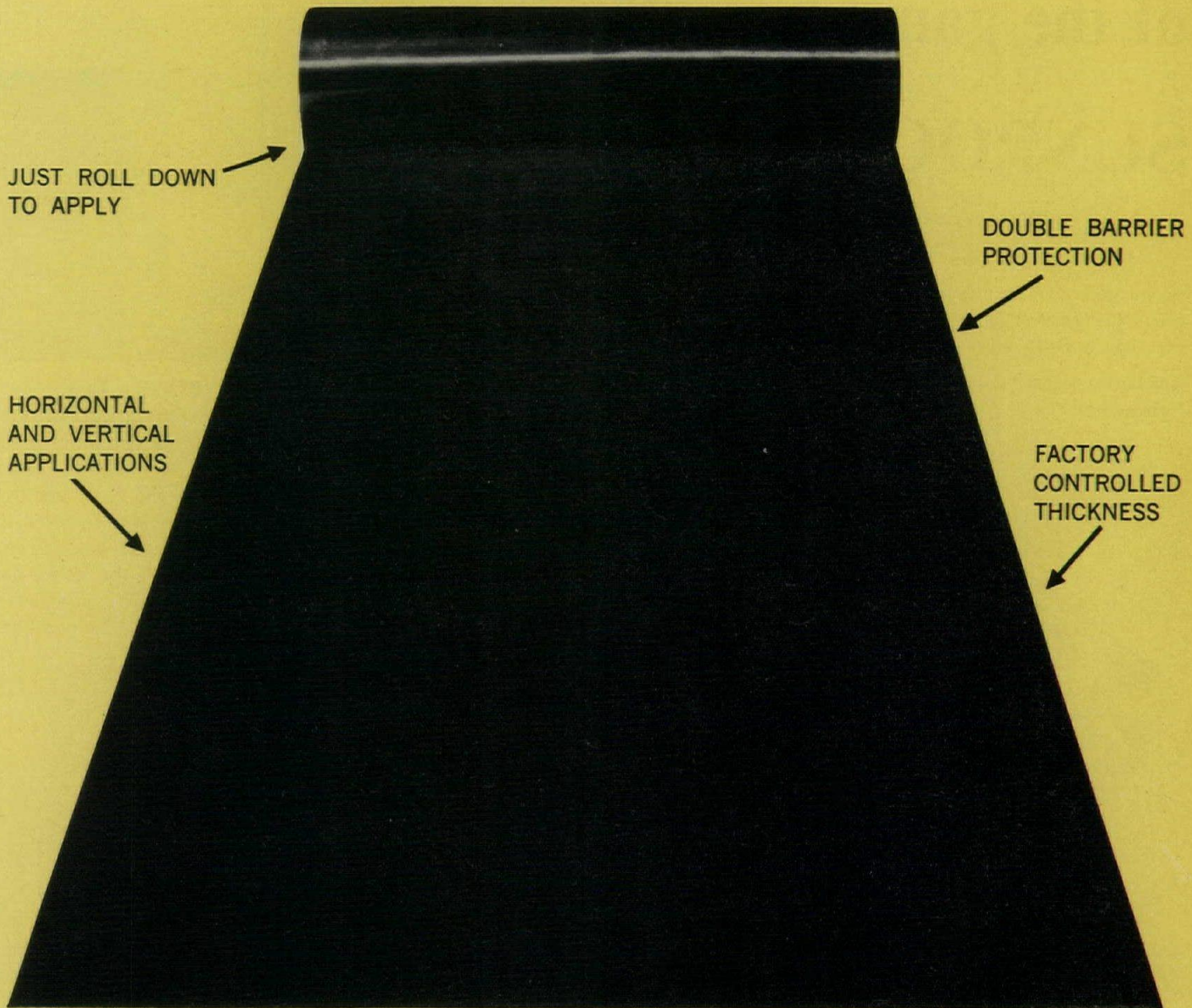
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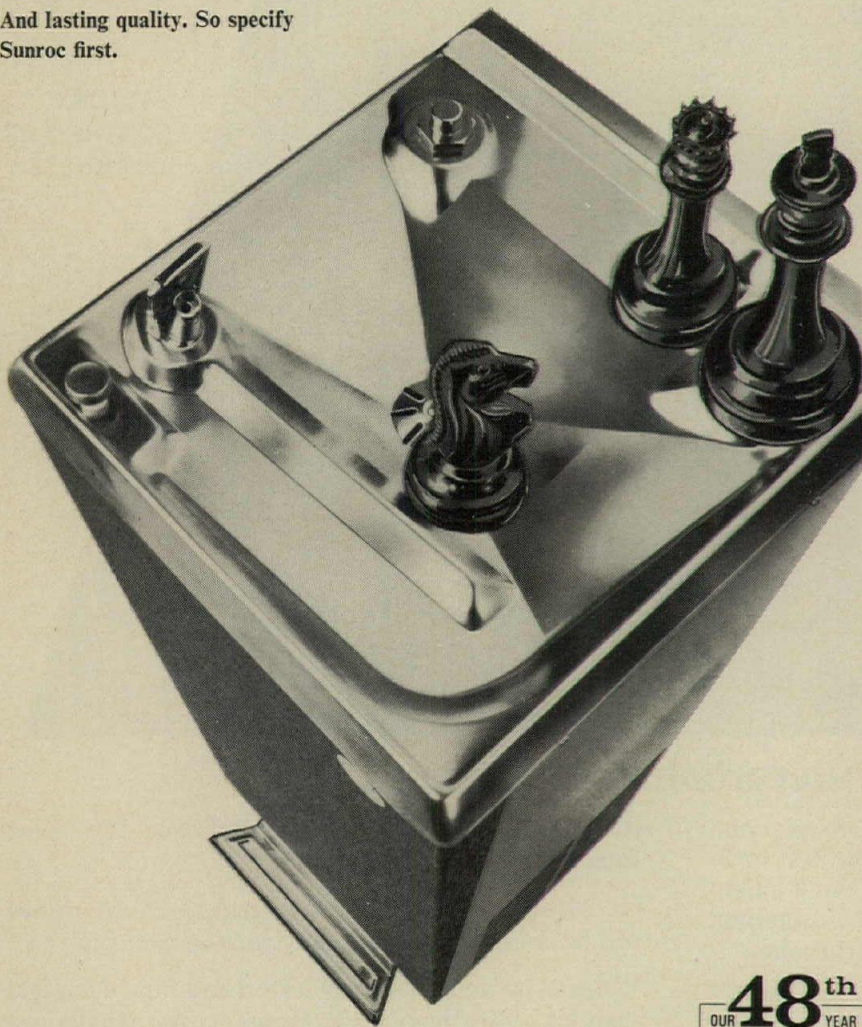


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MANUFACTURING QUALITY PRODUCTS

PRODUCT REPORTS

continued from page 188

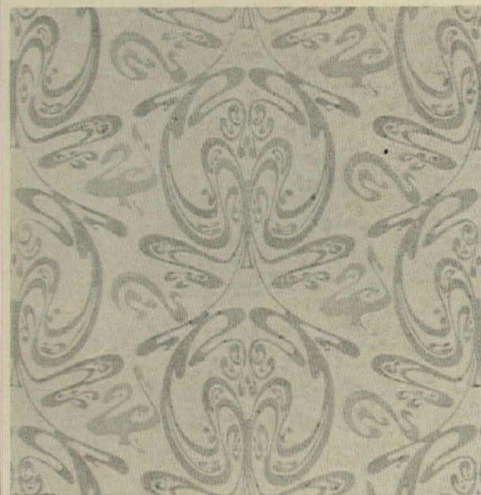
NON-STATIC CARPET / *New Element* is a carpet that solves the static problem without addition of metal fibers. It is constructed of a combination of nylon with plus charge and olefin with minus charge so that electrical charges are neutralized for the life of the carpet. This fiber combination affords other benefits: olefin is soil resistant and nylon is long wearing. The carpet comes in 8 colors with high density foam or secondary jute backing. ■ Porter Carpets, Cartersville, Ga.

Circle 318 on inquiry card



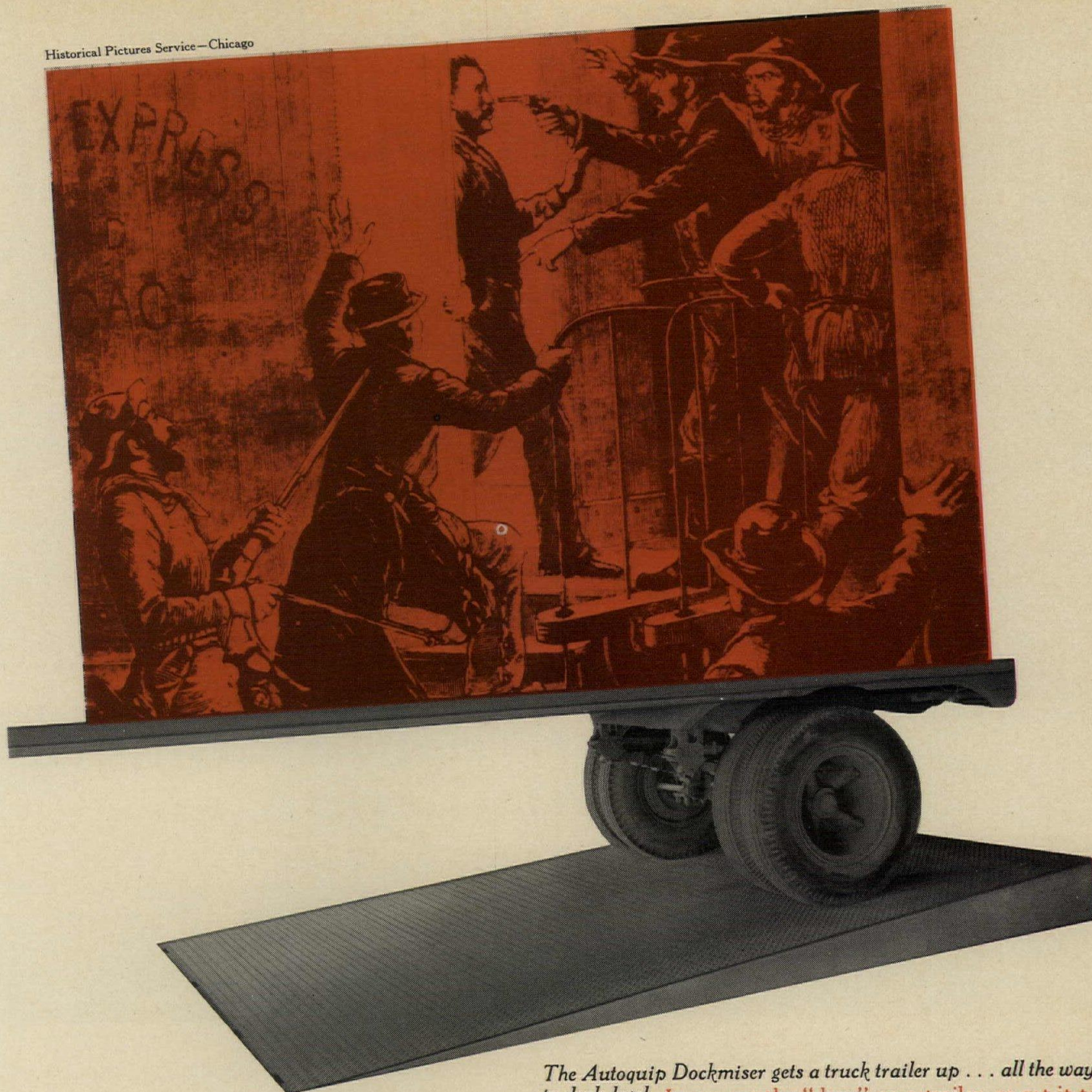
WATER SCULPTURE / These 10 ft high "sculptures" made of copper tubing are designed to cut down on hydrant water loss in hot city streets while providing a cooling sprinkler. The circle enclosed within a square uses less hydrant water to greater advantage: the water is all around those going through the hoop, and those on the sidelines are sprinkled by the square. ■ Copper Development Assoc. Inc., New York City.

Circle 319 on inquiry card



GUIMARD WALLPAPER / The wallpaper reproduced for the Museum of Modern Art's Guimard exhibition is now available on a commercial basis. The wallpaper was designed for the Castel Beranger apartment house. There is a 27 in. repeat, and a choice of four color combinations including Guimard's original colors. ■ Karl Mann Assoc. Inc., New York City.

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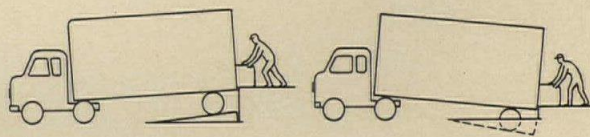
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Lead plenum barriers' renowned ability to block

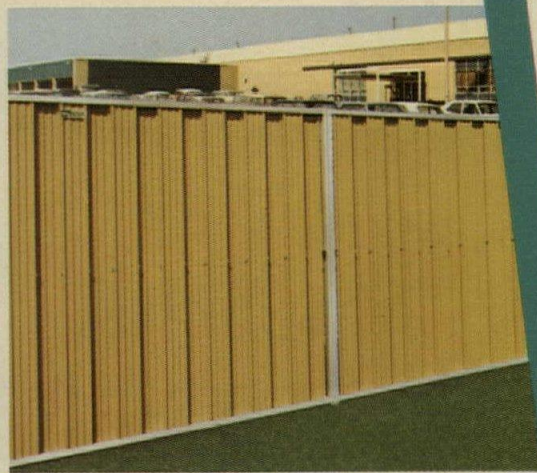
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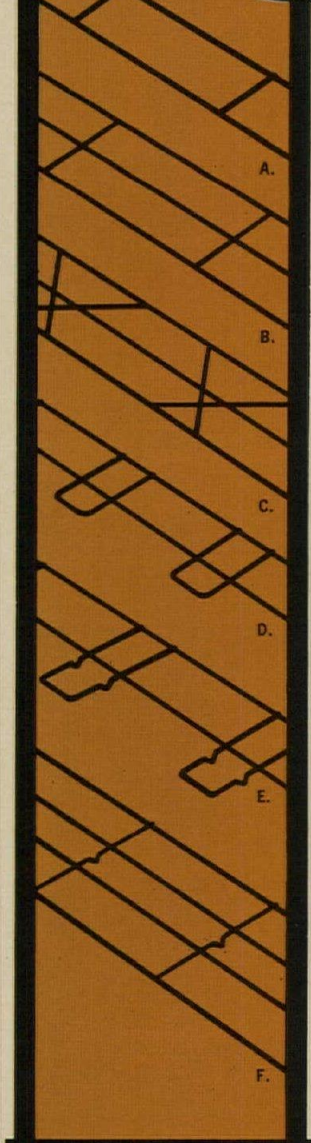
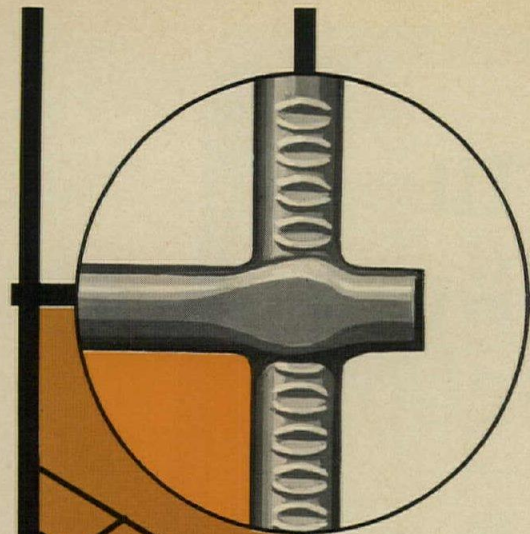
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Plants in Baltimore, Houston, Los Angeles; 48 branch offices.

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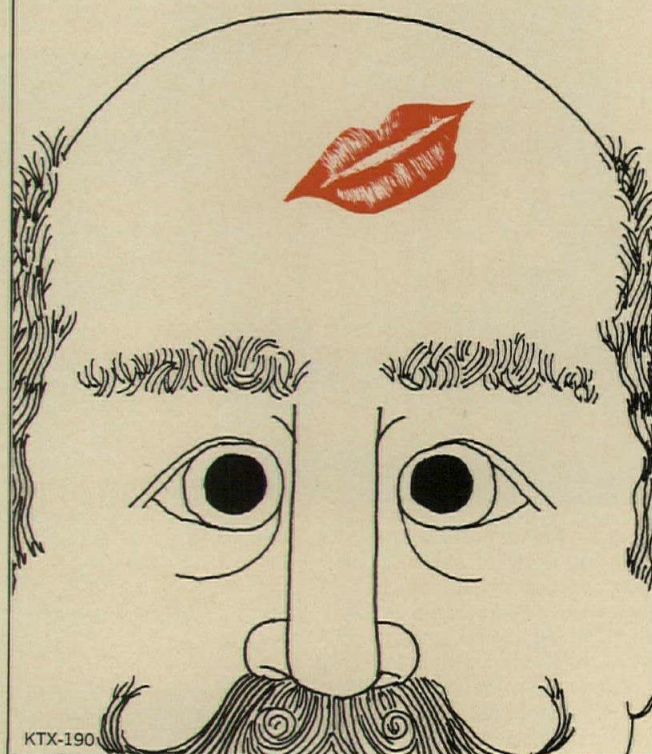
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Robert Tolkan is a fictitious name, but it's a fact that almost half the women today prefer tampons. And half still use napkins. That's why it's a good deal for the gals when you specify built-in *dual-vend* dispensers. Bobrick Dispensers, Inc. makes some beauties. We'll be happy to send you a free catalogue. Or see Bobrick, in Sweet's.



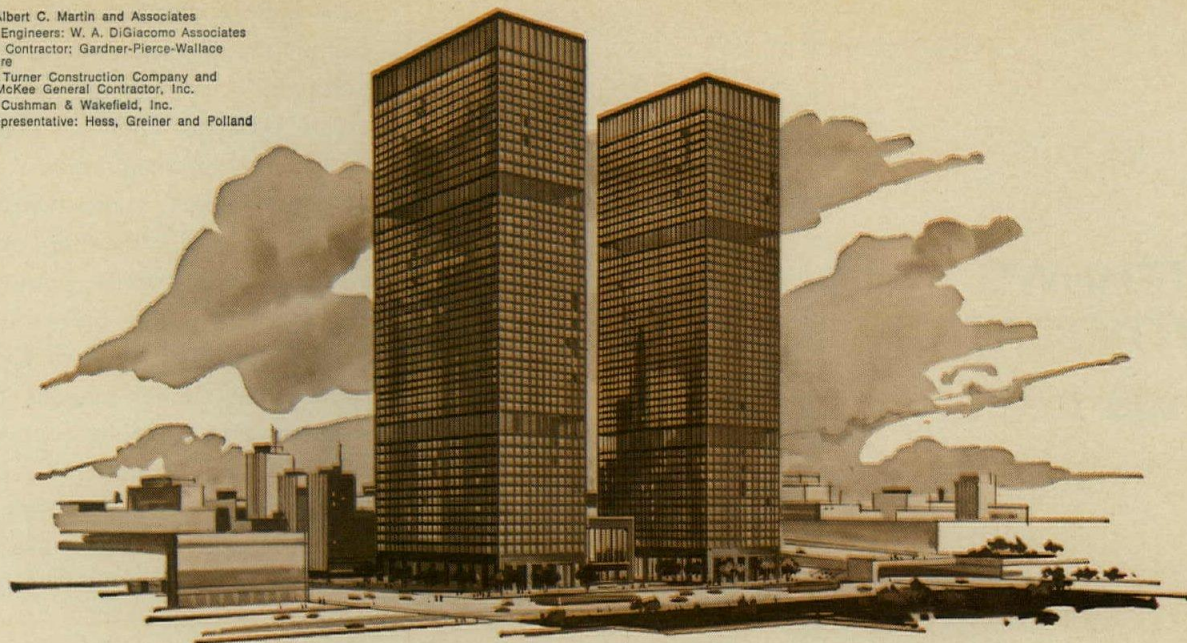
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Why do we love you, Robert Tolkan, A. I. A.?



KTX-190

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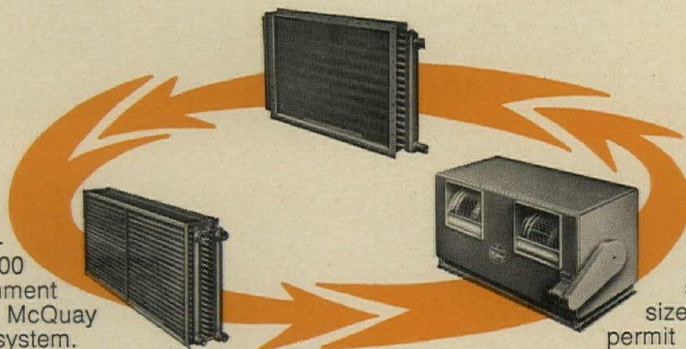
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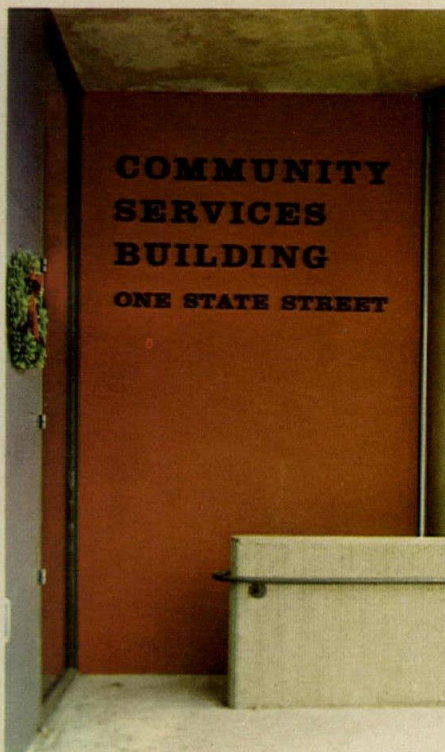
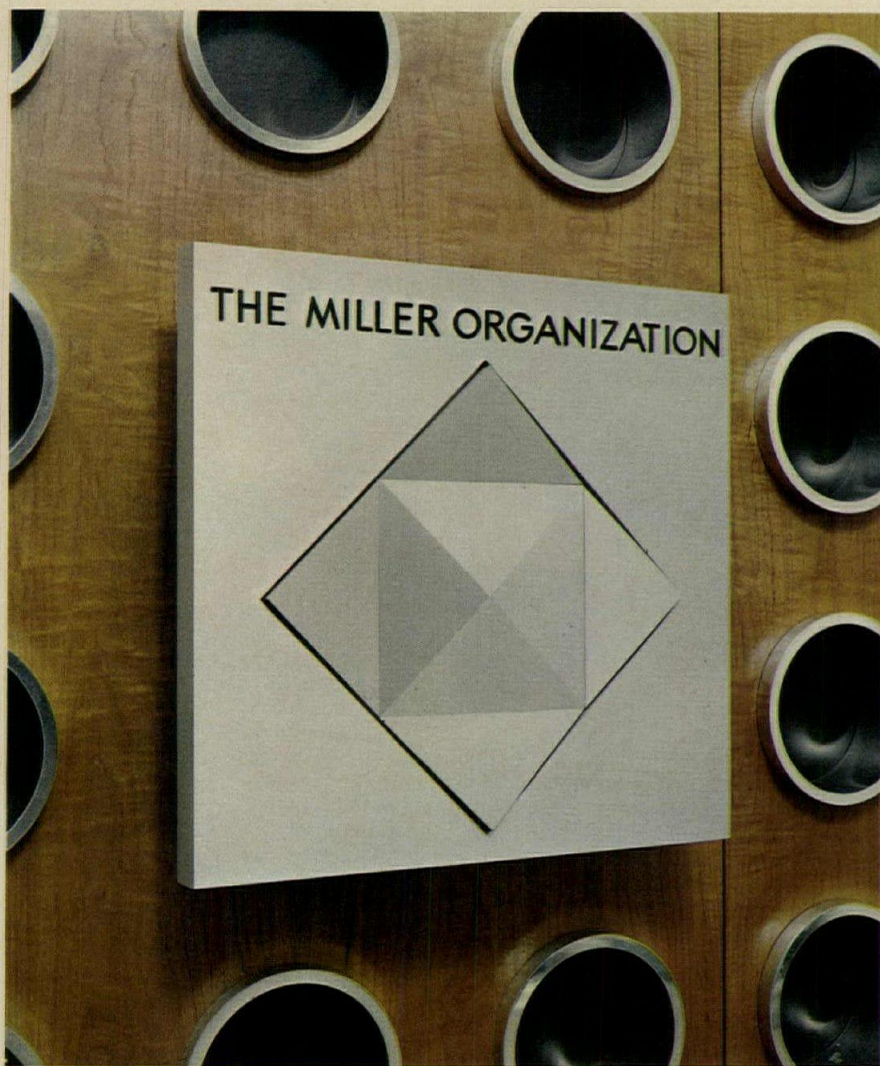
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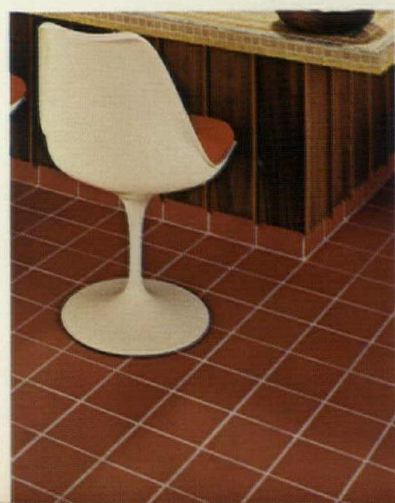
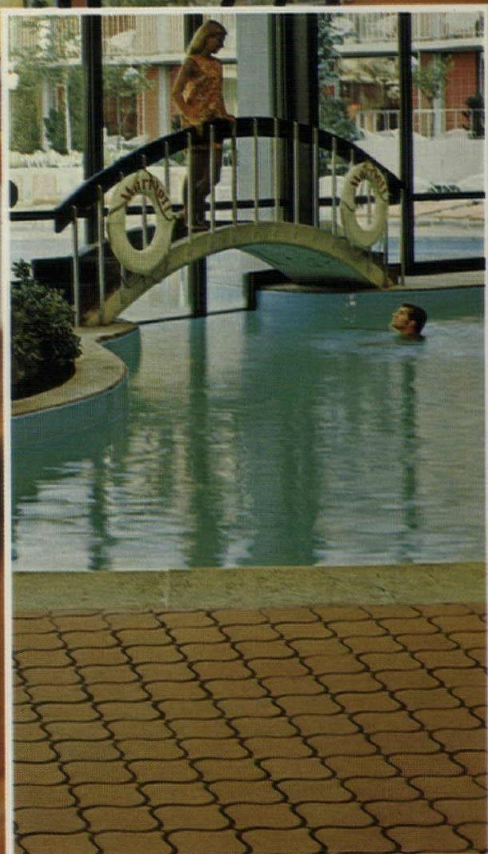


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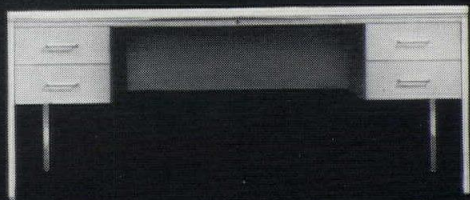


HB FULLER COMPANY

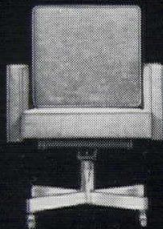
CONSTRUCTION DIVISION

2400 Kasota Avenue, St. Paul, Minnesota 55108 Dept. 34142

For more data, circle 106 on inquiry card



Choice of two furniture series
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Seating to supplement
every design arrangement

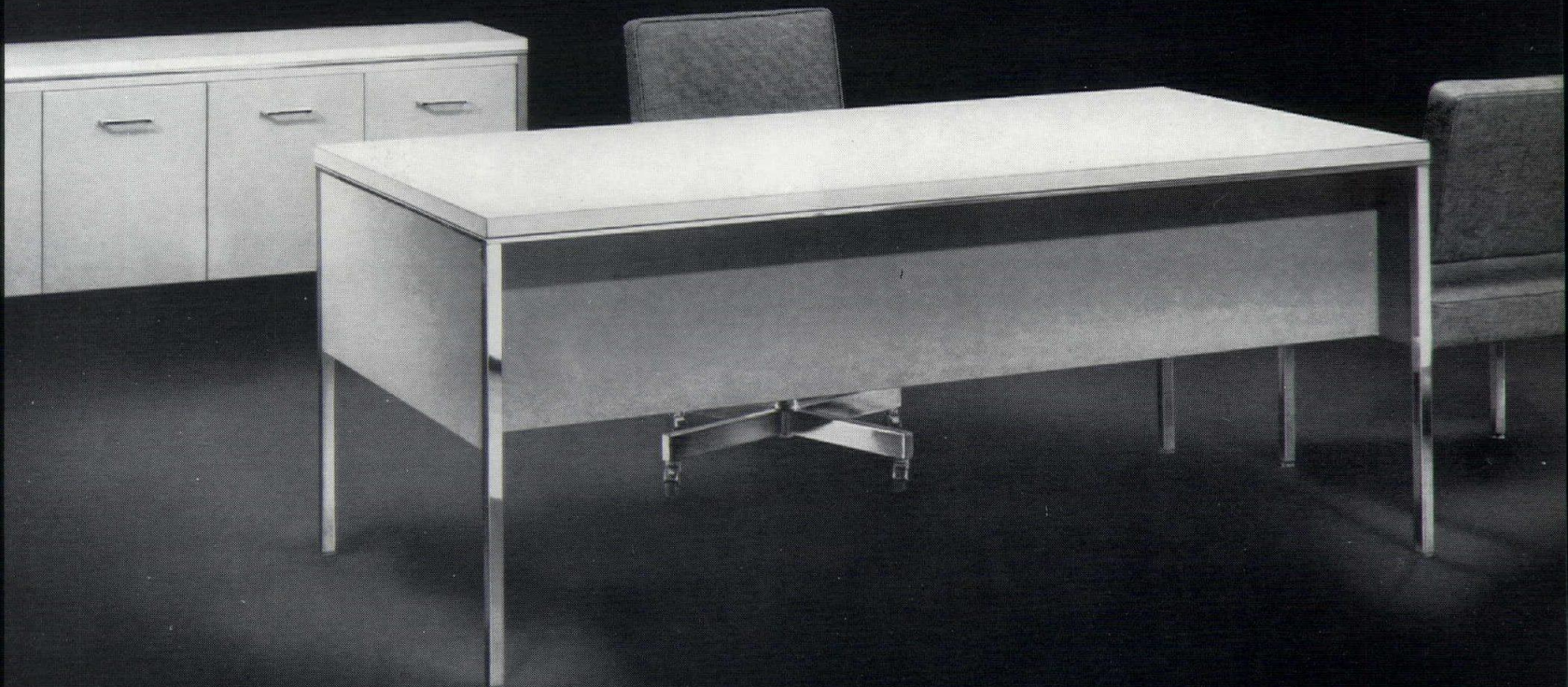


Complete complement of
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Yet very individual. Select from incomparable furniture lines, finishes and fabrics in an inspired spectrum of colors and textures to impart infinite expression to your design. All-Steel Equipment Inc., Aurora, Illinois 60507. Showrooms in New York, Chicago, Los Angeles, Aurora. Canada: B. K. Johl Inc. Montreal, Toronto, Vancouver.

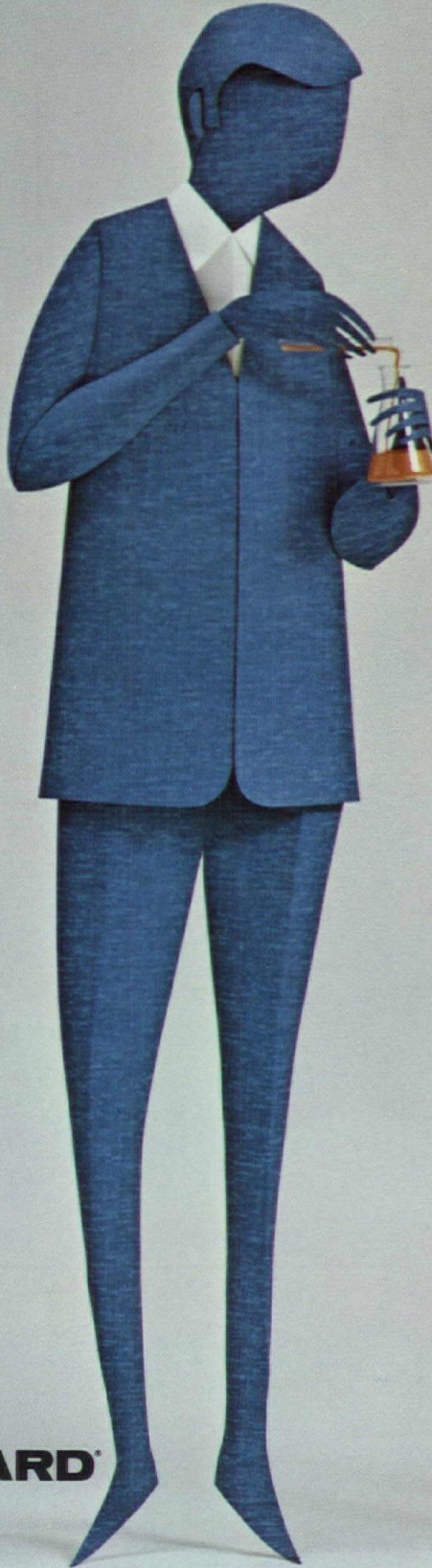
All-Steel



*Sharrie McBride
loves the stunning
effect her fashion boutique
achieves with
"April Showers/May Flowers."*

*When they told Harry McPherson:
if you can stain "Looma"
we'll replace it...
he knew it was right for
his hospital lab.*

*"Bourbon Street"
captures the
spirit Bob White
had in mind
for his restaurant.*



Wall-Tex

GUARD

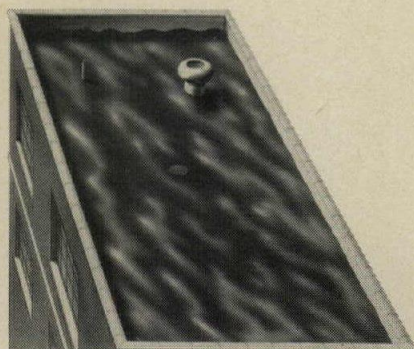
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When your plans include Corbin, you're designing for safety, security and style. Corbin heavy duty cylindrical locksets are renowned for combining security and efficiency with design leadership second to none. Contact a Corbin distributor for information and service or write P & F Corbin, Division of Emhart Corporation, Berlin, Conn. 06037. In Canada, Corbin Lock Division.



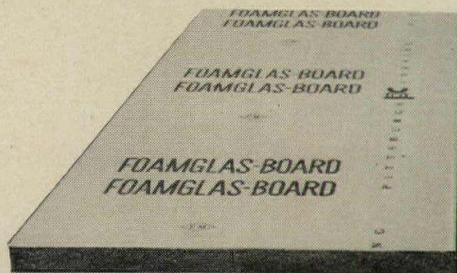
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DON'T LET THE INSULATION MAKE WAVES ON YOUR ROOF. [®]FOAMGLAS

Most insulations expand and contract with temperature changes and humidity, so they'll buckle or split your roof. Not FOAMGLAS. It's dimensionally stable—expansion and contraction are negligible. And FOAMGLAS is waterproof and has high compressive strength. It's the only guaranteed insulation.

For more information and a free sample, contact Pittsburgh Corning Corporation, Dept. AR-90, One Gateway Center, Pittsburgh, Pa. 15222.



PITTSBURGH
pc
CORNING

For more data, circle 115 on inquiry card

OFFICE LITERATURE

For more information circle selected item numbers on Reader Service Inquiry Card, pages 253-254.

ROOFING / A 4-page brochure describes a line of fire-retardant red cedar shake and shingle roofing materials, giving standard sizes and weights, flame-proof ratings and installation data. ■ Koppers Company, Pittsburgh.*

Circle 400 on inquiry card

KITCHEN EQUIPMENT / A 12-page catalog describes a complete line of kitchen appliances including gas and electric ranges, dishwashers, disposers, refrigerators and an electronic cooking center. Specifications are included. ■ Tappan, Mansfield, Ohio.

Circle 401 on inquiry card

FLOORING / A 16-page catalog describes a line of vinyl asbestos floor tile, asphalt floor tile and strip and cove base. Color illustrations show patterns and shades available. A brief specifications guide is included. ■ Azrock Floor Products, San Antonio, Texas.*

Circle 402 on inquiry card

WALL SYSTEM / An 8-page brochure describes a modular wall system which includes windows and doors as part of the factory assembled units. Insulating qualities of this polyurethane-core wall system are given. ■ Stran-Steel Corporation, Houston.*

Circle 403 on inquiry card

AUTOMATIC DOORS / A line of automatic swinging, sliding and folding doors is described in a 12-page catalog. Specifications for hardware, pneumatic and electric operators are included. Diagrams illustrate and give installation data for a variety of applications. ■ The Stanley Works, New Britain, Conn.

Circle 404 on inquiry card

MOVABLE PARTITIONS / A 6-page bulletin describes a movable partition system featuring a hook-on method of installation using slotted channel metal studs spaced with faces of gypsum wallboard applied by means of hook strips laminated to the back of the wallboard. This hook-on method allows independent removal of individual partition panels. ■ Kaiser Gypsum Company, Inc., Oakland, Calif.*

Circle 405 on inquiry card

TILE / A 12-page brochure describes a line of large-scale ceramic tile measuring one-foot square. The brochure gives applications for interiors, exteriors, walls and floors. Installation details and specifications are included. ■ American Olean Tile Co., Lansdale, Pa.*

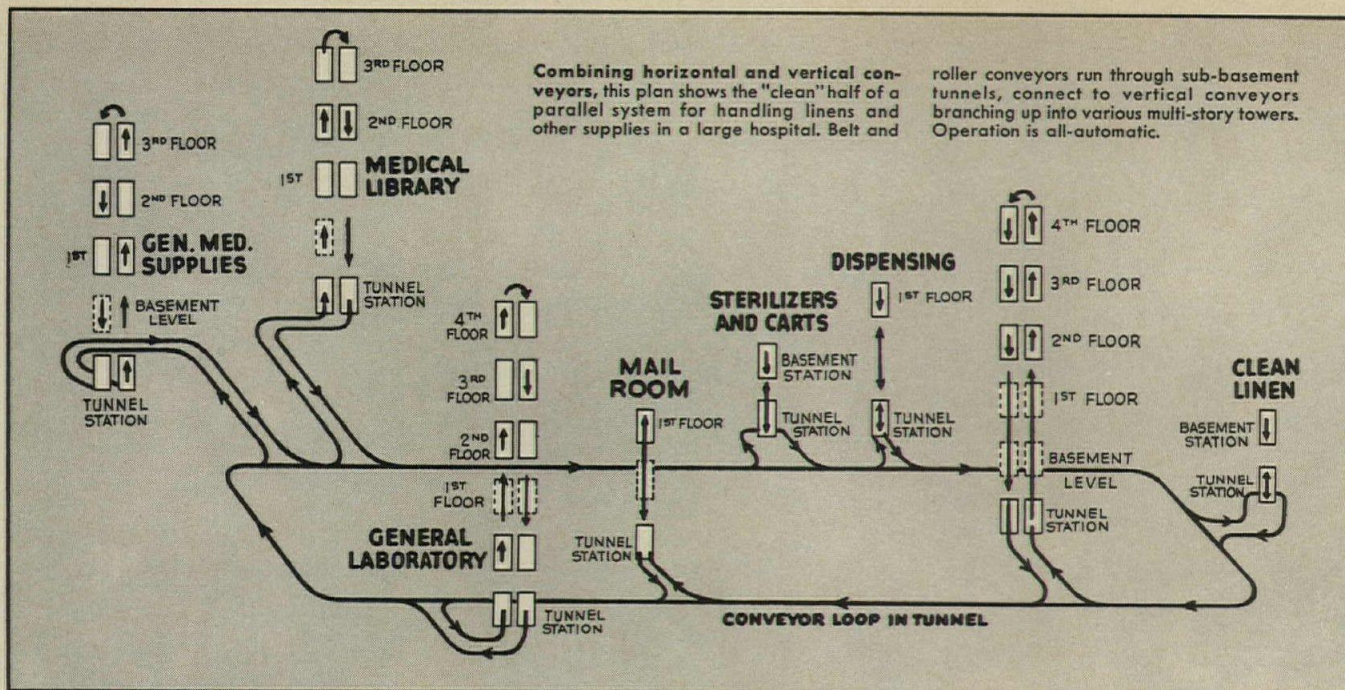
Circle 406 on inquiry card

* Additional product information in Sweet's Architectural File

more literature on page 234



This is IBG *BARRELVault*. IBG also designs, manufactures and builds IBG *DOMESYSTEM* and IBG *SKYLYTE* glazed structural systems and IBG *SUN/FUN* pool enclosures. See our catalog 22a/lc in Sweet's. / IBG, P. O. Box 147 Deerfield, Illinois 60015. Phone 312 634-3131. / IBG OF CANADA, LTD., 90 Bartlett Road, Beamsville, Ontario, Phone 416 563-8276.



Pushbutton conveyor system speeds hospital supplies to any of 17 stations



Automatic control is an integral part of a Recordlift System. It employs the magnetic tab principle of conveying encoded digital information—one of the most reliable, economical, maintenance-free systems devised.

Operation is fast and automatic. Operator simply loads the basket, places it on the loading station, pushes the proper button for the desired destination—and away it goes!

PLANNING for materials handling in multi-story buildings can become an easy matter—when you specify a STANDARD CONVEYOR Recordlift System.

A Recordlift System unifies a building. General supplies, mail, records, files and other materials go up, down, and throughout the building at the push of a button. The cost and congestion of inter-floor messengers is saved—speed and efficiency are gained.

Ideal for hospitals

Widely used in office buildings, banks, libraries, etc., Recordlift Systems have long proved ideal for handling hospital supplies.

The plan above, for example, shows the "clean" portion of an extensive double Recordlift System being designed for a new 700-bed hospital.

Has two-lane traffic

Two separate horizontal-vertical conveyor systems will run side-by-side throughout the building complex. One will handle clean linen; the other, soiled. The systems will also handle mail, books, records, forms, publications, medical supplies, instruments and lab specimens.

There are 17 pushbutton stations on the clean system, 14 on the soiled. The entire double system has about 4,300 feet of conveyor—3,000 feet horizontal. The vertical footage includes 8 Recordlifts and 12 reciprocating lifts.

Provisions are included for adding 7 more stations to the clean system and 8 more to the soiled.

Dispatching is simple

Any station can send to any other station in each separate system. For reasons of cleanliness, the two systems do not connect at any point.

Dispatching is simple, fast and selective. The operator merely loads the 20½" x 17½" x 10" container (2 will hold a complete change of linen for 3 beds), pushes the button for the proper station, and the system delivers it.

Write for data file

If you are concerned with multi-story buildings which call for streamlined distribution of everyday supplies, be sure to investigate STANDARD CONVEYOR Recordlift Systems.

Write today for an illustrated data file. Or simply clip this ad to your letterhead and mail it.

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Automatic Pneumatic Tube Systems • Recordlift Systems
• Mechanized Dish Handling Systems • Escaveyor Continuous Vertical Conveyors • Custom Engineered Conveyor Systems • Sorting Systems, Automatic and Semi-Automatic • Heavy-Duty Conveyors for Industrial Plants, Factories, Special Applications • Pre-Engineered Hand-drive Conveyors and Components • Pallet Stackers and Dispensers • Case Unstackers • Spiral Chutes

For more data, circle 121 on inquiry card

Bright idea



Specify a complete wash center with one word: Bradpack!

The economy of a complete, preassembled wash center, including the accessories of your choice. Everything design-coordinated Plus foot control. Plus beauty and ease of installation. You get them all when you write "Bradpack." You can specify from 3 models: full length unit or lav section only, both with foot control; or lav and upper section only, with wrist

blades for wheel chair patients. All are stainless steel, completely preassembled and ready for installation. For hospitals, motels, dormitories—all public and private washrooms—write "Bradpack." Got the word? See your Bradley representative. And write for literature. Bradley Washfountain Co., 9109 Fountain Boulevard, Menomonee Falls, Wisconsin 53051.

from Bradley!



For more data, circle 122 on inquiry card

What's the surest way to specify the right Wade DWV System Floor Drain?

You'll find all the numbers in the industry bible for DWV systems, the Wade Specification Manual.

It tells you all about Wade Floor Drains. The different kinds. The specs. The types. Everything you need to know in order to specify the Wade Cast Iron Floor Drain that's right for the system you're designing.

Our bible also gives you specification and product information on everything else we make. Everything from roof drains, to water hammer arrestors, to interceptors, to carriers and cleanouts.

All of these DWV system prod-

ucts are designed, engineered and manufactured to the highest quality standards by the Wade Division of the Tyler Pipe team. The team that makes everything you need for a total cast iron DWV system.

Things like cast iron soil pipe, No-Hub Couplings and TY-SEAL® Gaskets from our Soil Pipe Division.

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Next time specify your DWV system products from the bible. To get your free, registered copy, simply write us on your letterhead.

If it goes into a cast iron DWV system, Tyler makes it.

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W-1120-DF
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W-1140
W-1140 BODY
W-1160
W-1160 BODY
W-1180 BODY
W-1380
W-1380 T
W-1390
W-1390-LK
W-1390-T
W-1390-SB

W-1400
W-1410
W-1410-SO
W-1410-T
W-1420
W-1430
W-1430-SO
W-1430-T
W-1440-DS
W-1460-S
W-1470
W-1470-L
W-1500
W-1500-A
W-1510
W-1520
W-1520-LB
W-1520-P
W-1540-T
W-1540-TL
W-1560-B
W-1560-BM

W-1570 TD
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W-1640
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W-1740-UF

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W-1750-LL
W-1760-F
W-1820
W-1820-A
W-1820-B
W-1830-D
W-1860-D
W-1860-DT
W-1860-E
W-1860-ET
W-1870-A
W-1890
W-1890-R
W-1840-CV
W-1840-CVL
W-1950-CV
W-1980
W-1980-L
W-2030
W-2030-F
W-2040
W-2040 F
W-2050

W-2050-F
W-2050-GF
W-2080
W-2085
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W-2360-B
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SAVE 70% ON WASHROOM MAINTENANCE COSTS



"The installation of AllianceWall porcelain-on-steel panels will save us an estimated 70% in maintenance labor costs."

That's the prediction of the plant engineer at one of the world's largest manufacturing facilities who also made the following statement: "We tested these AllianceWall porcelain-on-steel panels for 10 months under the most punishing conditions and are convinced they are the most practical, economical material we could have chosen."

"These AllianceWall panels never require painting or scrubbing and we proved to our satisfaction that

steam cleaning won't harm their finish. We also found the panels are mar-proof, scratchproof and can't be written upon," he said.

When Alliance porcelain-on-steel is laminated to hardboard or low-cost Gypsum board it becomes the logical choice for interiors where durability, attractiveness and economy are a prime requirement.

The panels are fully protected under our standard guarantee. Panels won't corrode or appear to age. Choose from 107 standard colors that stay bright and new looking indefinitely.

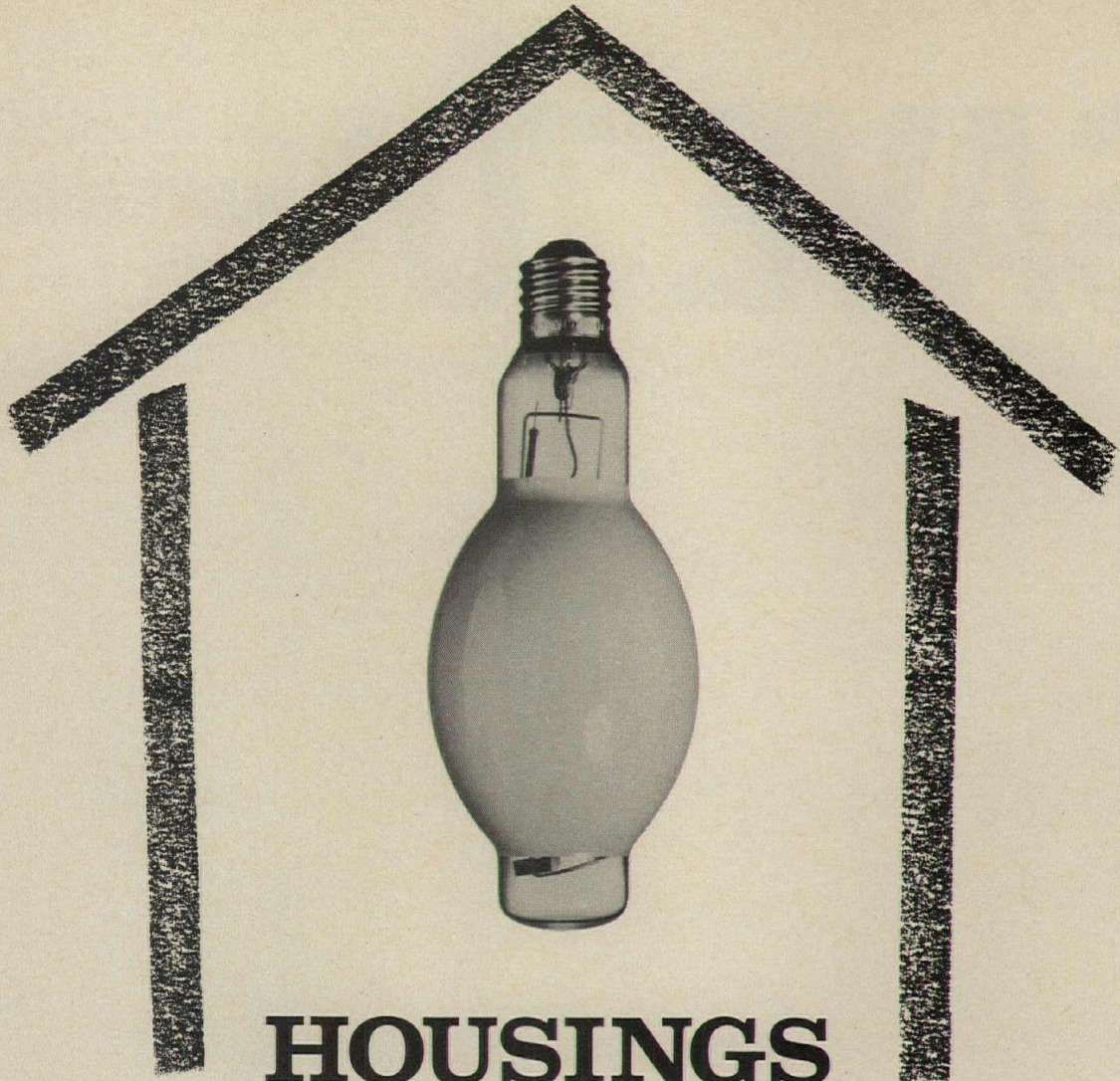
For more information, including specifications,
check Sweets File or write to:

AllianceWall

AllianceWall Corporation

P.O. Box 247, Dept. PE, Alliance, Ohio 44601

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HOUSINGS for Mercury lamps

PRESCOLITE has no HOUSING shortage. We have **MERCALITE**TM fixtures available for . . . indoor or outdoor use, hi-bay or lo-bay. Round or square recessed, ceiling cylinders, wall brackets, outdoor spots and floods, post lights, aisle lights or flush mount ground units. Over 100 different Mercury units to choose from.

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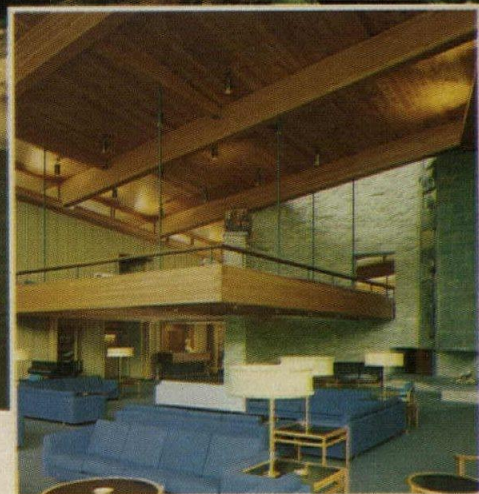
PRESCOLITE
A DIVISION OF U S INDUSTRIES, INC



General Offices and Factory: 1251 Doolittle Dr., San Leandro, Ca. 94577
Pennsylvania Factory: 539 Jacksonville Road, Warminster, Penn. 18974
Arkansas Factory: Prescolite Dr. and Industrial Rd., El Dorado, Ark. 71730

For more data, circle 125 on inquiry card

LOCK-DECK[®] DECKING HELPED CREATE THIS INSPIRED UAW FAMILY EDUCATION CENTER



Potlatch invented Lock-Deck laminated decking, and the UAW's spectacular Walter and May Reuther Family Education Center at Black Lake, Michigan, takes full advantage of this unique building material. The beauty and the ecology of the setting are preserved and complemented by the natural charm of inland red cedar Lock-Deck walls and ceilings. The architectural drama of soaring wall surfaces and wide-span structures relies on the integrity and strength of exclusive long-length laminated decking. Nearly three-quarters of a million board feet of Potlatch cedar Lock-Deck helped create this unique achievement. We can do the same for you. Write for information.

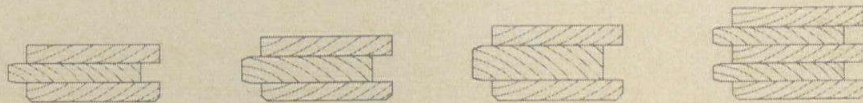
Potlatch

WOOD PRODUCTS GROUP

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Architecture: Stonorov and Haws
Engineering: David R. Wittes
Construction: Henderson Brothers

For details see Sweet's Architectural file 1c|Po.



Lock-Deck is available in 4 thicknesses and 2 face widths. Electro-Lam[®] beams in all sections up to 162 sq. in., lengths to 60 ft.

For more data, circle 126 on inquiry card



planning a
sound system?

RELY ON



SOLID-STATE

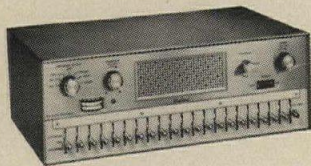
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virtually maintenance-free . . .
designed to your exact
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SCHOOLS: Widest selection of Central Control Solid-State Systems—with full intercom and program facilities—in console, table turret or rack configurations—in every price range bracket.

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Detailed specifications for RAULAND Sound Equipment are available to you. Ask for our manual on your letterhead. We specialize in close cooperation with architects and consulting engineers.

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For more data, circle 127 on inquiry card

OFFICE LITERATURE

continued from page 222

PARKING AREAS / "Design Guide for Permanent Parking Areas" is a 36-page booklet with major sections devoted to general planning, typical geometric and cross-section drawings, the NCSA pavement design system and materials and construction specifications. The booklet features the use of crushed stone bases in flexible pavements. ■ National Crushed Stone Assoc., Washington, D.C.

Circle 407 on inquiry card

NYLON COATING / A brochure describes a powder coating applied by fusion bond coating processes. The properties of this plastic coating are detailed in tables. Applications for industrial and consumer products are given. ■ The Polymer Corp., Reading, Pa.

Circle 408 on inquiry card

PROFILE EXTRUSIONS / A 2-page extrusion design guide for plastic profile extrusions of polyethylene and polypropylene gives information on material characteristics, properties, design considerations, die requirements, and secondary operations for polyethylene and polypropylene. Details on polypropylene hinge design are included. ■ Crane Plastics, Inc., Columbus, Ohio.

Circle 409 on inquiry card

LIGHTING SYSTEM / An 8-page brochure describes a coordinated lighting system. Execuline utilizes standard components to form incandescent or fluorescent lines of light for surface, pendant or wall-mounted applications. The system also offers focal downlighting. ■ Lightolier, Jersey City, N.J.

Circle 410 on inquiry card

HOSPITAL AUTOMATION / "Renaissance at Elmbrook Memorial Hospital," a 4-page brochure, describes how one hospital with a completely automated system for the processing and distribution of supplies is upgrading patient care and combating rising costs with the manufacturer's automated material processing and distribution system. ■ AMSCO Systems Co., Erie, Pa.

Circle 411 on inquiry card

CHAIR SERIES / A line of 15 chairs in three related styles is described in a 10-page brochure. Upholstery materials are available in vinyls, nubby weaves or tightly woven nylons in a variety of colors. ■ Steelcase Inc., Grand Rapids, Mich.*

Circle 412 on inquiry card

FIREPLACES / A 16-page booklet presents a line of free-standing fireplaces available in 10 colors. Installation details are included. Cost is \$.25. Write direct. ■ Preway Inc., Wisconsin Rapids, Wis. 54494

* Additional product information in Sweet's Architectural File

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For more data, circle 128 on inquiry card

BSN promises to make perfectly standard, perfectly colourless, perfectly bubblefree plate glass.

But if you insist we'll make it as thick as you like, whatever colour you like, and with as many bubbles as you want.

The "Halle à Pots" is the only place left in the world where architects can escape from traditional glass architecture. The architect of the Sydney Opera House insisted on having a light topaz glass. So we made it.

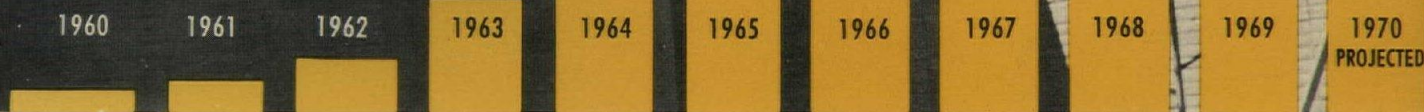


MILLIONS OF LINEAL FEET

6

3

tj the system



What building slump?

Call it what you will, to TRUS JOIST it's another opportunity!

For the past ten years TRUS JOIST sales have gone up steadily. Dramatically. This year is no different. In fact, TJ is well ahead of our own optimistic projections. Good salesmen? Yes, but the biggest reason is the product. The TRUS JOIST system is the most thoroughly engineered and precisely manufactured light weight roof and floor structural system you can buy. When building is booming TRUS JOIST is specified for its quality. When things tighten up TJ's economy makes the difference.

TRUS JOISTS save in a dozen ways. Long spans (to 150 feet) and light weight cut down on footings, foundations and bearing walls. That same light weight means extra fast erection and reduced labor costs. Nailable top and bottom chords allow for direct fastening of

low cost decking and ceiling materials and open webs mean quick placement of duct work, plumbing and wiring. Quick delivery too...within three weeks after approval of shop drawings if needed.

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**Building slump?
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For more data, circle 130 on inquiry card

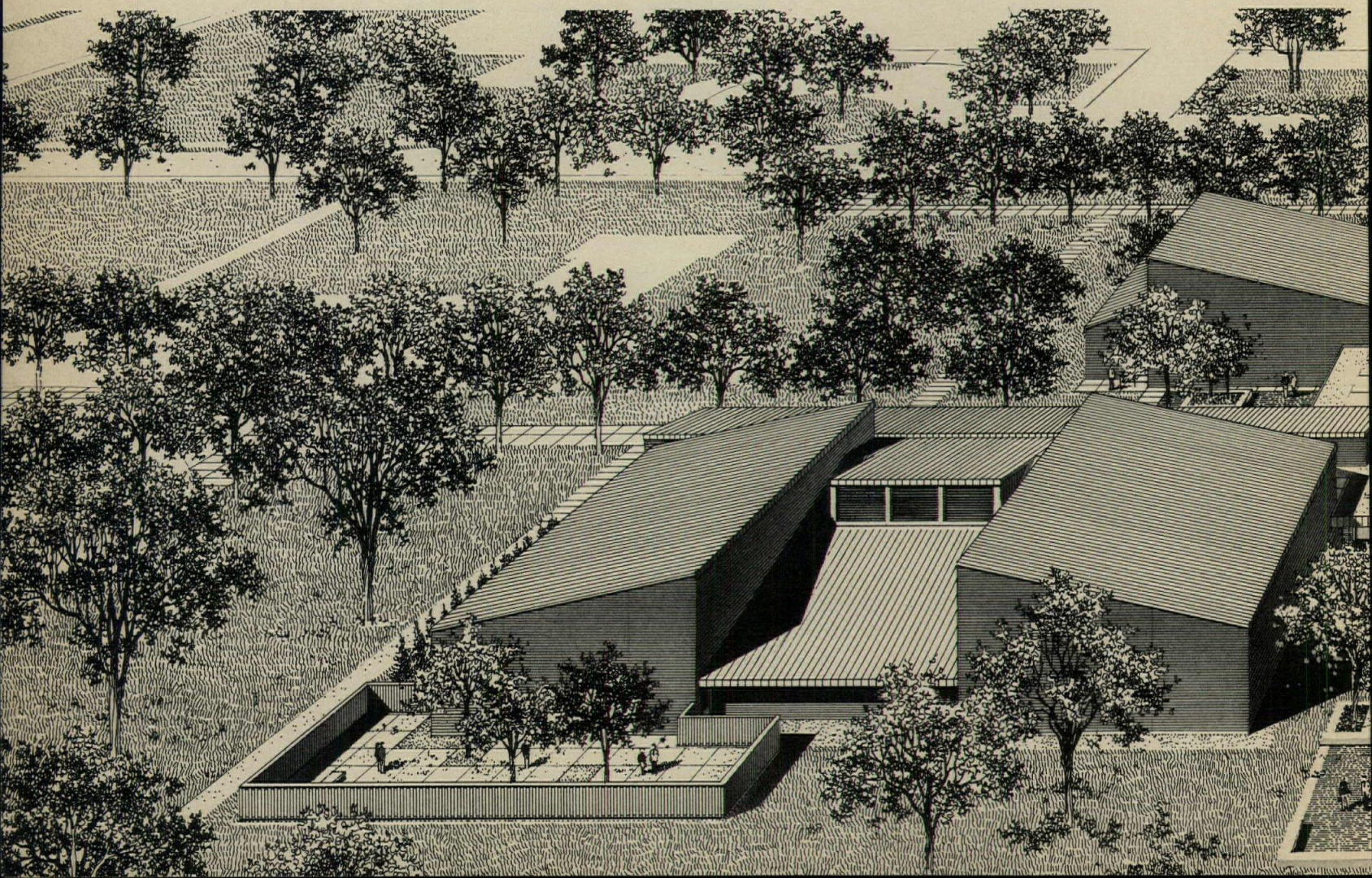
TCS:

Rehabilitation Center
Buffalo State Hospital
Buffalo, New York



Architects: Milstein, Wittek, Davis & Hamilton
Buffalo, New York

A project of the New York State Health and Mental Hygiene
Facilities Improvement Corporation for the New York State
Department of Mental Hygiene

Rendering by Brian Burr

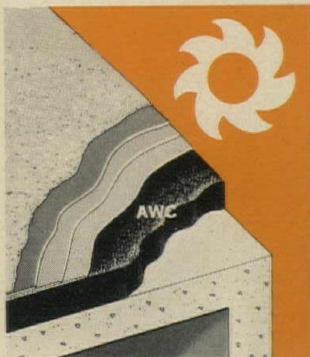
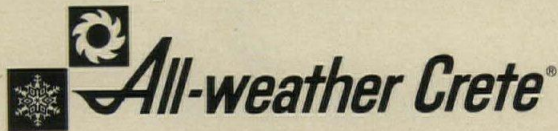


This is the story of a very special fill-type roof

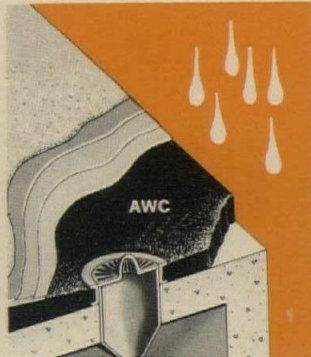
deck insulation that can be applied even during sub-freezing weather  because it contains *no* water. 

You are assured of a dependable insulation and a dependable application of this outstanding insulation . . . because it is applied only by trained, licensed applicators in your area.

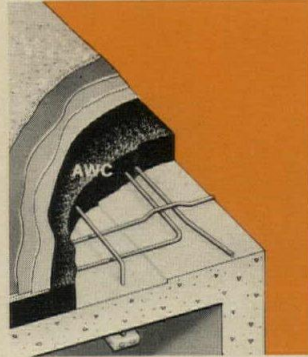
Check these features . . . then specify this insulation by its registered trademark—



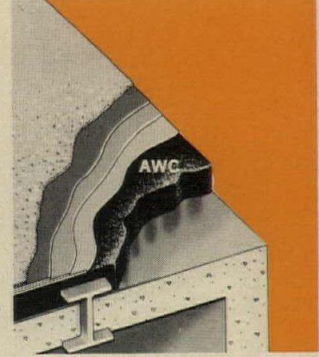
All-Weather Crete offers a K Factor, better than *any* other poured roof deck insulation!



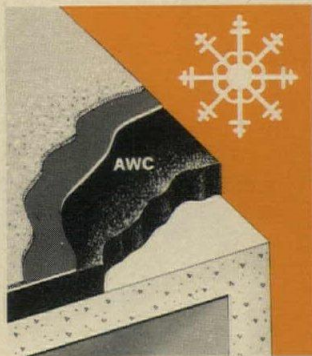
AWC can be sloped to drains thus preventing dead level roofs or water pockets.



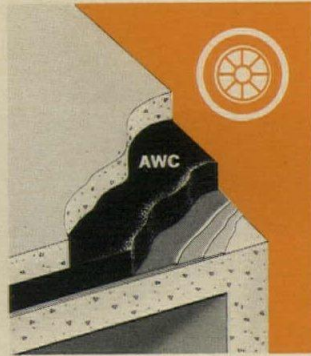
Its amazing working properties make it ideal for covering conduit or other roof irregularities!



Easy removal makes AWC ideal for future floor applications. Even covers reinforcing stubs and beams.



AWC contains no water—can be applied even in freezing weather. A monolithic insulation needing no curing time.



Its great versatility makes it ideal for roof deck insulation, re-roof, parking and plaza decks.



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Nobody helps lay out lightweight aggregate like Wheeling. Our new Tensilvent will dazzle you with steel work. It's a permanent steel form developed especially for lightweight aggregate pours.

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speed. Tensilvent has perforations in the valley of the form. These fill three percent of the sheet. They let the air in to cure poured floors and roof decks faster. And speed is what really counts so much of the time.

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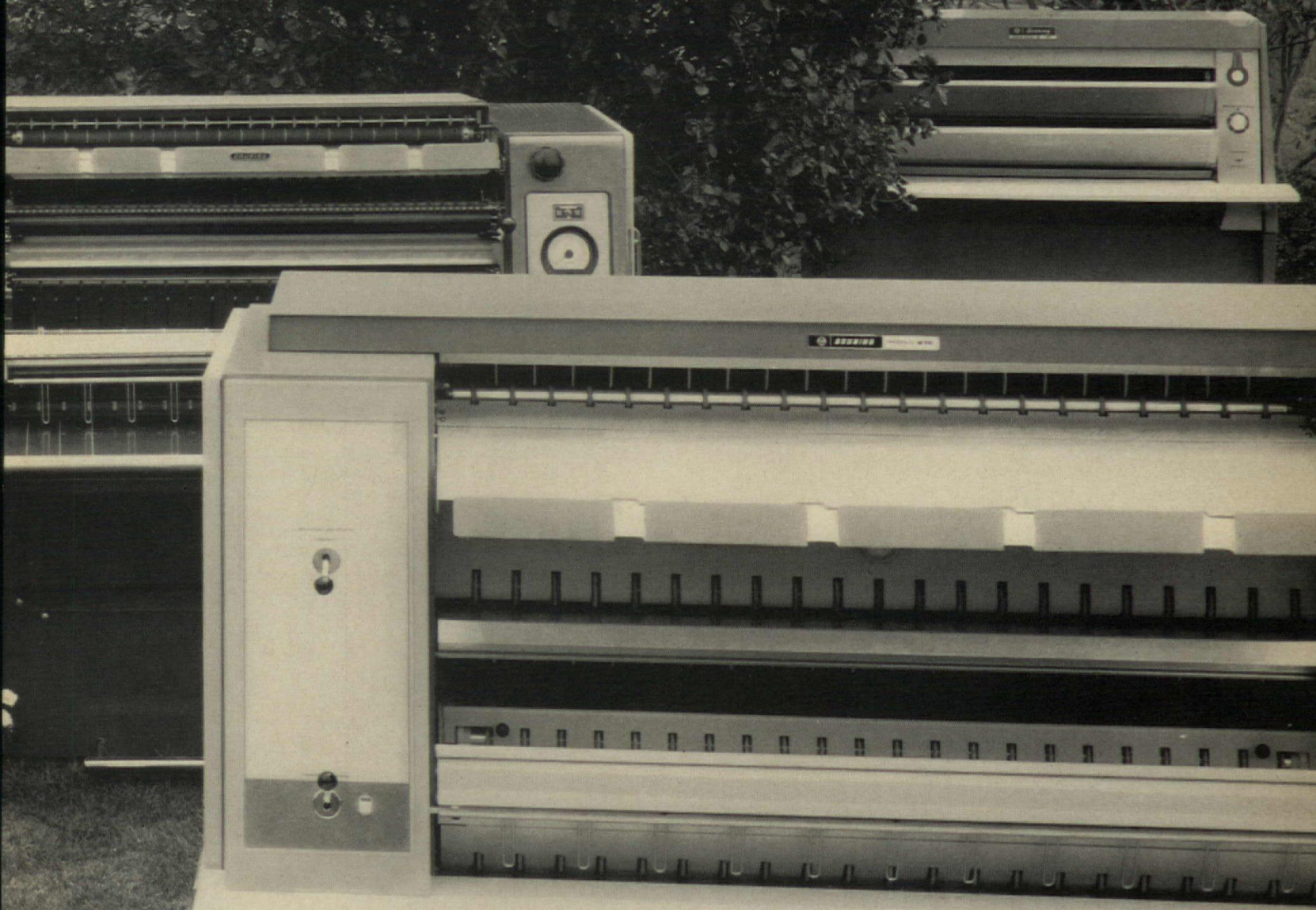
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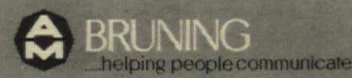
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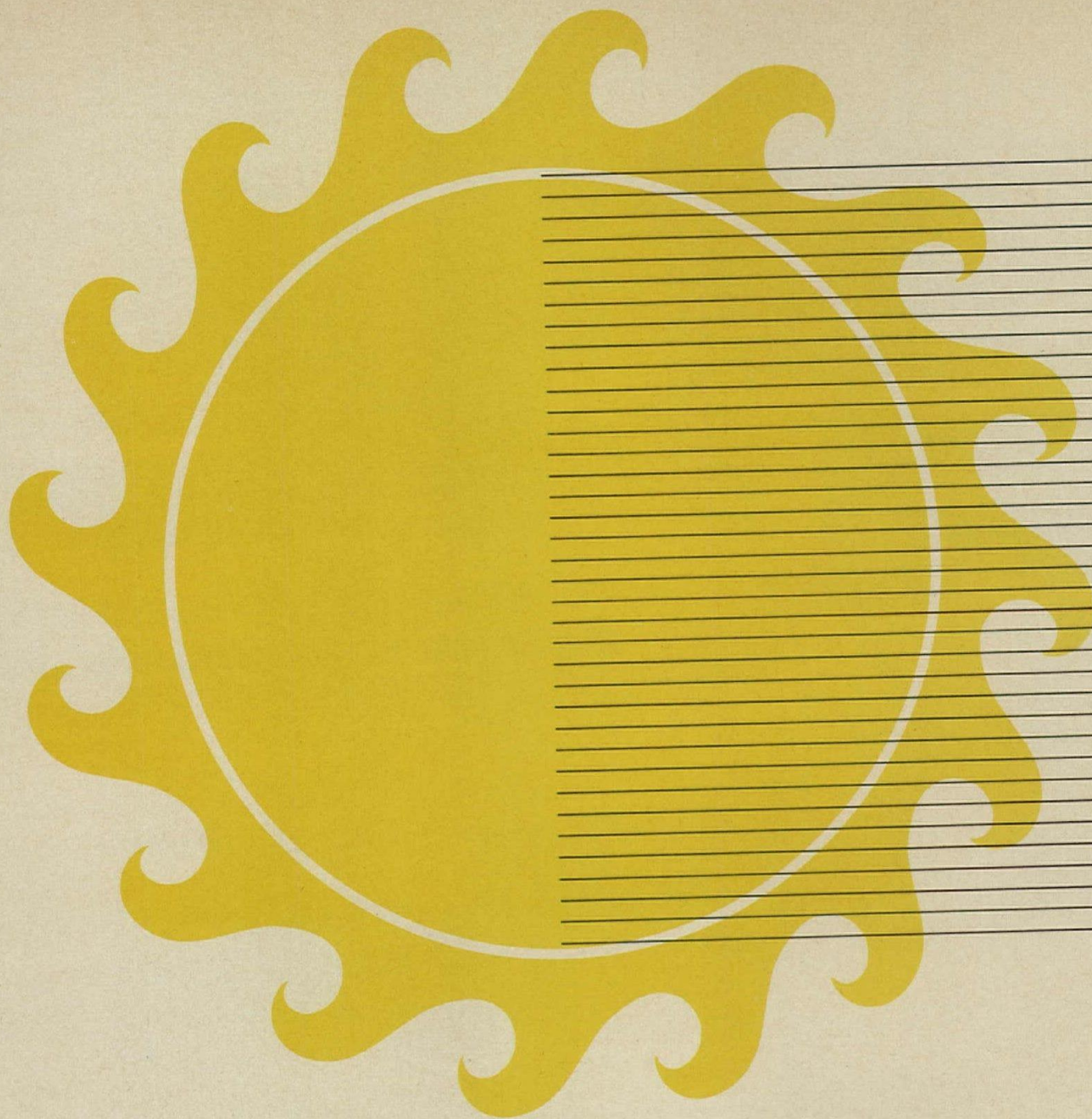
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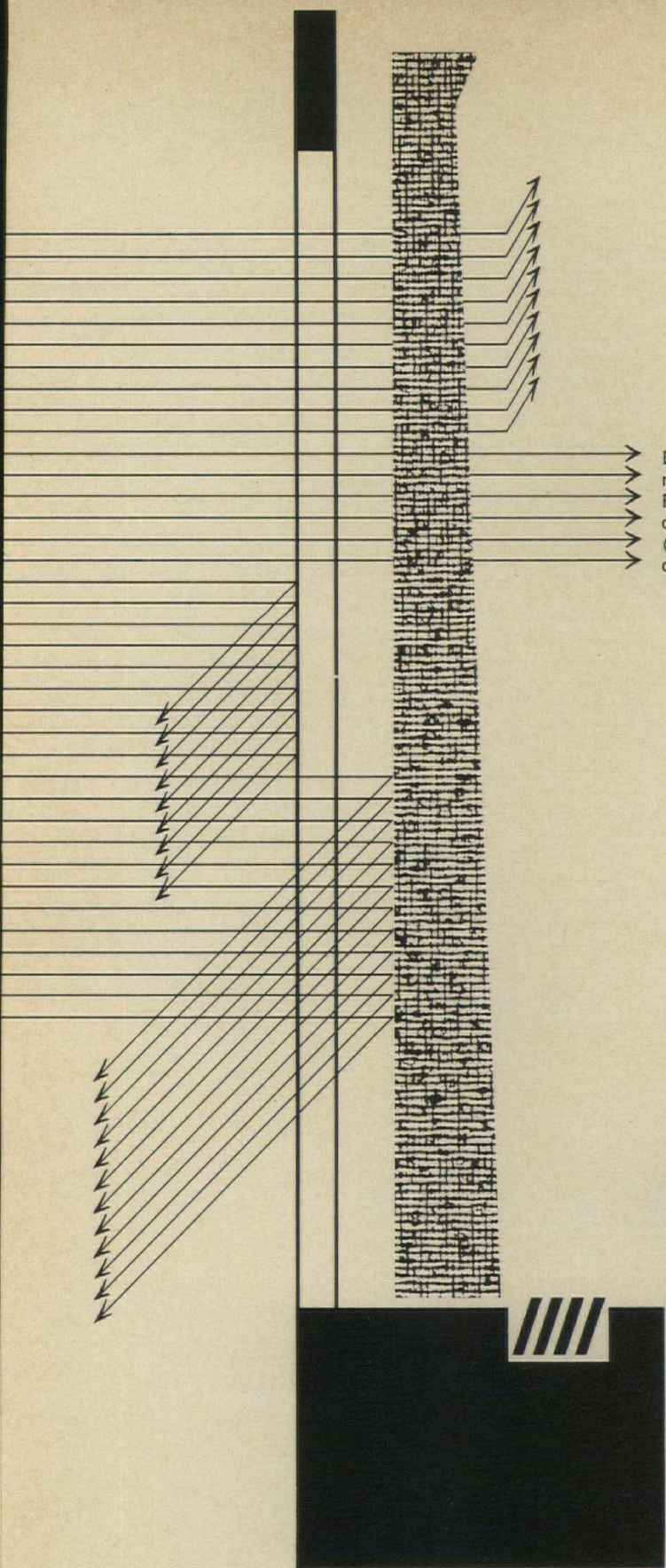
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For names of nearby representatives and for detailed technical information, use the coupon.

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