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BUILDING TYPES STUDY: GARDEN ENVIRONMENTS FOR APARTMENT LIVING

IT'S NOT JUST THE CITIES: SECOND IN A SERIES BY ALBERT MAYER

FULL CONTENTS ON PAGES 4 AND 5

ARCHITECTURAL RECORD

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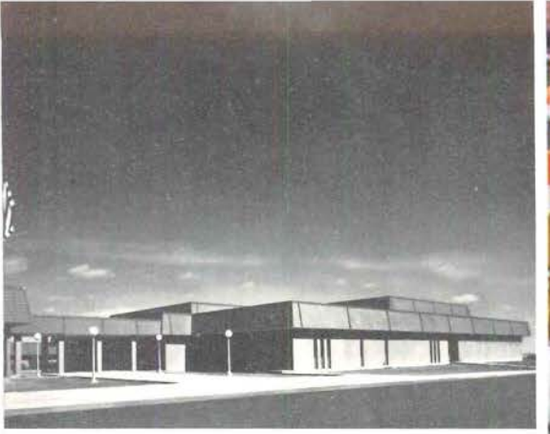

The new Oliver Wendell Holmes Junior High School in Colorado Springs, Colorado, sits in the shadow of the Rockies. The sleek, modern lines of the building contrast beautifully with the rugged, ages-old mountains. **Architect:** Higginbotham-Nakata and Muir, Colorado Springs. **General Contractor:** Bruce Hughes, Colorado Springs. **Flooring Contractor:** Denver Building Supply Company, Denver, Colorado.

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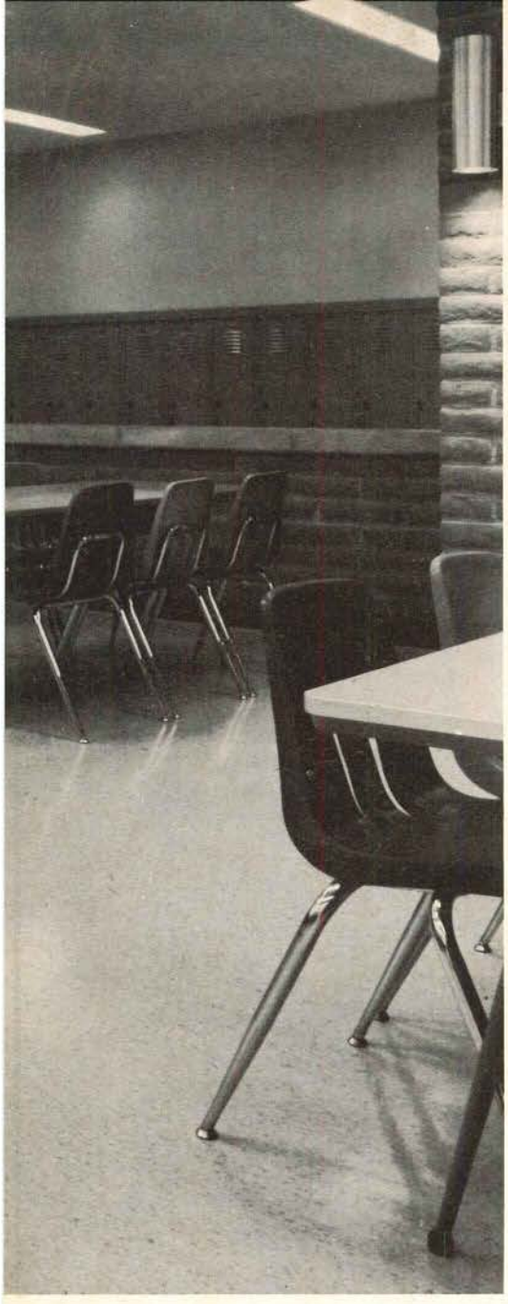
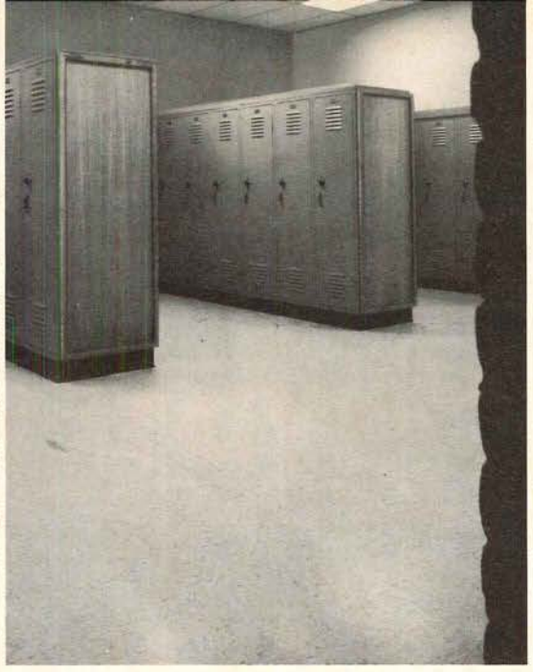
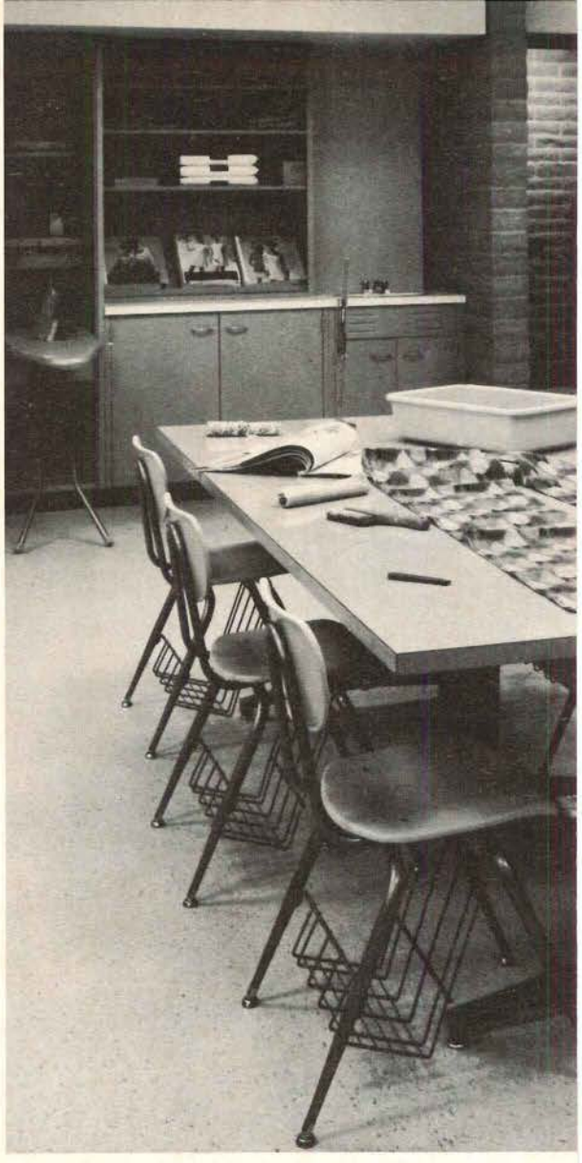
The floor plan of a junior high







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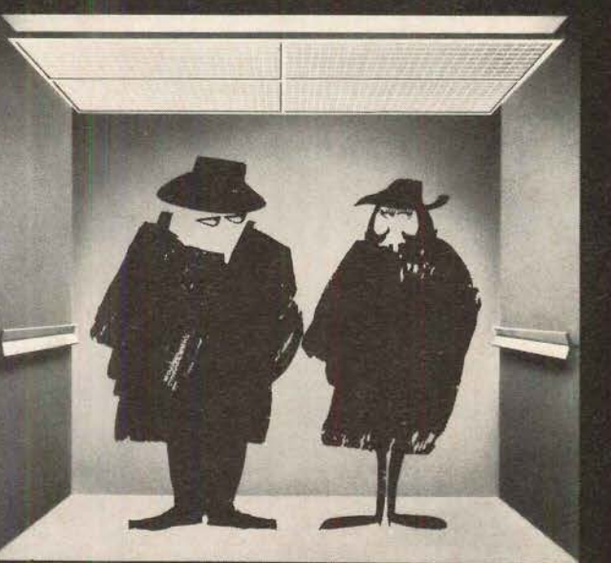

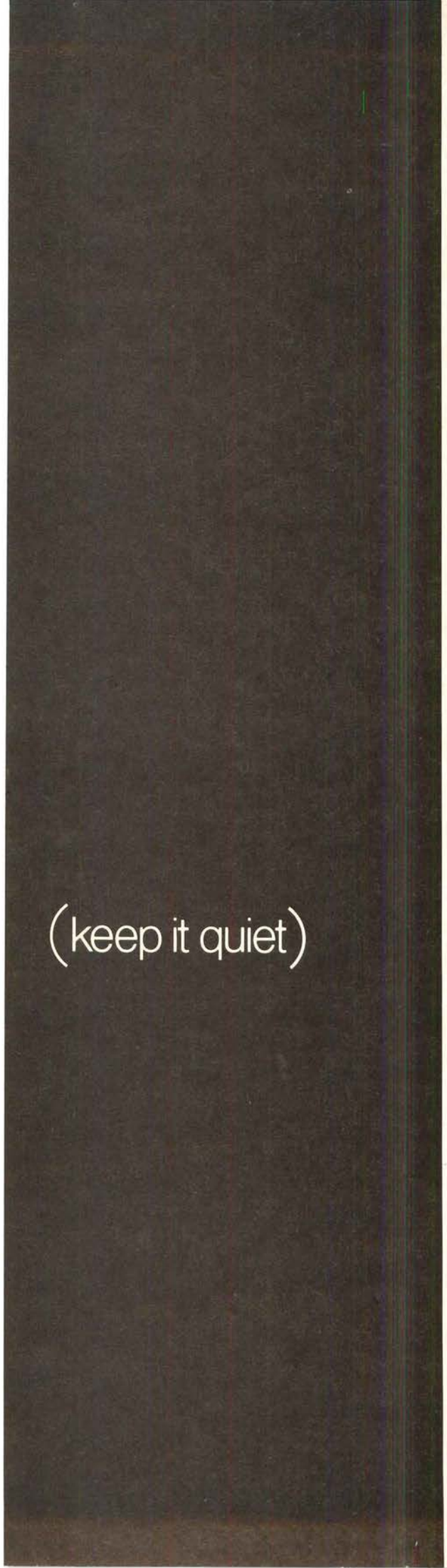

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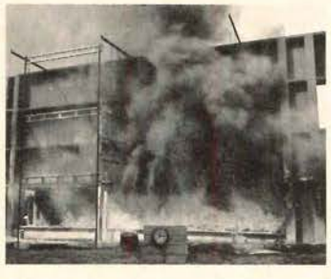
Art Hupy



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BUILDING TYPES STUDY: MIAMI'S INNOVATIVE NEW SCHOOLS

The results to date of Dade County, Florida's unique and remarkable school building program, will be explored in next month's school study. Developed with Ferendino/Grafton/Pancoast as consulting architects to the Board of Public Instruction of Dade County, the schools incorporate a great number of educational and planning innovations, and reflect the best design thinking of many of the architects in the area.

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

The housing crisis is fast reaching explosive proportions. Next month's article takes a broad look at the over-all dimensions of the problem and at current approaches to its solution, with special focus on the strategy exemplified by HUD's widely-heralded Operation Breakthrough.

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Ancient as the Pyramids

Porcelain Enamel Comes Home Again To The Desert

The ageless beauty and durability of porcelain enameled metal artifacts, hand crafted by the Egyptians as early as 500 B.C., can be seen in museums throughout the world. In spite of its early beginning, however, use of the porcelainizing process during the next 2000 years was restricted mainly to jewelry, cookware and household items.

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Ludwig Mies van der Rohe: 1886-1969

And now Mies is dead too, the last of the masters who conceived and shaped the architecture of our time, and who by the excellence of their work served as the conscience of a generation of their peers.

His greatest legacy is not, as with Gropius who died just 43 days before him, what he accomplished as a teacher—though he was a great teacher and taught actively as the head of the School of Architecture at Armour (now Illinois) Institute of Technology from the time of his emigration to the United States in 1937 until 1958. His view as a teacher: "First you have to learn something. Then you can go out and do it." He demanded of students, as he did of himself, a heaping measure of reason and discipline and attention to detail—intellectually, creatively and artistically—and that posture is now very much out of style with students.

Unlike Gropius and Le Corbusier and Wright, he wrote little and lectured infrequently. His philosophies and theories, like his buildings, had to be analyzed by others.

Mies' special place, his greatest legacy, is his profound influence on other architects and thus on the face of our cities.

Every great leader has followers, but Mies has more followers than anyone else, and many of the most distinguished and innovative architects accept and acknowledge that their work owes much to Mies' work. "The key to Mies' enormous authority," wrote Arthur Drexler, "lies in one simple fact: his ideas can be taught. His art is communicable. It can be practiced by others with measurable success. The Miesian discipline has attracted architects of every degree of talent, and Mies does not disdain an academy."

An enormous percentage of today's most distinguished, innovative, and influential architecture is being produced by members of Mies' academy; and if too many less able architects have adopted Mies' glass walls without applying his crystal-clear thinking, our architecture and our cities are better off than if those less able had felt compelled to invent their own architecture.

Mies wrote: "Construction is the truest guardian of the spirit of the times because it is objective and is not affected by personal individualism or fantasy. The idea of clear construction is one of the fundamentals we should accept. We can talk about that easily, but to do it is not easy; it is difficult to stick to this fundamental construction, and then to elevate it to a structure."

Happily, he was able to show what he meant in a great many buildings. His office lists 70 completed buildings by Mies since he opened his first office in Berlin in 1912—and lists 49 projects, some of them of equal influence.

The architectural concepts that created his enormous influence and mark the most recent of his work—the discipline and order and clarity and exquisite attention to detail—were evident in some of the work he did when he opened his first office in Berlin in 1912. He enunciated the idea of the glass skyscraper in 1920 and 1921. His project for a concrete office building in Berlin, still hailed as the apotheosis of the ribbon window, was designed in 1922. A brick country house designed (but not built) in 1923 was probably the first to "break the box" with free standing walls and a free flow of indoor and outdoor space. A concrete country house (project, 1924) was probably the first to be consciously zoned into separate elements for living and sleeping. The German Pavilion for the International Exposition at Barcelona (1929), perhaps achieves the architect's purest ideal of pure space. And any architect who does not really understand the importance of painstaking attention to every element of detail need only stand up and study his "Barcelona" chair.

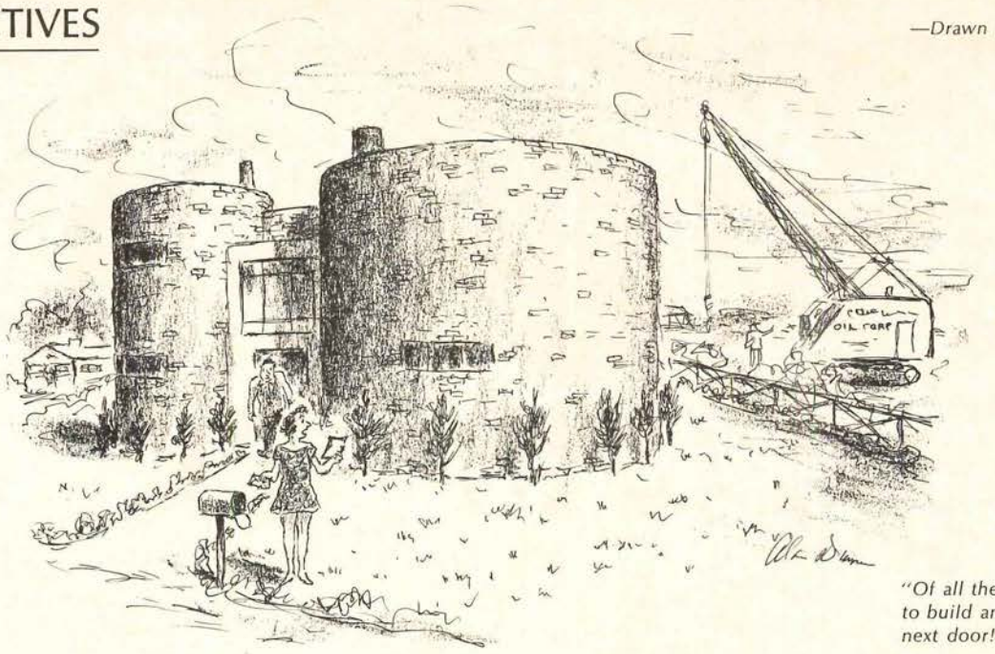
His work in America, beginning with a Jackson Hole house project in 1938 and the master plan for the Illinois Institute of Technology (1941), continued his search for a kind of absolute principle—a way to make art a science. The Alumni Memorial Hall at IIT (1946) and the Farnsworth house (1950) reveal his great subtlety in expressing things as they really are, instead of taking the easier way out of covering up incomplete thinking. His adjacent apartments at 860 and 880 Lake Shore Drive, built several years apart, reveal his ability never to settle for one detail if he could think of a better one. Mies' proposal for a conventional hall in Chicago (1954) would have used a great steel truss based on a 30-foot modular cube and spanning 720 feet. In 1958, with Cullinan Hall in Chicago, he made the most recent of his infrequent experiments in curved shapes, an interest that dated back to his first projects. In 1958, with the Seagram Building, Mies and Philip Johnson did no less than give New York City a new kind of civic pride; a pride that Chicago, with many major Mies buildings in downtown Chicago and at ITT, must feel even more strongly—though the credit for the architectural vitality of Mies' adopted city must be shared with other fine architects.

Between these landmarks in Mies' career were scores of other buildings that deserve the same kind of attention. And his output continued: His last completed buildings were the New National Gallery in Berlin, a science center at Duquesne University in Pittsburgh, Westmount Centre in Montreal (an office-apartment complex), an apartment building—and a service station—at Nun's Island, Montreal. His death leaves six major projects in the construction stage, three more in the planning stage, to be completed by his grandson and the others of his firm.

Mies wrote: "Architecture begins when two bricks are put carefully together. Architecture is a language having the discipline of a grammar. Language can be used for normal day-to-day purposes as prose. And if you are very good at that you may speak a wonderful prose. And if you are really good you can be a poet." Ludwig Mies van der Rohe was, of course, one of the great poets.

—Walter F. Wagner, Jr.

—Drawn for the RECORD by Alan Dunn



"Of all the nerve! They're going to build an oil-storage tank yard next door!"

Operation Breakthrough: commitment and questions

On the 19th of this month, officials of HUD will open and start the process of evaluating "proposals from the industry suggesting methods of producing housing in volume, considering the need for safety, durability, and attractive design as well as for the effective use of land." The goal of Operation Breakthrough is a noble one: implementation of the 20-year-old national commitment of a decent home and suitable living environment for every American family, with primary emphasis on the target set by the Housing Act of 1968 of six million housing units for low- and moderate-income families within the next decade.

With this kind of stake, it seems important before the balloon goes up to think of some of what Operation Breakthrough means in terms of commitment and what questions need to be asked on a continuing basis as the program evolves.

■ The commitment required from state authorities is enormously more expensive, more complex, and more politically hazardous than anything a Federal government has asked for before.

After listing a set of administrative requirements that will almost surely prove much easier called for than accomplished, HUD invites each governor to begin a process of "market aggregation" which involves nothing less than an itemized list, building site by building site, of available land, its physical characteristics, its market potential, an analysis of housing needs by type and quantity; and the matching of those lists.

Question: How's that for openers? How many states can or will choose to make this commitment? Will this state-wide regional market analysis work? Much hangs on the answer.

■ The commitment required from local communities hits close to home: "On the basis of consumer reaction to the prototype projects it is hoped that local communities will be encouraged to forego the restrictive zoning and land-use requirements that have been built up over the years." The question of course: will they, can they, should they? (For it is one thing to accuse communities of restriction, and another to concede they have real problems in raising the money to support the needs of new residents.)

■ The commitment asked for on the part of industry will strike home differently in different corporate hearts. Many companies (notably those making proposals) have, of course, already begun to "bring together the talents that are needed and to make the necessary investment to apply advances in technology and modern management approaches to production of housing." The question is, however: How many of those companies are prepared with proposals on the scale and of the quality required, and how many will promote dubious proprietary "technology"; how many companies will stay away because they have been burned too badly by earlier programs; and how many brilliant men and ideas will not be available to the Operation Breakthrough because their companies are not well enough staffed or financed to play in this big a league?

■ The commitment required on the part of labor is to "recognize that changes in the building system are inevitable, if we are to provide the housing we need. Labor must be prepared to make and encourage such changes and to adjust its operating procedures to the new systems that are established." The question is obvious: Not just will labor change, but can it change?

■ The commitment asked of the banking community is another complex and most difficult matter. The size of the pool of capital available for mortgages has been a recurring problem for years. The basic question now is: Is HUD right when it says, "The return to the nation and the indirect benefits should be ample encouragement for investment in housing."?

There are many other broad questions:

■ How many of the people at every level that are or will be involved in Operation Breakthrough understand that the key to success is almost surely not a breakthrough in building technology, but in management of government and corporate processes, management of land, management of money and management of people—whether they are architects, engineers, planners, bureaucrats, skilled labor, politicians, or just plain residents and taxpayers.

■ Will the now-purposely-vague evaluation criteria—for various building system concepts, organizational capabilities, program planning, and cost and price—be adequate after they are developed? And will the evaluators—to be chosen initially by the National Academies of Science and Engineering—prove equal to this most complex and critical judgement, especially in view of the likelihood that management, not a new building system, will prove the breakthrough?

■ Will the political need to "get something built" cloud judgements in Washington and give impetus to concepts that are do-able at the expense of concepts that hold out better hope of long-run success? (Perhaps we can manage both, and surely the proposed systems of "rolling bids," permitting re-evaluation of broad concepts and narrow technologies alike on a continuing basis will solve this problem, if it is one, in due time.)

■ And what of design quality? There is little evidence (though it is premature to say so) that there is much architect involvement in the conception of Operation Breakthrough, in the proposed evaluation process, or in the proposals themselves. Much is at stake for all that architects and other design professionals care about and believe in—as professionals and people.

Now is a time to be informed and be involved—individually where that is possible, but surely as a professional body. Figure the stakes for yourself.

—*W.W.*

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New physical education building, Graceland College, Lamoni, Ia. Designed to house the college's varsity and intramural athletic programs as well as large public functions. Roughly oval in plan, the end walls are parabolic curves and side walls are formed of two inverse parabolic curves. This column-free structure 305′ long, 174′ wide and 70′ high has space for five basketball, tennis or volleyball courts to operate at the same time within a 6 lane, ⅛ mile track. Floor area is covered with synthetic, resilient athletic surfacing to accommodate all those activities as well as indoor football and baseball practice.

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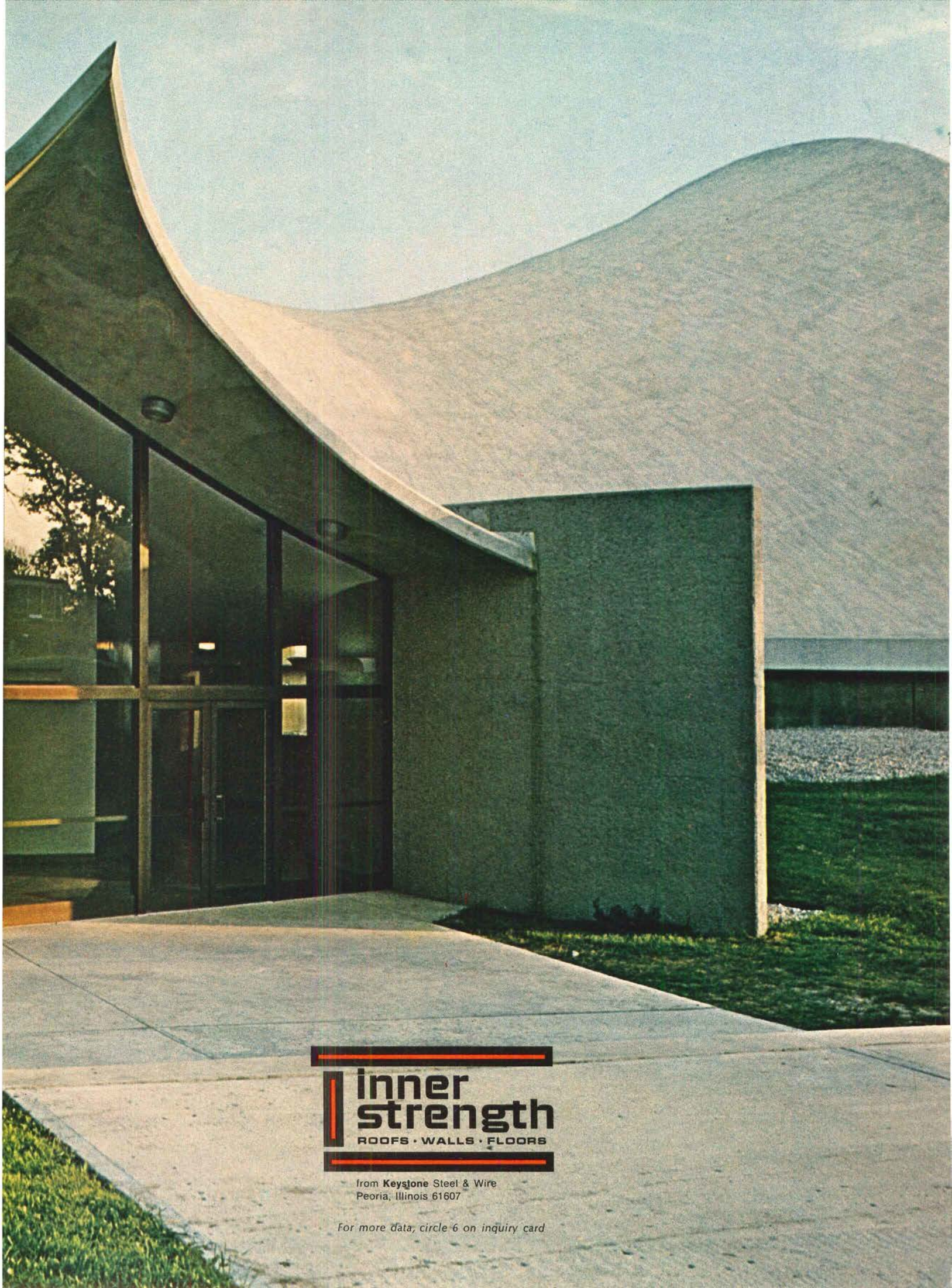

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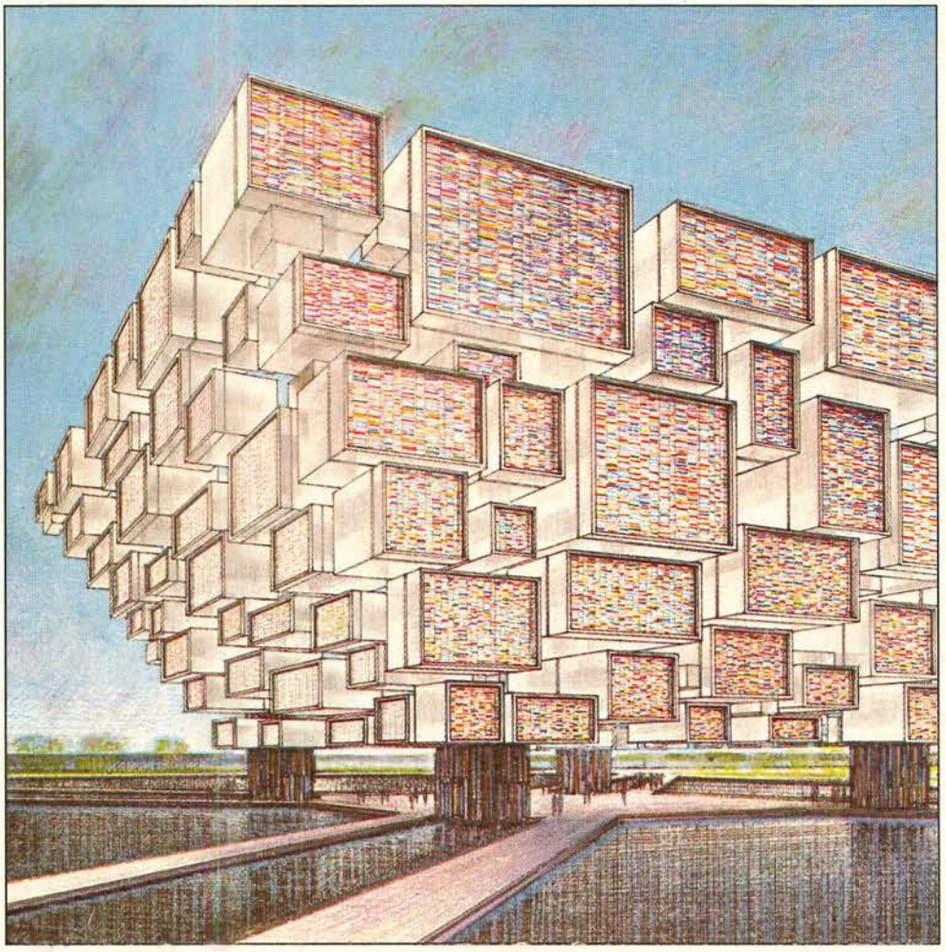

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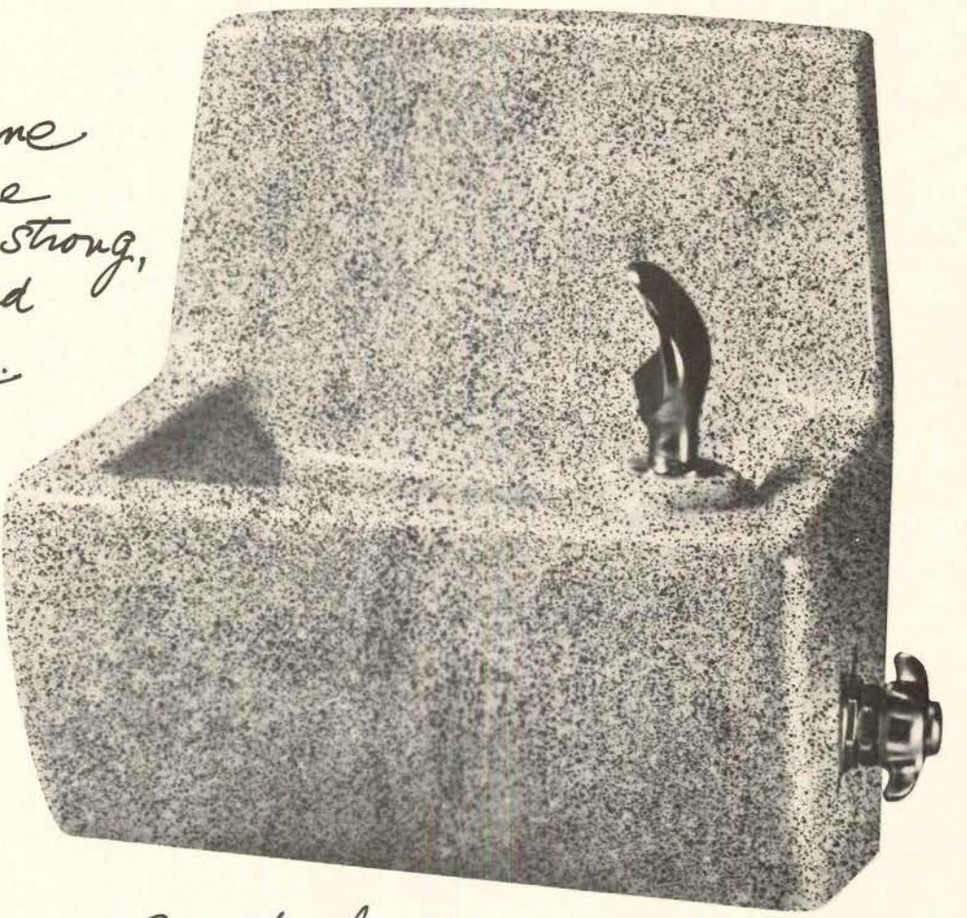

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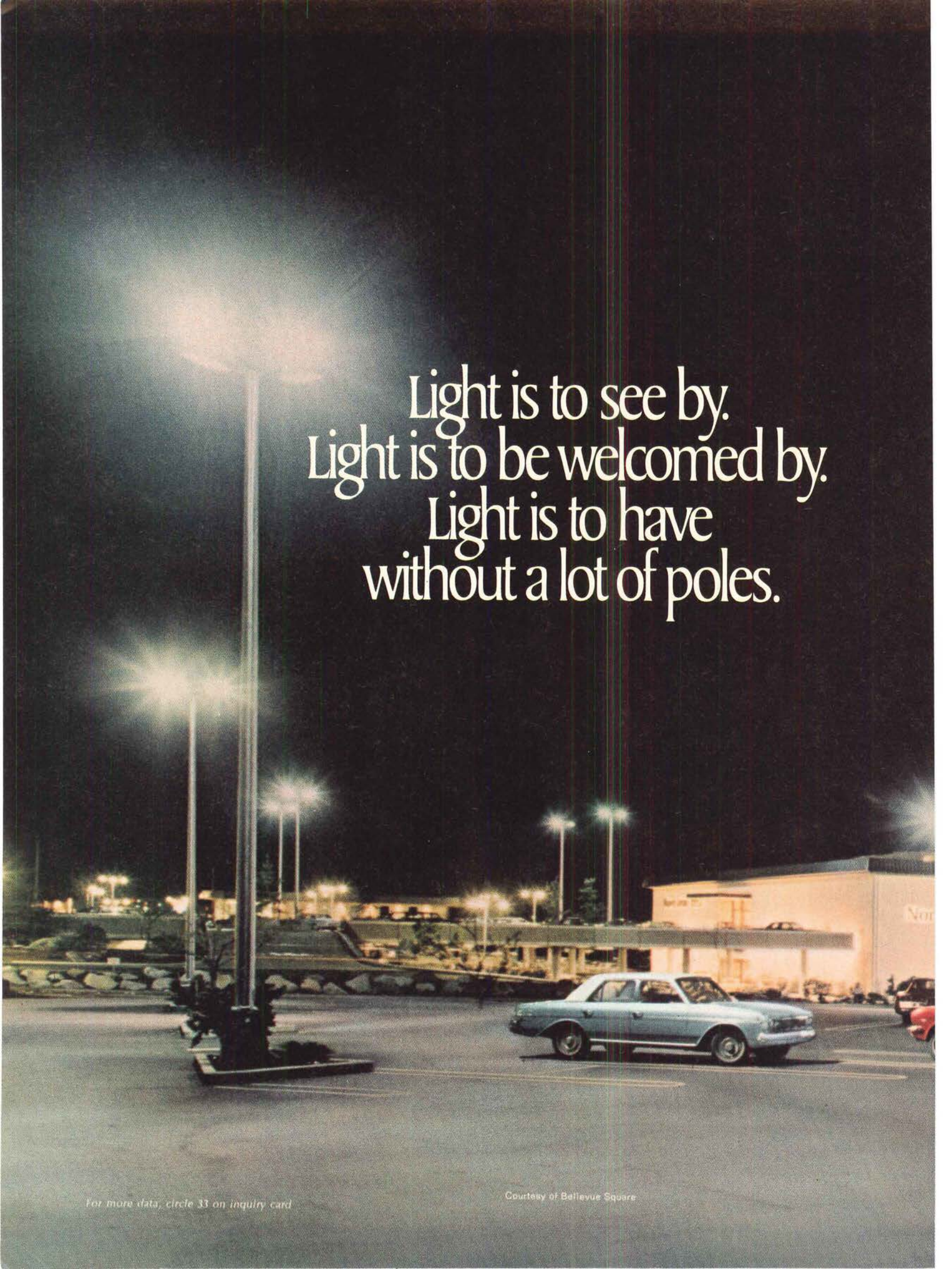

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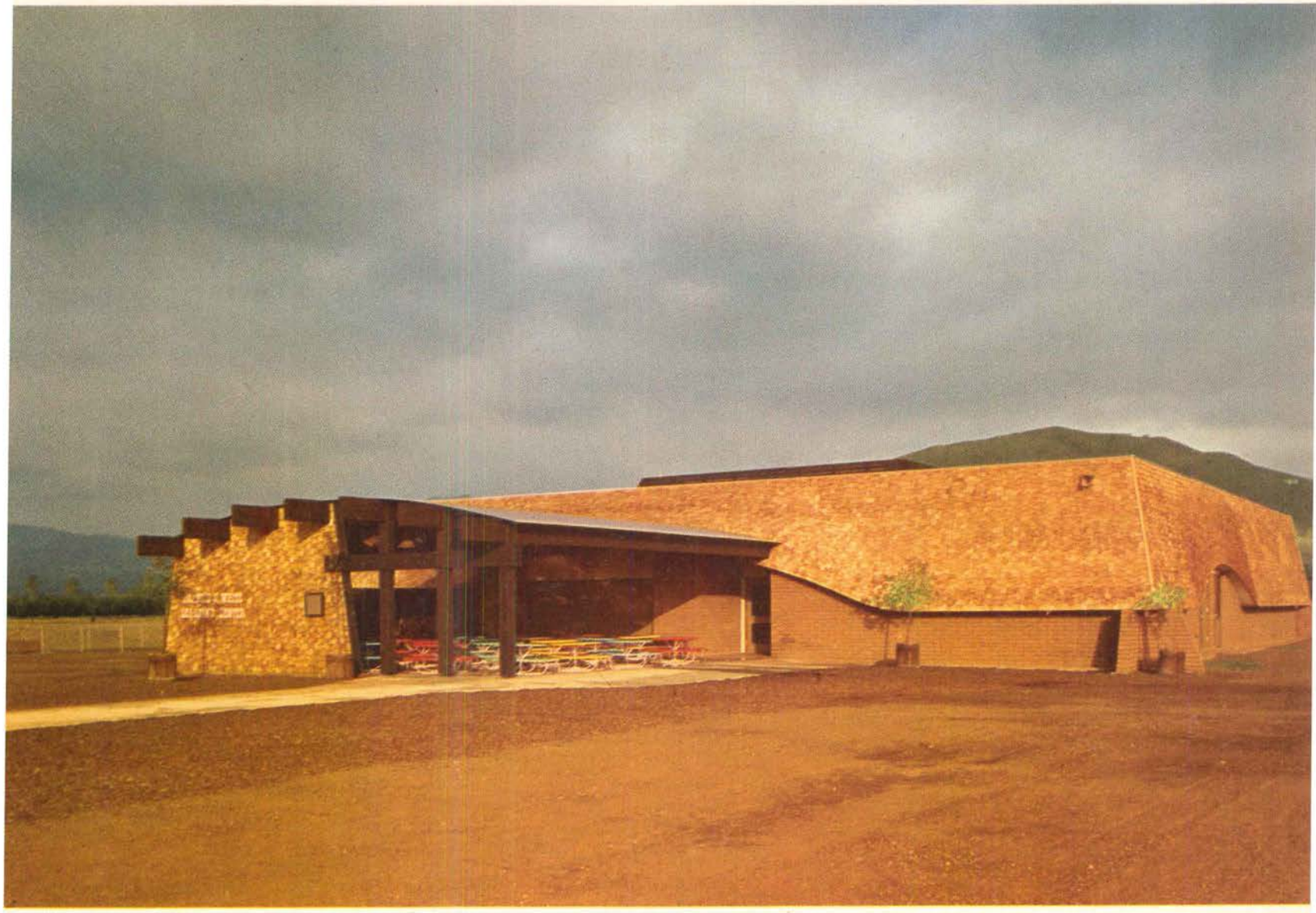

Francis J. White Learning Center, Woodlake, California. Architect/Engineer: Moring & Hayslett.
Roof treatment completely conceals Lennox rooftop equipment.

the case for the air conditioned school

Today, one out of every two new educational buildings is being air conditioned. The figure varies geographically. In southern states, seven out of ten schools are being air conditioned. In New England, three out of ten.

And the cost varies. The John H. Glenn Junior High School, San Angelo, Texas, was air conditioned —heating/cooling/ventilating—at $1.35 per square foot for the 100,908 square feet. Equipment used was the Lennox Direct Multizone Rooftop System (DMS). Architect: Donald R. Goss Associates. Engineer: Cowan, Love & Jackson, Inc.

By way of comparison, a hot-water/chilled-water system for the same school was bid at $1.88 per square foot.

The cost is modest in any event. A figure of $2.00 per square foot for heating/cooling/ventilating, over a 20-year lifetime, represents less than 1/10 of 1% of the total annual educational cost for an average elementary school.

Does air conditioning truly provide a better climate for learning? Research and history are proving that it does. Studies conducted by the University of Iowa show that in addition to the obvious increase in comfort, good thermal environment aids learning to an important and measurable degree. Studies are available on request.*

There are other important reasons for air conditioning a school. For example: freedom of design offered by complete environmental control. Freedom from the need for natural, window ventilation.

Continued . . .

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The low-profile Lennox DMS poses only a minimal screening problem. Example: The "pods" atop the William E. Orr Junior High School, Las Vegas, Nevada. Each conceals up to three DMS units. Architect: Zick and Sharp, in association with Shaver & Co. Engineer: Marvin Shafer.

Continued . . .

the case for the air conditioned school

And through the Lennox DMS rooftop units, with flexible ducts, there is the freedom to move walls, or add them, or eliminate them. And because this is a unitary system, as the building grows, you simply add new units.

Because the Lennox multizone system provides such flexibility in thermal control, it offers exceptional freedom of design, occupancy or change. The system can heat one zone while cooling another. It can, if needed, provide a 100% air change. Thus, the system allows for great variation in occupancy, activity, and orientation—as they affect heat gain or loss.

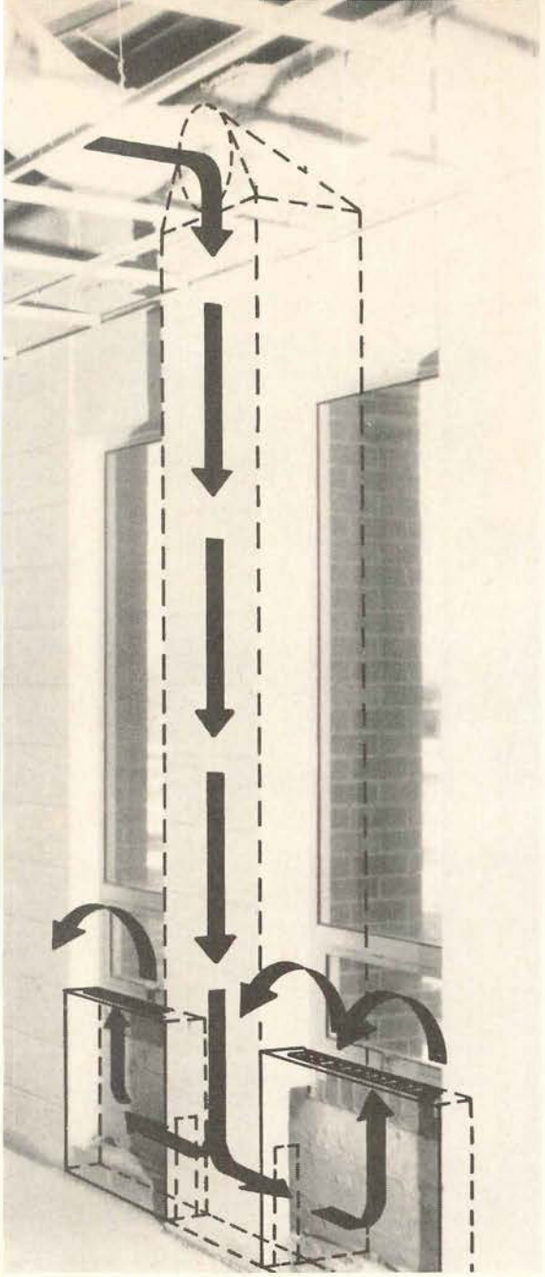
Schools, even in the northern states, tend to need more hours of cooling than heating. This is due to high occupancy, high activity levels, and high heat generation at school age. During cool weather, this cooling demand imposes little cost. A modern multizone system like Lennox will cool free at any outdoor temperature below 57° F.

Many factors beyond human comfort justify the modest cost of air conditioning: The summer use of the educational plant. The reduced depreciation of the building. The increased occupancy permissible. The increased capacity of the students to absorb information, thus increasing teaching efficiency.

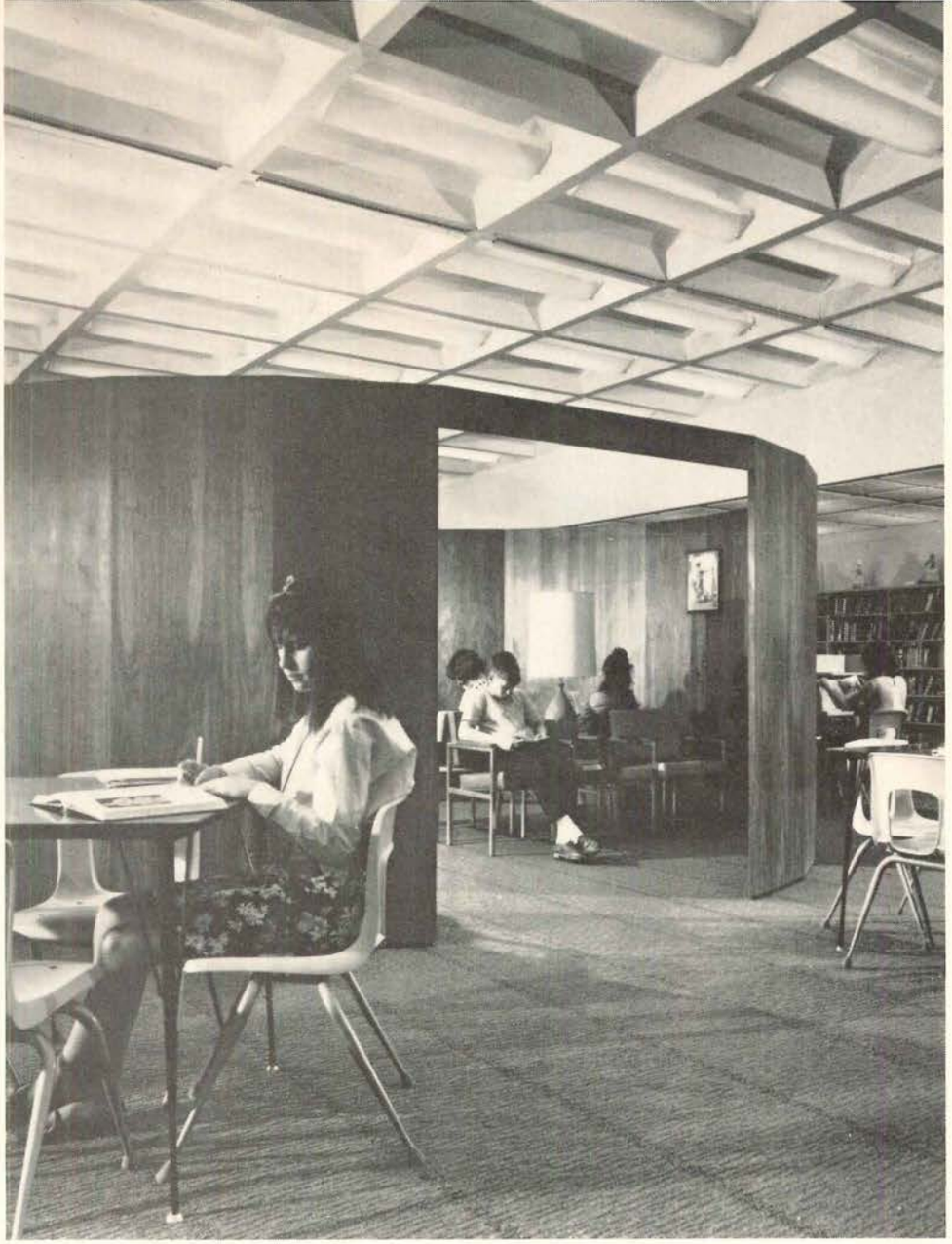
We have many case studies showing cost comparisons and design and installation data, for schools in differing climate zones. These are available on request. Write Lennox Industries Inc., 497 S. 12th Avenue, Marshalltown, Iowa 50158.

*Reports available: *"Education, Children and Comfort"* and *"The Effect of Thermal Environment on Learning."*

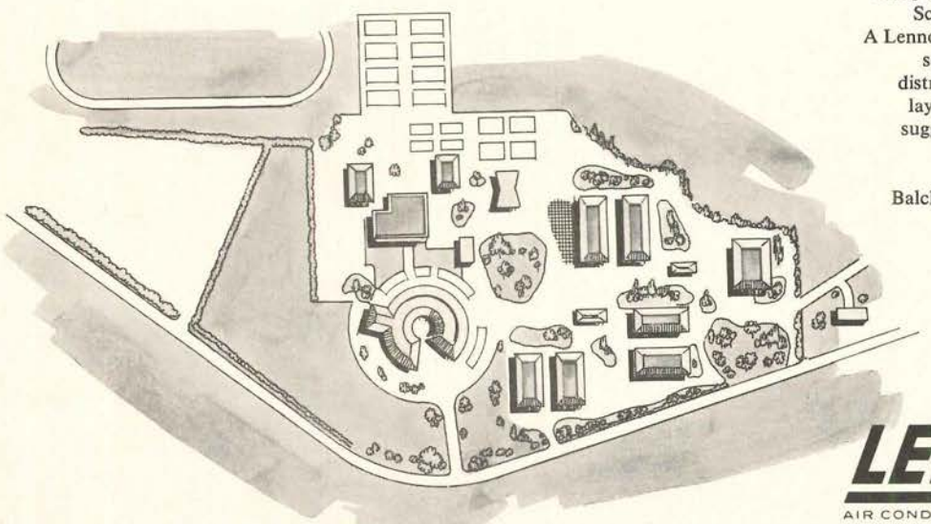
Movable walls, heart of education's new "flexibility" concept, are made possible at Bertha Ronzone Elementary School, Las Vegas, Nevada, by rooftop mounting and flexible ducts which eliminate fixed, wall-oriented ducts, pipes, registers, unit ventilators. Architect: Julius Gabriele, A.I.A.



An outside design temperature of -25° F at Watertown, South Dakota, made it desirable to have perimeter distribution of heat in the Watertown Vocational-Technical School. This was achieved by ducting some 20% of supply air down pilasters into wall ducts. Balance of air was supplied by ceiling ducts. Architects: Harold Spitznagel & Associates; Pope and Robel. Engineer: Harold Spitznagel & Associates.



For heating and ventilating, Barrington Middle School, Barrington, Illinois, chose Lennox DMS units—without cooling—but is adding air conditioning capability one unit at a time. Architect: Cone and Dornbusch, A.I.A. Engineer: The Engineer Collaborative.



Campus layout for Mission Viejo High School, Mission Viejo, California. A Lennox Direct Multizone System was selected here in preference to the district central system, which such a layout—in the past—has commonly suggested. The per-square-foot cost for Lennox heating/cooling/ventilating: $2.19. Architect: Balch-Hutchason-Perkins. Engineer: Kelly-Stewart-Goldstein.

LENNOX
AIR CONDITIONING · HEATING

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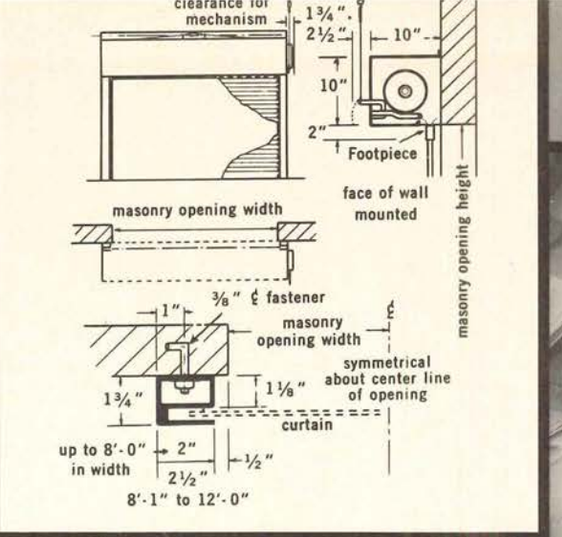

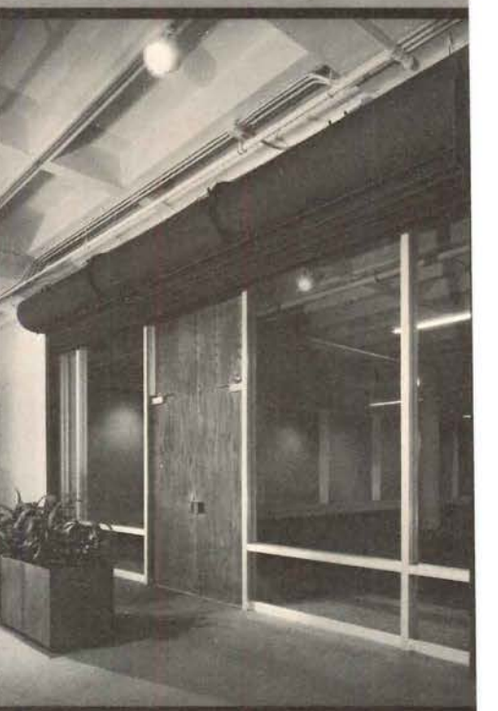

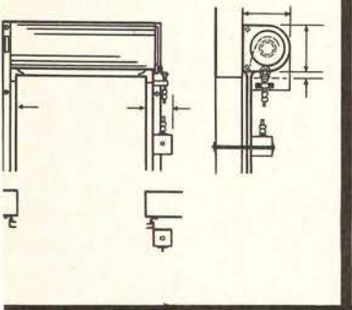

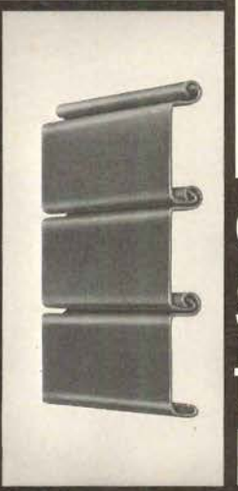

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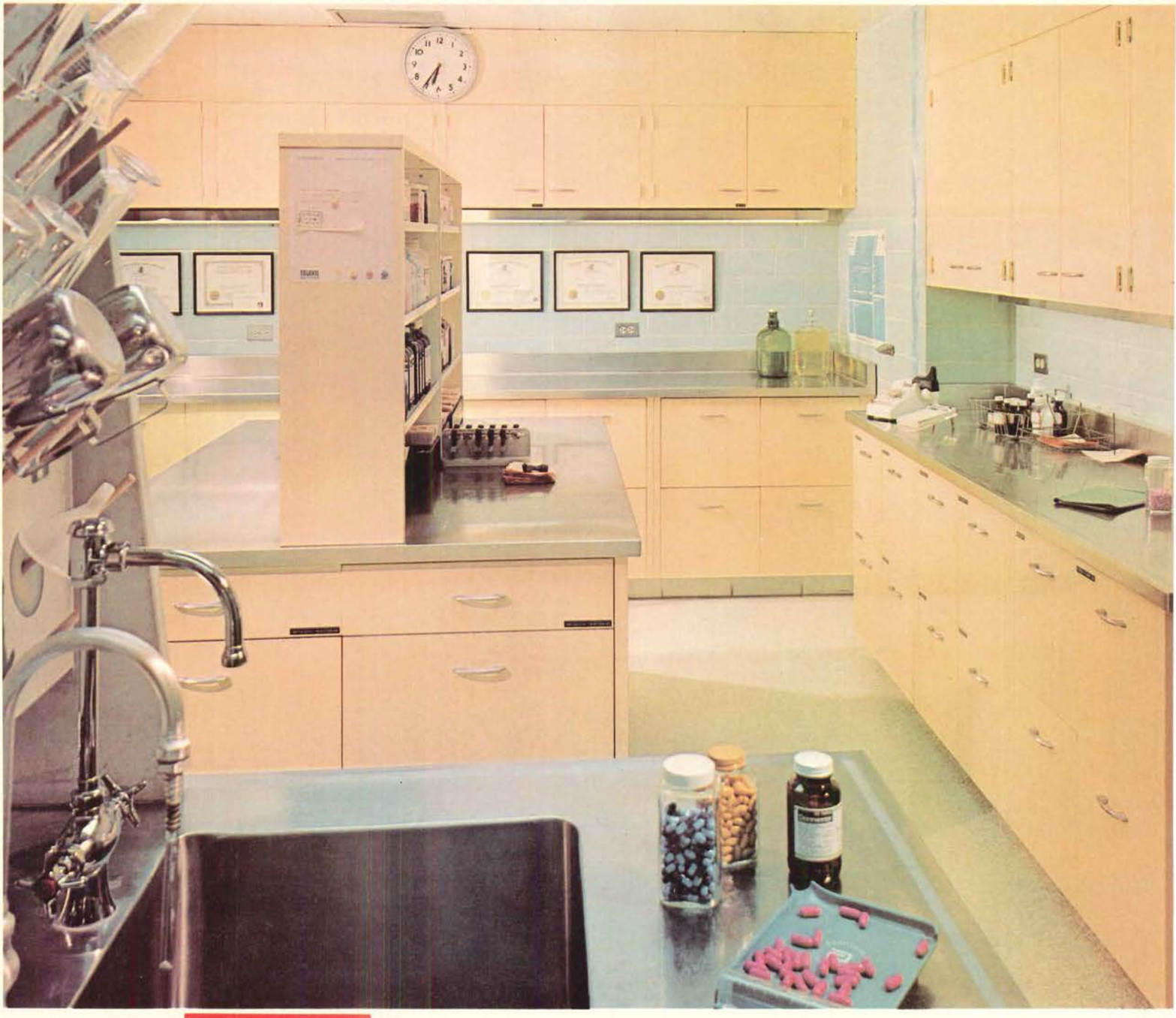

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Space-saving storage wall dramatizes St. Charles design, planning, workmanship.

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But we don't think it's enough to stop there.

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V.A. tile illustrated is Royal Stoneglow #5552 with olive matching feature strip.

Robertshaw research tackles rising installation and servicing costs

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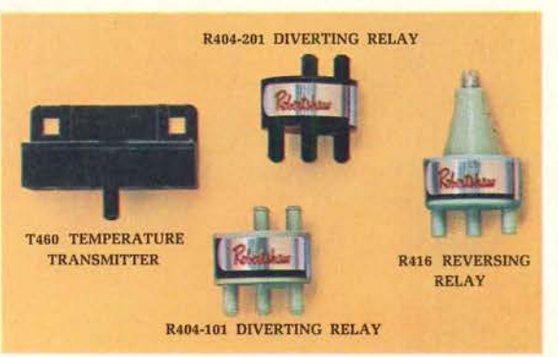

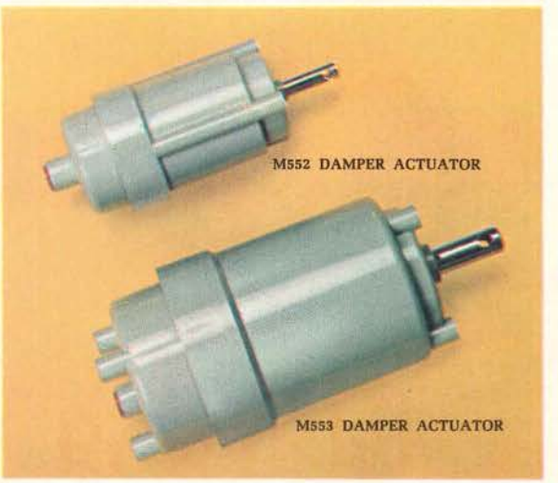

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Embarcadero Center to transform San Francisco

Embarcadero Center, the largest private building venture in the history of the West Coast, ultimately will include four office skyscrapers, an 800-room hotel, three theaters, an amusement center, and a three-block arcade of shops, galleries and other facilities.

The first building, now under construction and scheduled for completion in 1970, is the 45-story office building shown in the rear center of the above model. It will utilize a steel frame, steel deck floor, and a Square D underfloor duct system to provide the most modern power and telephone service. Other Square D equipment includes power switchboards, lighting panelboards and busway.

Embarcadero Center will be located between the financial district and the Bay. Special care is being taken to tailor the project to the unusual topography of San Francisco. We are proud to be an important part of this exciting new endeavor.

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For more data, circle 21 on inquiry card

News in brief

Ludwig Mies van der Rohe died August 17th in Chicago after a long illness. He was 83. Mies opened his first office in 1912 in Berlin, moved to the United States in 1938, and was actively involved in a wide range of current projects at his death. He was awarded the Gold Medals of The American Institute of Architects, The Royal Institute of British Architects, and the Federation of German Architects. He was a member of The American Academy of Arts and Letters, the German Order Pour le Merite, and was the first architect ever to receive the American Presidential Medal of Freedom. (See editorial, page 9.)

Several major efforts to stimulate housing production towards national goals make news this month. Most important: HUD will receive Operation Breakthrough proposals for new markets and construction techniques; and a proposed National Institute of Building Sciences may provide a national system of building standards (see also next page, and Perspectives, page 10).

The New Haven fire department has found no evidence of arson in the fire which destroyed the top three floors of Yale's Art and Architecture Building (RECORD, July). The first three floors will be in use this fall, and the rest of the building will be restored in about a year.

The grave of Robert Kennedy at Arlington National Cemetary has been designed by I. M. Pei. It will consist of a white wooden cross, separated from a semicircular granite platform whose low walls will be inscribed with quotations by the Senator.

The Tenth World Congress of Architects will be held at Buenos Aires from October 19th to October 25th. Its subject: "Housing of Social Interest." About 3000 delegates and representatives of the International Union of Architects are expected. The Congress chairman is Frederick A. Ugarte. Details from United Travel Agency, 807 15th Street NW, Washington, D.C. 20007.

Architects have joined the battle of Berkeley's People's Park. The designers of the student housing planned for the site—McCue, Boone and Tomsick—have withdrawn because their client, the University of California at Berkeley, refuses to include a "user-developed park" on the site. In its letter of withdrawal, the firm said, "We have come to the conclusion that this program, without provision for a user-developed space, cannot succeed on this site because of the overwhelming endorsement of the campus community for the inclusion of such space." Gerald McCue is chairman of the architecture department at Berkeley.

Industrialization Forum, a new magazine on building systems, construction, analysis and research, will appear in October. It will be published jointly by Washington University and the University of Montreal in simultaneous English and French editions. Write Box 1079, Washington University, St. Louis, Missouri 63130.

New Commissioner of the Public Buildings Service of the General Services Administration is Raymond F. Myers, formerly First Deputy Commissioner of the New York City Department of Public Works, and an executive of a New York sugar firm. Myers' responsibilities include acquisition of government real estate and design and construction of public buildings. He replaces William Schmidt.

A conference on the planning of secondary and elementary schools will be held at Washington University November 14-15. Write: School of Continuing Education, Box 1099, Washington University, St. Louis, Missouri 63130.

Awards: 1) Archibald C. Rogers, F.A.I.A. received a citation at the National Seminar on Urban Transportation "for his work in establishing the design concept team." 2) The U.I.A. has given awards to: Hubert Bennett and his team (England) for his work on "Thamesmead" new town; Fernando Belaunde Terry (Peru), author of "Carretera Boliveriana", a policy for international planning; and Karel Hubacek (Czechoslovakia) for the design of the Television Broadcasting Centre at Jested in Czechoslovakia. 3) Portland Cement Association has announced the rules of eligibility for the 1969-70 Architectural Scholarship Awards for summer study at Fontainbleau School of Fine Arts in France. Write Architectural Scholarships, Portland Cement Association, Old Orchard Road, Skokie, Illinois 60076. 4) New York's Mayor Lindsay received the Michael Friedsam medal of the Architectural League of New York for his contribution to urban planning.

Housing: some straws in the wind

On September 19, HUD will open the Operation Breakthrough proposals it requested this spring, 1) from the states and private developers for creation of "aggregate markets" and, 2) from the building industry for new residential building systems. HUD plans to develop eight prototype projects the first year (1970). Forty-two states and fifteen cities have designated Breakthrough representatives, the first step in eligibility for participation and Federal funding; and hundreds of construction firms have shown interest in developing prototype building systems. (For comment on Operation Breakthrough, see page 10.)

Some elements of labor are beginning to support prefabrication. The AFL-CIO Teamsters group has announced it will negotiate an industrial-type contract with producers of factory-built housing in Detroit. As a result of pressure from Walter Reuther, Detroit building trades working on prefab housing will act as one union. One of the biggest prefab housing manufacturers in the country, Stirling Homex, is now all-union, both in the factory and on the site.

Forty-one U.S. precast concrete producers have formed a consortium, Precast Systems, Inc., to produce standardized components for a complete multistory residential structure to be available anywhere in the country early in 1970.

The National Institute of Building Sciences, proposed by Senator Javits (R., N.Y.) and endorsed by the A.I.A., would streamline building methods by providing an outline for national standards for local building codes, coordinating tests of new building products and techniques, and providing research and technical services.

HUD's new population survey predicts rough going

"The dimensions of future urban masses are almost unbelievable" according to a new HUD survey on future U.S. population growth. U.S. population is projected to grow by 101 million in the next thirty years and, "in the absence of some types of mechanism for planning future urban growth," (for one proposal, see page 171), the "overgrowth" of fast-growing cities will double from 9,000 to 18,000 square miles. The metropolitan areas of Los Angeles, New York, Chicago, San Francisco Bay, Detroit, Miami, and Washington are expected to increase their population at least 3 million each by the year 2000. The report predicts that 30 per cent of growth will be in new communities, which are expected to be near great cities, although it doesn't rule out the chance wholly new cities might come into existence. The report concludes: "Under the best of conditions and of governmental organizations, the population growth of the next few decades will be difficult to accommodate, particularly if the public demands that the environmental conditions not be permitted to deteriorate."

New traffic signs

Boston is experimenting with new traffic signs, designed by Cambridge architects Ashley/Myer/Smith, and the results could mean new road signs for the whole country. The new signs use symbols and color coding (green for "yes", red for "no"). The experiment, which was financed by HUD, was meant to run only a few weeks, but the new system is such a success most of the signs are still up and the Boston traffic commissioner would like to revise the signs in the rest of the city to match.

Ashley/Myer/Smith also designed a colorful pedestrian information center (since dismantled) as part of the same experiment, and the city hopes to put up several permanent centers.

Architectural exhibits in several U.S. museums

The new regional museum of California and the West at Oakland, California plans a permanent slide-tape exhibit documenting the development of California architecture. A major retrospective of the work of the late Mies van der Rohe, organized by the Chicago Art Institute, is finishing an international tour at the Los Angeles County Museum of Art. The Museum of Modern Art has opened an exhibit on city planning centering on the work of the turn-of-the-century architect, Eugène Hénard, whose ideas for Paris are now in use all over the world. New York's Museum of Natural History is celebrating its centennial with an exhibit called, "Can Man Survive?" They argue he can, and they describe the present environmental mess with slides and films in an exhibit reminiscent of Expo 67. And the Jewish Museum, in New York, includes in its new exhibit of inflatable sculpture a plastic environment by Susan Lewis Williams, a large room furnished from floor to ceiling entirely in inflated clear plastic modules.

Three urban expressways do not slash through cities

New York's Mayor Lindsay has dropped plans for the Lower Manhattan Expressway and the Cross Brooklyn Expressway, both of which had been centers of controversy for years. He said alternate routes would be laid out only when "the community leaders can work out something that is supported by the community." The original plan for the Brooklyn road had included a "linear city," built on the air rights, which the Mayor had supported, but which was heartily opposed in the local communities, and which had begun to look financially improbable anyway.

The Vieux Carré of New Orleans has been saved from an equally controversial expressway by an order from Secretary of Transportation John A. Volpe. The order appeared only three days before the New York decision, and may have influenced it. Volpe, in turn, may have been influenced by a recent and very thorough study of the Vieux Carré conducted by the New Orleans Bureau of Governmental Research, which split the financing with HUD.

The A.I.A. is starting a study and action program to help guide new highway design, and the A.I.A. is urging Congress to enact legislation that will allow design by teams of architects, engineers, planners, and social scientists.

Architects in space

According to NASA, architects will play a major part in the design of space stations. The space station architects, who have not yet been officially chosen, will plan a complete environment to be lived in for periods of months, not by astronauts, but by "ordinary scientists." Twelve people will inhabit the first part of the station, to be orbited, NASA hopes, in 1975, and fifty people will live in the completed "space base" by the mid-1980's. The structure will be a "university laboratory in space," and it may also serve as a take-off point for flights to the moon and other planets; it will be reached by shuttle vehicles.

A good many architects are getting involved in other aspects of space architecture. The California Council of the A.I.A. has an Aerospace Committee, whose chairman, James Aitken, of Aitken, Collier and Associates (Berkeley) has designed a prototype moon shelter; and the Lunar Receiving Laboratory, where the Apollo 11 astronauts spent three weeks upon their return from the moon, and where scientific investigation of moon material is centered, was designed by Smith, Hinchman, and Grylls, of Detroit.

The Winner

The Great Boston Kite Festival (The Record Reports, May) gave first prize to Randall Thompson, Jr., of Cambridge, Massachusetts. Mr. Thompson made his kite of balsa wood and surveyor's tape the night before the contest, and it worked, he reports, "much to his amazement."

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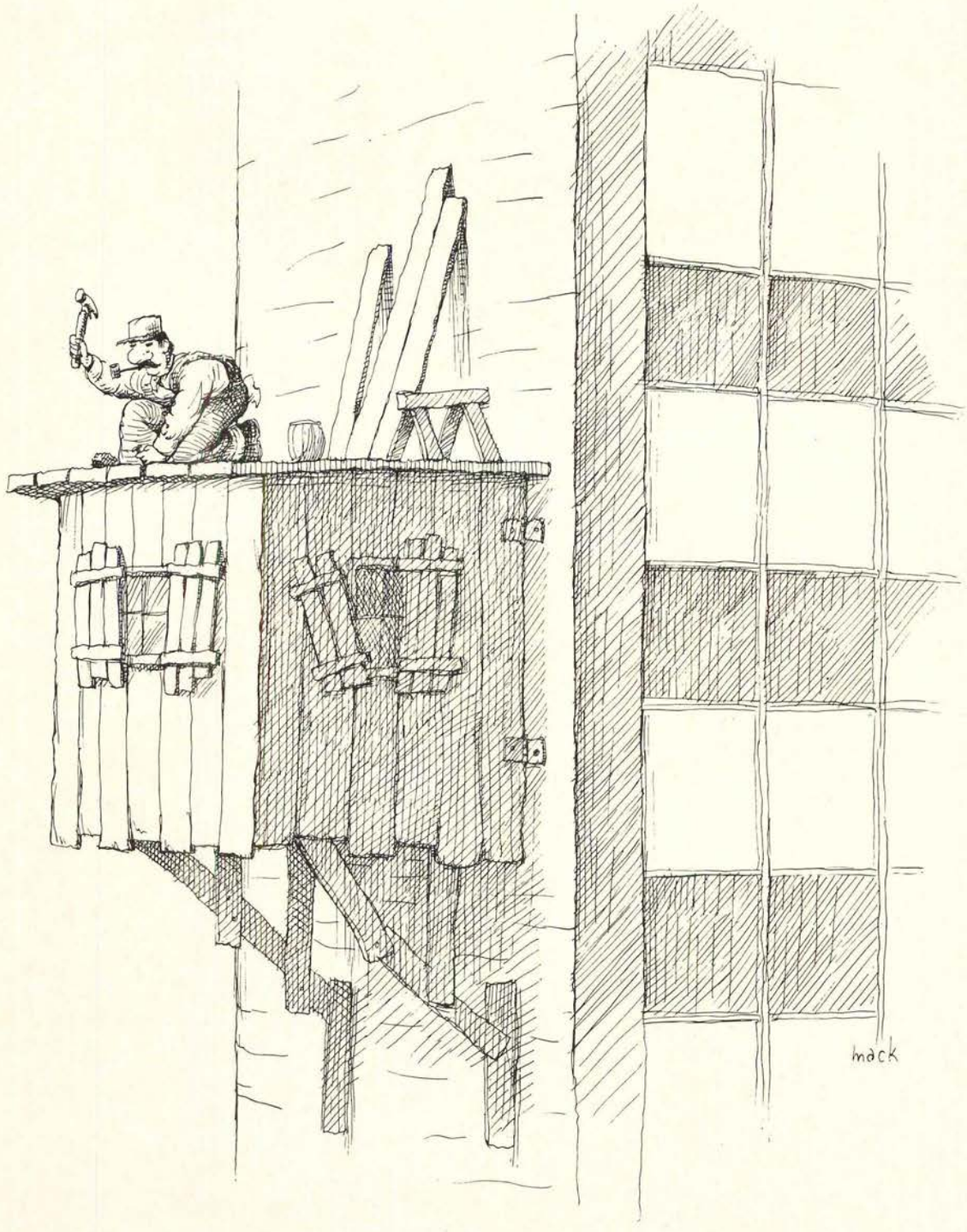

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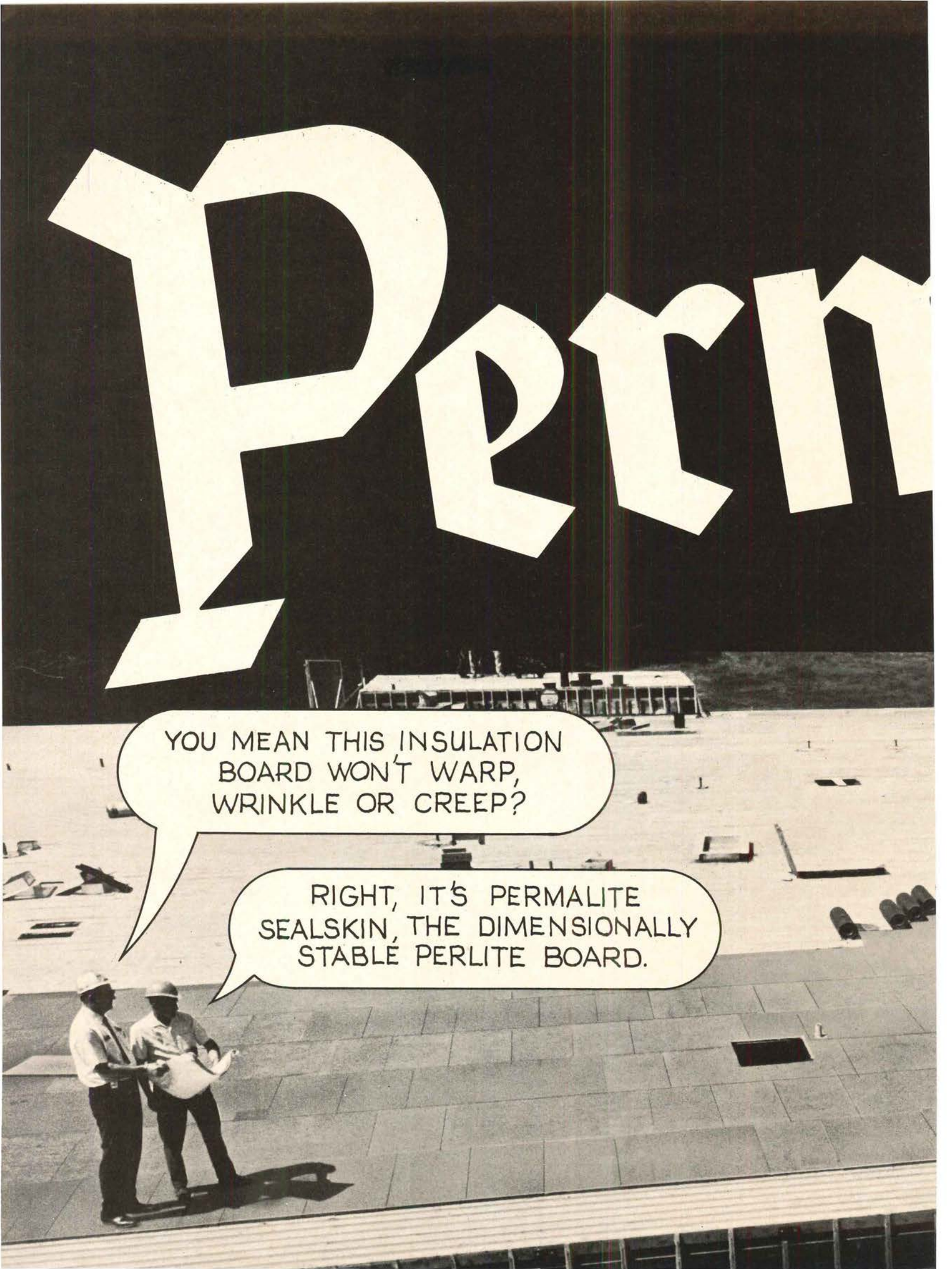
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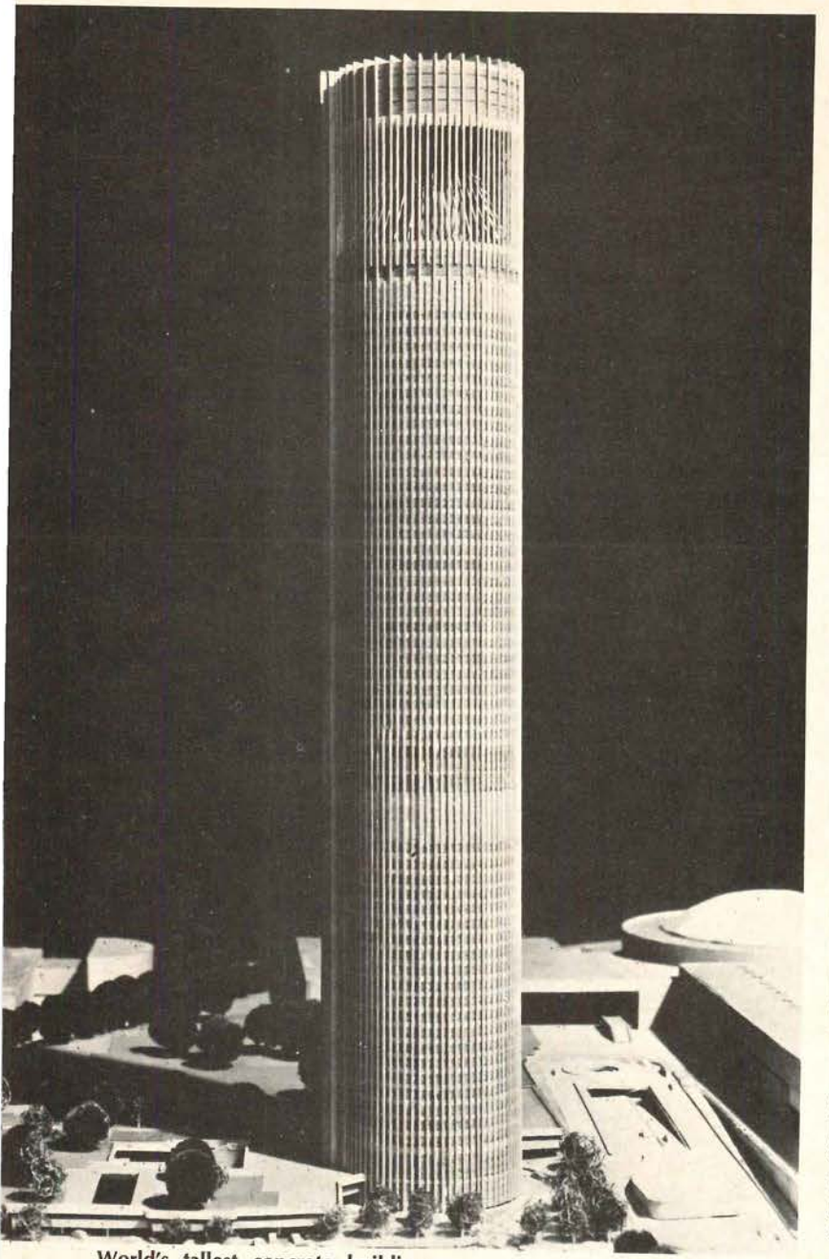
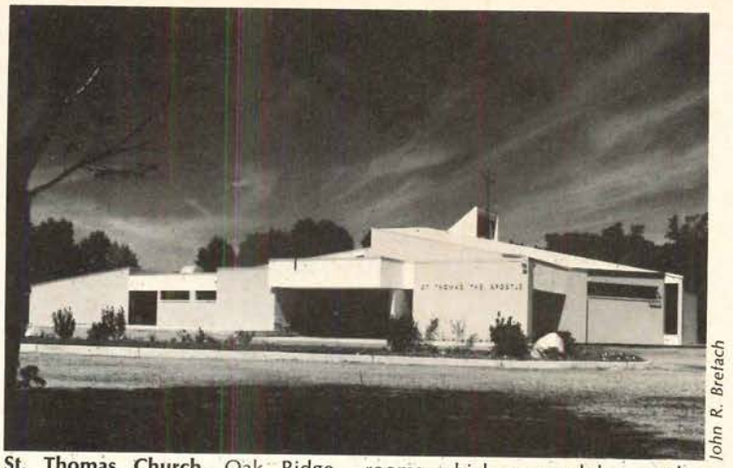
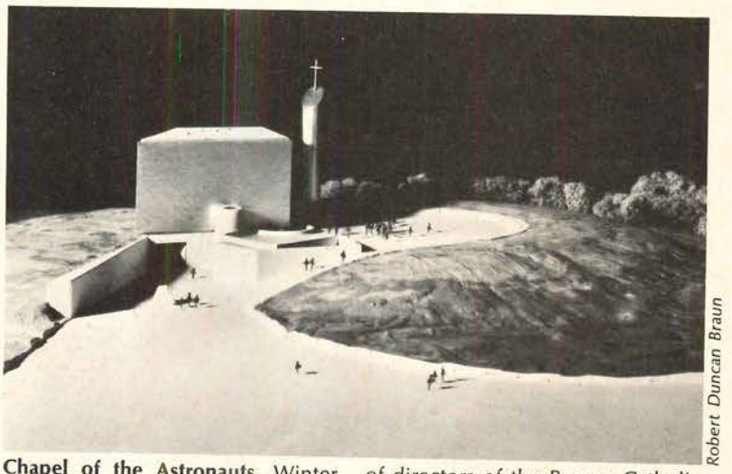


World's tallest concrete building, Dallas, will be built at the rate of three floors every two weeks. The 913-foot tower will, it is claimed, have 60 per cent less sway in the wind than conventional structural systems. There will be luxury office suites and hotel accommodations, plus an observation gallery and revolving restaurant, reached by glass-enclosed elevators. Architects: Pratt, Box & Henderson.



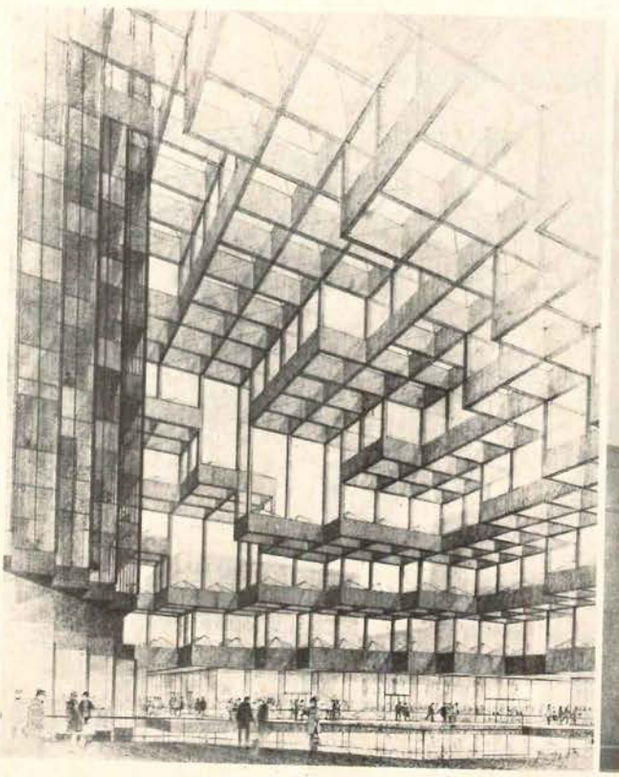
John R. Bretach

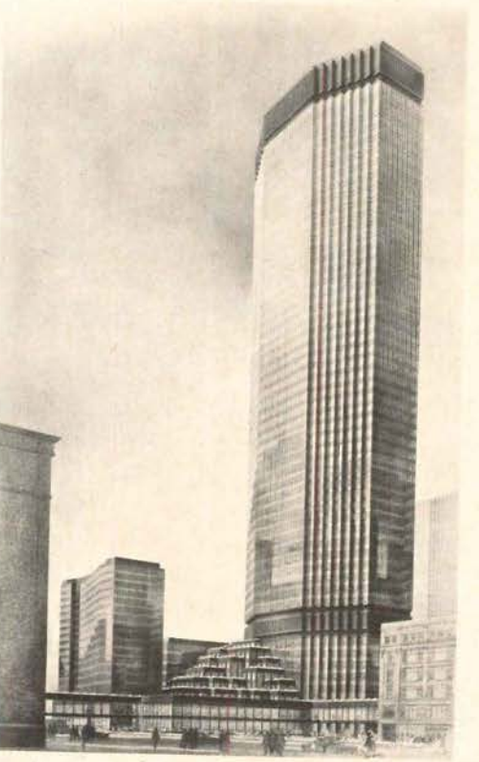
St. Thomas Church, Oak Ridge, New Jersey, is designed to be used seven days a week for social and service activities, religious and secular clubs. The library will serve the entire community. The classrooms, which are modular, can be expanded or divided by sliding walls. "The flowing of the different spaces one into the other" says the architect H. F. Necker, "gives the building its geometric expression."



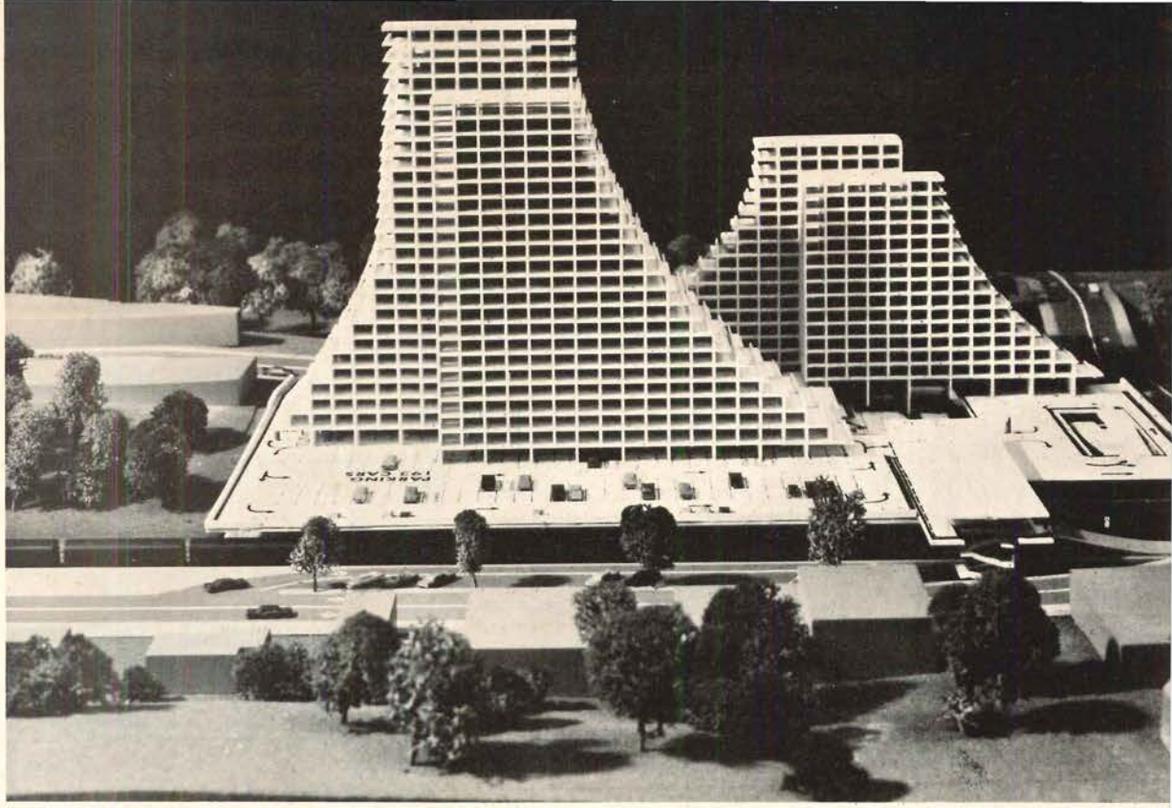
Robert Duncan Braun

Chapel of the Astronauts, Winter Park, Florida, has been designed by Schweizer Associates, Architects-Engineers-Planners for Chapel of the Astronauts, Inc., a nonprofit corporation composed of a board of directors of the Roman Catholic and Episcopalian faiths. The building is to be essentially a Christian space, able to accommodate Jewish services. Outside there is a plaza where hundreds may gather.

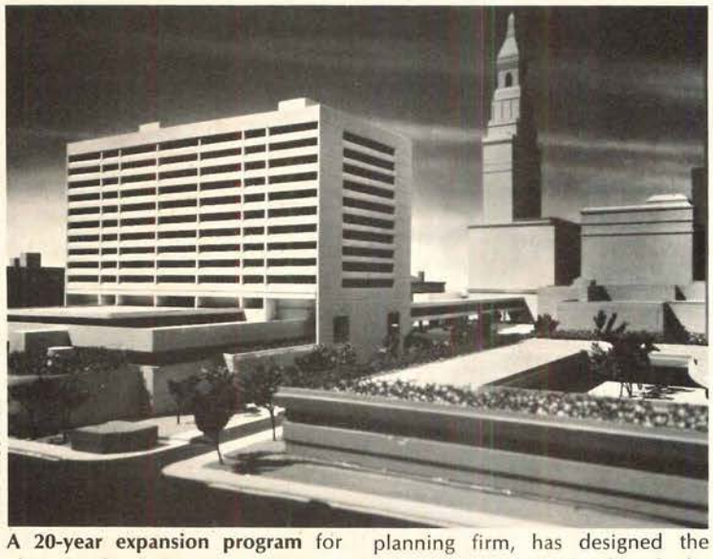




IDS Tower, Minneapolis, will be the first building in the redevelopment of an entire downtown city block. Designed by Philip Johnson of Johnson and Burgee, and Edward F. Baker Associates, the center will have a 20,000-square-foot, three-level shopping plaza with a specially-trussed glass roof stretching from a two-story retail building to the seventh floor of the 57-story tower. Other buildings in the project will be an eight-story annex and an 18-story hotel-bank.

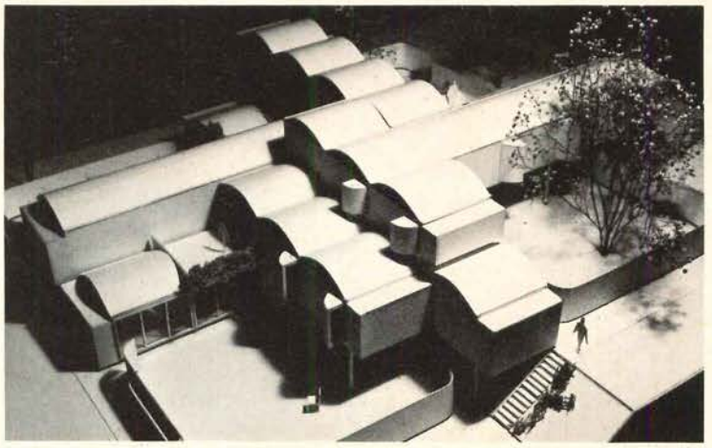


Railroad station area development proposal, Scarsdale, New York, includes two apartment buildings—one of 24 stories and one of 16 stories—a four-level parking facility, retail stores, a two-level railroad station and two plazas. The apartments have stepped-back terraces and are "designed . . . in character with the physical surroundings." The architects, Eggers and Higgins, estimate $12 million for the apartments, commuter parking structure and apartment garage.

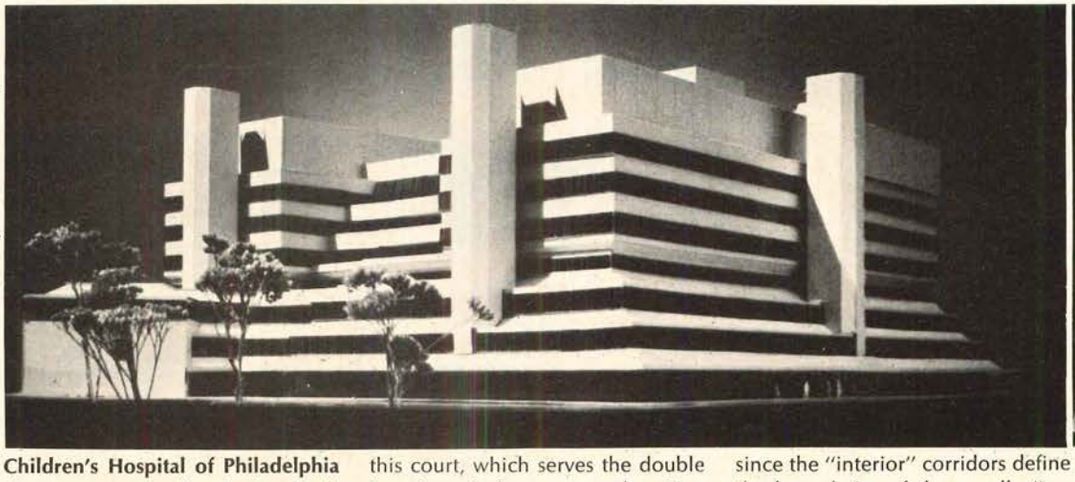


Louis Checkman

A 20-year expansion program for The Travelers Insurance Company, Hartford, Connecticut, will have as a first phase a 13-story office building and a five-level underground garage. RTKL Inc., architectural and planning firm, has designed the new facility and developed the long range plan. A plaza over a portion of the garage will be linked to neighboring buildings by a pedestrian bridge.



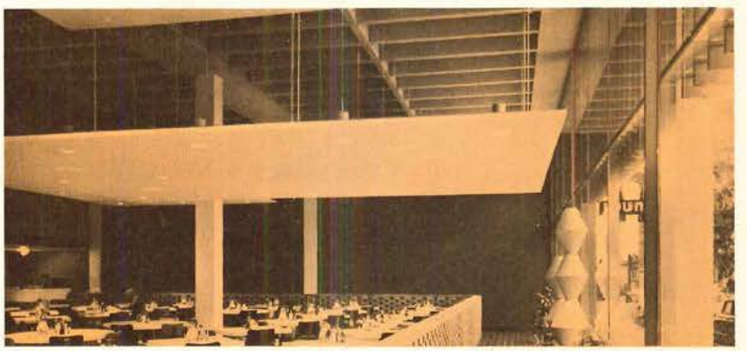
The Wilmot Road townhouses, New Haven, Connecticut, are "designed as a possible alternative to the one-family house." The townhouses, designed by Paul Rudolph and manufactured by Eastern Portable Buildings Corp., will have vaulted ceilings, 800-square-foot private yards for each family, and a raised porch area that can be enclosed to create an add-on room. There will be 148 low- and moderate-income two-story apartments ranging in size from two to five bedrooms. Financing is being provided in the form of a 236 mortgage assistance agreement from FHA through HUD. Developer: Modular Structures, Inc.



Lawrence S. Williams, Inc. photos

Children's Hospital of Philadelphia focuses on an enclosed glass landscaped court. All circulation in the hospital is patterned in relation to this court, which serves the double function of play space and waiting room. Thus the interior-exterior spatial relationship is inverted since the "interior" corridors define the boundaries of the usually "exterior landscape." The total structure is 600,000 square feet and will house 270 beds, research laboratories and outpatient clinics. Architects: Harbeson Hough Livingston & Larson • William A. Amenta.

The editors of ARCHITECTURAL RECORD announce a new program to recognize outstanding interiors



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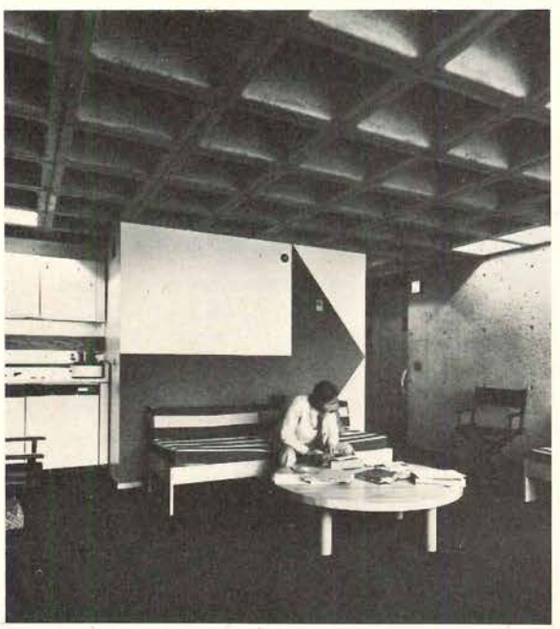

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3

5

1 The Piccadilly Cafeteria, Tulsa, Okla.
Architects: Murray Jones Murray
Photographer: Julius Shulman

2 Kirkland College Dormitory
Architects: Benjamin Thompson Associates
Photographer: Michel Proulx

3 L'Enfant Theater, Washington, D.C.
Architect: Jan Hird Pokorny

4 Bank of Houston
Architects: Wilson, Morris, Crain & Anderson
Photographer: Alexandre Georges

5 Joseph Magnin Company,
Walnut Creek, Cal.
Architects: Chatham & Schulster
Photographer: Robert Brandeis

coming in January 1970

designed by architects...

RECORD INTERIORS

With a remarkable upsurge of activity and interest in the designing of interiors evidenced throughout the profession, Architectural Record is establishing an editorial program with citations to help document and stimulate this significant area of expanded practice—and to give emphasis and recognition to the architect's vital role in creating a more "total architecture" and a better total environment. Recently completed architect-designed interiors of all building types will be considered—remodelings and renovations as well as new structures—anywhere in the United States. Selections will be made by the editors on the basis of the excellence of the design solution for the particular client's individual program. Submissions from architects of new, unpublished work will be welcomed through October 1st, 1969. No formal presentations are required, though material submitted should include plan, photographs or snapshots, and brief description and program.

RECORD INTERIORS OF 1970 will be published in the January 1970 issue of Architectural Record.

Write or telephone:

Herbert L. Smith, Editor in Charge
Interior Design Awards Program
Architectural Record

ARCHITECTURAL RECORD
330 WEST 42ND STREET
NEW YORK, N.Y. 10036
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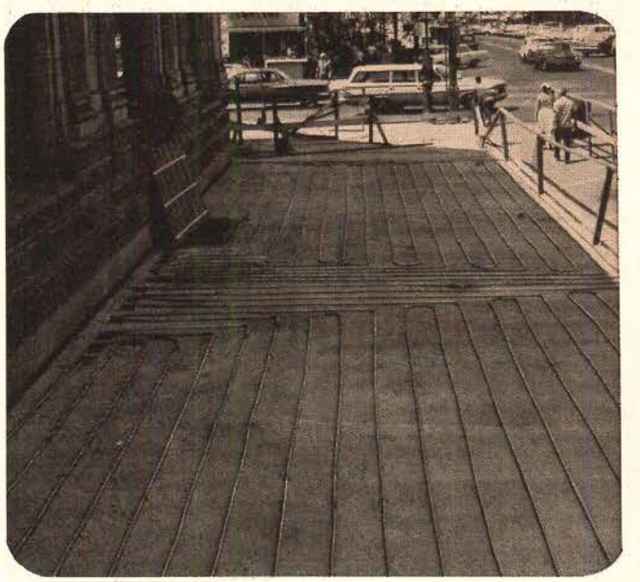
SNOW CONTROL

An increasingly important factor in modern building construction.

The economical answer is a snow melting system of

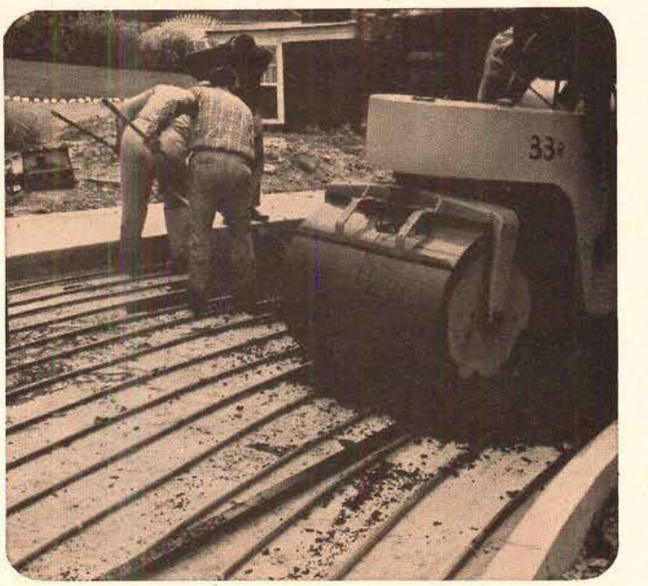
REVERE COPPER TUBE

No building being erected today, in areas where snow control is a problem, should be designed without giving serious consideration to snow removal from sidewalks, driveways, loading ramps, parking places and similar areas, around office buildings, hospitals, hotels, stores, banks, churches, theatres, warehouses, terminals, etc. Shovels, plows, salt and chemicals are not only out-of-date but are a nuisance, expensive and ineffective.



THIS SIDEWALK will be free of snow and ice no matter how hard it storms. The Revere Snow Melting System installed here is of sinuous coil construction.

An economical answer to this problem is a snow melting system of Revere Copper Tube. It saves building owners and operators time, labor and maintenance... eliminates "tracking-in", prevents accidents and resultant lawsuits. And, operating costs are only pennies a day on a square foot basis.

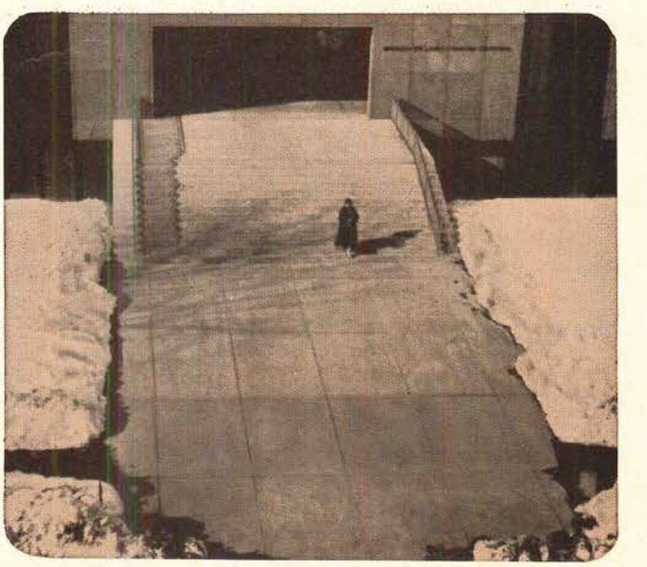


APPLYING BLACKTOP over Revere Copper Tube installed in a circular driveway of a hospital, leading to the Emergency Ward, where grade is steep. Proof indeed that Revere Copper Tube can take it.

NOT NEW

There's nothing new about a system that melts snow and ice before they pile up. Revere, the first to design a practical, workable copper snow melting system, has been at it for over 21 years . . . designing, testing and proving, in many locations and under every cold weather condition.

That's why Revere's Research and Development Department will be glad to help you with suggestions

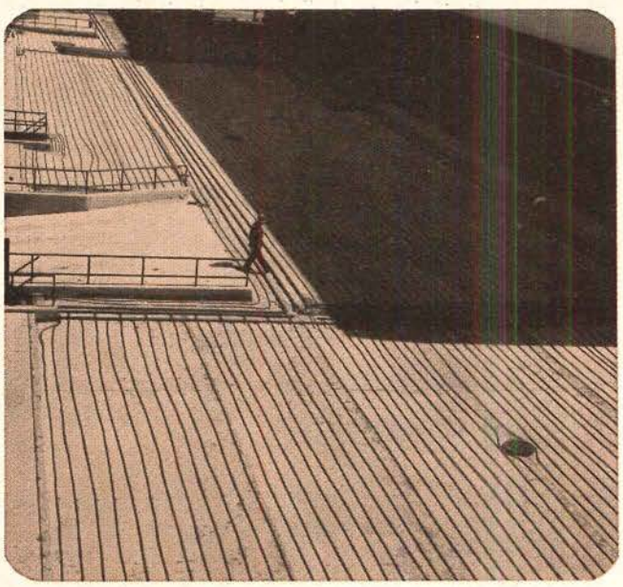


IT SNOWED ITSELF A STORM all last night but steps and sidewalk in front of this building are as clear as a whistle, that's how a Revere Snow Melting System performs . . . no shoveling, plowing, salt or chemicals needed—ever!

regarding your design of snow melting systems. And, by using Revere Copper Tube, with its long lengths, choice of tempers, ease of installation and handling, installed costs can be kept at a minimum, in either concrete or blacktop.

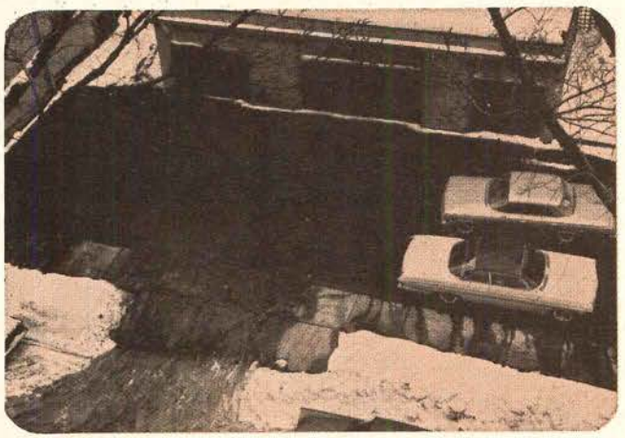
ACT NOW

Remember the snows of 1968-69? Don't wait for another winter like that to make you wish you had included snow control in your specifications. It's more economical to plan on it now. In planning on snow control, our booklet, "Snow Melting Systems of Copper" can aid you considerably. Send for your FREE copy today. Or, if you have a snow melting problem call us about it and we'll be glad to help.

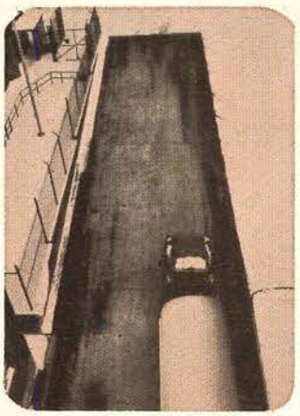


PARKING AREA BEFORE AND AFTER a Revere Snow Melting System has been installed. Imagine the mess here, trying to plow out so that cars can park. Photo with tube exposed shows grid-type installation.

BUILDING OWNERS AND OPERATORS —SAVE ON TIME...LABOR...MAINTENANCE..."TRACK-INS"...ACCIDENTS ...LAWSUITS.



DOCTOR'S PARKING LOT adjoining his office is kept safe and snow and ice-free by having a Revere Snow Melting System installed under the blacktop.



THIS LOADING DOCK DRIVEWAY (Above left) in the Buffalo area, although located on a sharp grade, assures the biggest trailer truck of a safe, fast entry and exit to and from the concrete loading platform, thanks to a Revere Snow Melting System. No skidding or delays here.

LET IT SNOW FOR DAYS, the sidewalk where a Revere Snow Melting System has been installed remains as free of snow and ice as on a day in summer. No "tracking-in" of dirty slush and snow.

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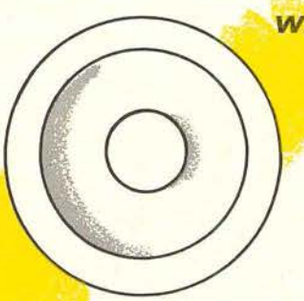
what was <u>then</u> called a rolling door



by using the principle of the wheel

(which has never been improved upon)

and originating the unsurpassed <u>new</u> concept of the interlocking slat curtain

KINNEAR

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Dissatisfied with the early corrugated sheet metal rolling door of the 1800's — their poor coiling action — the need for complete curtain replacement in event of damage — the restricted material usage — and the questionable protective value — Kinnear design engineers decided to do something about it. The result was the development of an interlocking slat curtain that can be of aluminum or steel (in many gauges) and that is easily repairable. Coiling action was also greatly improved. In fact, it offered a whole new dimension in safety and efficiency that to this day has not been excelled. When this innovation was coupled with the superior performance of the Kinnear originated single-shaft counterbalance mechanism, industry finally had a rolling door that fully met the demands of hard use, adequate protection and operational convenience **plus** ease of maintenance and repair. The configuration of the slats provides flexibility for good coiling and the degree of durability and strength needed for the specific job. Every detail of the door developed by Kinnear proved adaptable to any door size or custom requirements.

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This development is now history, but like the wheel, the slat curtain principle has never been improved upon. To keep Kinnear doors serviced in prime operating condition, a nationwide chain of service depots stands behind Kinnear's lifetime "Registered" door service policy. Every Kinnear door, regardless of age, can be maintained and repaired with the correct parts to keep the door in first-class operating condition.

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Architects and Engineers:
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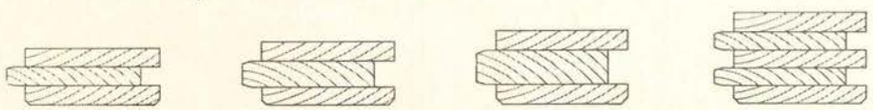
Potlatch Lock-Deck® laminated decking with natural cedar face was specified as a basic structural system in the spectacular Continental Villas at Orange Park, Florida. Lock-Deck forms both load-bearing roof and finished ceiling, giving warmth, character and spaciousness to the interior while solving structural problems with economy and speed. Potlatch engineered wood products provide integrity, design freedom, insulation properties and deep aesthetic appeal. For details on these apartments write for special Architectural Report on Continental Villas.

Potlatch
WOOD PRODUCTS GROUP
P. O. Box 3591 · San Francisco, Calif. 94119



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.

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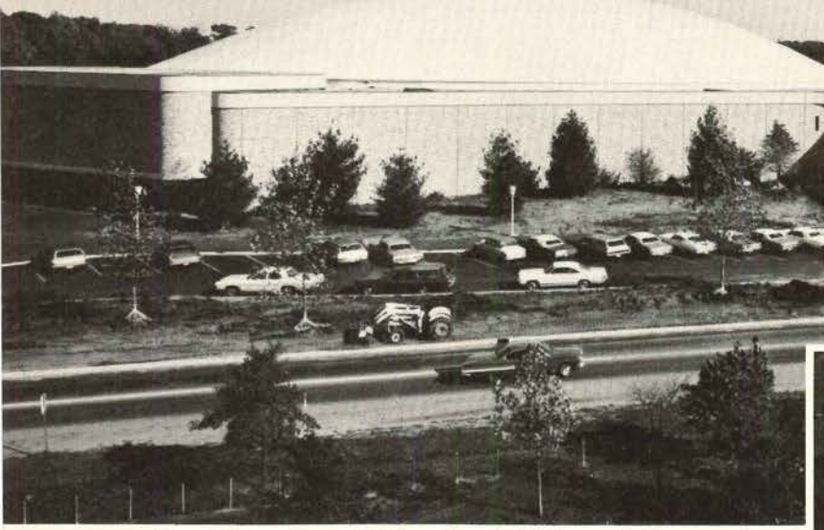
Used in America's Most Modern Athletic Complexes



New Notre Dame University Athletic and Convocation Center. Architect: Ellerbe Architects, St. Paul, Minn.

TROPHY Gym Finish, the finish for champions, again takes its place in one of the newest and finest athletic facilities. This fabulous $8.6 million University of Notre Dame Athletic-Convocation Center provides both athletic-auditorium facilities for the campus and exhibit and convention space for the community.

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TROPHY was chosen for all wood sports floors. Trophy forms a hard, smooth, slip-resistant, glare-free surface that is ideal for fast-play and telecasting. In addition, TROPHY offers unprecedented wearability, beauty and ease of maintenance.

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fly me to the moon...

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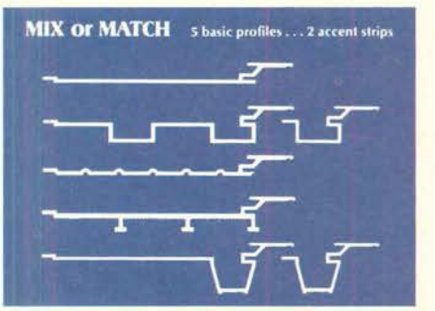
Let your imagination run wild with Permanodic® non-fading, hard color finishes in medium bronze, dark bronze, black plus optional gleaming Alumilite. Mix or match colors. Some sections even highlighted. Five basic profiles and two accent strips add unlimited design possibilities.



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Wisconsin Light & Power Company, Janesville, Wisconsin
Architect: Arthur Lund, Janesville, Wis.
General Contractor: Ford Brothers Construction Co., Janesville, Wisconsin

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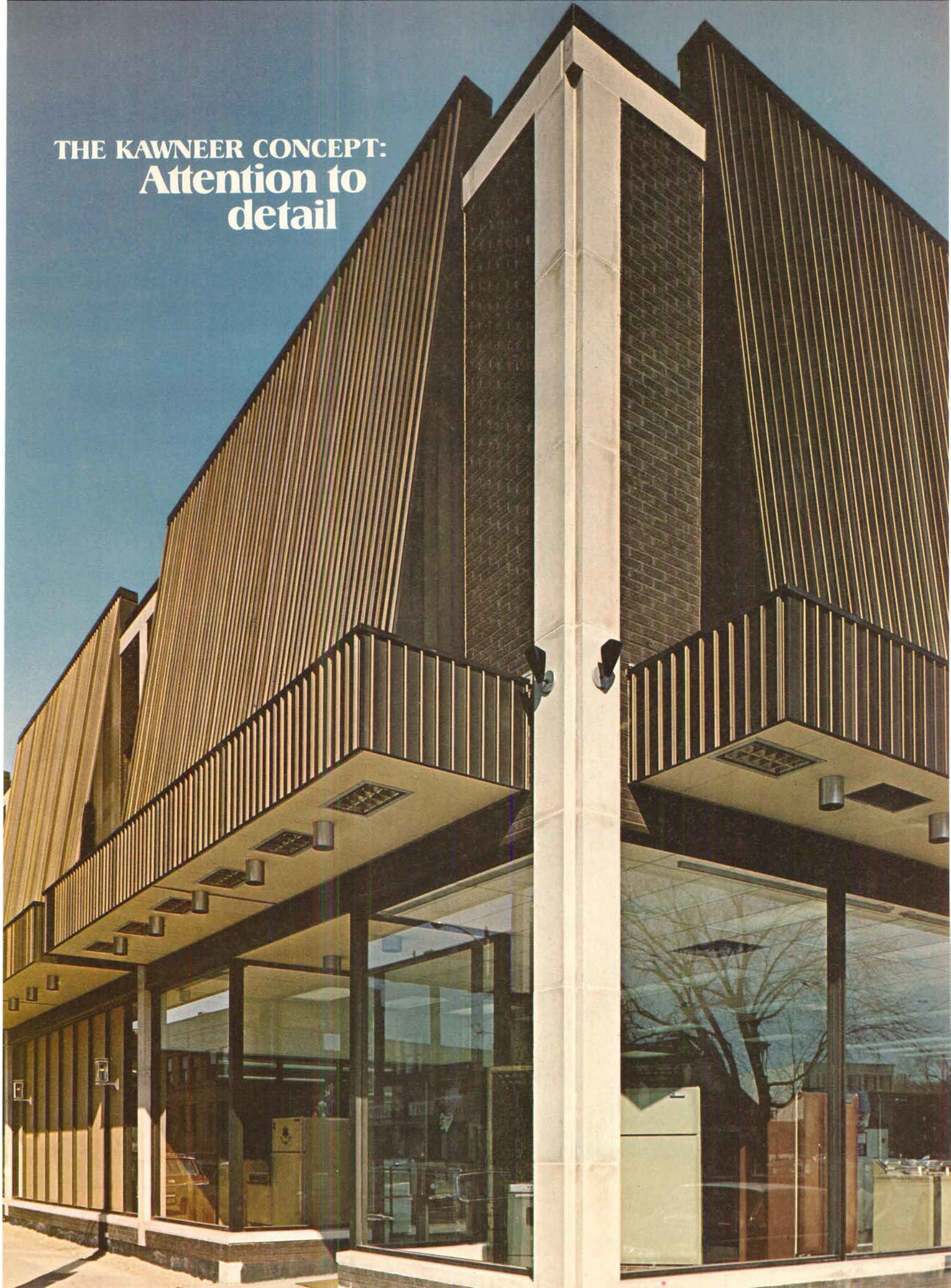
THE KAWNEER CONCEPT:
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detail

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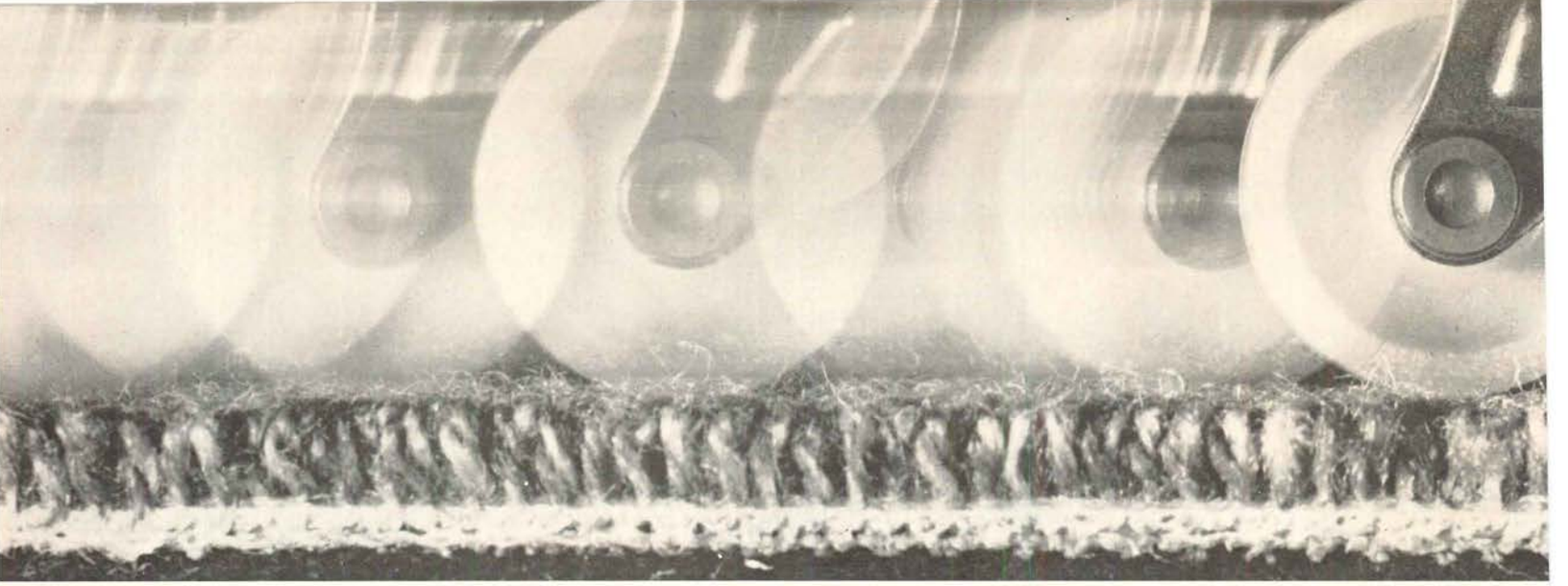

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Now—specify carpet where you couldn't specify carpet. Glued directly to the floor, double Jute-backed carpet eliminates mushy cushions or pads that bog down conventional wheels and casters. Bonds securely to any floor, to resist shifting and delamination. But comes up cleanly so the carpet can be reinstalled elsewhere.

And the cost is less. Less than foam-backed carpets with equal pile specifications. Less than equivalent carpets, plus separate underlayment. But still gives all the advantages of carpet. Low maintenance cost. Luxury looks. Good sound absorption. High employee morale. Less heat loss in many cases.

Shouldn't *you* be specifying it? Especially since it works so well in all the general office, computer, cafeteria areas (carpeted in the past 3 years) at Ford Motor Co., Dearborn —and many other demanding installations of a variety of types.

JUTE

Jute Carpet Backing
Council, Inc., 25 Broadway,
New York, N.Y. 10004

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GUIDE SPECIFICATION
Prepared by William E. Lunt, Jr., C. S. I.

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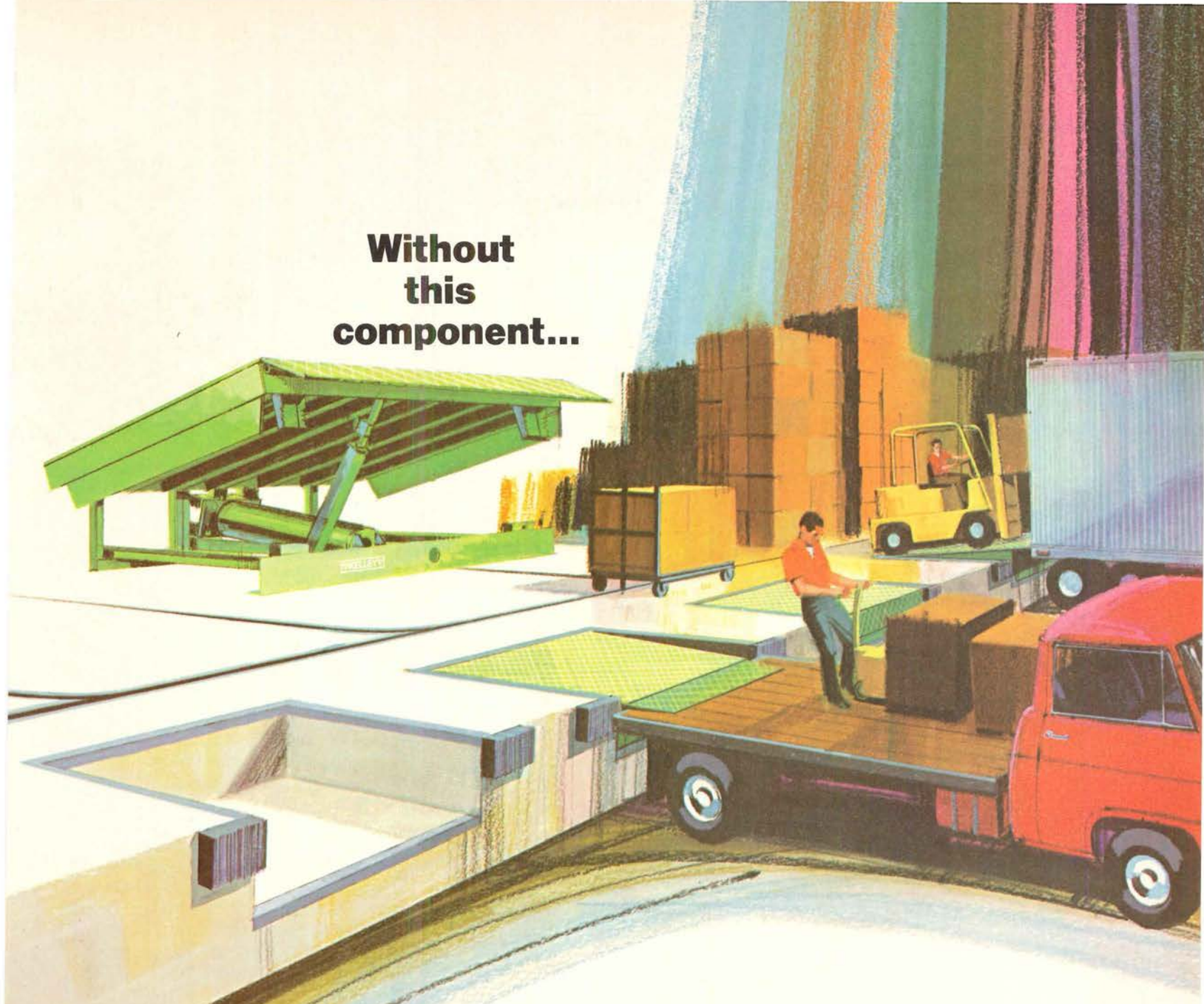

a material handling system is missing one of it's most critical parts

"In-plant" material handling systems often stop or start at the dock and make no provision to move goods and materials across the dock and into and out of trucks and rail cars. To help your clients effectively handle goods and materials in this critical dock area, Kelley offers a complete choice of Permanent Adjustable Dockboards. Kelley Dockboards offer patented safety and operating features which insure smooth, safe, efficient transfer of goods and materials. If you would like more information on planning this area, we will be happy to send you a copy of the third edition of "Modern Dock Design." Please return the inquiry card, or write: Kelley Company, Inc., 6768 North Teutonia Avenue, Milwaukee, Wisconsin 53209, (414) 352-1000.

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55-392

OFFICE NOTES

OFFICES OPENED

Earl Kai Chann, A.I.A. has announced the opening of his office for the practice of architecture at 501 South Essex Lane, Tucson, Arizona.

Lawrence Halprin & Associates has established a New York City office at 157 East 35th Street, with **James Coleman,** senior associate, in charge. The firm's main office is 1620 Montgomery Street, San Francisco.

G. Kent Hawks/Architect has announced the establishment of an architectural and planning practice at 333 Old Tarrytown Road, White Plains, New York.

Thomas E. Jankowski, A.I.A., Architect has recently opened an office for the practice of architecture and interior design at 65 East Elizabeth Avenue, Bethlehem, Pennsylvania.

Howard H. Juster has announced the opening of an office, **Howard H. Juster & Partners/Architects,** for the practice of architecture and planning, at 45 East 51 Street, New York City.

Dan MacMillan, Frank MacMillan, Brian Shawcroft and **Paul Thames** have recently opened new offices under the name **MacMillan, MacMillan, Shawcroft & Associate, A.I.A., Architects,** at 616 West Johnson Street, Raleigh, North Carolina and at 323 Ray Avenue, Fayetteville, North Carolina.

Robert Loren Rotner, A.I.A. recently announced the opening of his office for architecture and planning at 107 East 38th Street, New York City.

Leo S. Wou & Associates, Architects/Planners have established a new office at Suite 456, 680 Beach Street, San Francisco and have relocated their Honolulu office to Suite 1906, 130 Merchant Street, Castle & Cooke Tower, Honolulu.

NEW FIRMS, FIRM CHANGES

Jose Y. Almanza & Associates, A.I.A. Architects recently announced a firm name change to **Almanza Kelford Associates, Architecture Planning Engineering,** 7447 North Figueroa Street, Los Angeles.

James P. Barry is now head of the mechanical engineering department at **Holabird & Root, Architects—Engineers** of Chicago.

Walter P. Bogner, A.I.A. has been named an associate of the firm **Conklin & Rossant,** New York City architects and urban designers.

Terrill, Kistler & Anderson, Inc., Michigan civil engineers and land surveyors, has announced the association of **Frank J. Brechting, Jr.**

Brattle Street Associates, Inc., Architects and Planners is the name of a new firm with offices at 15 Brattle Street, Cambridge, Massachusetts. **Richard H. Heym** is president.

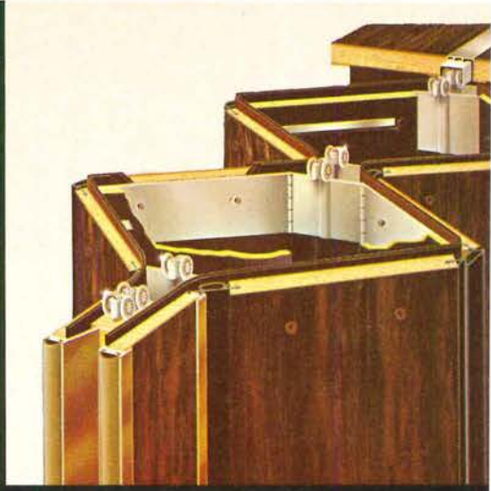
Two Washington, D.C. architectural firms, **Bucher-Meyers & Associates, Architects** and **Wilmot-Porter Architects,** have merged their practices. **John Wilmot** and **David Porter** have joined **Walter Bucher** and **Alan Meyers** as principals of the company, now known as **Bucher-Meyers-Wilmot-Porter & Associated Architects,** 8777 First Avenue, Silver Spring, Maryland.

Robert L. Thorson and **Jordan Gary Mertz** have been named senior associates with the architectural firm of **Carson, Lundin and Shaw,** New York City.

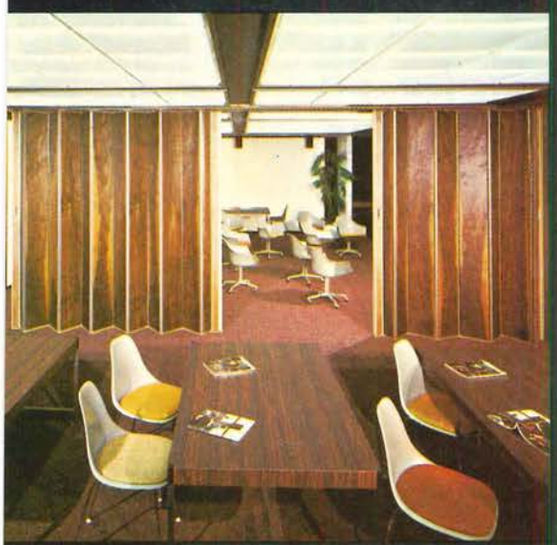
Campbell & Wong & Associates have announced the formation of two new firms. **John Carden Campbell, R.B.D./A.I.D.** continues his practice of building design and interior design with **Peter Rocchia** under the partnership name of **Campbell & Rocchia & Associates, Architecture and Interior Planning,** in association with **Raymond F. Murphy & Associates, Engineering and Planning. Robert Dahlstom, Architect** is a third principal of the new firm, which is located at 198 Francisco Street, San Francisco. **Worley K. Wong, Architect, F.A.I.A.** continues the architectural and planning practice of **Campbell & Wong & Associates** with **Ronald G. Brocchini, Architect, A.I.A.** under the corporate name of **Worley K. Wong, Ronald G. Brocchini & Associates, Architects and Planners.** Offices are at 737 Beach St. by Aquatic Park, San Francisco.

continued on page 74

From Panelfold...STC 40
an exciting new concept in wood



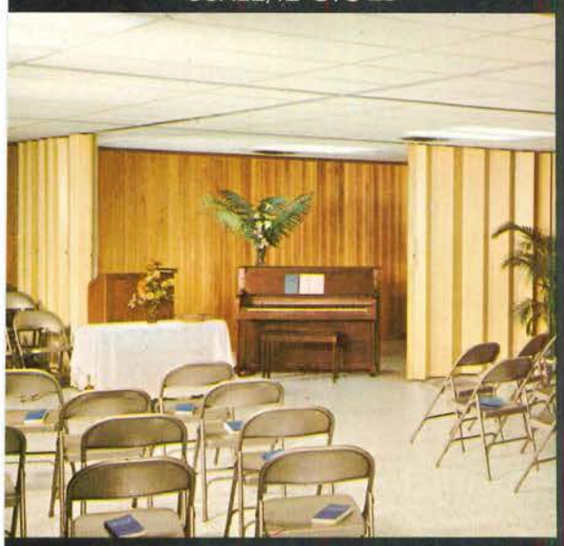
TWIN PANEL SONICWAL



SCALE/12•STC 29

SONICWAL/88•STC 40

SONICWAL/66•STC 36



SCALE/8•STC 25

Panelfold manufactures a full range of wood folding doors and partitions in both Single Panel and Twin Panel configurations. Four, Six, Eight and Twelve inch panel widths are offered. For each design or construction condition there is an appropriate Panelfold product to fill your acoustical requirements (STC 25 through 40), resolve area flexibility dilemmas or satisfy the aesthetic need dictated by room size. The Panelfold national sales team is ready to help you with the details.

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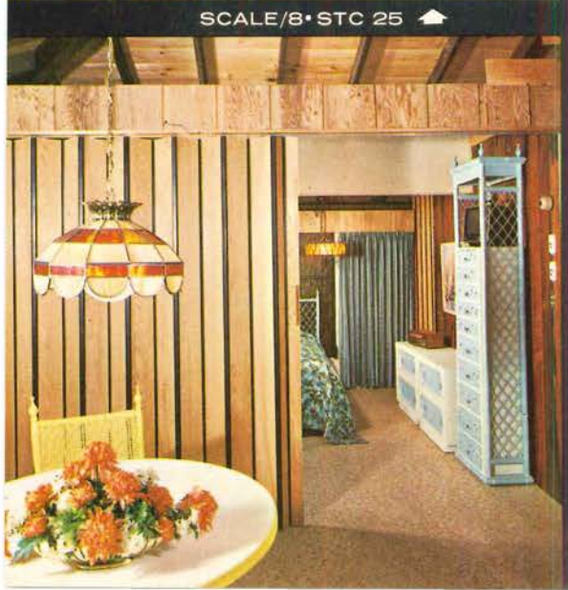

SCALE/4

ARCHITECTS:
Pancoast/Ferendino/Grafton (1)
Connell Associates, Inc. (2) (3)
James Merrifield (4)
Arthur Perrin (5)
Alfred Browning Parker (6)

Panelfold

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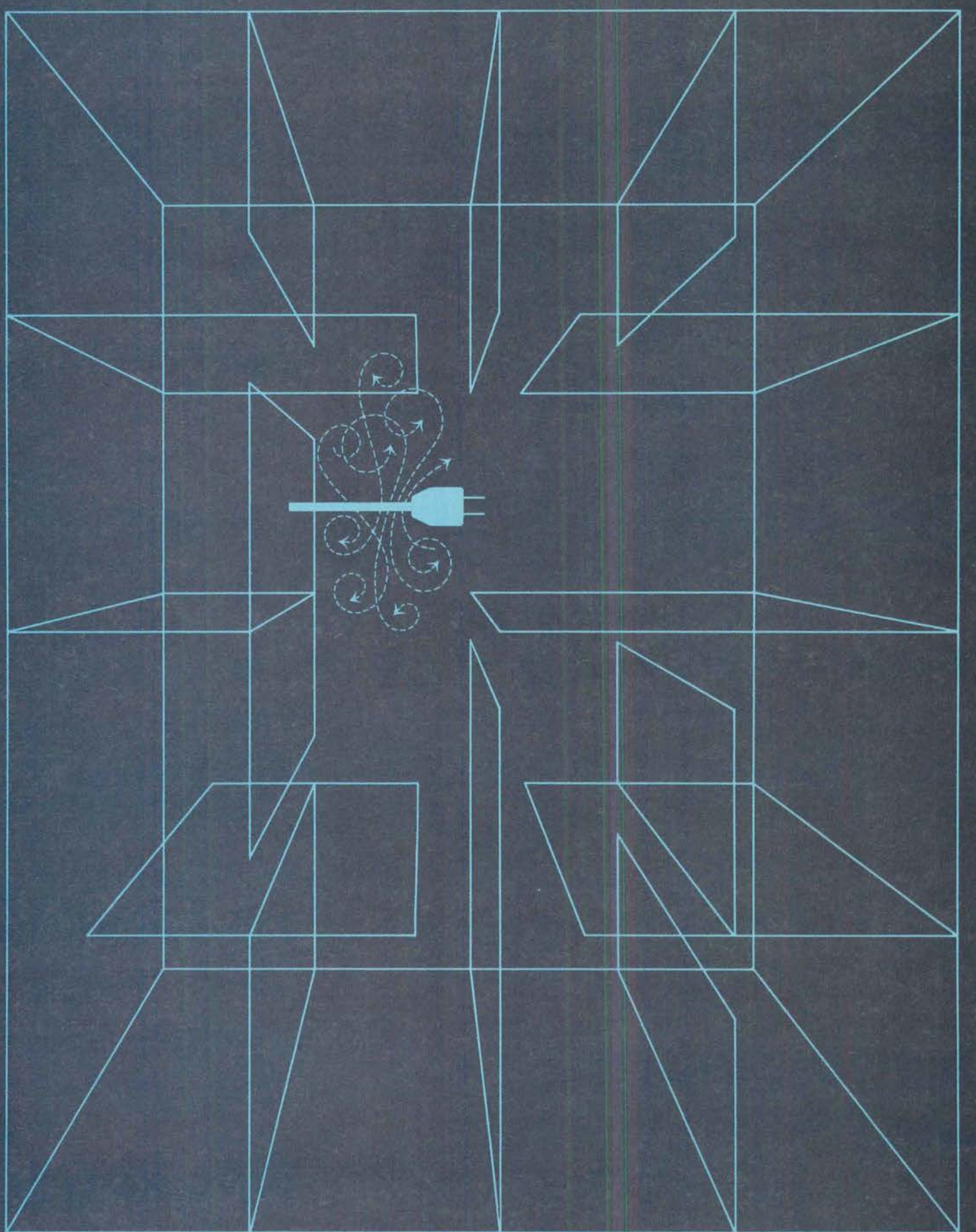
DESIGN



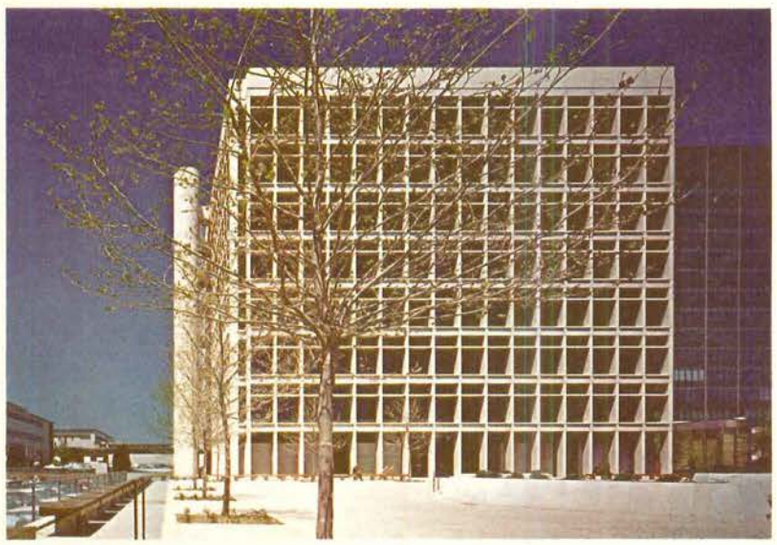
SPACE

without compromises demanded by mechanical and electrical services

Design cantilevered floors or balconies, waffle ceilings, luminous or exposed ceilings with complete freedom. Eliminate sills at glass walls, include completely movable partitions . . . or add innovations . . . simply by designing A-E Floor into your next job.

A-E Floor contains air distribution channels as well as telephone, electric and signal cells integral with any building frame. This blends mechanical and electric services into a highly efficient structural system.

Learn how this unique floor system gives new flexibility and versatility to architectural design. Get a copy of the A-E FLOOR design brochure from Granco Steel Products Co., 6506 North Broadway, St. Louis, Missouri 63147. (A subsidiary of Granite City Steel.)

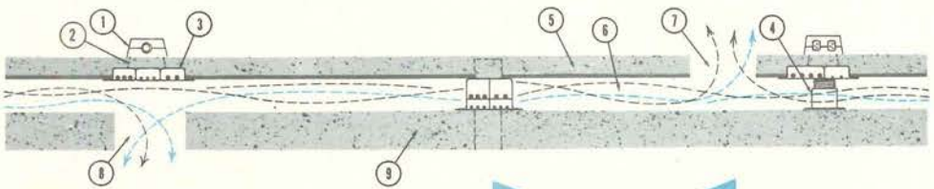


△ L'Enfant Plaza, Washington, D. C. (Office and Retail Center) Architect: I. M. Pei & Partners / Structural Engineer: Weiskopf & Pickworth / Mechanical-Electrical Engineer: Syska & Hennessy

A-E FLOOR PROJECTS

◁ Hoffman-LaRoche, Nutley, N. J. (Administration Building) Architect: Lundquist & Stonehill / Structural Engineer: Goldreich, Page & Thropp / Mechanical Engineer: Abrams & Moses / Electrical Engineer: Gustave P. Weiser

A-E FLOOR SYSTEM 1. Single floor fitting for power, telephone, signal service. 2. Preset insert. 3. Steel cells for telephone, electric and signal lines. 4. Vertical support. 5. Floor Slab. 6. Air plenum. 7. Outlet to floor or baseboard diffuser. 8. Outlet to ceiling diffuser. 9. Structural slab.



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Steel

IMAGINATION IN STEEL

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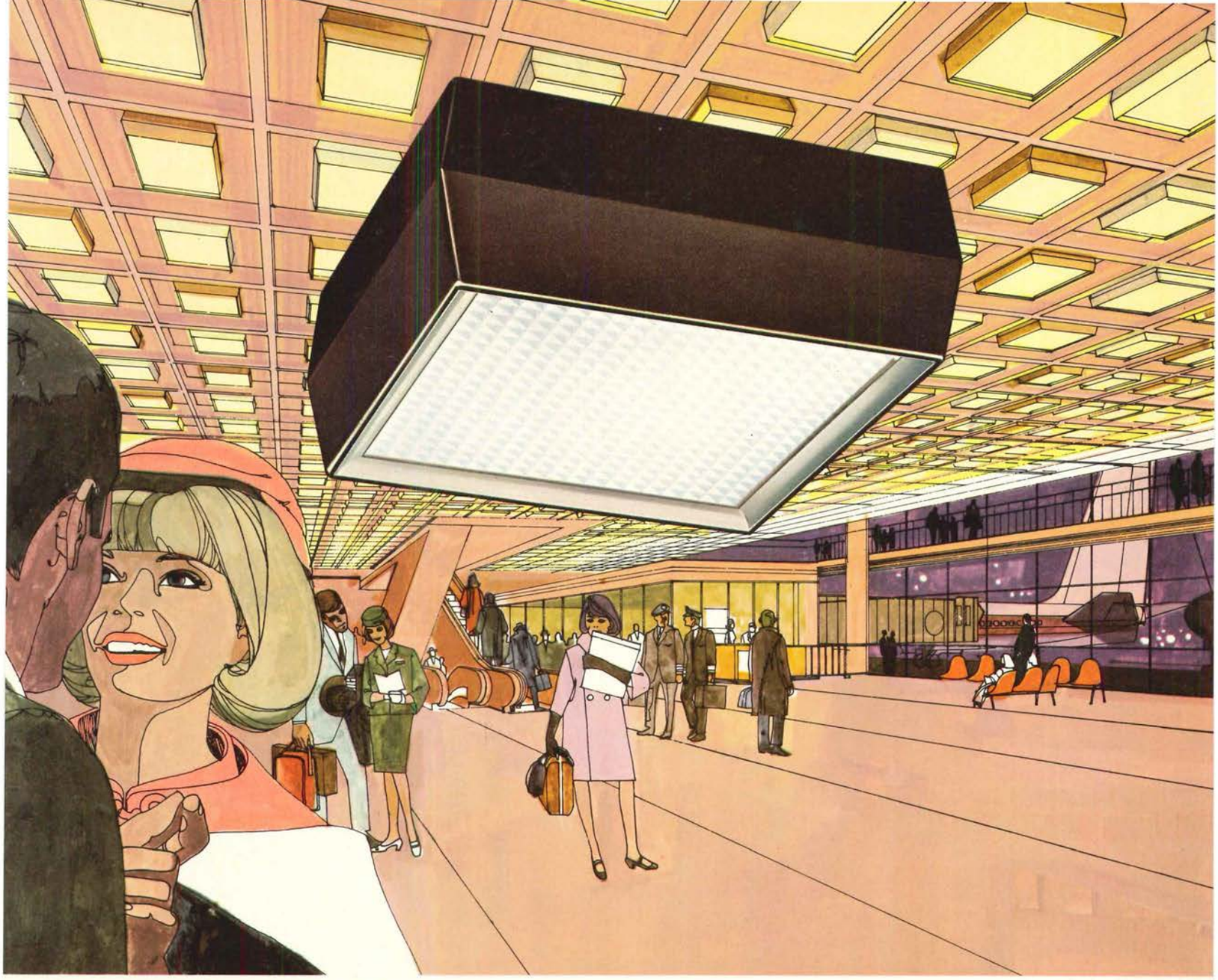

If you think mercury lighting belongs in a warehouse,

Magnum will change your mind.

Longer lamp life and higher light output made mercury vapor the most economical choice for industrial uses.

Now with good-looking Magnum, you can use economical mercury vapor lighting in commercial interiors, too.

Magnum, in 250 or 400 watt sizes, combines with the newest mercury vapor lamps to create warm, natural color rendition. An auxiliary quartz lighting system is available on standby for momentary voltage drops or power interruptions. And the porcelain exterior finish in charcoal gray, sandstone or white lasts a lifetime.

Just make a single electrical connection with the built-in ballast-capacitor and Magnum's ready for surface or pendant mounting.

If you'd like to find out more about Magnum commercial mercury vapor lighting, circle the reader service number. Or write: Benjamin Products Division, Thomas Industries Inc., 207 East Broadway, Louisville, Kentucky 40202.

THOMAS INDUSTRIES
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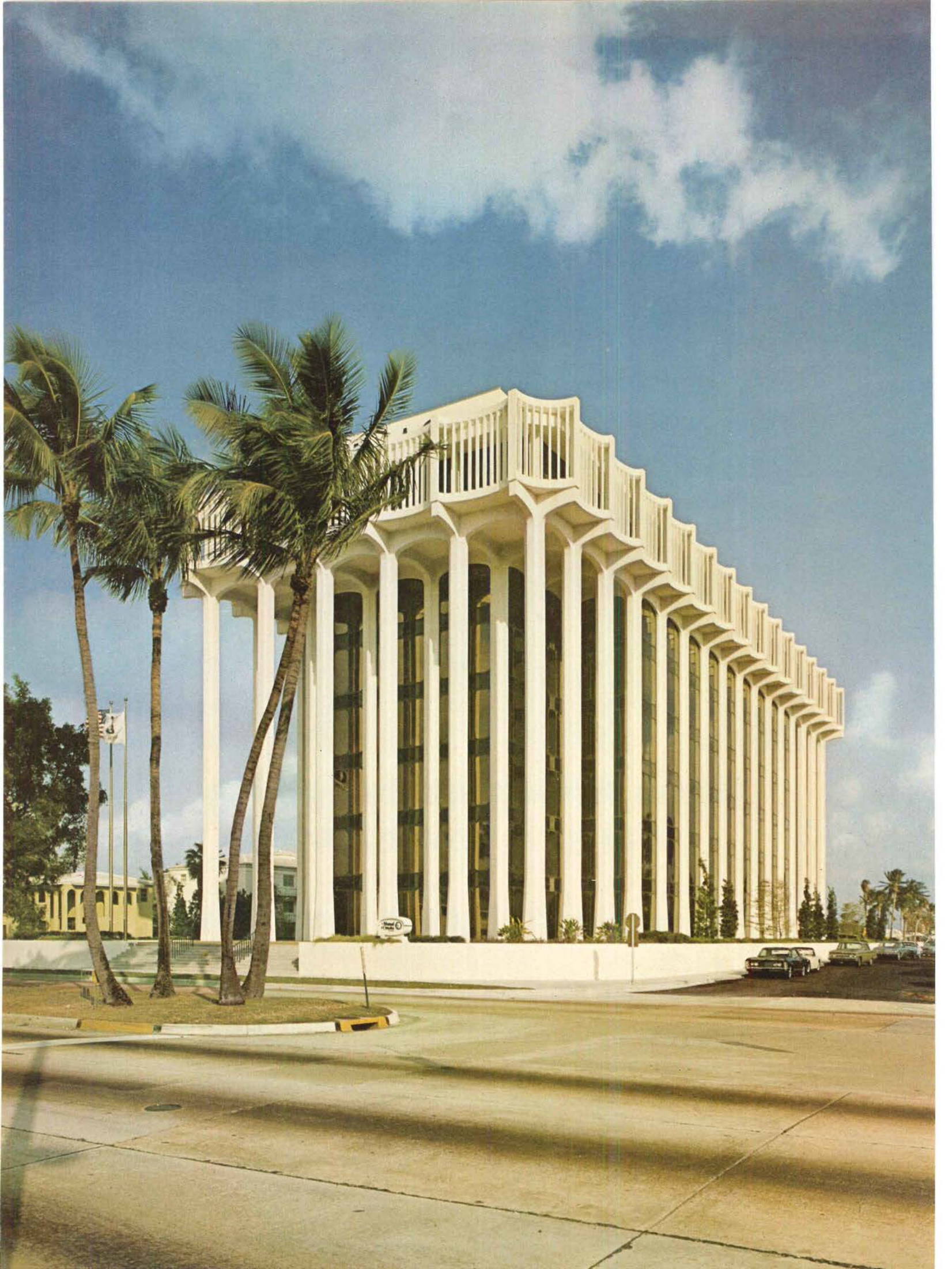
For more data, circle 40 on inquiry card



Now you can put up a glass-walled building in Miami and forget about the heat.

Mutual of Omaha did. With PPG Performance Glass.

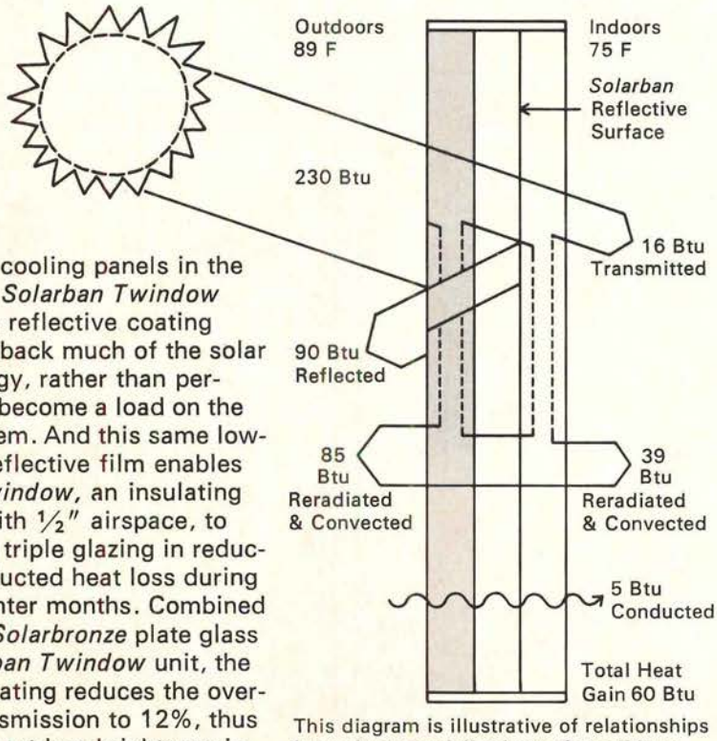
PPG's *Solarban® Bronze Twindow®* made possible an open building design for Mutual of Omaha's new Regional Home Office in Miami — and enabled the architects to reduce the size and cost of the building's cooling system.

The building's HVAC system is a single-duct air system with radiant heating and cooling panels in the ceiling. The *Solarban Twindow* units offer a reflective coating which turns back much of the solar radiant energy, rather than permitting it to become a load on the cooling system. And this same low-emissivity reflective film enables *Solarban Twindow,* an insulating glass unit with ½" airspace, to perform like triple glazing in reducing the conducted heat loss during Florida's winter months. Combined with PPG's *Solarbronze* plate glass in the *Solarban Twindow* unit, the reflective coating reduces the overall light transmission to 12%, thus much of the outdoor brightness is shaded with no obstruction to the occupant's view.

Other factors influenced the selection of *Solarban Bronze Twindow.* Its excellent insulating capabilities permit higher, more comfortable humidity levels to be maintained without condensation. This heat-strengthened glass also meets strength requirements, and its color complements the bronze tone of the exterior metals.

The new structure has eight floors with over 93,000 square feet of space. Building costs were $27.22 a square foot. Usable floor area is 80% of the total square footage.

Put the financial advantages of PPG Performance Glass to work for your clients. Contact a PPG Architectural Representative for technical data or write: PPG Industries, One Gateway Center, Pittsburgh, Pa. 15222.



This diagram is illustrative of relationships for a given specialized set of conditions.

Architect: Houstoun, Albury, Baldwin & H. Maxwell Parish, Miami
Interior Design: Houstoun & Parish, Miami
Consulting Design Architect: Leo A. Daly Co., Omaha
Consulting Engineer: Breiterman, Jurado & Associates, Miami

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

PPG INDUSTRIES

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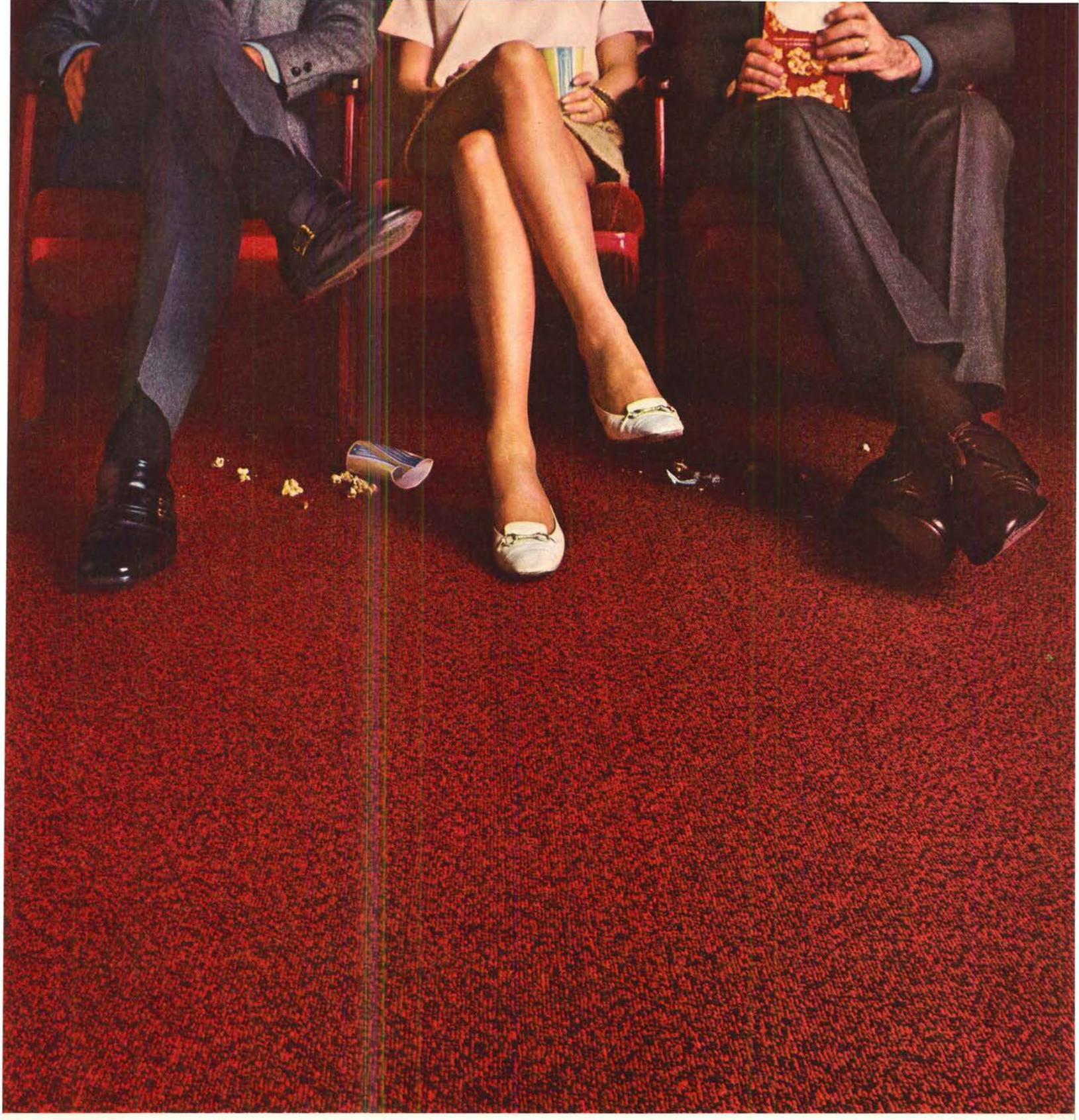

Carpet of HERCULON® stays in great shape even on a steady diet of popcorn, candy, and soda.

Looking for a triple-feature carpet? Carpet of HERCULON* olefin fiber is just the ticket. It doesn't absorb stains or soil so it withstands spilling, spotting, and the heaviest traffic, beautifully. It's also amazingly easy to clean.

In a movie theatre, your office, or at home, carpet of HERCULON will give you long life at a low price.

For more information, contact Fibers Merchandising, Hercules Incorporated, Wilmington, Delaware 19899.

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The home furnishings fiber

Want a wall that really takes it? Scuffs? Smudges? Banging doors? People? A wall that's easy and fast to put up?

Just put up Eternawall, and your wall's done. Completely decorated!

The inside is gypsum.

That means sound control.

Fire resistance.

Strength.

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The surface is vinyl. 100% vinyl. That means it's tough. Colorfast, flame and abrasion resistant.

And Eternawall is beautiful.

What's more, it comes in an almost limitless range of textures, colors, and patterns.

Is this the

You want the Georgia-Pacific vinyl-covered wall.

Eternawall™.

Eternawall could very well be the perfect wall for an area around a lot of traffic.

That's quite a statement. This is quite a wall.

What's this wall all about?

Eternawall is vinyl over drywall.

A predecorated wall system that goes up in one step.

There's no plastering. No joint finishing. No painting. No papering.

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What's so good about a vinyl-covered wall?

Durability. That's what vinyl is. Durable. Which means it lasts and lasts. In spite of hard wear.

The gypsum backing? We don't have to tell you how tough that is.

And Eternawall takes care of itself. It sheds dirt. Water. Almost everything.

So it could very well be perfect for demountable wall systems, too.

As we told you, this is quite a wall.

What so bad about other walls?

Nothing.

There are a lot of other wall systems that can be painted or papered. And painted or papered walls are great, in their place. In rooms that don't take much abuse.

But are they good for high traffic areas?

You know and we know that they just don't stand up to people.

Of course, you might get a wall that's just as good as Eternawall if you put up plaster or drywall and THEN covered it with a vinyl covering.

But why?

Takes time.

Lots more time than Eternawall. Time costs money.

perfect wall?

If it does get dirty, a damp cloth cleans it.

Fast.

Eternawall is so durable, it can be re-used. Over and over.

Is this really the perfect wall?

Nothing's perfect.

But, Eternawall is the toughest, easiest, most people-proof wall we know of. And that's darn close to being perfect.

So give your G-P representative a call and start putting up walls that stand up to people.

Eternawall

The almost perfect wall.

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HOPE'S

HEAVY INTERMEDIATE STEEL WINDOWS

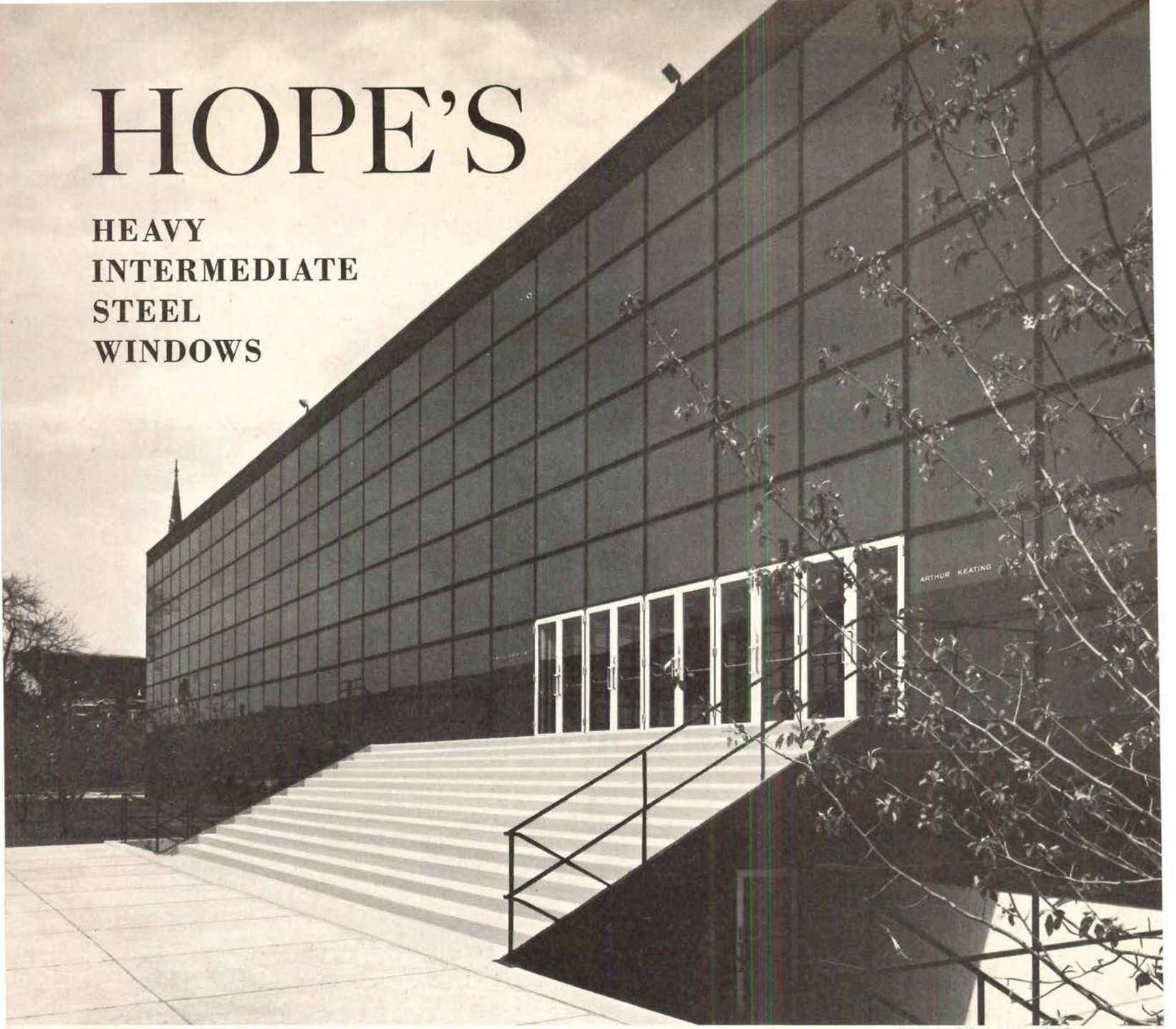

Photo by ©Ezra Stoller (ESTO)

GYMNASIUM (Arthur Keating Hall), ILLINOIS INSTITUTE OF TECHNOLOGY—CHICAGO, ILLINOIS

Architects: Skidmore Owings & Merrill — *General Contractor: A. J. Maggio Co.*

Custom Heavy Intermediate Steel Windows were selected by the architects and furnished by Hope's for the exceptionally large window walls in this handsome structure. Installation of all components including entrances (furnished by Hope's) was included in Hope's contract thus eliminating divided responsibility and insuring proper coordination and installation — Hope's would welcome the opportunity to discuss the windows for your next building — no obligation.

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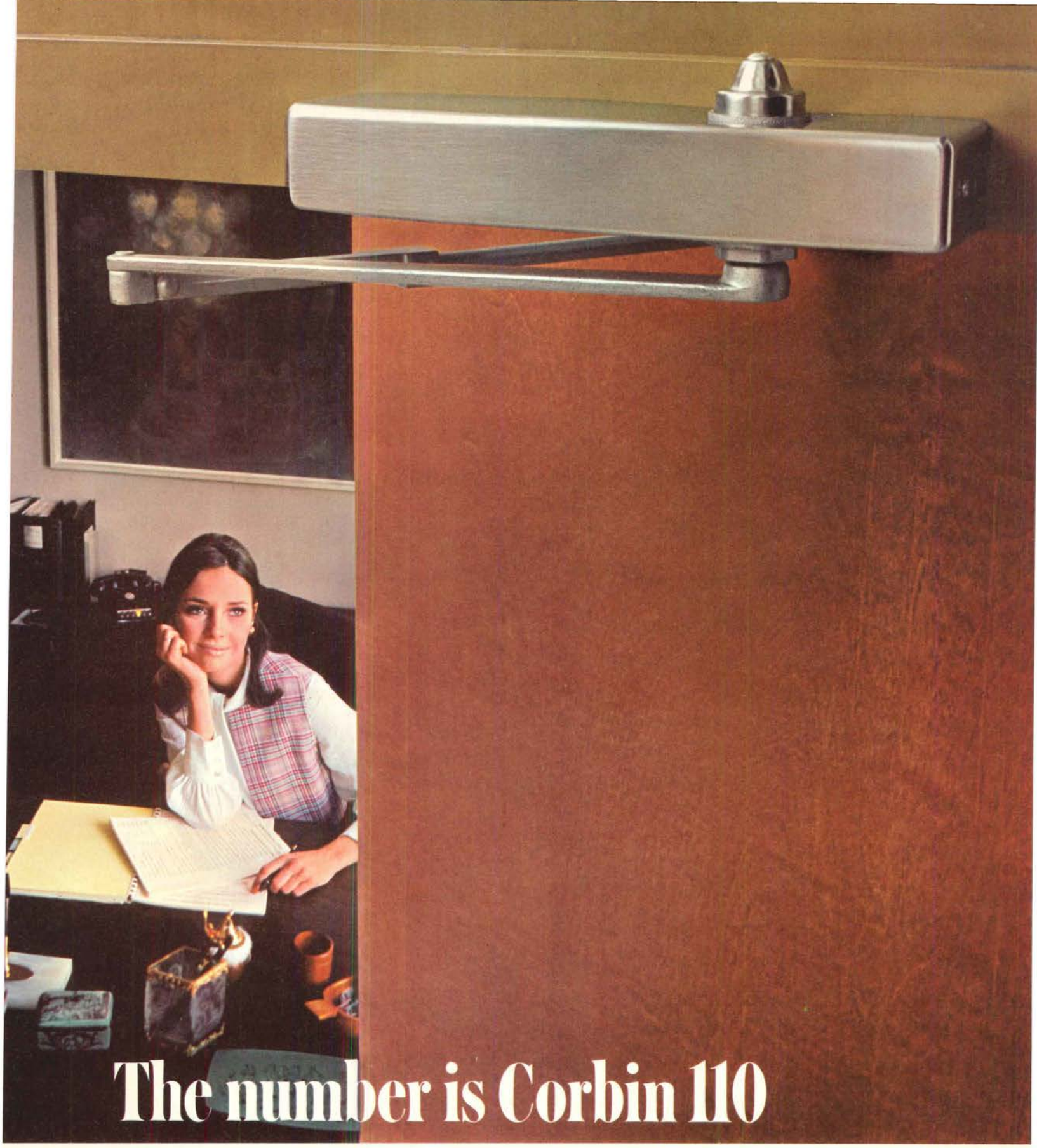

The number is Corbin 110

Your number for dependability. Strong, functional and stylish. One of many utilitarian door closers from Corbin. It typifies the beauty, quality and dependability built into all Corbin products.

Your Corbin distributor can furnish you with complete data on this design, or write P. & F. Corbin, Division of Emhart Corporation, New Britain, Connecticut 06050. In Canada—Corbin Lock Division, Belleville, Ontario.

CORBIN

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You don't have to specify JAMISON

but if you value VALUE, you will

The finest materials, superior design, expert workmanship—these are all part of the value of a Jamison cold storage door. You take them for granted in a door made by the oldest and most experienced firm in the business.

But Jamison also gives you value of another kind. For instance, you may have an assignment to remodel a restaurant or cafeteria. In that case our remodelling layout sheets for food service installations can be of great value in saving you time and trouble. We have provided cooler and freezer doors for thousands of remodelling jobs, and our experience is reflected in these layout sheets.

They are yours free without obligation. Also without obligation, our book "How to Select and Specify Doors for Cold Storage Warehouses and Food Processing Plants." Send for both values.

When you receive them, you still don't have to specify JAMISON. But if you value VALUE, you will.

COLD STORAGE DOORS BY
JAMISON
JAMISON DOOR COMPANY · HAGERSTOWN, MD.

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Is resistance still a virtue?

Porter says yes, with Vectra fiber.

New Porter "Double Play"—the first tweed tufted contract outdoor-indoor carpet of Vectra® fiber—resists stains, fading and wear, but can't resist being beautiful.

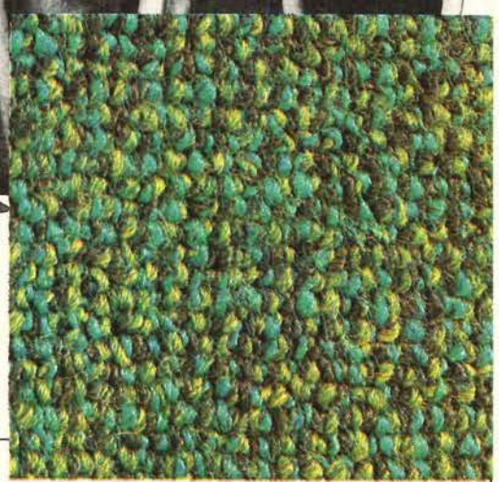
You know good old rugged, rough-and-tumble indoor-outdoor carpet. Now, Porter has made it a thing of beauty. The name is Double Play, and it's the very first tweed tufted contract carpet made with spun yarns of 100% Vectra olefin fiber... to rival the look and feel of Nature's own luxurious fiber.

But the real beauty of Double Play is the fact that it stays beautiful. Thanks to Vectra fiber's remarkable resistance to stains, fading and abrasion. Resistance that can be measured in fewer commercial cleanings... lower maintenance costs. So Double Play is an indoor-outdoor carpet in the truest sense. But once you see how lush and natural it looks indoors... you may not have the heart to put it outside.

SPECIFICATIONS

Pile of 100% solution dyed Vectra olefin fiber
⅛ gauge (216 pitch)
Pile wt.—28 oz. per yd.
Stitches per inch—7.5
Tufts per sq. inch—60
Yarns—3 ply
Primary Backing—100% polypropylene

Secondaries:
(all bonded with latex)
Jute
High density rubber
Durogan



Porter Carpets/P.O. Box 91009/East Point, Georgia 30344
Please send me samples and information on Porter "Double Play" carpet.

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Vectra® olefin fiber is manufactured by Enjay Fibers and Laminates Company, Odenton, Maryland, a division of Enjay Chemical Company. Odenton: (301) WO 9-9000. New York: 350 Fifth Avenue (212) LO 3-0720. Atlanta: 225 Peachtree Street, N.E. (404) 688-4250. Enjay makes fiber, not carpets.

Vectra . . . the fiber that believes resistance is still a virtue.

For more data, circle 47 on inquiry card

continued from page 58

C. A. Chaney and Associates of Washington, D.C. is now a division of **Lorenzi, Dodds and Gunnill, Inc.,** Pittsburgh-based engineers and architects. Offices remain at 8000 Indian Head Road, Washington, D.C.

William V. Cobern, A.I.A., Architect is now associate with the Pittsburgh firm of **Salvucci Engineers, Inc.**

Charles W. Magee, A.I.A. has been named an associate in charge of production of **Dorman/Munselle, A.I.A.,** Beverly Hills, California. Architect **Fred Orr** has been named vice president in charge of the firm's new Seattle office.

D'Orsey Hurst & Company, Inc., management consulting firm, has recently been acquired by **Resource and Management Systems Corporation,** New York City-based management and engineering consultants.

Epping, Whitney & Fox, Architects, of Rochester, New York have announced the appointment of **John L. Patterson, Jr., A.I.A.** as an associate, and of **William F. Albern, P.E.,** as the staff mechanical engineer for the firm's new engineering department.

George Erdstein, A.I.A. is now an associate of **Siegal Avrin Associates, Inc., Architects** of **Detroit, Michigan.**

Alexander Ewing & Associates, Philadelphia firm of architects, engineers and planners has appointed **Nicholas J. Rizzio, Jr., A.I.A.** as a partner, and architect **Joseph P. Eubank** as an associate.

Fridstein Fitch & Partners has changed its name to **Fitch Larocca Carington Jones.** The firm remains at 351 East Ohio, Chicago.

Geometrics Inc., Architects, Engineers, Planners of Cambridge, Massachusetts recently announced that **Robert P. Cooke** is now associate architect and **Walter M. Kroner** and **Birgit Mathé** are now associates of the firm. **Heyward Cutting,** now with the Boston Museum of Fine Arts, and **William H. Wainwright,** now devoting his time to teaching, are no longer principals, although Mr. Wainwright continues to associate with the firm on special projects.

Gruen Associates has named **Dan Branigan, A.I.A., William Dahl** and **Abbott Harle, A.I.A.** as partners.

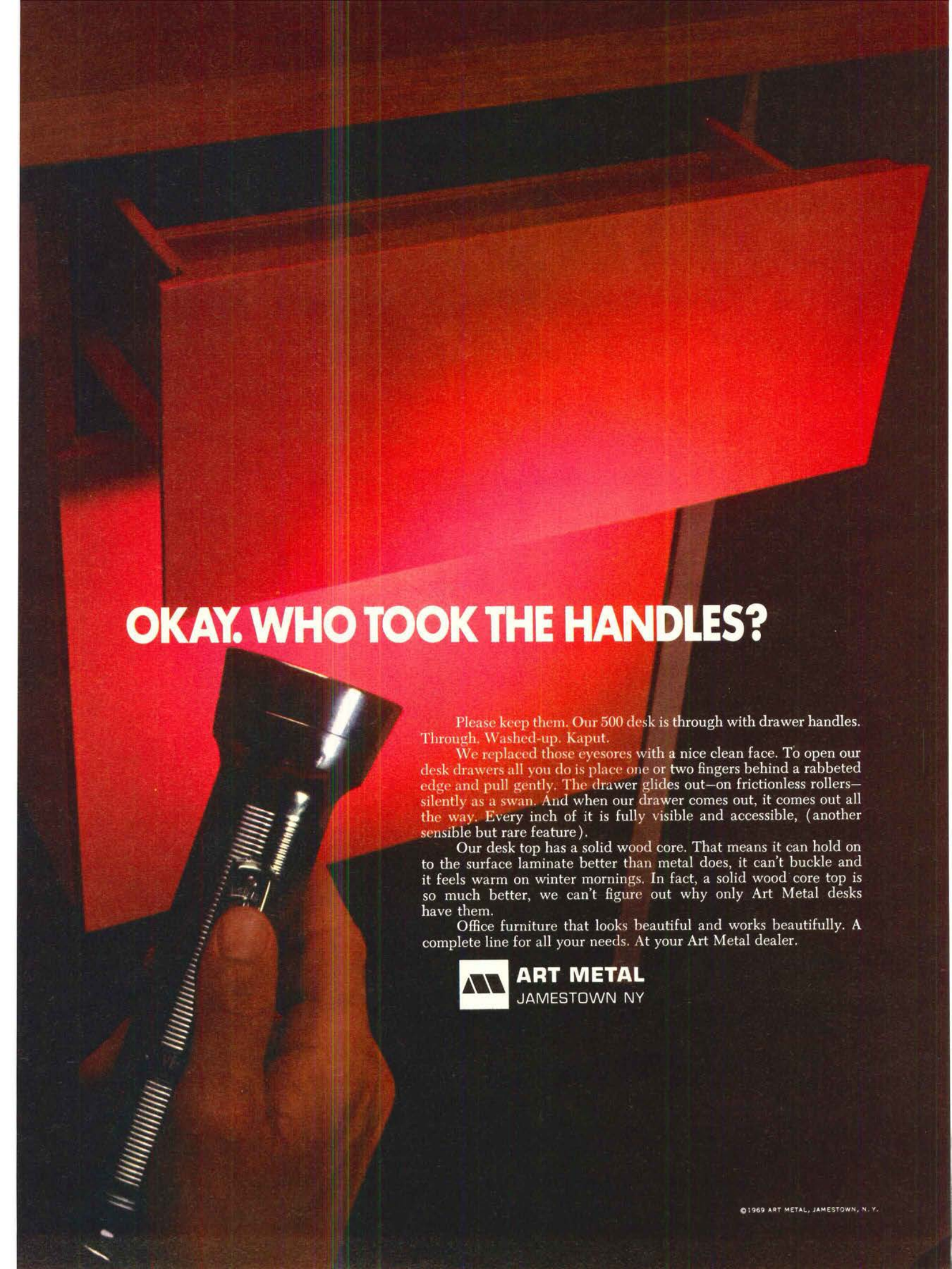
Segreti & Stillwell, Architects, A.I.A. of Washington, D.C. announce that **Peter M. Hasselman** has joined the firm as a partner.

Douglas K. Bloetscher, Edward F. Riddle and **John F. Ripplinger** are now associates of **Havis-Glovinsky Associates, Architects, A.I.A.,** Detroit.

Hayes and Smith, A.I.A., San Francisco architects, have merged with **Robert C. Trockey,** land development and housing consultant, and **Donald Blair, A.I.A.,** to form **Hayes, Smith, Trockey and Blair, Architects and Planners.** The new firm's address is 70 Broadway, San Francisco.

Stanley L. Horowitz, Architect, New York City, has appointed **Joseph Siegel** and **Steven Miller** as associates of the firm.

continued on page 102



Please keep them. Our 500 desk is through with drawer handles. Through. Washed-up. Kaput.

We replaced those eyesores with a nice clean face. To open our desk drawers all you do is place one or two fingers behind a rabbeted edge and pull gently. The drawer glides out—on frictionless rollers—silently as a swan. And when our drawer comes out, it comes out all the way. Every inch of it is fully visible and accessible, (another sensible but rare feature).

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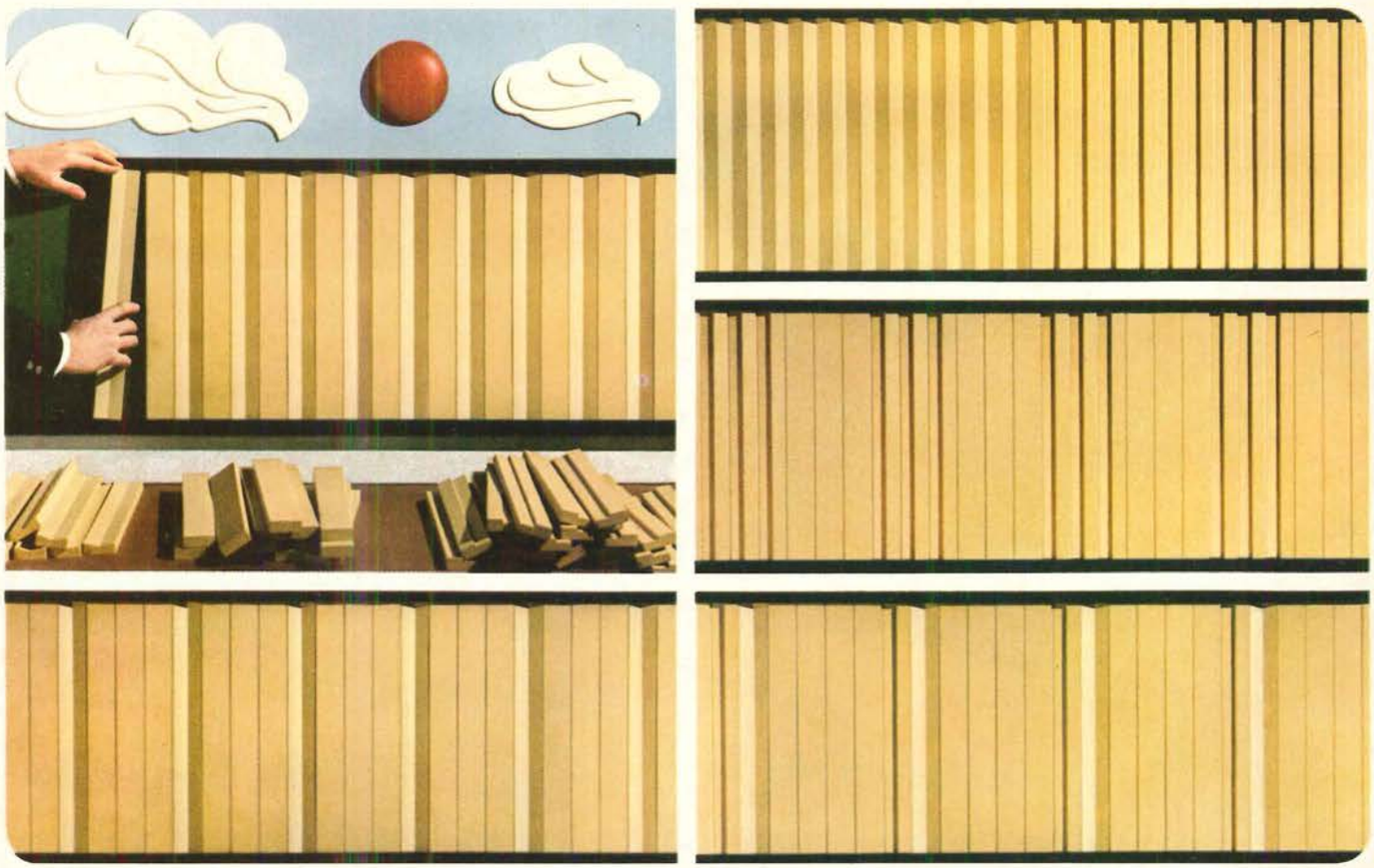

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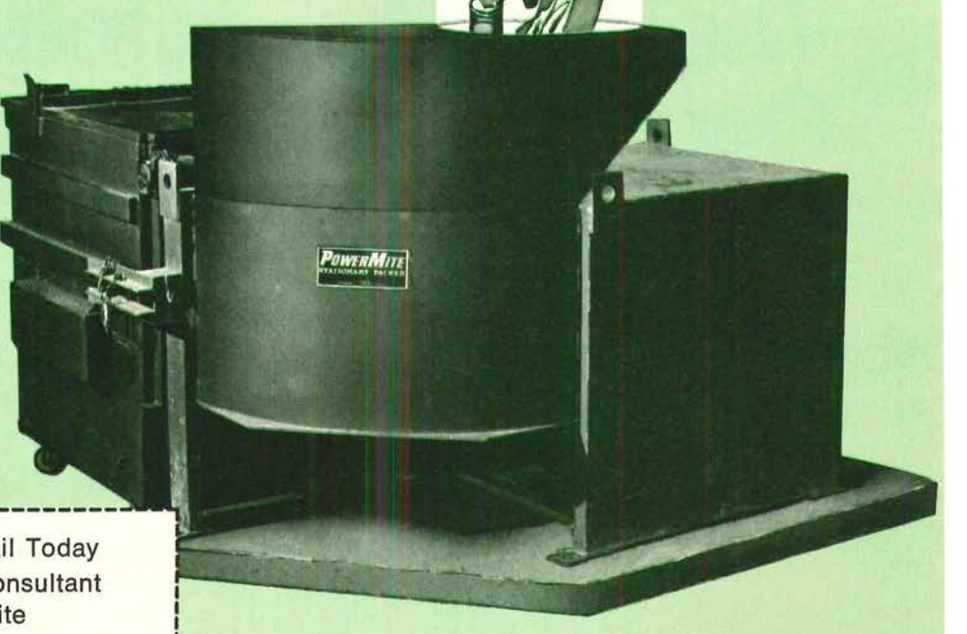

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N.C.A.R.B. pushes toward new exam bases—Part 2

Last month on this page, the moves of the National Council of Architectural Registration Boards toward new bases for evaluating registration candidates' experience and examination procedures were reviewed in a summary of the first half of Dean L. Gustavson's report to delegates at the national convention of N.C.A.R.B. in Chicago, June 20. The Council's review of changes in the scope and nature of professional practice was described, and the analysis by Gerald McCue of ideas generated in various committees was credited by Mr. Gustavson as a primary source for his overview.

The second part of Mr. Gustavson's talk drew further on the McCue paper for an analysis of the content and character of the profession of architecture to support an affirmative answer to the central question: *Can and should we develop a better examination?* Following is a summary of that analysis and some of the proposals to which it contributed.

In consideration of changes in the profession, Mr. Gustavson said, we are challenged to do at least two things:

1. Permit credit for experience in new and different routes or mixes. That is, we should recognize that some want to work for urban design or planning offices or for government, some want to work in new areas of computer usage and some want to work in the Peace Corps, advocacy programs and other government offices or programs. The proposal at this convention is to accept these varied experiences as full credit to a maximum of two years of the required total of three years. One year working under a registered architect in private practice would still be required.

2. Develop in cooperative study with the A.I.A. Committee on Internship and Licensing a structured internship program. N.C.A.R.B. and the state registration boards would be required to issue to the intern an "Intern Architect Record" that would record and verify each experience received and employer for whom he worked.

This is a simple procedure and permits the state boards and N.C.A.R.B. to evaluate each candidate's internship directly from the record book and thus avoid involved and often inaccurate later verifications.

Exams should test ability to use knowledge, not memorize it

While reviewing present examination procedures and in searching for improvements, several things ought to be kept in mind as constraints and as encouragement to change:

1. The forward steps now being proposed could only be based on the acceptance by all the states of a *national, uniform examination.*

2. We need to re-look at our whole process for examination and re-look particularly at what it is we should, and want to, examine for to satisfy legal and professional requirements and objectives.

3. We still examine in the long-standing divisions of subject matter, that is, history, theory, structures, design, site planning and so forth, even though these subject matter divisions do not respond wholly in content or emphasis to the need of our profession now and particularly to our projection of the future. We should recognize there are *expressions* from the profession and from candidates questioning the relevancy of the present subject matter in the light of the changing interest and changing demands of our society.

4. The examination is now largely oriented to testing for a technician's level of knowledge rather than testing for a tactician's ability to separate, organize and conceptualize; that is, those things that make him uniquely an architect.

5. The examination is exclusive in that every part must be passed by every person. Thus there is at present no way for one to take a flexible approach by selecting certain exams and then be required to demonstrate ability in depth in his own area of strength.

6. The candidate who possesses outstanding capabilities in, say, management or some technically oriented new sub-discipline, but yet possesses less than the minimal competence in design now required, is now excluded from the profession and must seek another profession or enter architecture as a second-class citizen. More likely in the future he will enter another profession competitive to us.

7. The examination committee proposes to reduce the length of the examination, from 38 hours to 36 hours.

Needed: a new definition for the architectural profession

If changes should be made, they have got to be based on a fundamental review of the objectives, definitions and philosophy of the profession.

To examine the problem of professional registration and examination, one must begin defining the qualities that we expect from ourselves and our peers, as well as the values that society can expect from us. We must first agree upon the qualities and purposes of professionals and professionalism.

There is an argument that professions may not be defined simply by the *problem areas* that its members face in common but rather by the common *fields of knowledge* that its members draw upon in order to solve these problems; the common *methods of application* of this knowledge and the *personal* values that members of the profession hold in common. This is an argument for a shift from simply defining professionals by the services they produce to a definition which also includes the means, processes and personal beliefs that they draw upon in performance of their work.

Association with a *problem area* is an insufficient definition for a profession. There are few problem areas which do not require the services of several professions. "Health," for example, does not describe the medical profession any better than "physical environment" defines the profession of architecture.

Relationships and congruence of understanding may result between those professions which have long associated in a particular problem area, but the problem area itself does not make a new profession. For example, economists, planners, architects and financiers who are all experienced in housing will each have learned something from the other's fields as it applies to this problem area. It does not, however,

tend to make them part of the same profession. The task before a profession is to define its qualities sufficiently irrespective of problem areas to distinguish its practitioners regardless of the problem areas to which they apply their talents.

A profession might be defined by delineating the *knowledge* that its members hold in common. This definition suggests that one would limit its members to those with precisely the same knowledge; or, even more limiting, it would suggest that the knowledge associated with the profession could be no greater than that of each individual.

Better, then, would be a definition which characterizes a profession by the knowledge which it holds as a group.

This is the more common tendency in referring to other professions, and this description expands the areas of knowledge associated with the profession to include those of its most advanced specialists as well as the more practical day-to-day concerns of its average practitioners. If the scope of knowledge of the professions is beyond the capability of any individual, it follows that, to some degree, individuals must hold different areas of knowledge. The professional presumably has the ability to retrieve and make use of all professional information but need not have current knowledge thereof. It is the ability to call upon, apply and make value judgments about the knowledge of the field which defines the professional rather than the limits of his personal ability to store knowledge.

After arguing against commonality of knowledge as the basis for defining the profession one must, however, accept some degree of commonality, some part of the body of knowledge of the field, which all of its members hold in common or there is no basis for a profession. It is important, therefore, to define the "commonality" of knowledge for the profession but not to consider this the total or even the major portion of the individual's knowledge.

We can also define a profession by the commonality of its *methods for application* of knowledge. We can visualize the profession as groups of individuals who utilize certain sophisticated techniques to apply pure theoretical knowledge to specific "real life" problems. In this concept, the professions function as the "glue" between society and its bodies of knowledge. But to regard professions as the interface between bodies of knowledge and the problem areas of society strongly suggests that any change in either the problem area or the available bodies of knowledge must result in a change in the profession.

Having looked at these definitions, let's look at a profession defined as a commonality of *personal values*. The public associates a profession with the values it represents as a social group and which subliminally influence its base of judgment. The medical profession, for example, holds maintenance of life above all other personal values and the public can depend upon this value as opposed to practicality, or cost, or other personal value judgments when the doctor must make a decision under duress. By contrast, the engineering profession is more often held by the public to represent a value system of expediency and action that is technologically efficient. The architectural profession likes to view itself, on the other hand, as representing humane and social values and for dealing in the personal idiom of subjective decision in the reconciliation of any conflict between social and technical issues.

Traditionally, the profession of architecture has been associated with a bias in favor of artistic form as opposed to highest technology, of minimum cost, and it is upon this value that the public has understood the distinction between its services and those of engineers since both are design professions with access to largely overlapping areas of knowledge for the performance of their services.

The architectural profession abandoned art in building as its primary bias when it accepted registration laws based largely upon technological factors. The profession has come to be known as the technician for assembling the diverse elements which go into an acceptable building. Currently there is evidence that the profession is even more uncomfortable with art values and now wishes to be identified with a science of solving social and technical problems.

It is important to note that should the public change its sense of the values held by the profession and change its view of its role, then there would be a major shift in the public's use of the profession vis-a-vis other professions.

Perhaps equally as related to registration, there is another level of personal value with which the public associates a profession. That is the degree to which it creates mechanisms to maintain a high level of public trust. When there are no internal procedures which protect the public against a low level of performance, then one should expect a correspondingly low level of public trust.

Having examined the commonality of areas held by a profession, next let us examine the "blanket" of environmental design. The knowledge held or known by a profession normally comes from several basic academic disciplines. Within some disciplines are sub-disciplines which may be overlapping. For example, both the architect and structural engineer draw upon the sub-discipline of mechanics of materials but at different levels of depth. It is through the areas of commonality that the linkages between the professions are made, but it is the areas of difference which give them sufficiently separate identity to remain separate professions.

Both landscape architecture and architecture share concerns for the human use of space, for analysis of human needs, and for design synthesis for these needs. They do not totally share, however, the areas of technical knowledge on which they rest. The architect shares a different set of congruences with the planner. Each has a concern for the interaction between the physical systems of individuals and those of the community at large.

Commonalities exist among those areas of engineering, law, sociology and psychology which have contributions to make within the field of environmental design. The commonality, however, is not to the degree that would justify one profession of "environmental design." However, because of their juxtaposition one must assume that persons will emerge in the future who have combined different sets of sub-disciplines in new or varied areas of expertise. The interesting problem this will pose is how these persons with new capabilities will relate to the existing professions.

Implications for registration authorities are clear

Once they have gone through these very important definitions and distinctions of what constitutes a profession and its relationship to other professions closely connected to it, then what are the logical implications to registration authorities?

First we could agree that it is in the best interests of the public to set a minimum standard for those of a profession who hold themselves worthy of public trust.

Secondly, if we accept this, we are then obliged to find a legal definition for our profession which provides the public with an assurance of competence and clarifies our relationship among other professions. At the same time such a definition should permit the profession to evolve as the areas of interests and subdisciplines of the knowledge of its members change.

Consensus in these definitions can not be arrived at in a year or two but exposition of these views can now provide the basis for next year's studies and development of a new and much improved examination.

To restate the principal points of this proposal for examinations:

1. We should devise an examination procedure which encourages rather than discourages entry in registration of persons who hold the methods and values of the field but have unusual or specialized individual competences.

2. We should devise an examination procedure that tests for those aspects of the profession held to be most significant; the architect's discretionary ability to draw upon and use knowledge at the conceptual level of value judgment rather than at the technician's level of memorization.

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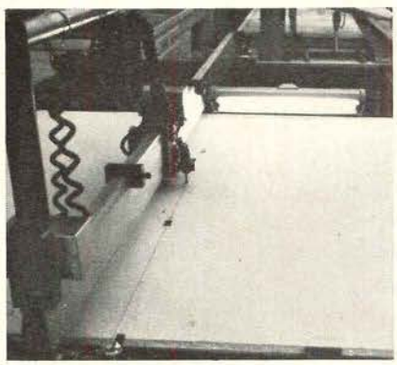

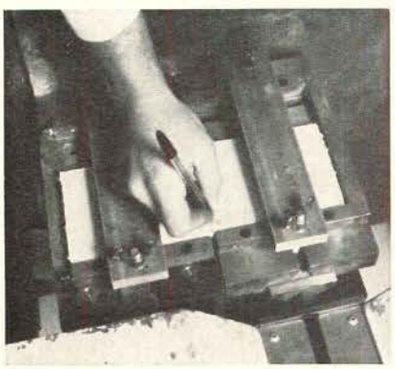

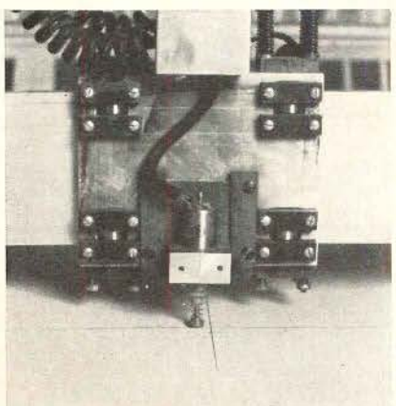

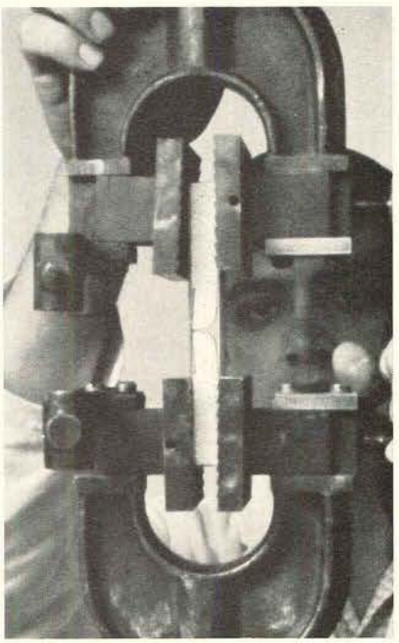

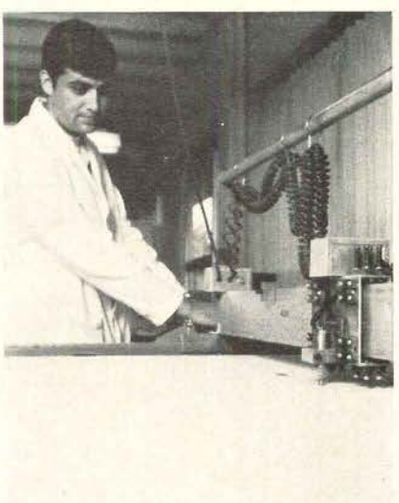

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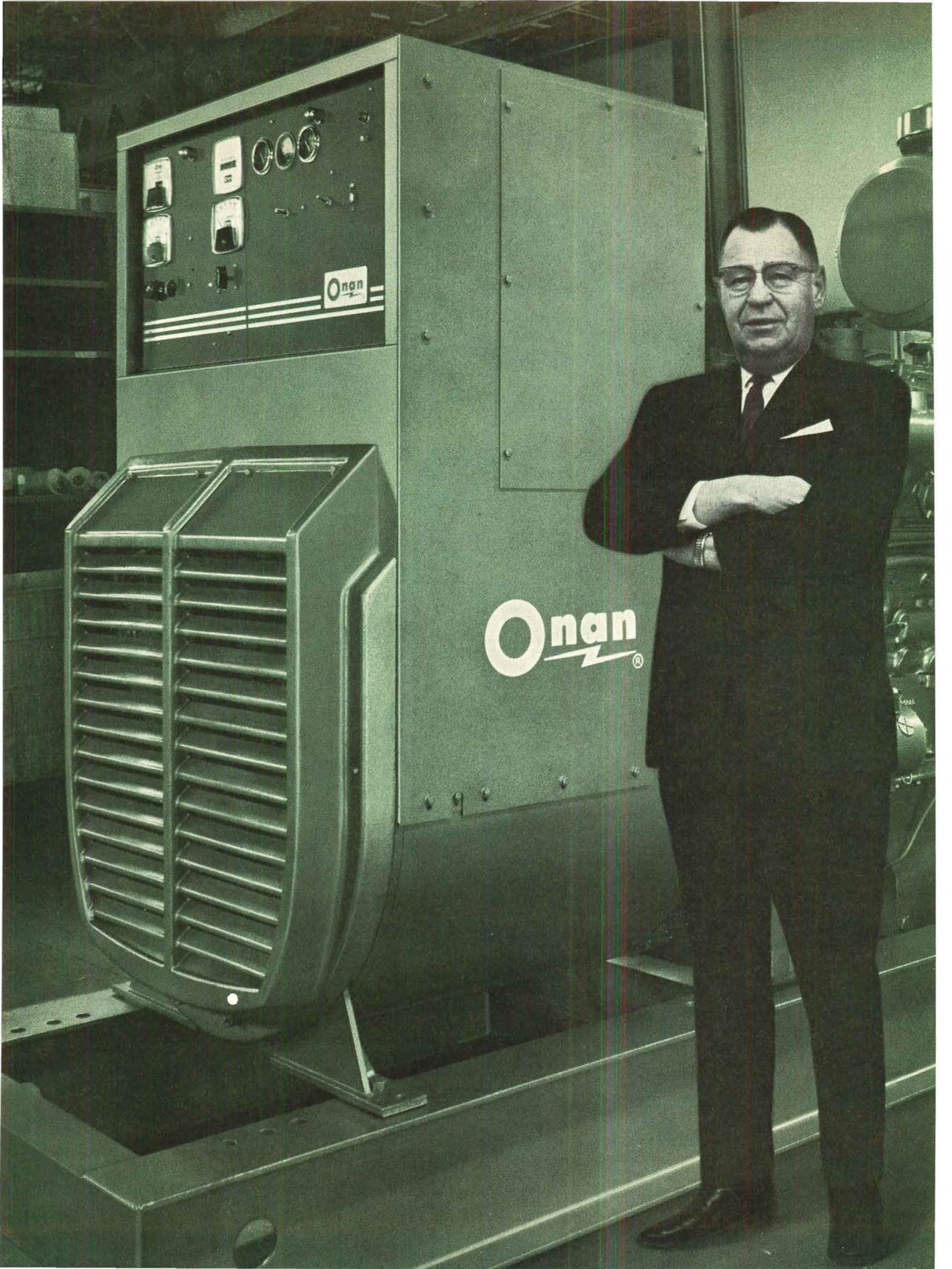
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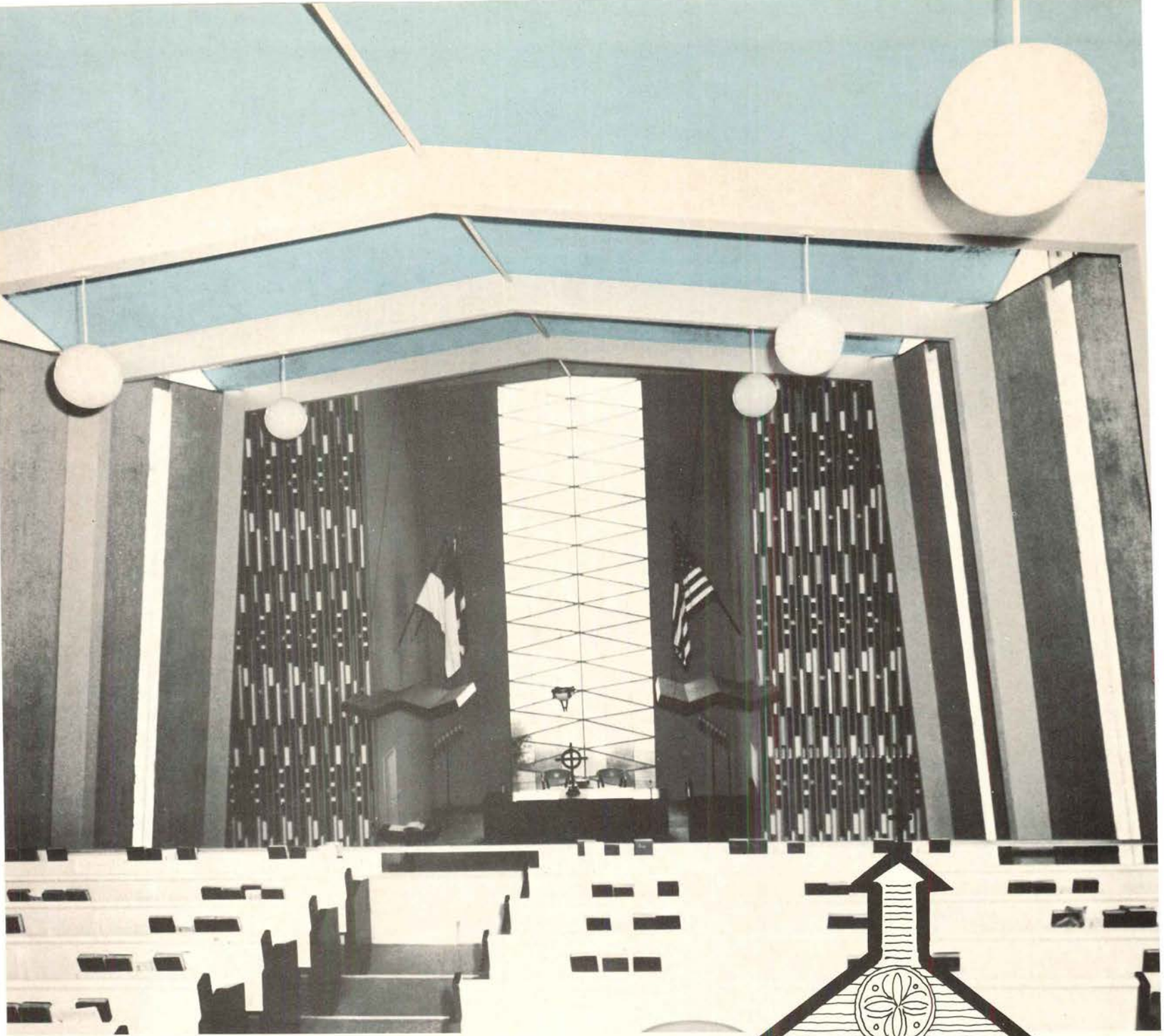

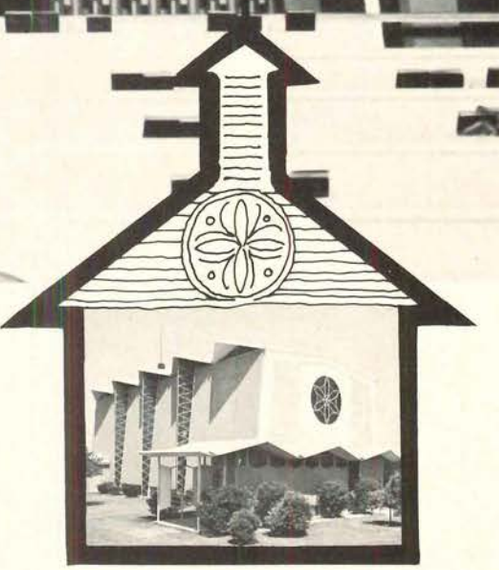

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COMMENTARY

William H. Edgerton
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Cost guidelines for urban housing rehabilitation—Part 2

Urban rehabilitation building costs were given a rule-of-thumb treatment in last month's commentary section. However, this type of reconstruction has many pitfalls for the inexperienced, and cost consideration of a more specific nature is worthy of discussion, especially in light of increasing emphasis at both the local and Federal levels on improving the urban housing supply and the opportunity for and involvement of architects in giving direction to this work.

Range of bids is generally wider than in new construction

One major difference between rehabilitation and new construction is in the spread between high and low bids. The bids for one recent "quality" job for a five-unit building were as follows: $109,000; $130,000; $150,000; $170,000; $180,000. The low bidder was not qualified and the high bid was a courtesy bid. Still, the range of the remaining three bids was 30 per cent high to low. Ultimately, the $130,000 bid was negotiated down to $105,000 ($10,000 above the budget for the job) and construction went forward to successful completion. Lesson number one: the architect must familiarize his client with the probability of meeting or not meeting an established budget, and the reasons for the large spreads between high and low bids.

Some of the reasons for uncertain determination of the bid level are:

1. Competence of the contractor. Usually non-union (for small projects), and often over-extended, the contractors who bid on rehabilitation work are impeded by unfamiliarity with newer products or techniques, substantial employe turnover, limited working capital, and low levels of efficiency and productivity.

2. Unknown factors of existing construction. As interior demolition progresses, many defects can be exposed: defective timbers, insecure headers, old equipment requiring removal, deteriorated or porous foundation walls, dry-rot and mold, new utility hook-ups required. In the latter case, digging up the sidewalk and street is usually both expensive and time-consuming.

3. Compliance with the building code and its interpretation by the job inspector. Plan examiners are not perfect. In a recent case, the inspector would not approve the issuance of a Certificate of Occupancy until a protected skylight was installed in the roof over the public stairs. The plan examiner overlooked this item (obviously required by the Code) and it cost an extra $300.00.

4. Inability of the contractor to estimate properly. Many contractors involved in rehabilitation work can't afford the overhead of an office staff; they must act as their own estimators. Also, some items can't be estimated. For example, theft from small, unprotected urban construction sites is a major headache and expense: How can one estimate reasonable allowance for this?

5. Contractors' profit and overhead. Profit and overhead allowances can run from a few per cent to 25 per cent or more, depending on the complexity of the job, the amount of local construction activity, and the previous experience of the contractor.

Other important cost items can easily go unnoticed

If not fully considered, some seemingly insignificant items can have a substantial influence on rehabilitation costs. For example:

1. A performance bond for new construction usually costs the contractor 1 per cent on the first $100,000 of contract value. The net worth and past history of the contractor influence this item significantly, but a small contractor may have to pay between 2 and 3 per cent for a bond.

2. A fifteen or twenty year bonded roof may be difficult or impossible to obtain, or cost as much as the roofing job itself. This is due to the generally small square-foot area involved. The architect should consider alternatives to a bond.

3. Does the code or good practice require a back-water valve on the house sewer? To put one in after the sewer is in can cost $100 or more.

4. Is the old house sewer usable or must it be replaced? A 50- to 80-foot horizontal run of cast iron pipe (in most rehabilitations) can be expensive.

5. Is the electric trench or duct (and sleeve) of sufficient size to carry the increased wire size underground to the service panel? This is an easily overlooked item.

6. Are there shut-off valves on the domestic water line (and sprinkler line if the building has one) in the street or in the building? Many of these buildings were constructed without such valves.

7. Sleeved air conditioners may give trouble on the building facade. Occasionally structural masonry will be found that cannot be removed. The alternatives are unesthetic window-mounted air conditioners or some form of a central system with a cost of $2,000 or more.

8. Spacing of existing joists can cause front-to-back displacement of the "stack" and ductwork up to 12 in. either way. What will this do to room sizes and other refinements of the plan?

There are many, many more items, generally due to existing conditions, that can cause trouble for the architect and raise the cost of the job.

The prudent architect will spend substantial amounts of time in surveying existing construction when engaged in design work for urban rehabilitation. The rewards can be many, including the self-satisfaction that comes from a workable design, executed at or near the clients' budget, within the limitations imposed by the existing structure.

Guidelines to New York City Average Rehabilitation Cost Per Square Foot

	Scale of construction quality			
	Low	Medium	High	Highest
	Costs per over-all square foot			
Demolition	$0.50	$0.55	$0.60	$0.60
Masonry [1]	1.50	1.60	1.80	2.00
Carpentry	1.60	1.75	2.00	2.50
Windows	.50	.50	.60	.80
Doors/Frames	.40	.40	.45	.50
Stairs [2]	—	.10	.15	.20
Plaster/drywall	1.80	1.90	2.00	2.50
Electric	.60	.75	.90	1.20
Heating	1.10	1.20	1.30	1.50
Air conditioning	.40	.40	.45	.70
Plumbing	1.30	1.40	1.50	1.75
Kitchens	.50	.60	.75	1.25
Insulation [3]	.40	.40	.45	.50
Misc. iron	—	.10	.15	.25
Floors	.70	.70	.75	1.00
Tile	.25	.25	.30	.40
Painting	.45	.50	.75	1.25
Hardware	.05	.10	.15	.30
Total/Square Foot	$12.05	$13.20	$15.05	$19.20

[1] Including necessary construction
[2] Not entire replacement
[3] Including roofing and sheet metal

INDEXES AND INDICATORS

Dodge Building Cost Services
McGraw-Hill Information Systems Company

BUILDING COST INDEXES

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

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

SEPTEMBER 1969

Metropolitan area	Cost differential	Current Index residential	Current Index non-res.	% change year ago res. & non-res.
U.S. Average	8.6	315.4	336.0	+ 7.34
Atlanta	7.4	364.0	386.1	+ 8.57
Baltimore	7.7	306.5	326.1	+ 4.43
Birmingham	7.3	283.6	305.0	+ 6.44
Boston	8.4	280.2	296.6	+ 6.29
Chicago	8.9	340.9	358.6	+ 4.71
Cincinnati	9.0	308.3	327.7	+ 7.55
Cleveland	9.9	339.4	360.7	+ 7.89
Dallas	7.8	299.4	309.2	+ 9.32
Denver	8.3	320.1	340.2	+ 8.31
Detroit	9.6	337.6	354.4	+11.42
Kansas City	8.3	280.8	297.2	+ 6.23
Los Angeles	8.4	319.2	349.2	+ 7.36
Miami	8.5	315.3	330.9	+ 7.75
Minneapolis	8.8	312.8	332.5	+ 6.79
New Orleans	7.8	282.6	299.4	+ 8.17
New York	10.0	325.5	350.1	+ 7.04
Philadelphia	8.6	307.0	322.3	+ 6.24
Pittsburgh	9.1	293.7	312.2	+ 5.61
St. Louis	9.1	308.3	326.7	+ 6.51
San Francisco	8.7	408.8	447.2	+ 9.16
Seattle	8.6	289.7	323.7	+ 8.46

Differences in costs between two cities may be compared by dividing the cost differential figure of one city by that of a second; if the cost differential of one city (10.0) divided by that of a second (8.0) equals 125%, then costs in the first city are 25% higher than costs in the second. Also, costs in the second city are 80% of those in the first (8.0÷10.00=80%) or they are 20% lower in the second city.

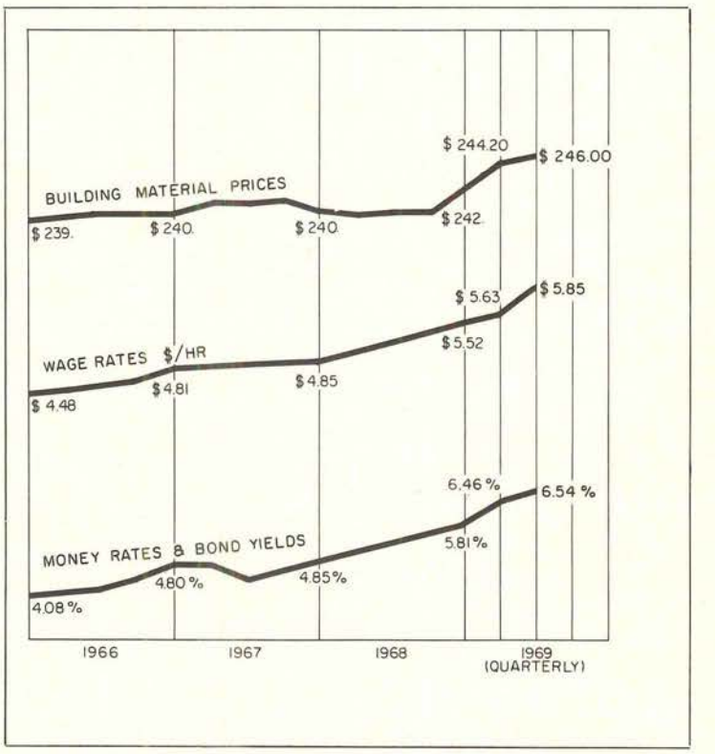
ECONOMIC INDICATORS

Indicators are intended to show only general direction of changes.

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

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

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



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

1941 average for each city = 100.00

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

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.

ARCHITECT: WARREN HOLMES CO., LANSING, MICH.
ERECTOR FOR SCREEN: PAYNE-ROSSO COMPANY

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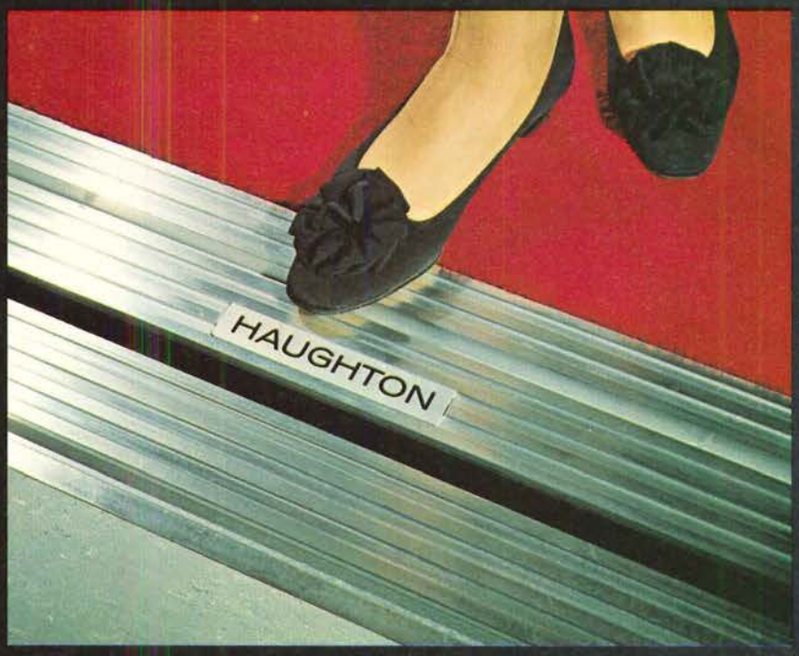
Haughton interrupts this page to suggest 3 key questions you should ask before you choose your next Elevator System.



Things change. The old yardsticks of performance are open to question.

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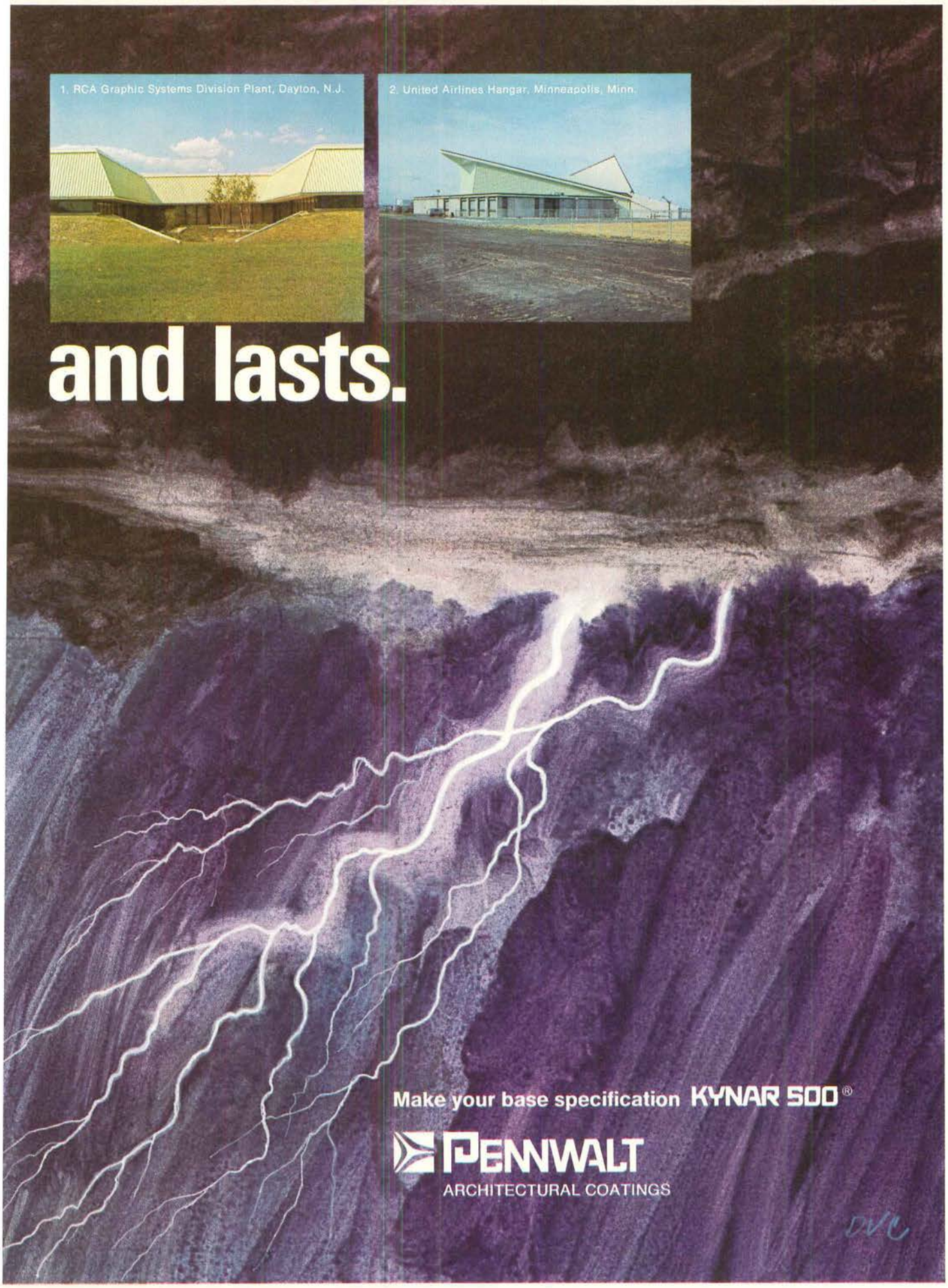
1. RCA Graphic Systems Division Plant, Dayton, N.J.
Architect: Vincent G. Kling and Associates, Architects, Philadelphia, Pa.
Finish: DeSoto Fluropon®.
Panels: Elwin G. Smith & Co., Inc.

2. United Air Lines Hangar, Minneapolis, Minn.
Architect: Miller-Whitehead-Dunwiddie, Inc., Bloomington, Minn.
Finish: DeSoto Fluropon®.
Panels: The Binkley Company.



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NEW FIRMS, FIRM CHANGES

continued from page 74

The architectural and planning firms, **Herbert Kahn, A.I.A., Raymond Kappe, F.A.I.A.** and **Rex Lotery, A.I.A.** have recently announced their merger. The new firm, **Kahn—Kappe—Lotery,** is located at 501 Santa Monica Boulevard, Santa Monica, California.

Caudill Rowlett Scott, architects, planners and engineers of Houston, Hartford and New York, announce that **Stephen A. Kliment, A.I.A.,** architect and former editor of Architectural and Engineering News, has joined the firm as architect in charge of research and information. CRS has also recently announced the formation of a independent affiliate, **Computing Research Systems Corp. (CRS2),** to provide software computer service to architects, agencies and institutions concerned with space planning. President of CRS2, whose offices are at 3616 Richmond Avenue, Houston, is **Robert F. Mattox, A.I.A.,** Mr. Mattox is a former associate of CRS.

Julian von der Lancken, A.I.A. is now director of design for **Kahn and Jacobs, Architects,** New York City.

Jack Klein has joined **Frank Grad & Sons,** Newark architects and engineers, as director of interior design.

Following the appointment of **Sam Kiyotoki,** architect, as a partner, the California firm of **Richard Leitch & Associates, Inc.** is now known as **Richard Leitch/Sam Kiyotoki & Associates.** Offices of the architectural and land planning firm continue at 1730 West Coast Highway, Newport Beach.

Robert H. Liles has been elected president of **Eberle M. Smith Associates Limited,** Windsor, Ontario planning and design consultant firm.

James E. Westphall, A.I.A. is now executive architect, and **John B. Fish** is now director of architecture for the Los Angeles-based firm of **Charles Luckman Associates.**

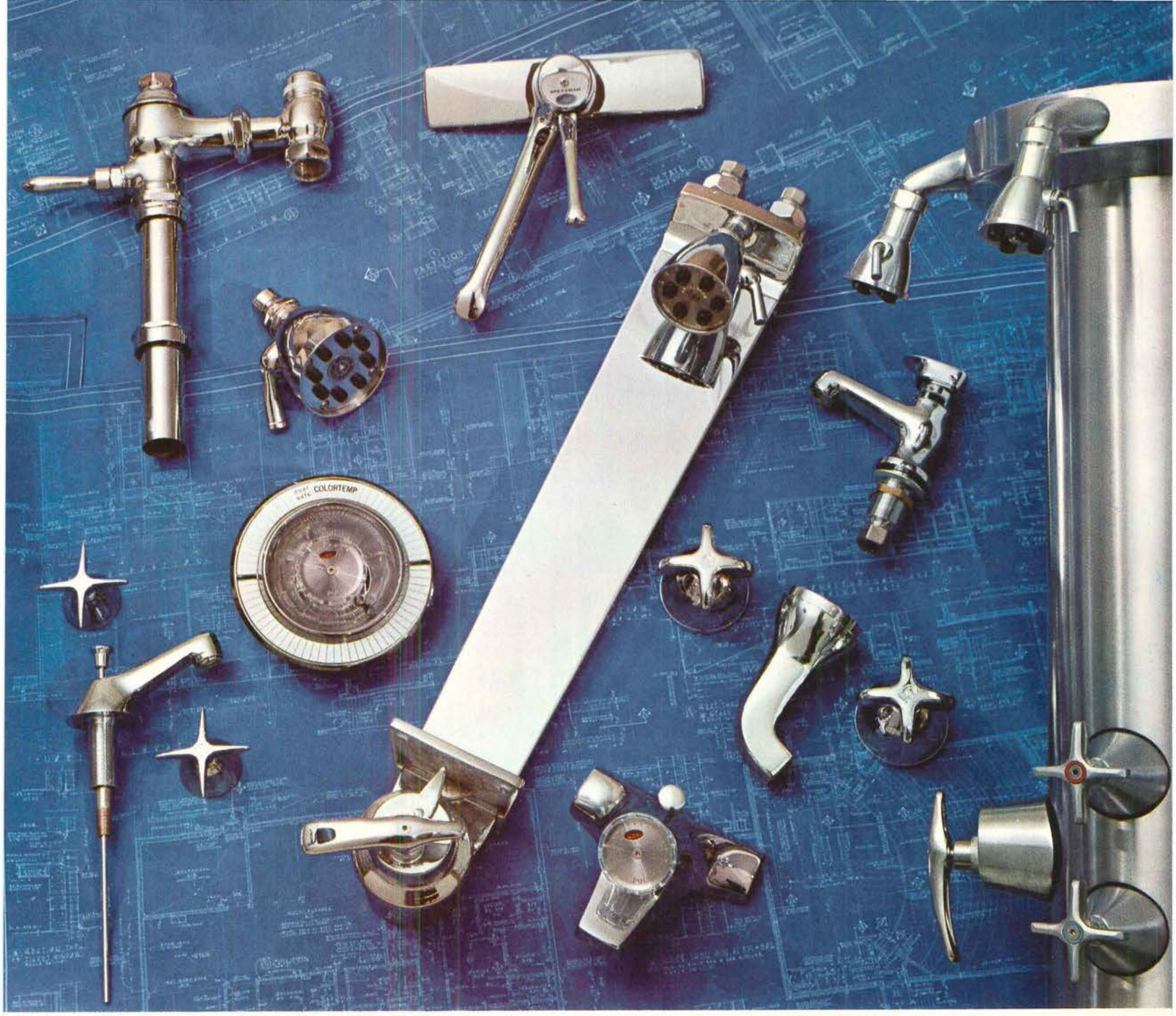
Eight associates have been named at **Albert C. Martin and Associates,** Los Angeles-based architectural, engineering and planning firm: **Emmanuel Aguilera; Samuel Moreno, A.I.A.; Ronald Pagliassotti, A.I.A.; Martin R. Perozzi; Kenneth J. Reizes, A.I.A.; John C. Rollow, A.I.A.; Romeo Sciammarella** and **Jack C. Spak, A.I.A.**

Leo McGlothlin has been appointed an associate of **Crittenden Cassetta Wirum & Cannon, Architects,** Anchorage, Alaska.

ADDENDA

The Lecture Hall Center, May, pages 158 through 160, was incorrectly located at the State University of New York in Buffalo. The hall is on the campus of the State University College in Buffalo.

Architectural credits for Lafayette Plaza, Bridgeport, Connecticut, shown page 137, July, should have read: Architects and engineers: Fletcher-Thompson, Inc.; consulting architect: Lathrop Douglass.



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Our Titanium demonstration will show you the difference between gray and white.

Titanium is the whiteness ingredient that only Westinghouse brings to fluorescent lamps.

And we've made up a little demonstration model to prove our point. The glass on one end of the lamp is treated with Titanium. On the other end it isn't. One look, and you'll see for yourself just how much difference there is between ordinary fluorescent gray and Westinghouse Titanium white.

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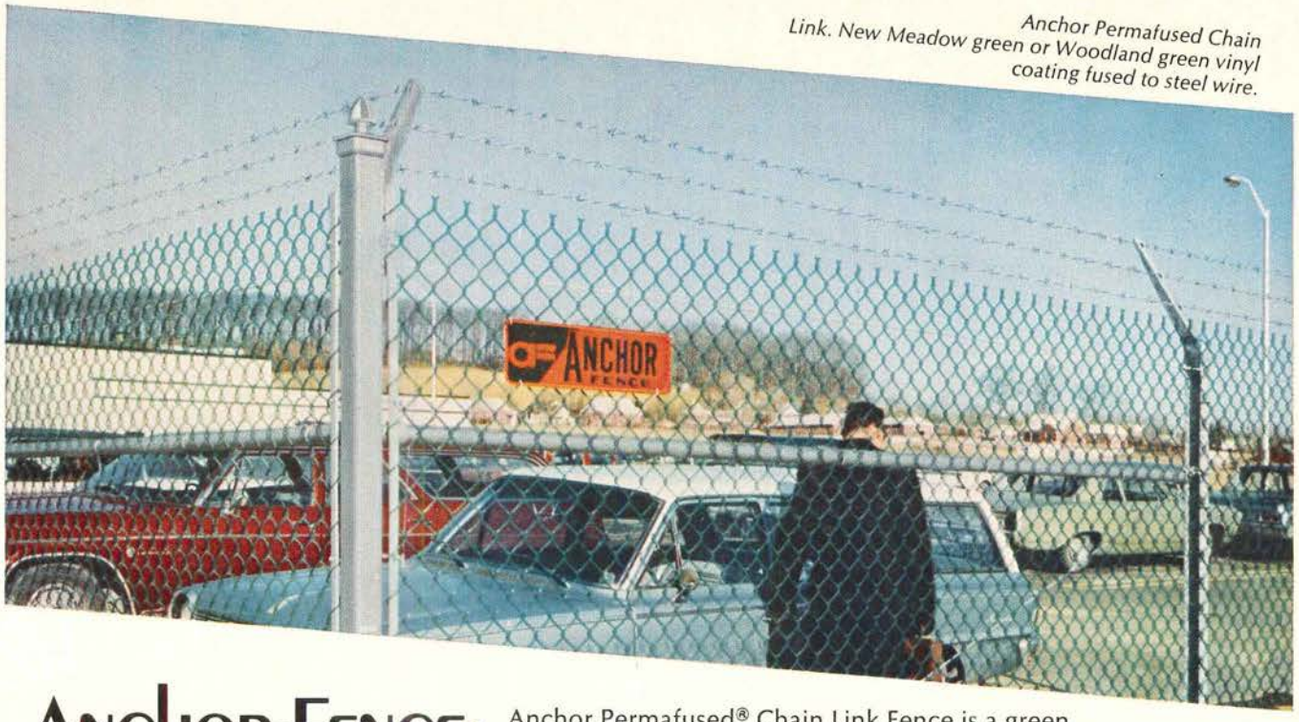

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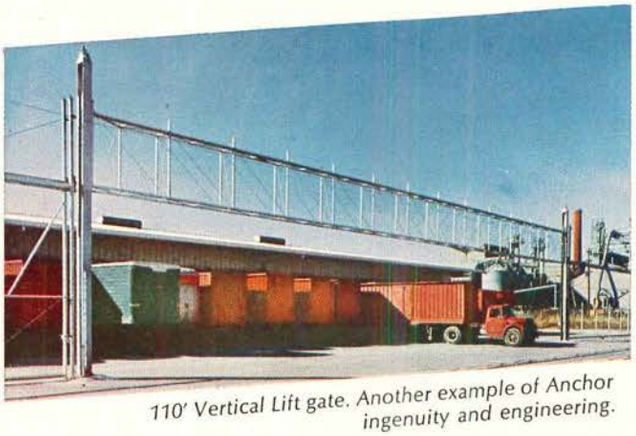

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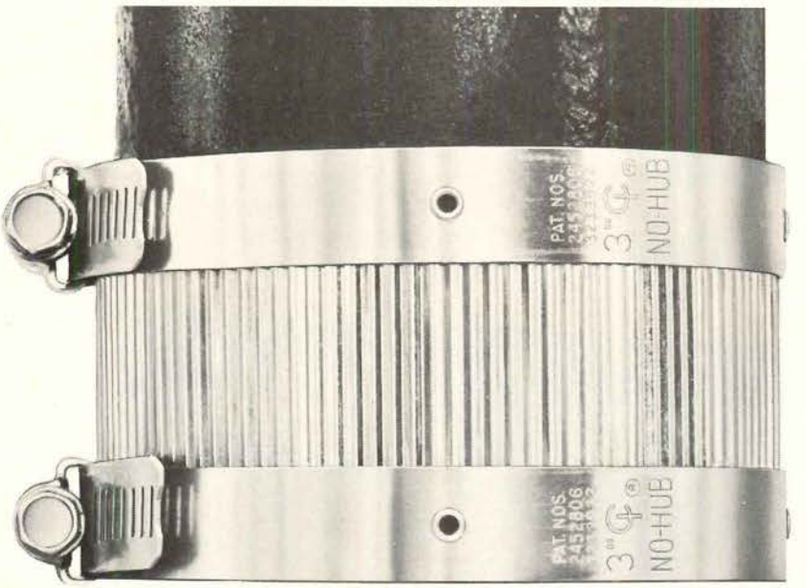

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Northwestern National Bank, major leaseholder
Grover Dimond Associates, Inc., architects-engineers
Naugle Leck, Inc., general contractor

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Not merely painted or ceramic-coated mineral fiber, Celotex Total Ceramic Lay-In Panels are kiln-fired, all ceramic, through and through. No sagging, no warping, ever—even when exposed to the weather. Completely washable. The permanent glazed finish never needs painting. *Totally unique—made only by Celotex.* Acoustically efficient (NRC .65) without conventional drilling or fissuring. Sizes 2' x 2' and 2' x 4'.

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

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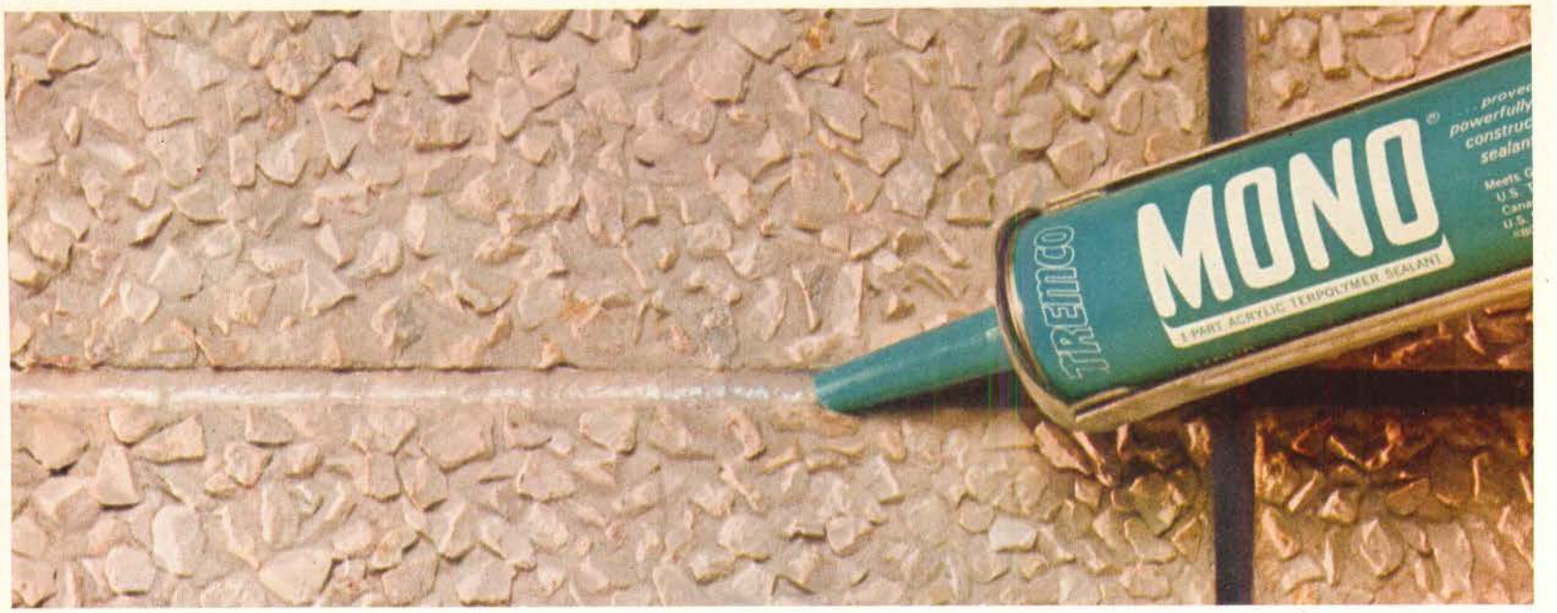

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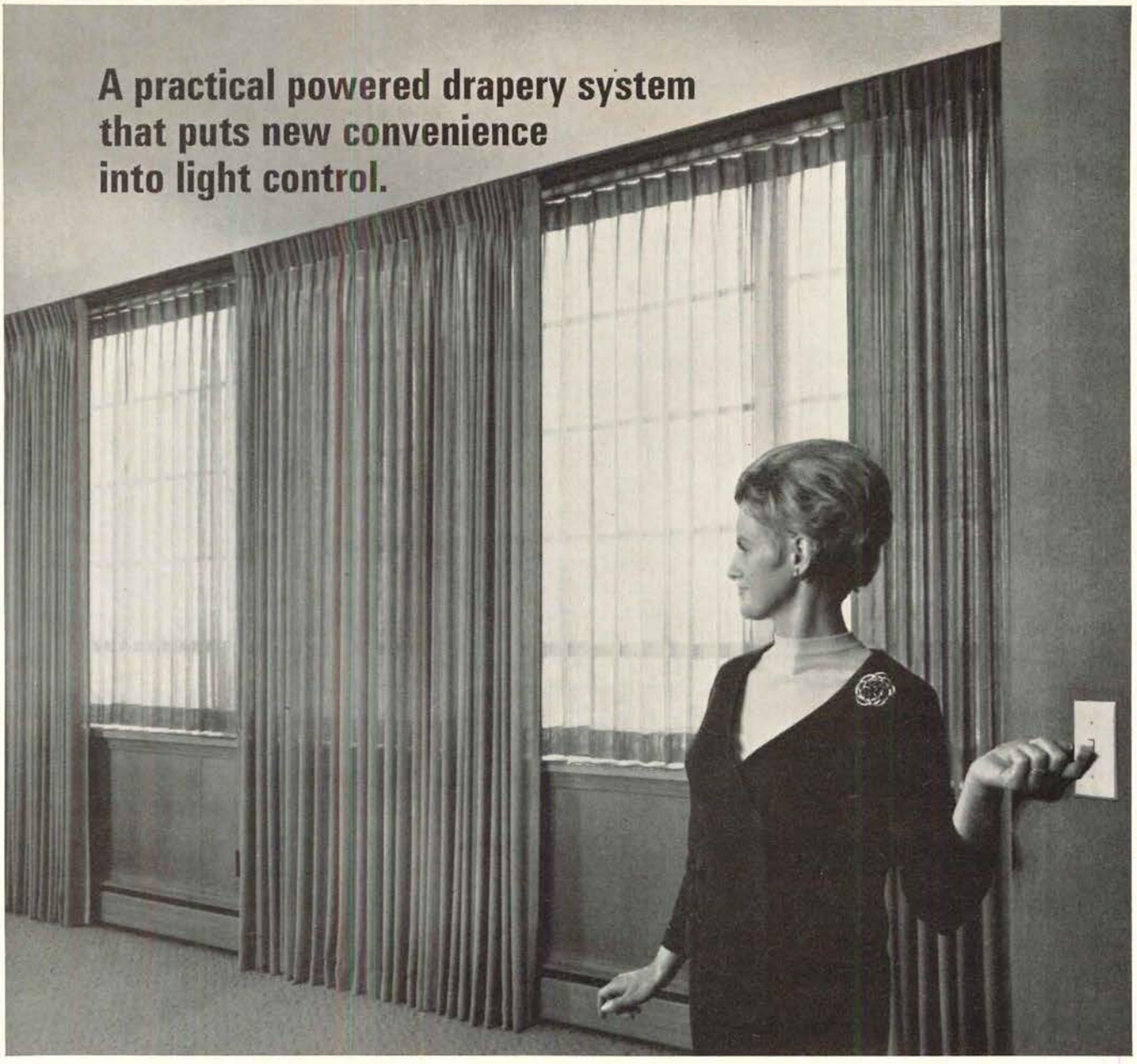

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Electrac gives you great new possibilities in window architecture. You can design broad expanses of glass without worrying about glaring people to death, because Electrac can operate draperies on a single window or a bank of windows with the touch of a switch.

Draperies flow smoothly, effortlessly. A single master switch location can control all the draperies, and can be located anywhere. There are no cords to tangle, no gears or mechanisms to get out of order. Electrac can be planned as part of a new building's wiring system, and is available with radio remote control or time control units.

**Hidden from view, this power capsule glides along the inside rear of an Electrac rod, operating draperies as it goes.*

Kirsch Electrac, Dept. S-969, Sturgis, Michigan 49091.
Please rush me full information on Electrac.
I am interested in ☐ residential ☐ commercial applications.

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(please print)

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LETTERS

On the Profession's Death

Your editorial in the July issue could not have been more welcome. Maybe that's because it's what we (architects) wish to hear; or, perhaps, it's because the facts are on your side.

For one, I think you have the facts correct. It is very easy to lose proper perspective during the the pursuit of one's practice, and when the architectural press issues monthly declarations that the architect is obsolete—well, sometimes it becomes a little tiresome. If for no other reason, your editorial was welcome because it confirms that there are two sides to the discussion. Unfortunately, the "architects' side" does not have continuous publication. (Even the AIA Journal, because of a commendable desire to give voice to critics within and without the profession, sometimes seems to have a tendency toward flagellation!)

You are perfectly correct when you point out that changes are coming. In fact, many are here today. It does seem to me, however, that one of the characteristics of most architects I know is that they are alert to, and welcome, changes which advance the art and business of building. Now it so happens that I love New York City, and go there every chance I have; but I do notice an insularity among some inhabitants, including, I presume, some members of the architectural press. It's just possible that a view of the profession from (say) Dubuque or (even) Toledo might orient some of your colleagues toward a less hysterical attitude.

There are many, many architects who are presently doing a first-rate job, and whose clients are loyal and appreciative. Our firm believes in the worth of our efforts; we derive an appreciable satisfaction from our daily toil; we enjoy the esteem of our peers; we're helping to make our town a better place to live in (not instantaneously, to be sure); and we are making a living! The same is true for the other architects I know. Really what more could one wish? All of this is not to say that our profession is without problems: far from it. Nor is it to say that we don't have to struggle: every profession does, one way or another.

It is, therefore, very refreshing, to open the RECORD and read some statements which one would have to consider calm and encouraging. Perhaps Mr. John Gardiner's statement could apply to our profession, "American education is (architects are) confronted today with an almost insurmountable opportunity."

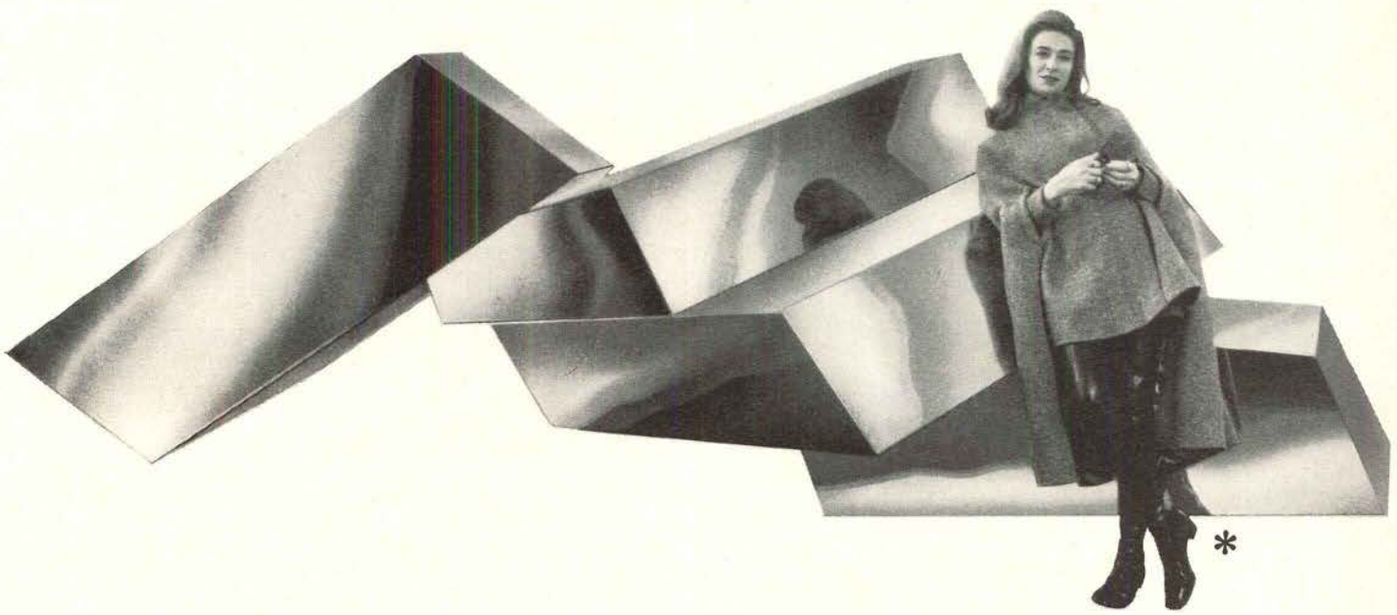
Melvin Henry Mull, A.I.A.
Angel, Mull & Associates
Toledo

A hearty Amen! to your editorial remarks in July.

Gerre Jones
Vincent G. Kling and Associates
Philadelphia

more letters on page 128

Steel: the only thing you can't expect to make with it is a mistake



Presenting the 1969 Outstanding Designs in Steel

Steel is everywhere.

For proof, look at the designs described on the following pages: winners in the construction categories of the 1969 Design in Steel Awards.

You'll find steel in a big-city convention hall.

Supporting the root at a local theatre.

And framing the structure of the house next door.

Wherever modern steel is found—however it is worked, shaped, treated or finished—its versatility rests on one intangible ingredient: the imagination of the architects, designers and engineers who make use of it.

It is to the imagination of these *artists* that the American Iron and Steel Institute dedicates its sponsorship of the Design in Steel Award Program.

John P. Roche, President
American Iron and Steel Institute

Judges:

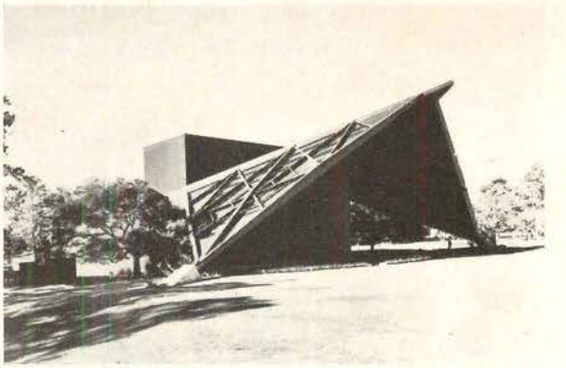
James M. Alexander, Head, Department of Industrial Design, University of Cincinnati; Chairman, Education Committee, Industrial Designers Society of America.
Rex Whitaker Allen, Principal, Rex Whitaker Allen and Associates, San Francisco, California; First Vice President, American Institute of Architects; Fellow, AIA.
Robert Lewis Bliss, Chairman, Department of Architecture, University of Utah; President of the Association of Collegiate Schools of Architecture.
George F. Habach, Vice President-Administration, Studebaker Worthington Corporation, Harrison, New Jersey; President, American Society of Mechanical Engineers.
Robert H. Hose, Robert Hose Associates, Summit, New Jersey; Chairman of the Board, Industrial Designers Society of America.
George E. Kassabaum, Principal, Hellmuth, Obata & Kassabaum, St. Louis, Missouri; President, American Institute of Architects.
Melvin R. Lohmann, Dean, College of Engineering, Oklahoma State University; Past President, American Society for Engineering Education.
Tucker Madawick, Vice President-Industrial Design, RCA Sales Corporation, Indianapolis, Indiana; President, Industrial Designers Society of America.
Frank H. Newnam, Jr., Executive Vice President, Lockwood, Andrews & Newnam, Houston, Texas; President, American Society of Civil Engineers.
Merrill C. Rueppel, Dallas, Texas; Director, Dallas Museum of Fine Arts.
Paul Smith, New York, New York; Director, Museum of Contemporary Crafts.
Jan van der Marck, Chicago, Illinois; Director, Museum of Contemporary Art.

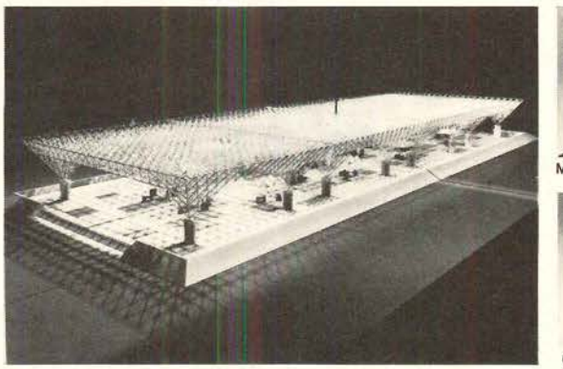
*The lady is a winner! Sculptress Beverly Pepper (see cover) stands beside her "Fallen Sky", which took first place in Art in Steel Category. Work was made by cold forming stainless steel sheets.

Low-rise Construction

BEST DESIGN was taken by Eugene Werlin & Associates for the Miller Outdoor Theatre in Houston. The designers used a roof of three sloping planes of special weathering steel, which rests on two 30-inch-diameter steel balls, 2½ inches thick, utilizing a universal joint concept. The weathering steel was chosen, among other reasons, for the way it would complement the two giant oak trees adjacent to the building.


Eugene Werlin






Michael H. Barrett


Charles D. Keyes

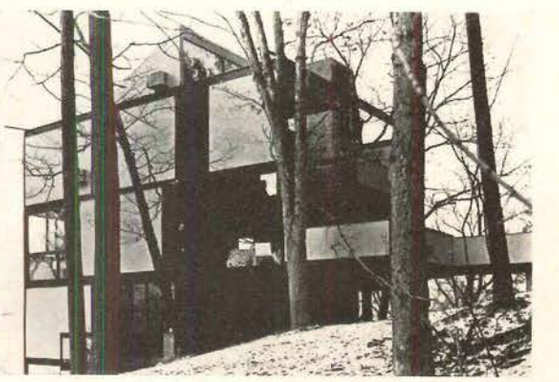

William B. O'Neal

BEST ENGINEERING goes to Ketchum-Konkel-Barrett-Nickel-Austin for the Denver Convention Center Exhibition Hall. The three engineers spearheading the project—Michael H. Barrett, Charles D. Keyes and William B. O'Neal—designed a large steel space frame roof providing 100,000 square feet of column-free exhibit area, 46 feet above the convention floor. The three-dimensional space frame system, based on 10 x 10-foot module, is assembled in a two-way system of inclined double Warren trusses.

Residential Construction

BEST DESIGN award was put in the hands of Louis Skoler, architect. His winning entry was a private vacation house which made use of steel to permit an open interior home on a difficult site. Skoler designed the home's structural frame of 10-inch steel beams and 5-inch-square tubular steel columns. Inside, floors are connected by a circular steel stairway.

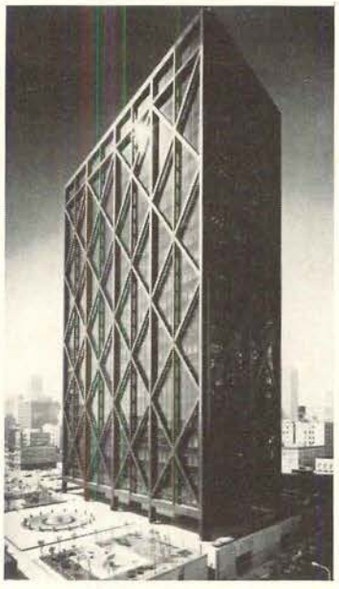

Louis Skoler



High-rise Construction

BEST DESIGN was won by Skidmore, Owings & Merrill for its design of the Alcoa Building in San Francisco. The 26-story structure uses a bold system of diagonal steel bracing on its exterior. These steel X-braces create vertical trusses on the building's facade, and place earthquake-resisting elements where they are most effective. These structural steel braces not only carry vertical and horizontal loads, but also give the building high torsional stiffness.

John Merrill, Jr.



Leo Borasio

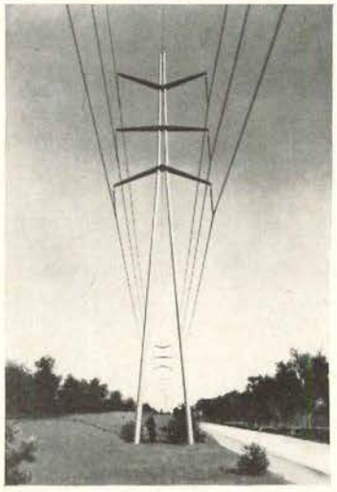
Chester C. Jancewicz

BEST ENGINEERING went to Stearns-Roger Corporation for the mine hoist space frame for U. S. Borax & Chemical Corp. Engineers for the project were Leo Borasio, Chester C. Jancewicz and Svend A. Ronlov. The all-welded steel space structure supports the hoisting machinery for the mine shaft. Each steel leg is hollow and triangular in shape with diaphragms and stiffeners. Each leg can be adjusted for ground heaving or settling. Some 1072 tons of structural steel, roofing and siding went into the mine hoist.

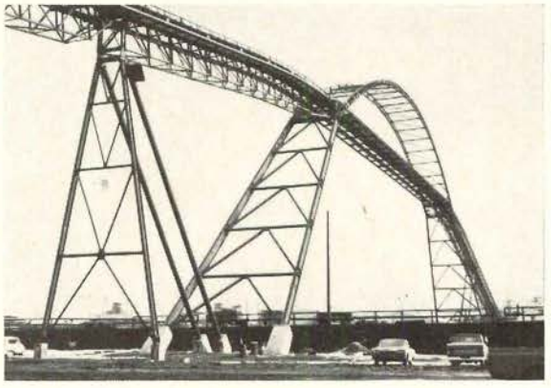
Svend A. Ronlov

Public Works Construction

BEST DESIGN was awarded to Southern California Edison Company in conjunction with Henry Dreyfuss & Associates for a high-voltage transmission tower. The goal of the project was to design a structure that was attractive, pleasing in design and unobtrusive. The tower design makes use of two tapered, steel legs that incline toward each other as they rise to the top portion where they meet the cross arms. Various models of the tower range from 140 to 162 feet in height. Robert N. Coe, Vice President, Southern California Edison Co., accepted the award.



Robert N. Coe



William E. Andrews

T. Takahata

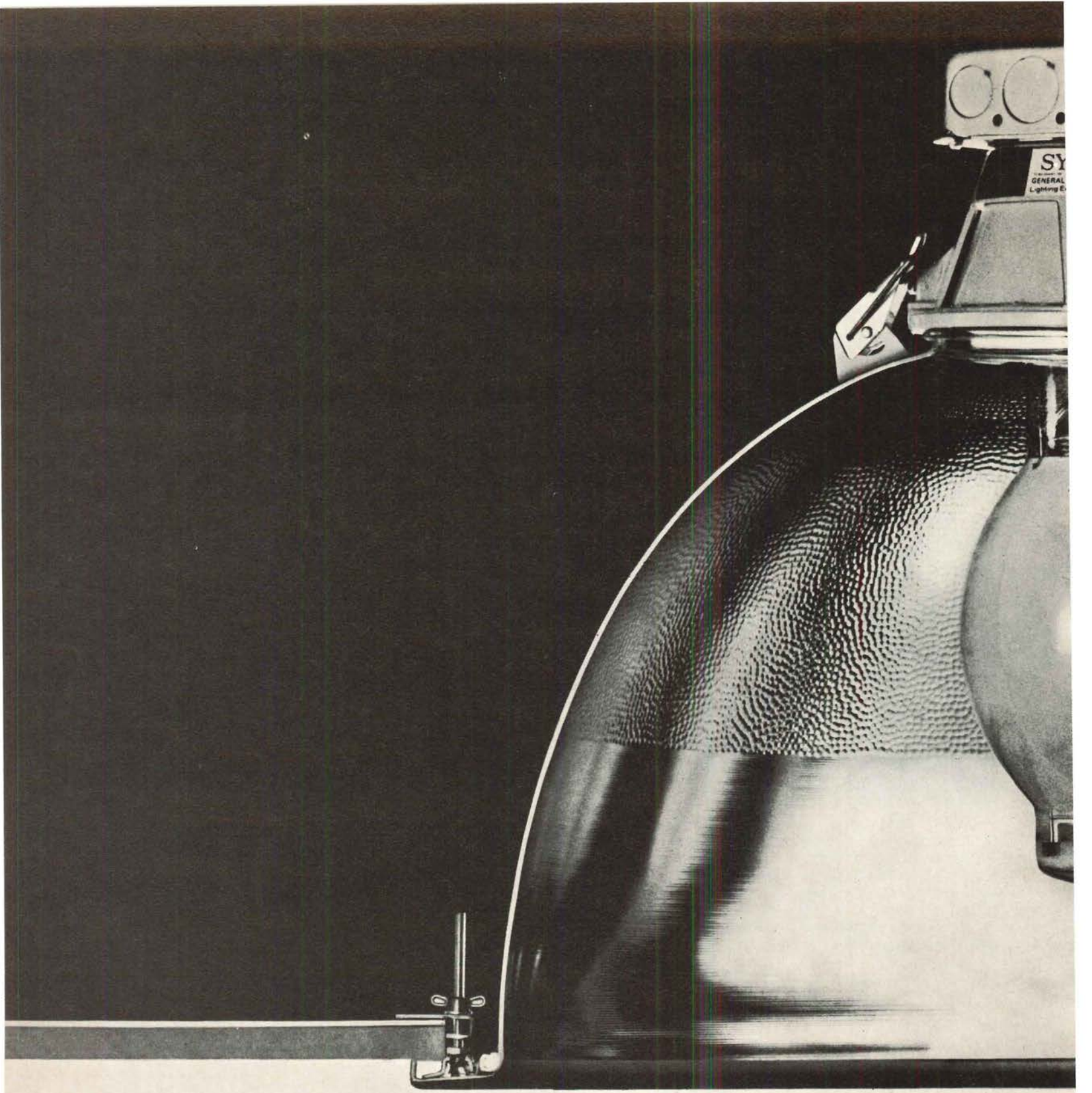
BEST ENGINEERING was given to McDowell Wellman Engineering Company for the coal conveyor bridge for the Penn Central Railroad Company. The project engineers for McDowell Wellman—William E. Andrews and T. Takahata—used low-maintenance weathering steel for all six welded approach trusses to the bridge, as well as its 250-foot arch spanning the river. The 965-foot-long bridge is used to carry coal from one side of the Ashtabula River to the other.

Steel

Manufacturers, designers, architects and engineers may obtain a booklet containing these and other imaginative designs in steel by writing to:

AMERICAN IRON AND STEEL INSTITUTE
150 East 42nd Street, New York, N.Y. 10017

For more data, circle 78 on inquiry card



Sylvania

Our Recessed Vanguard fixture is buried in the ceiling.

Our Metalarc/C lamp is buried in the fixture.

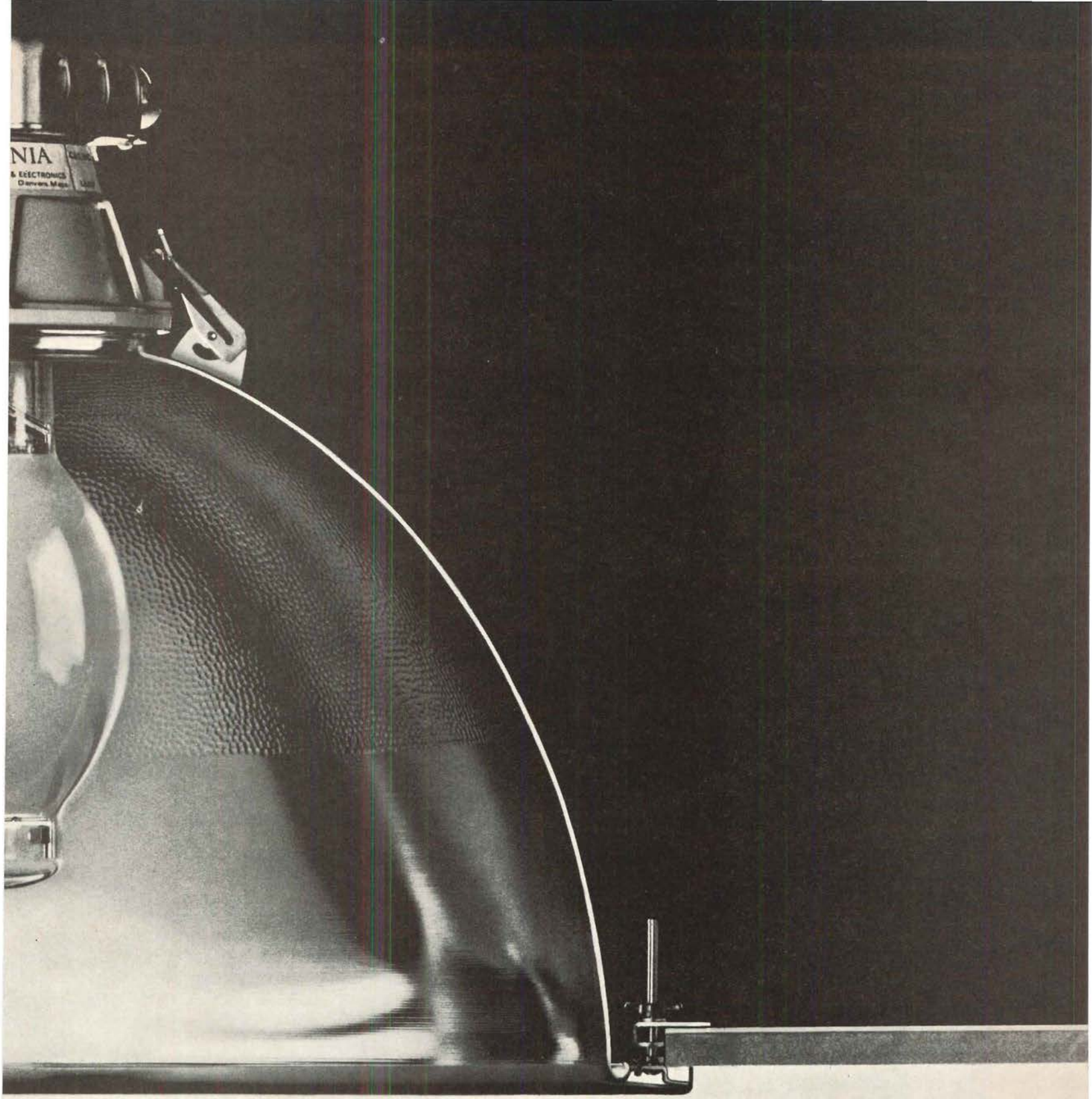
So the glare which would otherwise be giving your eyes a pain in the neck is buried, too.

(Compare this with fluorescent strip that fights for attention with everything in sight and never stops glaring at you.)

With a Recessed Vanguard installation, if you notice the ceiling at all, it's to notice how uncluttered it looks. You get bright, comfortable light over the whole interior of your store, lobby or building. Colors look warm in it: you never get that feeling of the blues.

A Recessed Vanguard installation has just one disadvantage: it costs more at first.

But you don't need as many fixtures



buries the glare.

compared with fluorescent strip lighting, because the light is so powerful.

Which means you don't need anywhere near as many lamps (only one per fixture, not two to four).

And each lamp has a long life (10,500 hours).

So your costs for lamp maintenance go down. Your electric bills also drop, because mercury lamps go easy on power.

After a few years, a Recessed Vanguard installation actually turns out to be cheaper.

Which for a lighting fixture is quite a silver lining.

For more details—write to: Lighting Equipment Division, Sylvania Lighting Center, Danvers, Massachusetts 01923.

SYLVANIA
GENERAL TELEPHONE & ELECTRONICS

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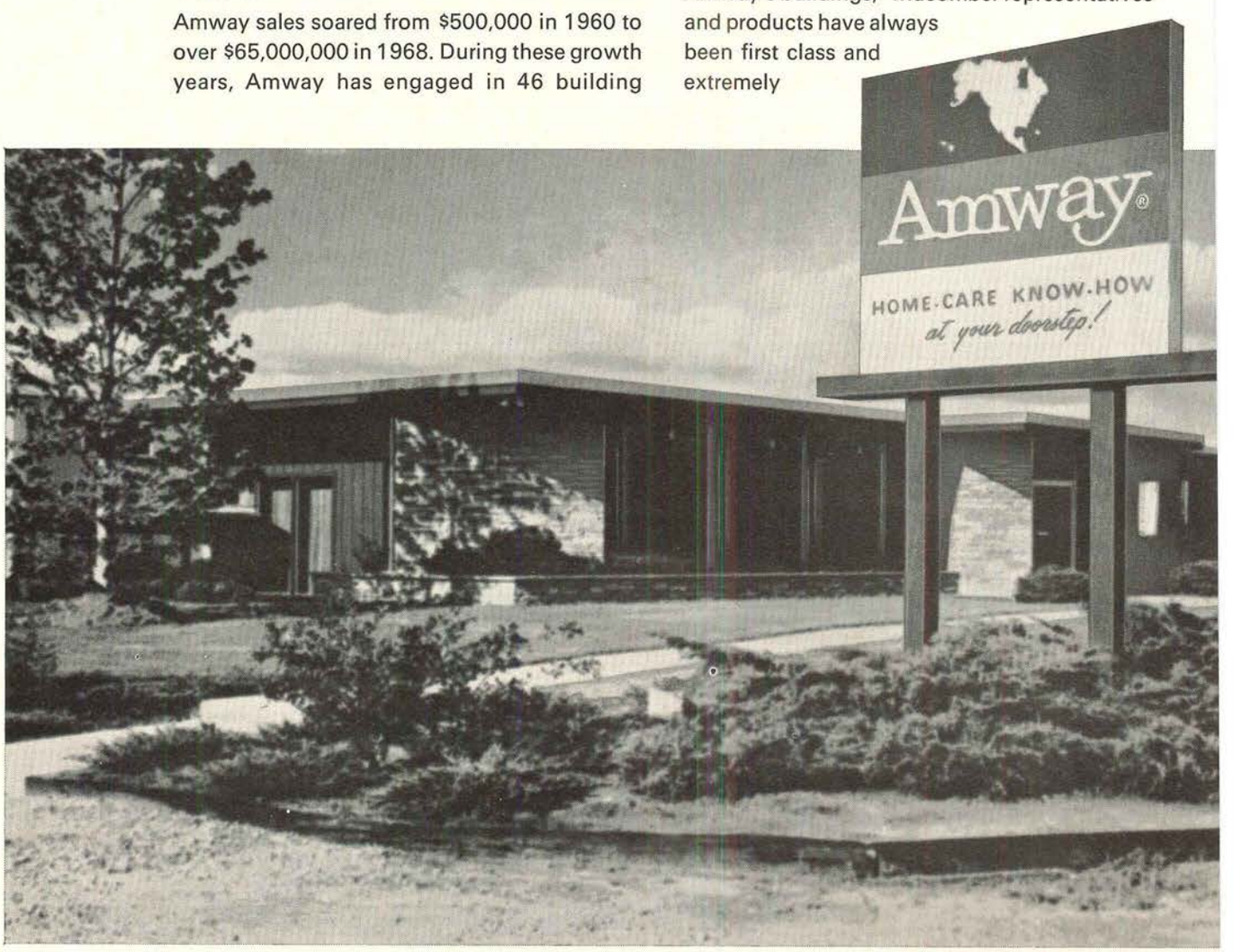
Amway Corporation is one of the world's largest direct-selling concerns. Amway manufactures over 150 products, including cosmetics, toiletries and home care supplies, and sells them through 100,000 independent distributors throughout the United States and Canada.

Amway sales soared from $500,000 in 1960 to over $65,000,000 in 1968. During these growth years, Amway has engaged in 46 building expansions to house its extensive facilities. Macomber has been privileged to contribute in a large way to Amway's physical growth.

Mr. C. Dale Discher, Corporate Treasurer and Chairman of the Building Committee of Amway Corporation, states: "Macomber has provided Amway with over seven years of excellent planning, service and delivery. All Macomber personnel with whom we have had contact have been most helpful and cooperative."

According to Mr. Dan Vos, President of Dan Vos Construction which has built all of Amway's buildings, "Macomber representatives and products have always been first class and extremely



for 14 new buildings in 7-year expansion

reliable. If delivery date is promised, the steel will arrive on or before that date."

Macomber, originator of the open-web steel joist, the V-LOK® Modular Component System and the new PANLWEB® girder, manufactures a wide range of steel framing and decking products for the building construction industry. But over and above products, Macomber provides service.

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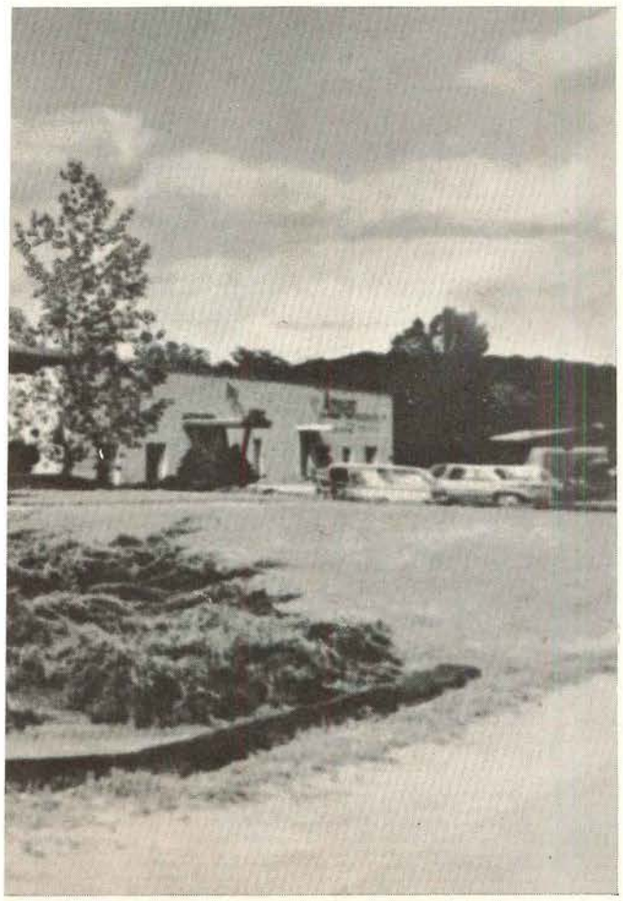

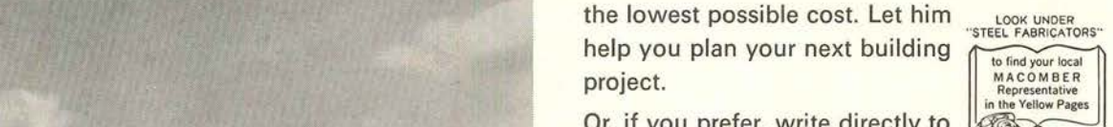

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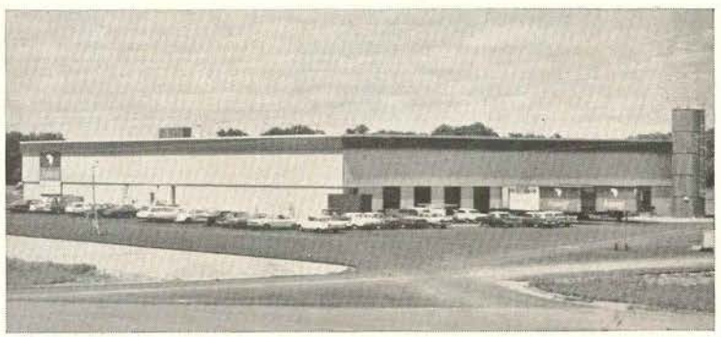

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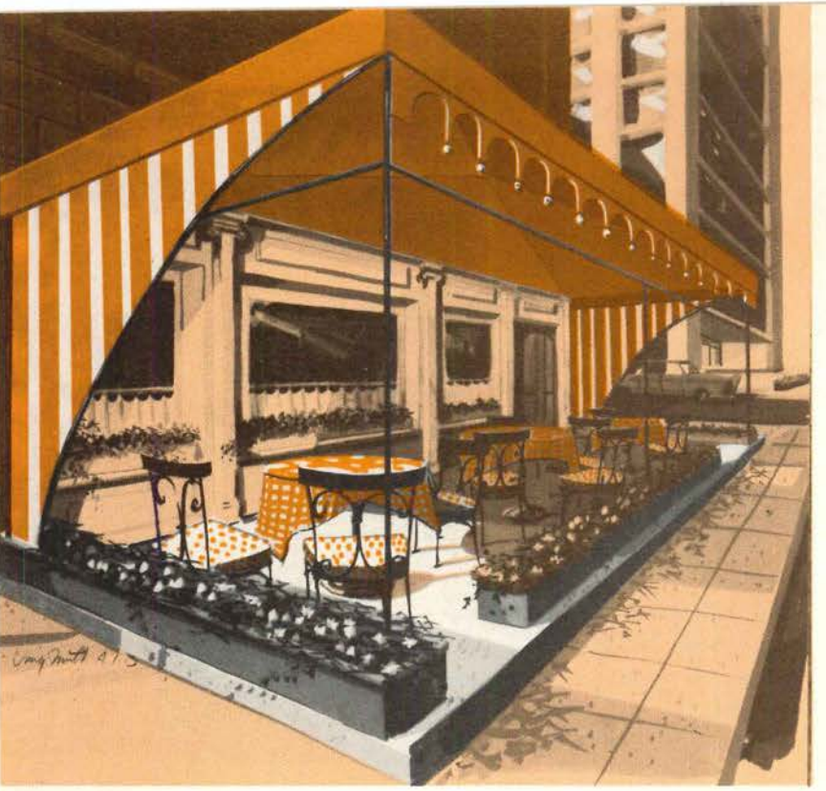

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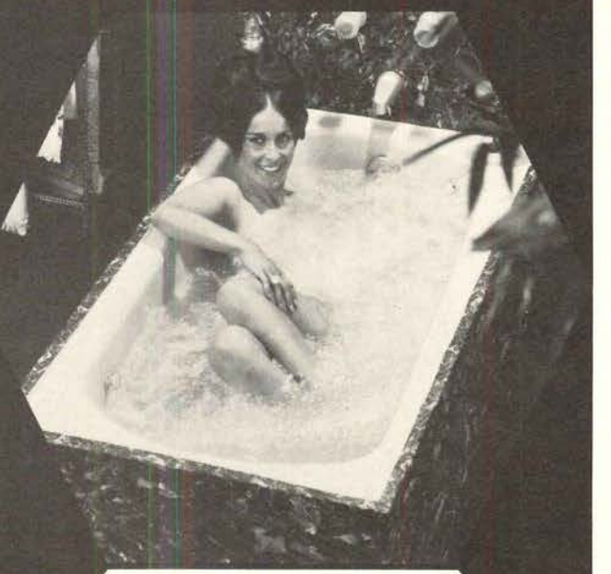

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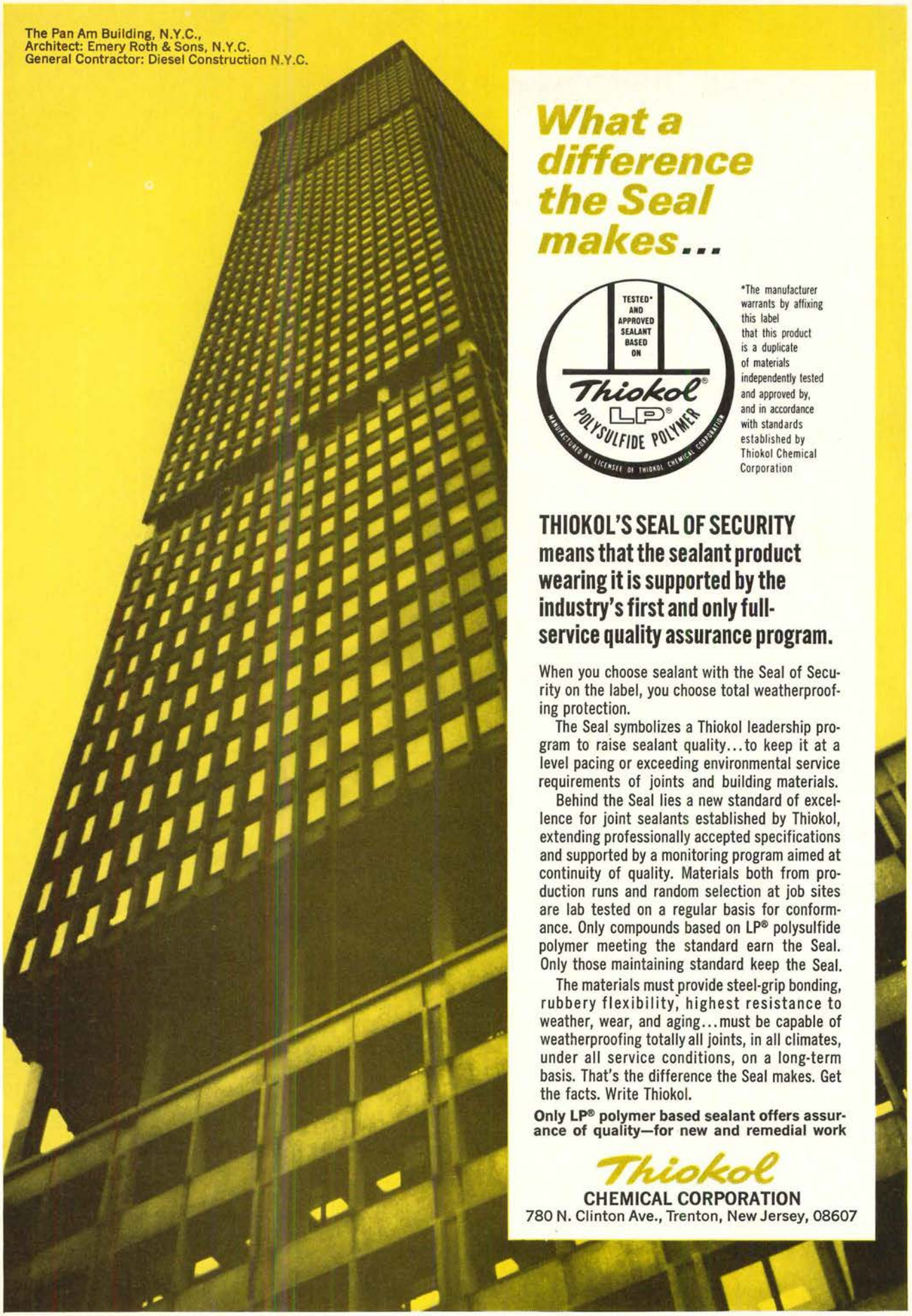

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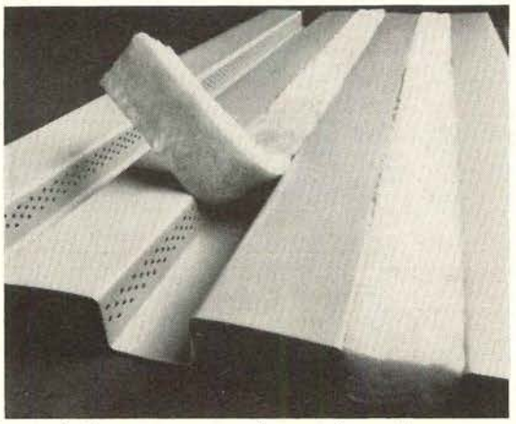
HAMILTON

Our new roof deck does great things for a band like this. It cuts out 75% of everything they play.



Not only 75% of all the music but 75% of all the shouting and banging around that goes with it.

In fact, Wheeling Sound Asorb Type B roof deck cuts out up to 75% of all school noise. Whether it's the noise of 50 healthy bodies in the gym or 500 healthy appetites in the canteen. (The webs of the ribs are perforated with 5/32″ holes staggered on 3/8″ centers. Then glass fiber is fitted between the ribs.)

But Sound Asorb does more than cut down noise. It also cuts down construction costs because it does double duty as an acoustical ceiling and roof deck.

It's lightweight structural quality steel, easily installed and specially packaged for fast handling so your building will be under roof earlier. And as soon as this roof is up the inside work can start.

Of course, it could happen that the school you're building has a band that people want to hear more of. In which case you simply alternate Sound Asorb Type B with regular Type B (non-acoustical) deck.

And only cut out half of everything they play.

Wheeling Sound-Asorb Roof Deck.

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

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*Are you utilizing this man on your design team?

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Consider the importance of roof and plaza insulation . . . hidden from sight, covered by membranes and wearing surfaces, applied over every conceivable sub-strate, this insulation is asked to perform many functions. Contact your local AWC specialist to assist you. Use his special knowledge on your next building project. (There's no obligation, of course.) If you don't know his name, write us — we'll have him contact you.

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What'll you have? McQuay's got it for every air conditioning requirement. As before, the 7½ thru 60 nominal tons capacity units. And now, the big guys—the new 70, 80, 90, 100 and 120 nominal tons capacity units. They're perfect matchmates for a complete system with McQuay Seasonmaster® Central Station Air Conditioners.

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As with other McQuay units, features often considered optional extras are standard in the new 70 to 120 ton units. For example, three and four step capacity reduction is standard. So is the completely enclosed, locked, weatherproof control center featuring McQuay's exclusive dead-front panel that insures operator safety yet is easily removed for service. Another plus-safety feature in the new big units is the 115 volt control circuit.

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continued from page 114

Your editorial in July is the best summary of current conditions in the architectural profession that I have read. I heartily endorse everything that you have said so well. In fact, it is a real help in enduring the "slings and arrows of outrageous fortune" which seem to be the profession's daily diet for most of us.

Morris Ketchum, Jr., F.A.I.A.
New York City

Re: "Reports of the Profession's Death are greatly exaggerated." You're outta your gourd! Simplistic living in the past seems chronic but you sir get the top award. You remember E. B. White's poem when J. D. Rock says to Diego, "After all, It's My Wall."

"We'll see," said Rivera.

D. B. V. Travers
Milford, Connecticut

I just read your editorial in the July issue and I personally wish to thank you for the expert rebuttal to what I consider very bad journalism in a couple of our recent publications. It is obvious that if the other magazines had someone like you who is as knowledgeable as you are about the profession and its members, such articles as appeared would never have been written.

I think you are right, too many members of our profession are feeling *too* guilty about our social and urban problems and are not taking credit for some of the contributions our profession has made toward the improvement of our urban environment. As you know, the Institute is making some concentrated efforts to convince the public of our profession's concerns. I hope you saw the full-page ad in The New York Times and Washington Post in July.

The image of the architect is changing and is not being replaced by "systems," but we have a long way to go. Too much of our public still visualizes our profession as blueprint makers for individual buildings.

A. B. Ryan, Chairman
Public Relations Committee
The American Institute of Architects
Washington, D.C.

You said it! It needed to be said and you said it well! In spite of the many prophets of doom who seem to frequent architectural meetings, the promise for the future practice of architects has never been better. The architect has two things which cannot be matched by most of our so-called competitors. As you pointed out, the first is his ability to produce a sensitive, creative concept appropriate to his client's needs. The second is his professionalism. In the next thirty years the public will be looking for these two qualities with increasing demand. We must change—we have to bring mechanization to our drafting rooms. We

more letters on page 272

Half the carpet you specify goes to waste.

(In fact, more than half!)

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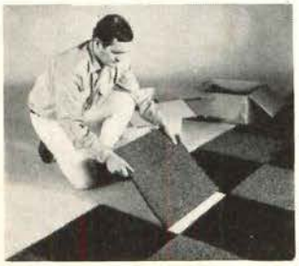

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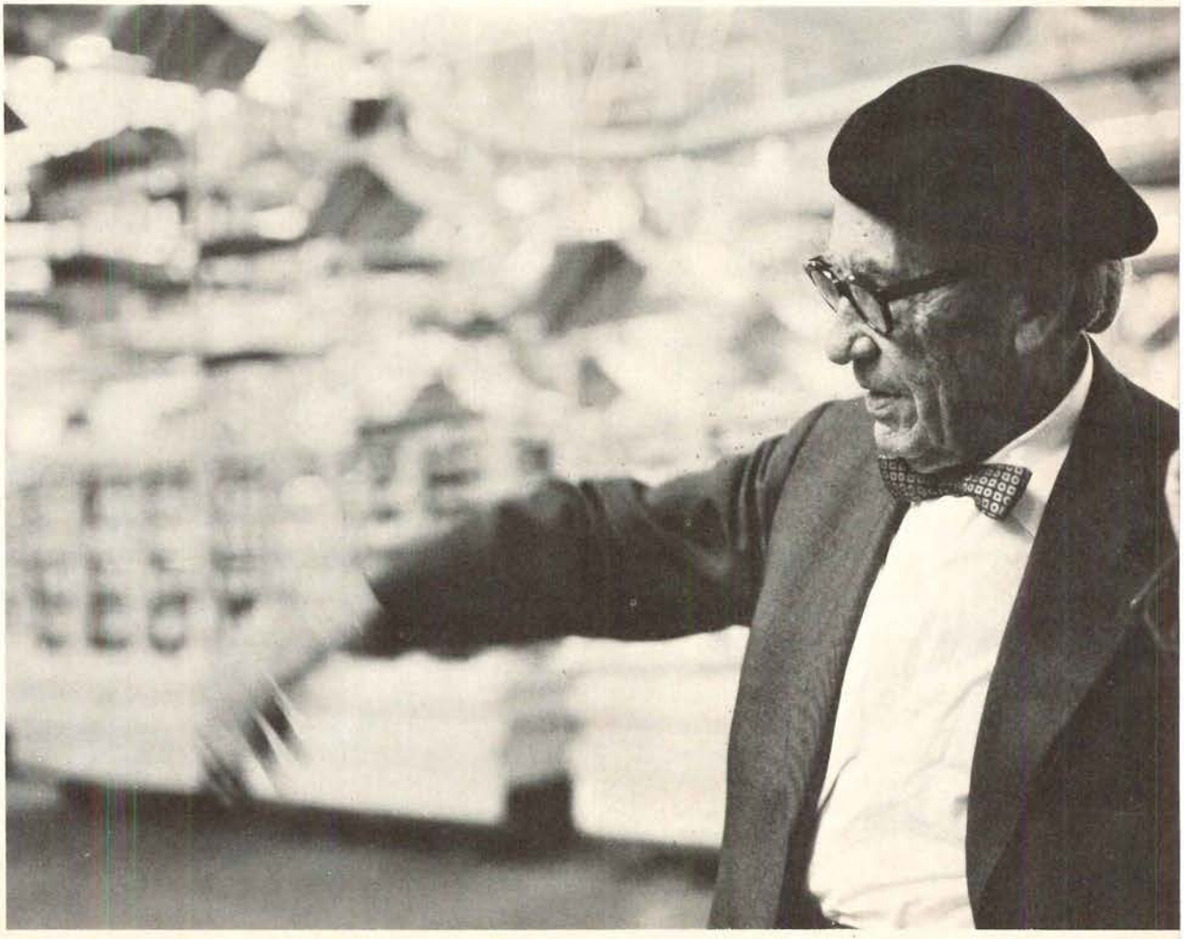
THE LAST WORK OF WALTER GROPIUS

At the time of his death, Gropius' most important commissions as a principal of The Architects Collaborative were housing, planning and industrial projects for West Germany. The great architect had come full circle, returning once again to problems which had first engrossed him as a young practicing architect and director of the Bauhaus, in Germany's Weimar Republic of the 1920's. Shown in this portfolio of work recently completed or in process is Gropiusstadt—a major housing development which includes a school complex from kindergarten through high school, a plan for the future development of the industrial town of Selb, a porcelain factory in that city and a glass factory at Amberg.

Gropius' solutions for the Germany of the 1960's met needs far greater than those of the 1920's. His last projects are in the new and vaster scale at which most architects must soon learn to work, but at the same time they embody the humanist principles he first expounded in his youth.

—Mildred F. Schmertz

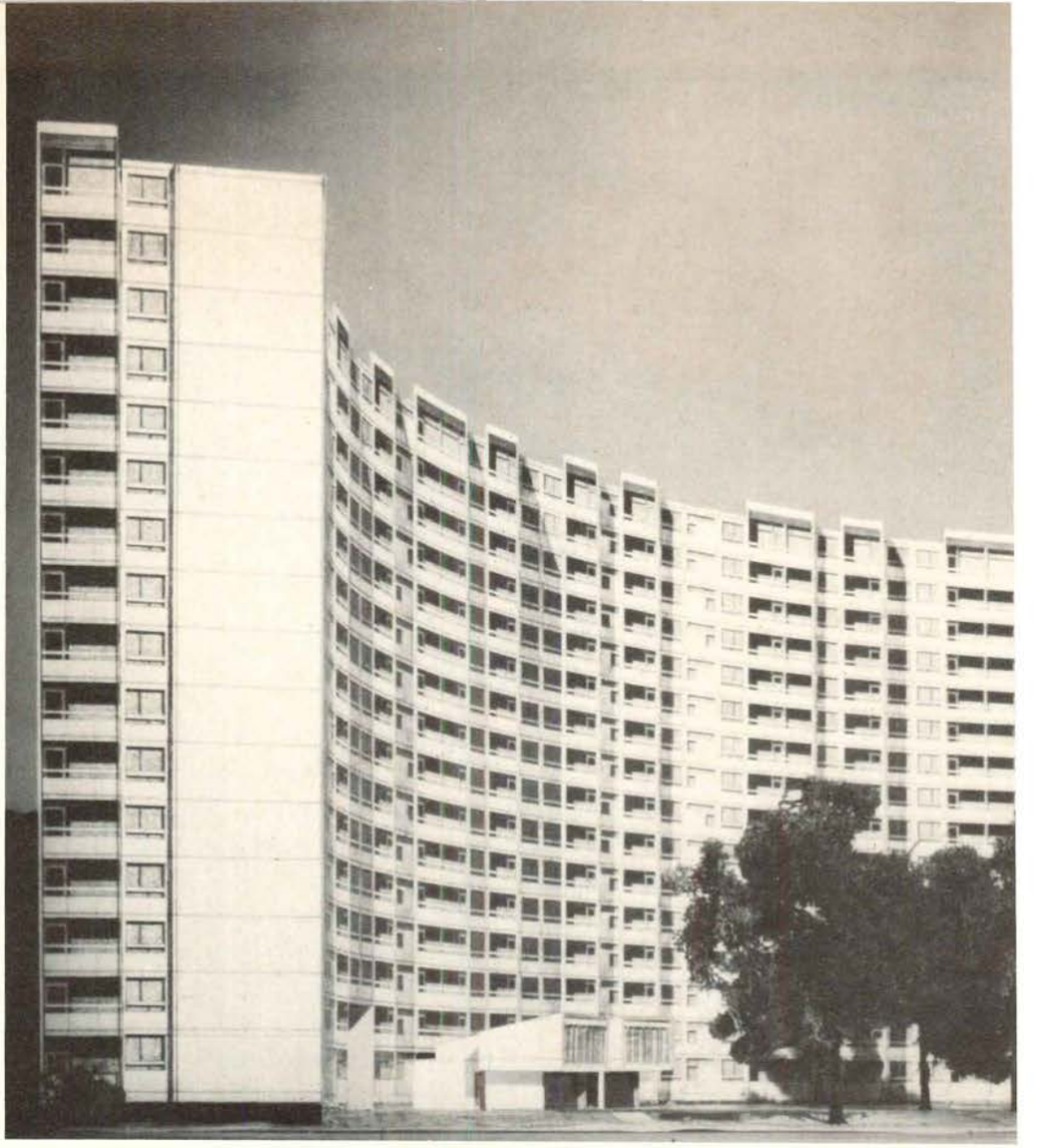


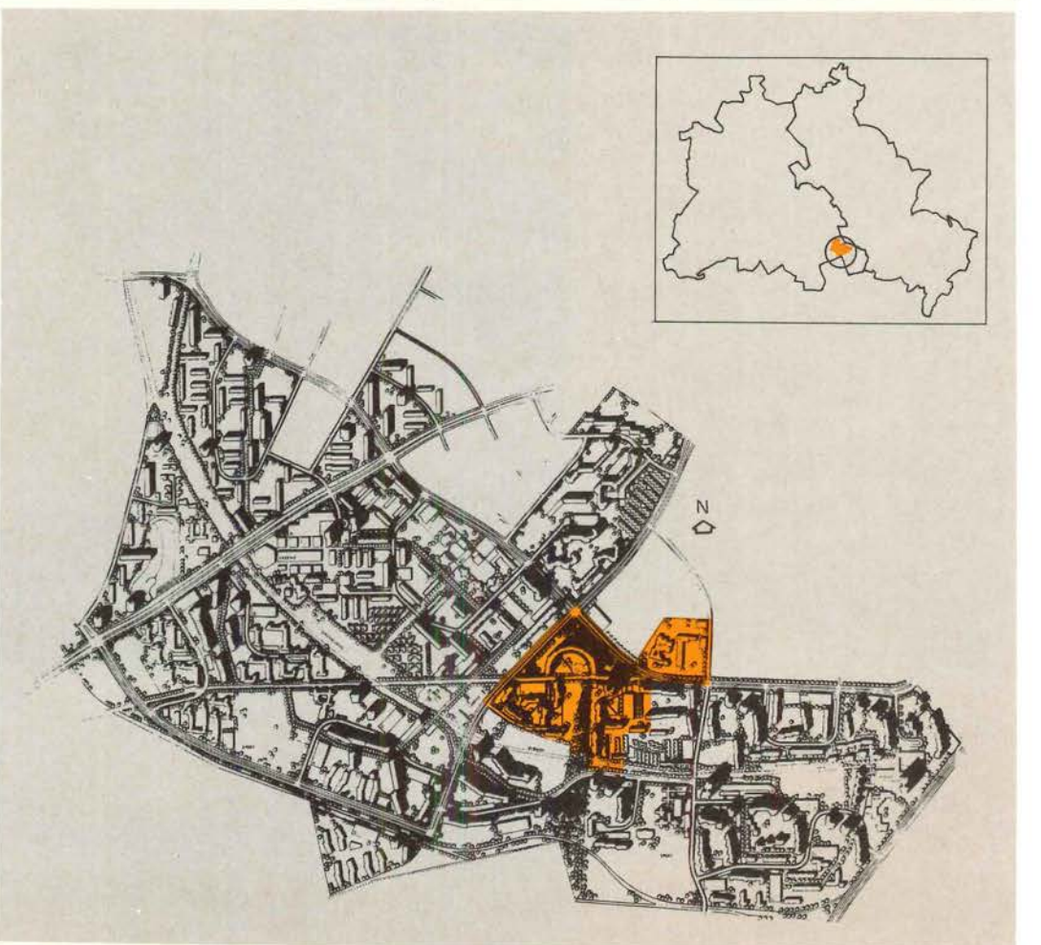
Gropiusstadt—a vast new township named in honor of its planner and architect—includes housing, parks and a large educational complex

Walter Gropius and Berlin's Mayor Willy Brandt, shown below at a cornerstone laying in Gropiusstadt, are celebrating an important beginning in the construction of the self-contained 650-acre township located at the wall dividing East and West Berlin. Formerly farmland, the site was the last large tract of open land available for building in West Berlin. Master planned by The Architects Collaborative with Gropius as principal-in-charge, the township will eventually accommodate 44,000 people in 16,400 dwelling units. Schools, shops, parks and recreational facilities are included.

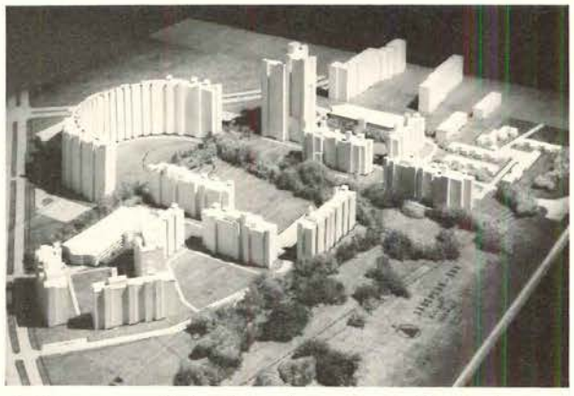
Exploiting the most advanced prefabrication techniques and construction systems which are now practical in Germany, appropriate as a solution to any similar housing problem in a technologically advanced country, splendidly free of any kind of contrived regionalism in its architectural expression, and uncompromisingly huge, dense, high-rise and urban, Gropiusstadt meets head on the problems of housing 40,000 people engaged in urban pursuits, and is a well controlled solution to the problem of building at the scale which society now demands. There are few, however, who would call it beautiful. Sections of the master plan have housing designed by architectural firms other than TAC and often in these cases design of the buildings themselves is less able. The township is still raw-looking and will remain so until the planting and parks are developed. By then its qualities should be apparent to all. The Germans are already so delighted with their new city within a city that they have named it after Gropius—probably the first time in history an architect has been honored in this way. Business and

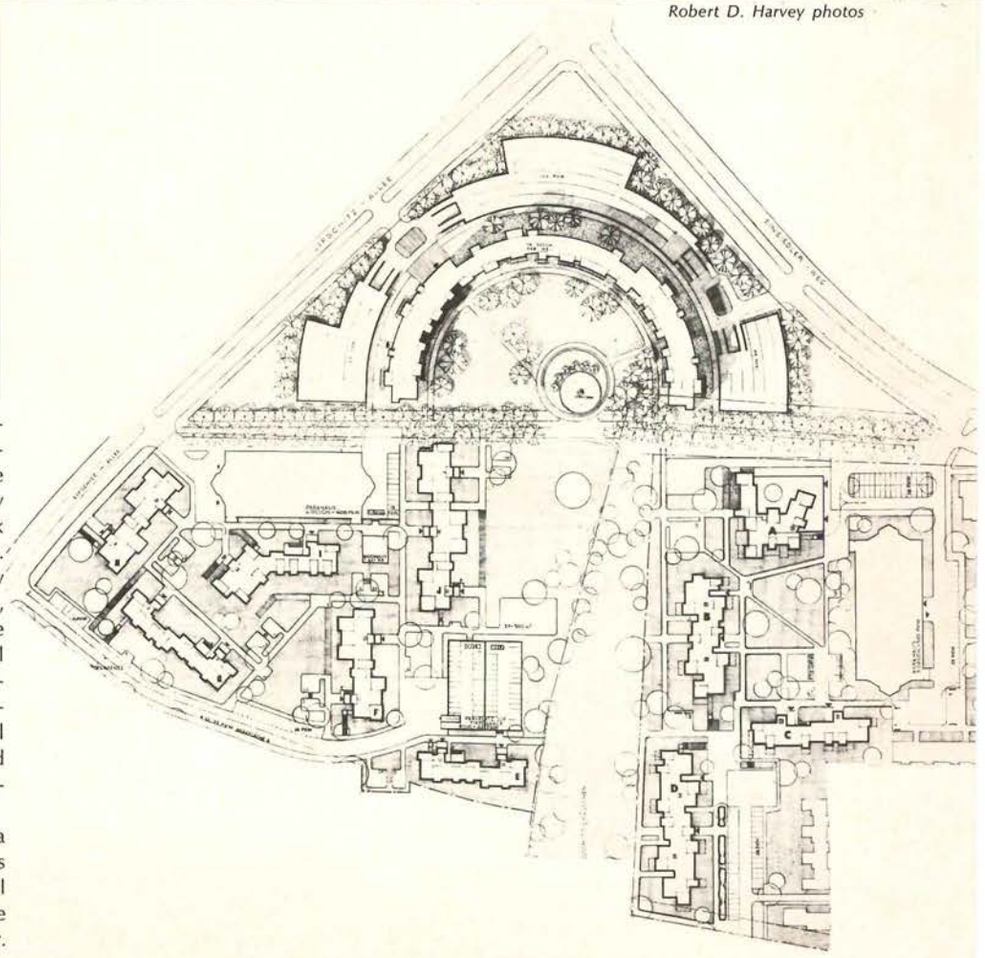
Photo courtesy Berliner Morgenpost





Robert D. Harvey photos





A 54-acre greenbelt, shown in the master plan at left, under which runs the subway, not only provides a visual tie to the overall community but acts as the most important of several pedestrian ways, linking three community centers together.

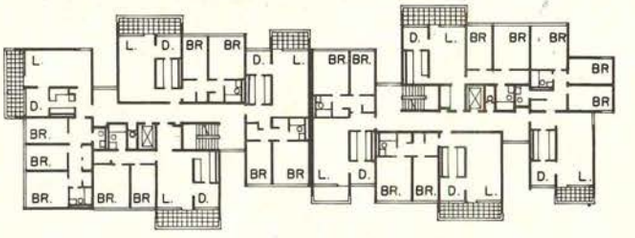
The housing, intended for moderate income families, has been designed in neighborhood clusters in a wide range of residential types from efficiency apartments to single family houses. Under the government program which subsidizes the development, sections of the project are awarded to various building societies each of whom retain their own architect. Gropius and TAC designed the triangular site developed by Ideal, Gehag, and Hilfswerk shown above and at right. Ideal and Gehag are now virtually complete. Hilfswerk, designed as a semi-circle and shown in the model photos above, is not yet begun. When all three developments are complete they will form one visually unified complex of over 1,300 dwelling units.

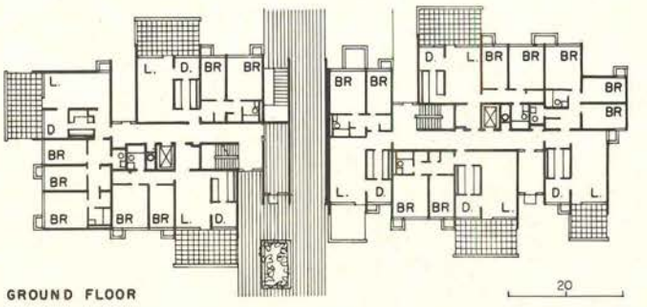
The plan establishes a hierarchy of exterior spaces of pedestrian scale with all vehicular traffic and service restricted to the perimeter.

political leaders of the West German Republic considered Berlin-born, U.S. citizen Gropius one of their country's great men, and they were proud of him. Soon after the end of World War II they began inviting him back from his productive and distinguished exile in the United States (he was one of the many non-Jewish German intellectuals who could not tolerate Hitler's regime) to expend his energies once more upon the same problems which engaged him as a master planner and designer of housing and industrial facilities during the 1920's in the days of the Weimar Republic. Thus honored so late in life by his native land, Gropius could say half-jokingly in a speech at his 85th birthday party last year: "live longer . . . through endurance you may become somebody."

Honor and esteem was withheld by those of his German compatriots of the 20's who were not part of the Weimar Republic's brilliant intellectual and artistic avant garde. Gropius was a leader of this avant garde whose birth followed the establishment of the Republic at the end of World War I and whose death coincided with Hitler's rise to power. He made his international reputation early. When still a young architect practicing in Berlin and later as head of the Bauhaus which he founded, he received wide attention because of his original and skillful efforts to use the resources of technology within a humanistic framework to meet the environmental challenges posed by rapid and uncoordinated technological change—challenges which Gropiusstadt now effectively meets.

From the beginning, however, the efforts of Gropius and his colleagues and students at the Bauhaus were highly controversial and subject to opposition from many quarters. Said Gropius: "of all the tremendous effort put into that enterprise, 90 per cent had gone toward fighting the hostile forces of the local and national environment, and less than 10 per cent had been spent on creative work." [1] Then, in Germany, as now in the United States and other countries, the building trades unions strongly opposed the prefabrication of building components and the system-

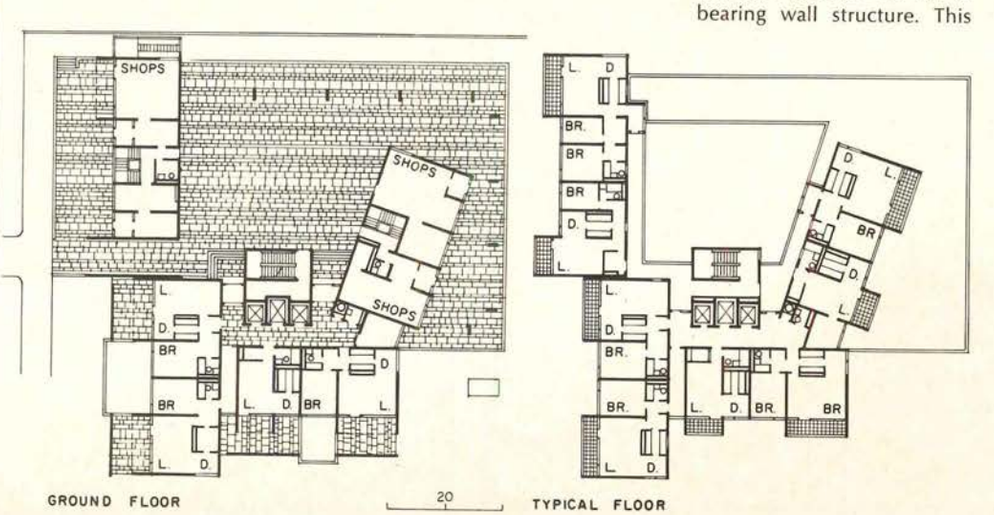




Despite height differences and plan variations among the apartment blocks of the different developers, a conscious effort has been made to develop and repeat consistent design elements throughout the project, such as stair towers, penthouses, and the raised roofs of banks of projecting living rooms.

The major determinant of building orientation was the code restriction which states that every major room, meaning a living room or bedroom, must receive a minimum of two hours of sunlight 270 days of the year. The restriction dictated that buildings oriented east-west could be double-loaded while those oriented north-south must be single loaded.

Two design decisions were of fundamental importance. First it was decided that the slabs be designed around an entry system in order to create as many through apartments as possible while still utilizing the elevators efficiently. Second was the decision to use a bearing wall structure. This



BERLIN DOUBLE SCHOOL
AND CHILD DAY CARE CENTER

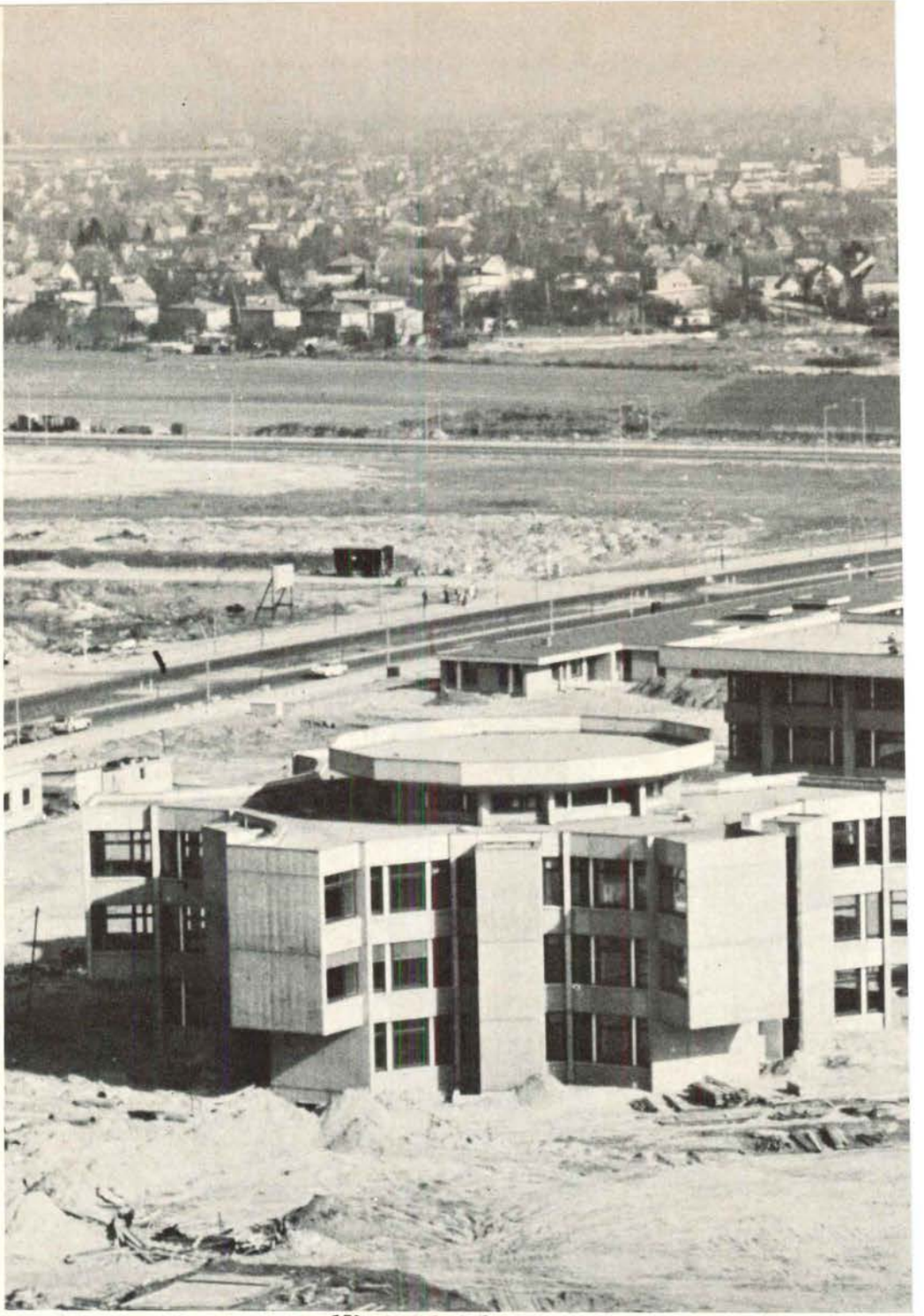
atization of the construction process. Although the housing needs of an expanding German population dependent upon urban and industrial employment could be practically met only at the higher densities proposed—and in significant numbers built—by Gropius, there were many Germans of the 1920's whose unrealistic nostalgia for a rural and village way of life caused them to view the housing developments of the Weimar Republic with great distaste. For them "Lebensraum," not high density housing, was the answer.

Because Gropius developed an approach to architecture which stretched beyond Germany's borders toward universal applicability and thus transcended his country's newly emerging nationalist drives; and because the European proletariat was to be a principal beneficiary of his efforts, he and his co-workers were considered by

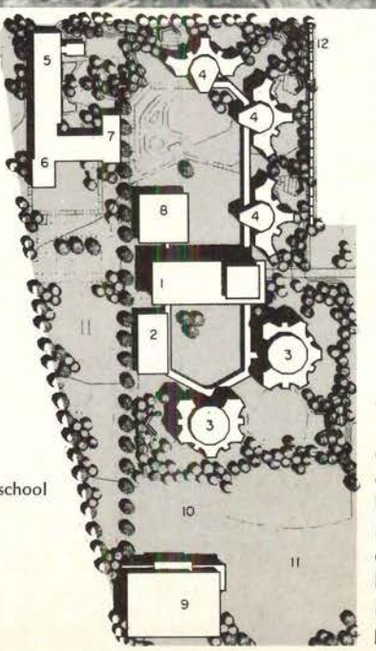
many to be international Bolsheviks. Some of Gropius' colleagues and students probably were Bolsheviks—a supposition not too fanciful considering the radical intellectual and artistic milieu of the Bauhaus and the Weimar Republic.

Germany also had its share of architects, artists and critics who believed that their country's art had been and should remain quintessentially German, and of mythical significance because infused with German 'soul.' Gropius' spare designs, utterly free of traditional German architectural forms or motifs, were pronounced degenerate by this group.

Interestingly, each of these issues became political fodder for the Nazis, the first political party to deliberately exploit design and planning arguments for votes.[2] The building trade unionists



Leon Muller



1. Office and classroom building
2. Small gymnasium
3. Classroom buildings—high school
4. Classroom buildings—elementary school
5. Child day care center
6. Custodian
7. Kindergarten
8. Workshop
9. Gymnasium
10. Courts
11. Playing fields
12. Bicycle stand

Placed on a flat site, this Gropiusstadt school complex to be known as the Berlin Double School and child day-care center provides educational facilities for all children between the ages of 5 and 18 living within a one-mile radius. The size limit enables each student to reach the school easily by foot or bicycle.

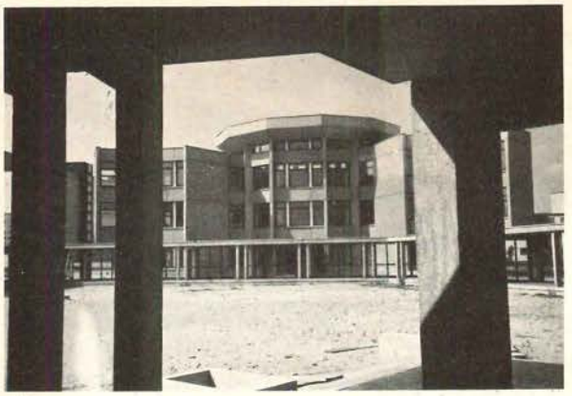
As the plot plan at the left indicates the school is divided into three age group units: the kindergarten and child day care center; the elementary group; and the high school facilities. Following the established pattern of the German system, the kindergarten (shown at right) includes two covered outside play areas, with the one for

older children convertible into a small outdoor theater.

There are three elementary school pavilions, each two stories and consisting of two groups of three classrooms surrounding a multipurpose room. High school facilities consist of three pavilions containing 30 homerooms, a science and shop wing.

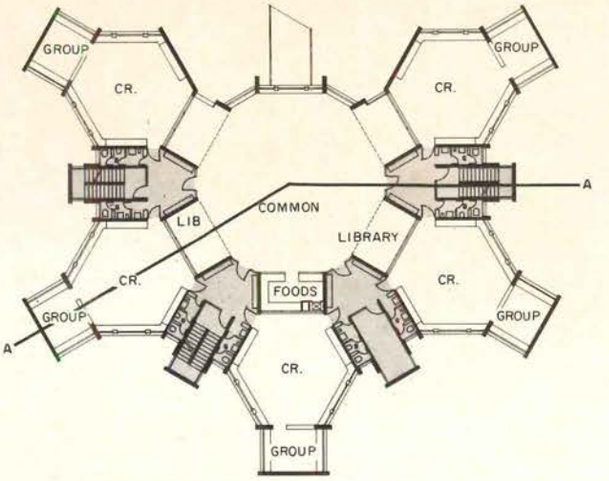
The office and classroom building has a complete array of labs and support facilities, as well as the central school library, driver education room and model apartments.

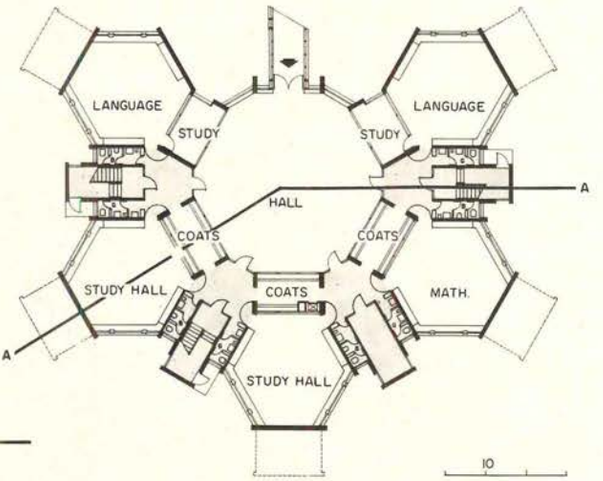
In the small picture Gropius photographs a brilliantly colored mural, one of a number of works of art commissioned for the school.

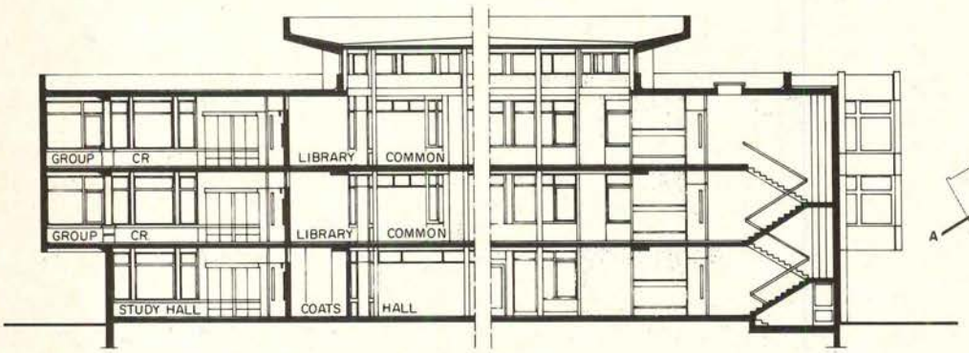


The eight individual buildings of the main school complex will be connected with glazed-in walkways which can be seen in the photo at left. All buildings are built in reinforced concrete poured in situ.

The plans, section and bottom picture on this page show the typical high school pavilion. Organized on the same plan as those of the elementary school complex, five classrooms are clustered around a large multi-purpose room. Each of the two high school pavilions consists of three stories. Special niches in the multi-purpose rooms serve as libraries, small stages and food distribution centers. All classrooms have cross-ventilation as required by local building codes.







SECTION A-A

Gnilka photos

BERLIN DOUBLE SCHOOL
AND CHILD DAY CARE CENTER

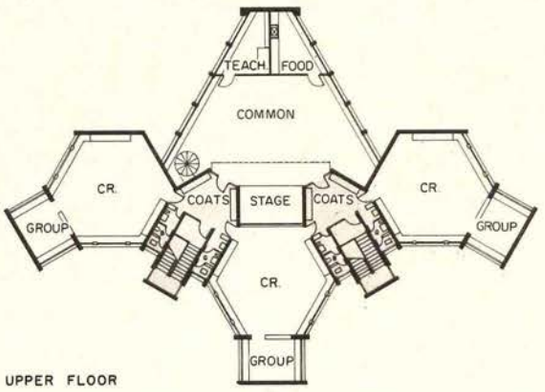
were wooed by the promise of opposition to the industrialization of building processes, and the rural nostalgists and anti-urbanists were promised low-density housing patterned after traditional villages. The Nazis solemnly vowed to put an end once and for all to the Bolshevik flat roof, and to build housing with the steeply sloping roofs of German tradition. All architectural forms would be German, they promised, evoking the life-giving myths of the super race.

The Nazi speech writers included a few of the traditionalist architects who hoped to find favor with the Party when it would seize power. When the Nazis took charge, however, they proved capricious and ungrateful. The Nazi leaders did not establish an official architecture embodying the qualities they promised the German people, but awarded commissions as they individually pleased. Gropius and the Bauhaus were finished of course but so were most of the skillful polemicists among the architects and artists who opposed them. Gropius left the country for England in 1934 and later settled in the United States. Twenty six years later he was back with the masterplan for Gropiusstadt and Germany at last was ready for him.

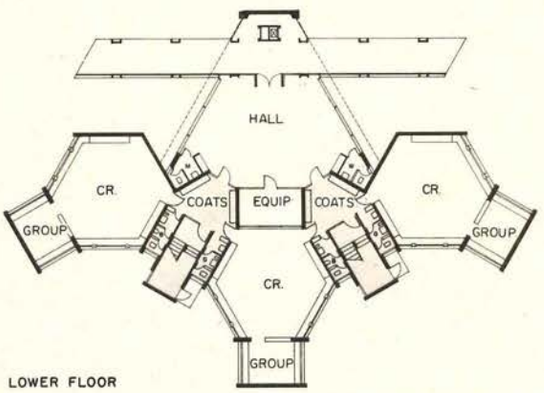
1. Walter Gropius, *Apollo in the Democracy* (New York: McGraw-Hill, Inc., 1968).
2. Barbara Miller Lane, *Architecture and Politics in Germany 1918-1945* (Cambridge: Harvard University Press, 1968).

GROPIUSSTADT, West Berlin, Germany. Architects for city plan: *The Architects Collaborative—principals-in-charge: Walter Gropius, Alex Cvijanovic, H. Morse Payne; contact architect: Wils Ebert;* architects for Ideal, Gehag and Hilfswerk housing: *The Architects Collaborative—principals-in-charge: Walter Gropius, Alex Cvijanovic; TAC associate-in-charge of Ideal housing: Malcolm Ticknor; TAC associate-in-charge of Gehag and Hilfswerk housing: Royston T. Daley.*

BERLIN DOUBLE SCHOOL AND CHILD DAY CARE CENTER, Gropiusstadt, West Berlin, Germany. Architects: *The Architects Collaborative—principals-in-charge: Walter Gropius, Alex Cvijanovic; contact architect: Wils Ebert;* structural, mechanical and electric engineers: *City of Neukolln Building Department;* general contractor: *Tobias, West Berlin, Germany.*



UPPER FLOOR



LOWER FLOOR

The elementary school pavilions are shown in the photos above and below and in the drawings at left. Each classroom has direct access to a multi-purpose room and yet there is no circulation between classrooms using the same multi-purpose room. The ground floor multi-purpose room serves as a play area for the youngest and contains snack dispensers and a small stage. Study hall, cafeteria and lecture space is provided by the upper floor multi-purpose room. This upper commons room is 2 stories high with the back portion containing a teachers' balcony which accommodates a teachers' tea lounge, study and wardrobe. Landscaping around the elementary school pavilions is organized in such a way that each ground floor classroom has an adjacent outdoor lecture space, sheltered from the elements and noise by planting and the slight depression of the space from normal ground level.

A long-range plan for the future development of the Bavarian town of Selb

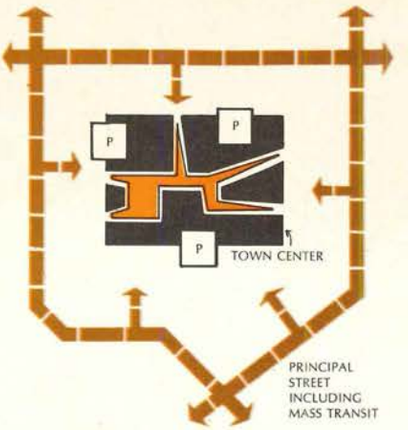
Walter Gropius, shown below discussing his plan for Selb with several of its leading townsmen, welcomed the chance to shape the growth of an industrial town of limited size.

A medium-sized city by German standards, Selb is of a type for which little or no planning has been done in spite of the fact that one third of the German population lies in cities of this size or smaller. Since such a town poses smaller scaled problems than the more complex urban areas with which planners more often deal, solutions can be formed a little more readily and can be implemented and tested within a shorter time span. Gropius believed, furthermore, that in the process of reaching solutions for problems of limited scale, much can be learned that will prove directly applicable to a wide variety of planning problems, whatever their size and scope.

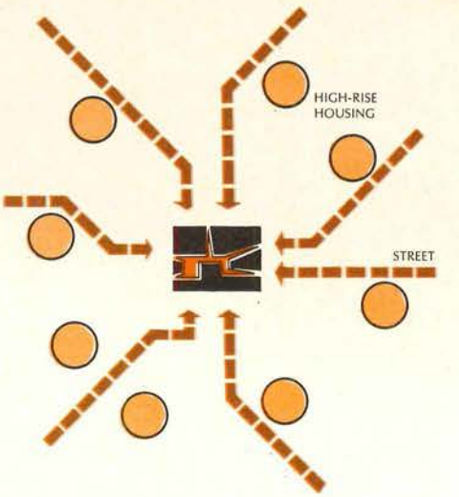
Selb is a town of 20,000 inhabitants in the north-eastern corner of

Bavaria (Western Germany), 3 miles from the Czechoslovakian border. A secondary highway and a single-track railway line provide the major routes of access from cities such as Bayreuth (32 miles) and Nuremberg (74 miles). The town lies in the foothills of the "Fichtelgebirge" (Pine Mountains), a frequent destination of West Berlin vacationers. It is surrounded by pine forests and farm land. About a century ago a fire entirely destroyed the town, leaving nothing of the medieval monuments and picturesque burghers' houses so typical of the area. Today the town is therefore of interest primarily because it is the center of the West German ceramics industry. The new Rosenthal factory (pages 144-147) designed by TAC, with Gropius as one of the principals-in-charge, is only one of several factories producing ceramic products in Selb.

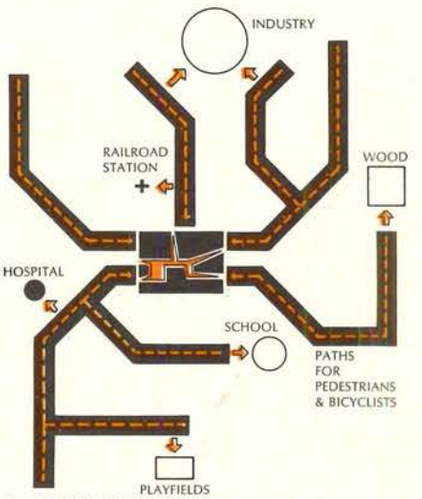
Selb, while it is the center of the German porcelain industry, faces a number of economic problems. For instance, while the proportion of in-



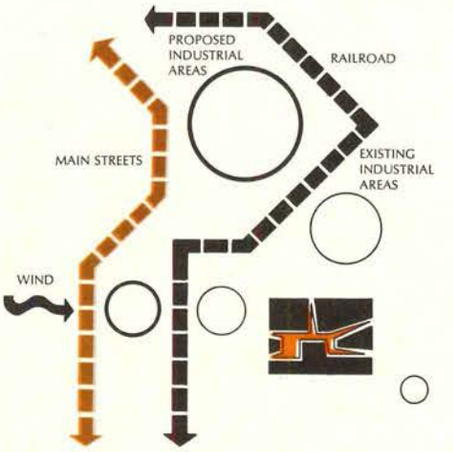
A. TOWN CENTER



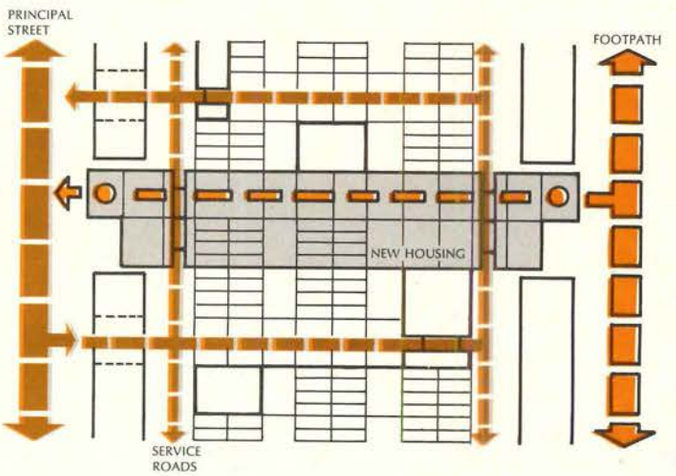
C. HOUSING



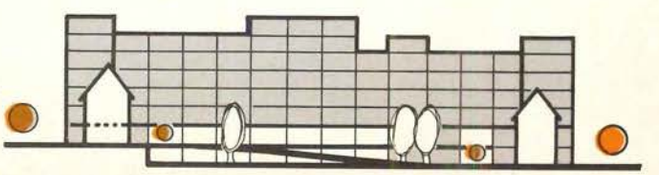
B. GREEN AREAS



D. INDUSTRY

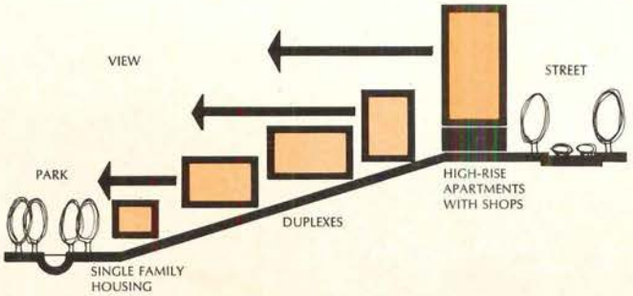


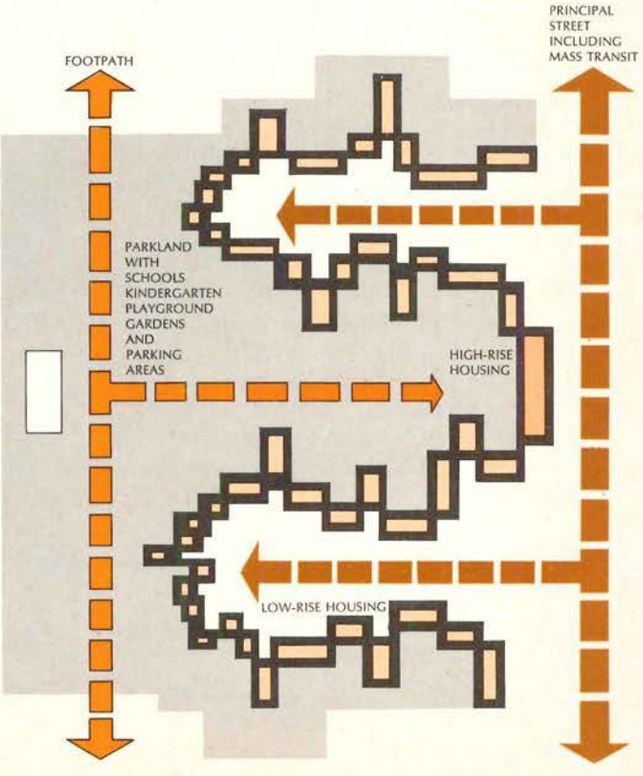
In the drawing (opposite page top) above, the town center and major-access roads are emphasized. Circles designate locations of existing industries. Diagram A (above) shows the changes which will strengthen the city core. The main plaza and adjacent main streets will serve only foot traffic. Service traffic and public transportation will be routed around the town center. Service streets, linked to the general traffic network will serve all buildings in the town center without crossing pedestrian ways. The most important new public and



commercial buildings will open on the plaza. Extensive parking areas (P) will be located near the pedestrian core. Diagram B shows the total pedestrian and bicycle network. These paths follow the open land of the valley floor which will be developed into park area. Diagram C indicates that clusters of high - rise apartments will form a circle around the town center, creating a strongly urban first impression as the town is approached from any direction. Each high-rise cluster is adjacent to an existing main street. With the exception of the proposed new town hall, buildings in the center will be low-rise. Diagram D shows the location of existing industries and the proposed siting of new industrial areas to the west.

The plan and section-elevation (opposite page left) shows the method of adding new housing to existing low residential areas, in the town center. Land between rows of existing houses which are to remain will become two-story parking areas. In most locations the upper level will be at street height and the lower level will adjoin the pedestrian way. Parking spaces will include green areas. New housing will span the parking area at regular intervals. On the lower floors, adjacent to the pedestrian passageway will be kindergartens, public lavatories and laundry and service rooms. The section (below) and the plan (right) show the proposed development of living areas outside the towns. Housing will be built in V-shaped clusters within the park landscape of the valley floors. Schools, kindergartens, recreation facilities, small gardens and parking will be located in the park.





SELB TOWN PLAN

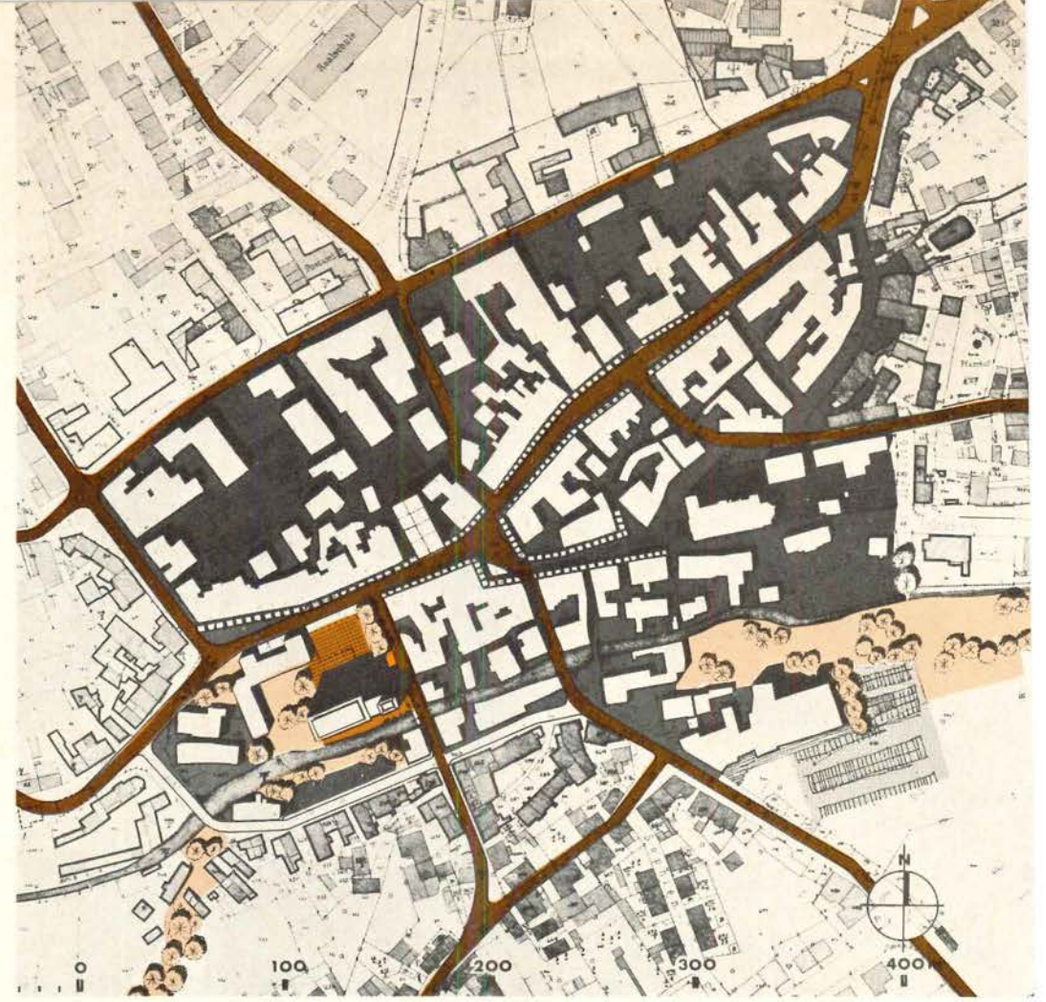
dustrial workers in Selb is one of the highest in Germany, the per capita income is quite low, lower than that of comparable towns in the vicinity. This seems to be due in part to the fact that the citizens of Selb depend upon the superior shopping and recreational facilities of surrounding towns. An unusually large proportion of the employees in the town's factories commute from nearby towns and villages, partly because Selb is considered to be a drab and not particularly desirable place to live. The lack of an adequate labor supply, partially due to the same reason, has even delayed expansion of the town's industries.

Selb's economic problems are, to a certain extent, traceable to its physical characteristics. The town lacks a true focal point or center; it is plagued by traffic congestion and lack of adequate parking; industry is dispersed in various areas; industrial railway sidings cross major streets; the streams are polluted; new residential subdivisions bear no relationship to the existing town or to each other.

Several considerations which were thought to be particularly important are reflected in the solution.[1] Most prominent is the idea of winning back the town center for the pedestrian by emptying it of vehicular traffic while providing spacious parking facilities nearby. Other important objectives include the general vitalization of the core by making it an area of highly concentrated, richly varied activity; the structuring of the entire town through the use of the strongly profiled natural topography; the maximum exploitation of streams and ponds, green areas, climate, and topography in the location of new dwellings; the integration of a far-sighted traffic solution; the destruction of as few of the existing streets and buildings as possible; the preservation of the present intimate, "small town" scale; the provision of large areas well-suited for the expansion of industry and maximum flexibility of all planning features to allow for any possible future changes.

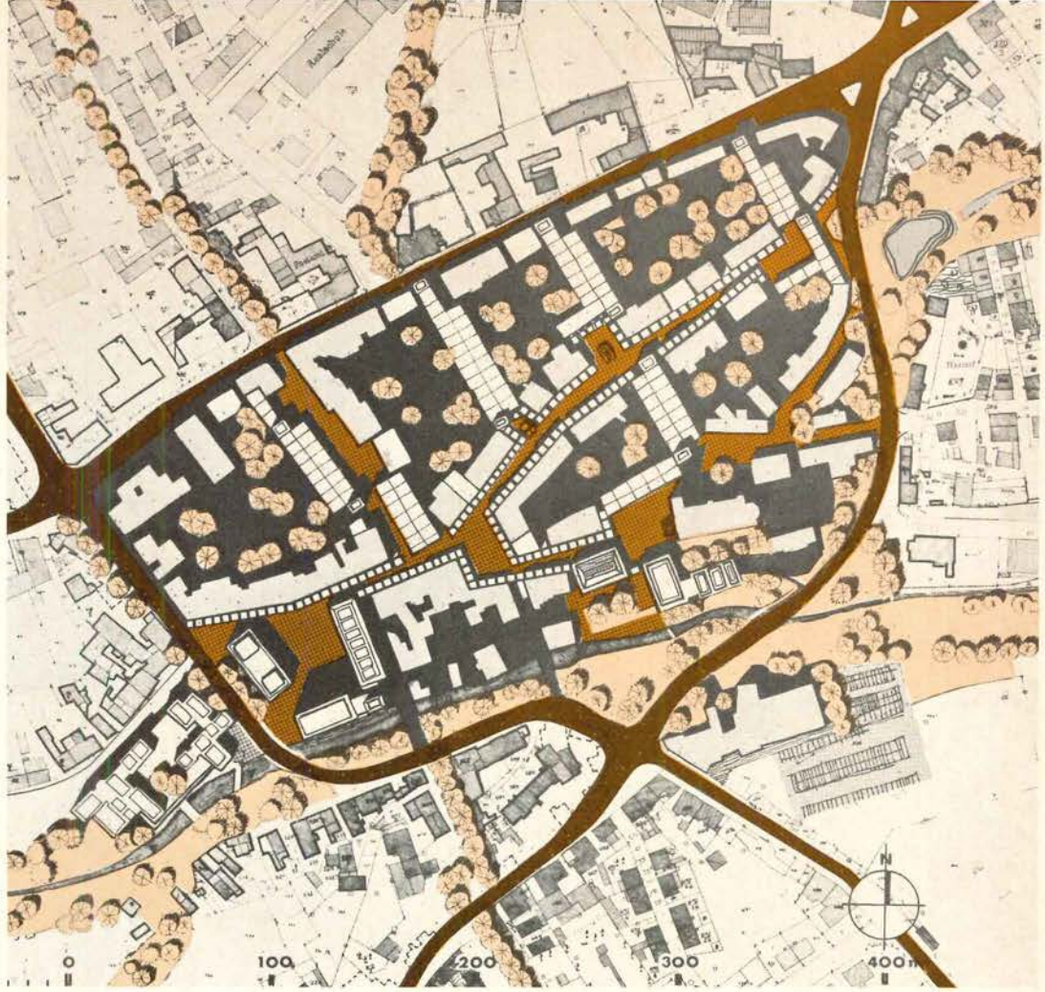
1. The complete report: "Plan for the Development of the Town of Selb" is soon to be published in English by the M.I.T. Press.

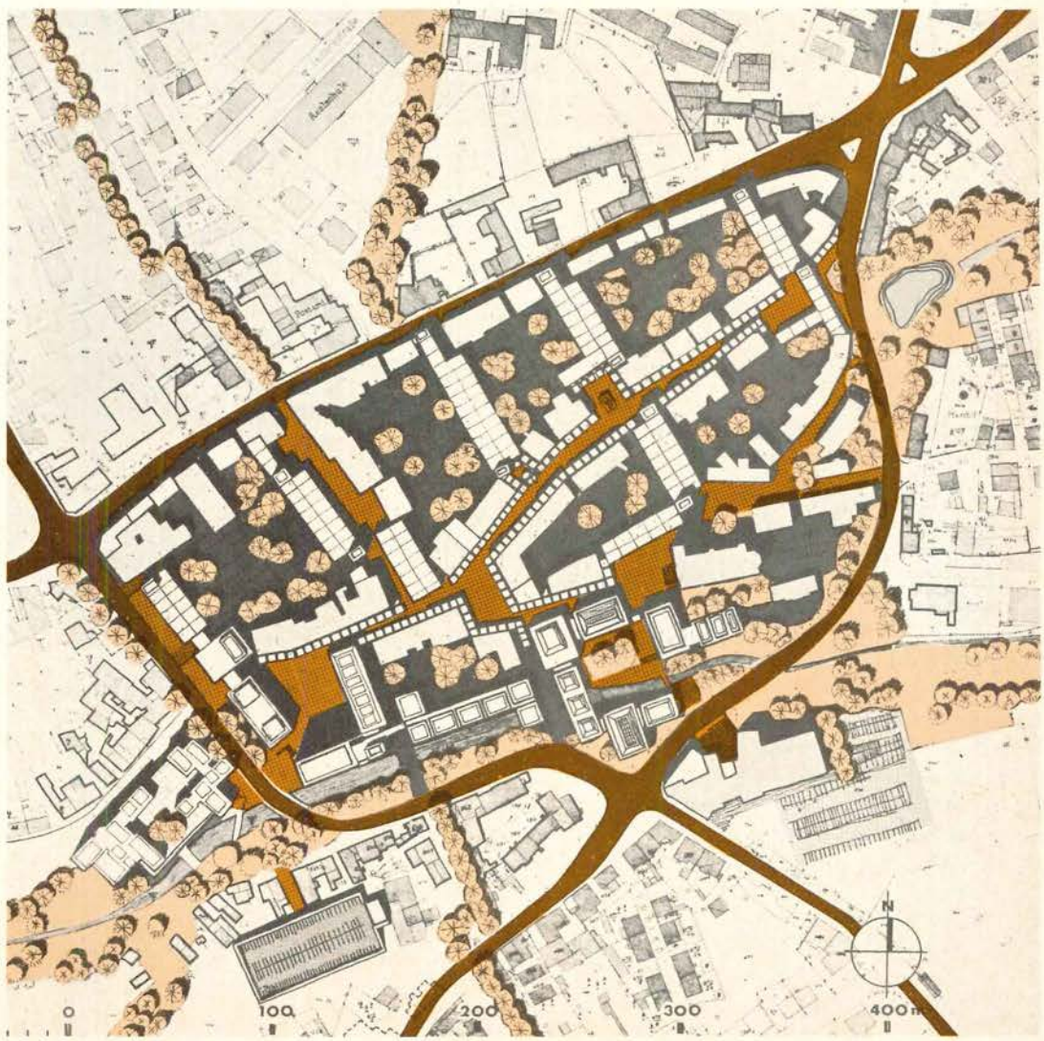
SELB TOWN PLAN, Bavaria, West Germany. Architects: *The Architects Collaborative—principals-in-charge: Walter Gropius, Alex Cvijanovic; TAC design team: Hans Buchwald, Robert Yelton;* traffic planner: *Kurt Leibrand.*

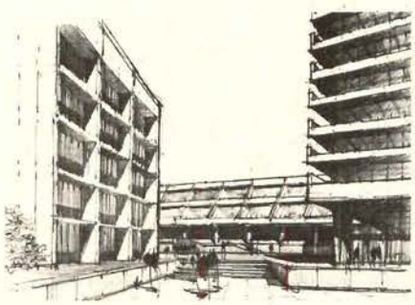


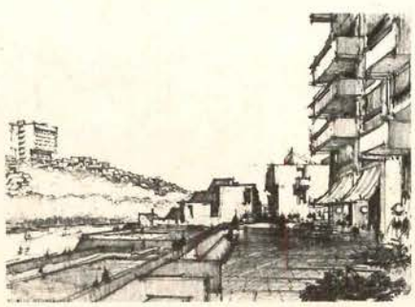
Development of Selb will be in four stages each of which can take place in an unspecified time in the future when the population will have increased by about 50 per cent to 30,000.

The proposed staging will give the citizens of Selb a sense of immediate vitality and accomplishment. In the first stage certain structures are demolished so that new parking places are provided, streets are broadened, changes in traffic circulation are begun and public transportation is extended. A department store, a new city registry and a new city hall are to be erected in the principal square. A system of arcaded walkways is begun. In the second stage pedestrian and automobile circulation are further separated, public transportation loops around the town center, buildings are demolished to provide more parking and green space, and the main plaza will include a renovated county court house and a new treasury building thus incorporating within the plaza all the buildings housing the main public functions of the city. The third stage will see the erection of a new hotel in the main plaza, a museum for the display of porcelain, new apartment houses, widened streets and more parking space. At the fourth stage the town center becomes the spiritual, cultural and economic center of the city, as expressed in its architecture. Apartment houses, shops, a cinema, bar and dance pavilion have been added.









A porcelain factory in Selb with generous recreation facilities for workers.

Walter Gropius and Alex Cvijanovic, TAC's principals in charge of the design of this prefabricated factory for Rosenthal, appear below near a large octagonal greenhouse which can be seen in the plan (opposite page). This greenhouse is filled with tropical plants, flowers and live birds and affords the workers a refreshing contrast to the factory ambience. Aisles between the machines terminate at walls covered with glazed tiles in strong colors as visual orientation. Windows are less to provide light than to give the worker opportunity to relax his eyes.

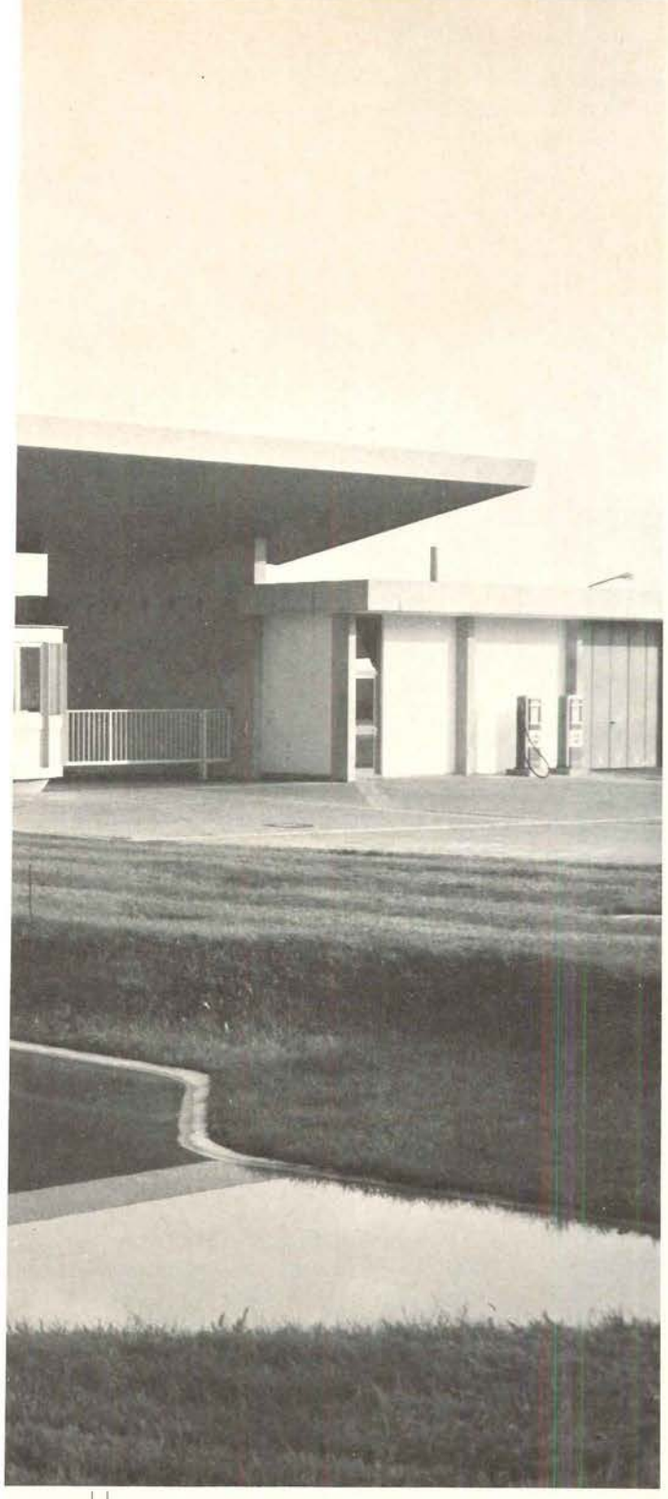
From his earliest years as an architect, Gropius had advocated the use of visual and intellectual contrasts to counteract the monotony of the factory assembly line, alleviating the tension of the pieceworker and increasing his productivity.

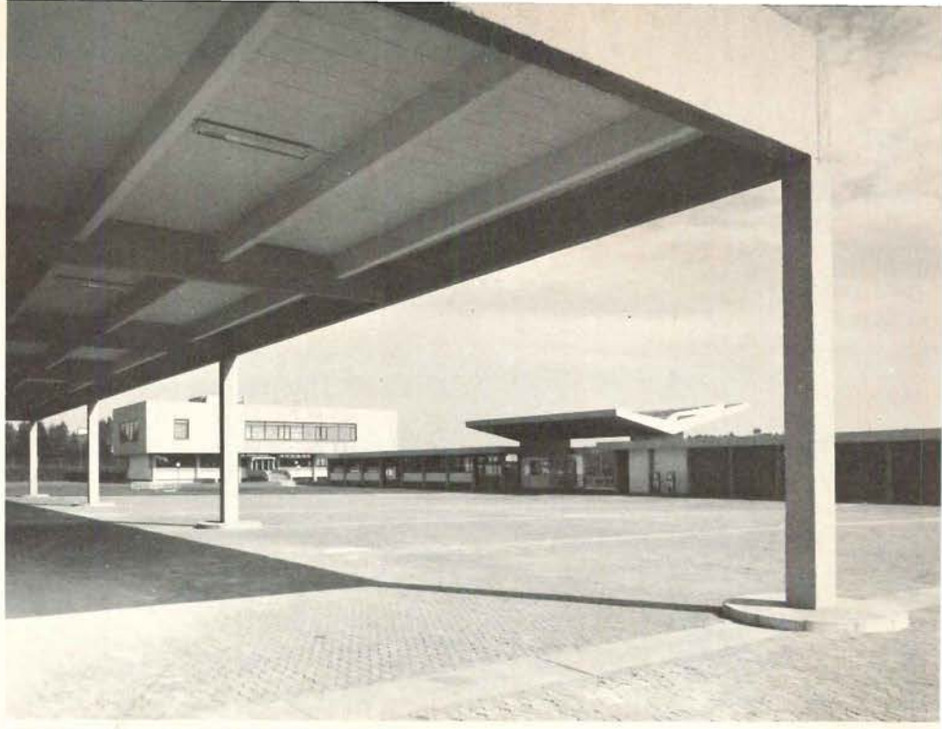
Gropius persuaded Rosenthal's owners to include a social hall building within the complex, which includes a large cafeteria-auditorium with stage,

a library, a conference room, a youth hall and facilities for medical and social services. The entire complex surrounds a landscaped area with a pond and bridge. The foyer at the workers' entrance includes large bulletin boards and glass cases for the display of new products.

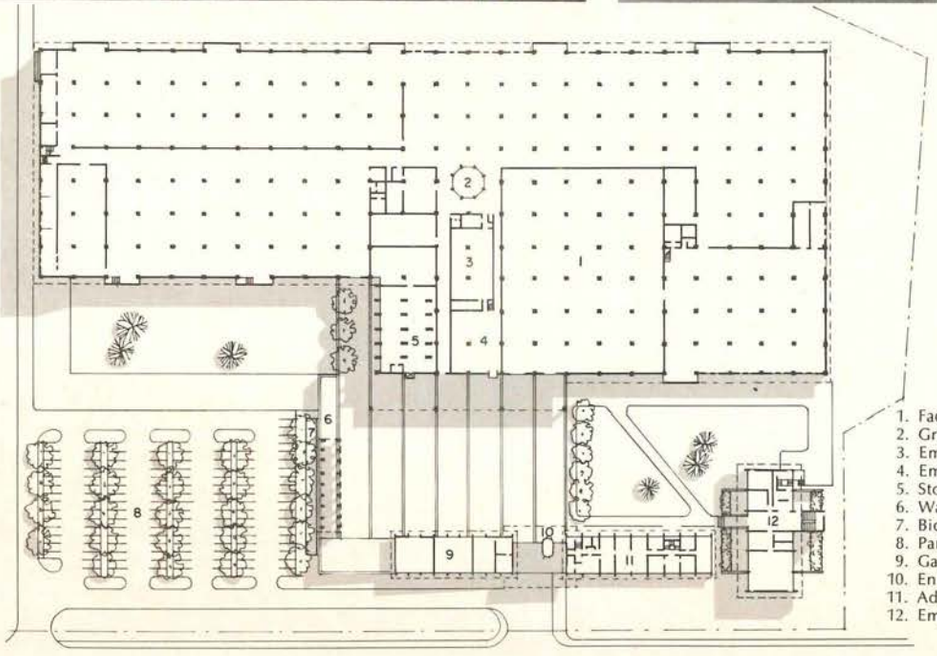
The porcelain factory as the plan at right indicates is composed of a large one-story factory proper of 200,000 square feet, an administration

The factory, office building, garages, waste silo, and parking area are placed on a site which slopes off to the north and west. The service courtyard is placed on the highest ground to the southeast. The factory is located to the north of this on filled ground. The parking area and bicycle stand, separated from the service courtyard by a high retaining wall, slope downhill to the west. The downhill end of the factory exposes a lower production level and service entrance. Because of the need for production security, a nine-foot wire fence encloses the factory and all other buildings. Entering and exiting from the complex takes place only at the entrance gate and porter's lodge under a concrete canopy. The enclosed area is divided into a quiet green area for the office building and social hall and a paved active area for garage, waste silos, factory entrances, and service entrances. The office building shown at the left in the photo above is composed in two levels: offices and basement. The office level is three feet above grade to provide windows for the basement and to raise the roof height to that of the garage. Spanning between two end-walls of these buildings is a V-shaped concrete entrance canopy. A glass and steel porter's cage sits beneath. The buildings are of poured-in-place concrete.

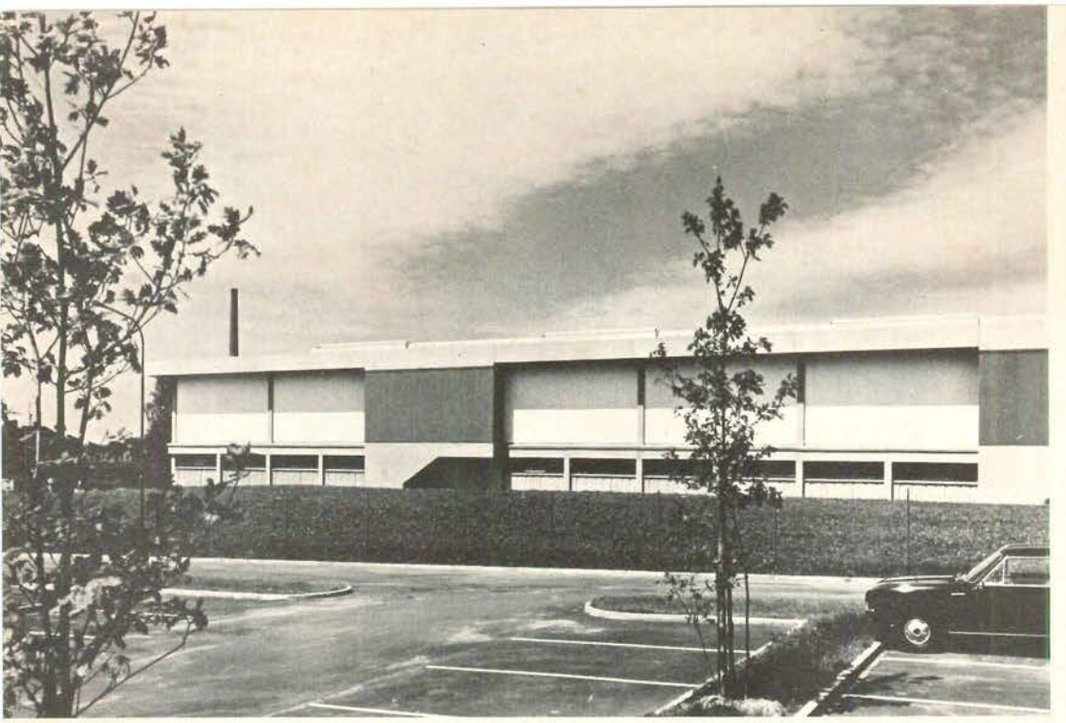




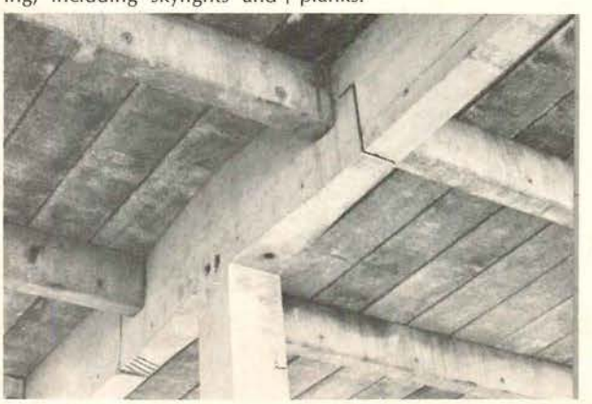
Paul Swiridoff photos



1. Factory production area
2. Greenhouse
3. Employees' lockers
4. Employees' recreation room
5. Storage silos
6. Waste silos
7. Bicycle stand
8. Parking area
9. Garage
10. Entrance portico
11. Administration building
12. Employees' social building



The one-story production layout plan of the factory was provided by Rosenthal. A complete precast structural system was devised which integrates the need for plan flexibility on a 30-foot bay. The system allows the building, including skylights and overhead mechanical and production runways, to expand in two directions. The system is composed of precast, structural T-shaped columns, connecting beams, and supporting purlins which in turn support concrete planks.



ROSENTHAL CHINA FACTORY

building, a garage, a raw material silo, a waste silo and the social hall. The buildings are completely flexible and all parts, structural and non-structural, were prefabricated.

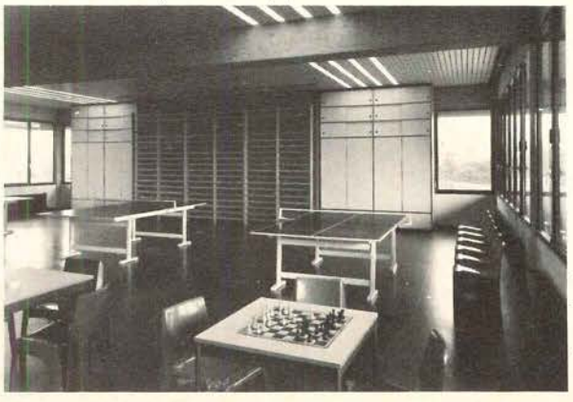
Structural changes can be made without shutting down production. Outside walls, except for the foundations, as well as T-shaped columns, connecting beams, supporting purlins, concrete planks, and ventilating skylights can be disassembled and re-erected. This method required a horizontal roof without a pitch. The grid is a bay system of 30 by 30 feet, allowing efficient use of space for all assembly lines, including transport routes and aisles.

Corrugated basement walls are of poured concrete. Structural parts are of gray concrete, filled-in walls of white concrete. Some wall fillings are emphasized by blue, red or yellow paint.

Gropius' work for Rosenthal embraced problems at many scales, ranging from product design to town planning, allowing him to affirm his belief that architecture should comprise the design of the total environment. While planning and constructing the porcelain factory, he designed a handsome new line of china now in production, and began work on the Rosenthal glass factory in Amberg shown on the following pages. The creation of the Selb town plan shown on the preceding pages was instigated by Philip Rosenthal, president of the porcelain and glass companies.

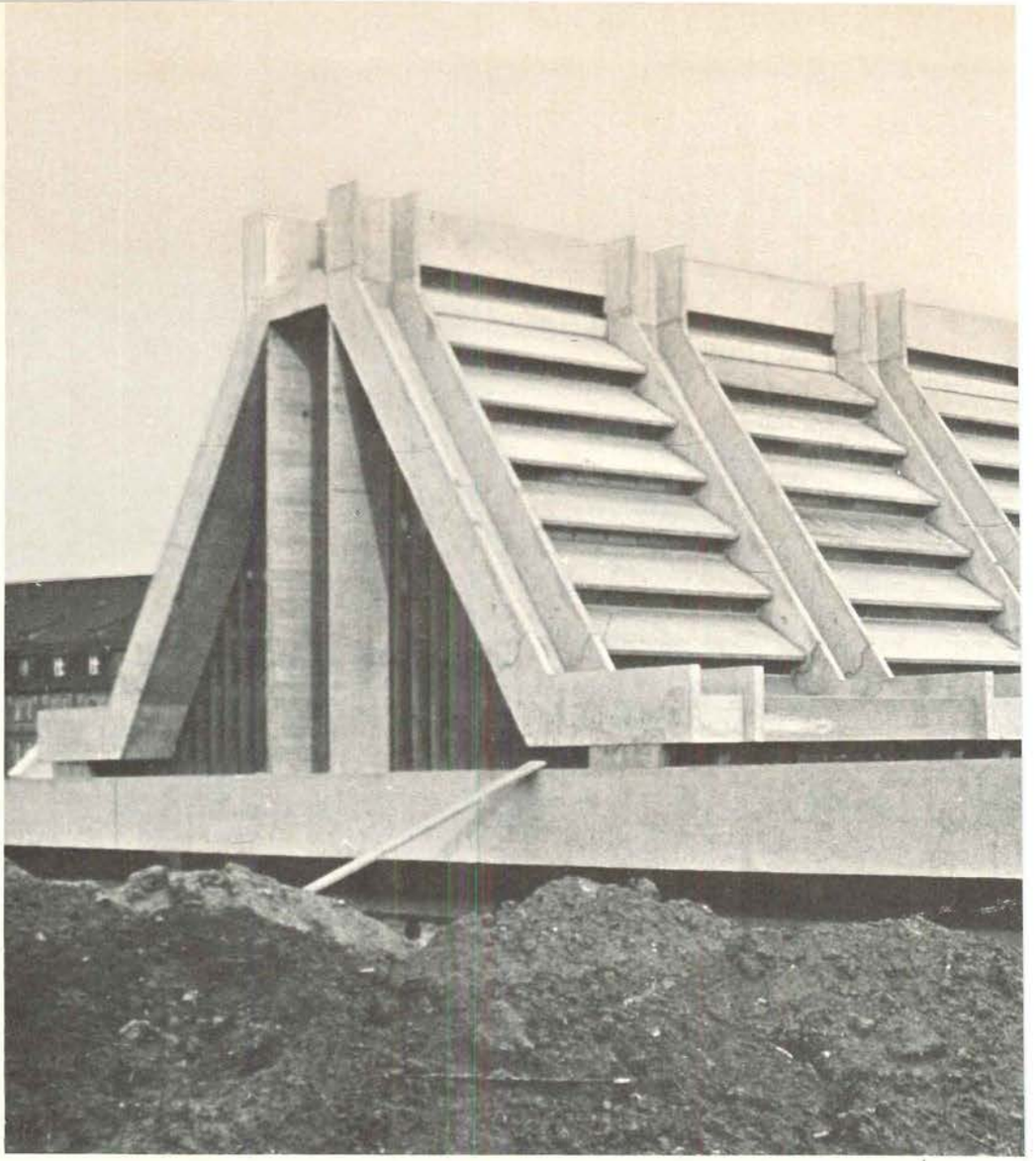
ROSENTHAL PORCELAIN FACTORY (ROSENTHAL AM ROTH BUHL), Selb (Bavaria), Germany. Architects: *The Architects Collaboration—principals-in-charge: Walter Gropius, Alex Cvijanovic; TAC associate-in-charge: Malcolm Ticknor;* associate architects: *Rosenthal Studios;* structural engineer: *Paul Weidlinger;* general contractor: *Dyckerhoff and Widmann.*

The social hall is a focus for employe recreational and educational activity and encompasses a kitchen and cafeteria with a stage for use as an auditorium. It occupies a commanding position at one end of the factory courtyard. The building is organized into three levels. The lower level contains the quiet areas: library, book stacks, and conference room which open out to the sunken courtyards to the east and the west. The main entrance level contains the active areas: youth hall, medical and social services, store and entrance lobby. A concrete bridge spans from grade across the sunken courtyard to the entrance. The upper level is cantilevered volume containing the auditorium-cafeteria and the kitchen.



David Hirsch photos

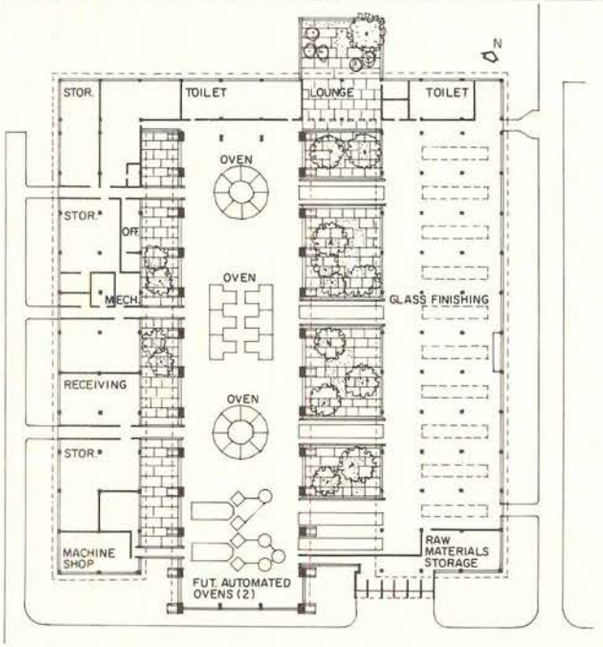
A glass factory of large-scale precast units in Amberg, Germany, is a prototype for glass making plants of the future.

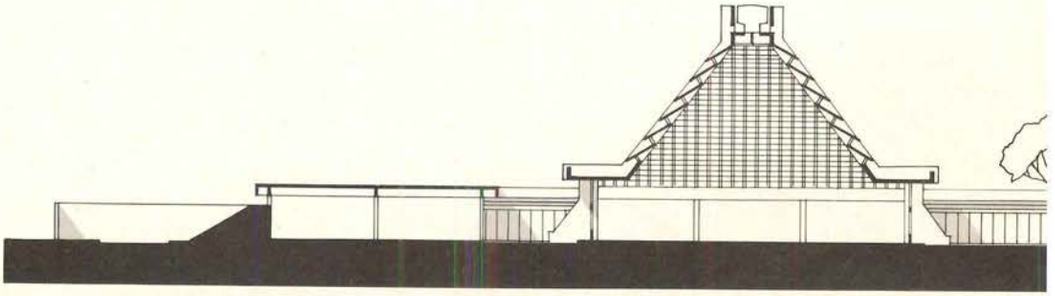


A major advance in industrial building technique and now almost complete, the factory is a 66-foot-high, triangular-sectioned structure supported by a series of huge pre cast ribs which carry broad, precast concrete louvers. Spaces between the louvers provide daylight and can be adjusted to provide the ventilation needed to clear hot air and gases from the working area.

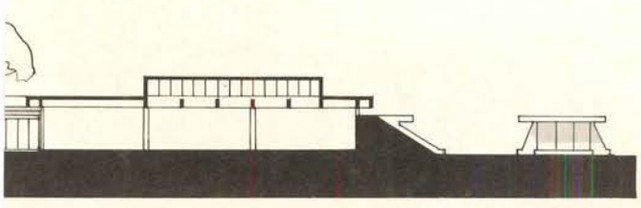
According to Alex Cvijanovic, the TAC principal who worked with Gropius projects, Gropius' spirits always rose when he visited a construction site. He is shown below viewing the demolition which made way for the construction of the glass factory. The site also includes low-rise workers housing designed by Gropius and TAC.

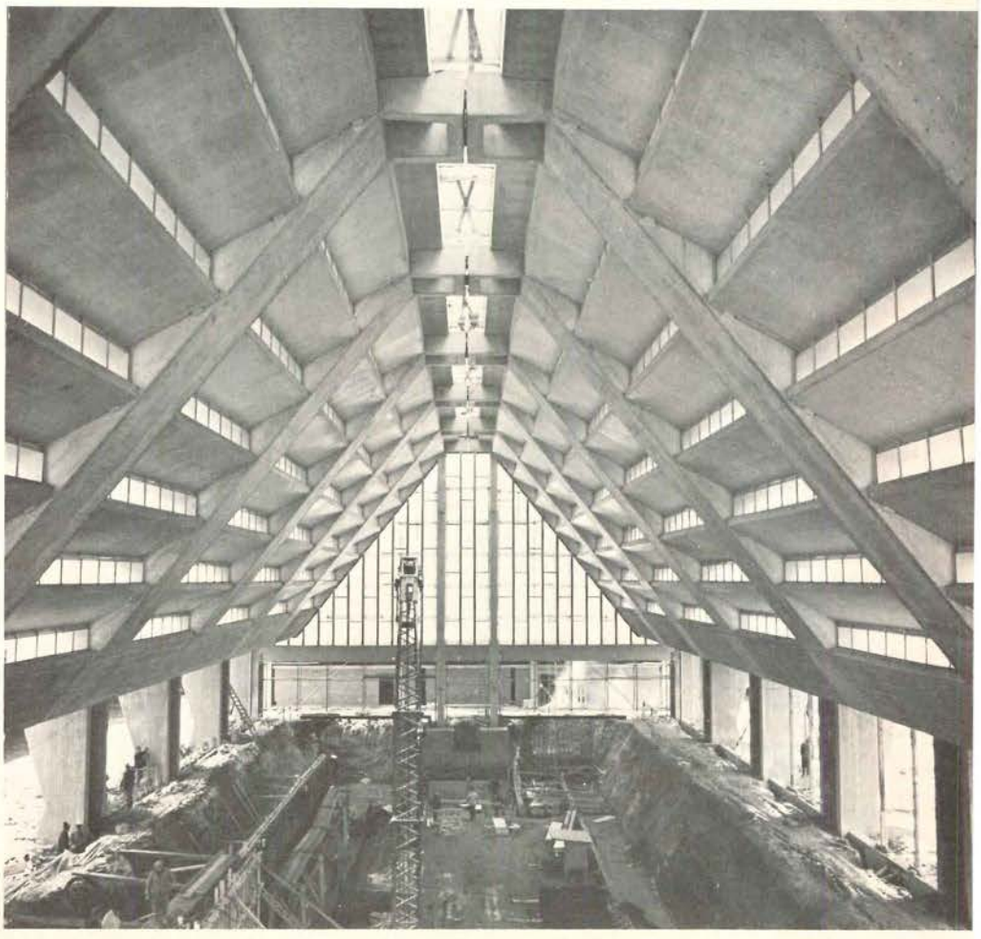
ROSENTHAL GLASS FACTORY, Amberg, Germany. Architects: *The Architects Collaborative —principals-in-charge; Walter Gropius, Alex Cvijanovic; TAC associate-in-charge: Royston T. Daley.*

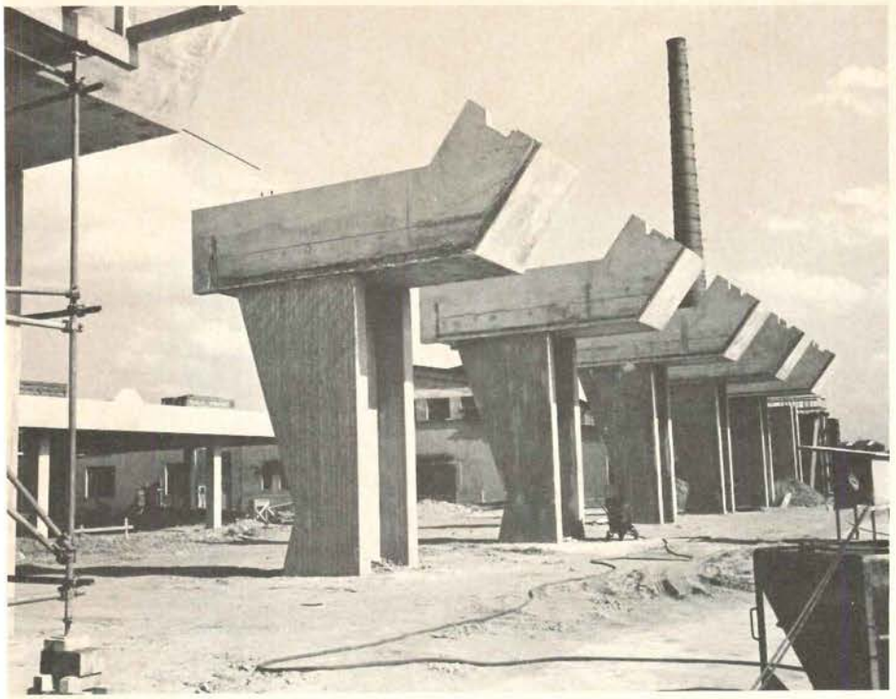


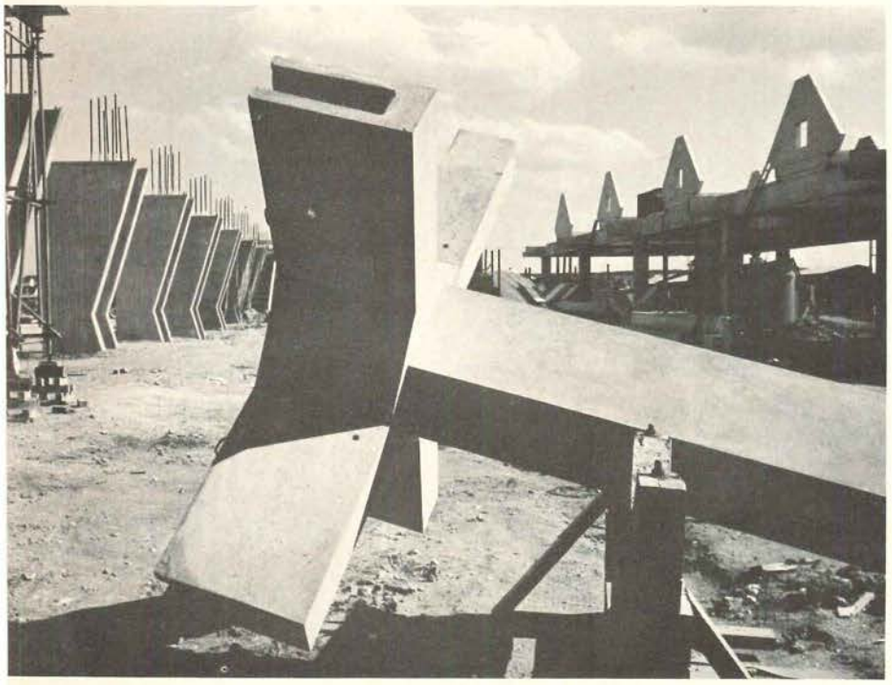


Despite their insulation, the glass ovens give off great quantities of heat, and the glass is worked in the open at temperatures from 1292°-2372° Fahrenheit. Gropius and his TAC colleagues solved the problem of drawing off the excessive heat without the aid of special air conditioners. As the heat rises and exhausts between the louvers, cool air is drawn in through the inner courtyards shown in the plan and section (left). The interior photograph (right) was made before the glass ovens were installed.









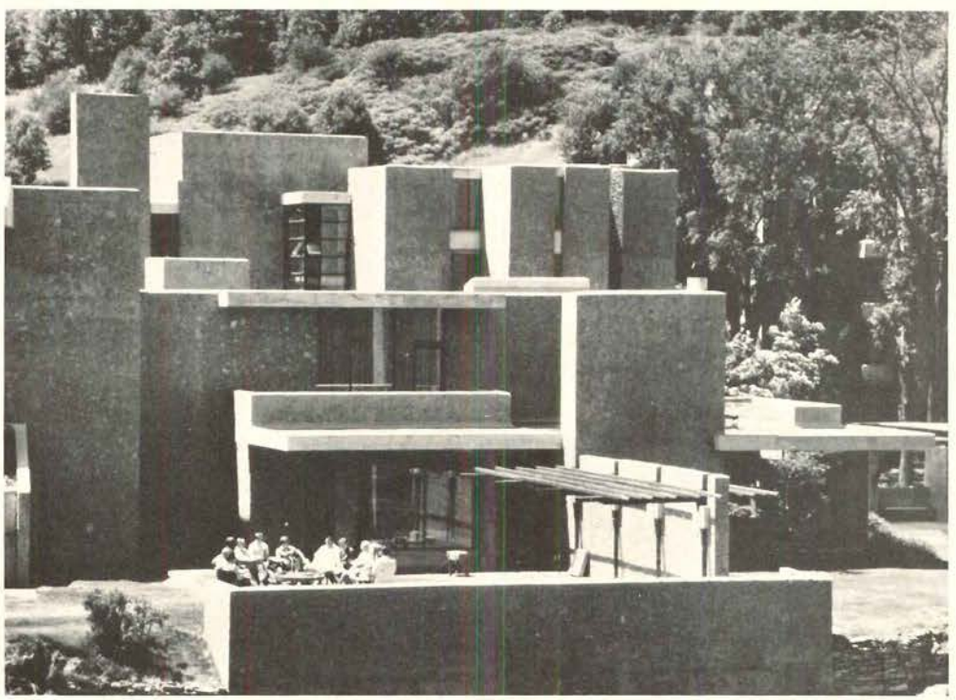
The production of large-scale precast units and their system of assembly at Amberg represent highly advanced industrial building methods. The pilotis and brackets in the top photographs are about to receive the roof ribs shown in place above. Precast columns with x-shaped caps support the lower structure. The triangular shaped end walls of the skylights can be seen in the middle photo.

TRENT UNIVERSITY

In the architecture of a new Canadian school, reflections of its special curriculum

Trent is an entirely new university, built over the last five years near Peterborough, Ontario, and now providing dormitories and teaching facilities for some 1200 students. Ron Thom, a partner in the firm of Thompson, Berwick, Pratt of Vancouver, has been the primary architect for Trent, and has been so involved since the firm was hired as master planners and as architects for the first phase of buildings in 1963. The design and planning of Trent has grown from certain special commitments to undergraduate education, and these commitments need explanation if we are to understand the architecture.

The university presented a brief to the architect in the fall of 1963 explaining in a general way what the architecture at Trent could be, and what it might accomplish; from this brief and the preliminary discussions and travel which had preceded it, the design for Trent was developed. The brief stated, in part: "Trent University wishes to apply two insights about the nature of good undergraduate university education: that students should live together, in the company of their academic seniors; and that teaching should be on a personal level, by tutorials and seminars which demand much of every student.



"There should be, in the design of the buildings, some intimation of the best architectural traditions of the region, as particularly expressed in the best 19th century stone farm houses. . . . We believe that deference to good regional tradition is an important part of putting down firm and live roots for the University in the community in which it is located.

"There should not be sharp distinctions of function among the areas of the campus. All kinds of university activity should occur throughout the campus: the colleges should be interspersed with the science buildings, and all should be accessible to library, river, playing fields, open spaces and a small commercial village.

"In the college system as we foresee it, there will be no single and obvious center of university life, but many; the University Library will, however, be the most important building shared by all parts of the University, and central to its purpose; its centrality should be recognized in the Master Plan."

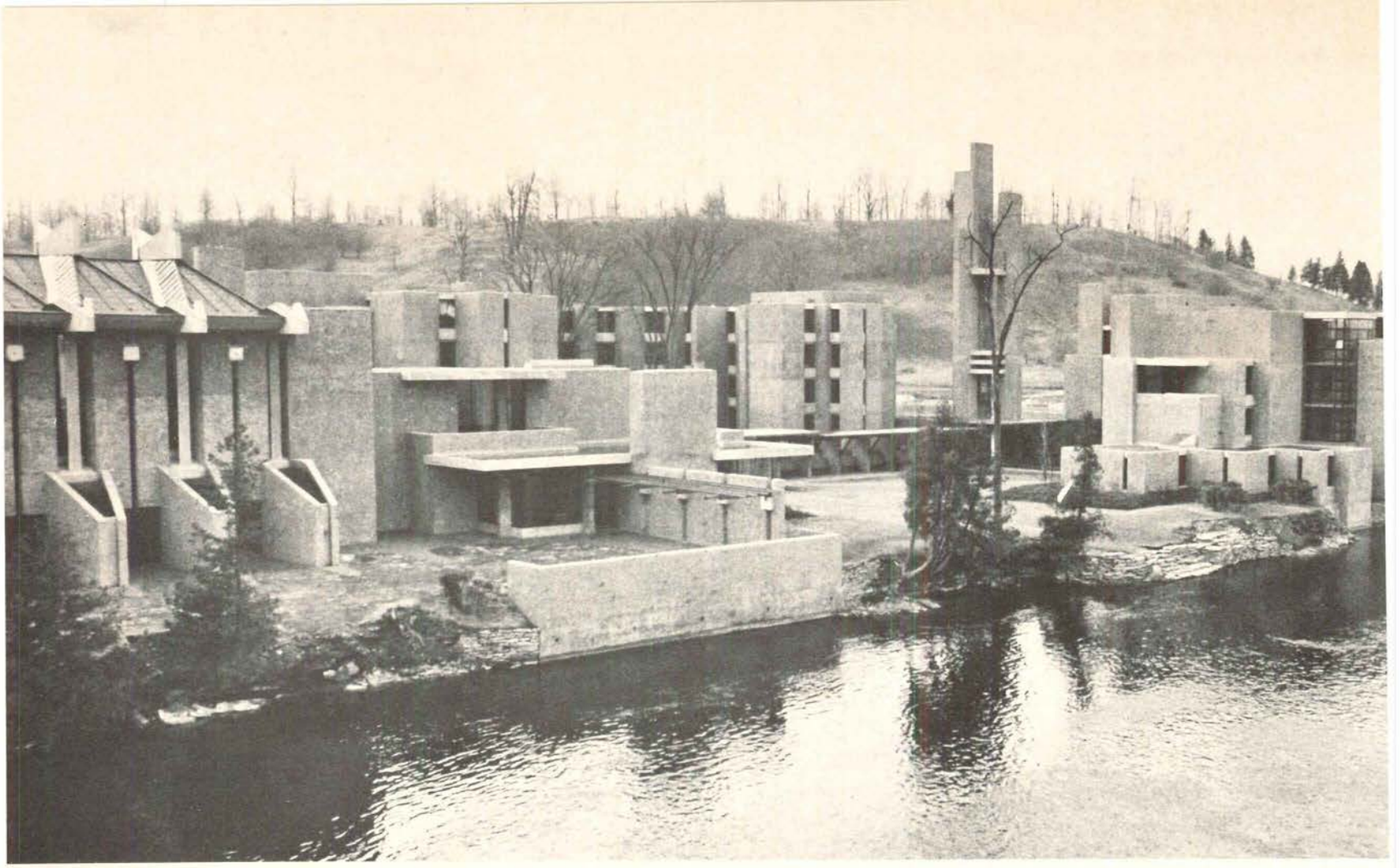
The college system at Trent is an attempt to limit distractions in learning

The efforts of the architect to fulfill these educational goals, and to interpret and mold some of the materials and forms implied by the goals, was one of the central preoccupations of the architecture. The brief suggested the subdivision of the university into a number of colleges, each containing residences and academic facilities, and this is the basis for Trent's current architecture and for its expansion plans.

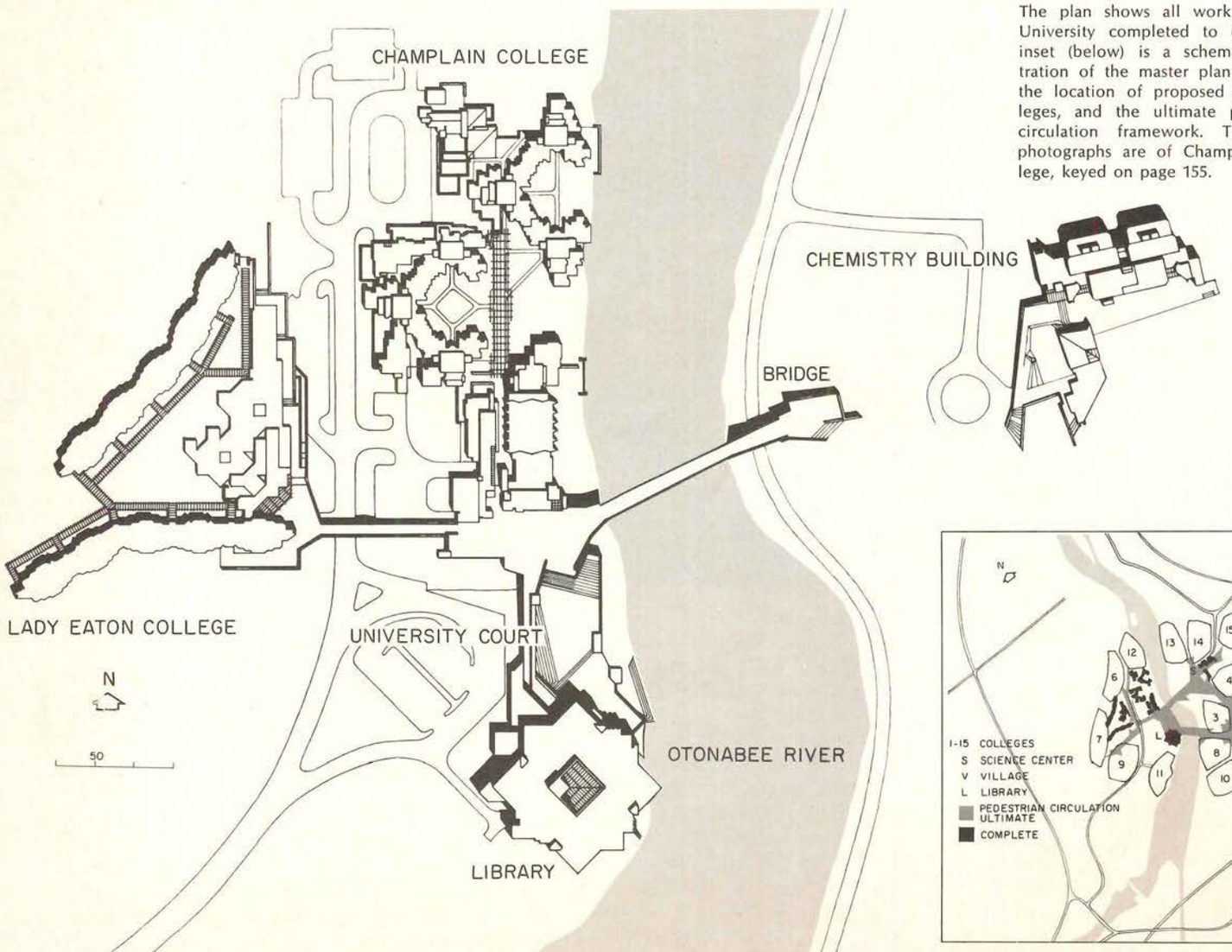
Most North American universities have their buildings segregated by function—separate buildings for arts and sciences classrooms, or for the Department of English, or for engineering. There is a separate building and location for student recreation and student government. Residence halls are distinct and often distant from the classrooms, and there are usually separate residences for men and women. The faculty lives in separate locations from the students. The word "college," in conjunction with the usual university, means a smaller academic or jurisdictional entity within a university, but often implies no separate physical boundaries.

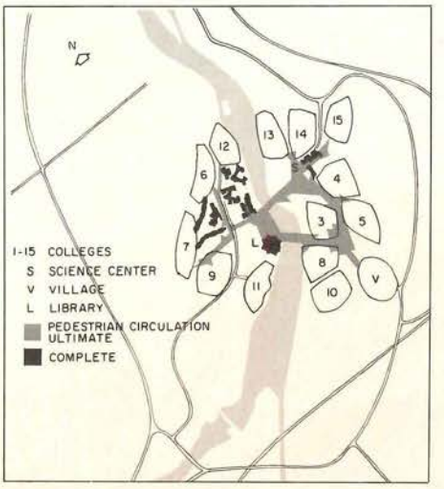
The word "college" at Trent means something different. It is a mixture of classrooms, residential apartments, and recreational facilities within identifiable physical boundaries; one "building" or a series of closely related buildings. The principal feature is that teaching and living take place for the student in the same building, and the faculty offices and some faculty living quarters are also in that building, similar to the colleges of Oxford and Cambridge in England. The idea, then, is not new, except in the context of recent North American universities.

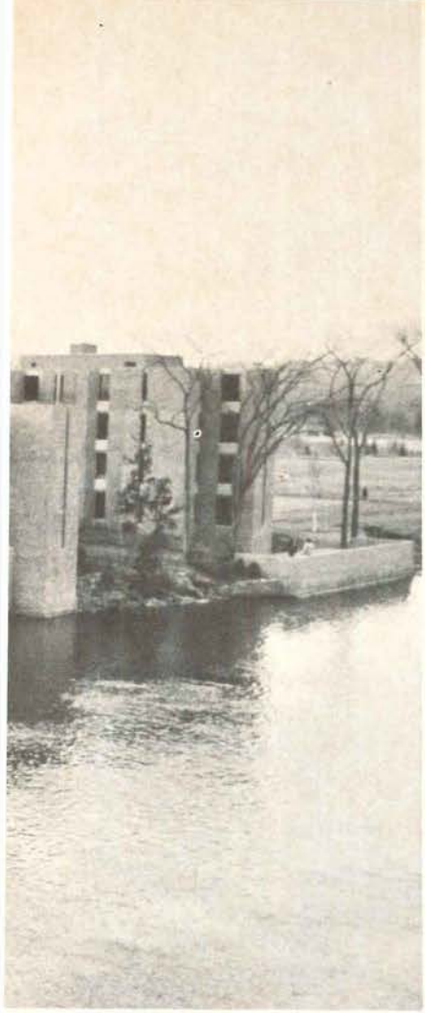
The curriculum and daily routine at Trent encourages the mixing of academic with social life. Every faculty member in the university is attached to a College and has his offices there. These instructors' offices are also tutorial classrooms, designed to accommodate about six students. The student-teacher ratio at Trent is now about 12 to 1 and a typical student's curriculum is set up with five subjects a semester. Each of these subjects typically has one hour of tutorial class per week, and one hour of lecture per week in the larger lecture rooms. The student is expected to spend



The plan shows all work at Trent University completed to date. The inset (below) is a schematic illustration of the master plan, showing the location of proposed new colleges, and the ultimate pedestrian circulation framework. The three photographs are of Champlain College, keyed on page 155.







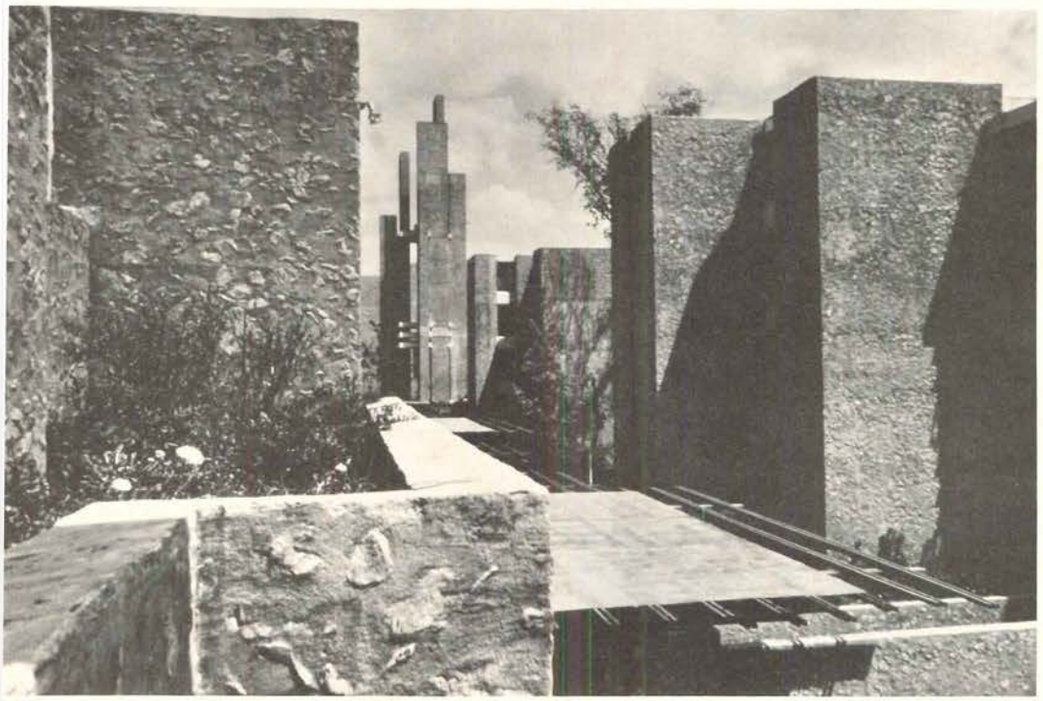
A

the resulting and relatively large amount of "free" time preparing his work. The residences are thus organized for privacy and in small groups, using the staircase principle rather than double-loaded corridors. Most of the bedrooms in the residences house only one person each, allowing uninterrupted use of the rooms for study at all times. Each College also has a small library for study, providing work space for all students, both residents and non-residents.

There are two colleges now complete at Trent, as shown on the site plan: Champlain College for men and Lady Eaton College for women, with enrollments of about 350 each. In addition, there are two colleges in Peterborough itself with enrollments of about 250 each. These have been necessary to accommodate increased enrollment before additional colleges could be built at Trent itself. Trent has been conceived as primarily a residential university; at present, however, about one-third of the students in Champlain and Lady Eaton live off campus.

Expansion at Trent will take place within organized and scheduled boundaries

The master plan and growth pattern for Trent was also prepared by architect Thom, and the present facilities correspond closely to those called for in the master plan of 1963. A schematic representation of Trent's future growth patterns is shown in the inset at left. The University Court and the library will remain as focal points for the completed campus of 15 colleges and 4000 students. Colleges will be added, as needs require, and money becomes available, in the areas allocated by the master plan, beginning with College 3 near the present science buildings. The ultimate circulation scheme (pedestrian) will form roughly a triangle, with the library and University Court as one apex, an expanded science complex the second apex, and a commercial "village" as the third point. There has been no attempt in the master plan to show the possible shapes of future buildings or the kinds of spaces which might occur between them. Other architects, as well as Thompson, Berwick, Pratt, will supposedly be commissioned for future work. Growth of the university, then, takes place by adding entirely new and self-contained colleges, rather than adding new instruction and dormitory facilities onto the colleges which now exist.



B

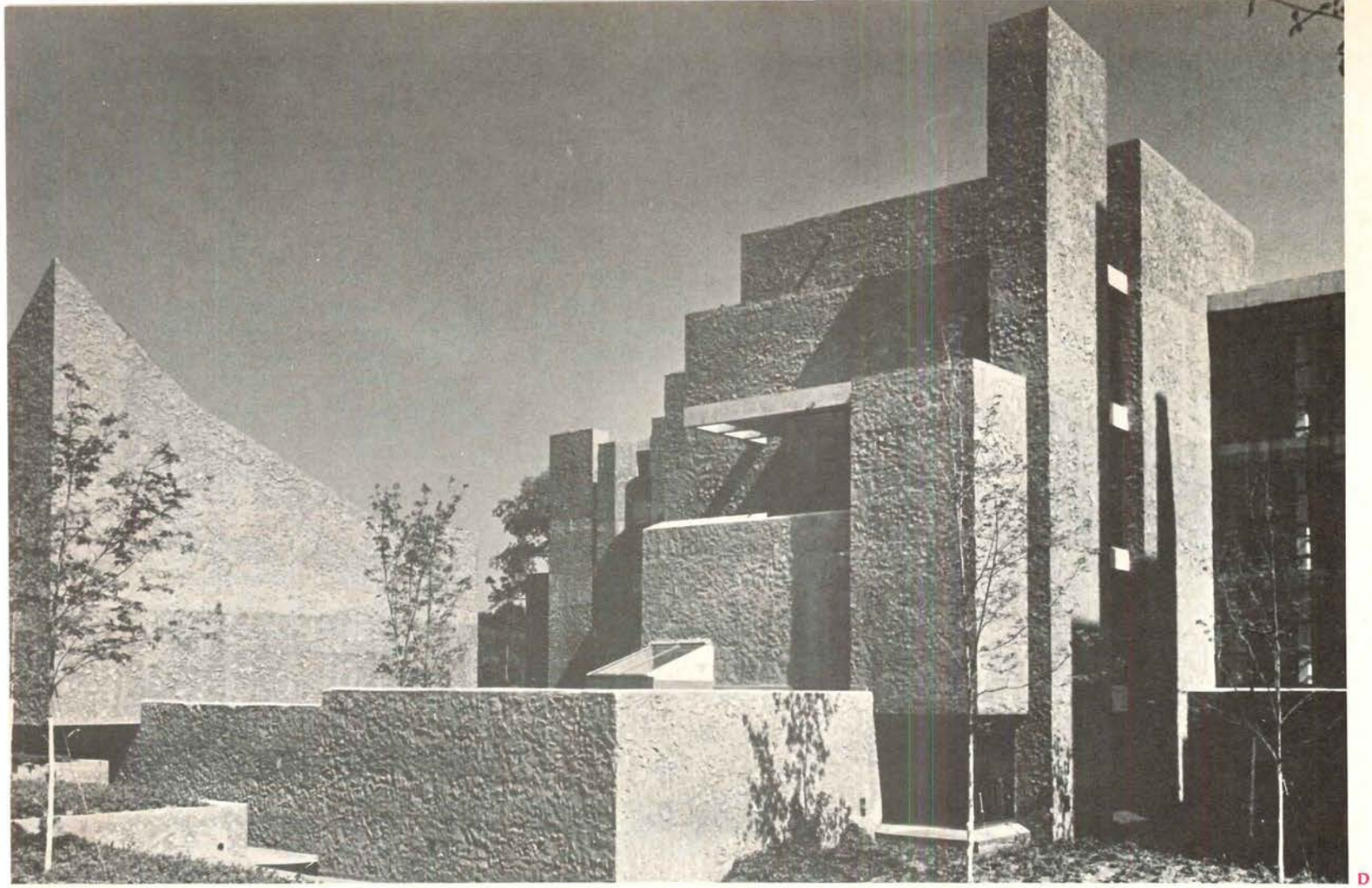
C

Trent alludes to visual precedents, its gentle site and its curriculum

There is a reminder of Frank Lloyd Wright in this architecture which cannot be overlooked. The reminders come in the material of large aggregate selected from the region and placed and exposed in the concrete; in the insistent horizontal bandings which carry consistently through the vertical elements, becoming broad cantilevered overhangs in places, which hug the ground. There is the pinwheeling of groups of rooms in plan about some dominant vertical stair tower or chimney; or the careful, studied tiers of similar forms in elevation, composed to reach a peak, a crescendo, and subside again in preparation for the next ascent.

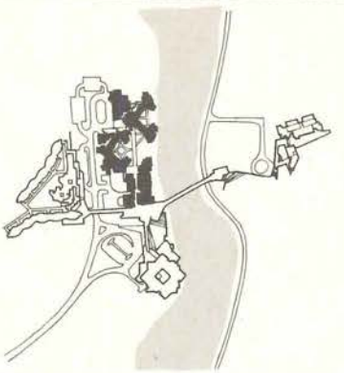
Yet the freshness and power in Trent's design make it innovative in its own right, expressive of a designer who is conscious of his roots but has his own artistic preoccupations and has as well tried to understand the specific, one-of-a-kind needs of the program. Champlain College (pages 154-155) is intricate and personal in that each separate room seems to be a little different from all others; the forms around each new corner are not predictable through what has come already. It appears to be, as the program and curriculum and future plans for growth at Trent imply it should be, permanent, finished, not-to-be-altered. Yet the science complex (pages 158-159) looks as if it could expand indefinitely, as it must to provide central facilities for additional colleges as they are built. The science center is more austere, less personal than other buildings at Trent; a place for work and hard facts, it would seem, in a university which has everywhere else mixed these with social living from day to day.

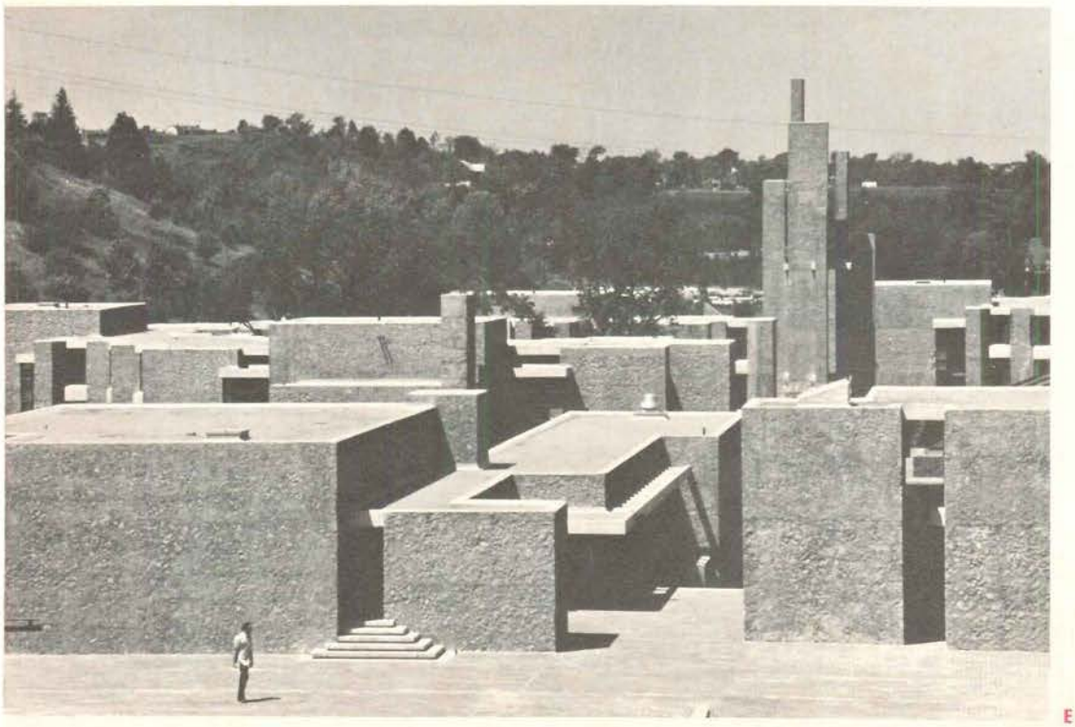
TRENT UNIVERSITY, Peterborough, Ontario. Architects: *Thompson Berwick Pratt & Partners—Ron Thom, partner-in-charge of design; Paul Merrick, design architect; Peter Smith* and *Alastair Grant, project architects; Dick Sai-Chew, supervising architect; Caroline Souter, interiors.* Structural: *M. S. Yolles and Assoc. Ltd.;* Mechanical and electrical for Chemistry, Library, & Champlain: *R. E. Crossey & Assoc. Ltd.;* Mechanical, Lady Eaton: *G. Granek & Assoc.;* Electrical, Lady Eaton: *Jack Chisvin & Assoc.;* Site services: *James MacLaren Ltd.*



D

CHAMPLAIN COLLEGE



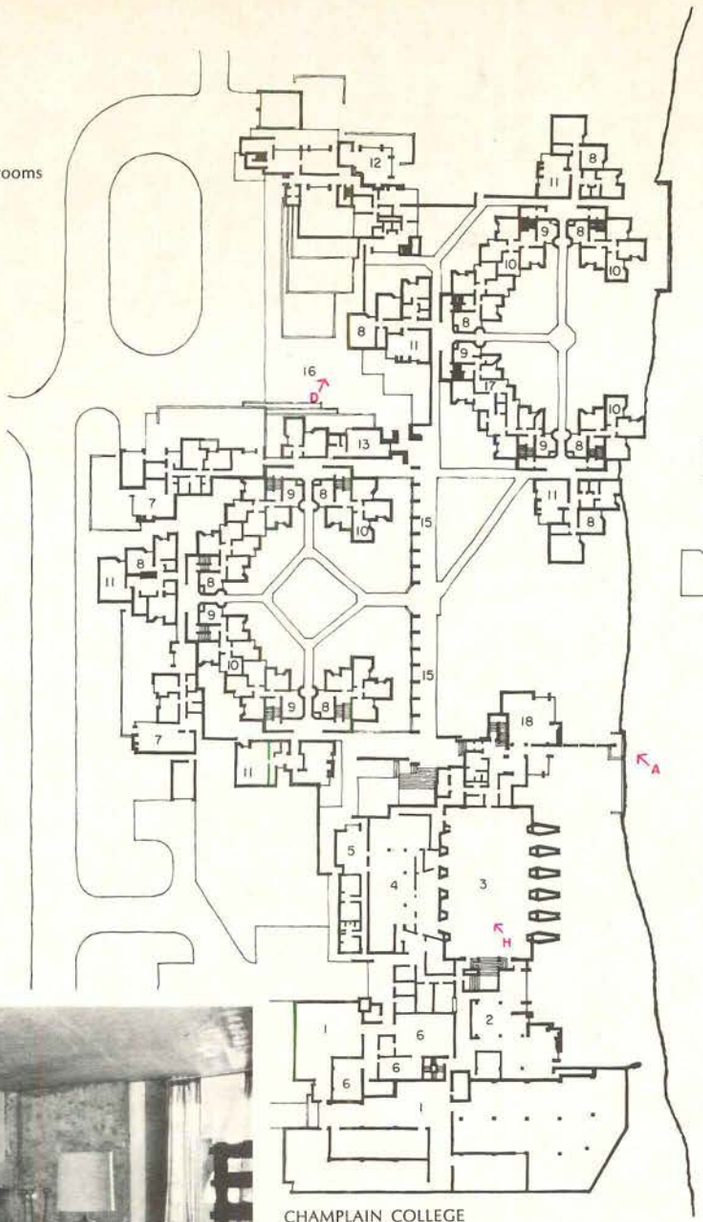


E

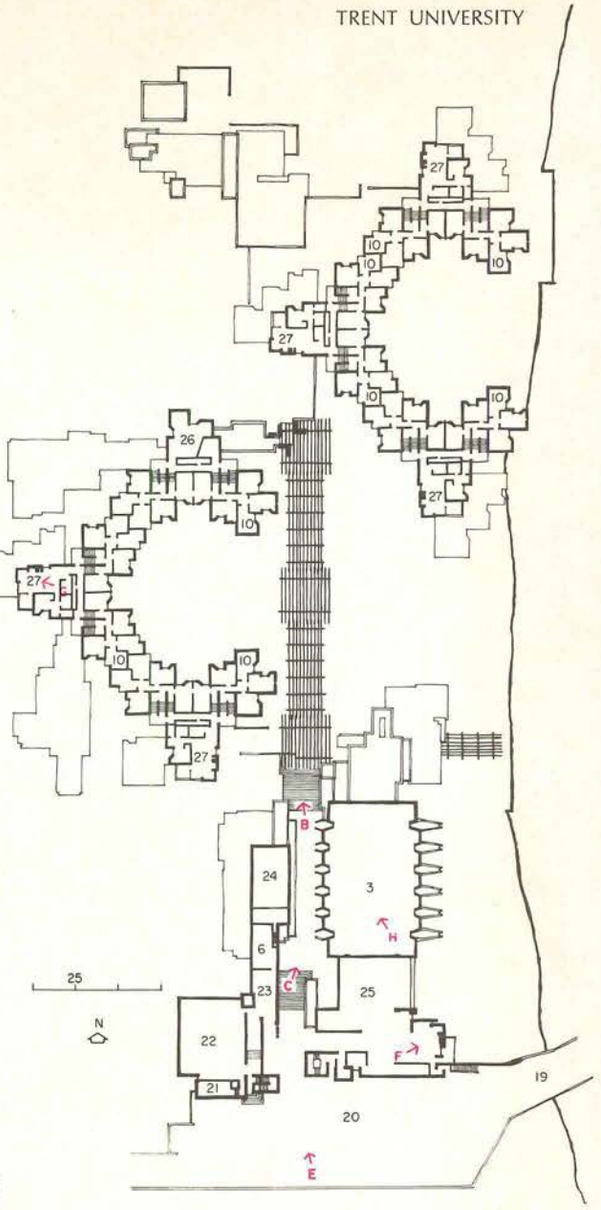
Champlain College can be divided in plan into four parts; the first is the dining hall and kitchen area, along with common facilities which surround it. The second and third are the roughly "C" shaped four-story residential and teaching units which form two similar elements on the site, and are the main facilities of the college. The fourth element in plan is the Master's house at the northern end of the College. The University Court entrance to Champlain College (E) leads past a lecture hall and the college's small library along a descending walkway (C) to the northern end of the dining hall. From here the view is across the upper roof of the main canopy (B) toward the carillon tower. Stairs then lead down and under the canopy to the ground level walk and to either of the main dormitory sections. Deliveries and all vehicular circulation take place at the rear of the college, and do not conflict with the pedestrian movement. Champlain has direct access to the river (A) and there are several boat landing sites built into the bank. The large aggregate concrete, which forms nearly all the exterior walls, is composed of a standard gray concrete plus large gray native rocks, dumped rather than hand placed in the forms—in tests, hand placing the large rocks gave more exposure than the architect wanted. The material is carried inside along many of the interior walls (F, G). The dining hall (H) is the largest interior space and seats 280. The exposed timber of the dining room repeats the extensive use of wood in interiors throughout the university, as the second primary material of Trent.

LEGEND

1 Mechanical space
2 Snack bar
3 Main dining hall
4 Kitchen
5 Staff lounge and washrooms
6 Storage
7 Married don's house
8 Faculty office
9 Academic secretary
10 Single study bedroom
11 Seminar room
12 Master's house
13 Porter's lodge
14 Tower Gate
15 Trellis walkway
16 Forecourt
17 Administration offices
18 Senior common room
19 Bridge
20 Podium
21 Projection booth
22 Lecture hall
23 Coats
24 Squash court gallery
25 Library
26 Listening room
27 Don's rooms



CHAMPLAIN COLLEGE
GROUND LEVEL



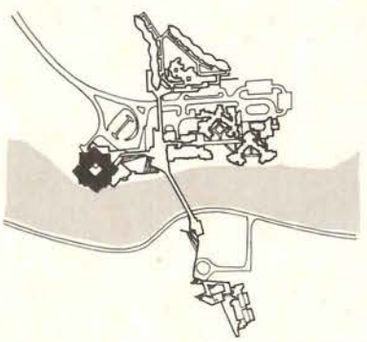
THIRD LEVEL

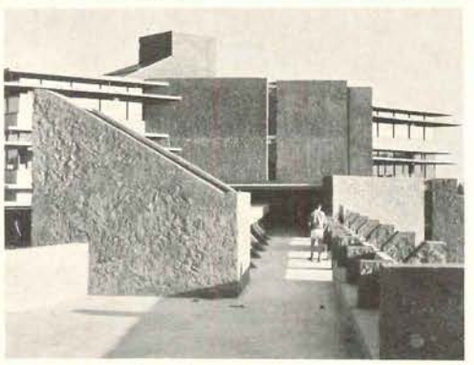
F

G

H

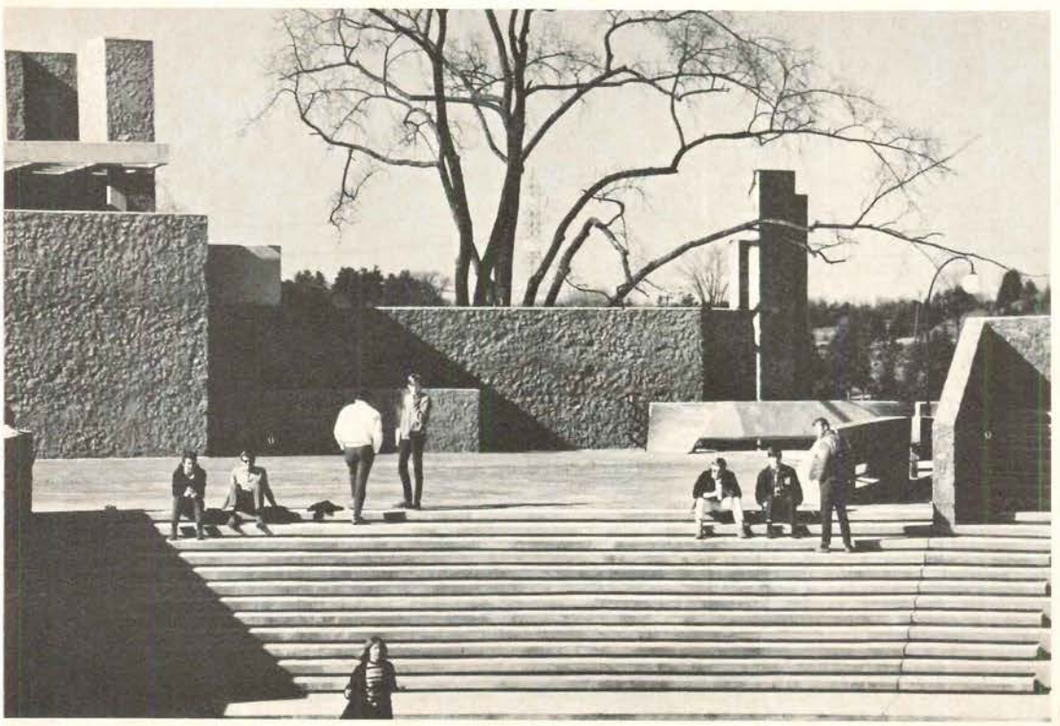
THE LIBRARY AND UNIVERSITY COURT





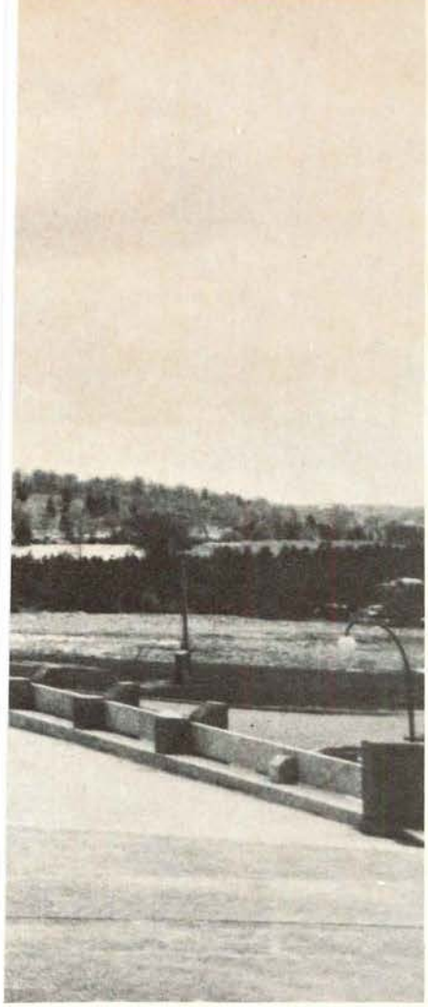
A

B

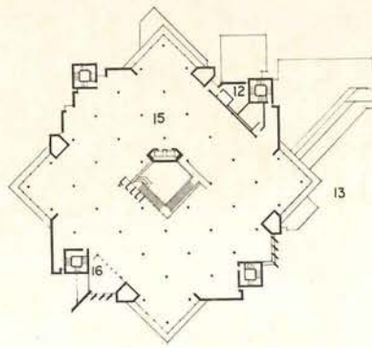


C

The Library and the University Court in front of it (A) are central to the campus as now completed, and will continue to be the main focus as new colleges are built. University Court (C) is considered the major outdoor space of the campus; it is tiered and shaped with its system of steps to provide various directional views and focuses, and may be used for large gatherings. A walkway at the third level (B) leads into a part of the library and serves as a gallery to University Court below. The library sits almost in the water (E), and there is access to the river from the ground level of the library. The principal material of the library is the large-aggregate concrete used on Champlain College, with smooth concrete used for the louvers, horizontal spandrels, and sun shades. The main stair (D) begins at the second level and leads up to the stack areas at levels three and four.



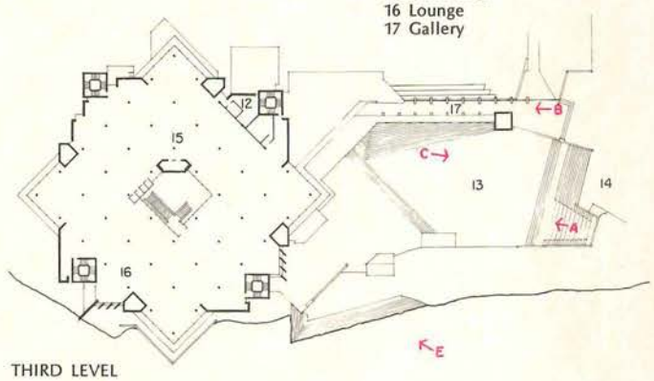
The library plan (right) has been generated by taking two squares equal in size and rotating one 45 degrees to the other, so that eight "corners" are exposed equally on the exterior. One of the implied squares within the library plan has its four corners shattered into many interlocking turns, forming the stairwells, air shafts, and louvered windows. On the exterior, these corners appear as solid masses in the composition, their primary characteristics being permanence—solid, muscular walls of giant aggregate reinforced concrete—and verticality—the concrete walls continuing uninterrupted from one floor to the next, with rhythmic vertical louvers running from ground to roof. The exposed corners of the other implied square are strongly stated in plan as simple 90-degree turns, and its walls are primarily glass, not concrete. In elevation this plan element is expressed in sweeping horizontal lines, thin and delicate, with wafer-like overhanging sun shades. Both squares, in plan, have been rotated about a central stairwell, itself a square, and this stairwell focus is expressed on the exterior by a large glass and concrete skylight. The main entrance to the library is on the second level directly off University Court. On the first level are listening rooms, rare books, duplication machinery and storage, and the first level spaces run underneath the full extent of University Court above.



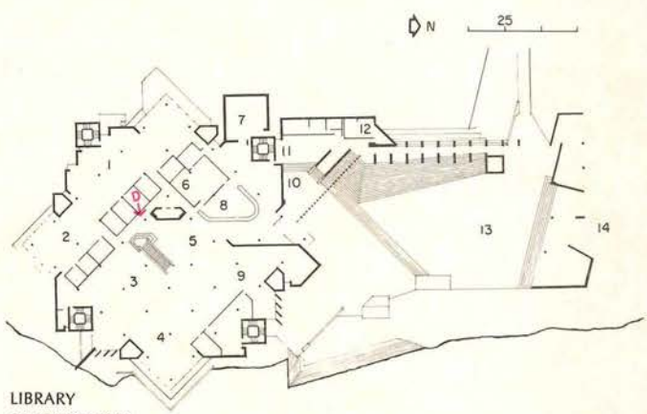
FOURTH LEVEL

LEGEND

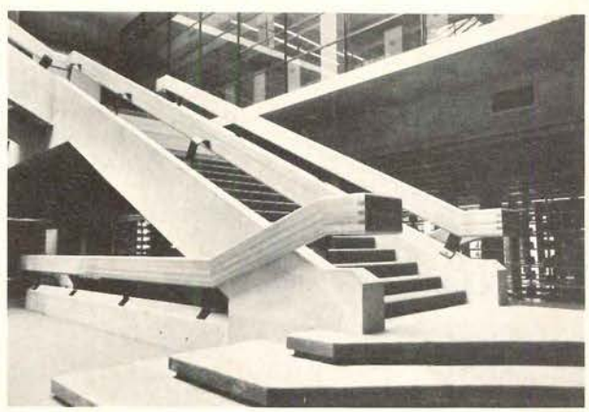
1 Cataloguing
2 Acquisitions
3 Bibliography
4 Reference
5 Catalogues
6 Circulation workroom
7 Reserved reading room
8 Circulation desk
9 Periodicals
10 Lobby
11 Display
12 Washrooms
13 University Court
14 Champlain College
15 Stack area
16 Lounge
17 Gallery



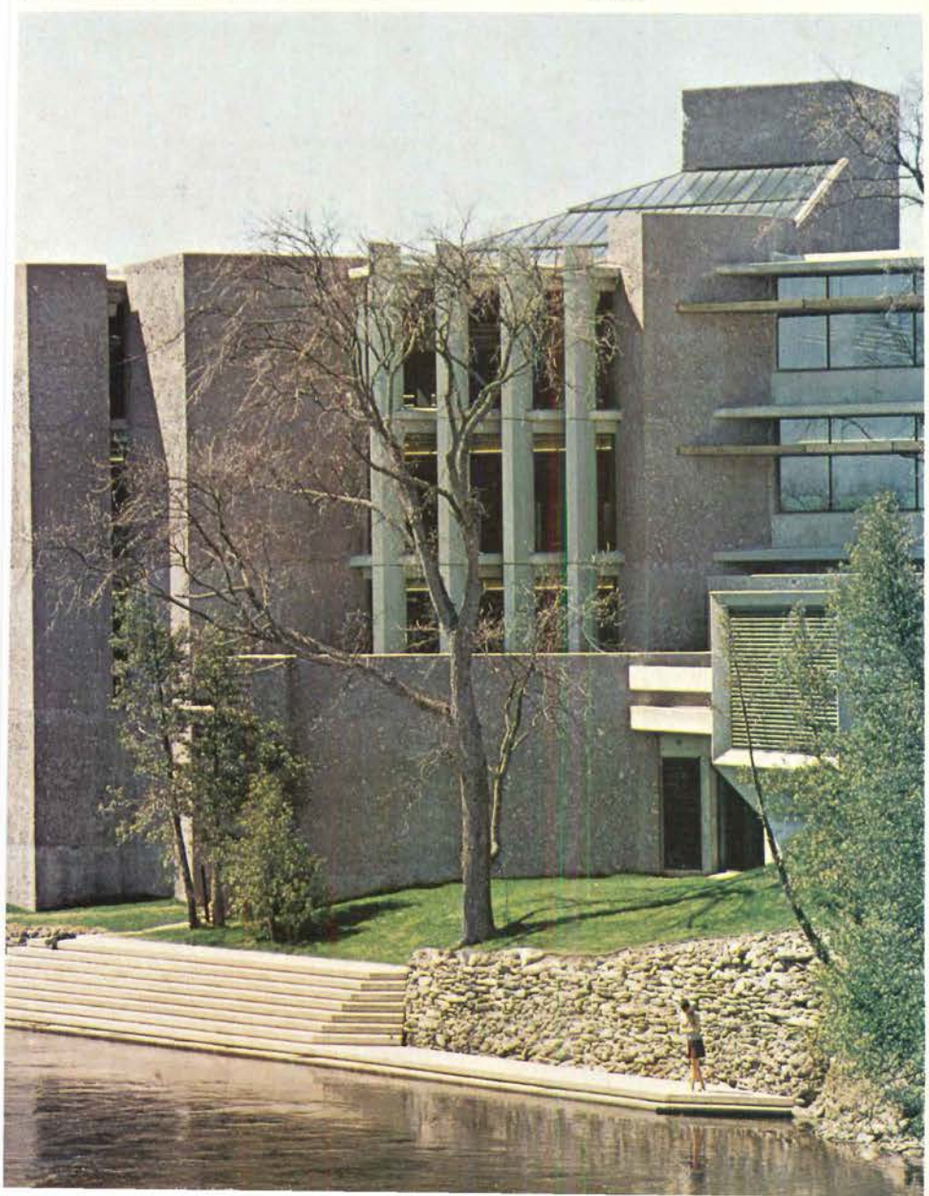
THIRD LEVEL



LIBRARY
SECOND LEVEL

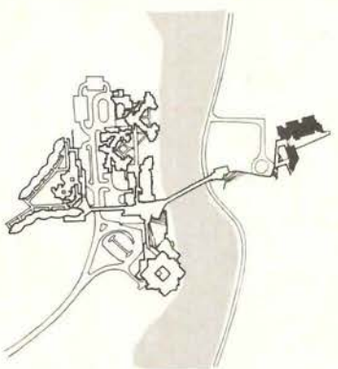


D



E

THE CHEMISTRY BUILDING

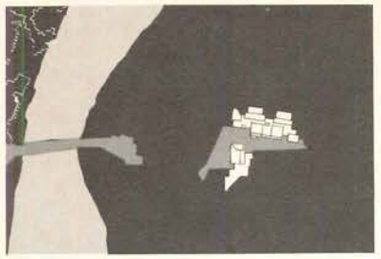


Multi-level chemistry building presents a complex skyline when seen from the main pedestrian bridge (A). Once across the bridge, the path drops down to ground level and to the stairs leading up to the science complex (B). The coffee shop with its wooden pitched roof (C) and (D) contrasts with the exposed concrete used throughout most of the buildings. Stairs become sculptural forms and space definers in the composition, as their treads widen to admit walking on them, then narrow as steeply sloping terraced walls (E).

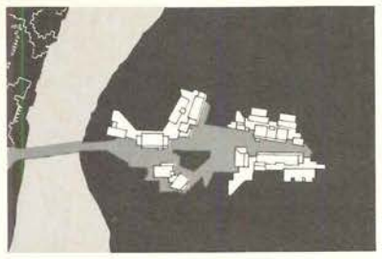
A

B

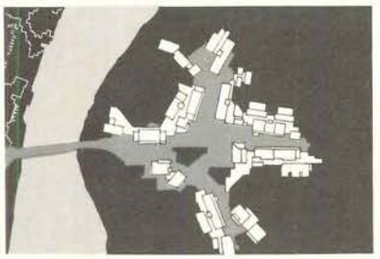
The Chemistry Building is only the first of an extensive series of science and research facilities planned at Trent. The diagrams (right) show three of the proposed six stages in the expansion scheme for Trent's science complex, and how the existing first-stage facilities on these pages fit into the pattern. This first-stage facility will be, when the ultimate development is complete (Stage 6), the most distant of the science buildings from the main circulation bridge leading to University Court. The unused land between the bridge and the main steps, now leading up to the chemistry building, will be completely occupied. The coffee shop for the science complex (right) is between the main chemistry center to the north and several seminar and conference rooms to the south. On the first level below the coffee shop is the main lecture theater for the science center, seating 240. Exposed reinforced concrete is used throughout the chemistry complex, with no giant aggregate added as in Champlain College and the Library. This change in material, plus a freer use of architectural forms to signal functional needs and mechanical systems (such as the "windowless" laboratories, and the many individually expressed exhaust ducts), seems to imply the ideological differences between sciences and the humanities; the science center is "harder" in its materials, more aloof and abstract in its forms.



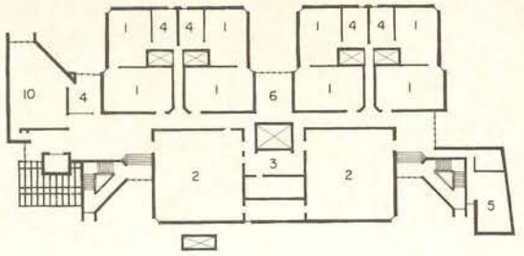
Stage 1



Stage 3



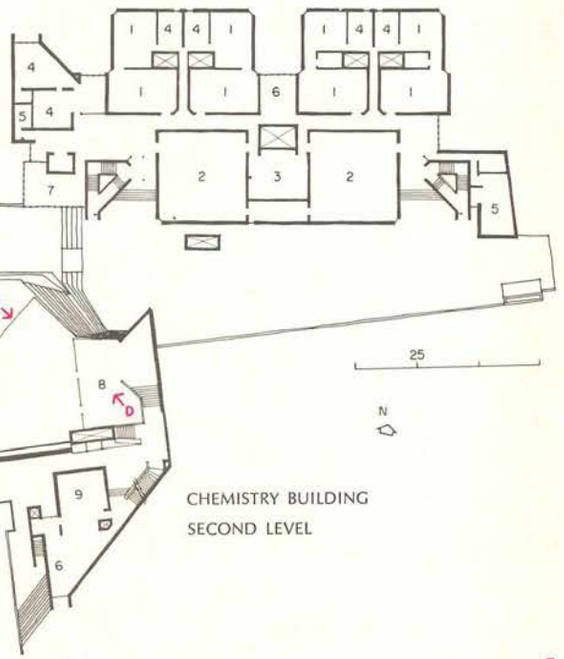
Stage 6



THIRD LEVEL

LEGEND

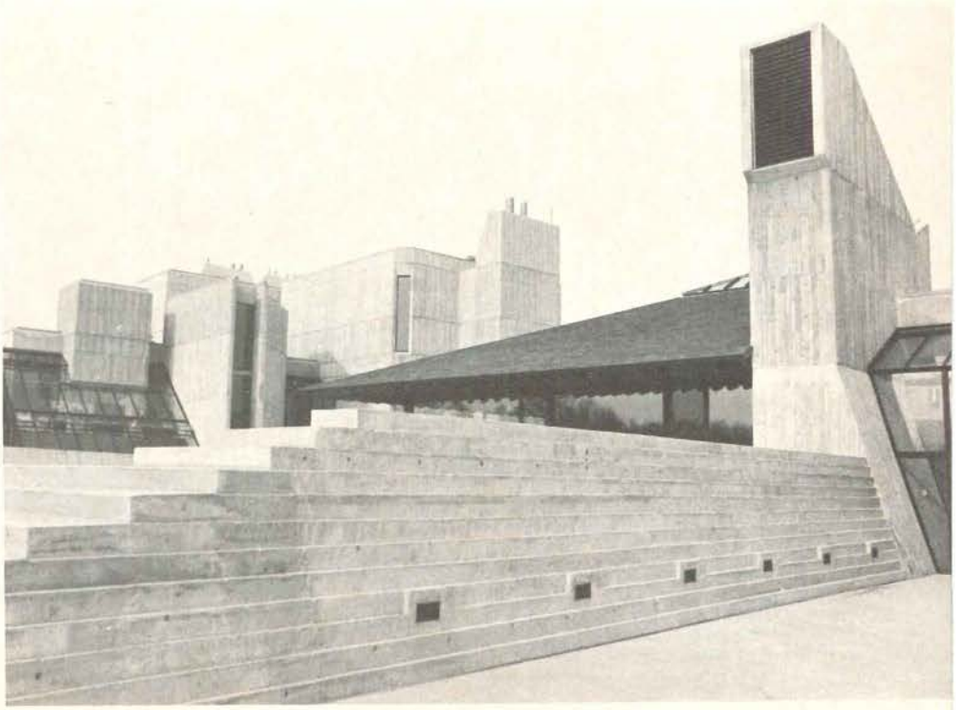
1 Research laboratory
2 Teaching laboratory
3 Storage and preparation
4 Office
5 Washroom
6 Lounge
7 Greenhouse
8 Coffee Shop
9 Conference Room
10 Library
11 Seminar Room



CHEMISTRY BUILDING
SECOND LEVEL

C

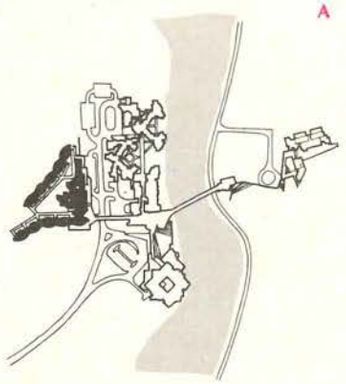
D

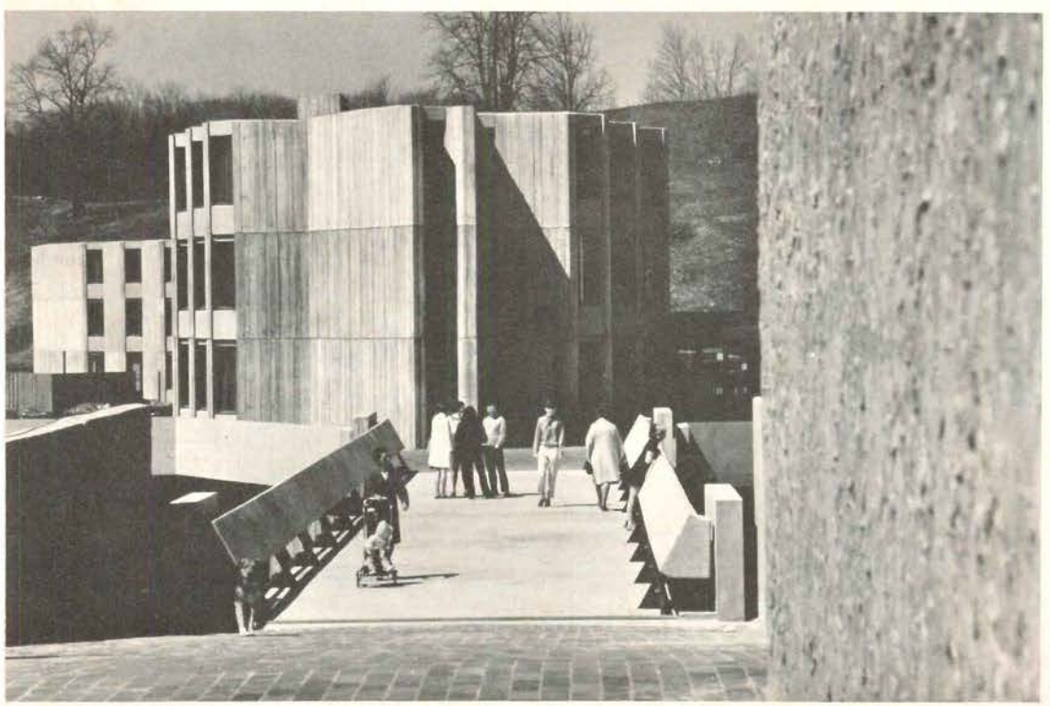


E

LADY EATON COLLEGE

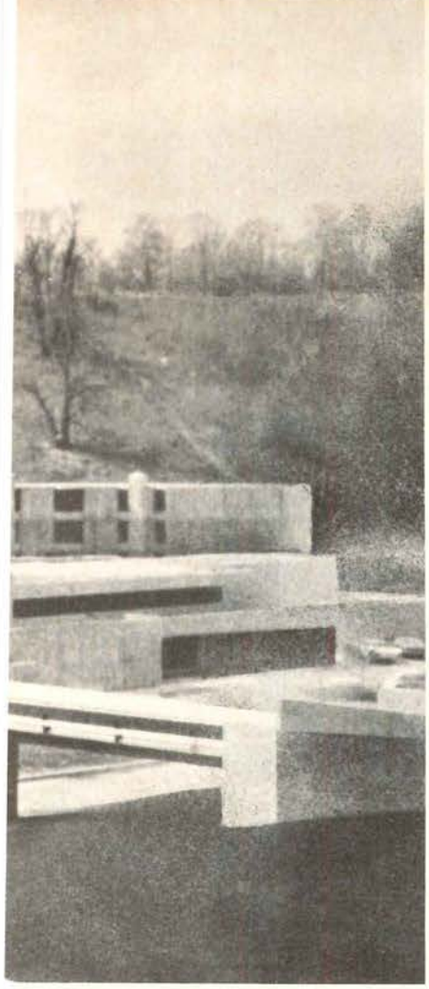
A





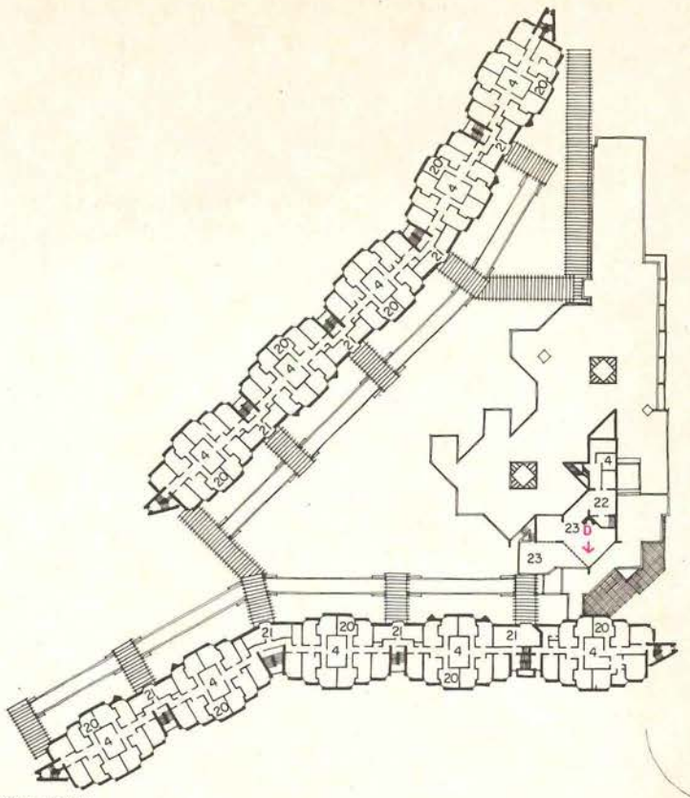
B

Lady Eaton is the newest of the two colleges at Trent, and is primarily for women. It is connected with University Court and Champlain College by a footbridge over the principal automobile road which services both colleges and the library (top photo). Lady Eaton College is roughly triangular in plan, with two sides of this triangle formed by the three-story teaching and dormitory facilities of the college. The third side is composed of the common facilities and larger teaching spaces, in a two-story wing. The main dining hall is in this element, as are the junior and senior common rooms, and the art and music facilities. The dormitory and teaching wings are composed of five linked clusters of rooms, linear and slightly turned to follow the contours of the land. Exterior walkways with low trellised coverings link the entrances of each building together, and are reminiscent of the central covered walkway at Champlain. Champlain and Lady Eaton both have about 350 students each, and housing for about 235 students in each college.



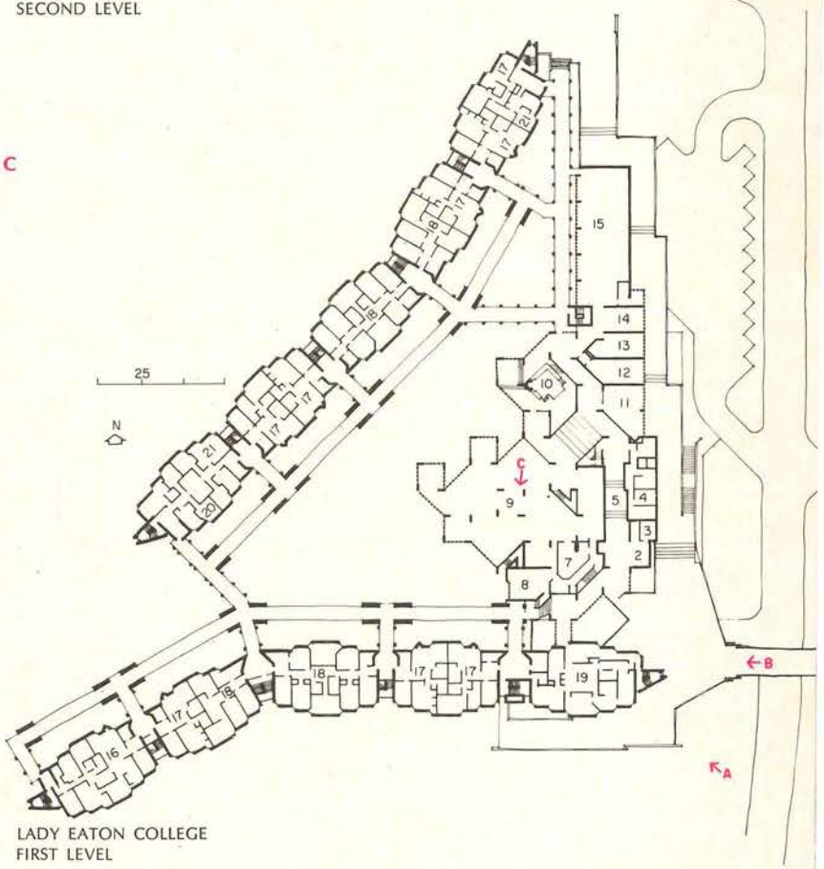
From the library one gets a clear over-all view of Lady Eaton College (A) and a part of the site which will someday become new colleges. The footbridge which spans the road between University Court and Lady Eaton (B) is reminiscent of the bridge over the Otonabee River, at least in its guard railings. The main dining hall (C) exhibits finely worked board-formed concrete inside, and has lighting fixtures designed by the architect. The Senior Common Room (D) repeats the lighting fixtures of the dining hall, and has similar waffle ceiling system. The chairs with rolled arm rests, seats and back were designed by the architects.

The exterior of Lady Eaton is the least successful of the buildings at Trent, due principally to the lack of warmth in its concrete walls, untempered by the large aggregate in Champlain, and by the insistent flatness of its roof, exaggerated by the thin cap between the roof edge and the top of the upper floor windows. The interiors on the other hand, are among the most powerful and effective at Trent, with careful attention to detail, varied ceiling patterns, and their large range of architect-designed furniture.



SECOND LEVEL

C

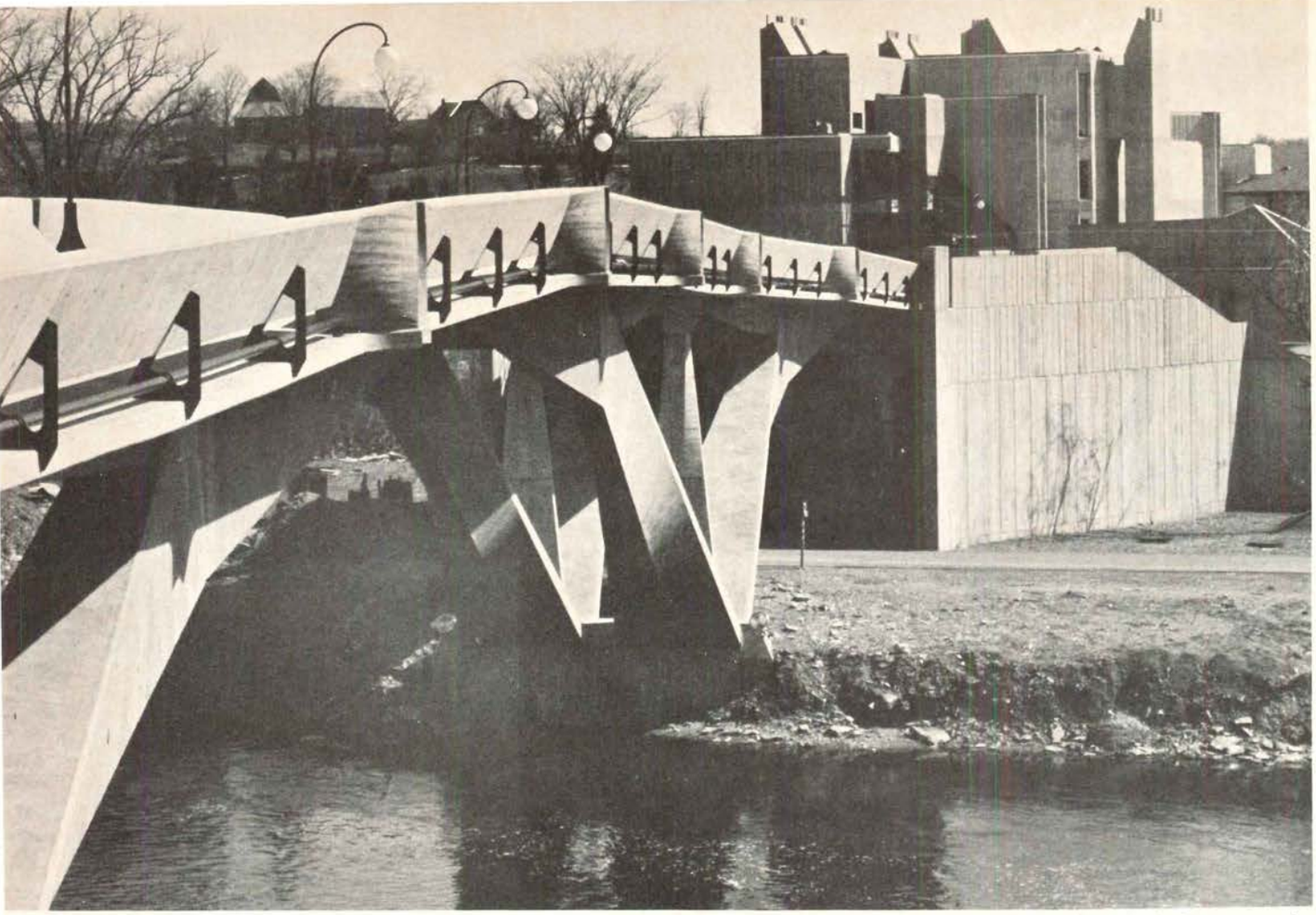


LADY EATON COLLEGE
FIRST LEVEL

D

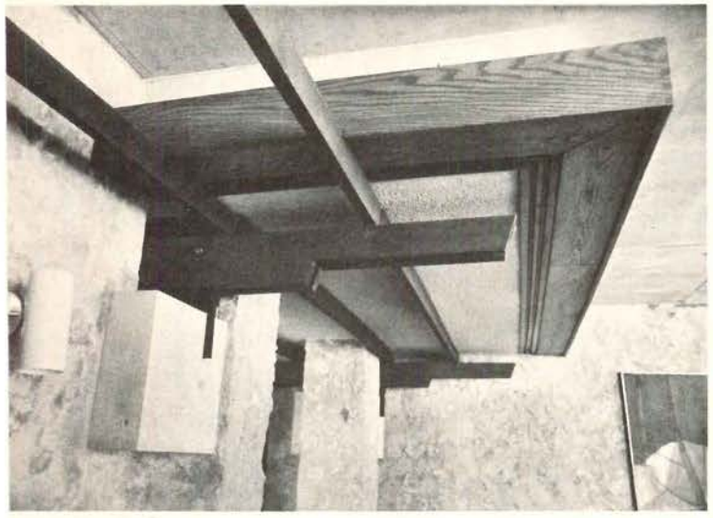
LEGEND

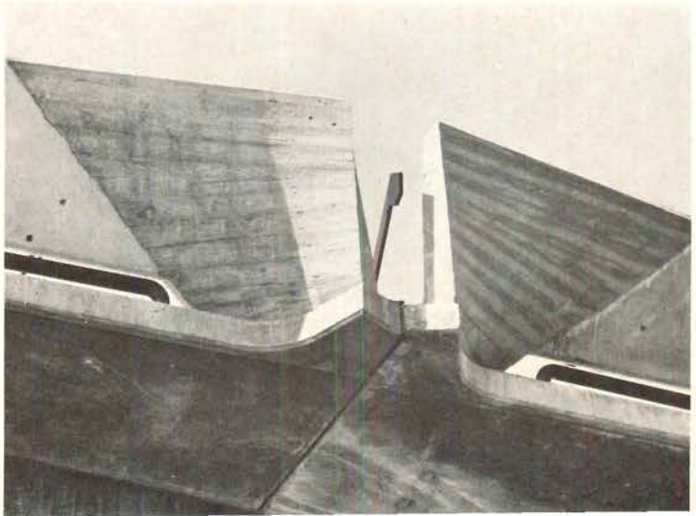
1 Podium
2 Porter
3 Office
4 Washrooms
5 Gallery
6 Servery
7 Dishwashing
8 Small dining room
9 Dining hall
10 Junior Common Room
11 Mixed Common Room
12 Audio room
13 Reference room
14 Seminar room
15 Library
16 Principal's rooms
17 Don's rooms
18 Faculty offices
19 Administration
20 Study bedroom
21 Double study
22 Entry
23 Senior common room
24 Deck



BRIDGE AND ARCHITECTURAL DETAILS

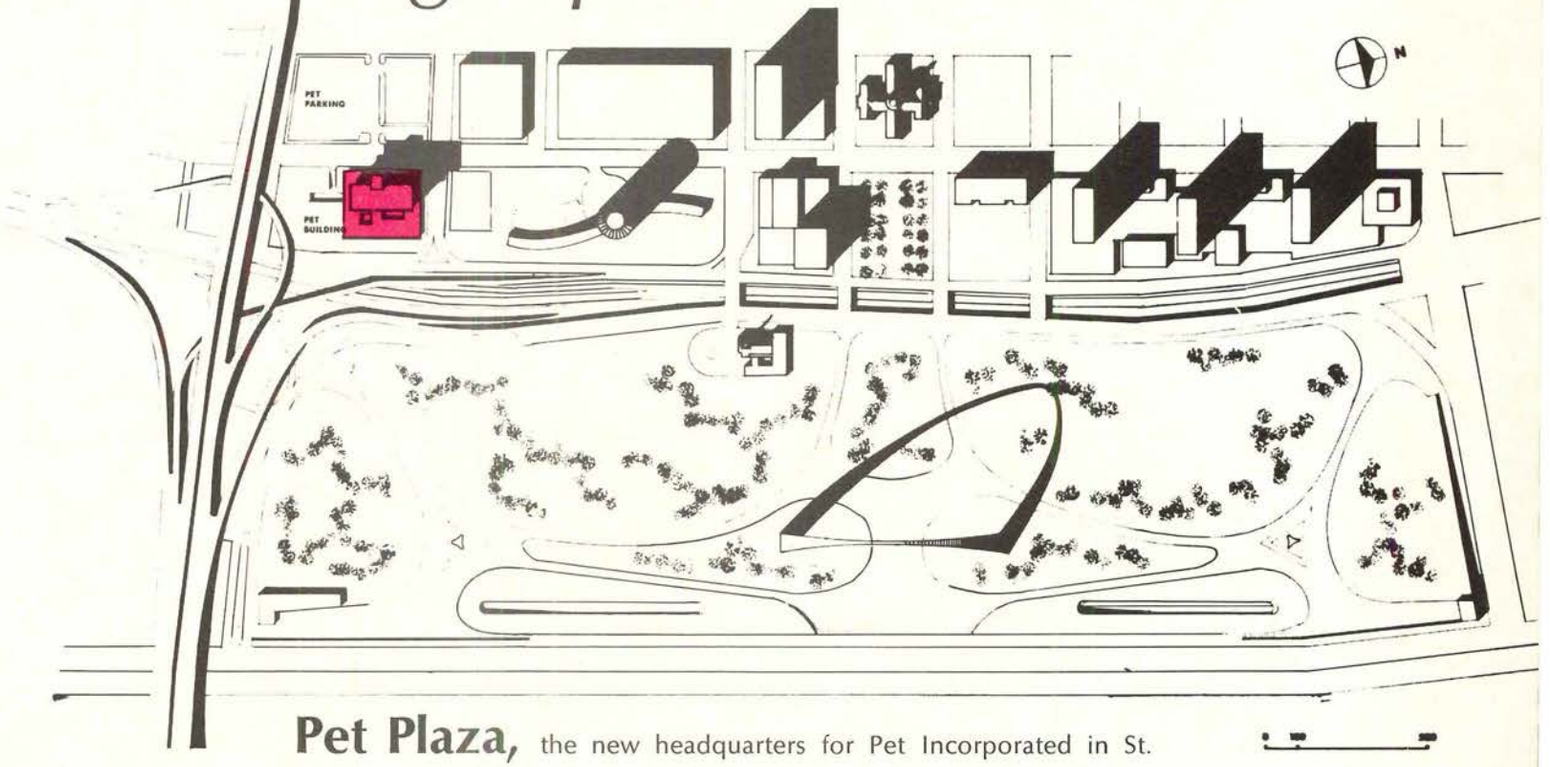
The pedestrian bridge over the Otonabee River has been designed to leave a clear boat channel 50 feet wide by 22 feet high beneath it. Eight major electrical conduits are incorporated into the bridge deck, providing the main energy link between the two parts of the campus. The structural system of the bridge is basically a three-hinged arch, spanning 182 feet, and its material is exposed board-formed concrete. Below is shown a photograph of one of the bridge railing joints, illustrating the careful attention to detailing which exists at Trent University. At left are an interior ceiling and soffit detail in wood, and one of the many fireplaces in Champlain College. The architects designed many of the major pieces of furniture at Trent, both movable and built-in, and were allowed complete control over the selection of those pieces of furniture bought from manufacturers. Furniture selection and attention to architectural details have created a sense of unity and wholeness in the changes of scale from "small" to "large" and from interior to exterior.





© Ezra Stoller (ESTO) photos

A powerful silhouette for a high-speed environment

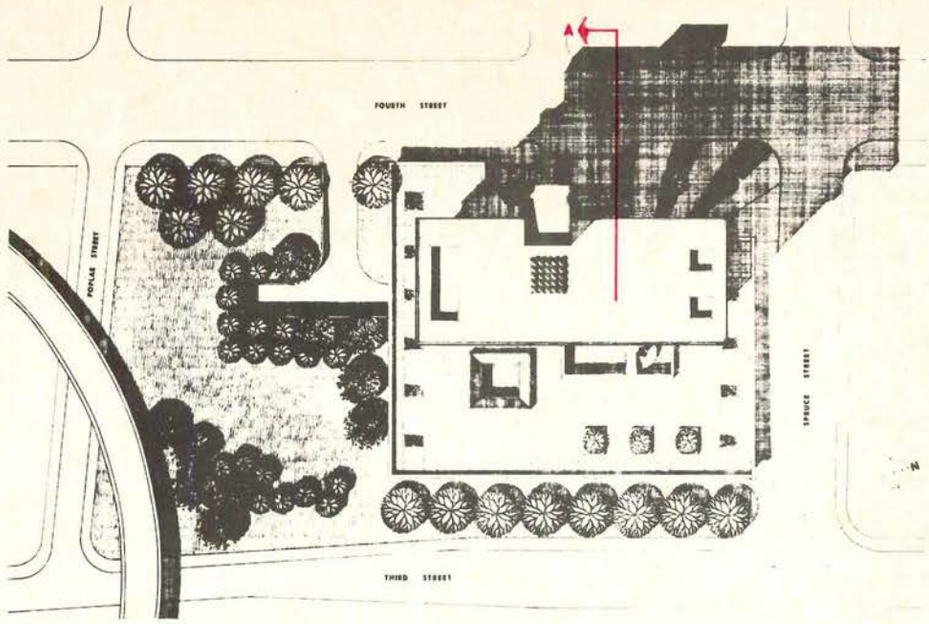


Pet Plaza, the new headquarters for Pet Incorporated in St. Louis, is a singularly forceful and successful architectural solution to a demanding program. Perhaps foremost among the problems was the site. Its location is a prestigious one adjoining the still-developing river-front park surrounding Saarinen's Jefferson Memorial Arch; but it also adjoins the spaghetti-like complexities of the new freeway bridge-interchange which borders the southern end of the park area. Said to be one of the busiest interchanges in the country, thousands of cars cross it at speeds in excess of 40 miles an hour. To create the desired corporate image in this high-speed, "landmark" environment, A. L. Aydelott & Associates, have articulated the building's elements into a bold, expressive statement.

Aydelott's design commission for Pet Plaza was an all inclusive one—down to the most minute interior details and furnishings. Prior to the actual design of the building, the Pet Company engaged Becker and Becker to conduct a survey of the organization's present and projected spatial requirements. This study was used as a basis for determining departmental adjacencies and in compartmenting each floor and future expansions. This led to a series of functional groupings that were ultimately individually expressed to give the structure its forceful, very individual character.

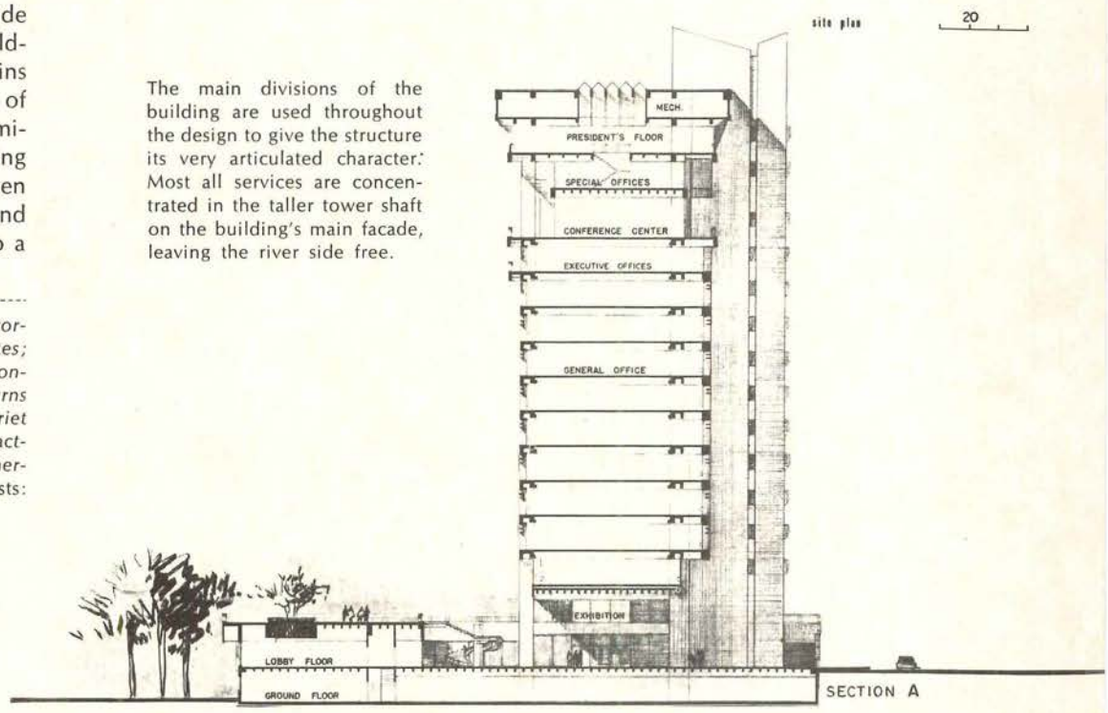
A slope in the site was used by the architects to raise the level of the base almost two stories above grade on the riverside, eastern elevation. This area contains those departments whose spatial needs are greatest but whose functions require little or no natural lighting, such as the computer and shipping departments. Public spaces, inside and out, are built upon this base. The building's homogenous middle section contains office spaces, topped by the projections of semi-public rooms and terraces, and terminating with the swelling crown containing the president's office level. All this has been carried out with meticulous detailing and beautiful craftsmanship, and welded into a very satisfying unity.

PET PLAZA, St. Louis, Missouri. Owner: *Pet Incorporated;* architect: *A. L. Aydelott & Associates;* structural engineers: *Severud-Perrone-Sturm-Conlin-Bandel;* mechanical engineers: *Samuel L. Burns & Associates;* landscape architect: *Mrs. Harriet Rodes Bakewell;* contractor: *G. L. Tarlton Contracting Company;* graphics: *Ivan Chermayeff, Chermayeff and Geismar Associates;* space analysts: *Becker and Becker.*



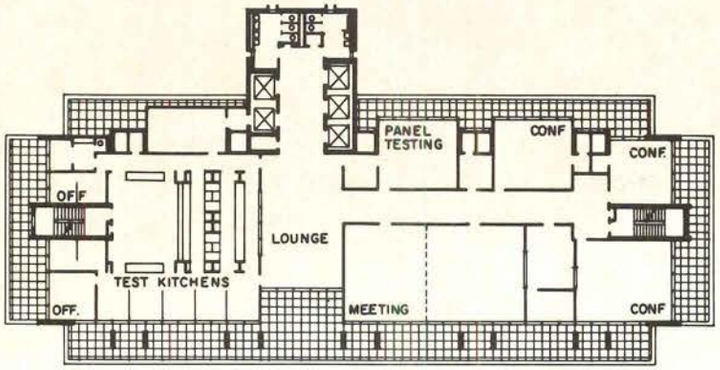
site plan 20

The main divisions of the building are used throughout the design to give the structure its very articulated character. Most all services are concentrated in the taller tower shaft on the building's main facade, leaving the river side free.

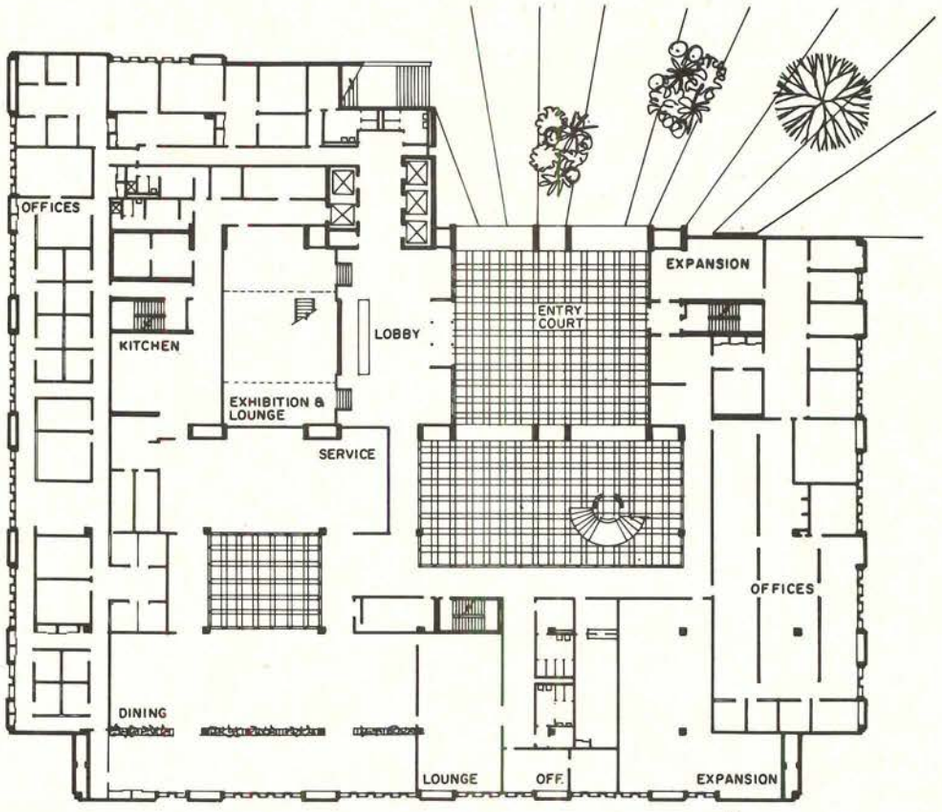


SECTION A

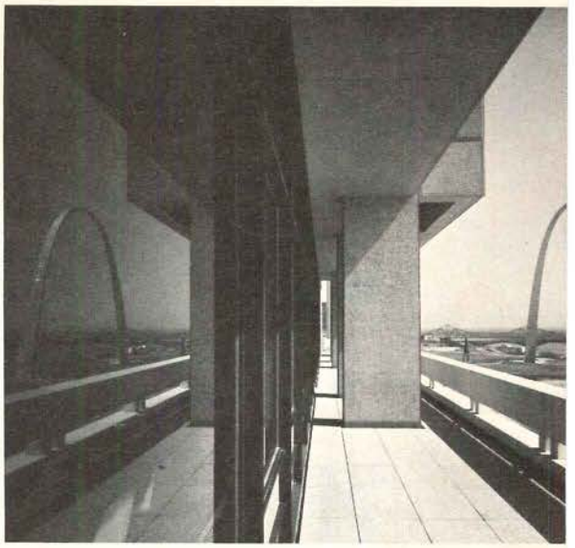
The main entrance to the building is through a covered plaza, which in turn opens on a court and, via two well designed exterior stairs, to a higher terrace where the river and arch may be viewed. These outdoor public spaces are supplemented indoors by big spaces on two levels for public information and displays.



11TH FLOOR



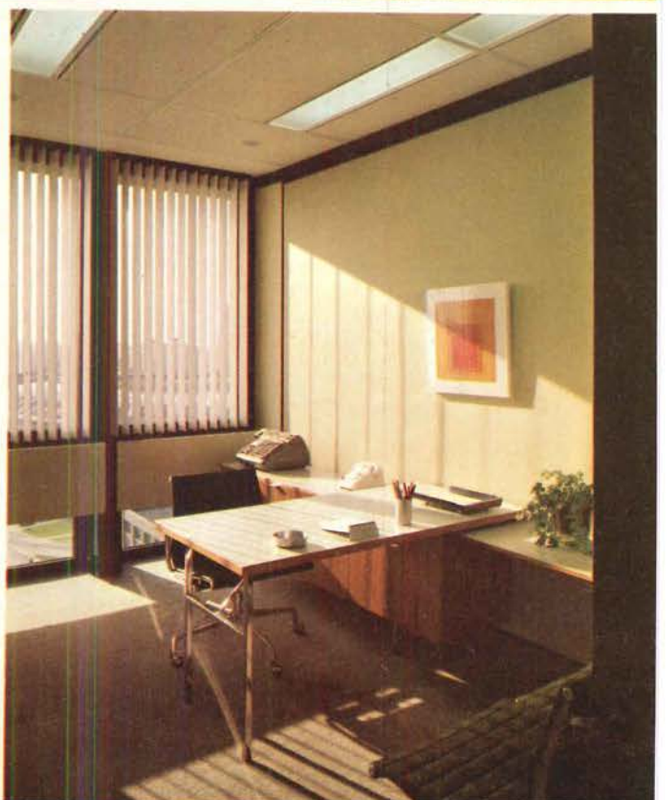
LOBBY FLOOR

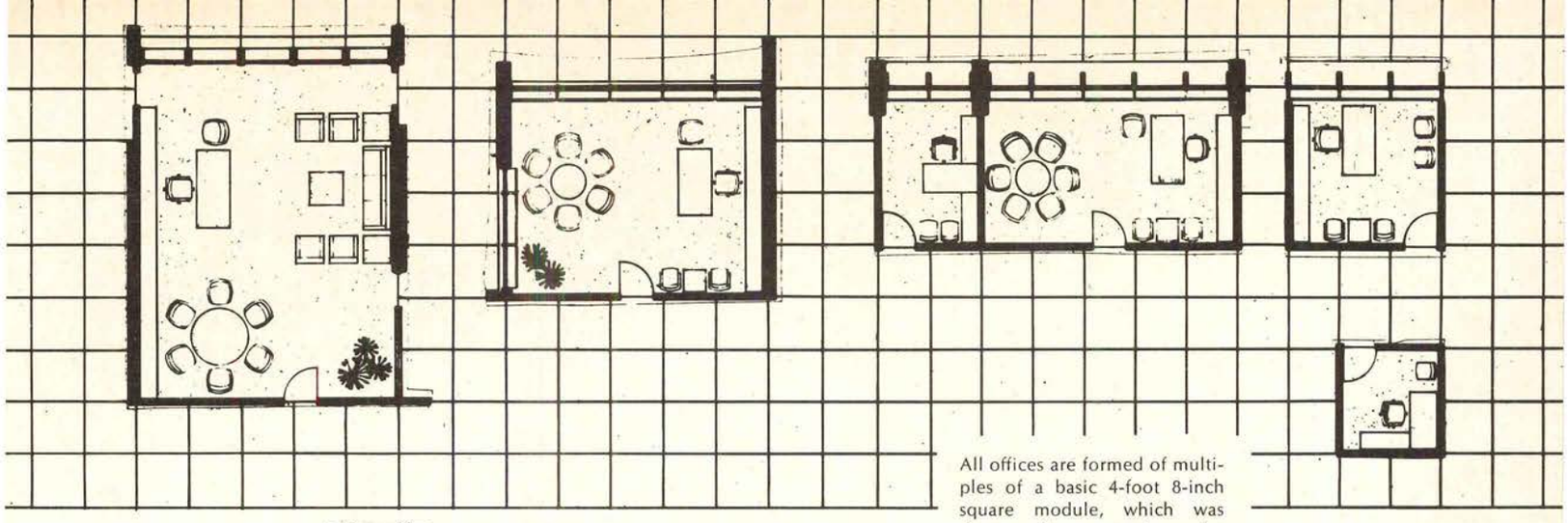


The 11th floor of the building, just under the crowning executive floors, is allocated to semi-public rooms for meetings and other activities, and for the test kitchens. Balconies surround this floor for higher and different views as shown in the photos above.

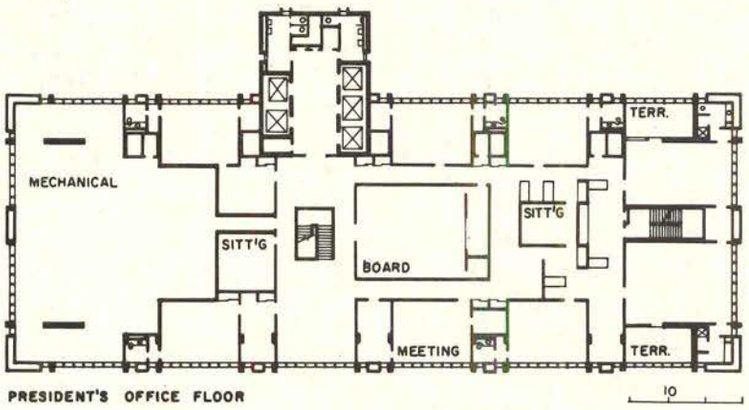
From the radiating pavement pattern of concrete and granite and the covered court, the visitor is led into a large and dramatically daylighted lobby treated as an "indoor courtyard" with display levels which lead up to the huge view terrace at the back.

On the working floors, the interiors are as carefully designed as in the larger public spaces. From the smallest office to that of the president, quality varies only in quantity and size. In general, the more permanently assigned offices are on the perimeter of the building, and more flexible partitioning placed in the center. In the perimeter offices, the air conditioning induction units are placed in the exterior walls above low hopper windows to permit individual opening for fresh air. Sun screens are incorporated in the design of the exterior precast panels. The end effect is that of a glass window wall—but without some of the disadvantages of total glass.

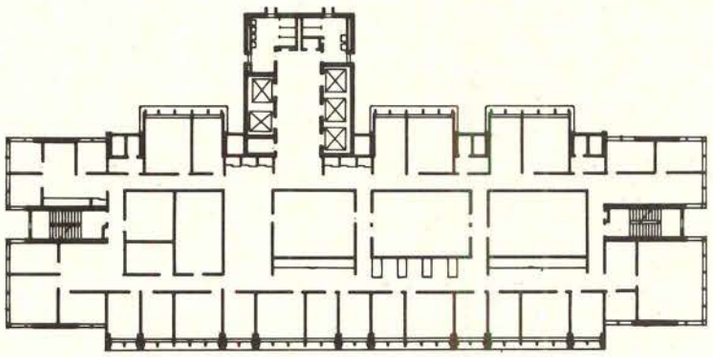




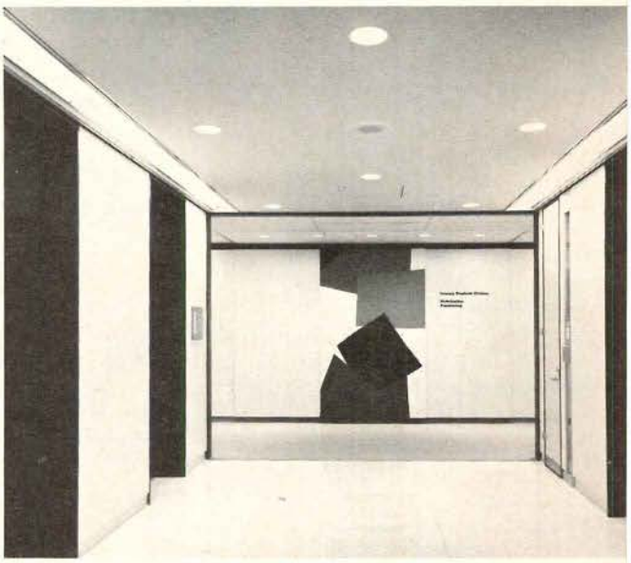
All offices are formed of multiples of a basic 4-foot 8-inch square module, which was chosen after research as the most efficient and economic.



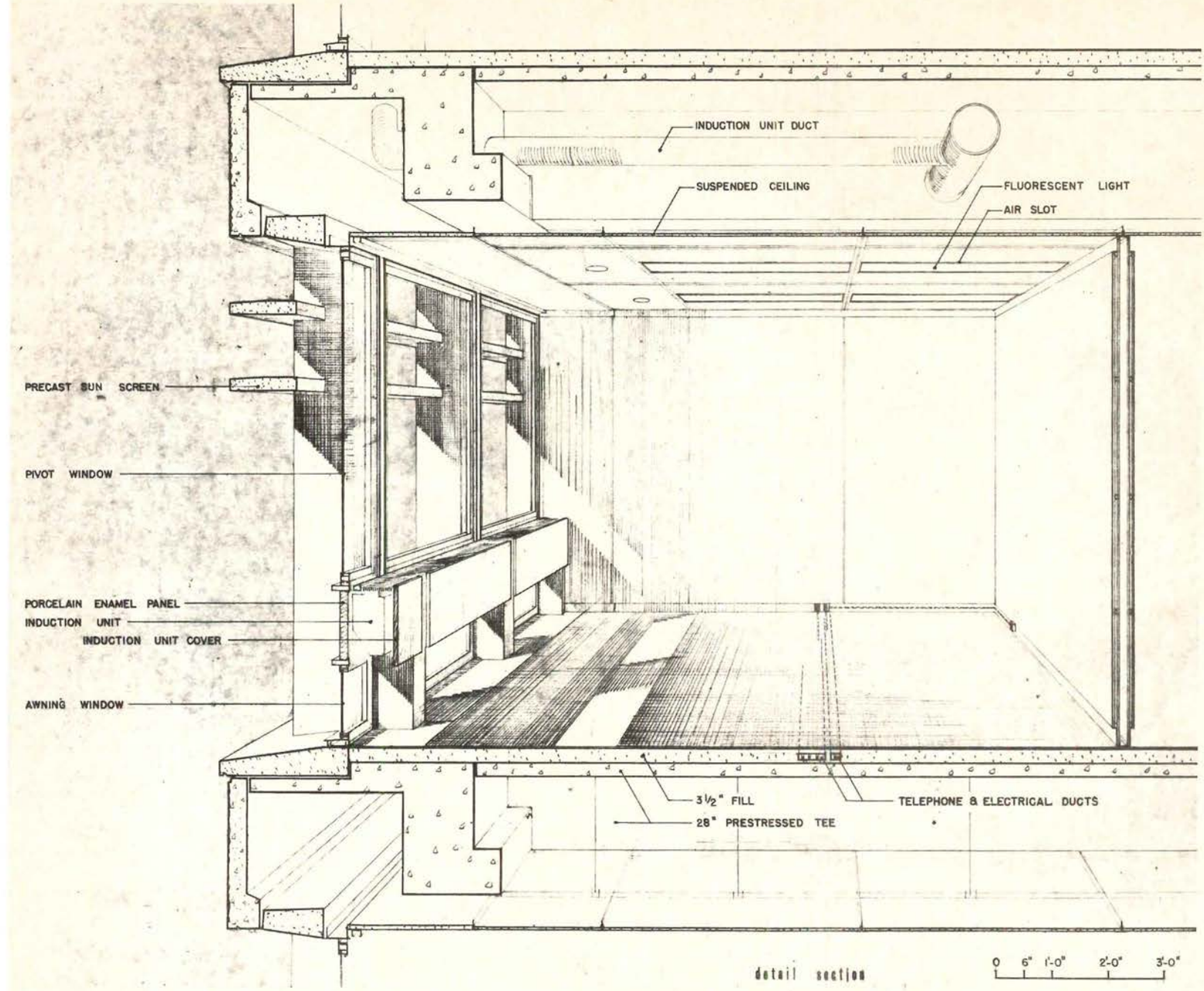
PRESIDENT'S OFFICE FLOOR



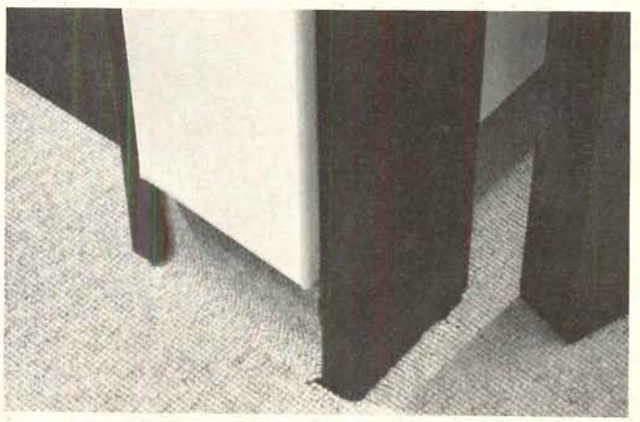
TYPICAL OFFICE FLOOR

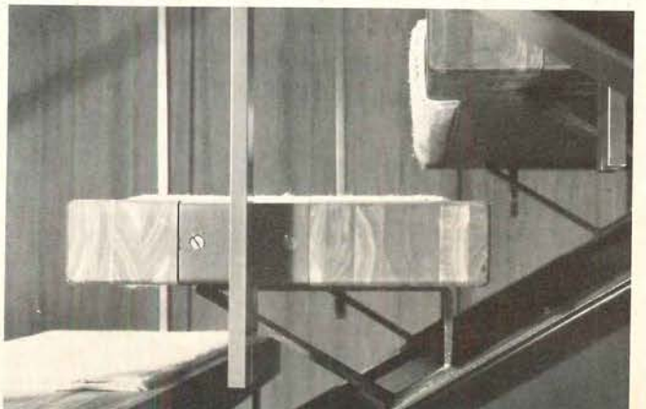


Art and graphics by Ivan Chermayeff play an important functional and decorative role throughout the building, as can be seen here in a typical office floor lobby and in the board room. Each mural is a subtle variant of a large one in the main lobby.



To obtain the maximum flexibility in the Pet Headquarters, a structural system was designed to provide a total effective floor of about 10,000 square feet, unobstructed by columns. Exterior poured-in-place concrete columns and shear walls support the tower section; floors are supported by precast, prestressed concrete tees, spanning 49 feet, and resting on perimeter poured - in - place concrete beams. Mechanical systems and partitions, all based on the 4-foot 8-inch module, are very flexible. Fluorescent lighting has been placed in ceiling panels, with air conditioning and heating air slots surrounding the lights. As can be noted in the wall and stair detail photos—all was executed with great care.





IT'S NOT JUST THE CITIES

by Albert Mayer

Part Two:
Megalopolis—multiplying the intolerable

Why do we stand for it?

Why don't we do something about it?

The second article of a continuing series by architect and planner Albert Mayer raises these questions and many others in an incisive analysis of the costs, both human and economic, of continuing to do things as we do

1 Obsolescence of current planning vis-á-vis the new problems and scales: and opportunities.

The desperately frustrating character and effects of planning and development in the U.S.A. as of now are nowhere as well illustrated or epitomized or caricatured as in the overdeveloped and still rapidly overdeveloping areas or corridors of the predicted-impending megalopolises. The areas in question are, of course, where so high a proportion of Americans already live: the "Atlantic Corridor", Boston-New York-Washington-Richmond; San Francisco-Los Angeles-San Diego; Milwaukee-Chicago and points east and south.

According to trend-figures, the United States will, in the year 2000, have a population of about 310 million. This means about 110 million more than now; an increase of 55 per cent. Out of this, say the trend-extrapolators, 174 million will live in these areas or corridors. These are to absorb most of the predicted population growth. That is, there is to be ever greater concentration in the already over-concentrated areas, in numbers and in percentage of the nation's people. This, if it comes to pass, carries with it accompanying over-concentration of air traffic and ground traffic, air and water pollution, proliferation of wastes—and their cumulative inter-effects.

The acceleration and piling up of new factors and scales have made our current driving forces and our planning-development obsolete. The new kind and greater dimensions of thinking and planning needed, the newly recognized or not yet recognized emerging complex of factors, the needed redirection into new areas and regions, the imperative urgency: these are the subject of this article.

By and large, whatever planning is now done is devoted to specific *limited* undertakings which may or may not be excellent or desirable, may or may not be well conceived and executed in themselves. But what is characteristically absent is consideration of the *total* situation, or what the *total cumulative result* must be of these individual commitments and decisions taken in a frenzy of limited ambition, ambition to accomplish limited and conventional objectives.

What is almost completely lacking is any burning moral life-urge to consider what are the immediate collateral or side effects, and the *total* non-immediate and *ultimate* effects. How are the quality

Part 1 of this series, "The National Continuum of Urgency and Opportunity," appeared in June 1969, pages 151-162. In Part 3, Mr. Mayer will discuss "nodes on the continuum" in terms of their function as magnets and counter-magnets for effectively altering urbanization patterns.

and character of living and of personal development affected by the cumulative unplanned deluge of what are often planned individual projects, some of them quite large or even of Model City or city scale; and sometimes handsome, too. What stands behind this approach, or underlies it, is the obsolete but still unexpended belief in, and drive for, growth, expansion, quantity-as-such, new "FIRSTS." This is the unspoken self-evident underlying premise of even the best Philadelphias.

"Are you assuming ever-continuing growth as an inevitable condition and making this workable as your only job?"

This is expectably the frame of mind of the entrepreneurs whose life-drive it is to undertake the individual, speculative, profitable enterprises ranging from single skyscrapers to urban renewals. But, more unfortunately, it is also, in general, the unstated underlying state of mind of the operative planning profession and of public officials, elected and appointed. And *still* more unfortunately, of the citizen-in-general also. The unexpended momentum of the desire for spectacular growth, and especially of beating out other areas, is still unquestionably dominant.

In Chicago, the Quarterly Magazine of Mid-America, we find (Winter 1968 issue) the editorial "Slipping to Number Two": "Now we face the disturbing fact that O'Hare is about to lose its Number One position in runway capacity among airports to Los Angeles International. Runways under construction there will soon give that city airport a greater capacity than ours and Los Angeles will move ahead of Chicago as a great air transportation center. . . . Chicago needs additional runway capacity at O'Hare now, lest we slip from our position of leadership in air transportation and suffer the resulting damage to the city's economy and civic pride while waiting for the sorely needed third airport."

"The acceleration and piling up of new factors and scales have made our current driving forces and our planning development obsolete. . ."

So powerful are these impulses still that until now people have not stepped back from the center of this welter of activity to weigh, dispassionately and imaginatively, the daily-visible side effects and the newly predictable ultimate effects. The highest aspiration of our most advanced pragmatic planning as of now is the effort at a more orderly jig-sawing of *open-ended growth,* of the ever upward curve of population, activity, land-absorption.

We will first epitomize in two extremes the ill effects of this concentration on essentially small objectives which produce the further growth of the already overgrown. During this process we must always bear in mind, and we will later bring up more vividly and forcefully, this point: that in this 20th century with its affluence and resources, its magic communications, electric power grids (vs. the old coal technology concentration), cultural diffusion, technological excellences, we can create a far more satisfactory alternative environment in New Regions in this country. And it can be done at much *less* cost than the cost of simultaneous stretching out and concentration in the "cut-over" metropolitan regions.

We will then get around to considering why both planner and ordinary citizen ignore the challenging alternatives in other parts of the country; and more extraordinary, why they accommodate so readily to unnecessary and expanding ills and tensions of what is being done on their home grounds.

2 The emerging realization: multiple overloading of total region and mega-region.

Consider first the cumulative ultimate effects. These are placed first because such consideration requires new thinking and needs sharp driving home. Take two examples of major undertakings (though "small" in the total-regional context in which we need to be thinking).

One is a composite of two spectacular projects, to extend out the shore lines of Manhattan Island at its south end by earth-fill operations. The westerly "Battery Park City" will contain some 200 acres (91 acres of land-fill); 19,000 apartments; 5 million square feet of office space. The easterly extension of downtown Manhattan, a later step, calls for 20,000 dwelling units, 15 million square feet of office space.

The other is the proposal to build a new city in the long-fallow Jersey meadows, a more or less self-contained city of residence, industry, commerce, recreation, park. Let us assume, as I am ready to do, without closer specific examination, that these are admirably planned, handsomely designed, will be socially and economically successful; and in the latter case at least, have reasonably low densities. Ingenious, bold, exciting; thus, a feather in everybody's cap (with the added glamour of technical virtuosity). BUT IS IT? Let us see.

We add in the New York region, in two concentrated spots, five to six hundred thousand in population as well as millions of square feet of office space. This means not only added transportation requirements within the city and the region. But more significantly and more especially the office buildings, housing national and international business, and the hotels, add a new load to needed transportation *into and out of* the region: largely air travel; and internally, road travel and rapid transit serving it.

We are already heavily and dangerously overloaded. For over ten years the New York Port Authority has been desperately and vainly attempting to find a site for a fourth airport. Every passenger can attest many-houred delays. And now a fifth airport is demanded in such responsible, knowledgeable quarters as the prestigious Metropolitan Transportation Authority. Thus we will be hobbling along in bad shape for at least eight years until the fourth airport is ready. And we may in fact *never* catch up, if we let volumes increase, indefinitely pile up: or, indeed, dynamically encourage such increases.

This warning that we may never catch up should be considered not just an ill-humored exaggeration, but a measured statement to wake us up. Consider two quite dead-pan unwitting confirmations. Mayor Allen of Atlanta, in a happy interview in early 1969, reviewing his city's progress under his administration, notes: "We were seeking completion of a downtown expressway system. . . . Since then, it's been completed, and today it's not only used, it's over-used." (This is five years after completion.) Putting a further point on this: In April 1969 a rapid transit busways and express road system was worked out for Atlanta—capital cost to be $2 billion. This is, too, an installment, adequate to only the year 1983. In connection with Newark Airport, a $200-million

expansion was started in October 1967. A report-analysis by William E. Burrows (The New York Times) noted it will be "inadequate the day it is completed." And, "Forecasts of passenger demand have been very much below the eventual experience in the past. . . . It was predicted that 3.5 million people would use Newark in 1966. The actual figure came to slightly more than 5 million."

In the matter of air and water pollution we find ourselves deep into a situation, far from answers to even present conditions, let alone additions. Knowledgeable ecologists and atmospheric scientists are gravely pessimistic as to whether we are not dangerously and irreversibly reducing oxygen content in the atmosphere, interfering with what we have hitherto assumed without worry to be the eternal inviolable operation of photosynthesis, on which our existence depends. And consider the inexorable multiplication of airports, facilities, operations, and accompanying multiplied ground travel. As additional or side effect, these generate fumes, exacerbate air pollution. Note another example of this negative inter-play between environmental elements. Presently the incidence of car ownership in the megalopolitan cores is comparatively low due to poverty. During the next decades, incomes will rise; car ownership will rise markedly. So, of course, will the contribution of cars to air pollution. Similarly, we all—in city and suburb alike—face the newly developed land pollution: of more garbage and refuse than we can dispose of, the necessity to dispose of it at unprecedented distances and expense.

And we must bear in mind that the three spectacular additions to developed lands which have been mentioned are just symbols or samples of such ingenious devices of regional overcrowding. Note, for example, the recent popularization of air rights over highways, of which Brooklyn's linear city was proudly a major one of many examples over the country. Chicago is embarking on an air rights development in the central area to be built over 50 acres of the Illinois Central's tracks: office space for 45,000 employes, 17,500 housing units. So we are adding violently and spectacularly to population and employment at the center, as well, of course, as by the usual unnoticed crop of innumerable individual office buildings all over; [1] as well, of course, as the normal drone of development on the outskirts and in suburban areas. *And* New York merely stands for impossibly jammed O'Hare Field in Chicago, International at Los Angeles, and *their* concomitants.

A run-over of the Washington area in the Atlantic Corridor shows the same galloping and eager course into total-regional over-stress: In the District of Columbia itself, in the environs, and in the whole Washington-Baltimore area. In the city (District of Columbia), there is predicted for 1985 a total of 124,400 office workers as compared with 56,000 in 1966: an increase of 120 per cent. The government component is almost half, and its projected rate of increase almost the same. The government increase at least could be controlled and redirected away from the Washington area, with many advantages, if a determined national attitude-national policy could be crystallized. According to trend projections, hotel rooms are to increase by 4000 rooms to 8550 or 90 per cent more.[2] Of course, as noted above, these carry along the inseparable fantastic increases of airplane and auto traffic.

The settlements around Washington are showing even more phenomenal expansion-concentration: Arlington-Alexandria, Rosslyn, Silver Spring as examples. And it is predicted that by 2020 the Washington-Baltimore area will have become one solid urban area. Farther on in this article, I shall discuss briefly one of the "millennial" effects of such expansion-solidification; in a later article, many others. It is these total considerations, becoming increasingly evident in dangerous installments, which are still ignored in our obsolete decisions and obsolete planning.

We must notice that even these out-size figures are not at all final or terminal figures. Whether it's the year 1985 or 2000 or 2020, it is a rather arbitrarily selected point on an upward graph, which simply means we are shooting ambitiously upward. The selected year is simply a way station, though it may *seem* to have a more definitive or terminal sound. So, all we're doing is establishing a sharp upward increase of momentum which we won't be able to taper off when it thus achieves the steeper upward slope. The time to start planning in terms of limiting total regional growth is now. In connection with the Washington figures, there is a wryly amusing situation. In Regional Report of January-February 1969, published by Metropolitan Washington Council of Governments, we are told that the population of Metropolitan Washington "by the year 2000 will be between 6.7 and 8.9 million persons instead of the preceding estimate of 5.3 million" made in 1966. Current population is 2.8 million.

Note the explosive growth, on any of the projections (somewhere between 90 per cent and 320 per cent!): even the lowest. And note the lighthearted *range* of estimates: a *difference* of almost 4 million! How this underscores the absurdity of second-guessing trend, the necessity for planning as control and as goal, instead of just being buffeted on a wild sea of speculative-trend figures.

"The highest aspiration of our most advanced pragmatic planning . . . is the effort at a more orderly jig-sawing of open-ended growth, of the ever upward curve of population, activity, land absorption. . ."

What these symptoms and situations all add up to, in thinking, planning, development action, is that we must formulate and embrace a new doctrine: the now-emerging likelihood of *overloading a whole region* and adjoining regions (corridor). We must start to think and to act on a policy of limitation of *regional density* and *regional capacity:* and on the possibility of regional breakdown or crack-up. This means that there must be a top limitation in the overdeveloped regions or corridors on the total of population-business-industry-automobiles-air traffic: *on the total complex or composite* of interacting and inter-accumulating factors, whose limits will be exceeded only at our future irreversible peril. In short, we have got to be vitally thinking *and acting* in terms of a much larger frame of reference in space and time than we are even on the edge of doing.

"The time to start planning in terms of limiting regional growth is now. . ."

By the same token, the *nemesis* of our galloping future is thinking and acting in terms of the single project, the single measure, even if large-scale. The crucial thing is the total interacting complex. In

"Are you just a bystander who plunges into the fray, or are you a total thinker and seeker?"

the case of the environment at least, nothing is more misleading than that "It's the last straw that breaks the camel's back." How delightfully simple that would be. It's the long-time, far-flung loading on of many varieties of straws that start to irrevocably weaken the camel's system, doom the environment, unless we waken sharply and act, viscerally conscious of all.

If we do that, think through alternatives in new regions, *and* start implementing them resolutely, we can strongly begin to hold down the growth of Megalopolis, concentrate on the quality of working and living there, use our technology for more worthwhile purposes, enhance our current environment to real livability. In such a dual program, we have a creative challenge in the old areas.

"The challenge is to transform the dynamics of ever more growth . . . into the dynamics of excellence. . ."

The challenge is to transform the dynamics of ever more growth not into stagnation but into the dynamics of excellence: to the creative reclamation of the Potomac, of the shoreline of New York, of the decayed areas, physical and human. Of course, we've got to do more than just move to new areas. Of course, we must first provide for *some* residual growth where we are. Much of the growth prediction is due to local natural population increase in the metro areas. *And* we've got to change the national attitude of growth-mania. Miami has now set its heart on the greatest airport in the world, ultimately dwarfing even New York. Thus the whole feverish cycle all over again, complete with mountainous land costs; in areas pretty-recently "new." A newer and possibly an even more dire example is Phoenix, Arizona. The Phoenix region, from the beginning of its boom, is heading at breakneck speed in the wrong direction: and, indeed, in all directions.

The fact is we have not only got to tame *Megalopolis*. More difficult, we must transform *megalomania*, become aware of its deadly penalties.

Coming back to our two examples in the light of this thinking, I have these alternatives to suggest to them:

Create great regional parks: the green heart of the metropolitan area or city-region, updating for the 20th and 21st century the same kind of seminal enterprise that Olmsted created for the city in New York's Central Park in the 19th century, that our national parks partly embody in their remote areas.

Develop them in some such fashion as intended. But, take effective measures so that they don't simply *increase* the total population-business totality, increasing regional density and continuousness and air travel, as is typically the case now. Require and effectively implement a thesis of equivalent or at least partially equivalent diminutions elsewhere in the region, decreasing local over-densities elsewhere. Use these areas as a God-given and man-consummated receptacle for numbers of present city dwellers of all incomes and races. The same applies to the newly discovered resource of air rights: splendid as a relocation resource, as needed parks; deadly in the form of more and more building up. There is effective precedent for such kinds of measures in the limitation on new office building in London; in the absorption of office building, industry and workers into new towns, by and large from predetermined "decanting" of over-urban areas: i.e. by and large, planned *interchange*, not total *net additions*.

The emphasis up to here has been on the negative cumulative irreversible effect of *regional overloading* even where individual projects may within themselves be well carried out.

So much for now, for the lethal present and long-term, soon-to-be, or perhaps already irreversible regional implications. As they have only recently become recognized for the ineluctable dangers they are and present, it is perhaps not surprising that there is not sufficient worry and alarm and action about them. This state of the public's and the planner's mind is what makes the staccato Cassandra cry of this series so necessary. It may be the more necessary because there is something reassuring to the public to know that the Master Plan for our largest city is 300,000 words long, has cost more than $1-million to prepare, has had many experts working on it, is full of terrific charts. But there is a desperately myopic quality in our planning. We have seen that we are not facing up to the cumulative total regional implications and threats that are upon us.

We have not discussed the quality of the individual projects which have been described, for the point was to make clear the probable total regional overloading and damage that will follow from what is happening in the drive for growth and ever more growth. And this is the case almost regardless of the quality of each of the developments unless they are linked to a doctrine of *total limitation*, what might be thought of as a new kind of zoning applied to a region: HOLO-ZONING. This is the mighty concept that must be viscerally driven home, coupled with great alternatives. This is the macroscopic side. The classic concept of zoning, of density, of coverage, based on the individual building or project however large, was to assure "light and air," open space, volume of building as related to these. Now, we need to think and work on the basis of multi-disciplinary "zoning," based on a new composite total index of PHYSICAL-SOCIAL-CHEMICAL-BIOLOGICAL-ECOLOGICAL criteria.

3 Deleterious side-effects of the single-ambitious FIRSTS: and our blinkered unawareness.

At the other extreme, or micro-scale, the individual project, the actually immediate, the daily tensions, we must now consider the side effects of individual operations, aspects and experiences, tangible and poignant.

Consider first some random cases of the immediate "side effects" of what is taking place in the over-populated regions. And in particular, consider what is to me the puzzle of the set of mind of the ordinary citizen who would seem objectively to be suffering from overcrowding, inconvenience, transportation costs, noise, traffic delays. He, unlike the collection of entrepreneurs and planners, does not seem to gain tangibly, as they do on their various planes. Yet, our prevailing ethos is so strong that the following is an authentic anecdote, quoted from

Rene Dubos' *So Human an Animal:* [3]

"On a hot and humid Friday during midsummer, I landed at Kennedy Airport early in the afternoon. The taxicab was soon caught in a traffic jam, which gave my driver an opportunity to express his views on the state of the world. Noting my foreign accent, he assumed that I was unacquainted with the United States and proceeded to enlighten me on the superiorities of American life. 'You are probably surprised by this heavy traffic on Friday afternoon,' he remarked, as the cab stood still in the sultry air saturated with gasoline fumes. 'The reason there are so many people on the road at this hour is that we have plenty of leisure in this country and all of us can afford an automobile.' As we removed our coats and mopped our brows, he added forcefully, 'In the United States we all live like kings.' "

The failure to take account of or be bothered by these disturbing factors, the failure to be creatively influenced by these factors of daily inconvenience and discomfort, is a set of mind, a blinkered but very dynamic outlook. Many believe so deeply in the spectacular single objective that they are intentionally or unintentionally quite oblivious of actual total well-being. But our taxi-driver's allegiance *may* be a hopeful source of strength, provided we can sublimate the strength of his cliche beliefs into alternative channels, in a creative direction. And bear in mind that in parallel with the taxi-driver's cheerful dynamism, there is the weightier evidence of the Gallup Poll cited in Part One of this series (June 1969, page 152), the growing choice for non-metropolitan living. But these desires as of now constitute a passive potential, not a dynamic consensus. Naturally the big builders are going for the immediately profitable super-development of already-development; and naturally the public is beguiled by the new plazas and sculptures, sometimes even places to sit, sometimes handsome buildings.

Consider:

Anyone who knows Broadway, Times Square and vicinity in New York City, knows that surface traffic is jammed, that subway traffic in the Times Square Station is unbelievably jammed and sordid. What is happening? Many more office buildings with millions more square feet are being erected. What else is going to happen? Just west of Times Square, according to Richard Weinstein, one of the Planning Commission's principal urban designers, "there will be a new Convention Hall; its total space will be three times that of the Coliseum at Columbus Circle" (New York's largest).[4] Three years earlier, Joseph Choate, manager of the motor boat show, in the same vein opined, "It's a pity for the greatest city in the world to have to turn away business" (because of lack of such a super-auditorium). Nobody stops to wonder whether this really is a pity, and why. In a recent New York Times account by the City Planning Commission, summarizing its forthcoming Master Plan, we note that the office building area in this district is to be greatly extended and "*The city must aid this expansion* and assure that the *increased concentration* of office space in the *already congested business district* [italics mine] is designed to work properly."

An arsenal of expensive transformations and special costly devices such as moving sidewalks is being unleased. From the summary of the New Master Plan: "The draft estimates that increased tax revenues from new office space in the area from 42nd Street to 50th Street will more than cover the *public improvements situated in the area.*" But as emphasized by my underlining, much more to the point in our context are the very heavy additional costs of bringing people and goods into and out of the area, and new transit lines required and the beefing up of the old ones. A new higher cost level is thus assured, and the usual devastating experience of the years of tunneling and reconstructing vast areas of public streets. The ultimate superior or adequate workability is more problematical. The negative impact, in our total-regional sense, is not thought of.

". . . we must formulate . . . a new doctrine: the now-emerging likelihood of overloading a whole region and adjoining regions (corridor). . . . We must start to think and act on a policy of limitation of regional density and regional capacity. . ."

Consider:

In Chicago, the new Hancock Center—a 100-story complex of shops, offices, garage, apartments, restaurants and you-name-it—"will bring 8000 new residents and workers—plus *1-million visitors a year* —into a neighborhood that is already congested with cars and people." [5] The new, huge Illinois Central Air Rights development has been noted.

Consider other cases of side effects:

The severe "temporary" inconveniences that people have to learn to accept as normal, forever. A map from The New York Times of August 31, 1951, shows "Where Motorists Are Likely to Find Traffic Bottlenecks on Weekends." The text reads in part as follows: "Warning motorists against traffic bottlenecks . . . the travel manager of the Automobile Club of New York estimated yesterday that 825,000 cars would depart from the five boroughs. . . . All airlines reported all planes sold out, with waiting lists growing longer constantly."

Another map from The New York Times *16 years later* (August 4, 1967) is captioned "9 Highway Bottlenecks to Slow Weekend Drivers." The text of the article starts: "Extensive highway construction . . . in the metropolitan areas is expected to cause severe traffic delays for the thousands of motorists who will be entering and leaving the city. City and state highway officials said yesterday, however, that traffic would continue to pass through the following bottlenecks. . . ."

What a time-confrontation! What an epitome of our self-generated dilemmas! What an object lesson in the futility of technical operations unless within the operative concept of a large planning philosophy!

Out of my collection of horrendous clippings on this subject from various cities, one more from the New York area to nail that situation down; in late 1967: Headline: "LONG ISLAND EXPRESSWAY TO BE SNARLED FOR MANY YEARS." Some of the text: "The steadily increasing traffic growth, the population growth of Long Island . . . guarantees a bleak future for drivers using the road, most engineers agree . . . average of 5 miles an hour they manage during rush hours. . . . In the words of one expert: 'It is the perfect example of a road where motorists can drive to work and read the daily paper simultaneously.' "

"We have not only got to tame Megalopolis . . . More difficult, we must transform megalomania. . ."

A spectacular instance of blinkered single-project planning without considering inevitable side-effects is the $200-million Lincoln Center for the

"Create great regional parks: the green heart of the metropolitan area or city-region, updating . . . the same kind of seminal enterprise that Olmsted created for the city in New York's Central Park. . ."

Performing Arts in New York. A whole essay or polemic could and should be written as to its egregious conception and its negative side-effects. I have done it partially, elsewhere. Here we note only one such, because it so well illustrates the total thesis of the nemesis of the single development, and that blind faith in the magic of technology does not justify itself. Placed in an absurdly difficult location for accessibility, just west of Central Park, with constricted transverse access roads over half a mile apart, Lincoln Center has traffic problems that haven't been able to be cured by all the King's horses and all the King's men in the eight years since its first building was completed.

Here again, we have the deadly news items typical of the continuing unresolved conditions. Mid-1966: Headline: "TRAFFIC WORRIES LINCOLN CENTER." Part of the text: "John Mazzola, Secretary of Lincoln Center, said the Center had embarked on a traffic education program . . . no actual figures are known. We will do a study eventually." Long after, in 1969: Headline: "LINCOLN CENTER WEIGHS MEANS TO COUNTER TRAFFIC CONGESTION." Subhead: "An Underground Garage, Shuttle Buses, Staggered Curtain Times Possible, Training of Public is Stressed."

The case of Lincoln Center is so egregious that it may seem unfair to use it. But its Board and its backers were and are among the most prestigious names in the country; so are its designers and architects. It all the more points up preoccupation with the immediate ambitions at the expense of the large view. It makes us all the more dubious that the promised solutions by the Planning Commission for more concentration and concentrations of office buildings will really pan out.

New York is to date the most advanced hunk of megalopolis. Instances are repeated elsewhere. Take Washington, again. The prestigious leader-studded directors of the Kennedy Center for the Performing Arts selected an almost equally difficult location, well after the Lincoln Center experience.

Cannot we see the common denominator behind all this: that planning-development at all our scales confining itself to the immediate-spectacular in the aura of unlimited growth, leads us into irreversible absurdity, grief?

"Many believe so deeply in the spectacular single objective that they are intentionally or unintentionally quite oblivious of actual total well-being. . ."

4 Crystallizing and pushing the issues.

There is a real job to be done, to be done here, now. It is to bring together and pile up the total, colossal, and ever-increasing single disadvantages and costs, to bring them ineluctably into the daily and compelling consciousness of people, so that rational awareness will overcome the self-hypnosis of what is felt to be the inherent self-evident virtue of growth and size, of firsts. Or to put it better: to bring out as an immediate major issue of our times the need of thinking in terms of creative alternatives—call it cost-benefit or whatever.

Let me repeat that I am not advocating the desertion of the over-grown regions, but concentrating on making them work, developing at the same time our countermagnets, counter-regions, other areas in the national continuum, so that our expenditures are not simply self-cumulative as they are now. As of now, the further building up in the congested regions ex *post facto,* produces remedies so that in one way or another the growth is accommodated, a new volume of development is attracted by the temporary relief and momentary over-relief, new congestion and strains result at a higher level, the situation keeps on spiraling indefinitely.

Until a relatively short time ago, planning or non-planning was blamed for insufficient consideration of the future. Now, it is not only heavily developing the present in over-strained areas, but is giving the future a big encouraging booster-y nudge infinitely forward. This will not only be *regionally* deleterious: Sensitiveness to emerging sub-trends indicates that by the time all these heroic additions and expansions are available, or not too long after, some of them may prove not to have been needed.

I recently came across the news item that Tulsa, Oklahoma is about to get a new asset—a United States Customs Office. Opened in mid-May 1969 at Tulsa's International Airport, it can receive imported cargo direct. Following this up with the Bureau of Customs, I learned that Tulsa can now also receive passenger planes direct from abroad. The Bureau also provided a list of a number of other inland cities where this is now the case. Incidentally, Tulsa by 1970, due to the Corps of Engineers' work on the Arkansas River to the Mississippi, becomes a river port. I am not trying to boost Tulsa, I am just trying to bring an example of the smaller voices of accumulating sub-trends to the attention of super-pushers of raucous obsolete-dominant trend.

5 Some costs of making Megalopolis work.

What are the costs of making Megalopolis work at all in the present aura of upward spiral, compared with those in smaller metropolises and other nodes in "new regions," which in the twentieth century it is altogether possible to create as a happy alternative? Unfortunately, there is no hard firm answer in terms of researched comparative figures. There is general opinion that living and local government costs are distinctly higher. Also there are a lot of indicative figures which I have jotted down over a period of time which are appallingly large in themselves, and which are seen to contain components that are much more costly than in less over-run areas.

Consider.

Elements of ground (and underground) transportation, and a few specimens from among the spectacular figures that are casually dropped into the hopper singly as they come up for action—which no one has put together in a total cumulative way that would expose or build up the amounts into the real frightening totals:

—*October 31, 1967.* The city's transportation commissioner said yesterday that "the very life of the city depended on unblocking the streets." 1968 budget request.....*$118 million*

—*March 8, 1968.* New York Board of Estimate votes expressway across Lower Manhattan .....*$150 million*

—*May 7, 1968.* State asks Cross-Brooklyn Road (12 miles) .....*$222 million*

—*September 21, 1968.* City approves 2nd Avenue Subway and 11 minor routes: $1.26 billion. [6] This is a part of a regional mass transit system in the New York area costing .....*$ 2.9 billion*

—*March 18, 1968.* The Executive Vice-President of Regional Plan Association at a public hearing on this matter had given testimony which was headlined: "Regional Plan Association Official Assails Transit [the $2.9 billion] Program as Inadequate". Some details of this testimony: "The $2.9 billion program for a regional mass transit system in the New York area provides only for a third of the city's indicated growth in the decades immediately ahead. . . . Mr. Keith said that the Manhattan Central Business District population was expected to grow from its present 6.7 million to 8.5 million by the end of the century, the metropolitan area from 19 million to 30 million. . . . The M.T.A. proposals for expanded rail and subway capacity to the Manhattan Central Business District serve primarily to relieve existing over-crowding," he said. . . . From a Times report of July 24, 1969: "The Regional Plan Association says that if Mid-town Manhattan is to fulfill the demand for new office space, 66 new buildings on the scale of the Time and Life Building housing 400,000 more workers will have to be put up." Thus, there is demanded by this prestigious organization an increase in the already astronomic amounts, to encourage growth still further forward rather than to begin planning in terms of creative limitation or damping of further growth and diverting the overgrowth.

—*Various dates:* to the effect that Governor Nelson A. Rockefeller proposes two bridges [7] over Long Island Sound (from Westchester and Connecticut to Long Island) ....*$130 million*
.....*$225 million*

—*February 6, 1969.* Article *Too Late the Metroliner,* by Tom Wicker, The New York Times. Riding the new high-speed Penn Central train New York-Washington. Notes that to develop the full potential, complete roadbed rebuilding or relocation required. Cost .....*$ 1 billion*

Consider:

Air travel and ground component:

—*October 1967.* Newark Airport modernization-expansion (already identified (page 172) as "inadequate the day it is completed") ....*$200 million*

—*October 13, 1967.* LaGuardia Airport nearly completed .....*$120 million*

—*January 2, 1969.* Kennedy internal three-level circulation loop and three-level parking. Proposed by a team of airline and government officials. (Target date: 1973-4) .....*$xxx million*

—*September 8, 1967.* Time Magazine reports: Los Angeles . . . airport brand new six years ago [1961] and "outmoded before the cement on the new runways was dry. . . . But things are about to change. The city has approved a program to expand the airport by 1971." .....*$500 million*

—*May 23, 1967.* Report in The New York Times. Flight delay costs to airlines are put at $41 million for year. Stuart G. Tipton, President Air Transport Association of America, notes cost to passengers 7 million hours in lost time in 1965—the last year for which records are available.

Consider.

Typical inter-meshed factors in the complex:

—*New York City's* new master plan (1968) includes plan to pump new supplies of drinking water to the city from the Adirondacks .....*$613 million*

—*New York City* is discussing contracts with railroads to haul garbage to abandoned distant strip mines in Pennsylvania .....*$xxx million*

—*"New Jersey's Vast Needs."* The New York Times reported (April 9, 1963): "The expected doubling of the population of northern and central New Jersey, to 10 million by the end of the century, brings the State face to face with a critical situation in its facilities for transportation, water supply, health, parks, air and water pollution control and higher education .....*$ 1.2 billion*

—Breezy Point Park, New York City. An extreme example of the land-cost dilemma in overdeveloped areas, for a fraction of much-needed open space and recreation. 300 acres of it, at a condemnation price for land, of some .....*$ 40 million*
Definitely essential and overdue in the recreation-hungry 20th century: The point is that the cost in a new region would be *under $300,000,* and really adequate space totals would be available.

". . . the probable total regional overloading and damage that will follow from . . . the drive for growth . . . almost regardless of the quality of each development . . . unless they are linked to a doctrine of total limitation . . . a new kind of zoning applied to a region: HOLO-ZONING. . ."

"I am not advocating desertion of over-grown regions, but concentrating on making them work, developing at the same time our counter-magnets, counter-regions. . ."

These are whopping figures, and of course, only a sampling (the two new airports for New York not included)—obviously, no attempt at an exhaustive picture. What do the figures mean?

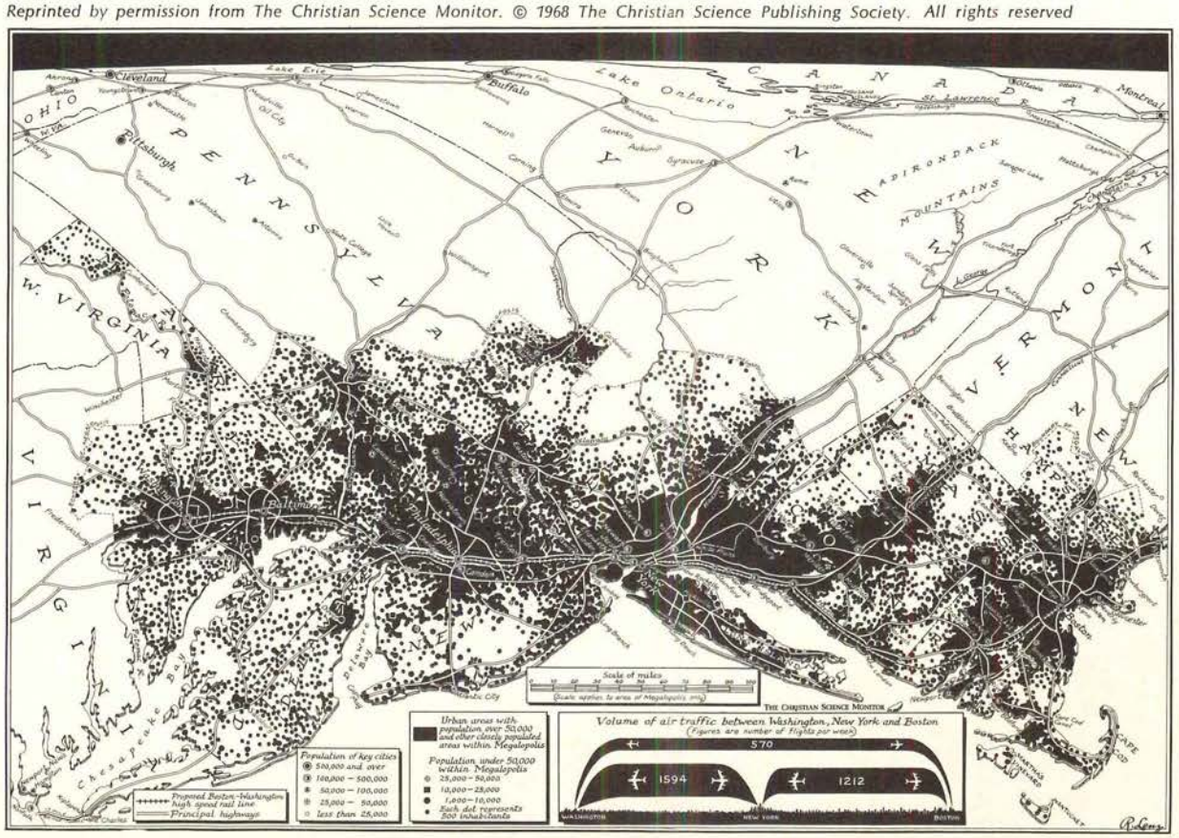
Well, in the first place, an obvious comment is that in a growing prosperous country, there *will be* need for more airport capacity, for more water supply, more roads, more recreation, etc. But there are two major points.

First, by more rational distribution in centers existing and to be created over the country, the very heavy and spiraling component of land and property cost involved in all these items will be very much lower, the costs of waste disposal in most cases much less. I have not located any fully rigorous comparative figures on this. There are many variables, and no one seems to have bothered to really tie it down. But here are some indications. Ratio of property cost to construction cost in a very large city was found to be 2:1 (2/3 land, 1/3 construction). In a specific city of 100,000, the land cost to construction was 1:3 (one-fourth land, ¾ construction); and, of course, in a quite new area it would be less. This would indicate that land in the big city costs at least *six times as much*. And here are some figures from "Urban Transportation and Public Policy" by Lyle C. Fitch and Associates[8]: Costs per lane mile of Mid-Manhattan and Lower Manhattan Expressways are put at $6.8 million; urbanized Westchester, $1 million; the largely rural New York-Buffalo throughway, $294,000. The two latter would relate to probable costs in "new regions."

Second, to supply the needed facilities, placing most of the increase of population and enterprise in "new areas," i.e., in less enormous concentrations-and-outstretches, will not require the three-story road systems, tunnels, etc., for the same functions. So, the construction cost, too, will be much less. Also, in the overdeveloped areas, there is a high cost element in altering and adapting existing installations and in maintaining service during new construction. The vast amounts of money saved simply by placing such undertakings in future-oriented areas can be used for schools, community-social and recreational enterprises, now so terribly under-budgeted. The savings do not mean diminution of facilities, but changing *location* of facilities. That is, it's not only the famous savings from the Vietnam war budget, that we are all keen on getting pieces of, but savings from the further over-spending on further overdevelopment of overdeveloped areas, that can be used to enhance life.

The constant alteration, reconstruction, re-re-construction, detouring, that these attempts at making Megalopolis work entail, take enormous toil in terms of tensions and lost time. The 7 million hours cited as air-passenger time loss is the smallest fraction of the total lost time that each of us experiences, daily or almost daily. The figures on the cost of lost time by delivery trucks in Megalopolis are horrendous.

And just imagine the summation of enormous local costs, public and private, house by house, not even mentioned yet, maybe not even thought of yet, that will follow when the so ardently sought two bridges from Connecticut and Westchester will make Long Island over into a long traffic corridor as part of a Boston-Washington highway. This in addition to the social upheaval effects with many thousands of families displaced.



"Megalopolis: 500 miles of Times Square?" Densities in the Boston-Washington corridor (1968) are vividly represented in this map by Russell H. Lenz for The Christian Science Monitor.

In new well-planned areas, planned with the hindsight benefit of dismal experience, planned to pre-visualized envelopes of population, not only will the costs be lower for the reasons noted, but the repeated re-doing costs and tensions can be cut to a fraction, or all but eliminated.

6 Further overcrowding the 2%; BUT plenty of room in the 98%. Conjuring up the cost-benefit comparison. Millennial considerations.

Another issue should be sharply noted. The Eastern Corridor or Atlantic Megalopolis Core had a population in 1966 of some 37.6 million; projection through the year 2000 *if present trends continue* reads 57.4 million, i.e., the addition of some 20 million or 52 per cent.[9] *But they need not.* These numbers are so very large that a very serious dent can be made in them within the period if we wake ourselves up to them, by a policy of vigorous thrust into concerted and varied counter-magnets elsewhere.

Reference to the two maps dramatically highlights these points. The map opposite shows in solid black the most thickly settled core areas of the Boston-Washington corridor; the less dense outer areas, in black circles. Our map of the U.S. shows (overleaf) how much practically unsettled area there is in the wonderful U.S.A. (less than 2 per cent of the land is heavily used now), the remainder waiting to receive counter-magnets at many favorable points discussed in the next installment. The big black circles on this map show the Atlantic corridor situation as well as the other megalopolitan situations: Milwaukee-Chicago-Gary-South Bend-Peoria; San Francisco-Los Angeles-San Diego. These latter two are less overdeveloped at this time, but galloping into the same critical situation, with faster rates of growth.

The cost-benefit ratio is a currently popular system for helping government bureaus and large-scale undertakings generally to determine location of roads and the feasibility of all sorts of enterprises as among several alternative possibilities. This takes first costs and operating costs of each alternative, and compares them with corresponding production economies, benefits to users, to nearby inhabitants, etc. This is a useful concept and operation. It should be applied to the whole matter of policy with respect to expenditures on overdeveloped Megalopolis versus development of "New Areas" and smaller metropolitan areas. While it is, of course, immensely more complicated when applied to regions, such a process, even if done with crude figures, can create and focus understanding on what should be a burning national issue. With all the money—public, foundation, private—floating around, research along these lines is terribly needed and full of potential.

Of course, to make it truly valid, a time dimension must be injected. *Immediate* return is often in favor of the already overcrowded, the over-demand, the high land cost increment.

Millennial Considerations. Consider now a quite different aspect and dimension: some of the long-range, often-submerged influences. These may be acting over millennia, may be responsible for visible symptoms which we don't understand or which we attribute to more immediate causes, and which we attempt to cure in some immediate terms, or may be attempting to cure by more of what has *caused* the ills and tensions.

As a specific over-familiar example, we are faced with monstrous traffic tie-ups, hour-long train or automobile journeys to work. Is the cure for the resulting fatigues and tensions more, and more humane, subways; better, faster trains and buses, monorails? These can slice off some travel time, make it pleasanter. But by virtue of this very improvement they will also permit and even encourage more uninterrupted urbanization over ever greater distance and area (filling in between the black circles). Or, is it this whole increasing distance scale of journey to work which is essentially undermining us? Should the cure be along quite different lines? We may, temporarily at least, be providing greater convenience, but we may be leaving untouched what may be a major underlying cause of increasing tensions, of mental illness and severe maladjustment. Perhaps our human constitutions have never yet really caught up with vast solid urbanization, and with separation from functional contact with nature.

"The constant alteration, reconstruction, re-reconstruction, detouring that attempts at making Megalopolis work entail take enormous toll in tension and lost time. . ."

What we really require might well be renewed and purposeful contact with nature, not just outdoors and recreation and hectic weekends, nor even camp fires. We could in great metropolitan parks involve the biological and ecological processes of soil nurture and growth; of farming, of cattle-rearing, of husbandry and the obligatory work and understanding connected with successful operations with living and growing organisms: especially in children's formative years. Indeed, such a metropolitan heart or complex could also be part of the cities' school system, where children work and definitely participate for definite seasonal periods, not merely as onlookers for occasional or holiday visits. What we need are new urban-rural configurations and relationships, not ingenious methods for intensifying and stretching the present continuous endless urbanized areas by faster transport. I don't know whether we will ever find the answers to these deep-seated problems, and they remain in the realm of intuition. But they should, I feel, permeate or offer constant sensitive check to our thinking and planning, pose continuing pervasive challenges to environmental conceptions and judgments. By attuning to the possible existence of such millennial effects, we will be sharpening our intuitions and our quest for better grasp of them. And we will be contributing to the emerging thesis of "Regional Holo-Zoning."

"In new well-planned areas . . . planned to pre-visualized envelopes of population, not only will the costs be lower . . . but the repeated re-doing costs and tensions can be cut to a fraction. . ."

7 How should we spend money in the overdeveloped areas?

I have attacked the piling up of endless office building, of traffic generation, of airport proliferation, of the spiraling intercycle of these and other elements, of encouragement to open-ended growth, of regional over-loading. It is necessary to dampen this rat-race, and to energetically set in motion the large-

scale early creation of alternatives, of counter-magnets, in this country. (Identifying and briefly describing these varied magnets and nodes is the subject of the next article). It is also clear that, however strong a case there is for determined re-orientation of resources into new directions of development and new areas, there will be substantial "residual" development to be done in the overdeveloped areas. This might be called the positive, measured residual effort.

But what we must do, what calls for the maximum in purpose, energy, and money, is to enhance the quality of living and of livability. *Of course* this means the whole galaxy of elements such as education, health, jobs, housing and community development, de-ghetto-izing life and opportunity.

"Perhaps our human constitutions have never yet really caught up with vast solid urbanization, and with separation from functional contact with nature. . ."

Here, I want to note some examples of elements of regional environment in the Eastern megalopolis that are so essential, and so very far behind in terms of high-influence dynamics: e.g., the Potomac Basin, the proposed Connecticut River National Recreation Area, the more recently proposed New York Harbor National Seashore, the 10,000-square-mile Appalachian park proposed. These mean inspiration, recreation, natural beauty, "remoteness near at hand": symbols and actualities of spiritual priority. They mean the presence and values of national parks actually *in* the crowded corridor rather than half a continent or a continent away. To create them now, means getting ahead of imminent further residential and industrial and commercial development, i.e. regional overdevelopment, in sensitive areas.

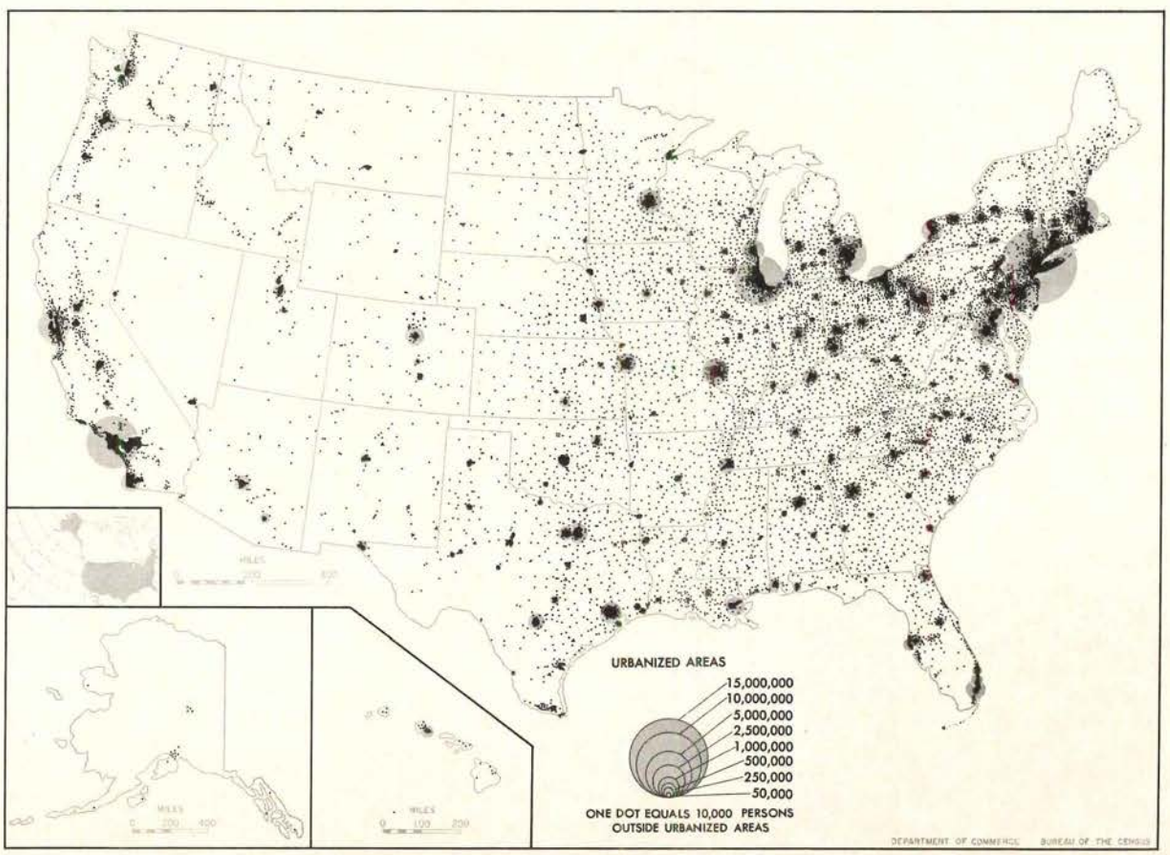
And, by the way, somewhat dramatizing the interlocked issues, it appears that there is an appreciable conflict between the New York National Seashore and runway extensions under consideration at Kennedy Airport for some of the land.

8 Why the urgency? Goal-oriented or means-oriented? Who cares? Beginnings of influential commitment.

The tone of this presentation and discussion has been urgent, alarmist. I think this tone is justified. With regard to Megalopolis, we are closer than is realized to a point of disastrous no return in the inter-feeding factors of the complex of environment and environmental negatives. We are in multi-faceted crisis or in galloping pre-crisis. There are these tremendous needs:

To recognize that the single enterprise, however large, and the single remedy, are simply and dangerously obsolete as life-policy, however exciting or profit making or prestigious they may appear to be.

To produce even these single remedies always takes so long, including the discussion and selection and funding period (the 10-to-15-year airport time gap, as an example) that the crisis which a particular remedy is intended to meet has already assumed additional new dimensions of scale and intensity so that the remedy is essentially obsolete before it can be applied. On the other hand, if a margin of excess in the remedy is provided for forward growth, as is now the practice, this very measure, in our present system and frame of mind, becomes a magnet for more growth, and overgrowth, unless there are built



U.S. population distribution (1960) shown in a map adapted by The Christian Science Monitor from a map by the U.S. Bureau of the Census. A great country—98 per cent open.

in both final limitations and counter-magnets elsewhere to make these limitations real and operative.

To produce the state of mind, conviction and action that indefinite growth is undesirable, and indeed dangerous, whether overtly sought or just inherent in our working drives: This is an immediate, an overdue necessity.

Goal oriented or means oriented? One way to go about this is to ask our planners and ourselves what are the real goals, what are the advantages and disadvantages of this open-ended growth? What is there beyond just size and vanity *per se?* Is the system as a whole benefited or deteriorated? Are most people better or worse off? Can we achieve a higher level of belief and allegiance in our community, in our city, a new sense of place and pride as citizens of our region by concentrating our ingenuity and technical skill on excellence and enhancement, with limited growth, rather than trying to make maximum quantitative increase feasible, with its always building, demolishing, re-building, detouring.

Please give some thought to your true goals and philosophy. As of now, are you assuming ever-continuing growth as an inevitable condition, and making this workable as your only job? Are you just a bystander who plunges into the fray, or are you a total thinker and seeker? Let me quote a passage which by its omissions epitomizes the validity of this remark. It is the first sentence of the foreword to the book *Urban Design Manhattan* put out by the Regional Plan Association of New York:

"This book was written in response to questions which arose in the course of our work on the future of the New York Metropolitan Region when it became clear that employment in office buildings probably would *double in about thirty-five years.*" These italicized words surely constitute the crux, the very issue to be analyzed, evaluated, to see whether it is desirable and how it can be modified or changed in favor of other possible choices. But no. It is just accepted because trend-extrapolation says so. Without exploring justifications and alternatives, the effort starts from there. All the technique and virtuosity are devoted to making that possible.

As of now, dominant thinking and action and above all, dynamics, is in the hands of the open-ended planners and organizations in the overdeveloped areas, a number of whom have been quoted. But recently, there are important beginnings of new thinking. This is on two planes.

First, upper-level investigating committees:

The Advisory Committee on Governmental Relations (ACIR) has issued an important study "Urban-Rural Balance" (1968). The National Committee on Urban Growth Policy, a bi-partisan group of senators, congressmen, governors, mayors, county commissioners, published a book in May 1969: "The New City." It advocates for the next 30 years the creation of 100 new cities of 100,000, 10 of possibly 1 million. A real-scale proposal.

On the other essential public opinion plane:

The Christian Science Monitor in an editorial "A Halt to Megalopolis" summed it up by saying, "What's needed is a national consensus that Megalopolis has gone far enough."

The National Parks Magazine, organ of one of the really important conservation groups, discussing a proposed new giant airport for Miami which threatens the wilderness areas of Everglades Park, reaches valid and trenchant determinations which go far beyond that one issue: "The Civil Aeronautics Board, the Federal Aviation Agency, and the Department of Transportation have a responsibility to get their house in order in matters of this kind. Their first obligation is to hitch the transportation system of the United States to rational human purposes. Among these purposes is the de-congestion, not the expansion, of the super-cities. City people need to be protected by sensible facility location against the deadly overcrowding which is making urban life intolerable for everyone."

"What we need are new urban-rural configurations and relationships, not ingenious methods for intensifying and stretching the present continuous endless urbanized areas by faster transport. . ."

I have shown that the issues involved are broader, deeper, more pervasive and threatening than even these elements. The most pregnant and ultimately lethal may be that of *total regional overloading* by the complex of cumulative interacting factors. But I hail this pronouncement, rejoice in the prospect that this kind of dedicated group is girding its loins to do battle. They are accustomed to afflate lost causes or still-unrecognized causes into victories. And particularly, this expansion of their interest from remote areas into the even more pressing situations close at hand; or, *conservation begins at home.*

9 A radical new refinement: institutional change.

But the job has a dimension even more basic as well as more insidious. It must be noted here briefly as a caveat, will be further developed later. Just moving into action on new regions and countermagnets, even quickly and on large and sensitive scale, will in the long run not create and creatively maintain the environments we seek, not really be "bringing in the new world to restore the balance of the old." Even though this may for a time bring relief, and short-term satisfaction, we will only be starting a new cycle of contradiction and deterioration unless there are basic institutional changes.

One of these is *Land* as an institution. We must remember that even our most worrisome or alarming present areas were once virgin, consisted of a landscape of hope and expectation. But the historic and current attitude toward land as a speculative commodity, as a major source of profit to take all the traffic will bear, and particularly the up-spiraling turnover: this stands squarely in the way of optimum development, of housing availability and manageable costs. It will require deep institutional change to deal with this and other basic elements, to effectuate and perpetuate optimum new environments.

"With regard to Megalopolis, we are closer than is realized to a point of disastrous no return. . ."

But this brief note is included now in this second section of the series so that the full dimensions of our proposals are before us. There have been cited serious beginnings of recognition of the need for such *programs* as have been called for here. But this underlying and pervasive problem of institutional change has not been dealt with. As an example, the

fact is that, inherent in the creation and operation of new towns being presently developed by private enterprise, and tacitly underlying the new proposals by various committees, and recent legislation, is *land profit* as a major incentive.

Also, while there is lip-service in the current creation of new towns by private enterprise to dealing with and meeting the needs of low incomes and of race in anything like the proportions that could relieve the exigencies of present cities, it will certainly not come about as nothing but a by-product of obeying the laws. This can come about only by placing these purposes as the very highest priority, as the criteria of success or failure.

To recognize and solve these urgent matters from the very start, policy must be embraced which does not overplay or deify private enterprise, but massively shifts emphasis, encouragement, reliance to public interest and nonprofit groups, to government-private development corporations as the major instruments. These have already begun to effectively demonstrate the ingenuity and elan of the best private skills and entrepreneurial drive combined with public social motivations and dedication.

Troubling as it is to develop and face this and allied questions, these are the imperatives of humane, enduring development.

Addendum or interlude. Things currently happen, or de-happen, so fast in our urban regions that perhaps the only safe procedure is to publish on loose-leaf pages, to accommodate inserts! In the short period that elapsed between submission of manuscript and correction of galleys, it has become necessary to up-date! Events have a way of catching up. What they do here is to vividly underscore what we have been talking about.

On page 176, it was noted that Tulsa, Oklahoma is now one of a number of inland international airports receiving cargo and passenger flights direct from abroad; and that watching incipient trends of this character, it just might be that before the New York area's fourth and fifth airports are completed in 10 to 15 years, all of this new capacity might not be needed. Giving this hypothesis further punch, it has just been announced (July 1969) that British Overseas Airways and National Airlines have both been authorized to fly London-Miami direct. Observe that this means not only that those passenger loads from overseas will not be landing in New York, but that flights out to Florida from New York will be equally reduced: a double healthy effect.

In another direction: the famous Lower Manhattan Expressway was first proposed as urgent 40 years ago, to solve an increasingly impossible traffic situation between New Jersey and Long Island. Ever since, it has been bitterly wrangled over with the local people to be displaced; has now been abandoned by Mayor Lindsay as well as the Brooklyn Expressway and proposed Linear City. He said in the course of his announcement that Lower Manhattan is experiencing a most extraordinary building boom (see by comments on this, above). Even when some alternate will have finally been adopted and finally completed in, say, 10 years, the Regional Plan Association's prediction of the loss of large numbers of jobs because of impossible traffic conditions will have come true. This whole complex is certainly a very heavy straw on the sick camel's back. The realistic point is that these are heavy warnings, and that the situation should be considered in the entirely different terms already indicated.

Instead of a great deal more of the same old traffic—relieving (and thus, further-promoting) measures, there are two courses to adopt. De-fuse the violent promotion of the downtown boom. And, make a massive start, immediately, toward further reducing the ever-mounting sources by means of counter-magnets elsewhere.

And it's not only New York where local people (the camel) are finally attempting to destroy and sometimes actually destroying the straws: among many other examples, Boston's Cambridge Memorial Drive Inner Loop, Philadelphia's Crosstown Expressway, San Francisco's experience.

Footnotes

[1] Perhaps this reference to "the usual crop of innumerable office buildings" skims too lightly over the situation. In the New York area, *one* large builder, from among at least a dozen similar ones, is as of 1969 building a monster in Lower Manhattan (3.5 million square feet); one in mid-town Broadway (2 million square feet); one in suburban Rockland County (1 million square feet plus 2.8 million later)—i.e. in all three centers of the region. A well-known architectural critic, reporting on the first, beautifully illustrates two of my points. As to the still raging rage for FIRSTS, which affects the critic as well, the opening sentence reads "The Pan Am Building on Park Avenue is about to lose its claim to the title of the world's biggest privately constructed office building to a new office tower in lower Manhattan." Another quote indicative of current states of mind (critics' and others'): "The Chemical Bank New York Trust Company is concluding what is believed to be the largest commercial lease in history, for $260-million and 1.1 million square feet" in the building—i.e. another FIRST. In that state of mind, one can scarcely wait until a new record-breaker lease comes along of, say, $261,000,000. NOR can I wait until we find out how the further over-crowding and traffic-transport of some 17,000 new office workers entailed by this one building alone, is going to be handled, on top of a dozen other outsize buildings now under way in this same area, *in one year;* and at what cost.

[2] These figures are taken from 1969 report of DOWNTOWN WASHINGTON. It notes that as 1969 began, 10 major private office buildings were under construction between the White House and the Capitol: this was more than had occurred during the entire decade of the 1950's. So, galloping.

[3] Page 148. Charles Scribner's Sons, 1968.

[4] The New York Times, 1/1/69.

[5] Time (February 7, 1969), which says further: "The world's second tallest, just 17 feet shorter than Manhattan's Empire State Building. It could go no higher because of local zoning laws and Federal Aviation restrictions."

[6] I don't know whether this figure is more, or less, spectacular than a unit figure within it: For the underground subway tracks, the cost is OVER $30 MILLION A MILE. Just think what that kind of money could do, in other ways.

[7] Austin Tobin of the Port of New York Authority foresees the need within 10 years of still another bridge across the Hudson, from Bergen County, N.J. to Westchester. This, of course, will in turn feed more traffic onto the Westchester-Long Island Bridge, later making the second bridge necessary: distressfully.

[8] Pages 130-131. H. Chandler Publishing Company, San Francisco, 1964.

[9] Figures from paper by Jerome Pickard, "If Present Trends Continue," presented January 30, 1969 at A.I.P. Regional Conference *Building the Future Environment.*

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Almost half the housing starts in the first six months of 1969 were apartments, a response not only to the pressures of land use but to the demand for this type of living. Indications are for continued pressure and demand over the next few years.

But the kind of apartment people today want is not the old stereotype. They want apartments that suit their particular needs—social and recreational as well as shelter—and these needs are not the same for all age and income groups. Today's apartment developer aims his project at —and his architect has to design for—a specific market, and the design of these projects is based on well-documented wants and needs.

As likely as not, today's apartment will be of the garden type, and it will include some kind (or kinds) of social and recreational facility: a swimming pool, certainly, since this fulfills both social and recreational needs; a community room or clubhouse probably, usually in relation to the pool; sometimes tennis or other sports courts; occasionally a crafts room or an art gallery; and for projects geared toward the young family, a children's playground. What the project includes and what its character is depends today on the specific age group it is intended to attract.

Such specialty apartments, unheard of a few years ago, are increasingly commonplace today, developed from carefully analysed wants and needs of specific age groups: young single people (and young married couples without children); young families; and older people whose children have left home. Income and rent capability vary within these groups and with them some aspects of design. But quality of environment is not —as the eight projects shown here show—a matter of high income and expensive rent. It is a matter of design ingenuity and sensitivity to the needs of people, and builders and developers are finding that it is the architect who can provide these essential ingredients to success.

What tenants say about living in apartments leads developers to effect changes in their programs, but for architects there is nothing new in the tenants' lists of desirable characteristics. Open space between buildings and landscaping are important to the character of the apartment group, and appearance rates high with renters in attracting them to a project. Next in importance is sound-proofing and freedom from other people's noises. Individuality, especially in access to an apartment unit, is also important. Private outdoor space, a balcony or a patio, ranks along with recreation facilities as desirable. There is no substitute, these specifics say, for good design, good plans, and good construction.

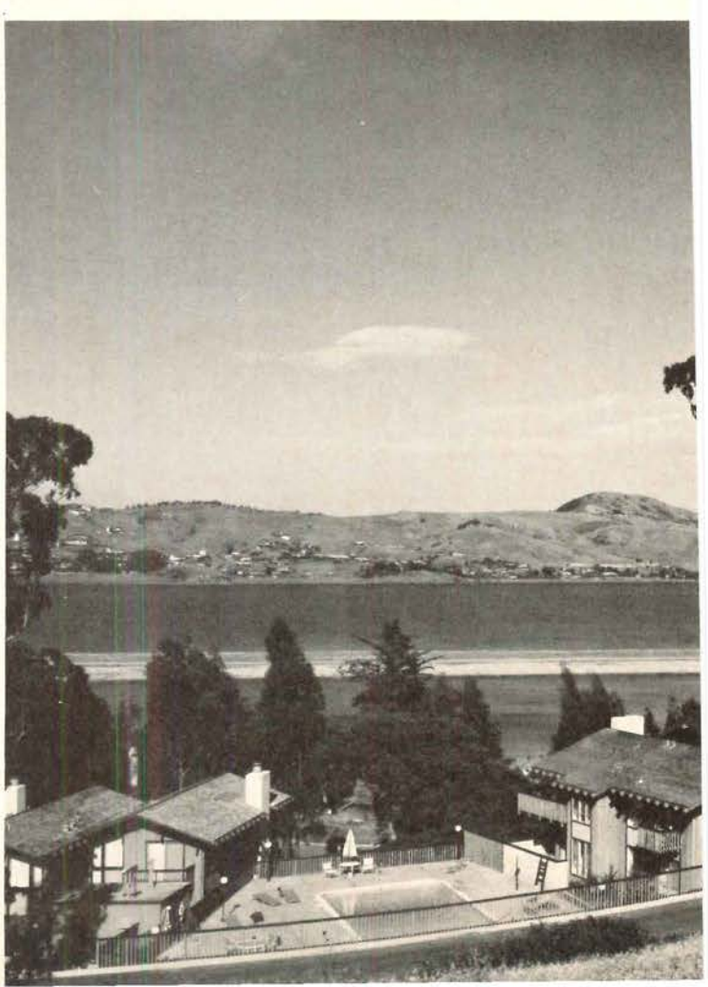
In the projects shown here, four make intensive use of the land: urban Northpoint, low-rent Lord Tennyson, Lakeridge for young families, and Woodside with its high proportion of single people. Three are medium density groups: luxurious Carlmont Comstock, beachside Dunehouse, and suburban Harbor Point. And one—a townhouse complex with low density—emphasizes open space for common use. All meet, in various ways, the highly desirable rentable standards tenants are looking for.

—Elisabeth Kendall Thompson

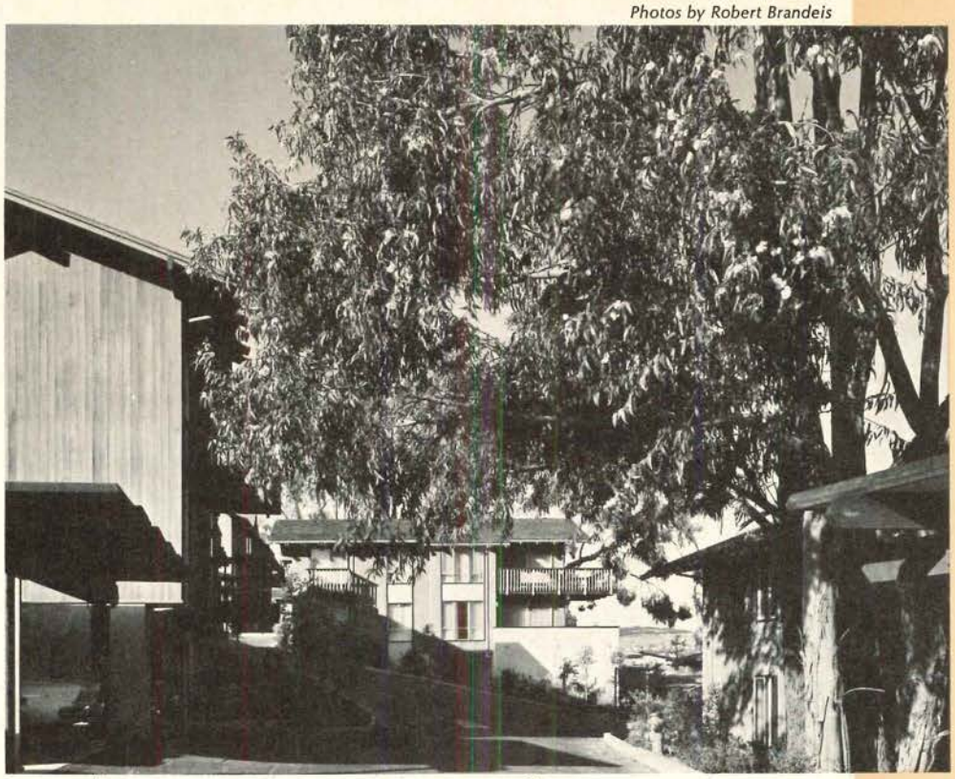
High interest, medium density on a hillside site in semi-rural area

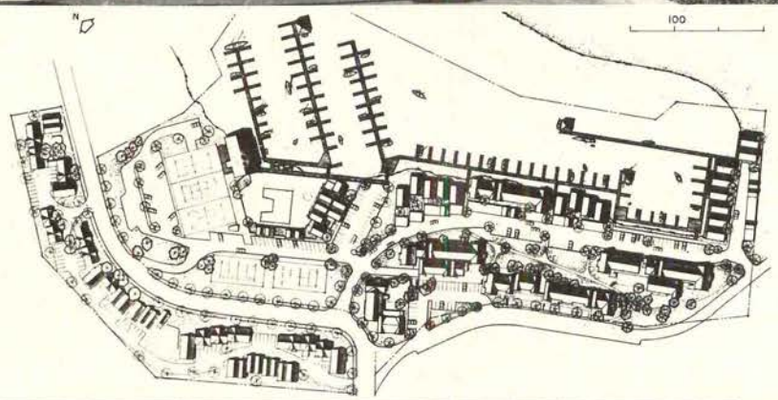
The Harbor Point apartments fit so pleasantly onto their semi-rural site in Marin County, north of San Francisco, that they suggest a group of private residences rather than an apartment complex. That the site is intensively used—there are 15 units to the acre—comes as a surprise because of the feeling of openness around the buildings. To achieve this quality, the architects oriented the buildings to the fine views of San Francisco Bay and the city of San Francisco, placed them on the site with skill and care, created between them interesting and varied spaces, and preserved as many as possible of the existing live oak and eucalyptus trees. The sloping site lent itself to development of interesting vistas out to the water as well as within the apartment complex. The first phase consists of 52 units (eventually there will be 237), recreational facilities (tennis courts, swimming pool, and a clubhouse now under construction) and parking at scattered locations. Units vary in size from one bedroom to three; different combinations of these produce the varied exteriors. Vertical redwood siding is used for exterior walls, with stucco on fireplaces and balconies for contrast.

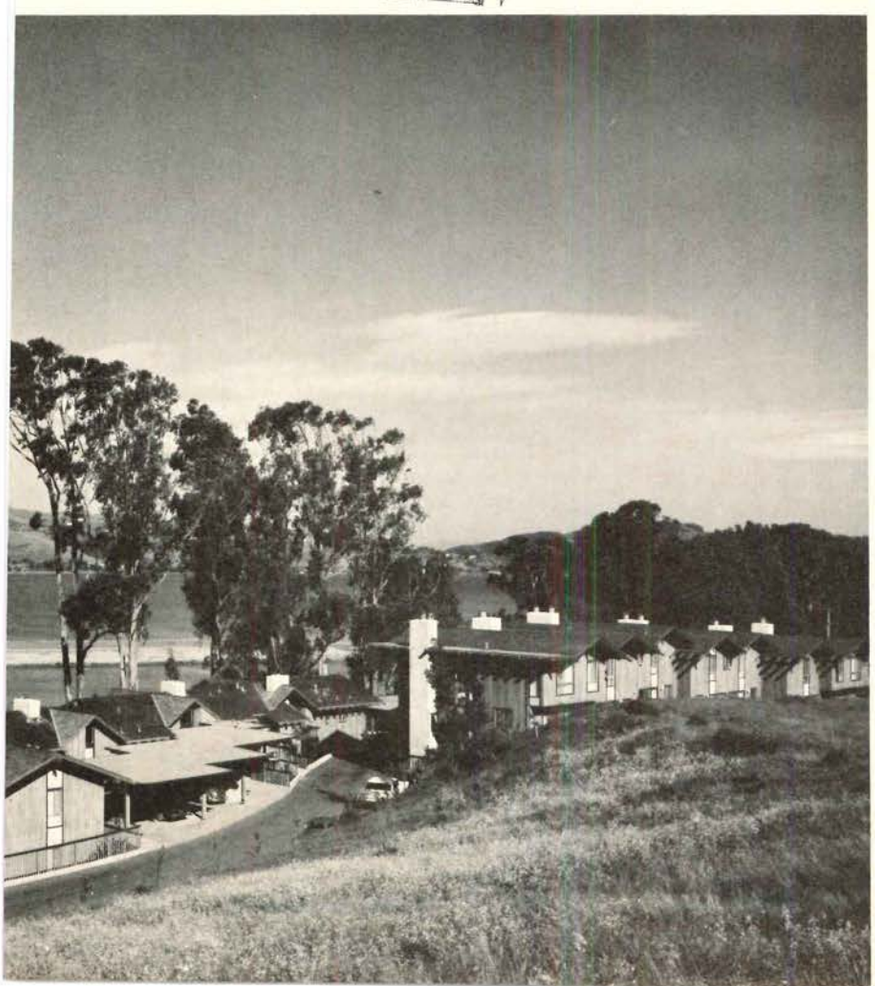
HARBOR POINT APARTMENTS, Phase I, Strawberry Point, Marin County, California. Owner and developer: *Marin Land Development Company*. Architects: *Karl Treffinger & Associates;* structural engineers: *Nicholas Forell & Associates;* landscape architects: *Sasaki, Walker Associates, Inc.;* contractor: *Ernest Carlson.*

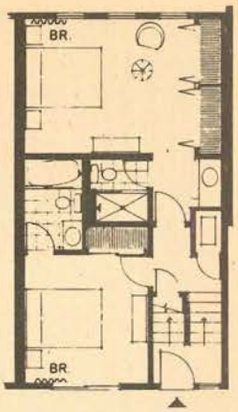


Photos by Robert Brandeis

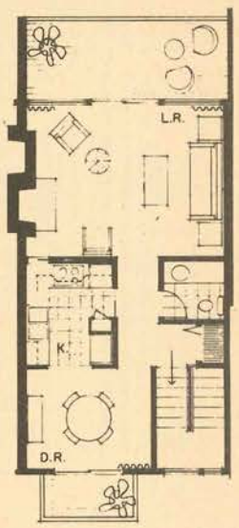




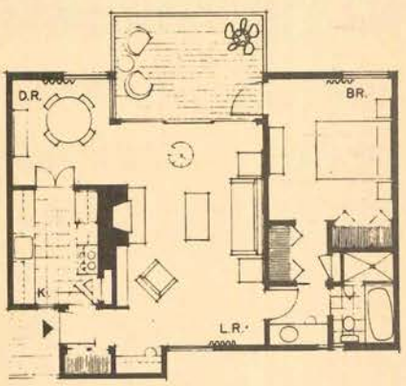




SECOND FLOOR
TWO BEDROOM UNIT

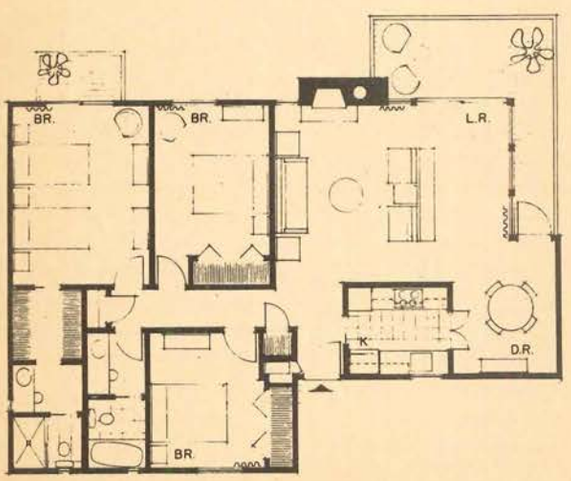


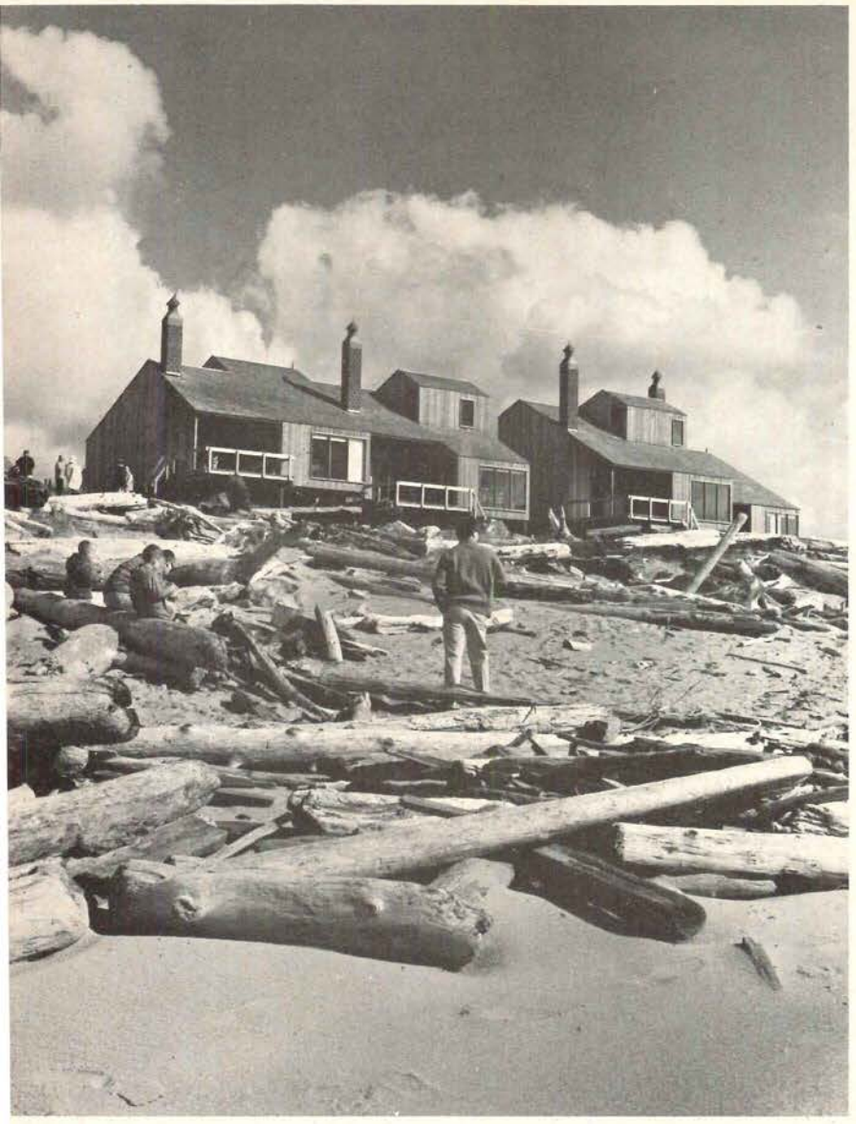
FIRST FLOOR

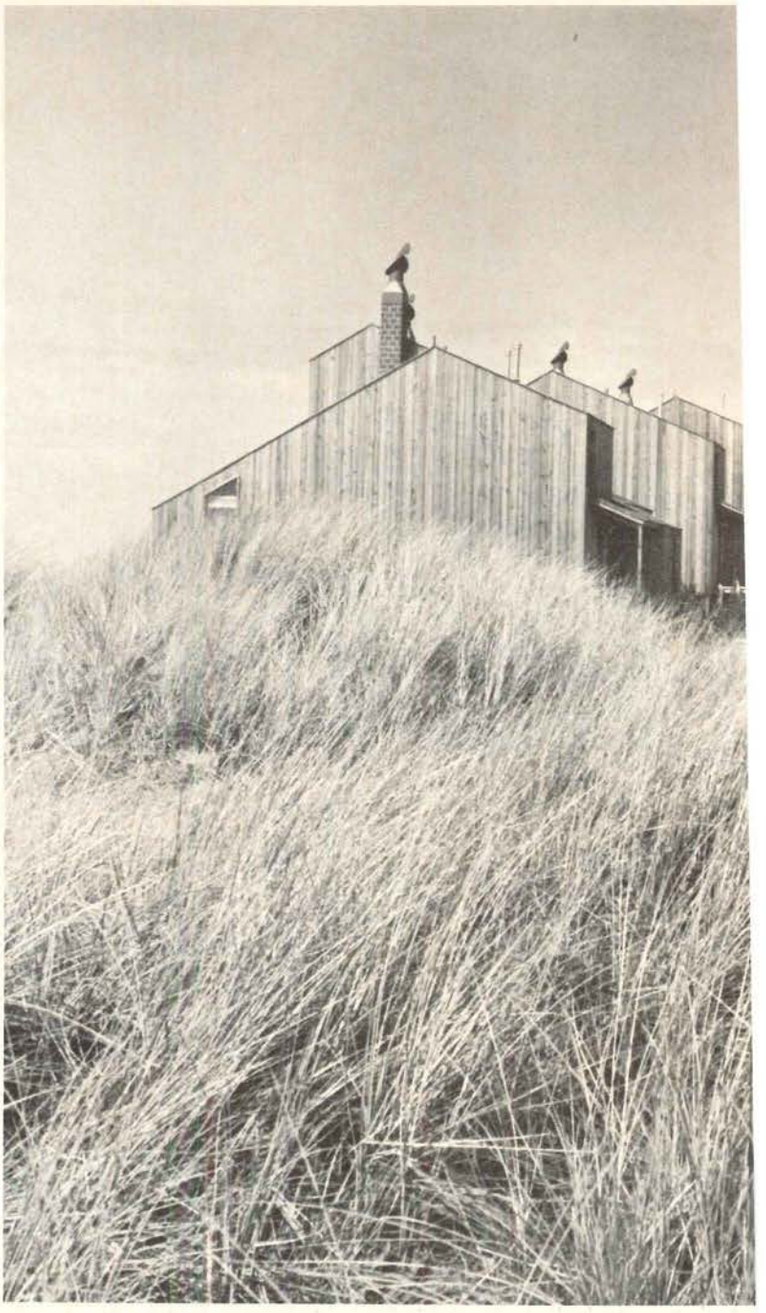


ONE BEDROOM UNIT

THREE BEDROOM UNIT



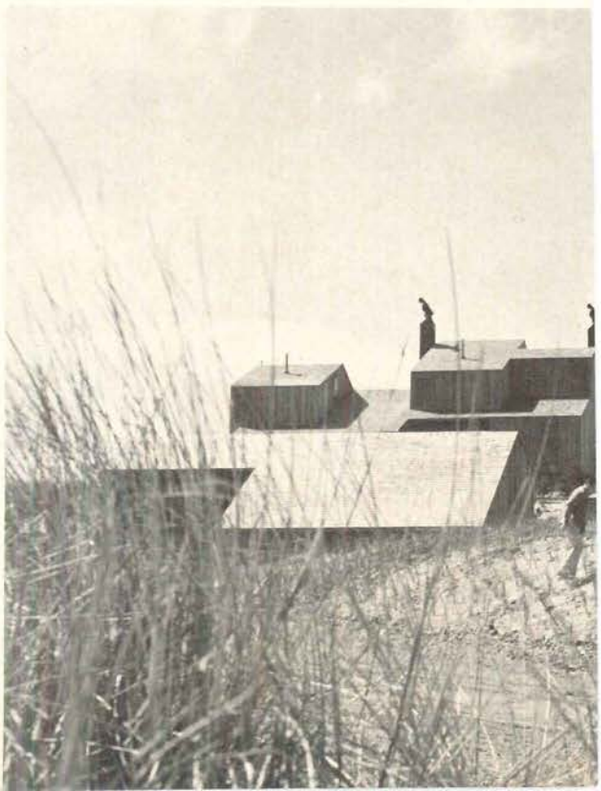




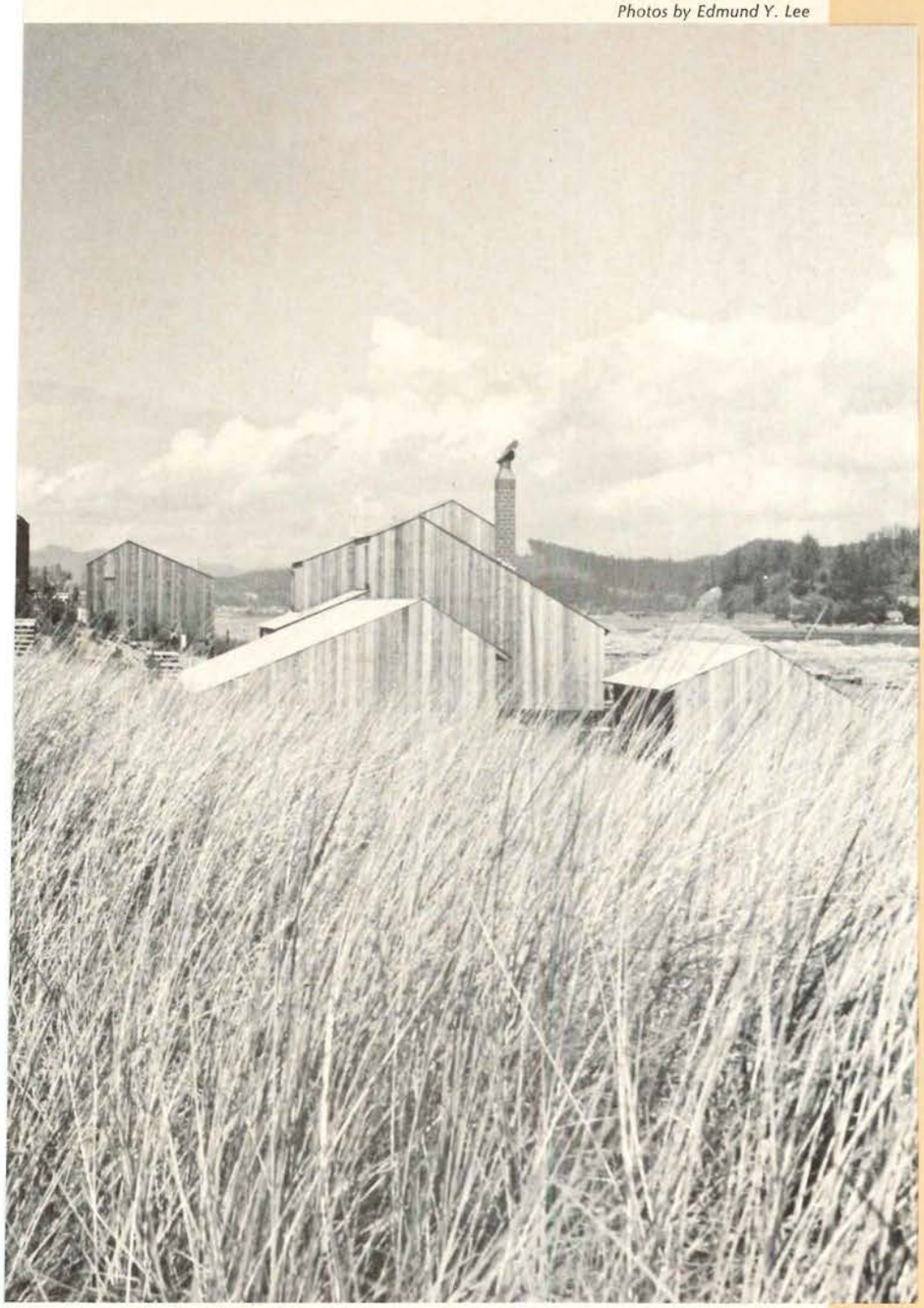
Clustered apartments make unusual—and successful—group on Oregon beach

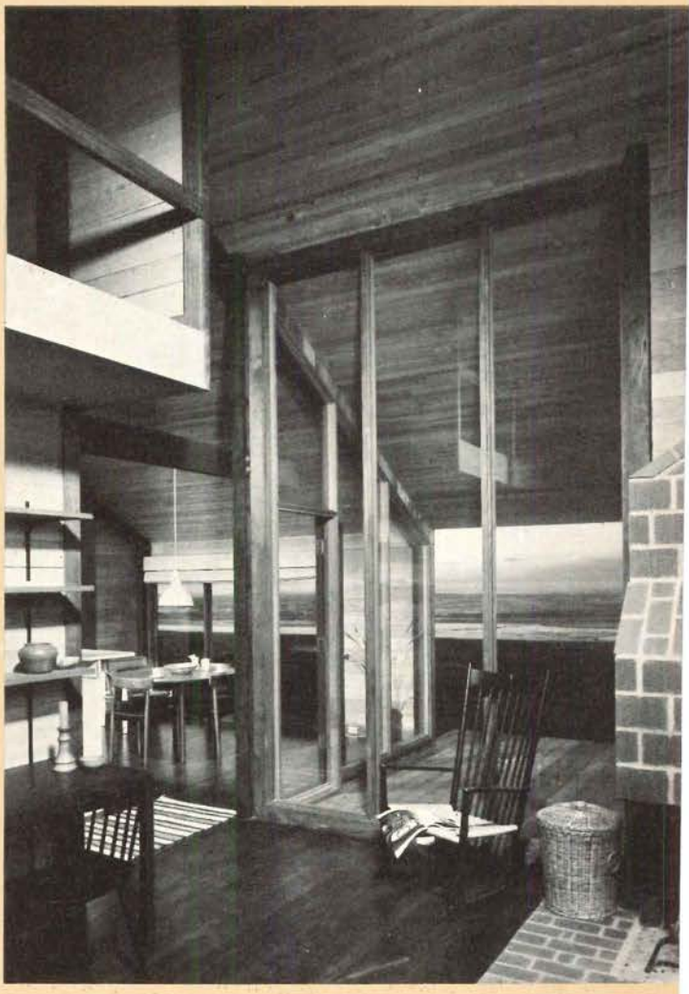
Originally built to demonstrate feasibility and desirability of construction on the sand dunes of the Oregon coast, this group of apartments has been so successful that six more units are now under construction and much of the adjacent area is being developed. The site is a narrow exposed sand spit north of the main residential section of Salishan, a developing community on the central Oregon coast (RECORD, January 1967). The apartment buildings, closely clustered and connected by board walks are designed in the vernacular of the beach: wood is used throughout—vertical cedar siding for the exterior, hemlock for interior walls and floors, cedar shingles for the roofs. The structure consists of pressure-treated fir posts, sunk in the sand and back-filled with concrete. The vernacular proved economical as well as appropriate to the beach site. Some units face the ocean with large windows, some with small, so that all have views of the magnificent winter storms of that part of the coast but at the same time convey a sense of protection and shelter—two major program requirements. The narrow, intimate spaces between buildings enhance this solution.

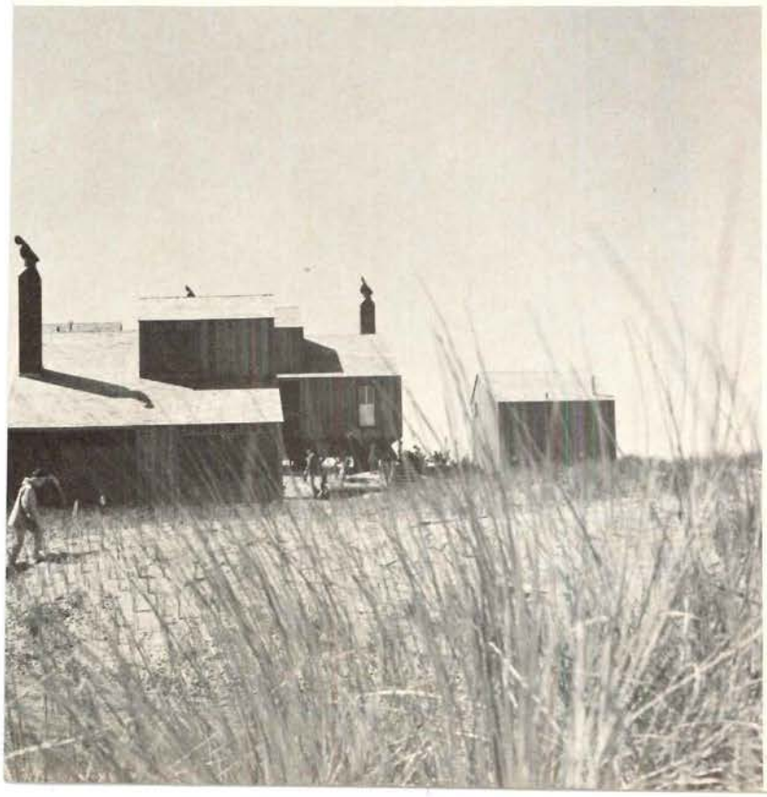
DUNEHOUSE, Salishan, Gleneden Beach, Oregon. Owner: *Salishan Properties, Inc.* Architects: *Church & Shiels;* electrical engineers: *Dean Athay & Associates;* mechanical engineers: *Edward Long & Associates;* general contractor: *Ralph A. Neubert.*



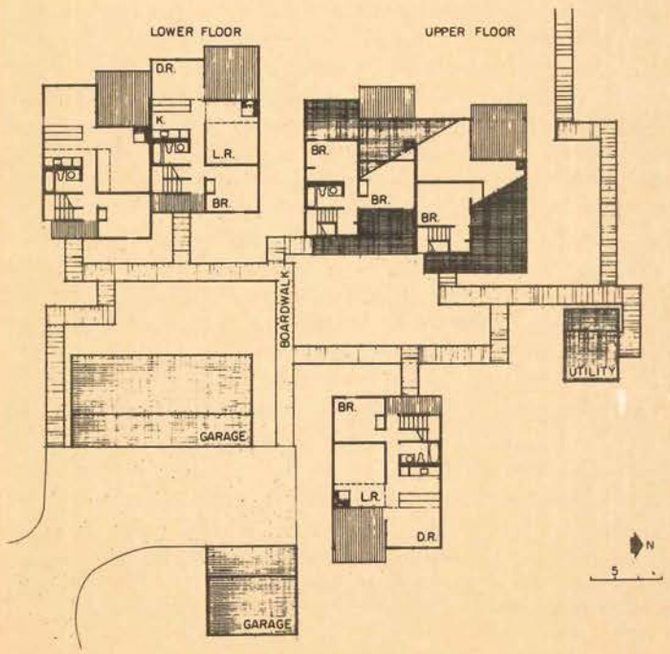
Photos by Edmund Y. Lee







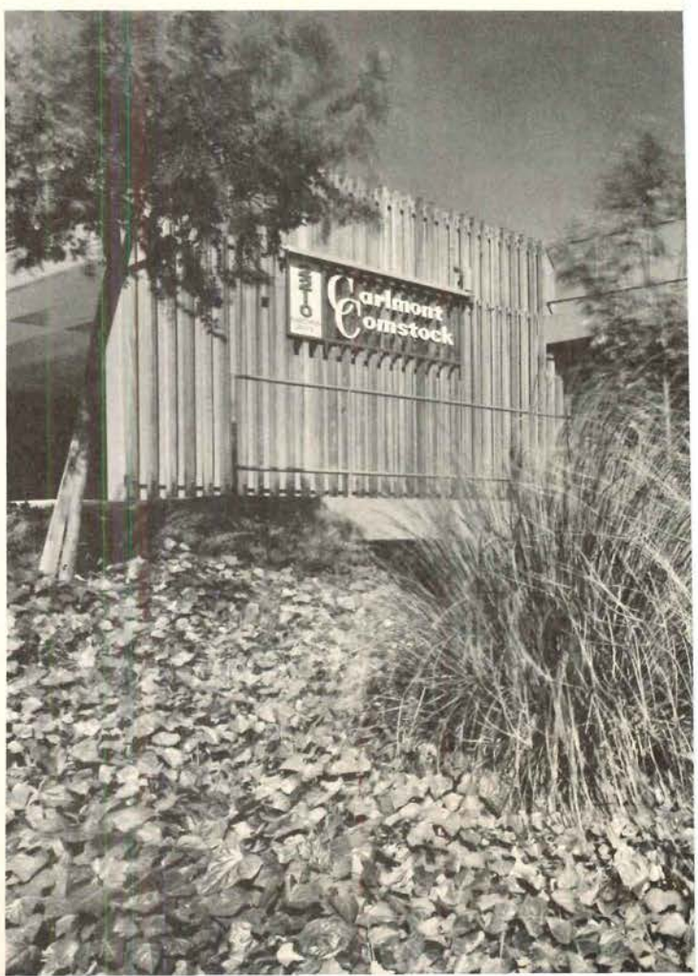
SITE PLAN



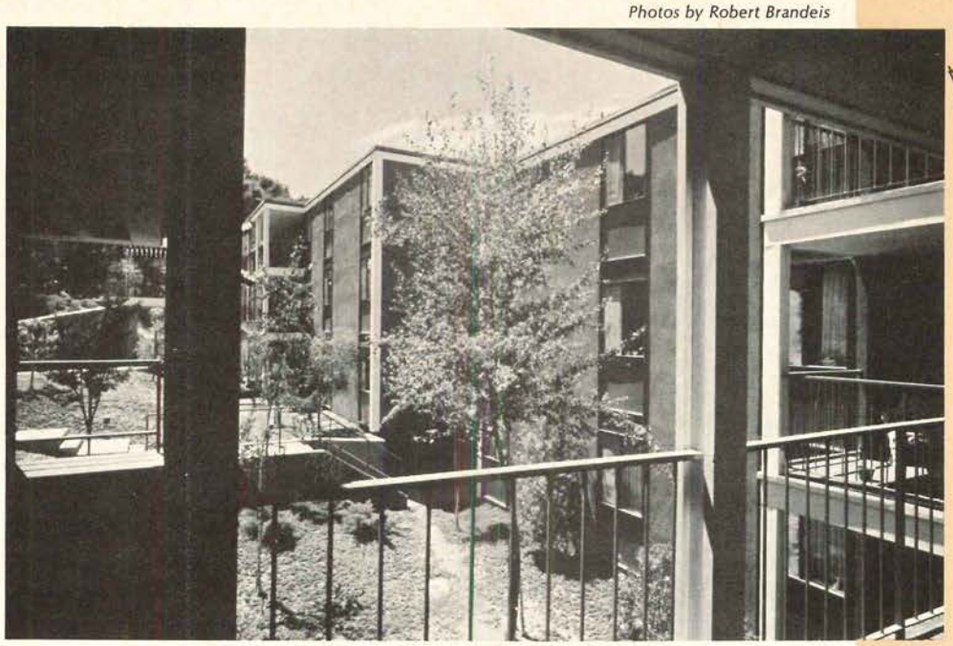
Luxury apartments with emphasis on spacious units and individual privacy

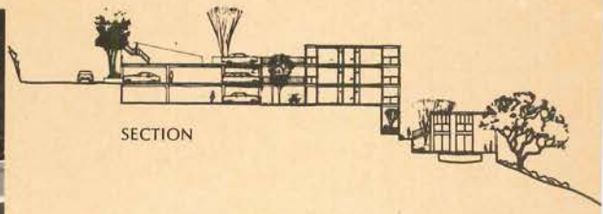
The Carlmont Comstock Apartments are in the luxury class, their design premised on the need of older tenants for living units which approximate a private residence in amenity but which the tenant does not have to maintain. Given these requirements and the two-way slope of the site, a three-story garden apartment proved more suitable than a high-rise building (although this was considered). The entrance to the complex is from the upper side of the site which permits parking in the three-level parking structure along the street. Access to individual units is over landscaped walks, by bridges or by steps which define the variety of spaces and levels. Tenants walk up or down only one flight from the garage. Many of the large oak trees on the site were preserved to enhance the view from each apartment. Privacy between apartments—important in tenant satisfaction—is obtained through separation of balconies, location of windows, and double walls and carpeted floors. Recreation facilities are on a level some 15 feet below adjacent apartment units to reduce noise. Construction is wood frame and stucco.

CARLMONT COMSTOCK APARTMENTS, Belmont, California. Owner: *Edward Drotleff*. Architects: *Knorr-Elliott & Associates;* structural engineer: *Stefan J. Medwadowski;* mechanical and electrical engineers: *O'Kelley and Schoenlank;* landscape architects: *Sasaki, Walker Associates, Inc.;* contractor: *H. J. Drotleff & Sons.*

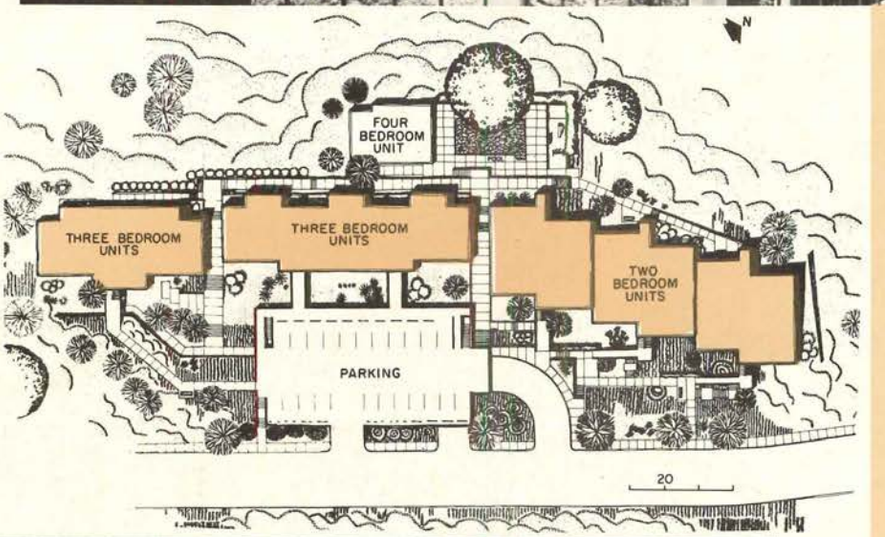


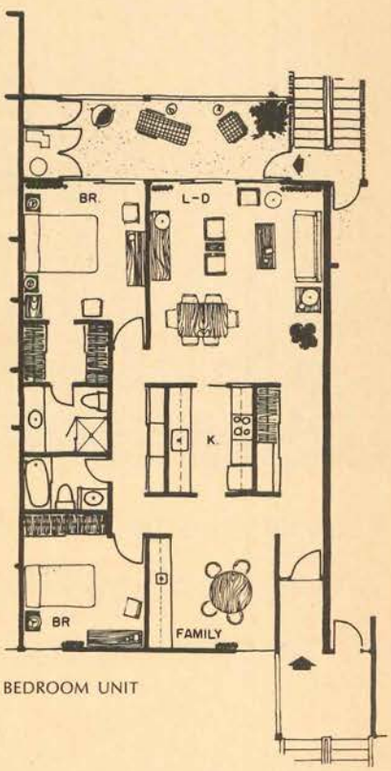
Photos by Robert Brandeis



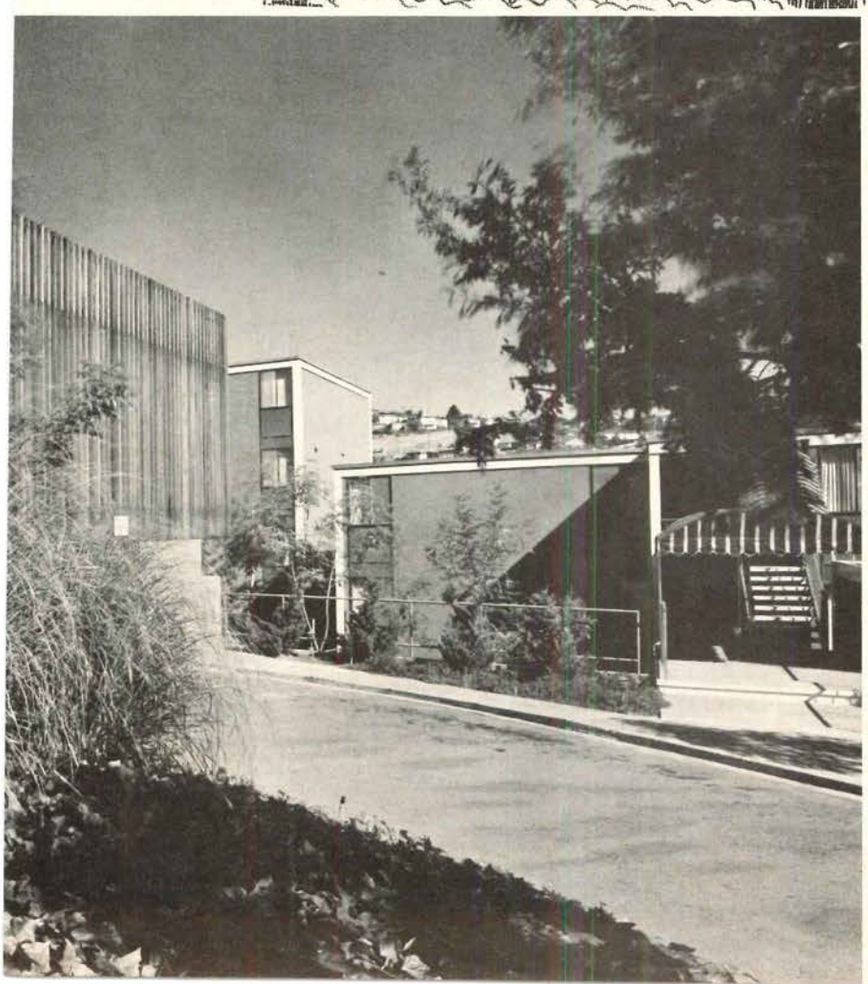


SECTION

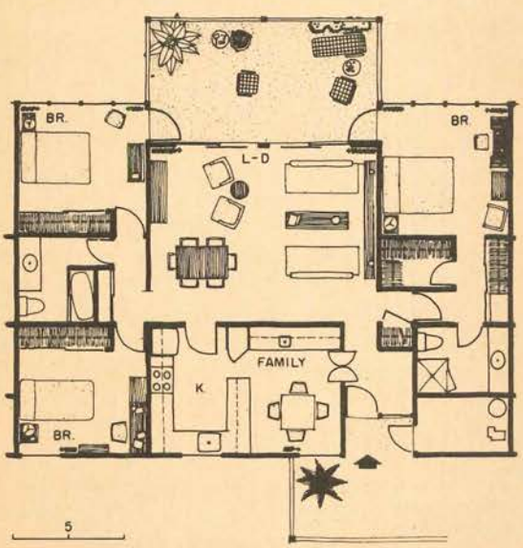




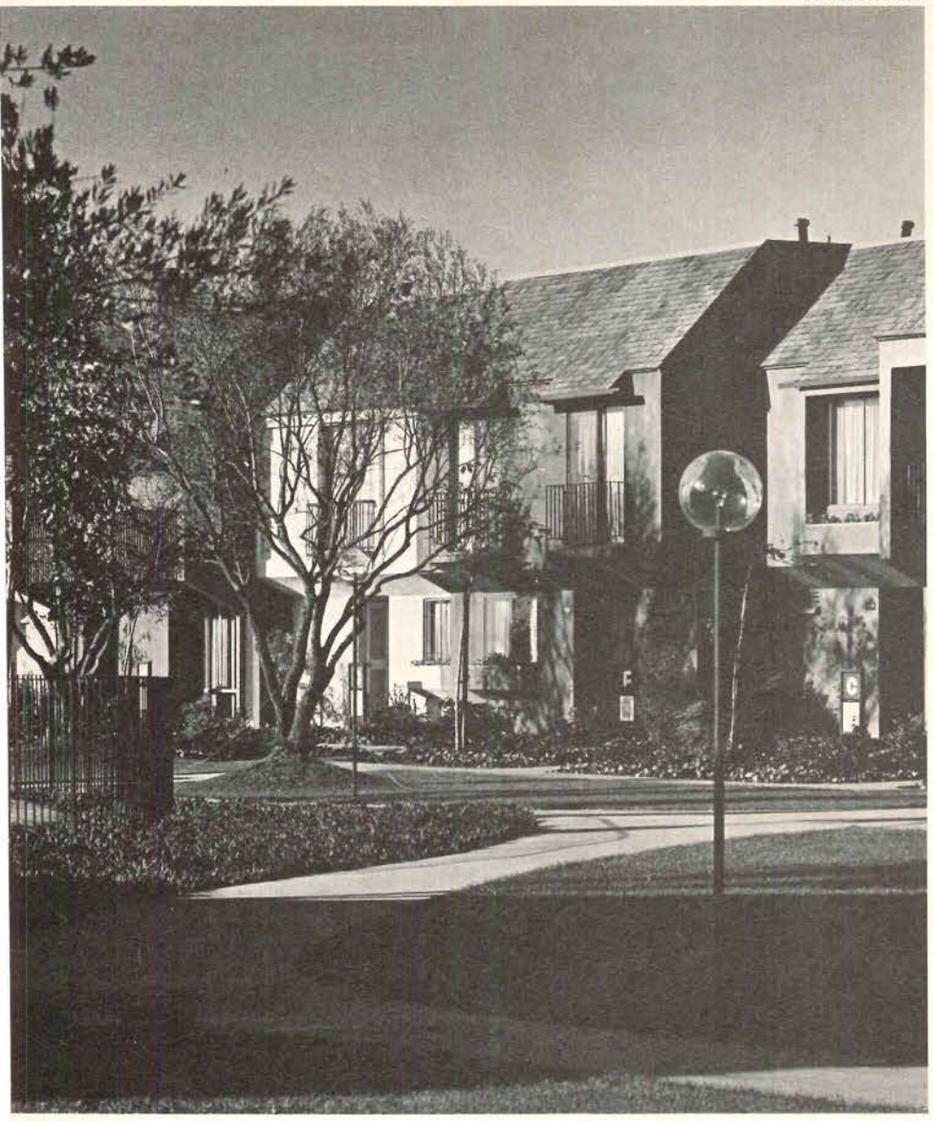
TYPICAL TWO BEDROOM UNIT

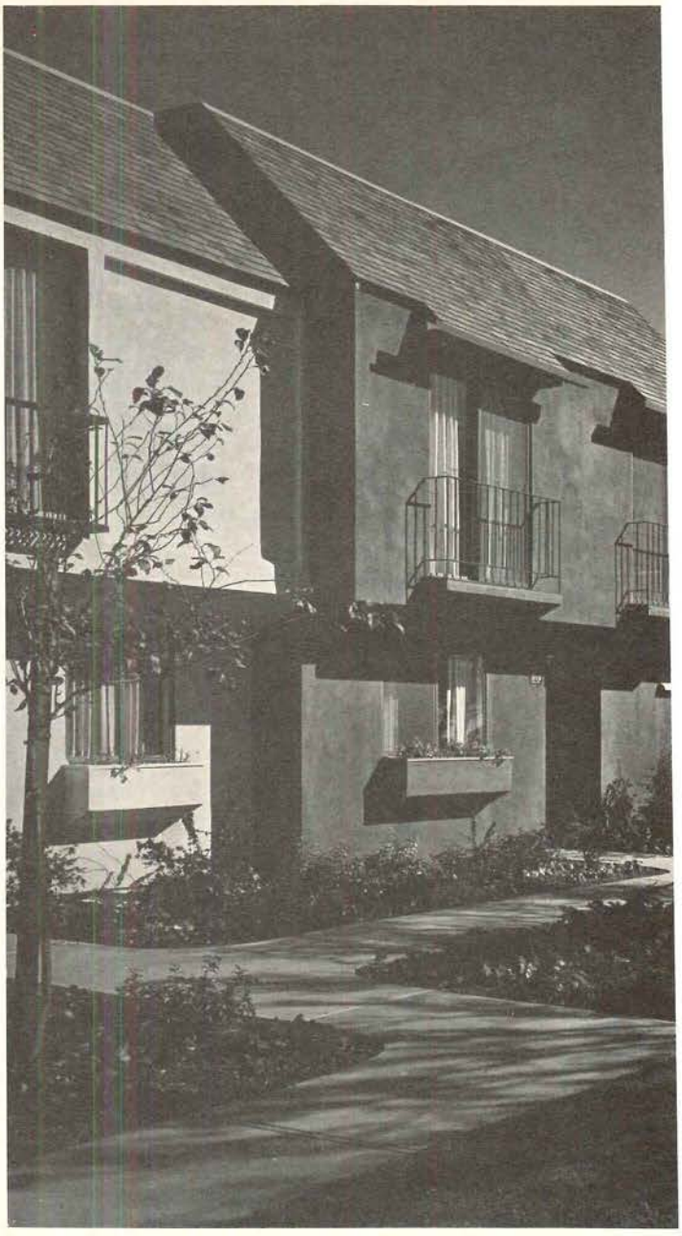


TYPICAL THREE BEDROOM UNIT



A. Robert Fisher

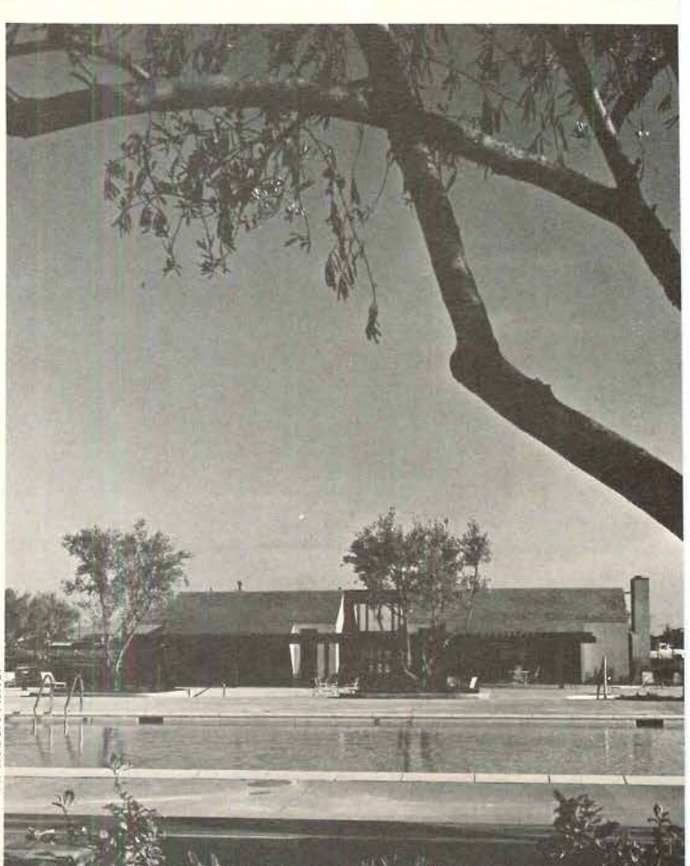




Disciplined variety creates interest on a flat site for a townhouse complex

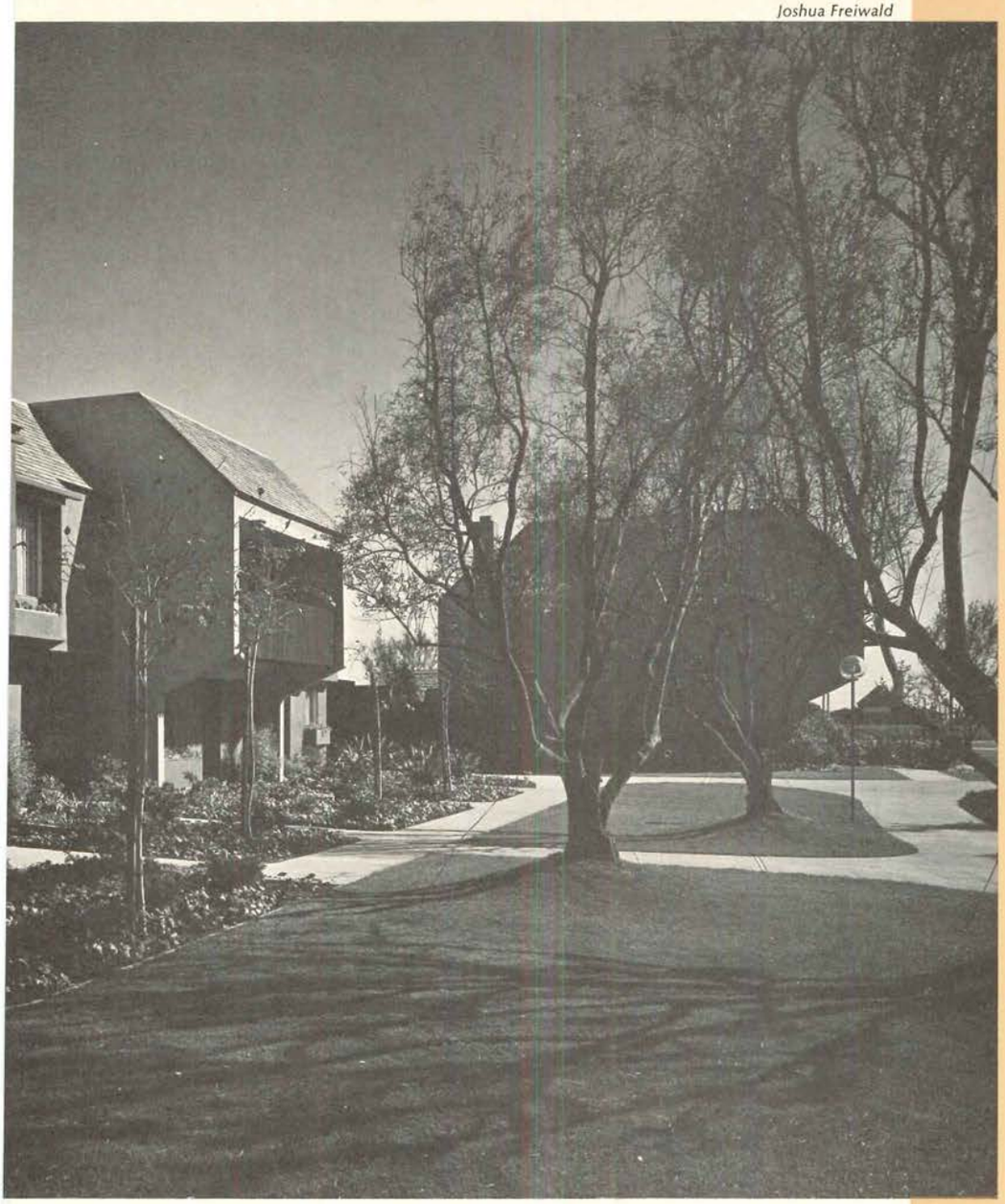
These townhouses, on a low flat site on Bay Farm Island in San Francisco Bay, are the first of an eventual 400-unit development. The project turns inward for the most part since the flat site has only limited vistas. Variety of building forms, spatial experiences and landscaping are especially important in such circumstances. Seven kinds of house plans, and a number of elevations for each, provide variety of building type and form; color and setbacks add further interest. The strong roofline gives stability and strength within such variations. Sizes of units range from one-floor, two-bedroom units to two-story, four-bedroom units. All are of frame construction, finished with blown-on, integral two-color stucco. Their design, derived from the Mediterranean, is reminiscent of many of the houses nearby. The site is developed with generous open space—the density is just 10 units to the acre—a five-acre park at the center of the site contains three swimming pools and a community building (lower right photo); smaller common spaces are scattered through the site. Each unit also has a private patio between its two-car garage and the house.

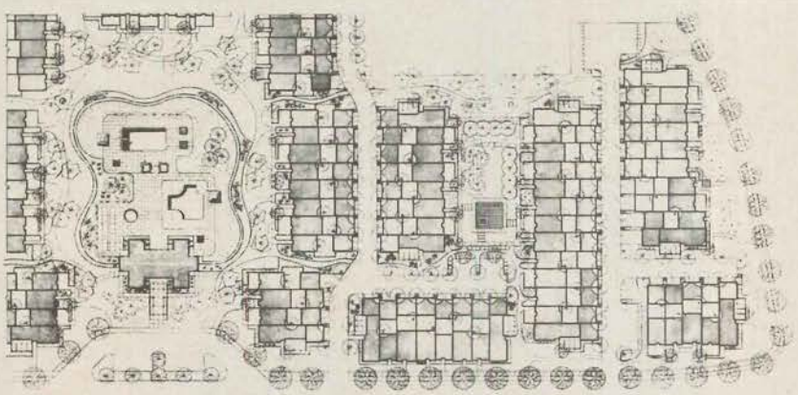
CASITAS ALAMEDA, Bay Farm Island, Alameda, California. Owners: *Braddock & Logan and Shoreline Properties.* Architects: *Fisher-Friedman Associates;* structural engineers: *L. F. Robinson & Associates;* landscape architect: *Anthony Guzzardo;* general contractor: *Braddock & Logan.*

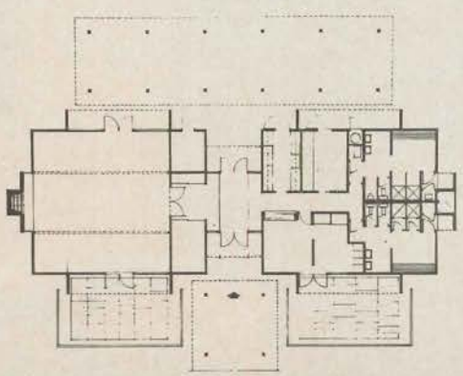


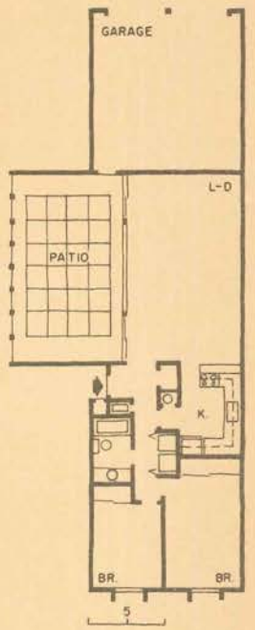
A. Robert Fisher

Joshua Freiwald

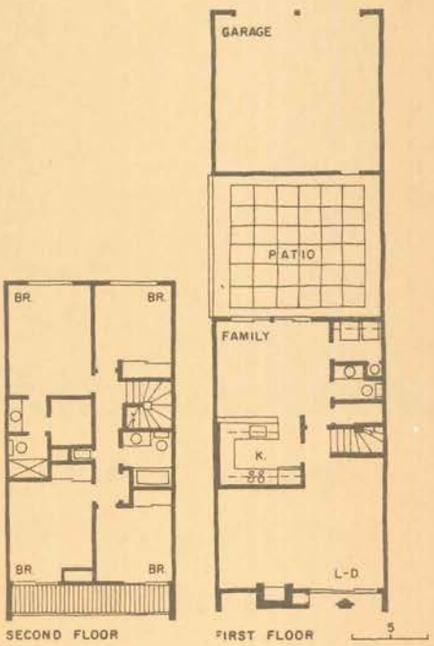




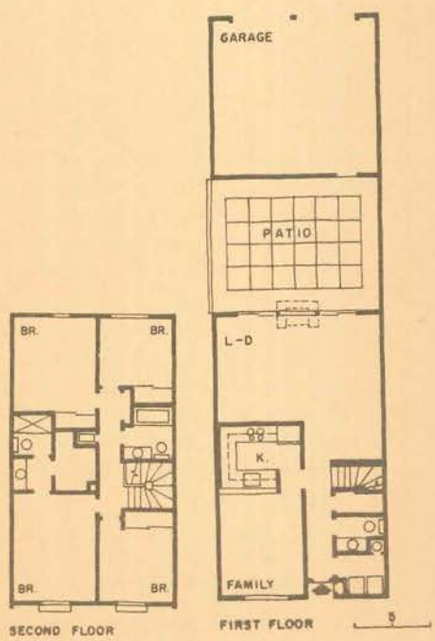




ONE-FLOOR, TWO-BEDROOM UNIT



TWO-FLOOR, FOUR-BEDROOM UNITS

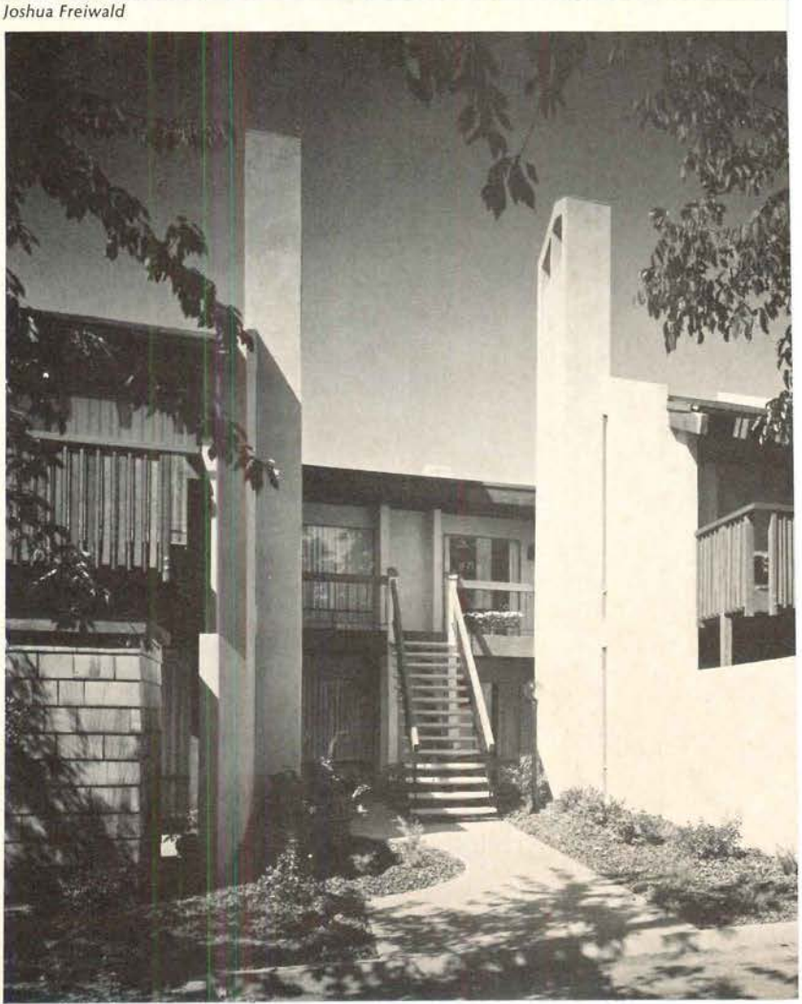


Joshua Freiwald

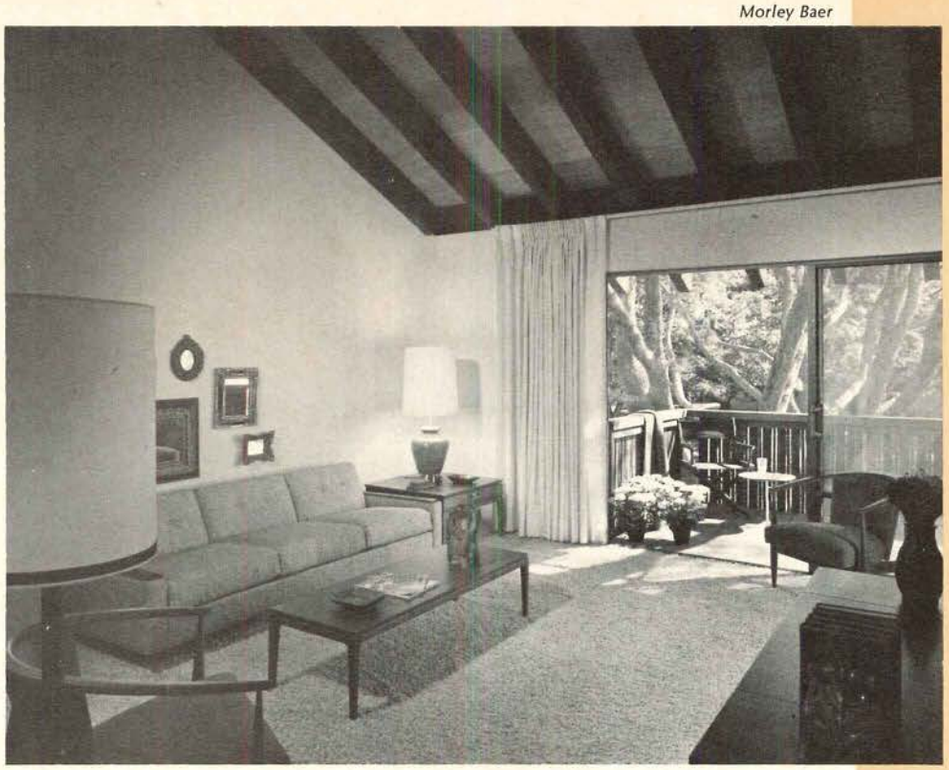
Careful planning clusters 800 units on 38-acre site without crowding

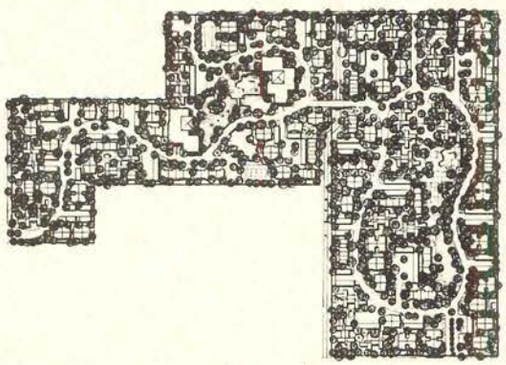
Woodside's site is an old walnut orchard in a new and rapidly developing section of Sacramento, California, across the American River from the city's major business area and the state capitol, and adjacent to a state college campus and many new businesses. The plan for Woodside is being developed in three phases; eventually there will be 800 units on the 38-acre site, with an overall density of 18 units per acre. The first phase, now complete, shows that this rather intense use of the site can create, through cluster planning and sympathetic landscaping, pleasant and generous open spaces between buildings—a key consideration in renting apartments. Although stucco is the predominant material for the residential units, the community facilities (recreation, guest units and laundry) are faced with cedar shingles. Redwood is used as trim, for balcony railings and stair rails, on the apartment units, and panels of cedar shingles tie the residential and community buildings visually. The residential buildings vary in exterior appearance more by size and type of unit than by difference in material. Six basic plans were used to achieve the variation which gives the development its vitality.

WOODSIDE APARTMENTS, Sacramento, California. Owner and developer: *Robert C. Powell.* Architects: *Donald Sandy, Jr., and Associates;* structural engineers: *Shapiro and Okino;* landscape architect: *Anthony Guzzardo;* interiors: *Jeannette Interiors;* contractor: *Robert C. Powell.*



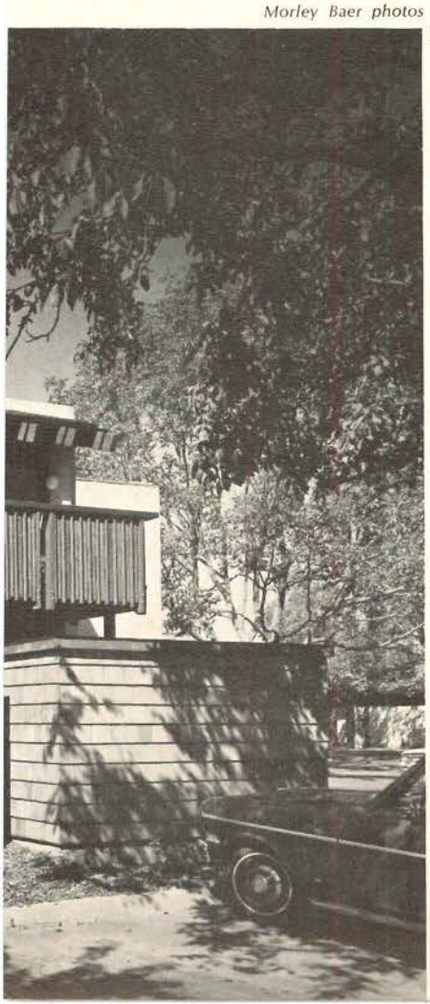
Morley Baer

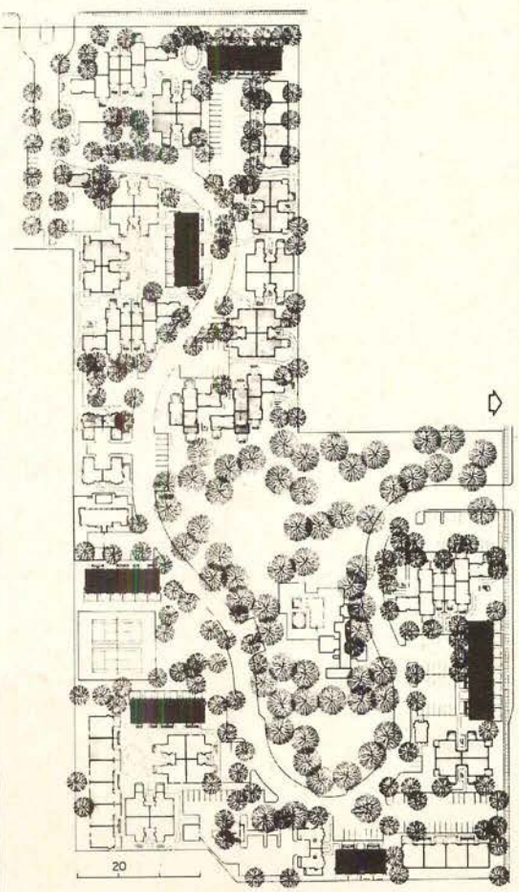


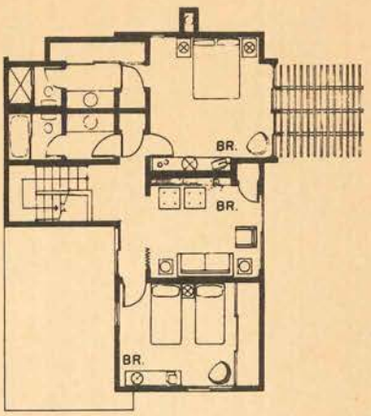


Apartments at Woodside range in size from studio (two types: with balcony bedroom, and all-on-one-floor) to three bedroom, two and a half bath units, and rents range accordingly. Each unit has some form of private outdoor space, either a walled court (first floor units) or a deck (second floor units). Some of the more luxurious units are on two levels. Fireplaces —a big selling point with rental agents—are a feature of most apartments. Average age of renters is 37; 62 per cent are young single people who make good use of the recreation units and social center.

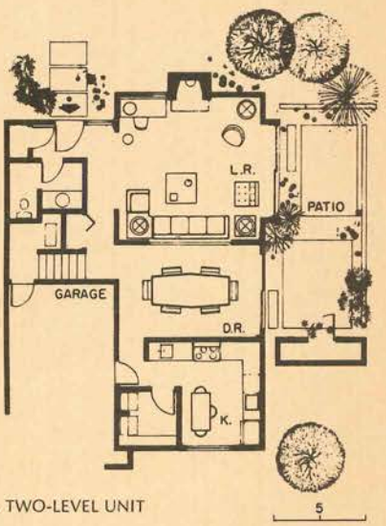
Morley Baer photos



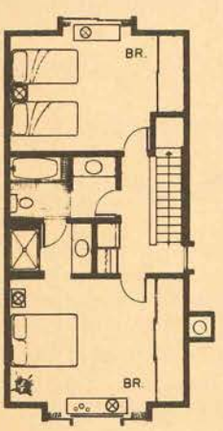




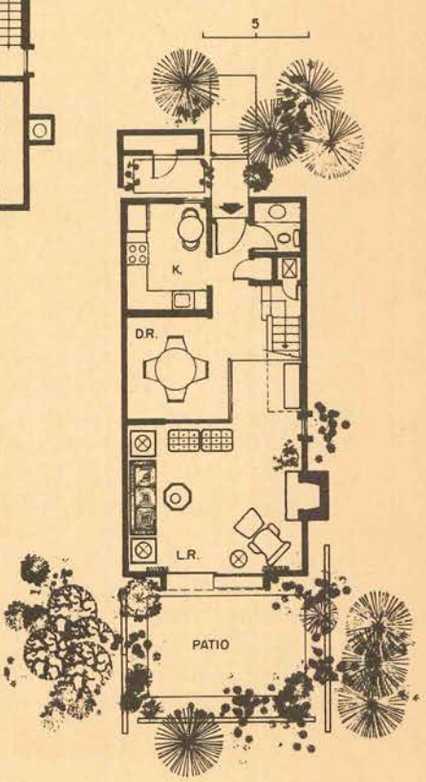
SECOND FLOOR



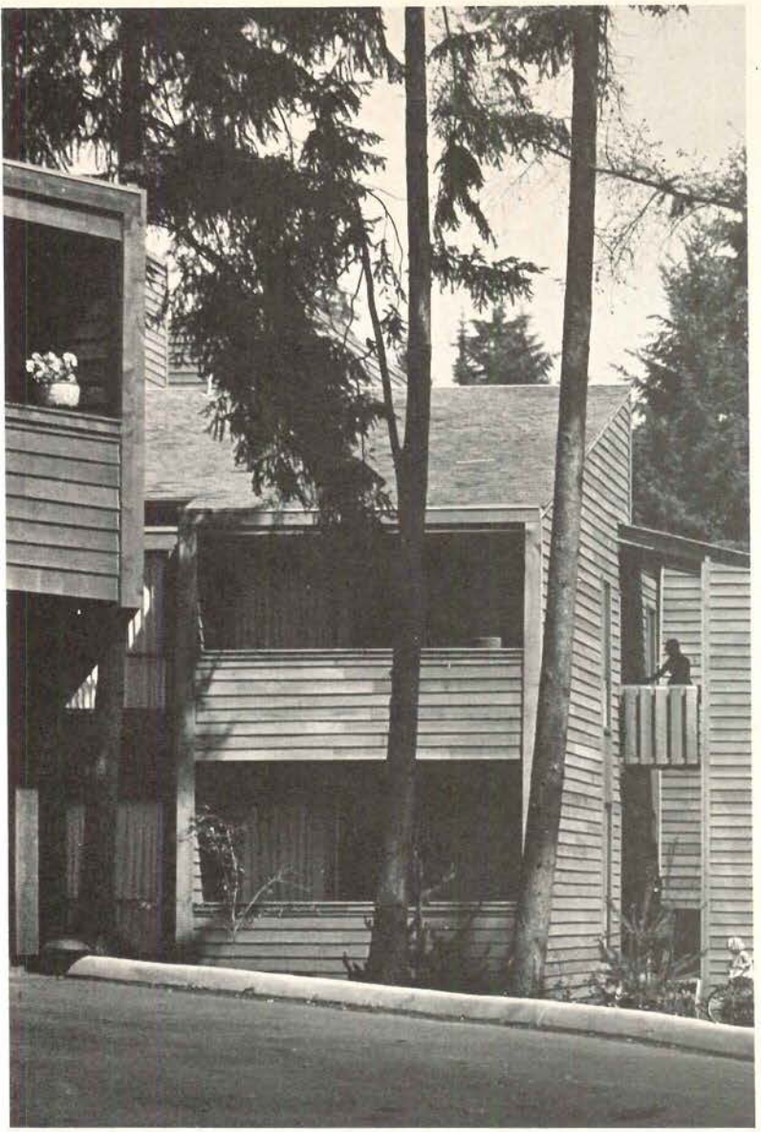
THREE-BEDROOM, TWO-LEVEL UNIT
FIRST FLOOR

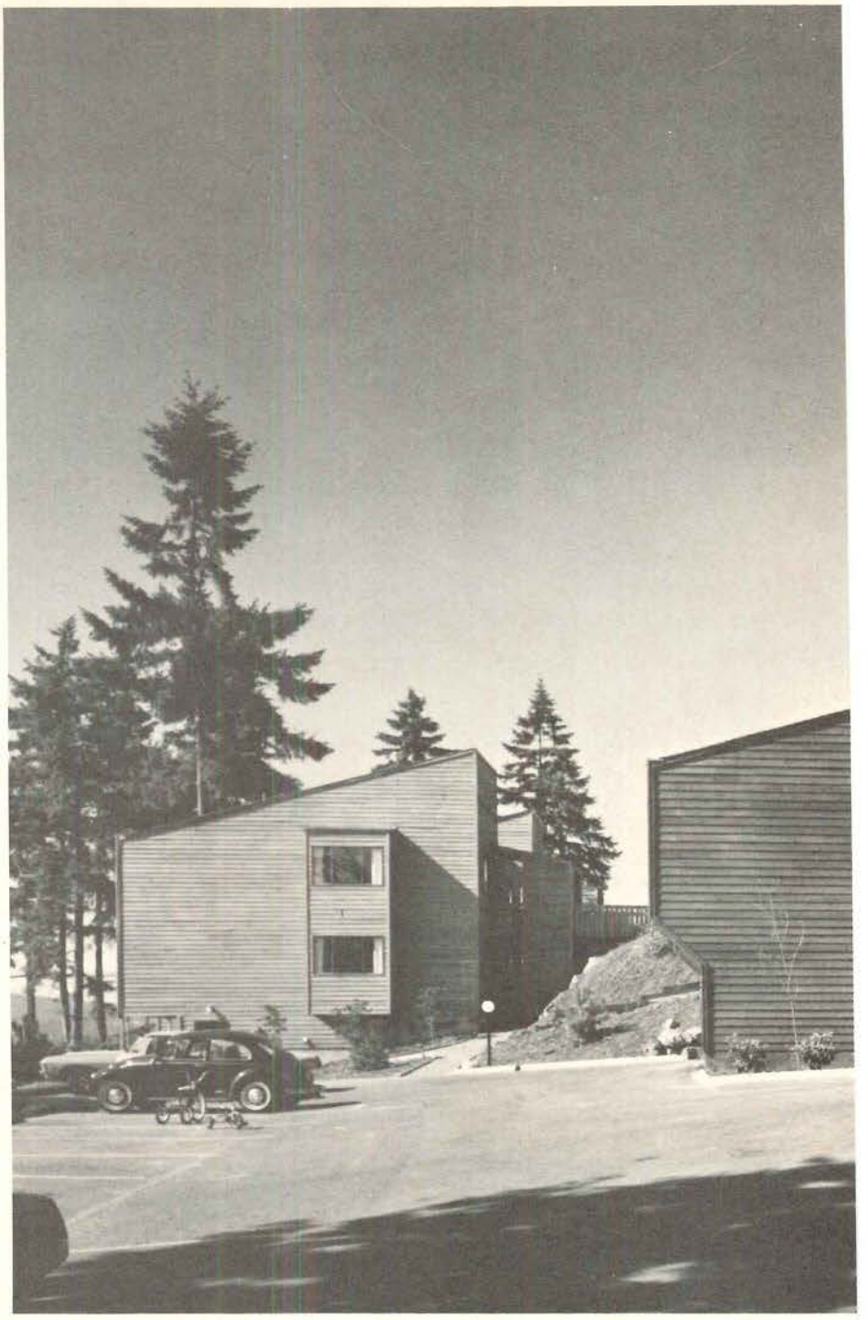


SECOND FLOOR



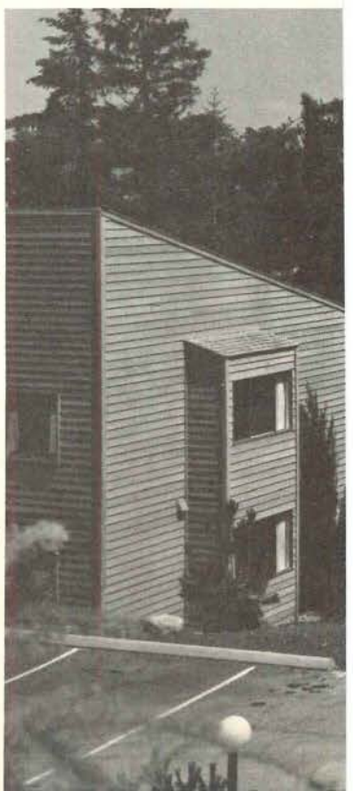
TWO-BEDROOM,
TWO-LEVEL UNIT
FIRST FLOOR





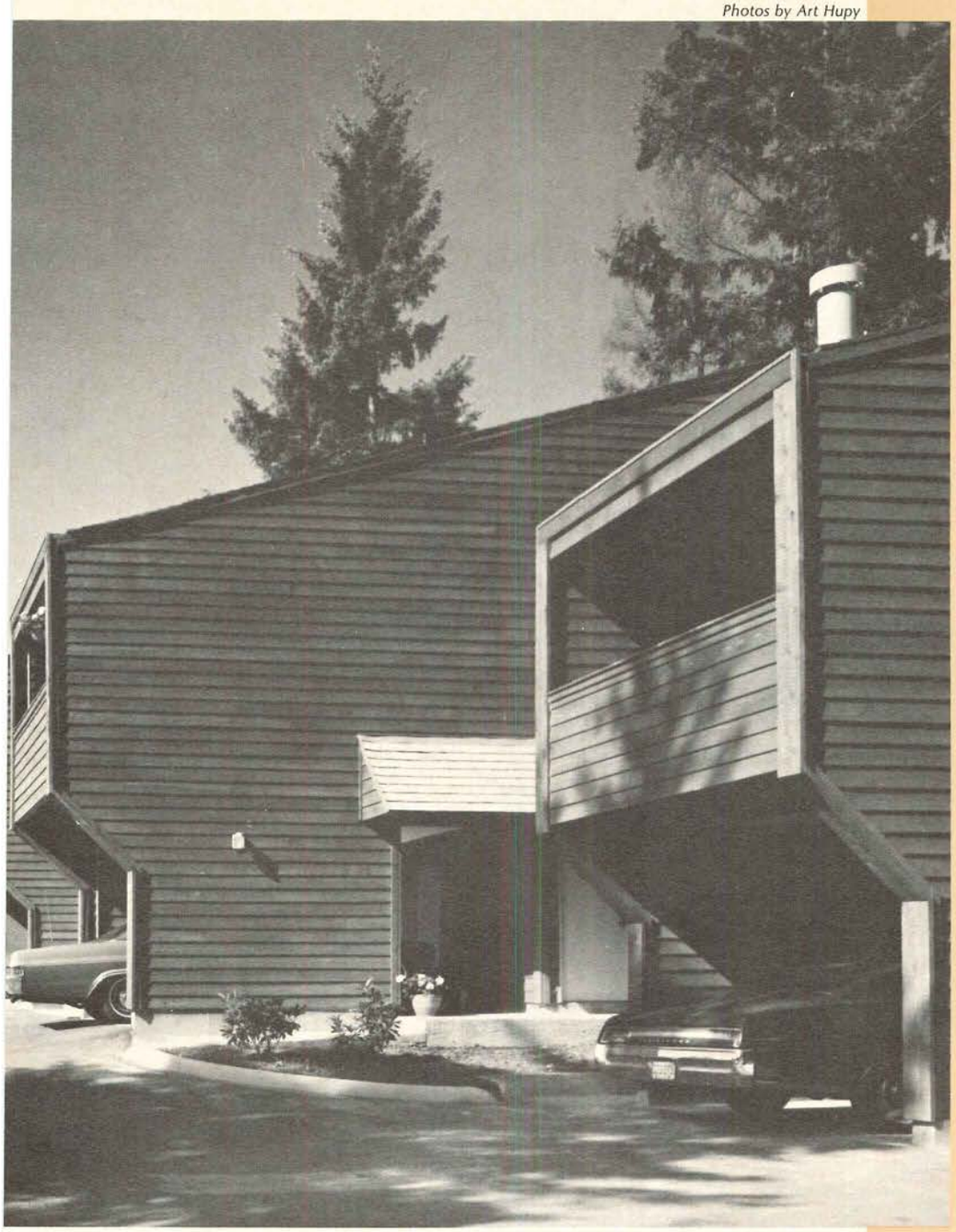
High density, low-rents for young families in complex on wooded hill

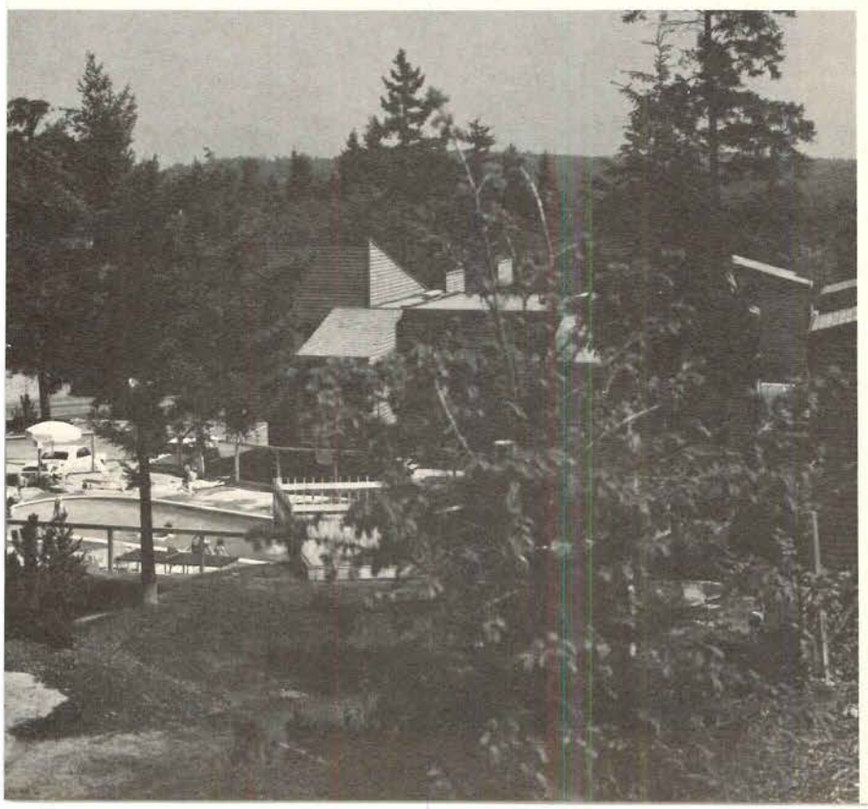
Designed to attract—and meet—the rental needs of young families, this apartment group, located in a grove of Douglas fir trees northeast of Seattle, makes much of the open spaces between buildings. For the most part, buildings are clustered around small open spaces containing either play areas for little children or a small number of parking spaces. Very little grading was done to the site since steps, decks and bridges were used where needed to make walking easy on the sloping site. Circulation through the site is carefully controlled, with no through roads. Despite the high density of site use (18 units per acre) there is an unusual feeling of openness throughout, and this is increased in those units which have a view over Lake Sammamish. Other units look out on small landscaped areas. Just three unit plans were used to minimize costs and still obtain variety visually and in rental offerings. Size of units varies from one to two bedrooms. Wood is used for its suitability and because it was inexpensive (at the time of construction), an important consideration in keeping rents low. Rough sawn cedar siding, stained, is used for exteriors, with cedar shingle roofs.

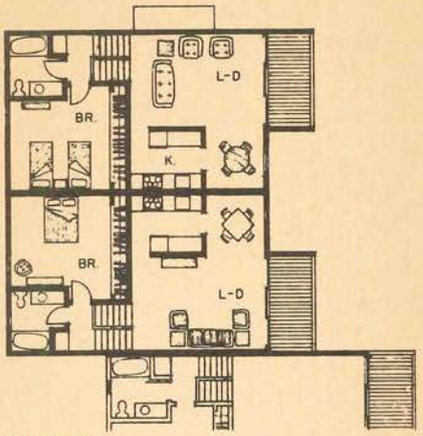


LAKERIDGE VIEW APARTMENTS, Bellevue, Washington. Owner: *Environmental Properties, Inc.* Architects: *Zaik/Miller;* landscape architect: *William Teufel;* contractor: *Environmental Properties, Inc.*

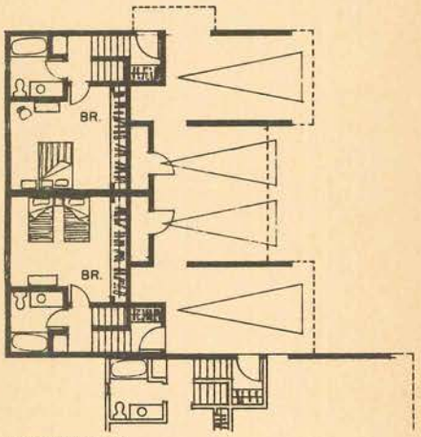
Photos by Art Hupy



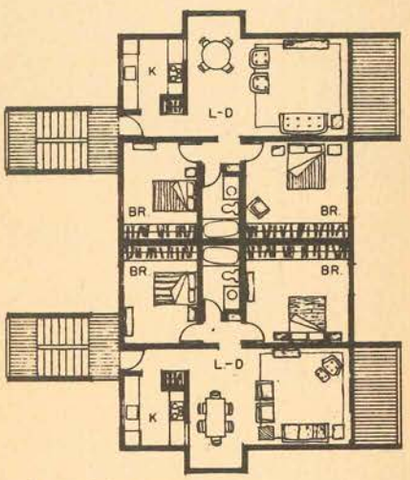




UPPER LEVELS

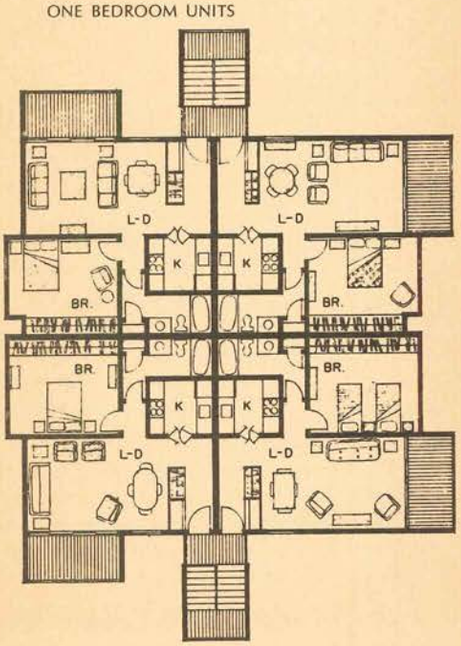


LOWER LEVELS



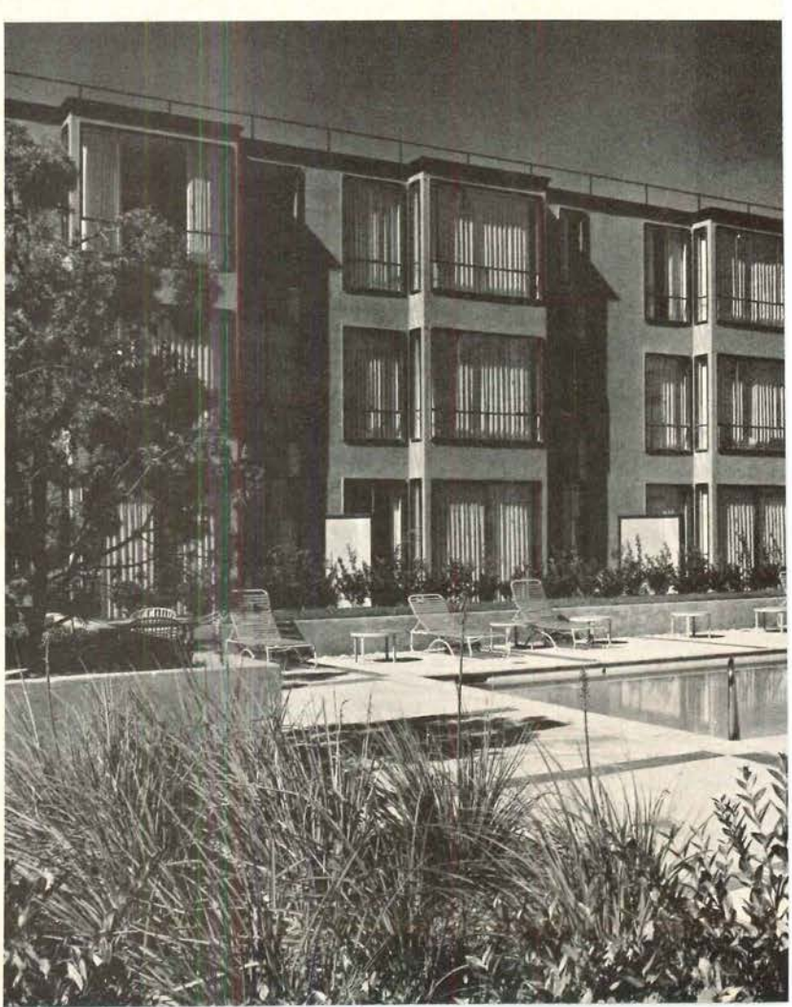
TWO BEDROOM UNITS

ONE BEDROOM UNITS



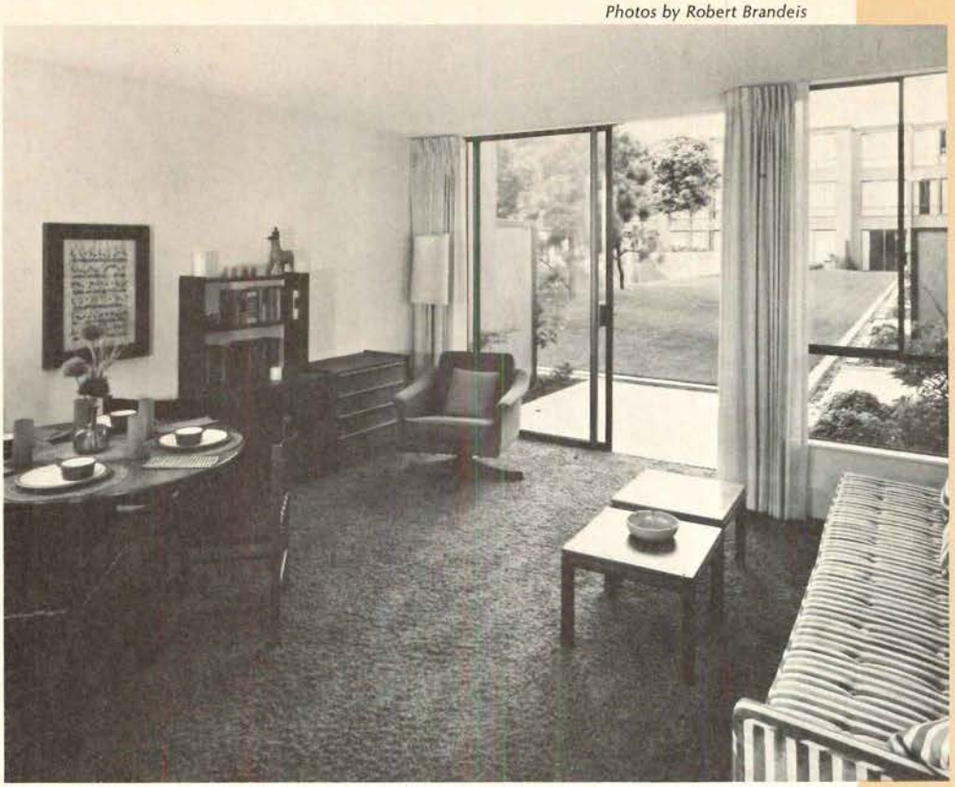
Northpoint: a city site with large open spaces has special advantages

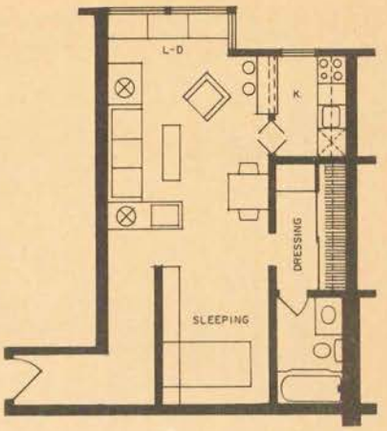
Although garden apartments are usually located in suburban areas, Northpoint was deliberately located in a city with the intent of providing the same amenities that suburban locations offer along with the advantages of city living. Northpoint is in the North Waterfront area of San Francisco, within walking distance of shops and restaurants and with good public transportation to other parts of the city. Its four landscaped courts, each developed for a different kind of use, are unusual in urban apartments: two have swimming pools, the others have fountains; all have trees and grass and places for quiet relaxation. In addition, most units have semi-private outdoor space, either enclosed patios or balcony decks. There are 12 lobbies for entrance to the apartments, a device which conveys a sense of small scale despite the large number of apartments and the density of site use. Of the 514 units, 233 are one bedroom and 14 are two bedroom units. Parking is underground, one stall to a tenant, with direct elevators to apartments. Next to the buildings is a block-size commercial development by the same developers and architects.



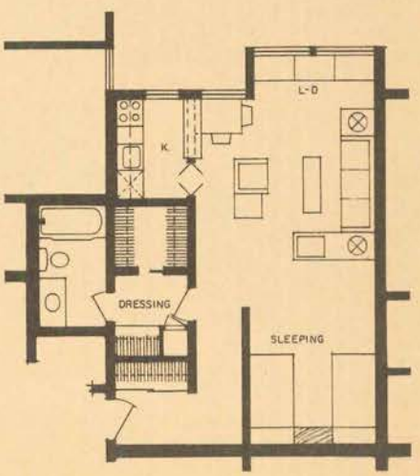
NORTHPOINT APARTMENTS, San Francisco, California. Owner and developer: *Gerson Bakar and Associates*. Architects: *Wurster, Bernardi & Emmons;* structural engineer: *David A. Welisch;* mechanical engineers: *Atlas Heating and Ventilating;* electrical engineers: *Edward Shinn & Associates;* landscape architects: *Lawrence Halprin & Associates;* interior design: *Matt Kahn;* contractors: *Williams & Burrows, Inc.*

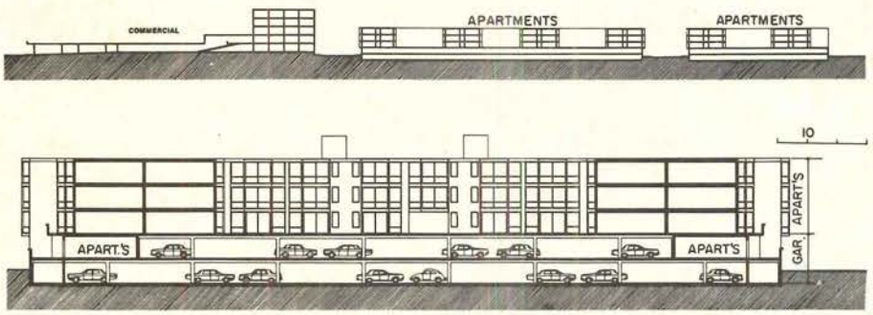
Photos by Robert Brandeis

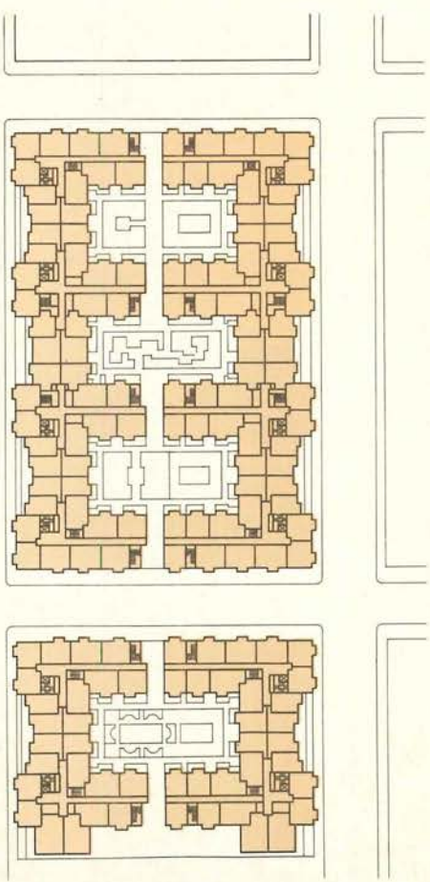


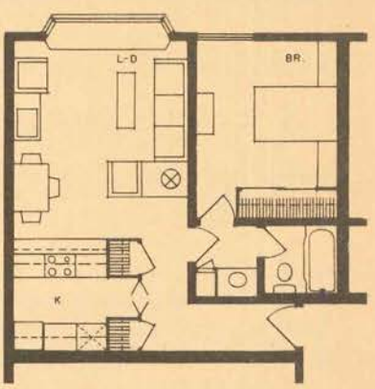


TYPICAL STUDIO UNITS

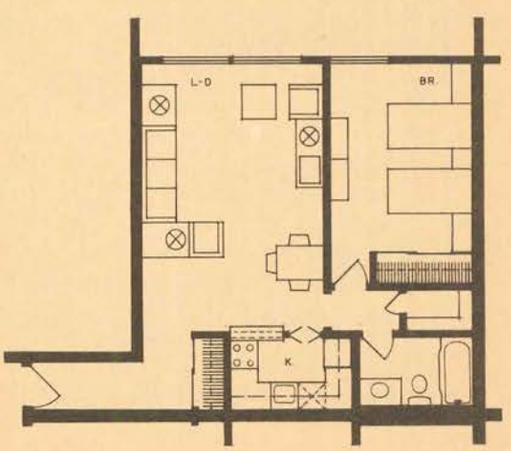




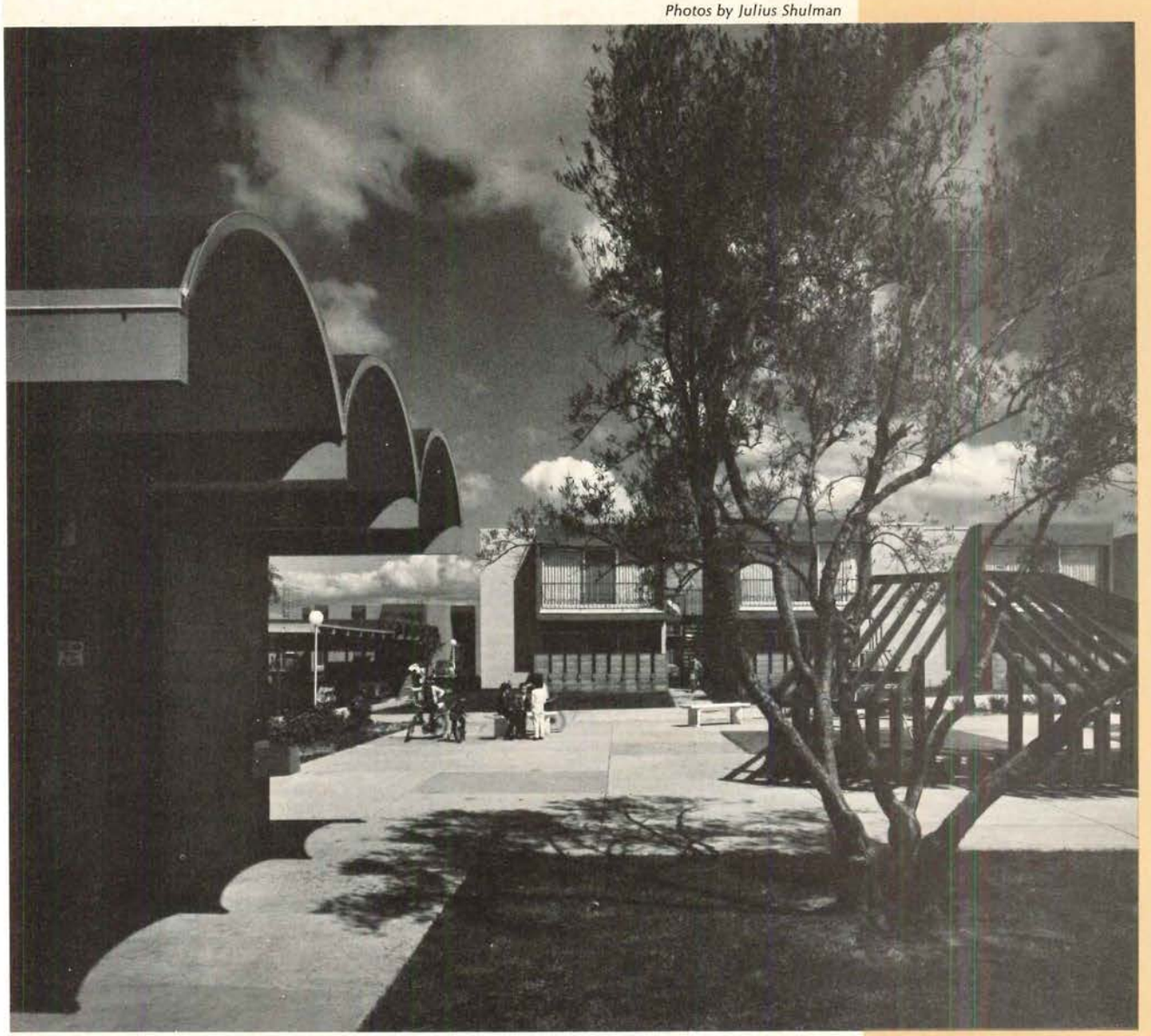




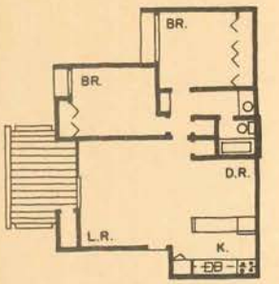
TYPICAL ONE BEDROOM UNITS



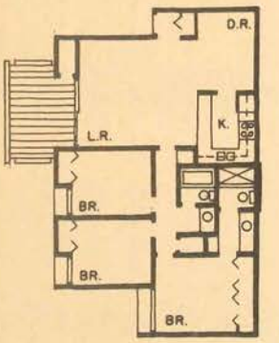
Photos by Julius Shulman



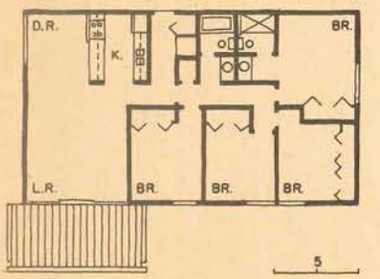
TWO BEDROOM UNIT



THREE BEDROOM UNIT



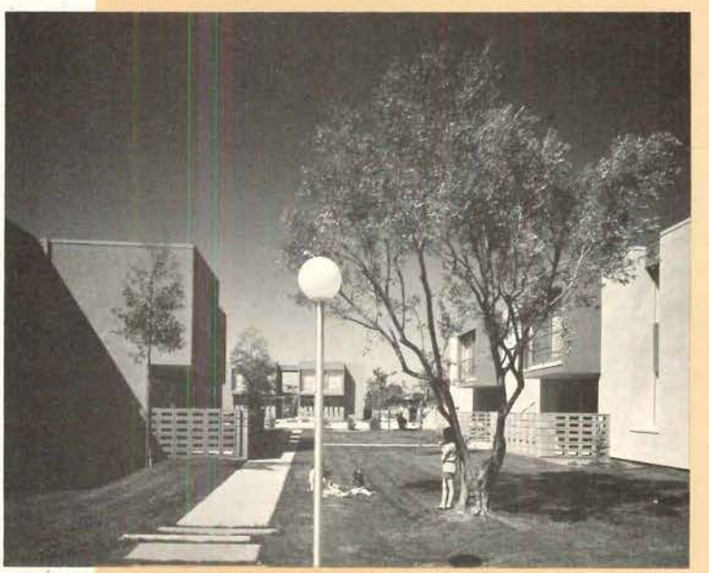
FOUR BEDROOM UNIT



A low-rent project in a landscaped setting with quality amenities

To get as much visual interest and variety as possible and at the same time use the available land intensively so that rents could be held at a low level, the architects for the Lord Tennyson Apartments in Hayward, California, near Oakland, alternated large and small buildings, bridged between some of the buildings for vistas, and grouped buildings around landscaped areas developed for community use and recreation. Since this project was built under 221-d3 regulations, economy was vital. That low-rental housing can be as attractive even if not so luxurious as moderate and high-rent apartments is obvious from the quality achieved in both buildings and site use in this project. Basic plans, limited in number to effect economical construction, are combined in many different ways to obtain variety. Elevation designs, too, are varied with bays, recesses, extensions of wall planes, and different locations for windows and other "secondary" elements. The common open spaces are pleasant and generous; in addition, each unit has some private open space, with a walled patio or balcony off the living room.

LORD TENNYSON APARTMENTS: Hayward, California. Owner: *Volunteers of America.* Architects: *Stephen G. Oppenheim & Associates—Kurt W. Rheinfurth, partner-in-charge of planning; Harold Wiener, partner-in-charge of production;* structural engineers: *Ralph Goers & Associates;* electrical engineer: *Frederick R. Brown;* contractors: *Albert Gersten and Associates—Louis Cohen in charge.*



Fire tests prove steel structure can be exposed

by Anthony F. Nassetta, partner, Weiskopf & Pickworth, consulting engineers

Full-scale mock-up tests show that spandrel girders of a 54-story office building to be built in New York need not be sheathed on the outside with conventional fire-protective materials.

Steel need no longer be considered an assembly of beams and columns forming the supporting framework or "skeleton" of the building that has to be fully encased by fire protective material. The skeleton is coming out of the closet! Architectural use of *exposed steel* is growing steadily as more and more design possibilities are explored and adopted. Many architects and engineers have long felt that fire protection is one of the main problems in using exposed steel, particularly in high-rise buildings. But it need not be, as has been demonstrated by recent research that has involved full-scale fire tests on structural steel assemblies under a variety of conditions: different fire loads, sizes of window openings and winds. Extensive studies and tests have been conducted by the American Iron and Steel Institute, Underwriters' Laboratories, Inc., and United States Steel Applied Research Laboratory, including the types mentioned above.

As part of a broad applied research program sponsored by United States Steel Corporation, prior to the design of a new 54-story rental office building in New York City, various methods of fire protection were studied with emphasis on exposed steel. New protective coverings, protection by shielding, water cooling and elevated temperature steel designs were all examined for various building prototypes. Architects are Skidmore, Owings & Merrill; joint venture structural engineers are Paul Weidlinger and Weiskopf & Pickworth.

The design adopted totally expresses the structure, with exposed steel plate girder spandrels spanning 54 ft and extending full depth between windows. The spandrel members consist of 70-in.-deep steel built-up girders with metal cladding and window frames attached to top and bottom flanges forming the entire exterior wall assembly. As a structural member, the girder supports cladding, window frames and a portion of the interior floor construction; as the exterior wall it provides the weatherproof building enclosure in addition to the windows and exterior columns. The exterior face of the steel web will receive a three-coat paint finish. Top and bottom steel flanges and interior steel surfaces of the girder will all have a spray-on application of mineral-fiber or vermiculite-type fireproofing. What is particularly unusual about the design from a fire protection standpoint is the cladding, which, attached to the flanges of the structural steel girder, forms a fire canopy. This cladding, together with the fireproofing, prevents steel temperature from reaching critical levels during fire.

Why the standard fire test does not apply

The fire resistance rating for this construction element cannot be determined by fire tests made in accordance with the "Standard Methods of Fire Tests of Building Construction and Materials" (ASTM-E119). Reason is that a compartment-type fire test, such as required in the standard procedure,

Adapted from a technical paper presented earlier this year at the 21st Annual National Engineering Conference of the American Institute of Steel Construction, Inc.

is neither feasible nor realistic. First of all, the large window opening size would make it impractical to achieve the required time-temperature curve even if a compartment of suitable size could be constructed for testing purposes. Furthermore, the standard time-temperature curve does not properly represent fire intensity and duration, particularly along the exterior portion of the building, for this type office occupancy. Many tests have been conducted which have demonstrated that higher temperatures occur during the first hour, with far less intensity and duration after the first hour depending upon the openings, and hence ventilation, provided in exterior walls.

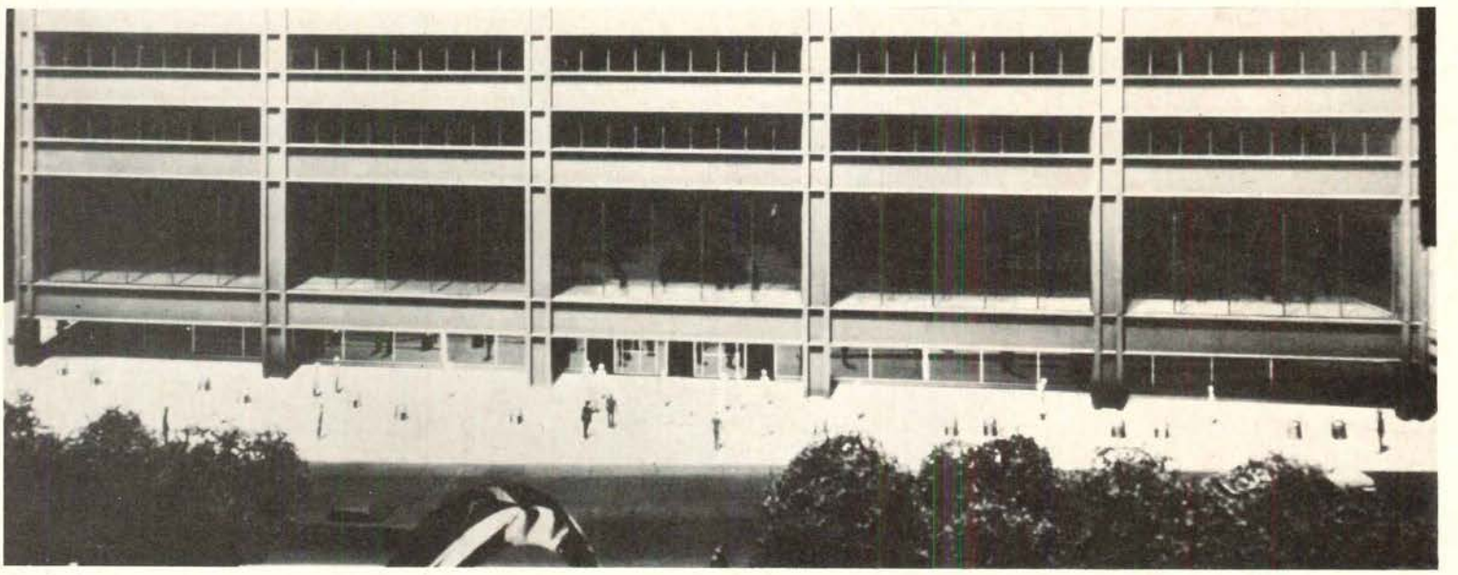
Exposed spandrel protected by shielding, not encasement

Earlier studies that involved fire testing and thermodynamic analysis suggested that the exterior face of the girder could be protected by use of a shielding approach rather than encasement with a fire-protective material. Shielding—a commonly used and accepted technique—can be accomplished by a barrier (flame-impingement shield) or by geometry (distance) or by a combination of these two which, in effect, prevents elevation of steel temperature to critical levels during a real fire even without total encasement of individual elements. Fire-protective ceilings between steel floor members and the source of thermal radiation is one example of barrier shielding commonly permitted in lieu of total encasement of steel members. Roof construction (trusses) more than 20 ft above the floor below without any protective ceiling or encasement of steel framing is already permitted in many building codes for most building classifications and occupancies.

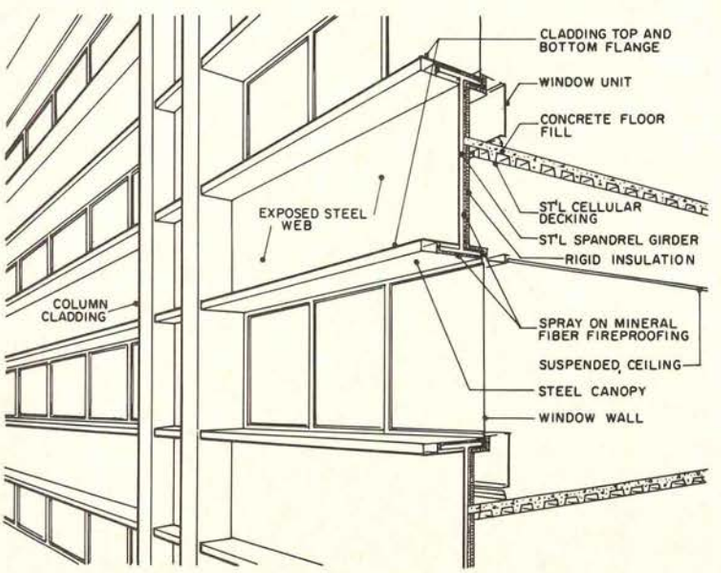
First step taken to arrive at a fire-protective design, incorporating flame-impingement shields and distance as a means of fire protection for the spandrel girder assembly, involved a thermodynamic analysis to predict anticipated temperatures of flame, and resultant temperatures on the spandrel. It was found that through a combination of flame-impingement shields, position of the girder, location of window line, size of window opening and interior protection, steel temperatures could be prevented from elevating above 1000 F during a real fire inside the building.

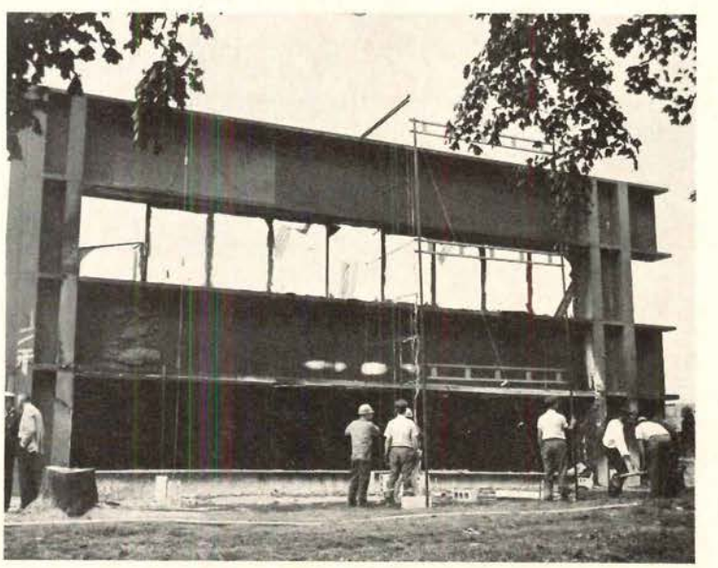
Shielding approach borne out by field test

Use of flame-impingement shields applied to the flanges of the spandrel girders for the proposed buildings was tested in an actual fire to confirm the validity of the thermodynamic analysis. The test was conducted by Underwriters' Laboratories, Inc., on October 10, 1968, on the grounds of the American Bridge Plant in Trenton, New Jersey, where a full scale mock-up of one bay of building was available.



Spandrel girders and H-columns are fully expressed, as the model (photo above) shows. Only treatment of the exposed webs of spandrels will be several coats of cool-gray paint to protect steel from weather, and to give it the color the architect has selected. The H-columns, backs of spandrel girder webs, and portions of the flanges will, however, have a fire-protective coating. Key to the omission of fire-protective coating is the cladding of the top and bottom flanges which serves as a shielding to mitigate the effects of flame.





For the purpose of the fire test, a concrete block enclosure approximately 56-ft wide, 24-ft deep and 9-ft high was added to the mock-up to simulate a typical office building area. The exterior face of the mockup was painted steel. No fireproof coating was applied to this face except for two small areas of the spandrel girder. One of these areas was coated with a 3/16-in. layer of intumescent paint, and the other was protected by a 9/16-in. coating of cementitious material. These coatings were applied merely to obtain some indication of the effectiveness of these fireproofing materials under conditions of exterior fire exposure.

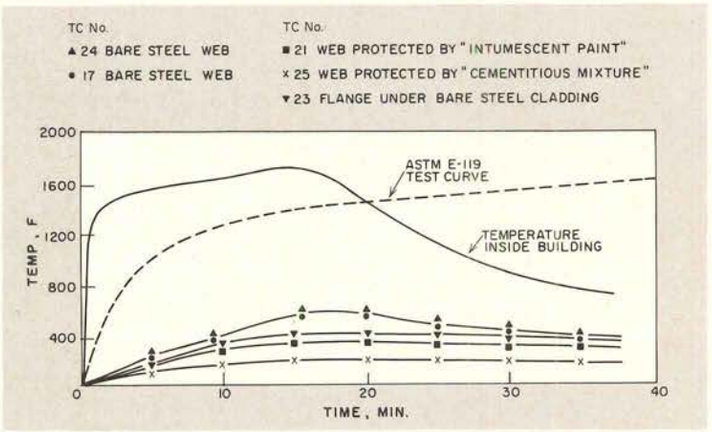
Temperatures were measured at 17 points on the exterior steel surfaces, at 6 locations inside the building, and at 10 positions in the flame outside the building. All thermocouples were connected to high-speed recorders to provide a complete record of temperature during the test.

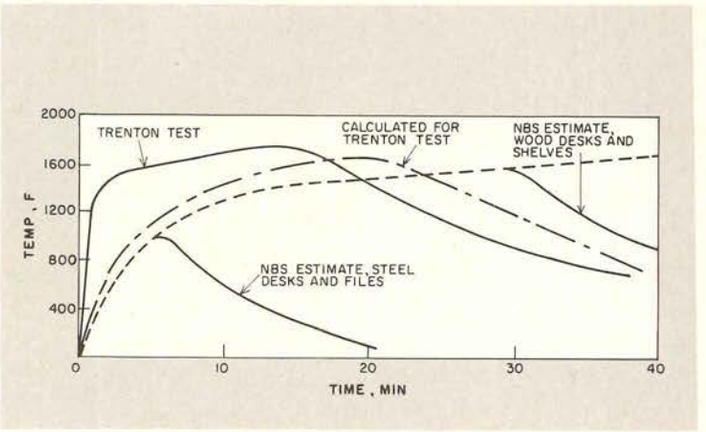
Fire load for the test was provided by 5600 pounds of kiln-dried, white fir lumber in the form of wood cribs. The total combustible content of the building, including the fuel oil and excelsior, represented an equivalent heat content of approximately 5900 lbs of wood. The floor area of this building was 1060 square ft; thus, the total fire load was 5.6 pounds of wood per square foot.

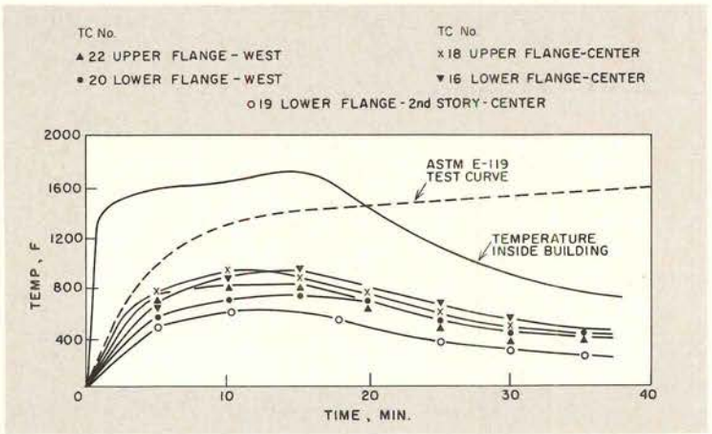
Following ignition of the oil-soaked excelsior, the fire developed quickly and reached temperatures considerably higher than those that would be encountered in the Standard ASTM E-119 Fire Test. Large flames emerged from the window of the fire chamber, and these were held close to the face of the building due to the action of the wind which was blowing at 4 to 8 miles per hour toward the building.

About 15 minutes after ignition, the fire was near its maximum intensity. The flames extended nearly to the top flange of the spandrel girder, but they did not appear to be in contact with the web of the spandrel in spite of the force of the wind which was blowing toward the building. The average fire temperature inside the building reached 1700 F 15 minutes after ignition; at this time, the flame temperature just outside the building near the bottom flange of the spandrel girder was 1500 F. At a point 24 in. away from the center of the spandrel web, the flame temperature had decreased to 1060 F; and near the top flange of the spandrel, the temperature was only 920 F. These temperatures are representative of conditions at the time of maximum fire intensity.

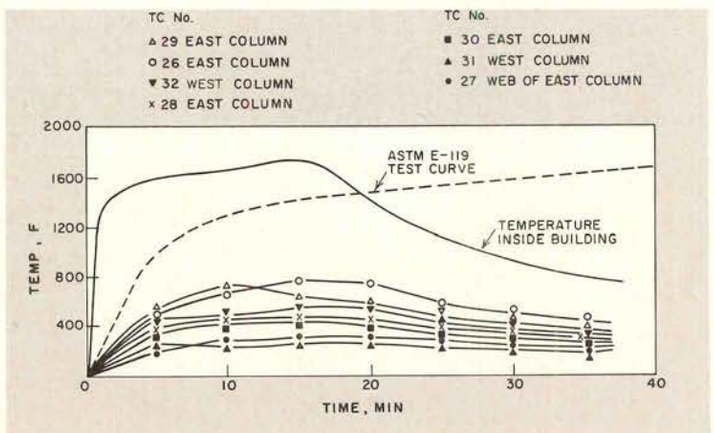
The glass in all the second-story windows cracked before 15 minutes of exposure, and the center pane fell out about 30 minutes after ignition. A maximum temperature of 310 F was indicated by a thermocouple attached to the glass 17 minutes after the start of the fire, and cloth strips hanging

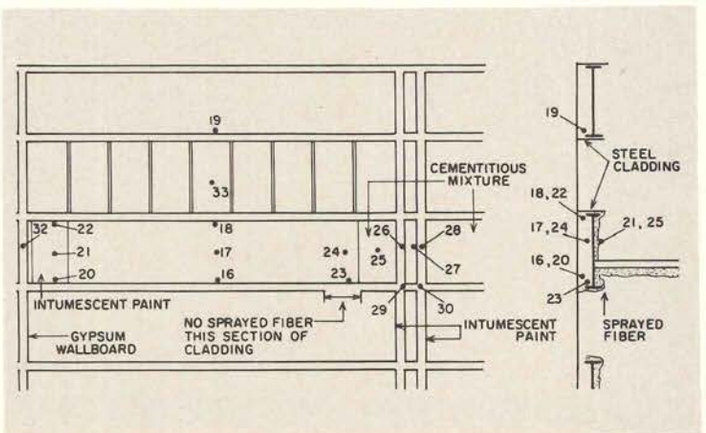






Based upon documented fire loads, recent fire tests covering office-type occupancies have shown that fires tend to produce higher temperatures earlier than the standard ASTM temperature curve indicates (see above). It has been demonstrated that for fires in perimeter spaces having fairly large areas of glass, temperatures decrease quickly after about 15 minutes when glass breaks and fire is "ventilated"—i.e., cooled down. The curves at left give temperatures of the columns and spandrel girders for the test mock-up subjected to fire. Thermocouple numbers given above sets of curves correspond to those indicated on elevation and section below.





near the windows to simulate curtains did not ignite.

The structure withstood the fire exposure without any damage whatsoever. Some of the non-structural elements were affected by the heat. The most evident damage of this nature was the distortion and separation of the bottom flange cladding at the location where the sprayed fiber insulation had been removed before the test. The bottom cladding is for architectural appearance only and is not essential for fire shielding. The shielding is provided by the cladding on top of the spandrel flange which remained substantially intact after the fire. The thermocouple attached to the bottom flange of the spandrel girder at this point of maximum exposure registered a maximum temperature of 420 F. In the proposed building, this flange would be independently fireproofed before the cladding is applied.

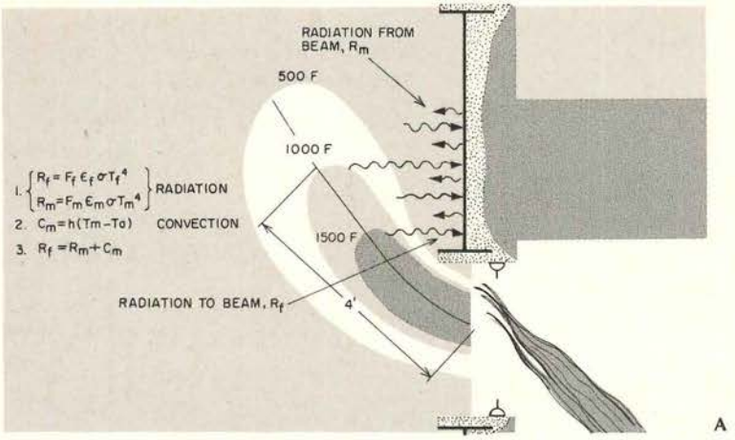
The maximum temperature reached by the bare web of the spandrel beam was 640 F 16 minutes after the start of the fire. This is well below the safe temperature limit of 1000 F to 1200 F for structural steel. Therefore, it is evident that the web of the spandrel girder was adequately protected from flame impingement by the steel cladding surrounding the spandrel girder flange. The effectiveness of this cladding as a flame shield during this test is especially significant because the wind was blowing the flame toward the face of the building.

The maximum temperatures reached by the insulated portions of the spandrel girder web were 390 F for intumescent paint protection and 220 F for the cementitious material. It is clear that both of these materials have significant fire resistance properties. However, in view of the effectiveness of the flame shielding principle, it is obviously not necessary to apply fireproofing material to the exterior face of the spandrel girder web.

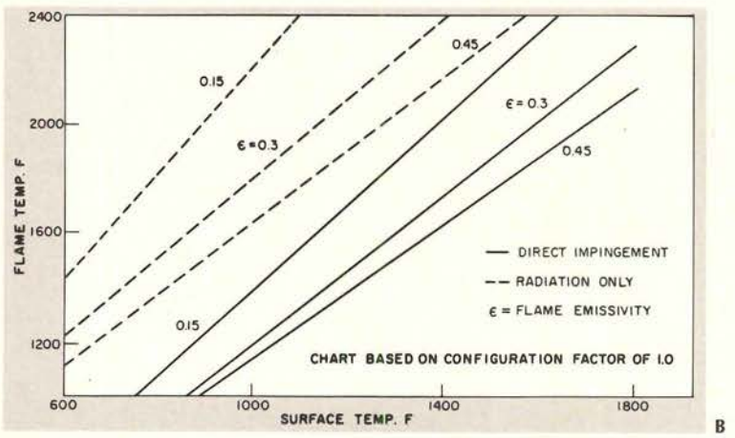
At the end of the test, it was found that no permanent deflection, buckling or structural damage to the spandrel girder had occurred which would affect its structural adequacy.

Visible damage to the steel cladding was observed in the vicinity of thermocouple 23. (No sprayed fiber was provided in this area). This damage was confined to the underside only. The flame impingement shield remained intact and performed throughout the test to prevent direct flame impingement on the steel web of the spandrel girder.

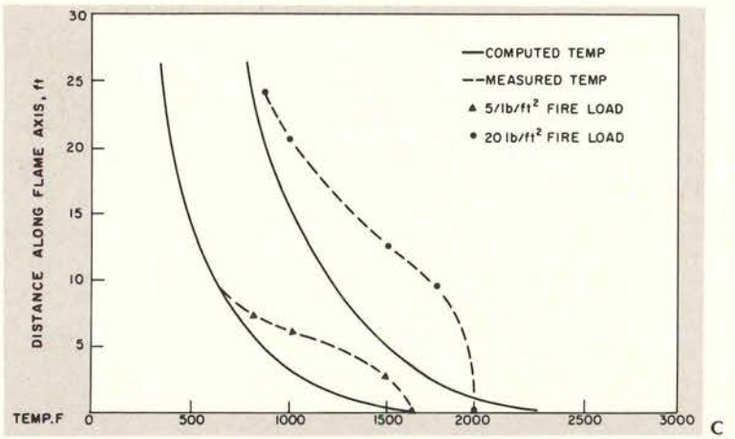
Inasmuch as the mock-up was originally constructed for architectural purposes, fire-protective materials had not been applied to the spandrel. Thus when fire tests were to be conducted, the fire-protective materials had to be applied to the outside of the steel cladding to simulate thermal conditions that would pertain if the material had been applied, as it would be in practice, directly to the flange of the spandrel girder.



A



B



C

Based upon an experimental program at Underwriters' Laboratories, sponsored by the American Iron and Steel Institute, the Applied Research Laboratory of United States Steel Corporation developed a method for predicting the effect of accidental fires on steel temperatures. The method is illustrated in the accompanying illustrations and caption text.

When an unprotected exterior steel building member is exposed to a flame, it will receive heat from the flame and may dissipate heat to its surroundings at lower temperature by processes of radiation and convection. The processes involved are shown schematically in Figure A and are defined by the equations. A long exposure (longer than about 20 minutes) will result in equilibrium as expressed by Equation 3. This equation can be solved when the characteristics of the flame and the geometry of the exposure are known. However, the random nature of building fires makes the determination of these factors difficult, and, therefore, a general solution has been developed for a range of flame characteristics and geometry. This solution permits determination of the maximum temperature that will be attained by an exterior surface exposed to fire with or without flame impingement.

To use the equation for a specific case, it is necessary to know the flame temperature, the flame emissivity, and the configuration factors for radiation. For most flames, a value of 0.3 may be used for emissivity. However, lower values may occur in clean-burning fires with a large amount of ventilation. The configuration factor depends on the geometry of the exposure, and varies from 1.0 for cases of direct flame impingement to 0.0 where members are completely shielded from radiation. A sketch of the anticipated flame pattern in relation to the exposed member will be helpful in evaluating the proper configuration factor for a specific application. Figure B has been drawn for a configuration factor of 1.0. The flame temperature depends upon the design of the building and on the amount and type of combustible material available to burn. A suitable estimate may be made by use of Figure C. For a fire load of 5 lb per sq ft, Figure C indicates a fire temperature of approximately 1600 F at the window and about 1300 F at a distance of 4 ft from the window on the flame centerline. Now, if this value of 1300 F is used as the average radiating temperature of the flame as seen by an exterior structural member, the maximum temperature that will be attained by that member may be determined by Figure B. If the member is shielded from flame impingement (as in the case of the proposed building), the lines for "radiation only" will apply; and for a flame temperature of 1300 F and emissivity of 0.3, a surface temperature of 680 F is indicated.

PROFILITE

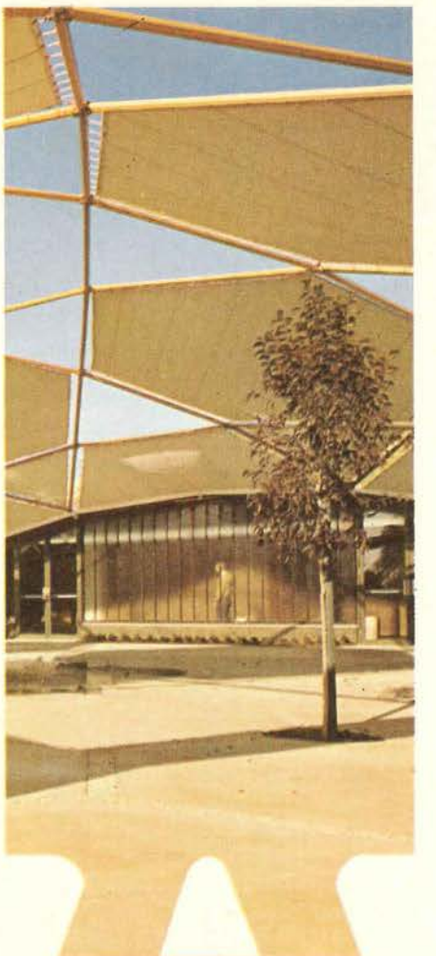
GLASS that could change your thinking about design, lighting, strength, heat and sound insulation

MISSISSIPPI GLASS COMPANY

MISSISSIPPI GLASS CO.

For more data, circle 90 on inquiry card

PROFILITE



PROFILITE

the channel-shaped glass that brings a fresh new concept in daylighting practice

You need to think differently about glass to bring Profilite into your building plans. With it you have new design possibilities. It also offers new structural efficiencies. Picture the rising channels of Profilite giving their upsweep to building exteriors. Look down corridors where vast stretches of glass wall let in more light and stand strong without any framing to get in the way of the repeated vertical pattern.

BOLD VERTICAL LINES

add decorative effect

The adjoining flanges of the channel-shaped sections of Profilite eliminate the need for muntins . . . save this cost and provide attractive wall sections that are easily maintained. The vertical accent gives height emphasis to interiors and the glass helps distribute daylight for a more spacious feel in the environment. Each vertical line not only adds its heightening effect but also signifies built-in strength of Profilite.

CHANNELED SECTIONS

so easily handled two men can install

Profilite sections are just under 12 inches in width ($11\frac{13}{16}$″). The stock lengths of 8, 10, and 12 feet are easily handled by two men without special equipment. Profilite weighs 4.34 lbs. per linear foot, so a ten-foot section could be lifted and set in place by one man if necessary and easily by a two-man team. Profilite is set in anodized aluminum sills supplied as part of the Profilite glazing system. Slip-in vinyl inserts seal the areas between metal and Profilite glass channels.

CHANNEL MOVEMENT

helps compensate as building shifts or settles

Profilite sections, because of their channel linkage, can move in relation to each other without tension. And there are no rigid metal members in between. Profilite's "flange joints" are cushioned top to bottom by non-hardening sealants or vinyl insets. The seal is positive, yet the glass is free to contract, expand, or move vertically. Profilite is thus especially suited for glazing buildings that may tend to settle.

SO STRUCTURALLY STRONG

it's practically self-framing

Profilite has proved it withstands substantial wind pressures and suction forces. The structural configuration of each section forms extra strength every foot of the way. It is so resistant to lateral pressures that you do away with vertical members necessary in conventional glazing. You enclose vast stretches of wall areas, "channeling in" Profilite that builds in extra strength section after section.

GIVES PLANTS CURTAIN WALL LOOK

Profilite's biggest volume use at present is for exterior walls where its vertical lines give a curtain wall effect. Installed cost compares favorably with that of conventionally glazed areas. Double-glazed Profilite forms a 1½" air cushion between inner and outer channels for heat and sound insulation—U-value 0.55; visible transmittance 72%.

MISSISSIPPI GLASS CO.

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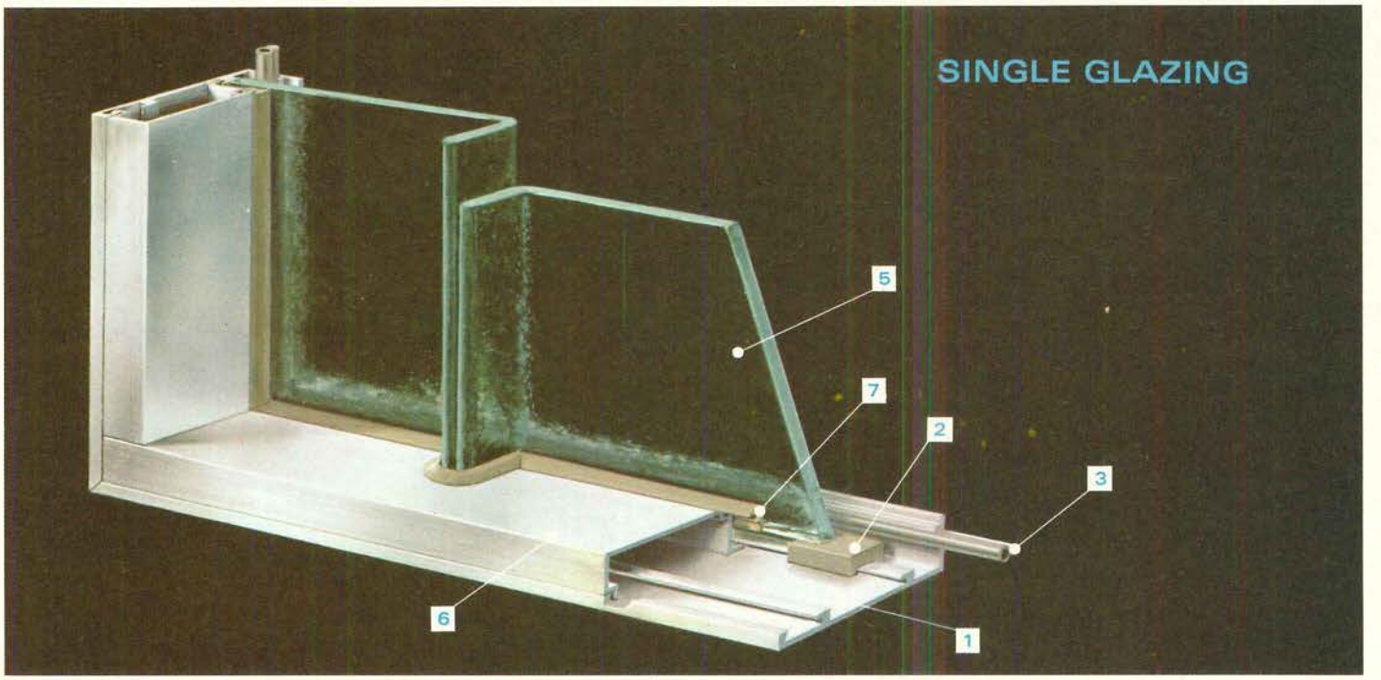
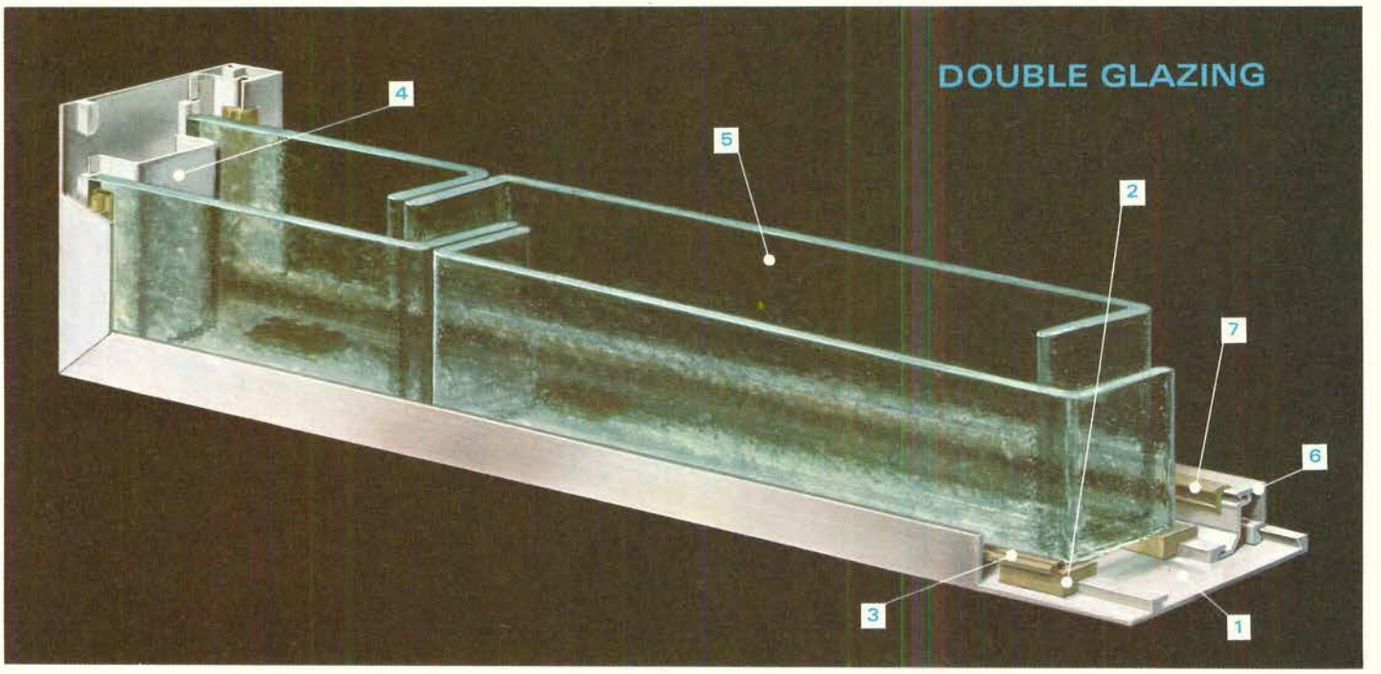
PROFILITE EASY TO INSTALL

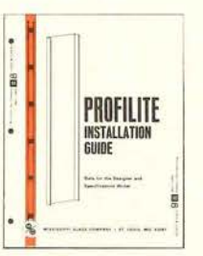
With Profilite you have a complete glazing system. Aluminium framing for periphery, jambs, heads and sill and vinyl setting blocks and slip-ins all supplied for double or single glazing.





1 Extruded aluminum periphery frame. 2 Vinyl setting block. 3 Vinyl slip-in. 4 Bent aluminum section. 5 Profilite. 6 Extruded aluminum sill snap-on. 7 Vinyl roll-in.

Write for Profilite Installation Guide for detail glazing instructions.



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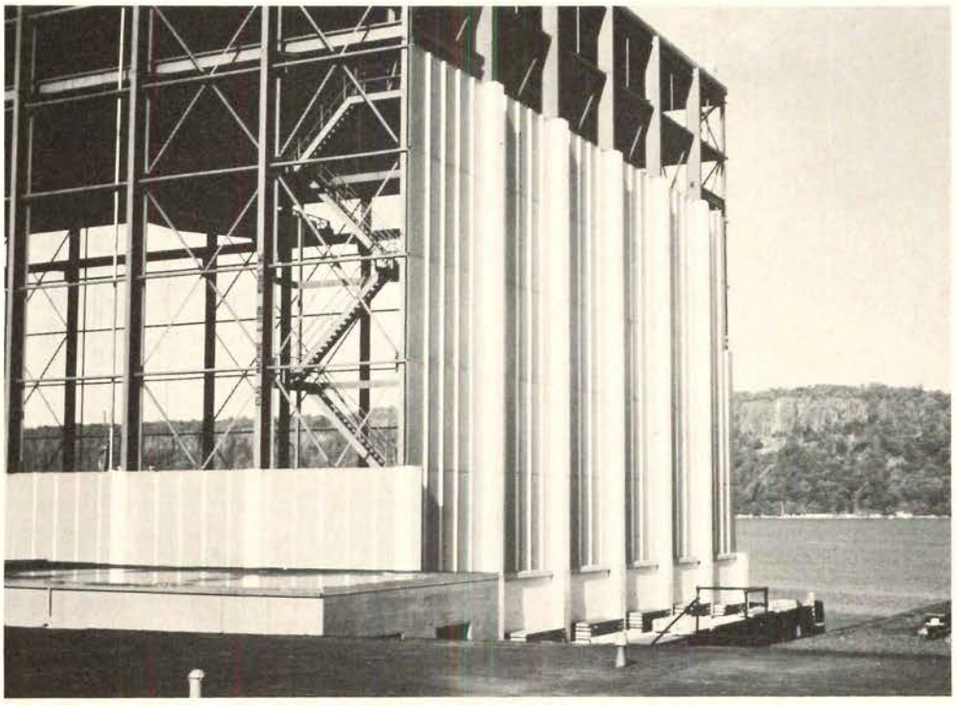
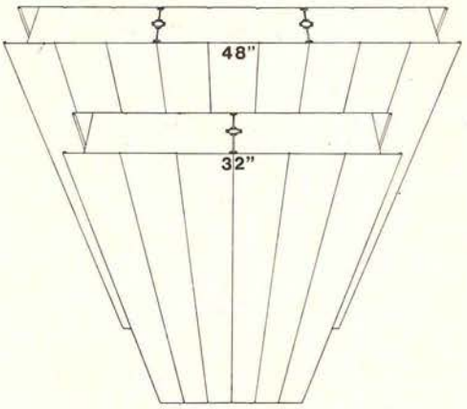
Load-bearing sandwich panels form weather-tight skin

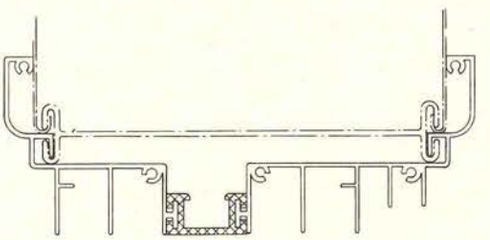
Mammoth-size high-voltage laboratory is sheathed in metal-faced sandwich panels having a 5-in. core of foamed polyurethane. Skins are separated by vinyl ties which also serve to join one panel to an adjacent one. Metal skins serve as an electronic shield. Joints between panels are foam-filled in the field.



A highly versatile and flexible load-bearing sandwich panel made by Phelps Dodge Building Materials provides a number of desired architectural characteristics—strength, light weight, insulating value, simplicity—using only three basic elements. The outer skins are metal, usually aluminum. These skins are spaced 5 1/3 in. apart by means of ladder-like vinyl extrusions which also serve to join one panel to the next. Also, another version of the wall tie has a vinyl conduit at its center to receive wiring. The core is polyurethane which stiffens the panels and provides a high degree of thermal insulation. The urethane core for the panels is foamed in-place in the factory, while foam for the joints between panels, and cavities containing plumbing piping, is placed in the field.



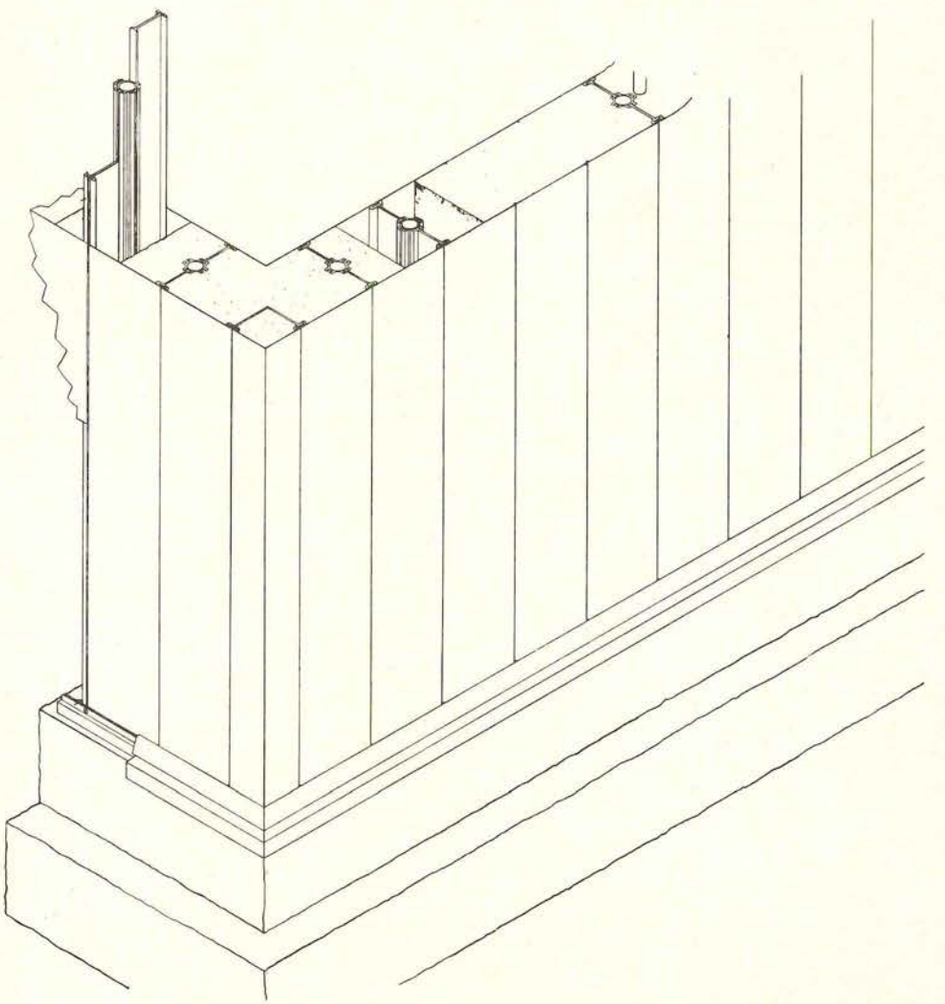
The parent company, Phelps Dodge Copper Products Corporation, recently found an opportunity to exploit the characteristics of the panels in one of its own buildings—a 130- by 240-ft high-voltage test laboratory in Yonkers, New York. Three inherent characteristics favored the sandwich panel—its conductivity that permits grounding, its electrically isolated skins that permit shielding, and its vapor impermeability that helps control humidity. First of all, the enclosure had to serve as a shield to keep stray electrical fields from escaping to the immediate area and interfering with radio and television reception. Further, the entire structure had to be grounded so that its potential would not rise above earth potential during EHV testing. An ideal shielded room would consist of two jointless, conducting enclosures electrically isolated from one another. For all practical purposes this is accomplished



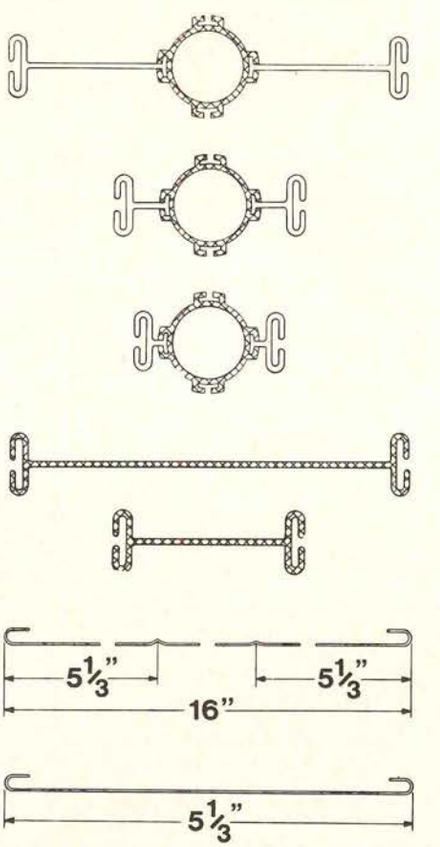
with the wall panels and the use of a metal ceiling and a metal roof deck. The steel inner faces of the panels are attached by clips to the steel frame, and for grounding purposes are bonded by welds at 2-ft intervals. The aluminum outer faces are, of course, isolated electrically from the inner steel panels because the vinyl connectors are non-conductive.

The laboratory has to be maintained at 30 per cent relative humidity at 70 F, and, of course, the urethane-insulated wall panels lessen the load on the air-conditioning system by limiting heat transfer and preventing moisture migration through the wall.

Customarily the sandwich panels are available in widths of 16, 32 or 48 in., in two standard thicknesses of 2 and 5 1/3 in., and in heights up to 20 ft. The system has, however, a sub-module of 5 1/3 in. so that panel widths such as 10 2/3 in., 26 2/3 in., etc. are available. Panels can be provided with a vertical electrical chase every 16 in. Concerning appearance, panels are available in colors in baked-on vinyls, plastisols, fluorocarbons, laminates, etc. in smooth or textured finishes. Panels are fastened to girts with sheet-metal screws through aluminum angles, or through steel clips fastening directly to the girts.



Basic elements of the panel system are shown below. Wall ties come in several widths. The one-piece ties are vinyl. When the tie incorporates a vinyl electrical conduit, the two stud portions are of aluminum. The metal skin elements are either 16-in. wide or 5 1/3-in. wide—the basic module. The 16-in.-wide panels are indented at 5 1/3-in. increments so that 5 1/3-in. modules can be added with visual compatibility. Aluminum windows have vinyl thermal breaks (upper left). Wall assembly is shown at left.



For more information circle selected item numbers on Readers Service Inquiry Card, pages 311-312

Eighteen furniture firms will hold two-day open house to exhibit contemporary contract designs

Architects and designers interested in seeing first hand some of the newest contract furniture designs may visit 18 of New York City's leading showrooms during Designers Saturday—which will include Friday this year—October 24 and 25.

Designers Saturday is so named because certain companies wanted to see New York City recognized as *the* market place for the best contemporary furniture designs. They wanted to offer out-of-towners a special, convenient time to browse through their showrooms, and they decided to remain open on a specific Saturday. Said Chairman of the Executive Committee Fred Seeman, "The feeling persisted that shows at a convention hall give a quick glimpse of what a manufacturer has to offer, but only his showroom can really do justice to his designs."

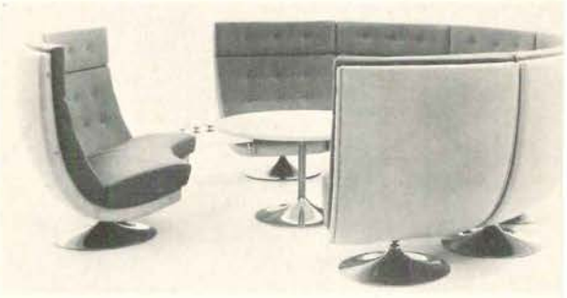
The first Designers Saturdays (March and November, 1968) were so successful that the group has expanded the event to include another day. Shown below and on page 214 are some items that may be inspected during the coming open house.

Member firms: Helikon Furniture Co., Inc., J. G. Furniture Company, Cumberland Furniture Corporation, Jens Risom Design Inc., Janet Rosenblum, Inc., Knoll Associates, Eppinger Furniture, Inc., Harvey Probber, Inc., John Stuart Inc., Stendig Inc., Lehigh-Leopold, I.C.F., Fritz Hansen Inc., Atelier International, Ltd., Lee L. Woodard Sons, Inc., Edward Axel Roffman Associates, Inc., Directional Contract Furniture Corp., Jil Associates Inc.

Circle 300 on inquiry card

Stackable fiberglass chair. John Stuart Inc.
Circle 301 on inquiry card

Walnut or oak table and chair. Helikon.
Circle 302 on inquiry card



"Roulette," circular seating series. ICF.
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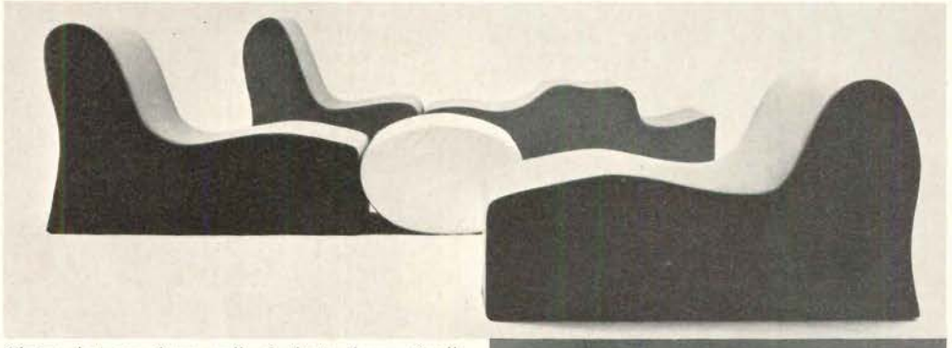

Chairs that can form wall of plastic foam. Knoll.
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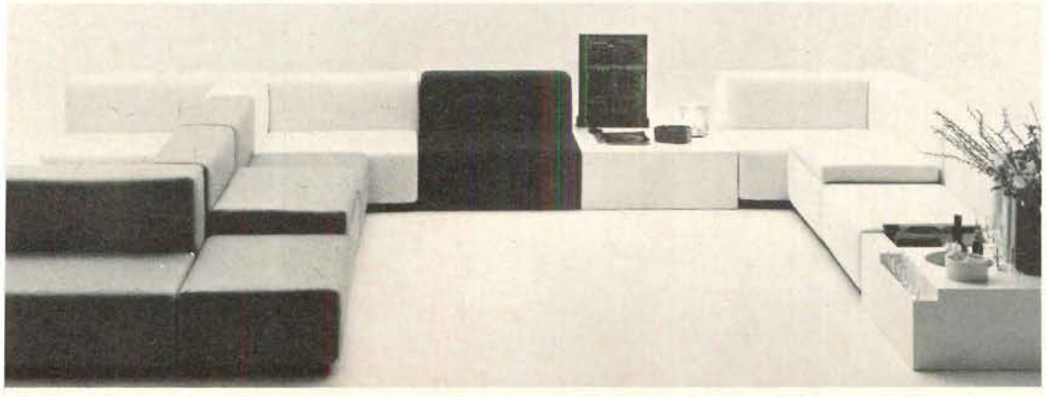

"Seating Landscape," varied groupings. Stendig Inc.
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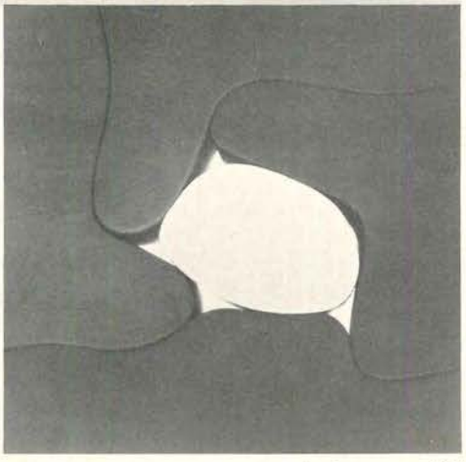
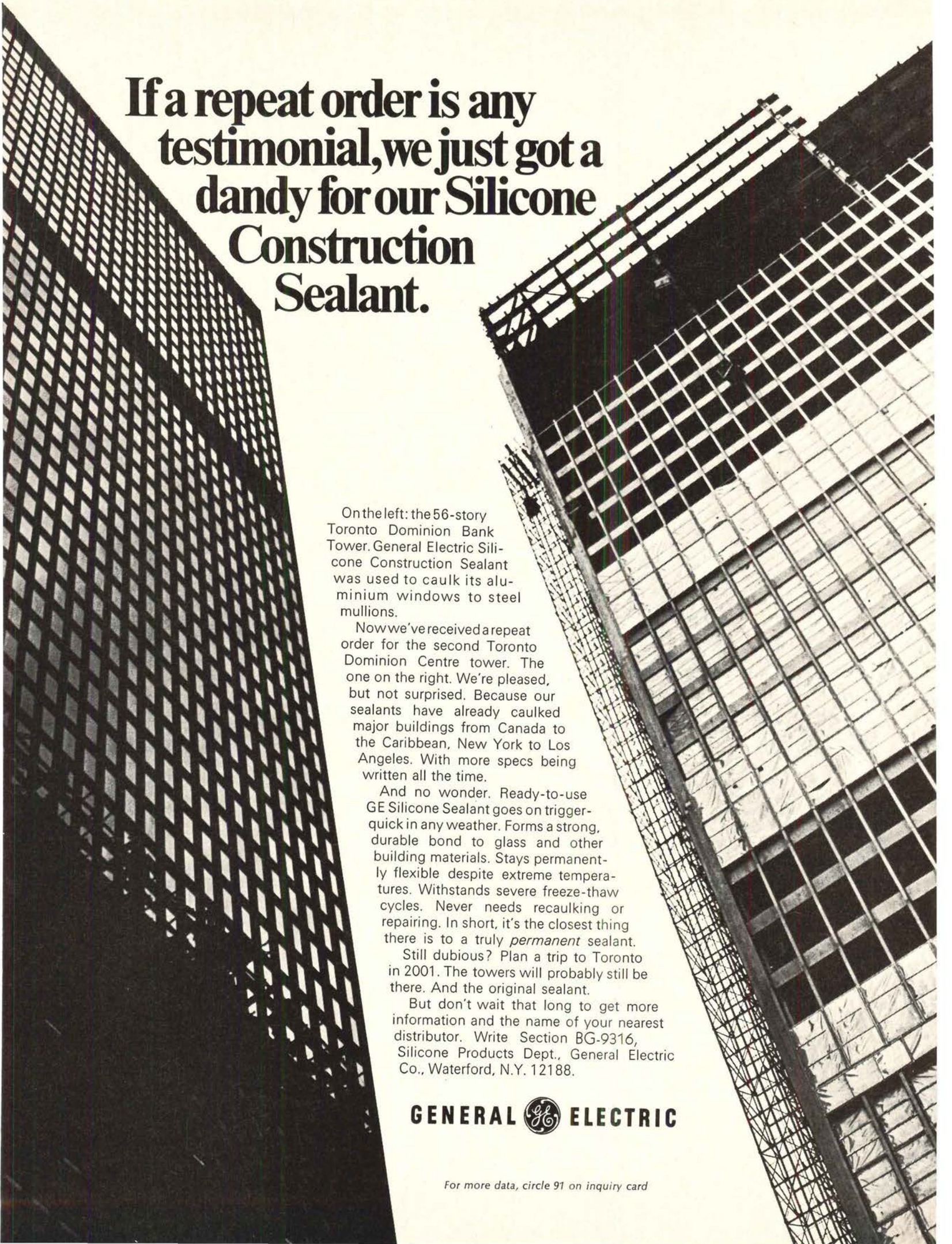


more products on page 214

If a repeat order is any testimonial, we just got a dandy for our Silicone Construction Sealant.



On the left: the 56-story Toronto Dominion Bank Tower. General Electric Silicone Construction Sealant was used to caulk its aluminium windows to steel mullions.

Now we've received a repeat order for the second Toronto Dominion Centre tower. The one on the right. We're pleased, but not surprised. Because our sealants have already caulked major buildings from Canada to the Caribbean, New York to Los Angeles. With more specs being written all the time.

And no wonder. Ready-to-use GE Silicone Sealant goes on trigger-quick in any weather. Forms a strong, durable bond to glass and other building materials. Stays permanently flexible despite extreme temperatures. Withstands severe freeze-thaw cycles. Never needs recaulking or repairing. In short, it's the closest thing there is to a truly *permanent* sealant.

Still dubious? Plan a trip to Toronto in 2001. The towers will probably still be there. And the original sealant.

But don't wait that long to get more information and the name of your nearest distributor. Write Section BG-9316, Silicone Products Dept., General Electric Co., Waterford, N.Y. 12188.

GENERAL ELECTRIC

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The colorful doors

Now you can order Steelcraft doors and frames in color. Ten different colors for interior and exterior use. Ten different ways to eliminate a real headache, too: the problem of specifying paint and depending upon on-the-site paint jobs. Besides this, with Steelcraft's "colorful doors" you can count on consistent color and quality throughout. (If you order twenty or thirty doors and frames in sunset orange, sunset orange is what you'll get.) Quality is controlled and labor costs are cut considerably.

Here's something to remember, too: the doors and frames are sealed in plastic covers for protection. When the building is actually ready for occupancy, just take off the protective covers. There you are . . . shiny and new, and already painted.

If you'd like to know more about Steelcraft's "colorful doors," see your Steelcraft distributor or write to Steelcraft, 9017 Blue Ash Road, Cincinnati, Ohio 45242 U.S.A.

STEEL Craft **Steelcraft**
finest name in metal doors and frames

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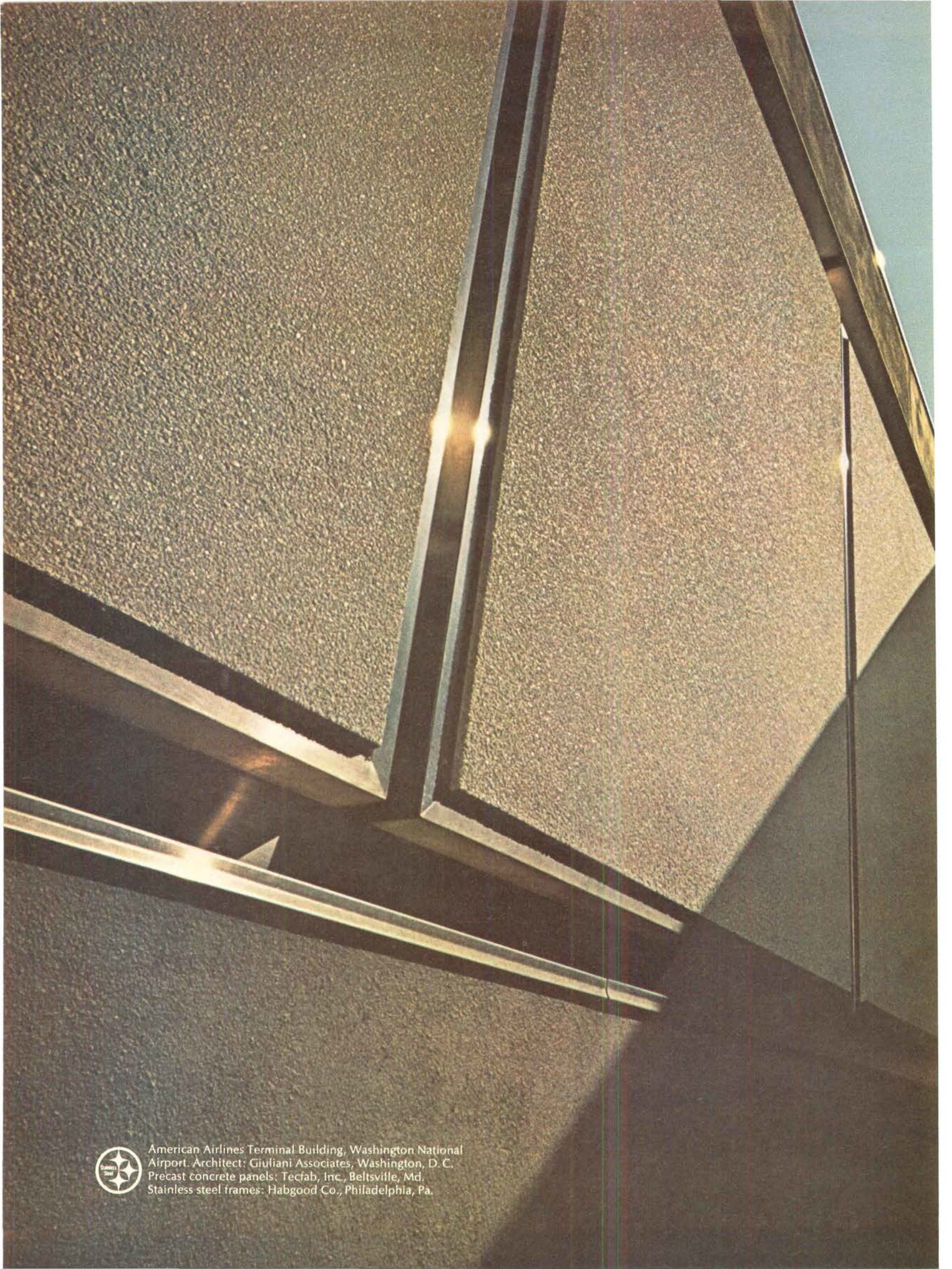

American Airlines Terminal Building, Washington National Airport. Architect: Giuliani Associates, Washington, D.C.
Precast concrete panels: Tecfab, Inc., Beltsville, Md.
Stainless steel frames: Habgood Co., Philadelphia, Pa.

Introducing stainless concrete.

No concrete curtain wall was ever improved by brown or green streaks of metallic corrosion.

Giuliani Associates' design for American Airlines solves this problem

by combining the best features of precast concrete and nickel stainless steel. Architect and client can be confident that the wall will be free of corrosion streaks for the life of the building.

The 4⅛-inch thick panels were custom-made by leaving .063-inch thick Type 304 stainless forms in place as the concrete hardened. The forms thus became framing members, and were polished just before erection.

Stainless adds strength to the concrete, while withstanding the multiple corrosive attacks of jet engine exhaust fumes, general urban air pollutants and particularly the caustic environment of concrete.

Stainless shines as a beautiful partner with masonry. It won't pit in a caustic environment. It never dribbles corrosion streaks down light-colored surfaces. And the high strength of stainless lets you design with thinner members, lighter gauges.

Our architectural fact sheet has all kinds of ideas for designing with stainless. For your copy, write to The International Nickel Company, Inc., 67 Wall Street, New York, N.Y. 10005.

INTERNATIONAL NICKEL

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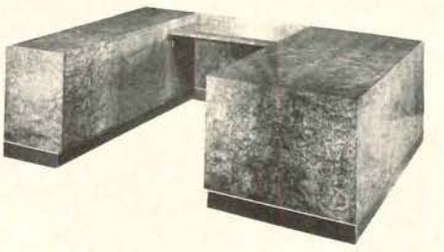
continued from page 209

CONTOUR CHAIR / A contour easy chair, designed by Jorn Utzon, features an upholstered foam rubber and molded plywood unit placed on a frame of tubular chrome-plated steel. A loose pillow enhances comfort. ▪ Fritz Hansen Inc., member Designers Saturday, New York City.

Circle 306 on inquiry card



WORK STATION / The flush, veneered surfaces give this cube work station an elegant form. The Carpathian elm burl has a fine hand-rubbed lacquer finish. The black textured plastic base contains an area to conceal telephone and electrical conduits and junction boxes. The black credenza has full depth stationery compartment, flush sliding doors and box and file drawers. ▪ Eppinger Furniture, Inc., member Designers Saturday, New York City.

Circle 307 on inquiry card

CONTRACT GROUP / The *Embassy* group, especially designed for contract use, has a frame entirely of steel "with every part welded in and trussed like a bridge." Upholstery is designed for ready replacement without damage to the frame. ▪ Lee L. Woodard Sons, Inc., member Designers Saturday, New York City.

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TABLE / This table, 36-in. in diameter and 16½ in. in height, uses the strength and beauty of stainless steel (type 304) to achieve scale and durability for contract and residential furnishing. The base is worked to close tolerances to assure proper proportions and a precise fit with the top. Nine operations, including roughing, are essential to achieve the fine mirror polish. ▪ Cumberland Furniture Corporation, member Designers Saturday, New York City.

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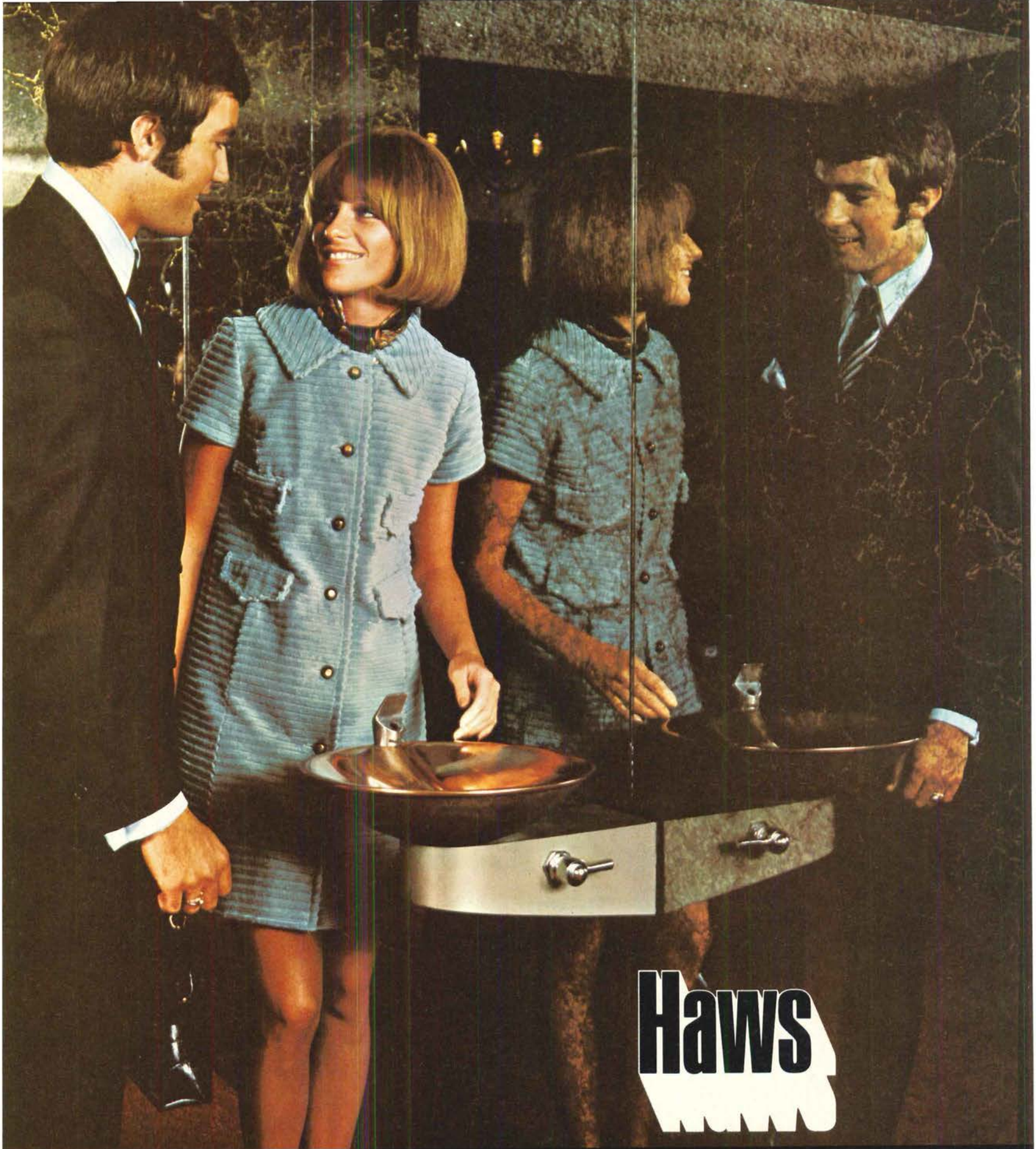
more products on page 226b



Haws

There's a Haws fountain that's just right for every wall, every hall—
and your every design idea. Consult Sweet's, or write for literature today.
Haws Drinking Faucet Company, 1441 Fourth Street, Berkeley, California 94710.

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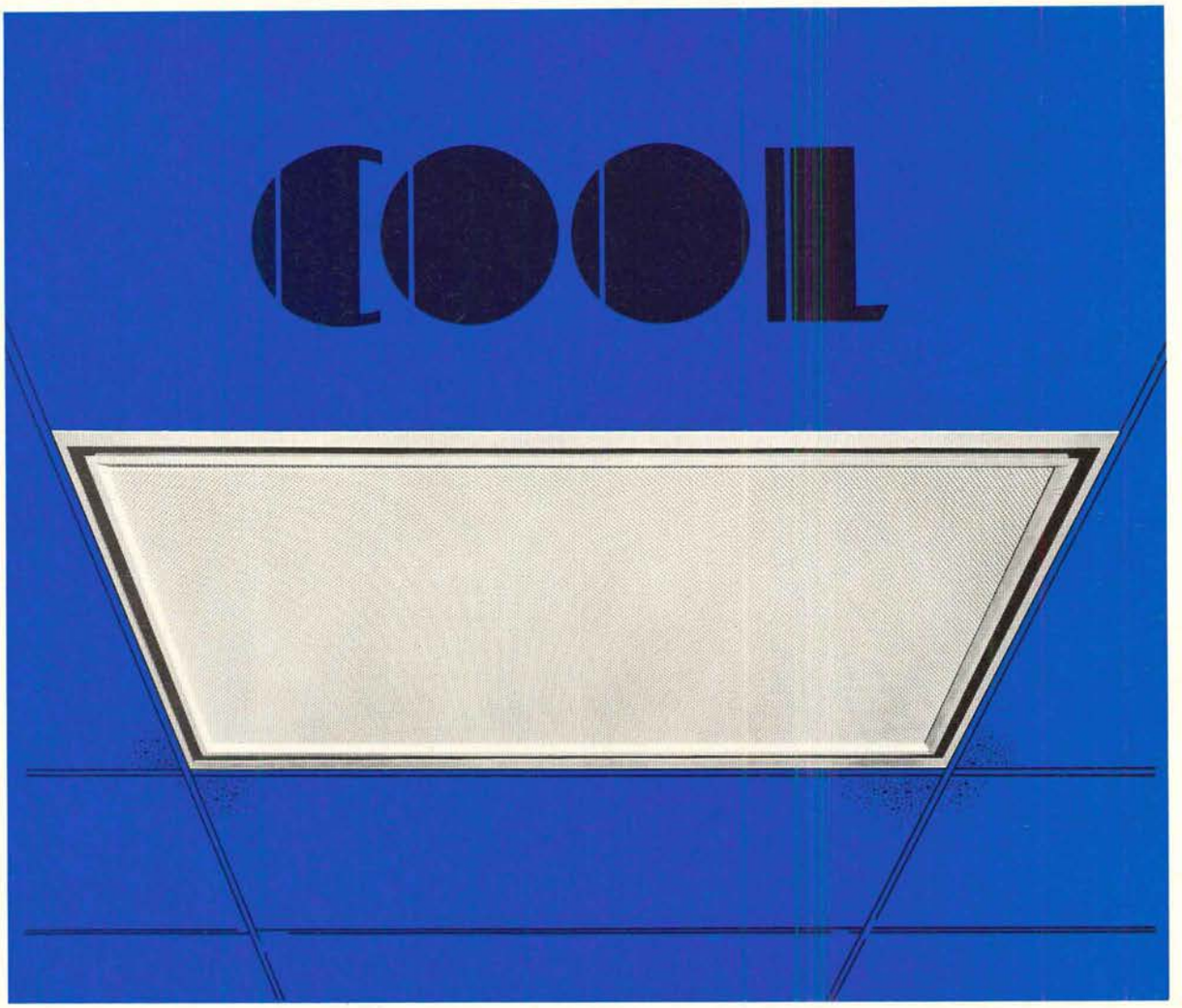
dresses up a drink of water.



Wakefield's New Floating-Frame Air Troffer

with regressed extruded aluminum frame!

Looking cool, feeling cool. Making everything around it look and feel cool, too. That's Wakefield's all-new floating-frame air troffer, featuring the incomparable beauty of regressed extruded aluminum. Three models adapt to your every need: air supply, heat removal, and a combination air supply and heat removal. Wakefield's new floating-frame air troffer is also available in a host of sizes to meld with all types of ceiling construction. So why not get all the facts on the one with cool—the new floating-frame air troffer by Wakefield.
Write Wakefield Operation, ITT Lighting Fixture Division, International Telephone & Telegraph Corporation, P. O. Box 195, Vermilion, Ohio 44089.

WAKEFIELD LIGHTING ITT

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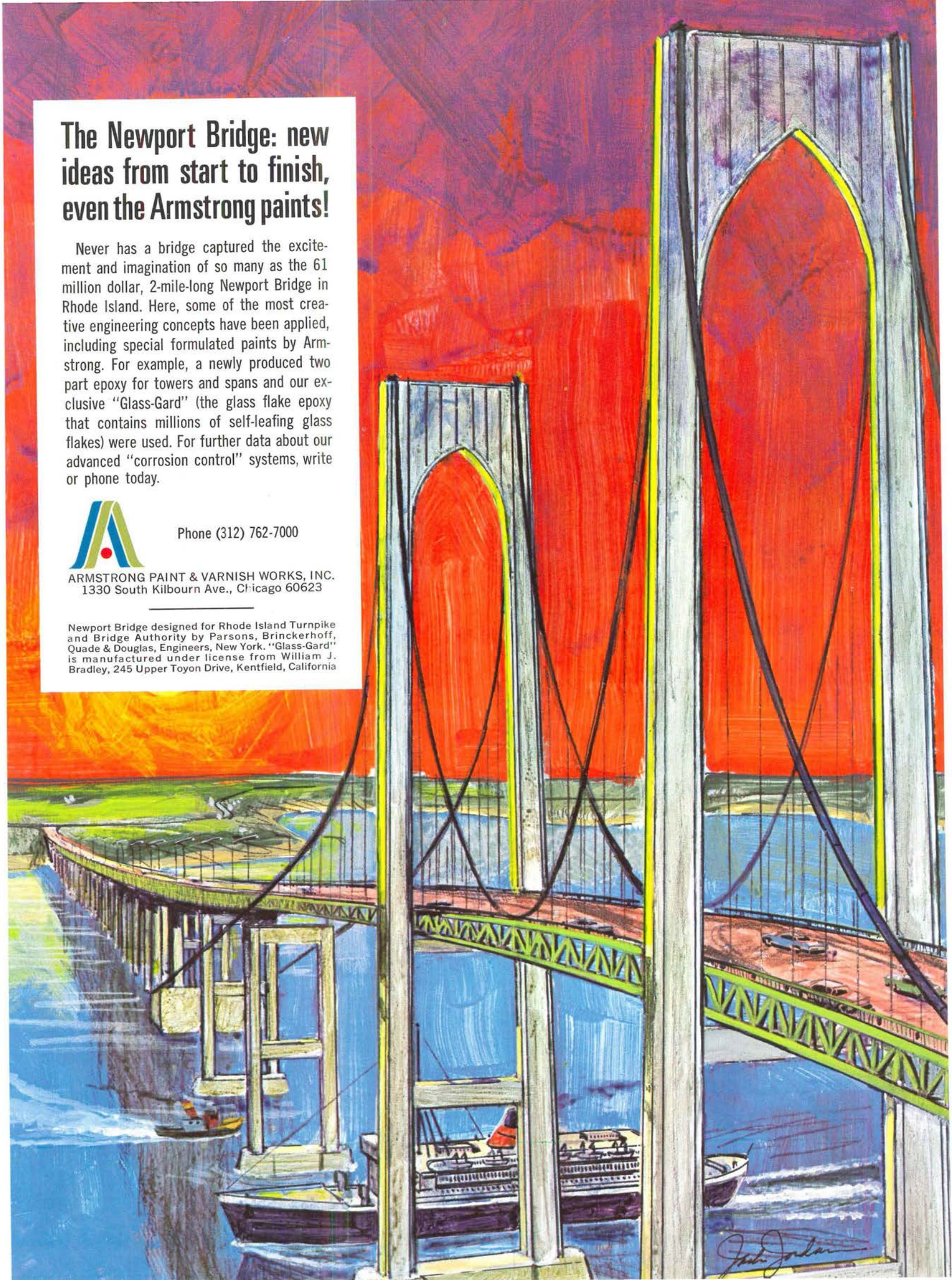

The Newport Bridge: new ideas from start to finish, even the Armstrong paints!

Never has a bridge captured the excitement and imagination of so many as the 61 million dollar, 2-mile-long Newport Bridge in Rhode Island. Here, some of the most creative engineering concepts have been applied, including special formulated paints by Armstrong. For example, a newly produced two part epoxy for towers and spans and our exclusive "Glass-Gard" (the glass flake epoxy that contains millions of self-leafing glass flakes) were used. For further data about our advanced "corrosion control" systems, write or phone today.

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1330 South Kilbourn Ave., Chicago 60623

Newport Bridge designed for Rhode Island Turnpike and Bridge Authority by Parsons, Brinckerhoff, Quade & Douglas, Engineers, New York. "Glass-Gard" is manufactured under license from William J. Bradley, 245 Upper Toyon Drive, Kentfield, California

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

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

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

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

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

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

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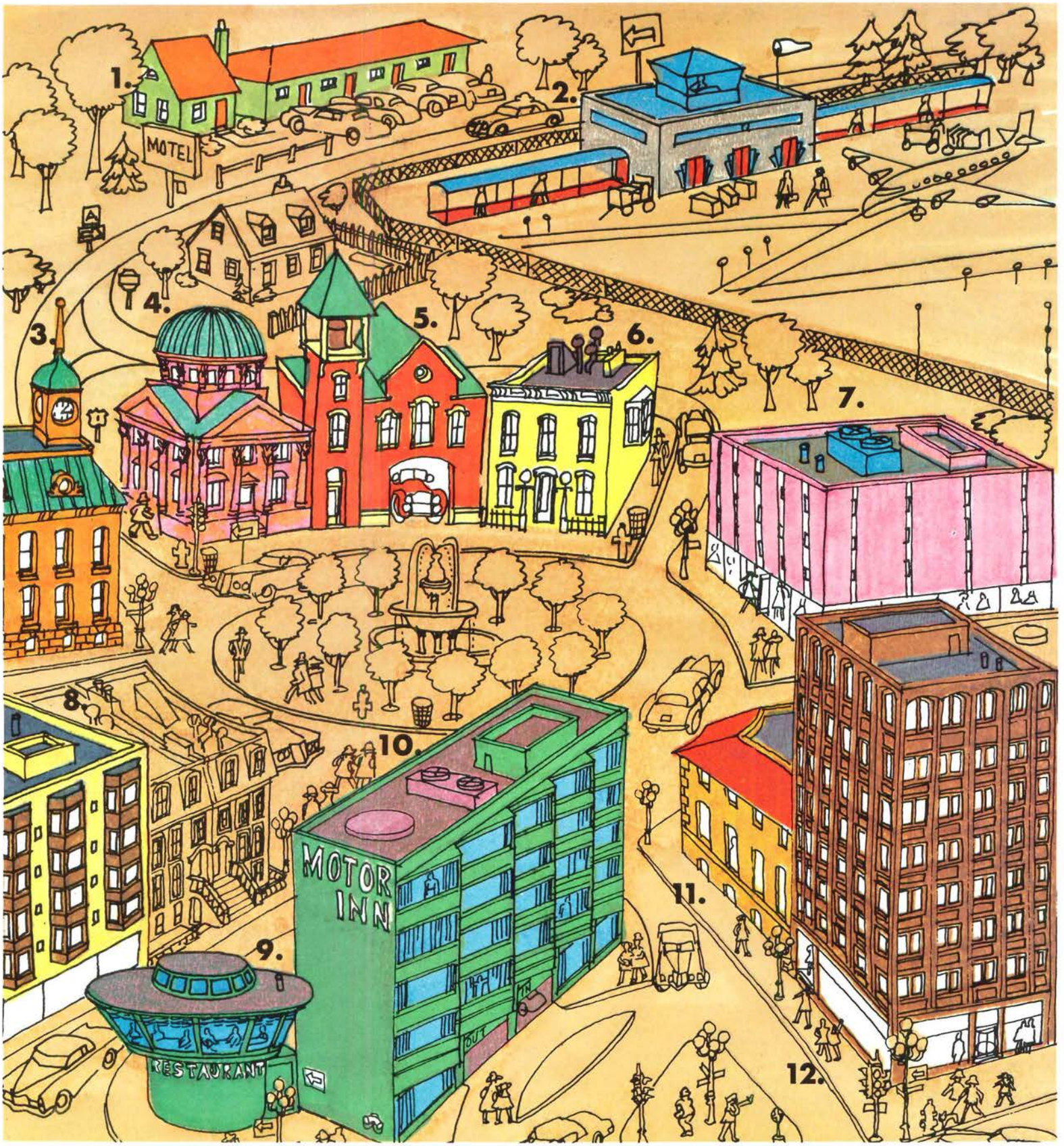
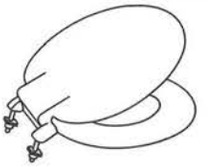


You're better off with Beneke on

Tour a town. Count the buildings that count on Beneke. Beneke: not just the biggest in bathroom seats but best. Up there in every way down to the smallest bolt. High Rise. Hotel. Hospital. City. Suburb. Plane. Train. You can do it with Beneke best.



Beneke celebrating 75 celebrated years

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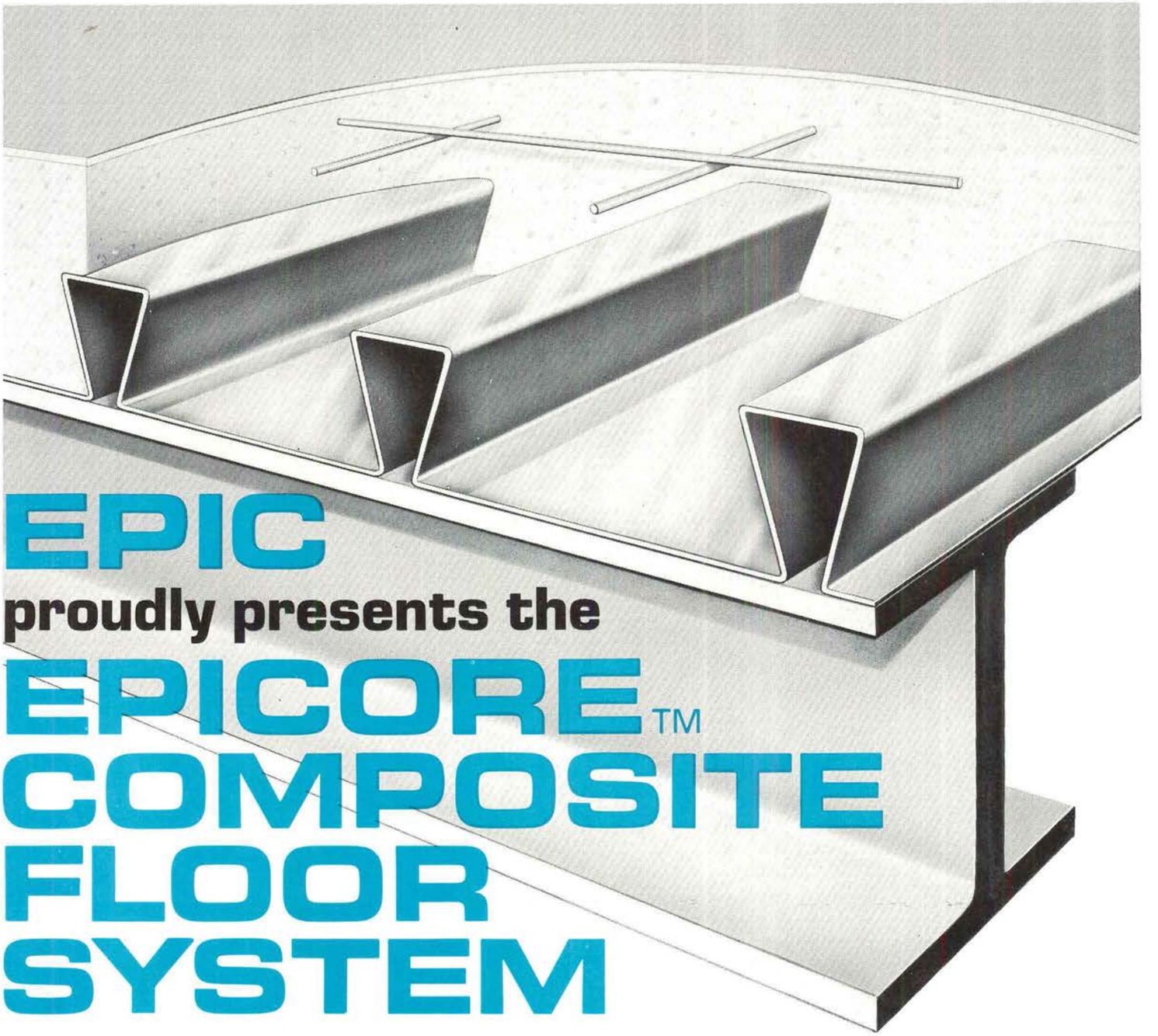

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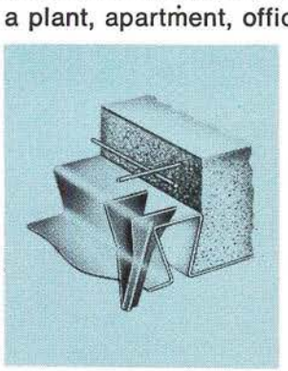
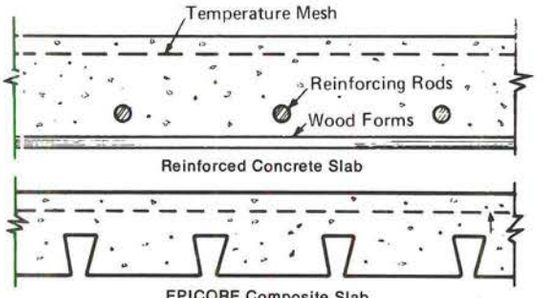
EPICORE™ COMPOSITE FLOOR SYSTEM

starring in today's best planned, most exciting buildings

The new EPICORE Composite Floor System is here, and progressive engineers and contractors are finding that its 2″ depth and 24″ width is the answer to complex and costly conventional slab construction. Whether it's a plant, apartment, office, school, hospital, EPICORE makes it go up faster, easier and at less cost. EPICORE offers the industry's strongest most flexible hanging system for ceilings, lighting, piping and other utilities. The inverted triangular ribs key into concrete, forming a lock which is unexcelled in bond strength. EPICORE's bottom plate acts as tension-reinforcing steel, working with the concrete's compressive strength at the top surface of the slab. Slabs are thinner, saving on concrete. Rod reinforcement is eliminated, saving on steel. EPICORE's big 2″ depth, 24″ width, and lateral bracing action reduce horizontal and vertical structural steel requirements. The final result is a building that saves you time, labor, materials and money. Why not ask us today for all the facts on EPICORE quality, advantages, service and savings?





EPIC METALS CORPORATION

General Offices
1844 Ardmore Boulevard
Pittsburgh, Pennsylvania 15221
(412) 242-8343

For more data, circle 100 on inquiry card

For more data, circle 101 on inquiry card

THE SECOND NO-STRINGS GUARANTEE.

The No-Strings Guarantee

For Tufted Indoor-Outdoor Carpet

Phillips Fibers guarantees this carpet made with pile of MARVESS® OLEFIN, a Phillips 66 fiber, against rotting, wearing out, or the effects of weather.

For 2 years indoor or outdoor commercial use.

Or we will replace this carpet. Free. Exclusive of installation.

Consult your carpet resource for details

PHILLIPS 66

PHILLIPS FIBERS CORPORATION, A SUBSIDIARY OF PHILLIPS PETROLEUM COMPANY

*REG. T.M. PHILLIPS PETROLEUM COMPANY

ANOTHER FIRST.

Carpet shown backed with Loktuft®, a Phillips 66 carpet backing.

The No-Strings Guarantee

For Tufted Indoor-Outdoor Carpet

Phillips Fibers guarantees this carpet made with pile of MARVESS® OLEFIN, a Phillips 66 fiber, against rotting, wearing out, or the effects of weather.

For 2 years indoor or outdoor commercial use.

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Consult your carpet resource for details

PHILLIPS 66

PHILLIPS FIBERS CORPORATION, A SUBSIDIARY OF PHILLIPS PETROLEUM COMPANY

*REG. T.M. PHILLIPS PETROLEUM COMPANY

THE FIRST NO-STRINGS GUARANTEE FOR TUFTED CARPET.

Our first first was for the toughest needlepunched olefin indoor/outdoor carpet ever. Made with face of Marvess olefin CG, "The Big Fiber."

Now, continuing the Phillips Fibers No-Strings Guarantee System, our second No-Strings Guarantee stands fully behind tufted carpet made with versatile Marvess olefin. Tufted carpet designed for both indoor and outdoor areas. And bearing the first No-Strings Guarantee in the tufted carpet field.

Tufted carpet made with pile of Marvess olefin features guaranteed ruggedness. Against "rotting, wearing out, or the effects of weather." Marvess resists mildew damage and static buildup too. And it cleans beautifully because it resists stains so well. Its decorator colors stay bright and vibrant.

Look into the first No-Strings Guarantee for tufted carpet.

It looks out for you. MARVESS OLEFIN

A PHILLIPS FIBER

TWO FIRSTS THAT ARE SECOND TO NONE.

A No-Strings Guarantee for tufted indoor/outdoor carpet.

A No-Strings Guarantee for needlepunched indoor/outdoor carpet.

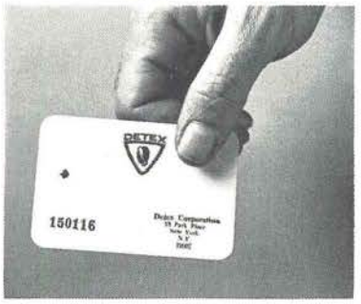
Both guarantees exclusively from Phillips Fibers.

Now, for whichever carpet they choose, for whatever area, there's a Phillips Fibers Guarantee of performance. A Guarantee stated in plain, open and explicit terms that say precisely what they mean and mean every word they say.

For tufted carpet. For needlepunched carpet.
Indoor. Outdoor.
The No-Strings Guarantee for each.
You couldn't be surer if you wrote them yourself.

PHILLIPS FIBERS CORPORATION, GREENVILLE, S.C., A SUBSIDIARY OF PHILLIPS PETROLEUM COMPANY. MARKETING OFFICES: 1120 AVENUE OF AMERICAS, N.Y., N.Y. 10036. (212) 697-5050; P.O. BOX 66, GREENVILLE, S.C. 29602. (803) 242-6600. PHILLIPS 66 FAMILY OF FIBERS: MARVESS® OLEFIN, QUINTESS® POLYESTER, PHILLIPS 66™ NYLON.

Looking for more efficient entry control?



May we present our card?

Because new Detex Entry Control (DENTCO) System uses invisible coded cards instead of keys, it eliminates security gaps caused by lost, stolen, or unreported duplicate keys. And because there's no lock cylinder to be picked, it also does away with lock picking.

Only insertion of a properly coded card into the electro-magnetic "reader" will release the electric latch. The code cannot be readily duplicated and many thousands of code combinations are possible.

DENTCO systems are sold, not leased; your initial cost is your **only** cost. And any qualified locksmith, electrician or maintenance man can install it.

Send coupon for full details on DENTCO. Then lock your door and throw away the key.

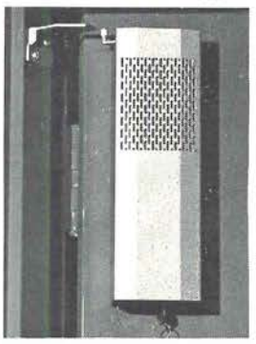
DENTCO system

Looking for more efficient exit control?

May we present our Total Exit Protection Program?

Vulnerable exits make life easy for thieves, vandals and pilferers who want "out". Control those exits with Detex Total Exit Protection . . . the industry's widest selection of exit control equipment. Both Exit Control Locks and Exit Alarms. For single or double doors. AC or battery-powered. With silent alarms, quiet alarms, or blaring horns loud enough to scare the daylights out of any would-be criminal. On-site. Or remote alarms through annunciator panels.

You can prevent entry from the outside; leave exits openable from the inside for emergency use. Alarm activated when door opens. Only special key — issued to authorized personnel — temporarily shuts off alarm to permit access.



Exit Alarm No. 501

Remote Indicating Panel No. 110

Exit Control Lock No. 230

DETEX

Send coupon for literature.

DETEX Corporation Dept. AR-9
53 Park Place, New York, New York 10007

Rush me detailed, illustrated literature on:

- ☐ DENTCO (Detex Entry Control System)
- ☐ Detex Exit Control Locks
- ☐ Detex Exit Alarms
- ☐ Remote Indicating Panel
- ☐ Watchclocks
- ☐ W.A.S. (Watchmen's Alarm System)

Name/Title_____

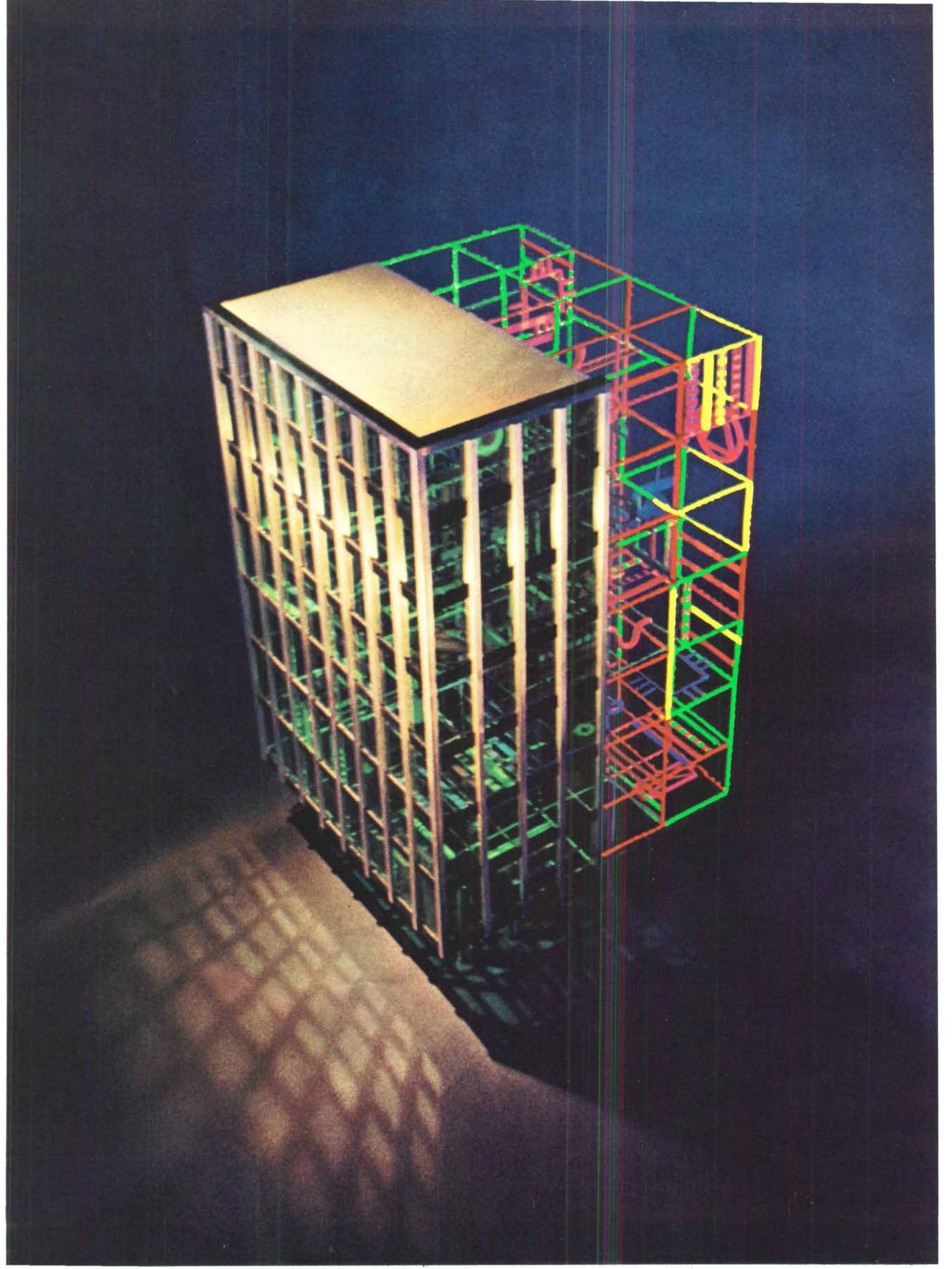
Firm_____

Address_____

City/State/Zip_____

For more data, circle 102 on inquiry card

For more data, circle 101 on inquiry card



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

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

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

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

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

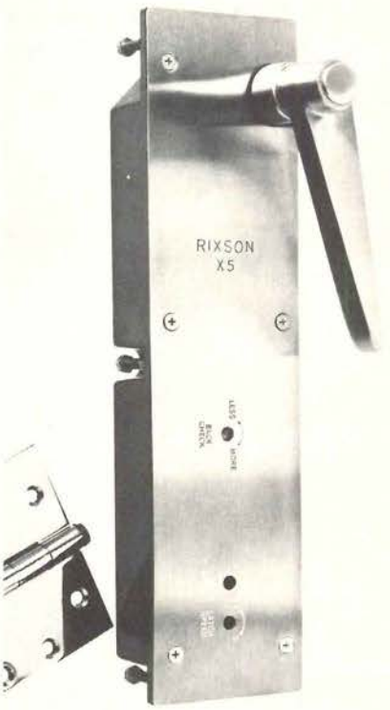
Your challenge is his challenge.

The challenge of the Electro-environment

The Qualified Electrical Contractor makes the Electro-environment work.

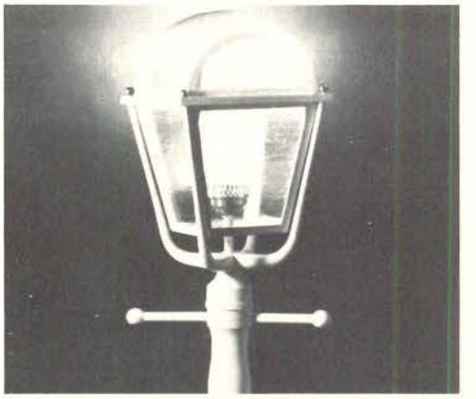
NECA. National Electrical Contractors Association.
1730 Rhode Island Avenue, N.W., Washington, D. C. 20036

continued from page 214



DOOR CLOSER / The *X-5* concealed floor-type interior door closer has been "designed in response to an extensive survey of architects." It can be removed without removing the door. It can be used with stock hollow metal, aluminum or wood doors and frames with standard 4½-in. by 4½-in. butt hinges, may also be hung on offset or center pivots, and will fit in a two-in. slab. The closer is recommended for medium-traffic interior doors weighing up to 200 lbs. ▪ Rixson Inc., Franklin Park, Ill.

Circle 310 on inquiry card

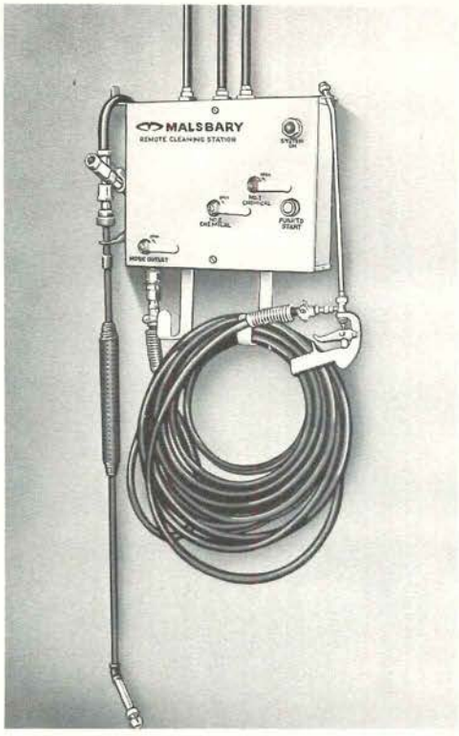


CAST ALUMINUM LANTERNS / The glazed dome roof and cage suspended inside a "spider" are features of the *Concord* series that also has clear glass, brass corner finials and hinged access door. Basic lantern size of 12 in. by 19½ in. makes this series suitable for commercial as well as residential applications. ▪ Sternberg Manufacturing Company, Inc., Chicago.

Circle 311 on inquiry card

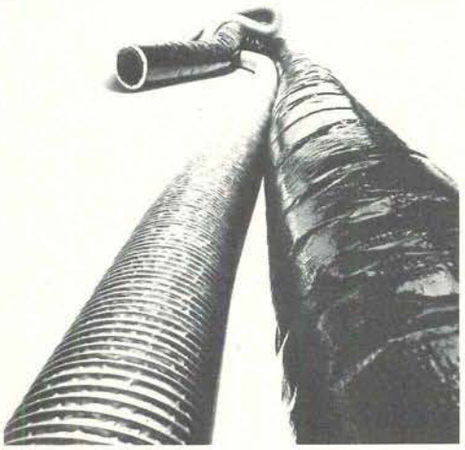
EXPLOSION-PROOF REFRIGERATOR / This 4.9 cu ft undercounter cold wall refrigerator is designed and fabricated to meet the specifications for Class I, groups C & D of the National Fire Underwriters Code for use in hazardous locations. ▪ The Jewett Refrigerator Co., Inc., Buffalo.

Circle 312 on inquiry card



CLEANING SYSTEM / A system for cleaning and sanitizing food processing facilities provides a hot chemical solution under pressure and hot, clear rinse water. From a central master unit the liquids are plumbed to remote stations reaching difficult areas. The system greatly speeds the cleaning of complex machinery or large areas in processing plants, kitchens and related areas. ▪ Malsbary Manufacturing Company, Oakland, Calif.

Circle 313 on inquiry card



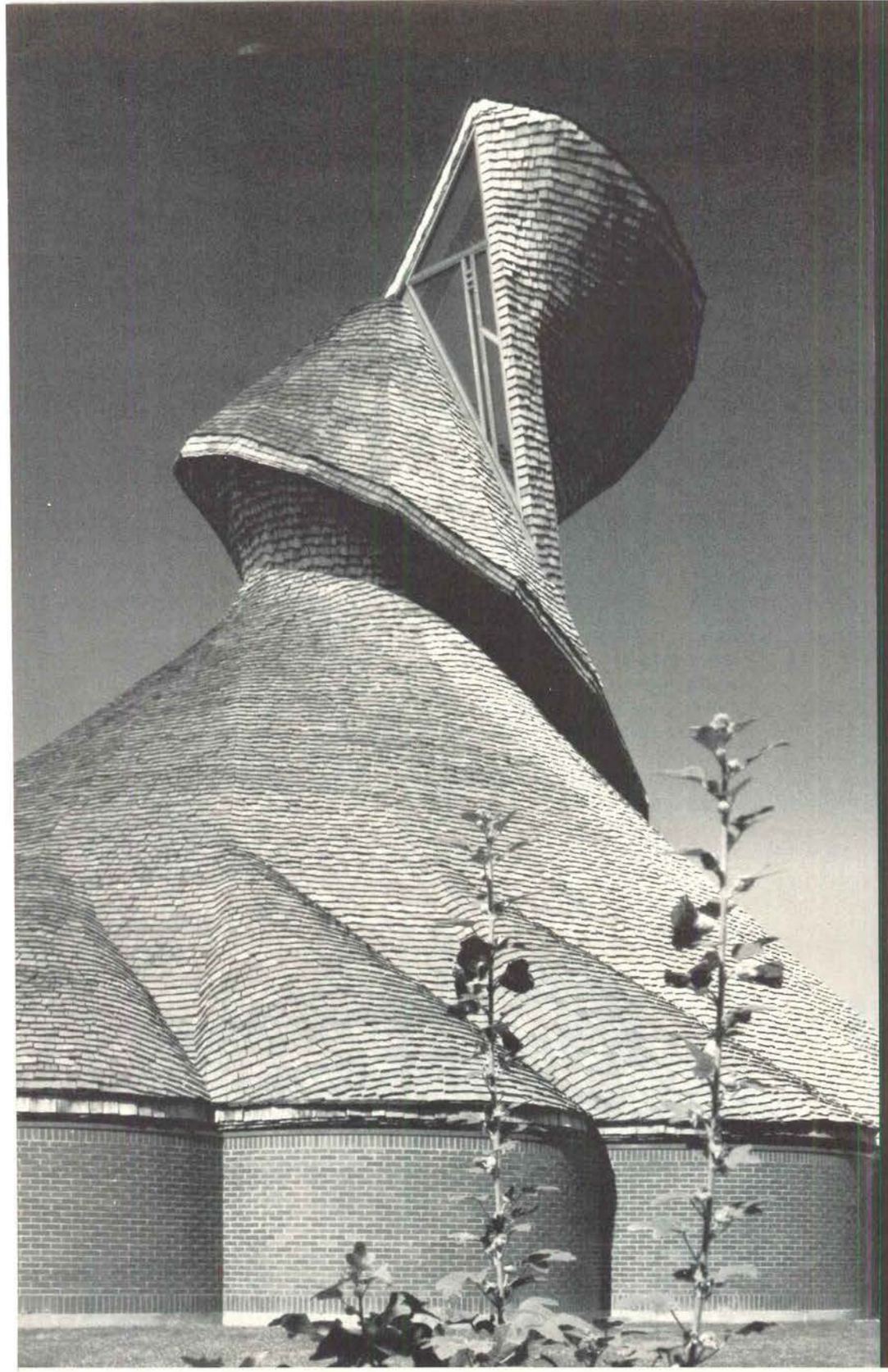
AIR-CONDITIONING DUCT / *Thermaflex M-KA* is an insulated flexible duct for low velocity heating, ventilating and air-conditioning systems. This predesigned duct connects outlets or diffusers to mixing boxes or low-velocity ducts or plenums and is applicable in any low pressure system. ▪ Flexible Tubing Company, Guilford, Conn.

Circle 314 on inquiry card

SCHOOL CARPETING / Even though Whitfield County, Georgia contains many carpet mills, it was "difficult to sell the Board of Education on installing carpeting throughout their new schools." After experimenting with carpeting in one school however, the Board has decided not only to carpet all new schools, but all old schools built before 1954. The first completely carpeted new school has lobby, administrative offices, library (shown above), classrooms, medical rooms and halls carpeted with *Crown Tuft's Diamond Point I*, the acoustical resilient flooring made of *Zefkrome*. This acrylic fiber is water absorbent, stain resistant, strong and long wearing. ▪ Dow Badische Company, New York City.

Circle 315 on inquiry card

more products on page 234



Certi-Split No. 1 Handsplit/Resawn shakes, 24" x 3/4" to 1-1/4"; random 8" to 10" exposure. Architect: Etienne Gaboury, MRAIC

Red cedar shakes: To proclaim an emotion. In motion.

The emotion is faith. Its expression: the swirling, skyward-reaching roof of Winnipeg's Precious Blood Roman Catholic Church.

And while the roof proclaims, it also embraces. The interior projection of its spiraling lines draws together congregation and priest, pew and altar.

The application of red cedar handsplit shakes demonstrates the flexibility of this richly textured material. Cedar brings a sense of warmth and solidarity to the striking free form of the structure. And promises freedom from maintenance for years to come.

For your next church project, insist on the real thing: red cedar Certi-Split shakes or Certigrade shingles. They're worth it.

For details, plus money-saving application tips, write: 5510 White Bldg., Seattle, Washington 98101. (In Canada: 1477 West Pender St., Vancouver 5, B.C.)

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

Red Cedar Shingle & Handsplit Shake Bureau

One of a series presented by members of the Forest Products Promotion Council.

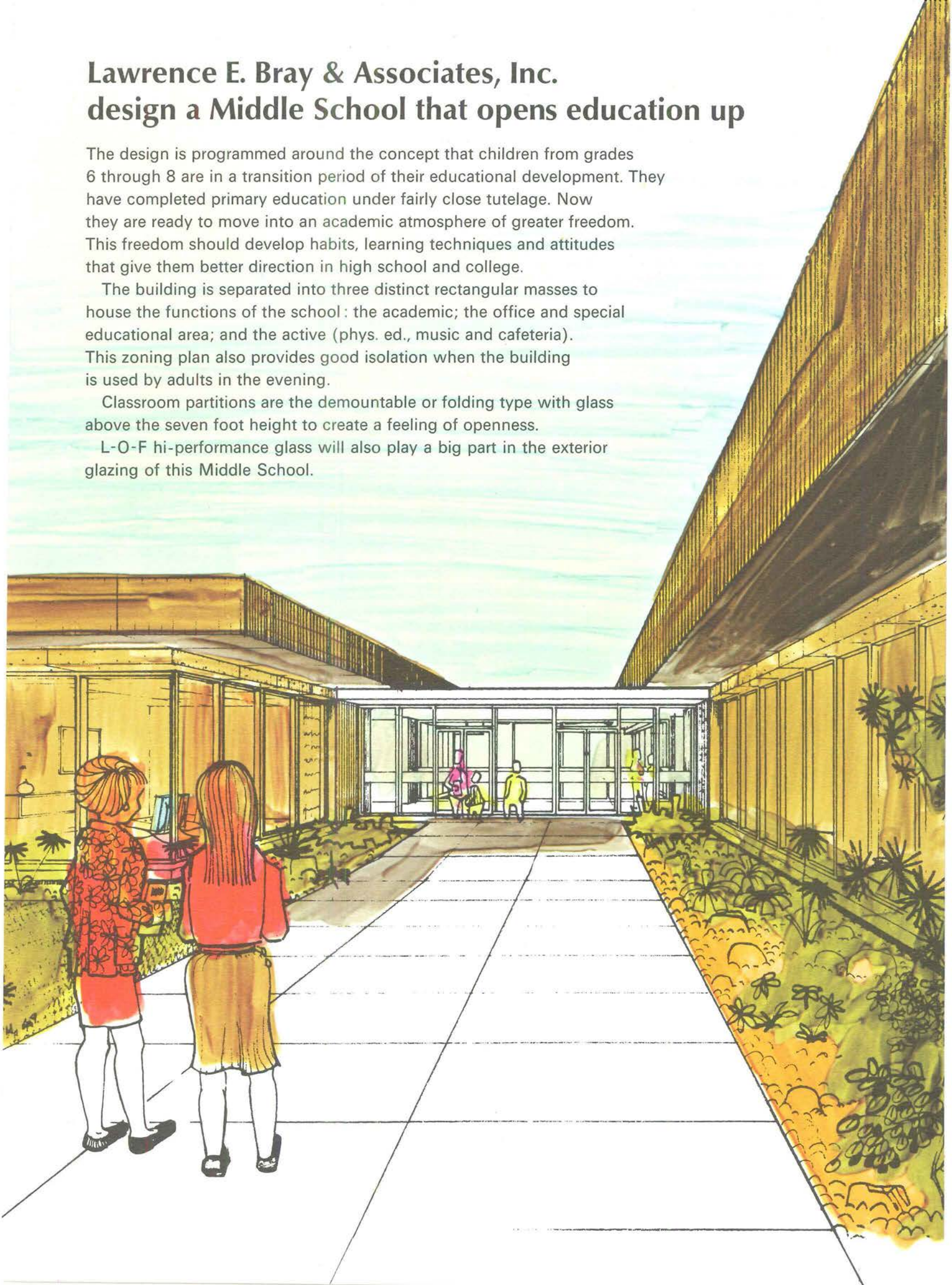
Lawrence E. Bray & Associates, Inc. design a Middle School that opens education up

The design is programmed around the concept that children from grades 6 through 8 are in a transition period of their educational development. They have completed primary education under fairly close tutelage. Now they are ready to move into an academic atmosphere of greater freedom. This freedom should develop habits, learning techniques and attitudes that give them better direction in high school and college.

The building is separated into three distinct rectangular masses to house the functions of the school: the academic; the office and special educational area; and the active (phys. ed., music and cafeteria). This zoning plan also provides good isolation when the building is used by adults in the evening.

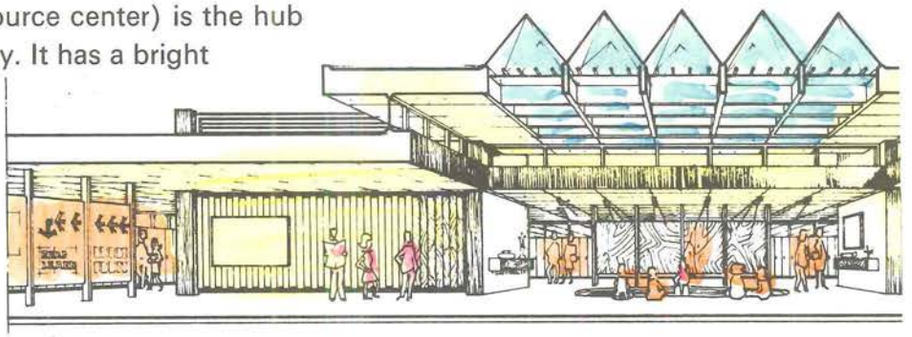
Classroom partitions are the demountable or folding type with glass above the seven foot height to create a feeling of openness.

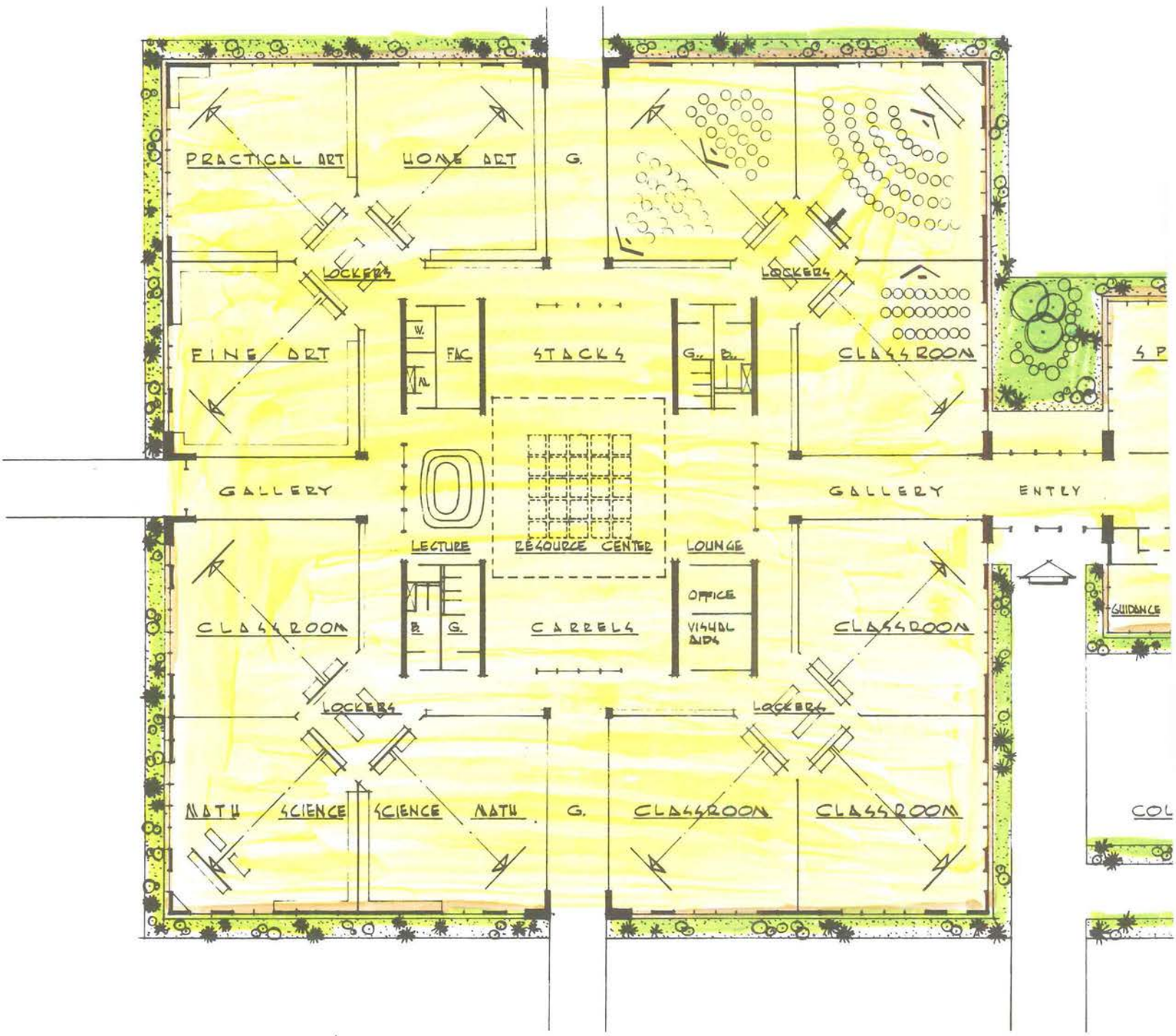
L-O-F hi-performance glass will also play a big part in the exterior glazing of this Middle School.

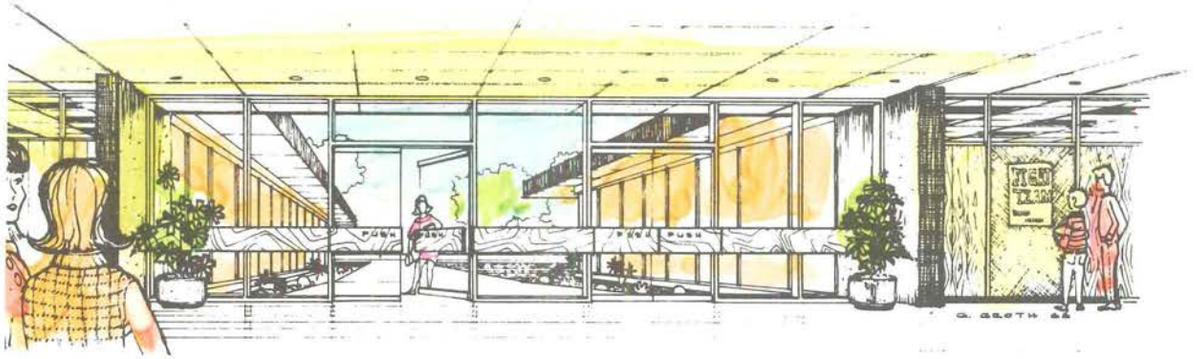


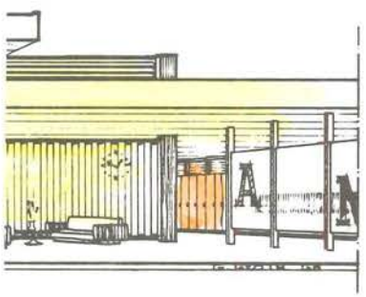
Generous use of Thermopane® insulating glass with Parallel-O-Bronze® as the outboard pane is used in exterior classroom windows. The hi-performance glass frames pleasant views while reducing the entrance of solar heat to contribute to air-conditioning economies. Functional controls for audio-visual privacy are also provided. Exterior wall surfaces adjacent to windows are Vitrolux® spandrel glass with a backup of insulated wall covered with chalk and tack board.

The centrally located library (resource center) is the hub of the academic freedom philosophy. It has a bright clerestoried high ceiling area of Parallel-O-Plate® glass. Skylights of Crossweld® wired glass

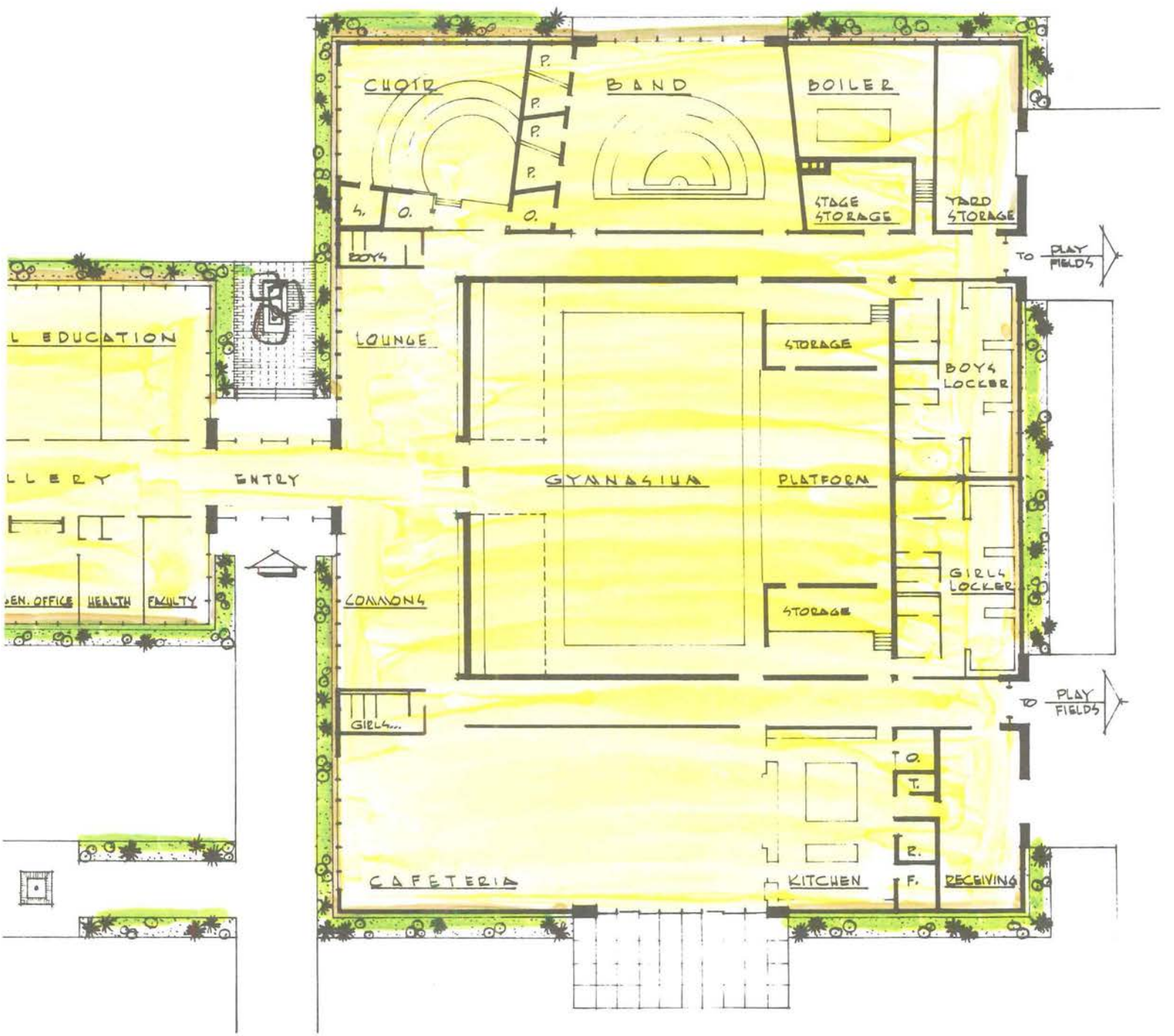









DISCOVER
A
FACT....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STAGE STORAGE
YARD STORAGE
BOYS
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LOUNGE
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STORAGE
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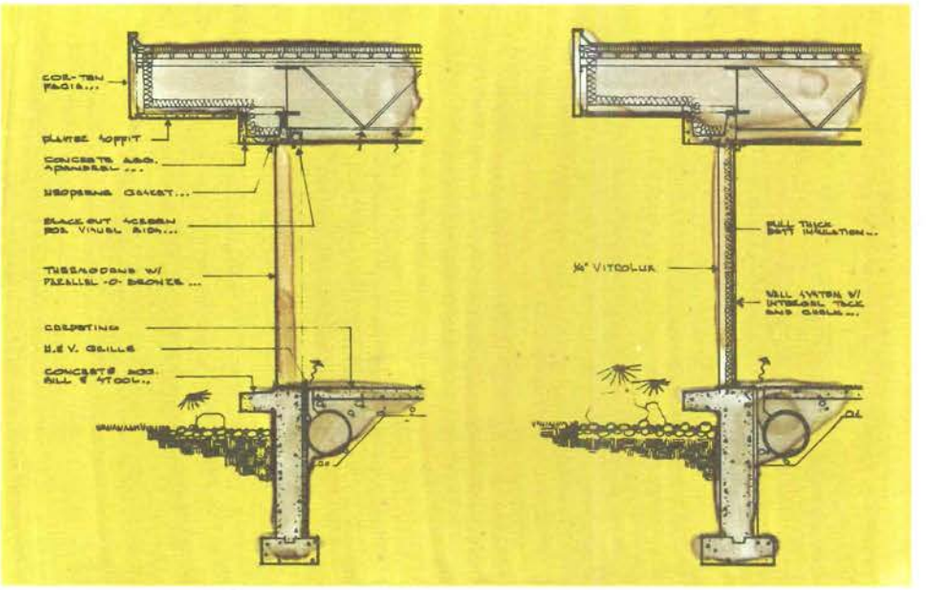
GIRLS...
TO PLAY FIELDS
T.O.
T.
R.
F.
RECEIVING
CAFETERIA
KITCHEN

with diffusers of Tuf-flex® tempered Patterned glass below them bring daylight into five pleasant activity areas: the control desk with conventional library furniture; stacks for material storage; study carrels for individual audio-visual, television or reading; lecture area with carpet; lounge area for casual reading.

Thus, Lawrence E. Bray & Associates, Inc., of Sheboygan, Wisc., have created a school design that truly reflects its educational philosophy. Glass made it possible. Libbey-Owens-Ford hi-performance glass made it practical. Why not get in touch with an L-O-F Architectural Construction Specialist? Or call your L-O-F Glass Distributor or Dealer listed under "Glass" in the Yellow Pages. Libbey-Owens-Ford Company, 811 Madison Avenue, Toledo, Ohio 43624.



POLISHED PLATE GLASS
Parallel-O-Plate®, ¼"
Parallel-O-Grey®, 13/64", ¼"
Parallel-O-Bronze®, ¼"

HEAVY-DUTY PLATE GLASS
Parallel-O-Plate®, 5/16" to ⅞"
Parallel-O-Grey®, ⅜", ½"
Parallel-O-Bronze®, ⅜", ½"

LAMINATED SAFETY PLATE GLASS
with Vari-Tran™ Coating

HEAT ABSORBING FLOAT, ¼"

INSULATING GLASS—Thermopane®
Regular, tinted or with
Vari-Tran Coating

VIGILPANE™—Safety Plate Glass

ROUGH PLATE, Regular or Tinted
(Rough 2 Surfaces)
(Polished 1 Surface, Rough 1 Surface)

SPANDREL GLASS—Vitrolux®
Vitreous colors fused to back
of heat-strengthened glass

HEAT-TEMPERED GLASS—Tuf-flex®
Windows, Doors and Sidelights

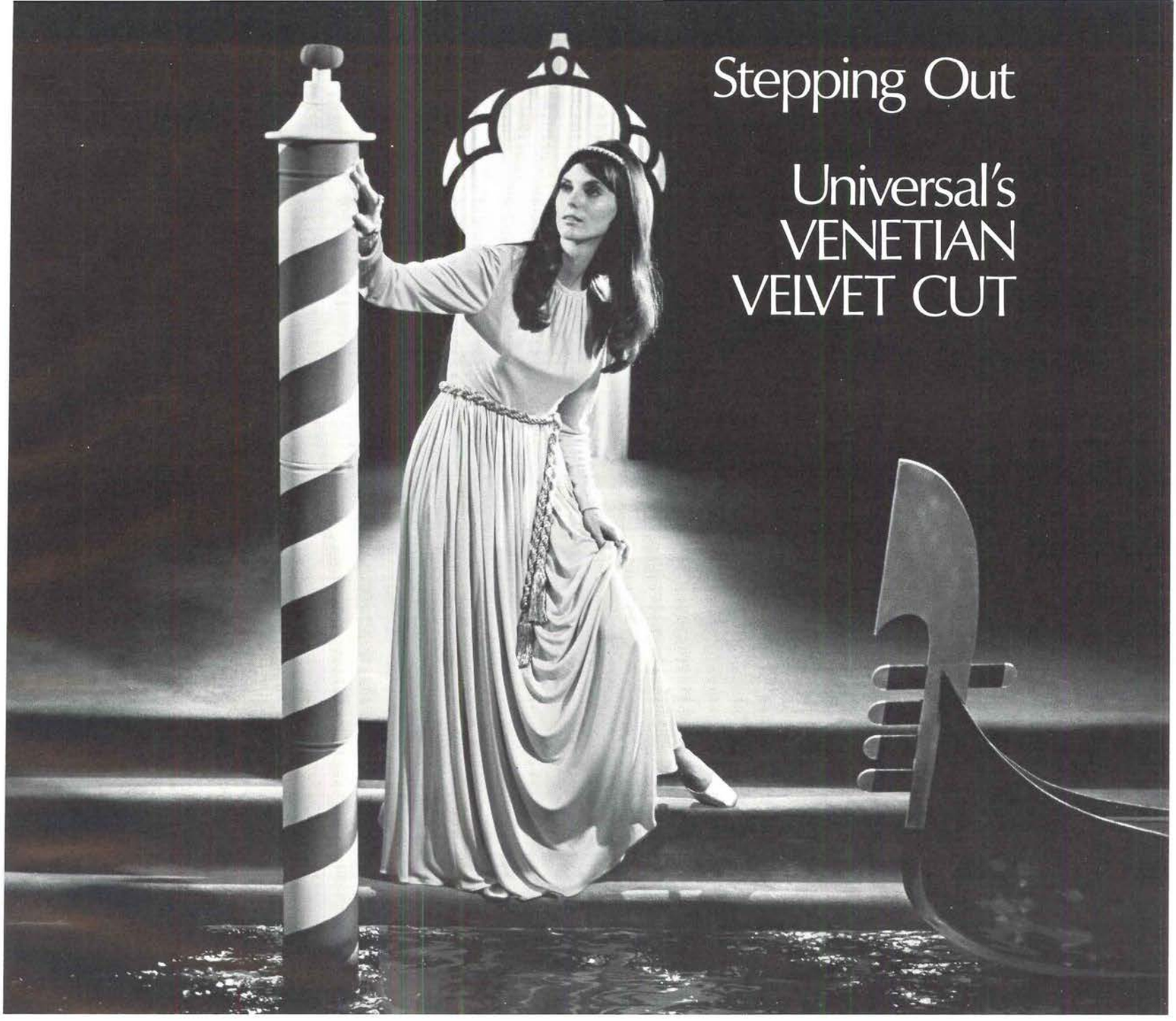
WINDOW GLASS

PATTERNED & WIRED GLASS

MIRROPANE®
One-way vision glass

L-O-F GLASS

L-O-F HI-PERFORMANCE GLASS



The Ultimate Luxury in Contract Carpet

Finalemente! Universal's **VELVET-CUT COLLECTION** captures **la dolce vita** of the finest woven velvet carpeting—while advancing all the benefits of modern, precision-tufting! Made on one of the industry's first 1/10 gauge **cut-pile** machines, the **VELVET-CUT COLLECTION** is rich with the joyous color of old Venice and available in two devastatingly beautiful types. Both are of high-density construction.

ST. MARK'S

- Pile Yarn: 100% solution dyed Vectra® olefin fiber
- Stain, static, and abrasion resistant
- Gauge: 1/10″
- Stiches per inch: 10
- Pile weight: 35 oz sq yd
- Pile height: ¼″
- Density: 100 tufts per sq in
- Ultra Violet light factor added

COLORS:

Golden Grain, Jamaica Blue, Charcoal, Avocado Mist, Brazil Nut, Dark Moss, Cumquat, Regimental Red

FLORIAN

- Pile yarn: 100% polyester
- Gauge: 1/10″
- Stitches per inch: 10
- Pile weight: 28 oz sq yd
- Pile height: 5/16″
- Density: 100 tufts per sq inch

COLORS:

Sand Gold, Golden Wheat, Tassel Gold, Firethorne, Sash Red, Tropic Blue, Spring Meadow, Beret Green, Bronze Olive, Navy, Turquoise, Avocado

St. Mark's and Florian primary backing: DuPont Typar®—secondary backing: 40 oz HI-D foam rubber or 9 oz jute

Gown and Accessories: Davison's, Atlanta

ST. MARK'S VELVET-CUT

Deep — Dense — Delightful

OTHER UNIVERSAL STARS

made on Universal's 5/64″ tufting machines

BONANZA: 100% continuous filament nylon

LUCKY STRIKE: printed variation of Bonanza

DICKSIE: 100% Herculon® polypropylene

HIGH CHAPARRAL II: 100% continuous filament nylon

VANGUARD: solution-dyed Vectra® olefin

MAIL THIS COUPON FOR UNIVERSAL SAMPLES

VELVET-CUT COLLECTION: ☐ Florian ☐ St. Mark's

UNIVERSAL STARS: ☐ Bonanza ☐ Vanguard ☐ Dicksie ☐ Lucky Strike ☐ High Chaparral II

Name_____

Firm Name_____

City_____ State_____ Zip_____

universal carpets inc.

ELLIJAY, GEORGIA 30540, PHONE: 404/635-2332

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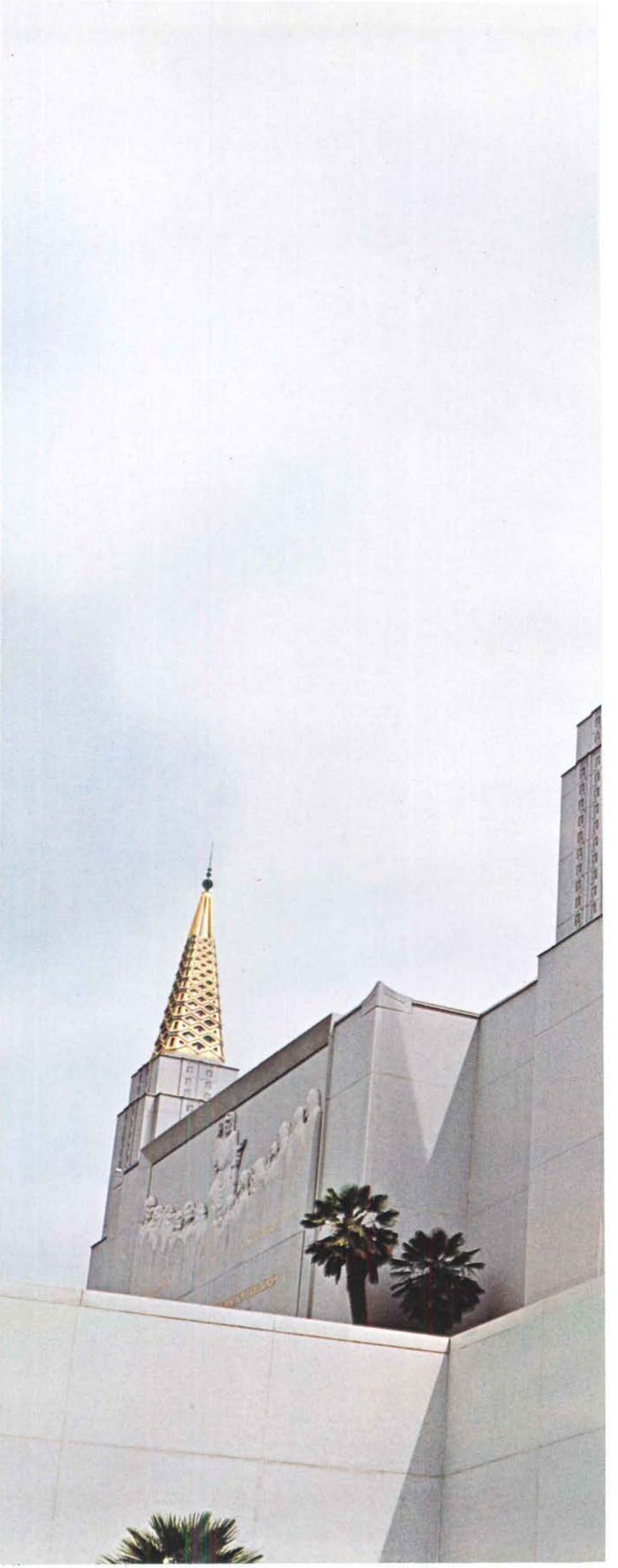
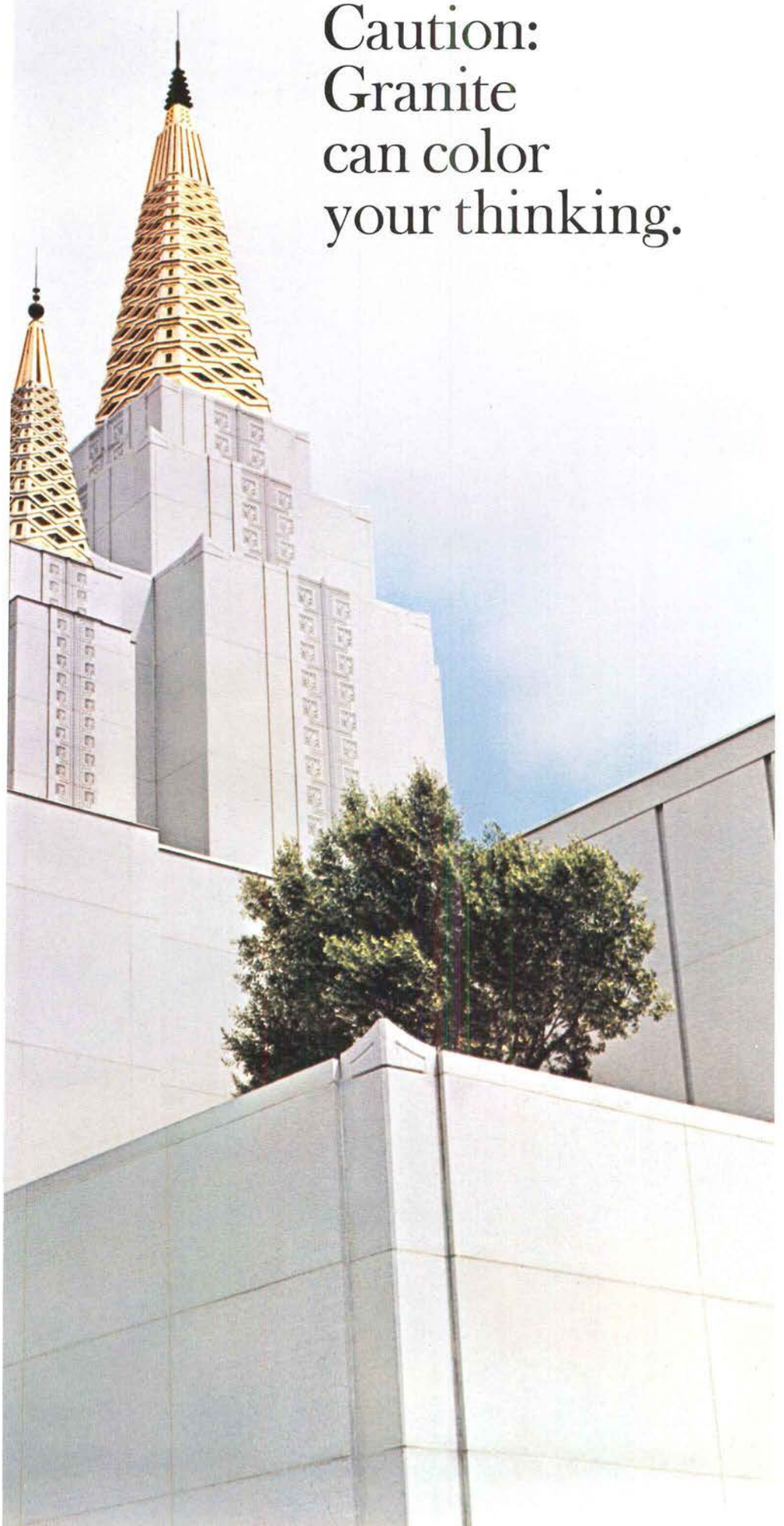
For more data, circle 15 on inquiry card





Caution: Granite can color your thinking.

Oakland Temple, Church of Jesus Christ of Latter Day Saints, Oakland, California
Architect: Harold W. Burton
General Contractor: Wheatly Brothers
Sculptor: Merle Gage
Granite: Sierra White, thermal finish and hand carved

Cold Spring Granite Company

Cold Spring, Minnesota

subsidiaries:
Lake Placid Granite Company
Jay, New York
Texas Granite Corporation
Marble Falls, Texas
Raymond Granite Company
Raymond, California
Cold Spring Granite (Canada) Ltd.
Lac Du Bonnet, Manitoba

over 20 producing quarries

See us in Sweets, File No. $\frac{6a}{Co}$, or write.

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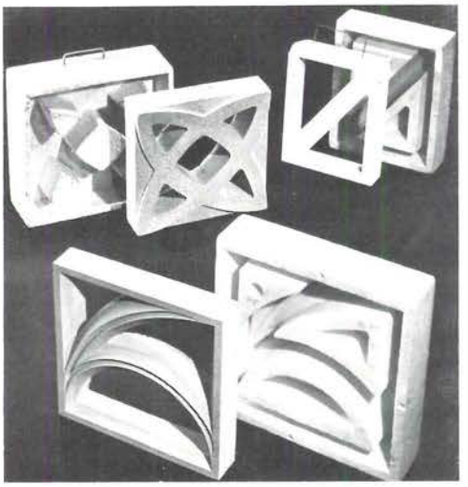

CEMENT BLOCKS / A new method of producing cement blocks uses polystyrene forms molded to the desired shape. After the concrete is poured and cured, the block is shipped to the building site in its mold, reducing breakage. ▪ Durable Cement Corporation, Chicago.

Circle 316 on inquiry card

VINYL ASBESTOS / A mixture of sun-flecked tropical tones make up the *La Paz* design for 12-in. by 12-in. squares that are non-directional, and reported to have low cost and low upkeep. *La Paz* is said to be exceptionally durable and immune to oils, fats, greases, alkalis, acids, detergents and other chemicals. It is recommended for bedrooms, baths, living-dining areas, kitchens and even basements. ▪ American Biltrite Rubber Co., Inc., Trenton.

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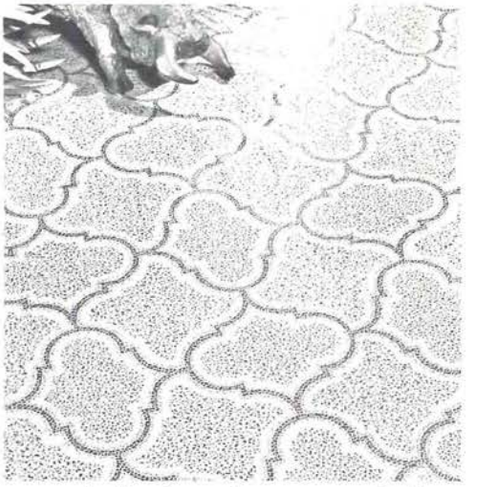
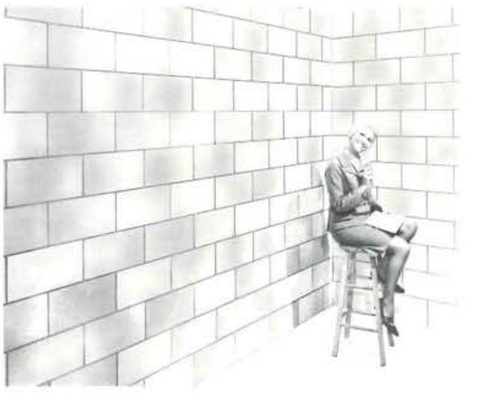




TILE COLOR GLAZE / A "blended" color glaze for structural clay tile produces shades that progress from dark to light within each tile face. *Harmony Hues* are currently available in ranges of warm olive and golden wheat. ▪ Stark Ceramics, Inc., Canton, Ohio.

Circle 318 on inquiry card

INLAID CUSHIONED VINYL / *Royal Court* is the first design in the new *Fashionflor* product series. The look is said to have a "unique shimmer" achieved via a new manufacturing technique that also makes the embossed effect different. ▪ Congoleum Industries, Inc., Kearney, N.J.

Circle 319 on inquiry card

These light fixtures are 2′ x 4′.
Picture them as 1′ x 4′.

Or 1′ x 1′ or 2′ x 2′ or 3′ x 3′. Fact is, any of these standard troffers fit the new C-60/60 Luminaire Ceiling System by Armstrong. So now a room can have special design and lighting effects or meet a variety of lighting requirements without sacrificing the advantages of an integrated ceiling system. With Armstrong C-60/60, all that need be changed is the lighting function. C-60/60 (the accommodating square) and other ceiling innovations are described in our folio. Please write for a copy. Armstrong, 4209 Rock St., Lancaster, Pa. 17604.

Armstrong
Ceilings Systems that work

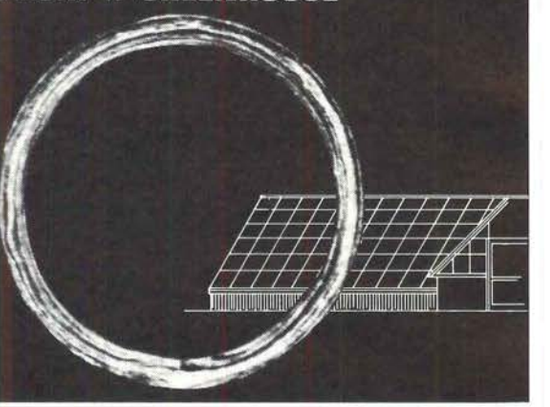
Or for more data, circle 1 on inquiry card.

Look at these Wrought Iron Pipe Service Records!

50-YEAR OLD STEAM CONDENSATE RETURN LINE TAKEN FROM A GREENHOUSE

50

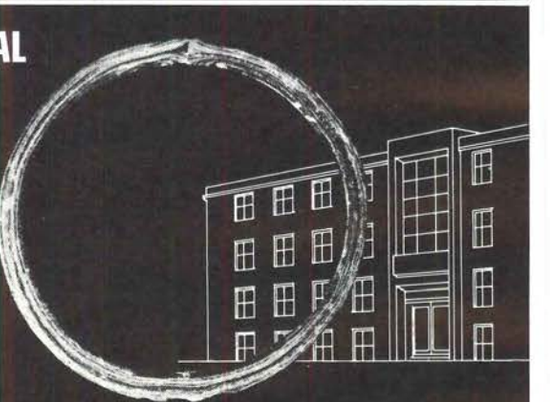
Wall thickness of this 1¼" 50-year old Wrought Iron pipe system is 0.101. The average wall thickness of 1¼" Wrought Iron pipe is 0.143. This means that only one-third of the pipe wall has corroded in 50 years . . . a weight loss of only .0008"/yr. This is remarkable when you realize the corrosive nature of steam condensate. Are you getting good service life from your condensate return lines?



45-YEAR OLD COLD WATER LINE TAKEN FROM A HOSPITAL

45

When a mid-western hospital was recently renovated, the cold water line was examined to determine how much of the Wrought Iron pipe wall had corroded during the 45 years of service. As you can see from the cross section of the pipe line, there is no evidence of corrosion.

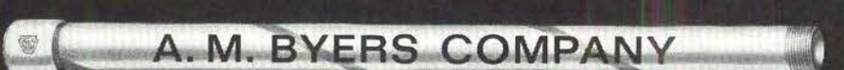


30-YEAR OLD VENT LINE IN A COMMERCIAL BUILDING

30

Look at the wall thickness of this 30 year old 4" extra heavy Wrought Iron vent line . . . the galvanized coating is still on the pipe. Needless to say, the weight loss was insignificant. What a pipe! Could you use this kind of service?

Believe you will agree these service records speak for Wrought Iron pipe's claim to fame . . . "long service life." Byers can't think of any other way of proving Wrought Iron pipe is the master corrosion stopper. If you are looking for long service life for plumbing, heating or any of the many other piping services, then it's got to be time-proven Wrought Iron pipe. More than 500 pipe distributors are ready to serve you. Write for our bulletin, "PIPING FOR PERMANENCE."



P. O. BOX 369 AMBRIDGE, PA. 15003

For more data, circle 107 on inquiry card

For more data, circle 108 on inquiry card

PORCENA... GLASS HARD ...JEWEL BRIGHT =THE ULTIMATE FINISH

Sanymetal Porcena is as impervious to cigarette burns, scratches, acids, caustics and corrosion as glass because it is glass . . . glass-on-steel to retain its gem-like luster and beauty for several lifetimes. Porcena installations include fittings and hardware that blend at all junctures—smooth, flush, no exposed edges. Edges are trimmed with gleaming stainless steel.

Wall-supported Sanymetals provide easy floor cleaning and virtually unlimited design versatility. Easy, positive, mechanical anchoring to masonry walls assures strong, rigid installations. "Wedge" panel design permits recessed accessories.

This combination of finish and style provides the unequalled . . . the ultimate restroom installation . . . Sanymetal, 1701 Urbana Rd., Cleveland, Ohio.

THE Sanymetal PRODUCTS COMPANY, INC. 1701 Urbana Road, Cleveland, Ohio 44112

Sanymetals®

For more data, circle 109 on inquiry card

For more data, circle 110 on inquiry card

For more data, circle 111 on inquiry card

For more data, circle 112 on inquiry card

STEEL AGAINST STEAL.

All stainless steel. The live idea in deadbolt locks.

Take a good look at the new Yale® 300 series mortise deadlock. If its sleek design features don't stop you, its maximum security will.

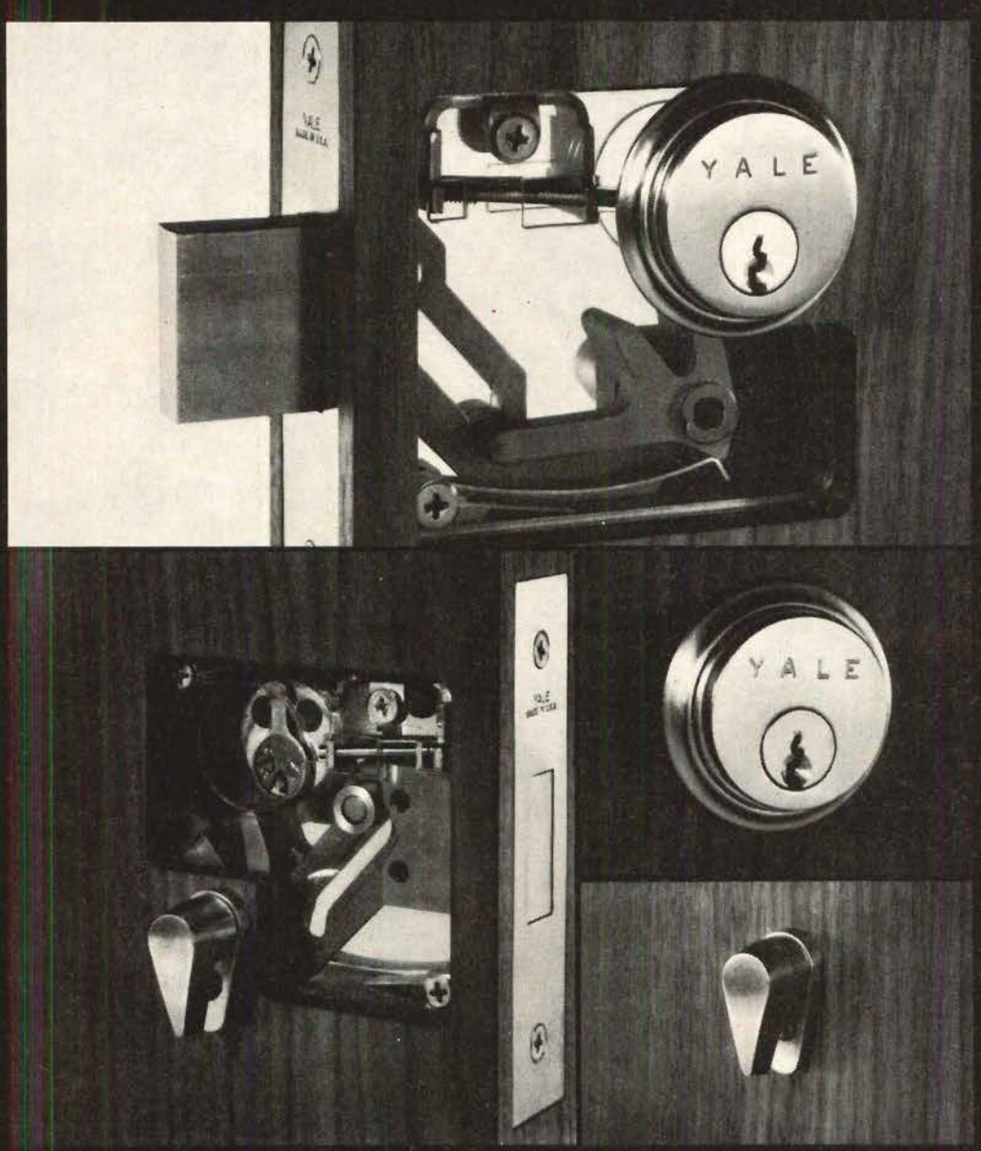
- *Full* 1-inch deadbolt.
- Two hardened-stainless-steel rotating pins in the deadbolt, making it virtually impossible to saw.
- Deadlocked when thrown, making it wholly resistant to end pressure.
- Easy-action bolt throw.

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

YALE® EATON YALE & TOWNE

THE FINEST NAME IN LOCKS AND HARDWARE

YALE LOCK & HARDWARE DIVISION, RYE, N. Y. 10580



For more data, circle 117 on inquiry card

OFFICE LITERATURE

For more information circle selected item numbers on Reader Service Inquiry Card, pages 311-312.

BATH ACCESSORIES / Cabinets, decorative mirrors and lights, "designed to fit any decor and priced to fit any budget," are presented in a catalog for 1969. The catalog features pewter as the "color of the year." ▪ Philip Carey Corporation, Cincinnati.

Circle 400 on inquiry card

FLOORING / The 1968-69 Flooring Technical Data Book was judged "best literature offering technical information concerning the products or equipment of a single manufacturer" in the Construction Industry's annual Advertising and Product Literature Competition. The annual competition is sponsored by a group of seven construction industry organizations including the A.I.A. and Consulting Engineering Council. ▪ Armstrong, Lancaster, Pa.*

Circle 401 on inquiry card

AIR CONDITIONING / A 15th-edition directory listing products that are licensed to use the AMCA Certified Ratings Seal includes 573 products of 59 manufacturers in the United States and Canada. A separate enclosure explains the Certified Ratings Program, the new test facility and test equipment available. A section shows changes in product listing since December 1967, including discontinued products, replacement products and new listings by manufacturers. ▪ Air Moving and Conditioning Association, Inc., Arlington Heights, Ill.

Circle 402 on inquiry card

ROOFING AND SIDING / A 20-page booklet presents *Zip-Rib* roofing and siding system for new and re-roofing applications. The system requires no through fasteners. ▪ Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Circle 403 on inquiry card

PAINT PRODUCTS / A three-ring binder that allows for quick and simple updating, is a handy guide for selecting products for use on specific surfaces. Included is a self-addressed card to be filed with the company to assure that product manual owners receive future supplements. ▪ Martin-Senour Company, Chicago.*

Circle 404 on inquiry card

CHALKBOARDS / A 20-page catalog illustrates a complete line of chalkboards, bulletin boards and directory boards. Included are steel chalkboards in 15 decorator colors. ▪ A-1 School Equipment Company, Los Angeles.

Circle 405 on inquiry card

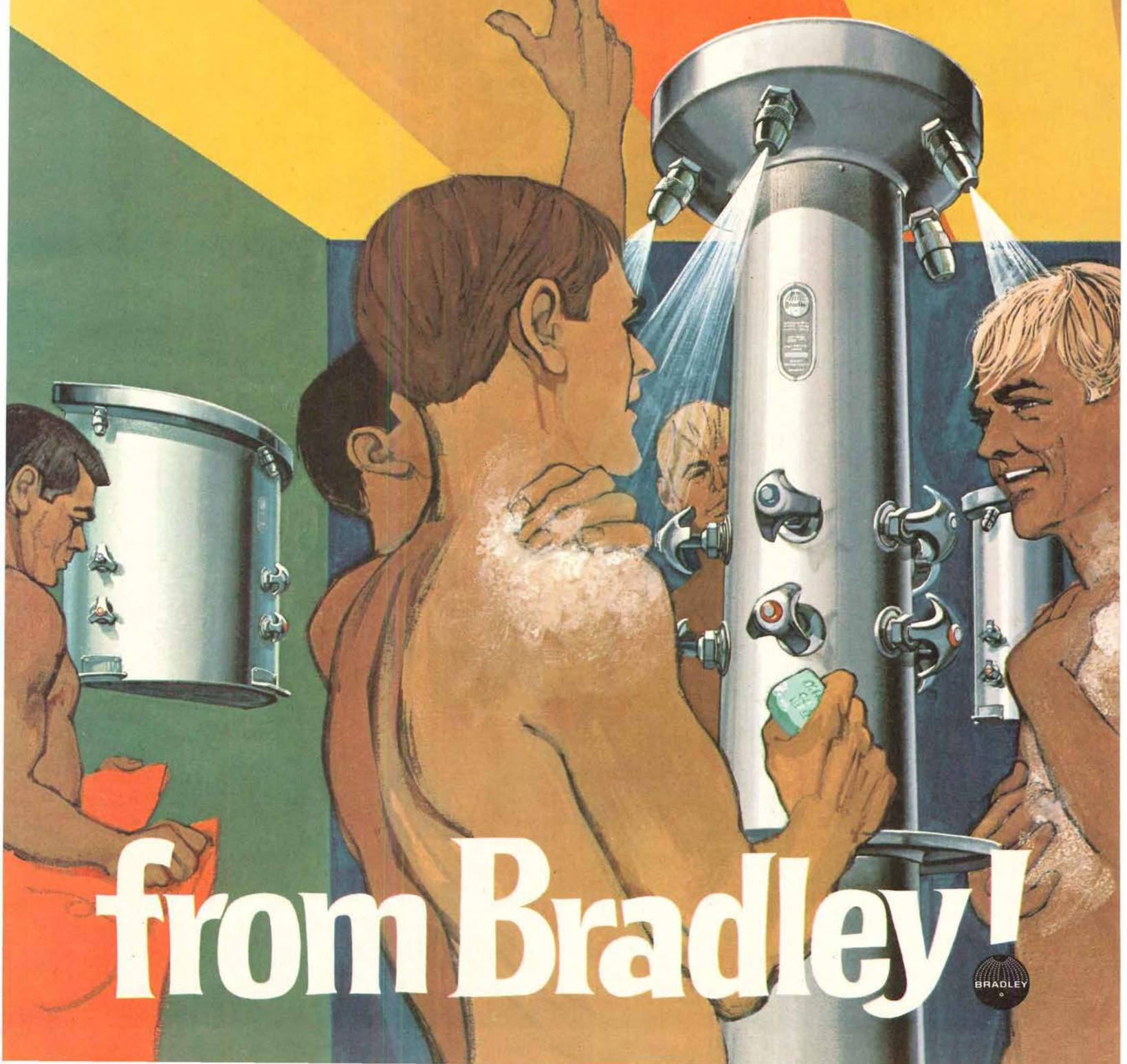
**Additional product information in Sweet's Architectural File*

more literature on page 250

For more data, circle 114 on inquiry card

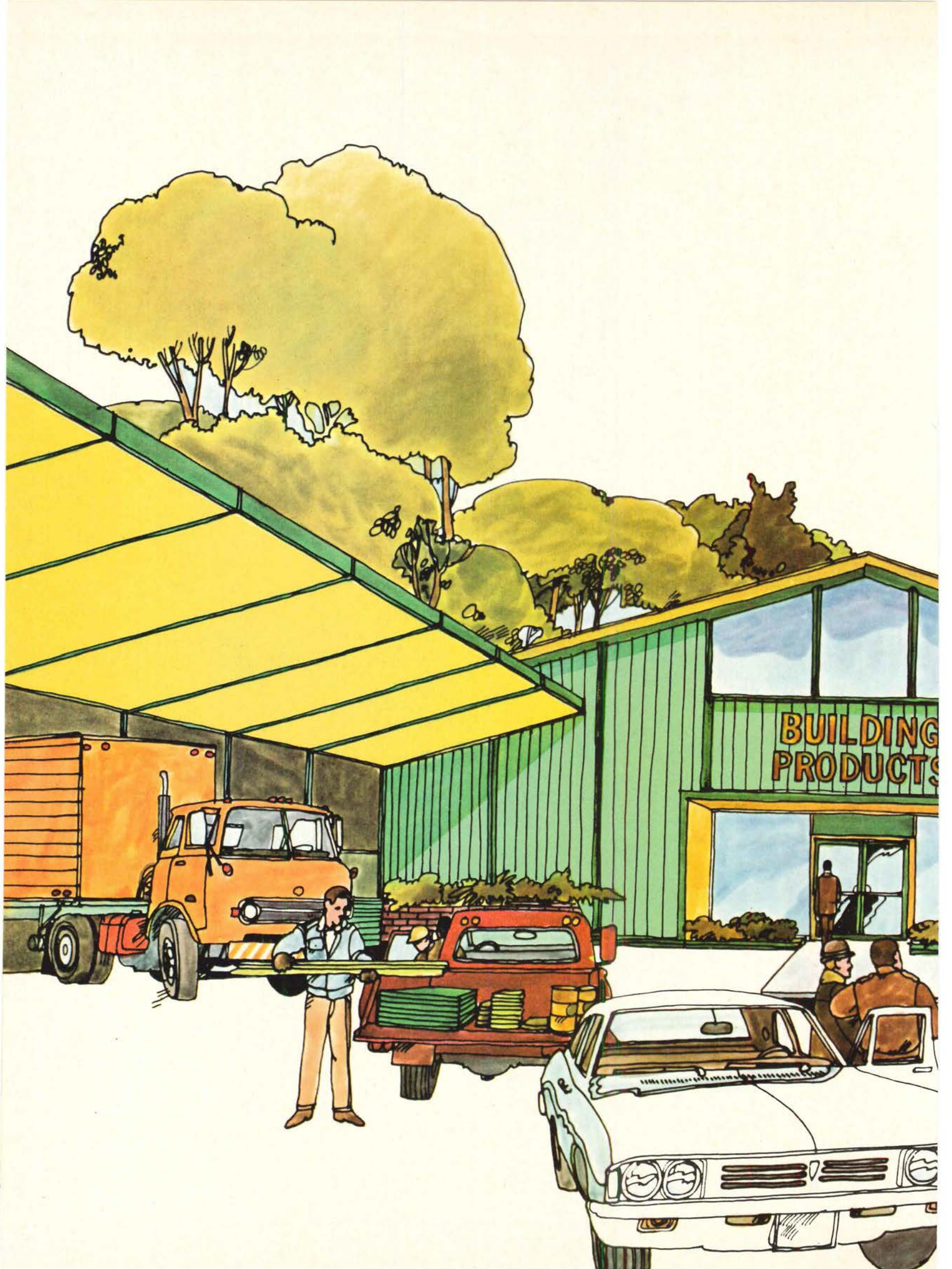
Bright idea

Specify this shower team and you'll move people! Lots of people. In and out of shower rooms. Fast! The team of Bradley Column and Wall-Saver® Showers turns even limited spaces into high capacity shower rooms. It lets you utilize every inch of floor and wall space. No waste. What's more, Bradley Group Showers serve up to 6 people with just one set of plumbing connections, cutting installation costs as much as 80%. Wherever and whenever you want to move lots of people, fast—schools, plants, institutions—team up with Bradley! For complete information see your Bradley representative. And write today for colorful literature. Bradley Washfountain Co., 9109 Fountain Blvd., Menomonee Falls, Wisconsin 53051.



from Bradley!

BRADLEY


BUILDING
PRODUCTS

Some metal buildings will never grow old

PPG coatings, factory-applied, add color that stays fresh and bright for years and years

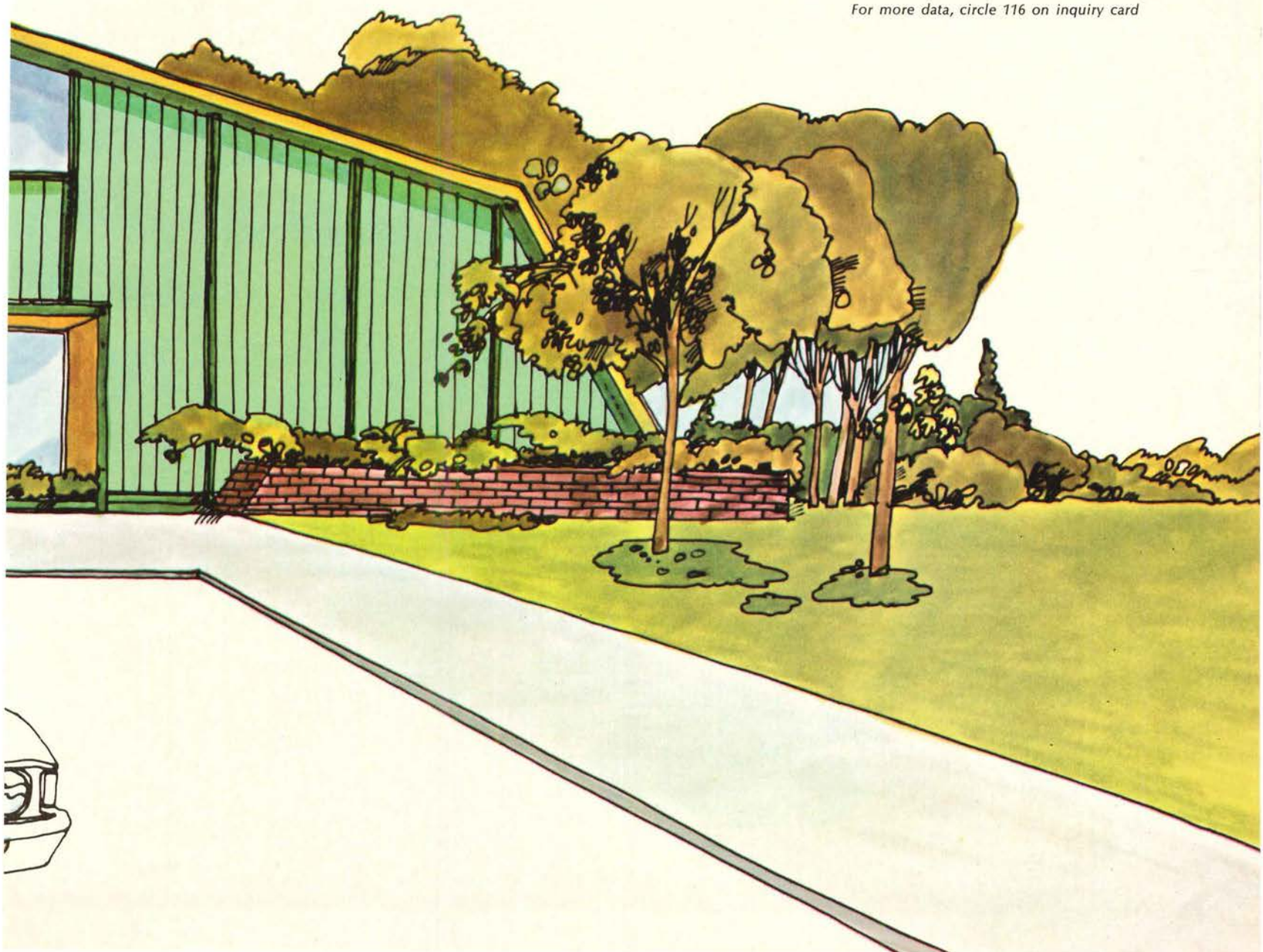
Whatever type of metal building you're planning—warehouse, plant or store—PPG Color Coatings can beautify it and keep it looking new longer. Choose from a wide range of colors—harmonious architecturals, bright commercials, even sparkling new metallics. These PPG coatings are available on factory-finished panels, siding and roofing, with matching or harmonizing colors for extruded components.

PPG coatings are tough, too. The finish won't chip, crack, peel or blister. They stay bright and care-free, resisting years of weather and industrial atmosphere. The highly flexible finish takes severe forming and fabrication, comes through shipping and installation in great shape.

You can have the dramatic factory-applied color and long life of PPG Color Coatings on your metal buildings. Call your supplier, consult Sweet's Architectural File, or contact PPG INDUSTRIES, Inc., Dept. 16W, One Gateway Center, Pittsburgh, Pa. 15222. Telephone 412/434-3191.

Color Coatings PPG INDUSTRIES

For more data, circle 116 on inquiry card



Your hang-up.

A wall-hung version of Day & Night's famous Duopac – the new Panelpac

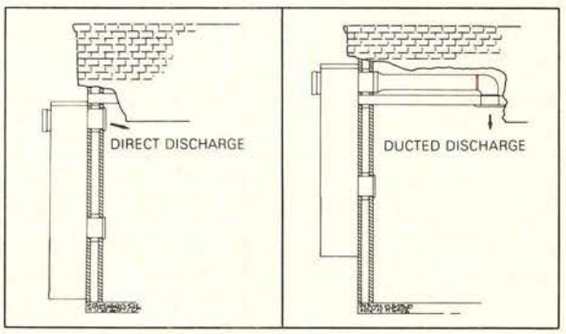
And what a hang-up! It's the first gas-electric, vertical, year 'round air conditioner that requires no venting.

As one compact outdoor unit, the Panelpac is ideal for add-on residential applications as well as prefabricated or relocatable buildings, schoolroom construction or modernization.

Easy to install, the Panelpac snubs up against any outside wall or may be recessed into it, with only 4 inches exposed. All service is done completely from the outside.

That's not all. The Panelpac can be installed with either direct or ducted air discharge, and you can select a gas-electric or *electric-electric* Panelpac, depending on the requirements.

For more detailed information, simply mail the coupon below and let Day & Night solve your heating and air conditioning hang-ups.



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For more data, circle 113 on inquiry card

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brings the wide-open spaces *inside!*

When your design calls for a broad sweep of column-free floor space, prestressed concrete gives you the long span muscle you need. Without premium cost.

Ceilings have a clean, modern appearance because mechanical and electrical systems can be channeled between the stems of well proportioned structural members, providing easy access.

Get in touch with your nearest PCI producer member for complete information on how prestressed concrete can give you more design freedom in your next project. His experience can help you most in the earliest stage of planning.

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ARCHITECTURAL STRUCTURAL

205 West Wacker Drive, Chicago, Illinois 60606

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Automation savings aren't just for skyscrapers . . . with Honeywell's standardized systems.

You might think automation is practical only in the biggest buildings. Not so. Take the Honeywell System 2, for example. It's an inexpensive little automation package made up of standardized components. And it can grow as your client's building grows, just by adding another off-the-shelf module.

Basic System 2 control panel is a mini-automation center, little over 5 feet high and about half that in width and depth. Yet, it can start and stop equipment, detect equipment failures, monitor temperatures, monitor all kinds of alarms. And save enough in operating costs to pay for itself in 3 years!

The 3-year payoff, of course, is the most important feature of a Honeywell Automation Center of *any* size. That's a fact, based on 18 years of Honeywell experience in automating over 4,000 other buildings.

Want building automation help? Send for our planning guides: Honeywell, Commercial Division, G2118, Minneapolis, Minnesota 55408.

Honeywell
AUTOMATION

For more data, circle 119 on inquiry card

continued from page 242

VALVES / "Valves for Plumbing and Heating" is a 22-page revised catalog containing pertinent data on the company's line. There are installation suggestions and a list of specifications and standards. ▪ Anaconda American Brass Company, Waterbury, Conn.

Circle 406 on inquiry card

ROOFING / "Silicone Rubber Roofing Systems" completely describes the application of this roof construction method for both new and remedial installations. The eight-page booklet includes a description of the chemistry involved and the resulting superior resistance to weathering and degradation. ▪ General Electric Company, Waterford, N.Y.*

Circle 407 on inquiry card

HOSPITAL COMMUNICATIONS / A 12-page booklet presents the *Medi-Scan 220 Bed Availability Systems* for hospital bed control. The system uses alpha-numeric displays to provide updated data to key departments and can be controlled from each floor nursing station. ▪ Motorola Inc., Schaumburg, Ill.

Circle 408 on inquiry card

GLASS / A 16-page catalog offers an extensive selection of conventional and modern patterns of rolled, figured and wired glass. The primary functions of light diffusion, decoration and protection, plus the secondary function of heat absorption are discussed in detail. ▪ Mississippi Glass Co., St. Louis.*

Circle 409 on inquiry card

ICE REQUIREMENTS / A dial-type calculator helps determine ice requirements for food and beverage service in different types of establishments (e.g., hotels, hospitals, colleges). The calculator is the result of a market research study. ▪ Uniflow Manufacturing Co., Erie, Pa.*

Circle 410 on inquiry card

STEEL AIR DISTRIBUTION / Chicago's new First National Bank Building promises year-round air conditioning through use of the largest dual duct system ever installed in an office building. A four-page brochure tells how and why the engineers included the galvanized steel ductwork air distribution system. ▪ American Iron and Steel Institute, New York City.*

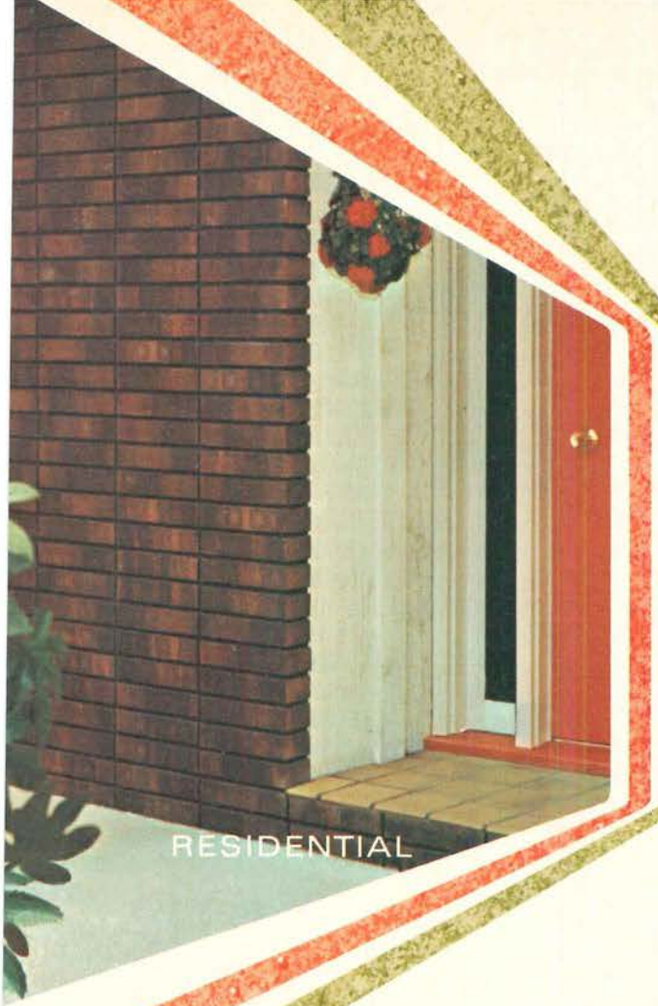
Circle 411 on inquiry card

CONTROL SYSTEM / A 10-page brochure presents the *Series 250* all-electronic system used to control flow, pressure, level or position in a variety of water, waste water and industrial applications. ▪ BIF, General Signal Corporation, Providence, R.I.

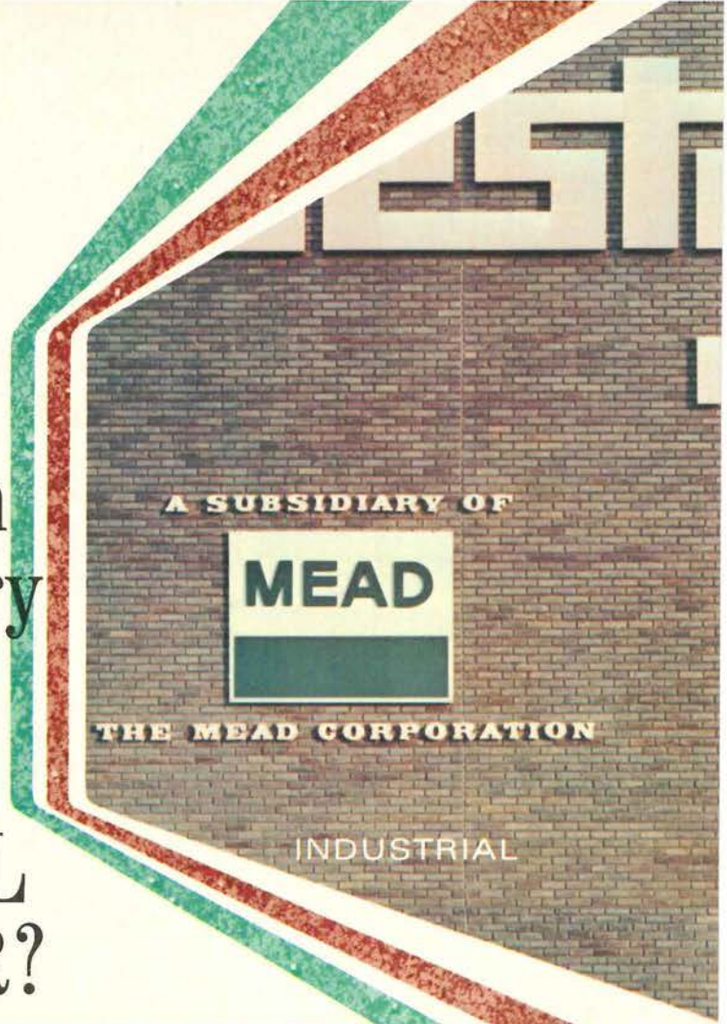
Circle 412 on inquiry card

Additional production information in Sweet's Architectural File

more literature on page 258



why not design masonry walls in TOTAL COLOR?



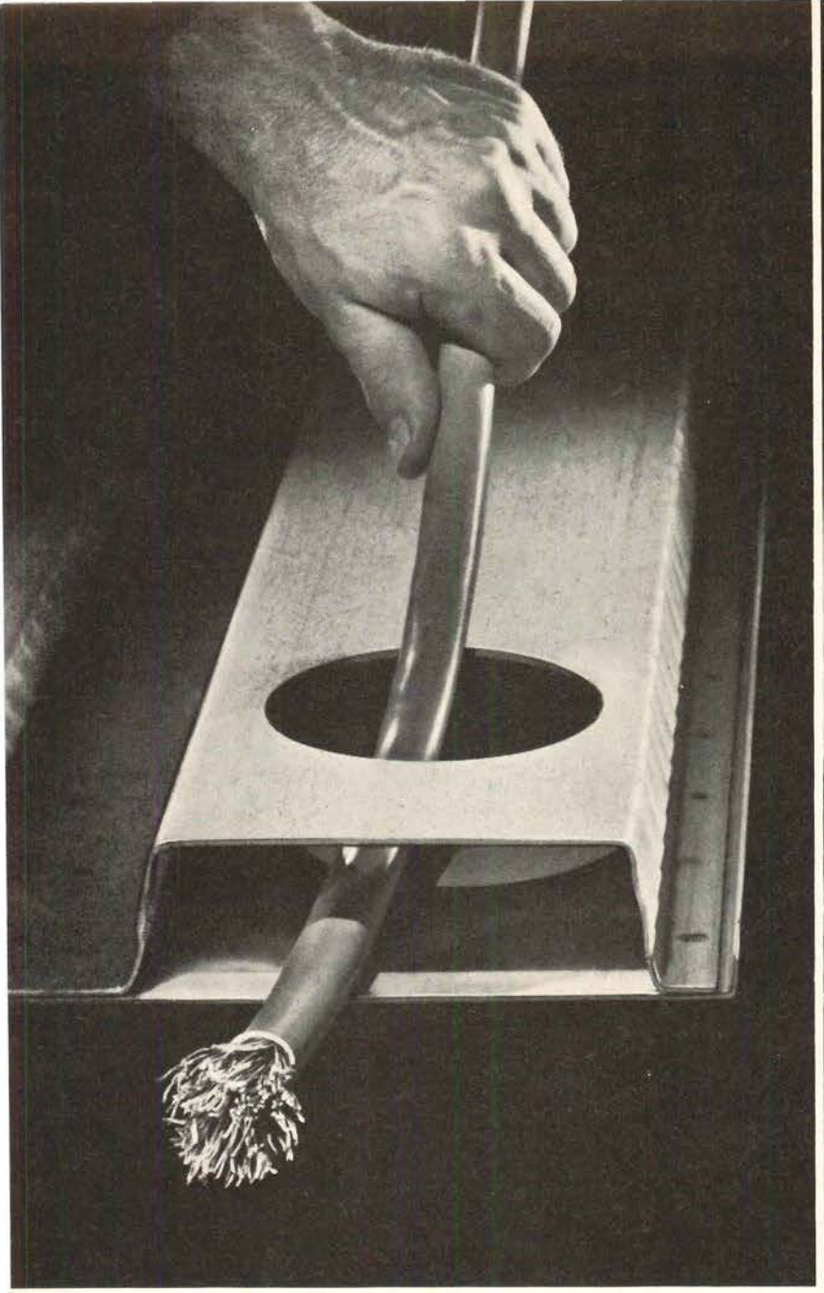
With over 500 Medusa Custom Color Masonry Cements from which to choose, why not get away from drab masonry cement work? Specify the MCCMC you want to complement *or* contrast masonry units. It will come to the job ready for sand and water. No job-mixing supervision necessary. Adds color to the *total* masonry wall. Ask to see samples today. Write Medusa Portland Cement Company, P. O. Box 5668, Cleveland, Ohio 44101.

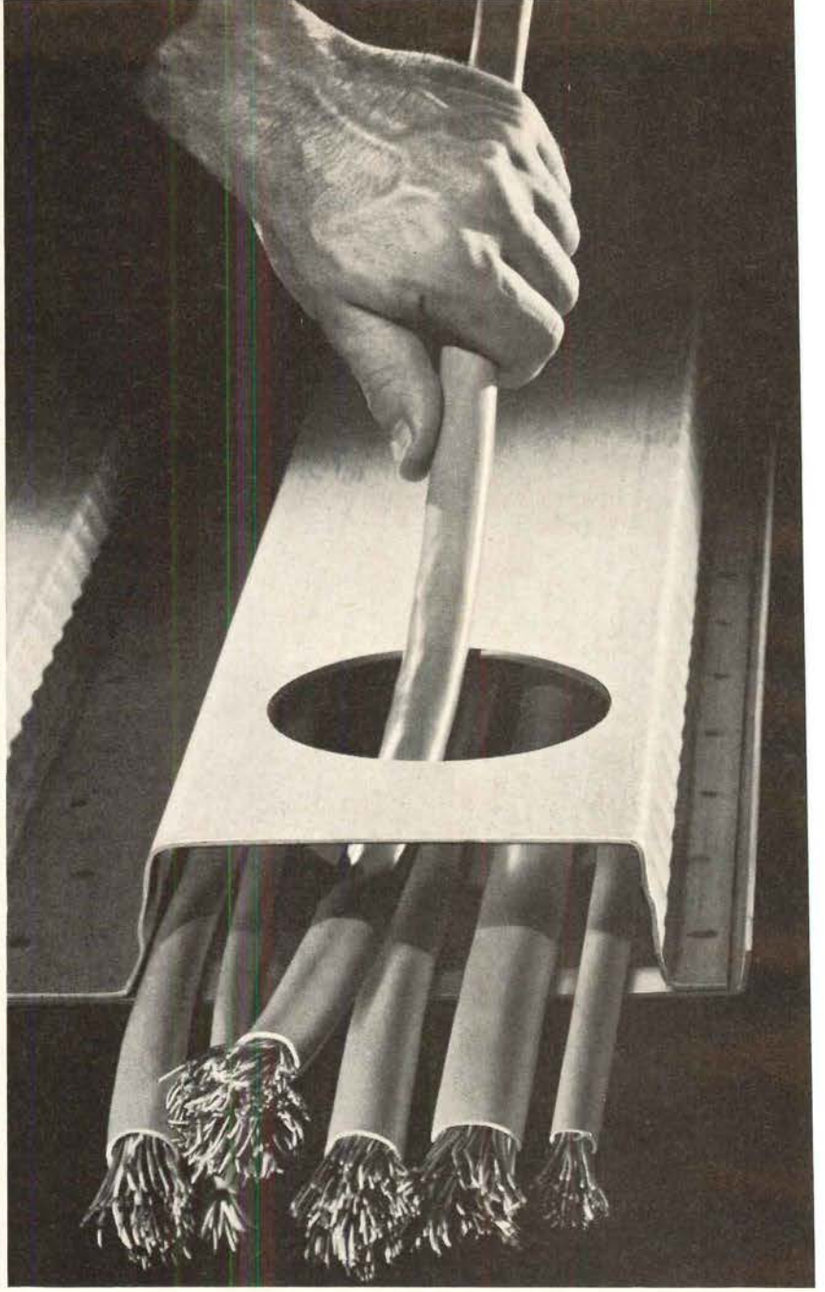
SOUTHERN ESTATES RESIDENCE, Brecksville, Ohio. Designers & Builders: Pate Homes, Inc., Cleveland, Ohio. Masonry Contractor: Pat Kilbane, Cleveland, Ohio. **WESTAB, INC.,** Kalamazoo, Mich. Designer, Engineer, Builder: Cunningham-Limp Co., Birmingham, Mich. Masonry Contractor: Vandermay Construction Co., Kalamazoo, Mich. **MARTIN LUTHER KING, JR. ELEMENTARY SCHOOL,** Providence, R. I. Architect: Robinson, Green & Beretta, Providence, R. I. General Contractor: Nanni Builders, Providence, R. I. Masonry Contractor: Frank Spirito & Sons, Cranston, R. I.

MEDUSA PORTLAND CEMENT COMPANY

White and Gray Portland Cements • White, Gray and Custom Color Masonry Cements • "CR-85 Series" ChemComp® Cement

For more data, circle 124 on inquiry card





1-5/8″ NF Celluflor®

the floor with 66% more space for the future.

Inland-Ryerson 1-5/8″ NF Celluflor offers 66% more space per cell than standard profile 1-1/2″ electrified floor deck. It can handle today's expanded electrification needs with a healthy reserve for tomorrow. The greater cell size permits wide 4″ hand-holes which more easily accept large diameter communication cables.

Our 1-5/8″ NF Celluflor can be blended with any standard Inland-Ryerson 1-1/2″ deck, giving you maximum flexibility in meeting a variety of in-floor electrification requirements. 1-5/8″ NF also has the Inland-Ryerson Hi-Bond® lugs which makes it an integral component in composite construction.

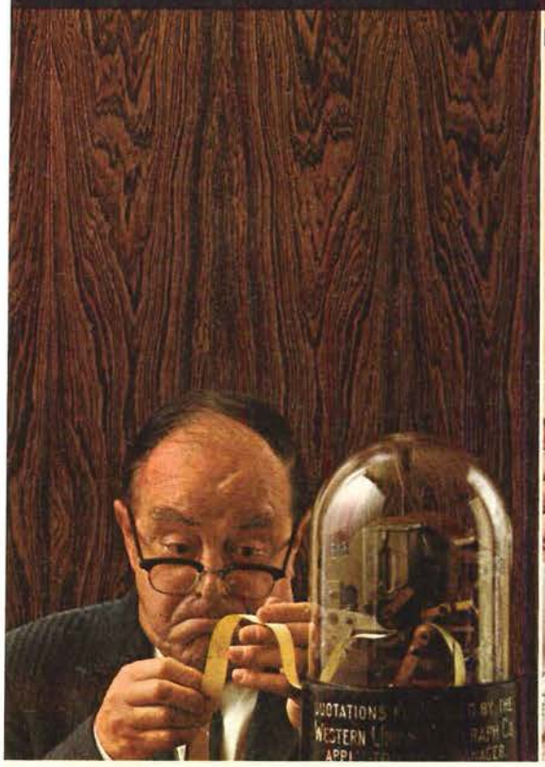
For complete design, specification and construction data on 1-5/8″ NF Celluflor and all of the Inland-Ryerson floor systems, contact your Inland-Ryerson sales engineer or write to Inland-Ryerson Construction Products Co., Dept. D, 4033 W Burnham Street, Milwaukee, Wis. 53201.

INLAND RYERSON

A member of the INLAND steel family

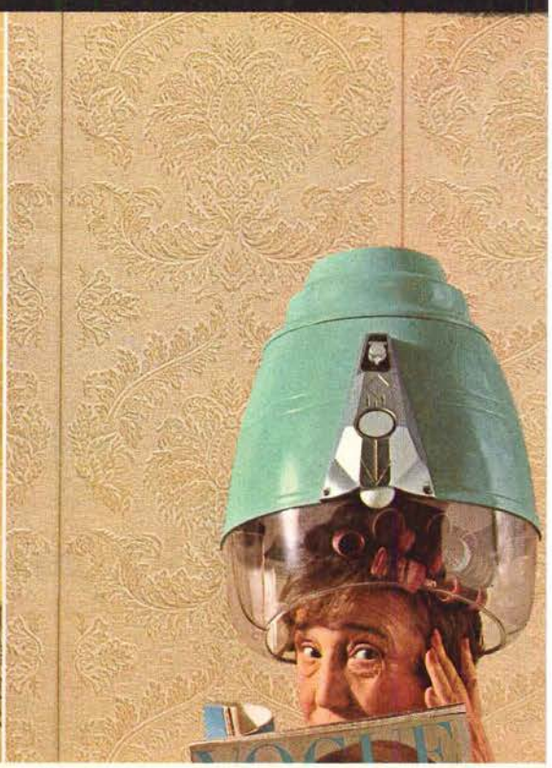
For more data, circle 125 on inquiry card

How Marlite paneling gets involved in everybody else's business.

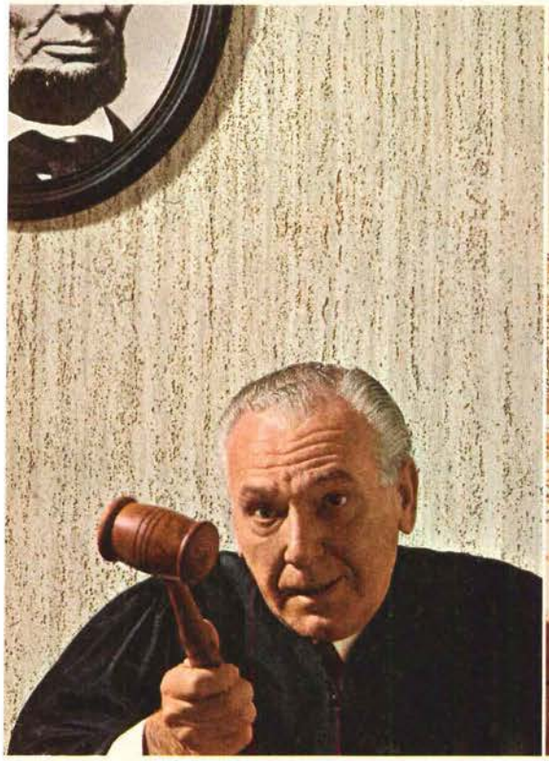


New Rosewood does wonders for a corporate image by capturing all the rich grain and color of hand-rubbed natural wood. Only difference: Marlite stays like new, Annual Report after Annual Report.

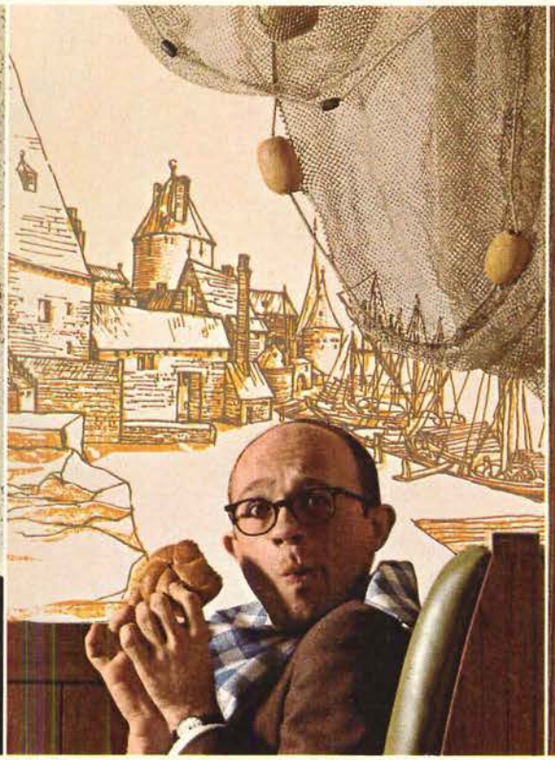
New American Tile is the answer where clean walls are the question. All the beauty of ceramic tile, but none of the problems of grouting. And like all Marlite paneling, this wall wipes clean with a damp cloth.



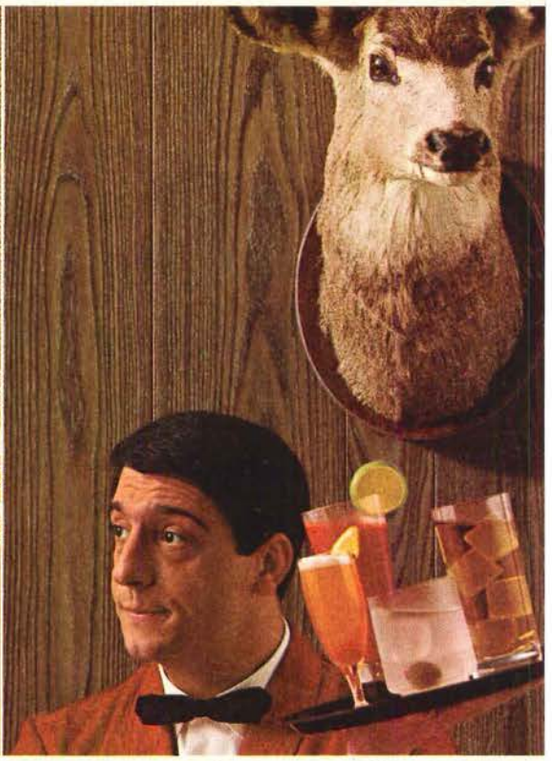
New Antique White Tapestry has texture you can see and feel—down to the most delicate thread. But Marlite texture can't peel off. It's deep-embossed in the panel for a lifetime of wash-and-wear beauty.



New Lombardy Travertine has been accused of looking like costly Italian limestone. That's the idea exactly. So if your customer wants magnificent walls without paying a heavy penalty, make a case for this Marlite paneling.



New Marlite Mural, entitled "Flemish Harbor," is crafted in deep brown and gold on a white background. Use this panel when you want pictorial effects in a hurry. (Marlite goes up fast without interrupting business.)



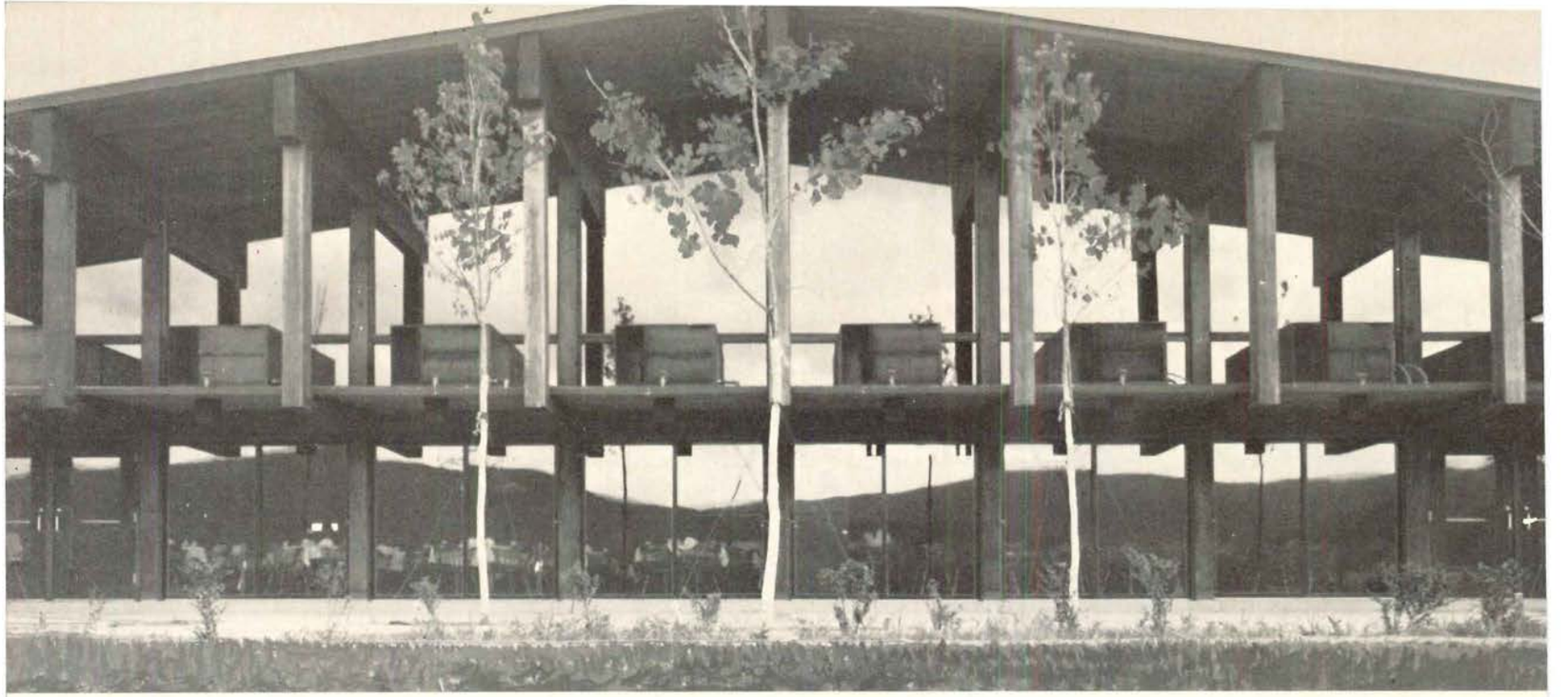
New Textured Oak gives you everything the real wood has except acorns. Authentic texture. Distinctive grain. Plus a rugged plastic finish that resists heat, moisture, stains and dents. A great background for any business.

See Marlite's new line of prefinished hardboard paneling (including new Fire-Test Panels) in Sweet's File or write Marlite Division of Masonite Corporation, Dept. 905, Dover, Ohio. 44622.

MASONITE CORPORATION **Marlite®** plastic-finished paneling

6804

For more data, circle 126 on inquiry card



Warm wood teams-up with insulating glass by Thermoproof.

Here, wood and glass blend beautifully.

A warm, free character was created for this B.P.O.E. Elks Lodge in Boalsburg, Pa., by combining laminated wood beams with large glass areas, taking advantage of the scenic view of the surrounding mountains and golf course.

Situated on a high knoll, the Lodge, subjected to severe cold and winds during winter, is electrically heated. To prevent excessive heat loss, Harlin J. Wall, Architects and Associates, specified insulating glass by Thermoproof, made more ways to meet more ideas, beautifully.

Full color insert in Sweets $\frac{4a}{Th}$

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

For more data, circle 127 on inquiry card

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- CONTINUOUS OPERATION
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- DELIVERS AND COLLECTS TRAYS
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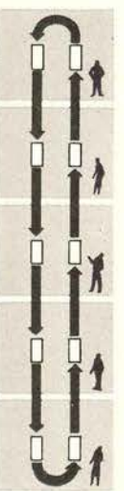

FREE BULLETIN describes Standard Conveyor *Recordlift*—ideal for multi-story buildings requiring inter-floor delivery of mail, documents, books, anything weighing up to 32 lbs. per load. Widely used in high-rise office buildings, insurance companies, banks, libraries, hospitals, etc. *Send today.*

Standard Conveyor COMPANY
312-J Second Street, North St. Paul, Minn. 55109

For more data, circle 128 on inquiry card

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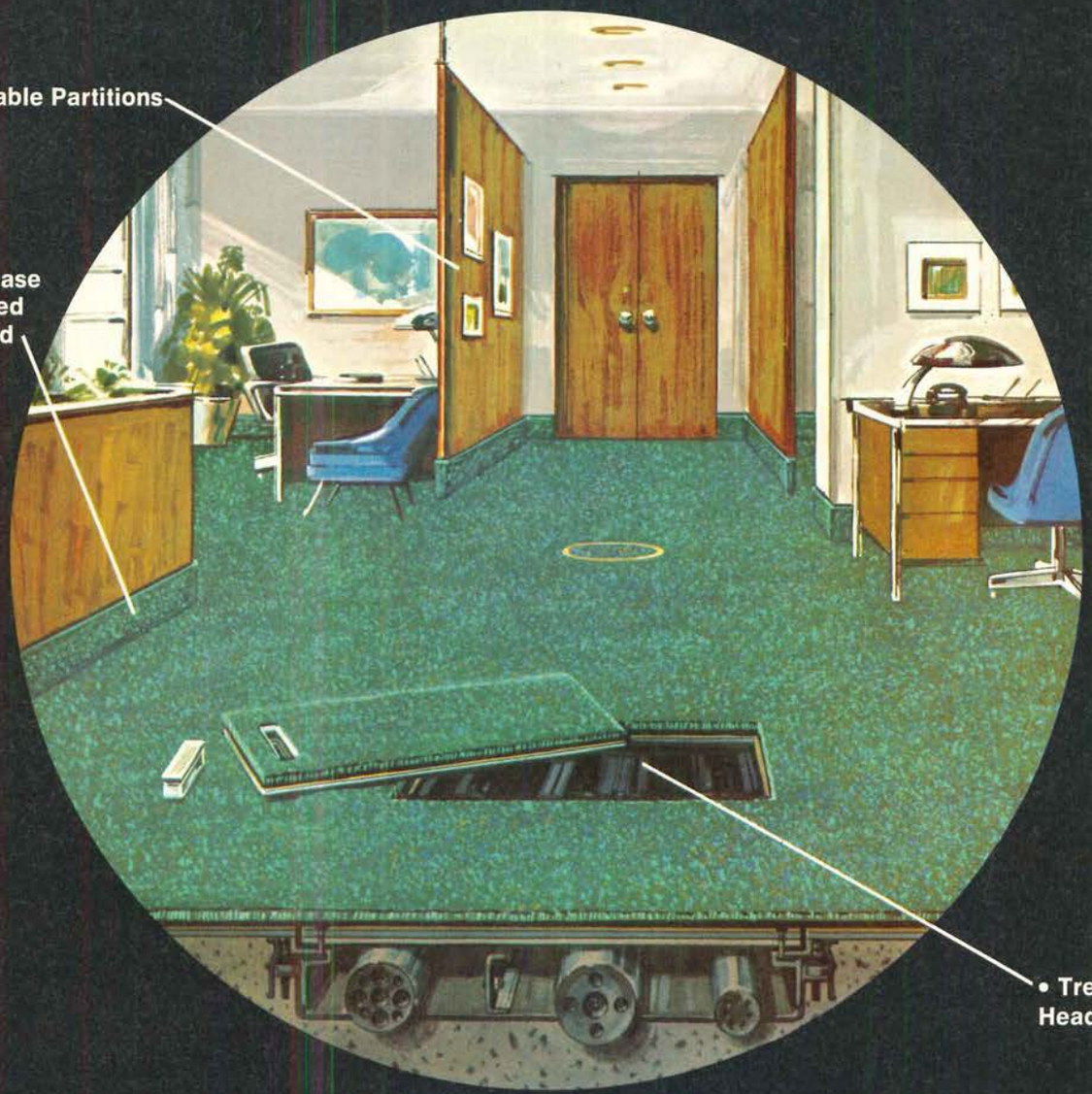
All systems are go

Carpet Systems from CCC with Acrylic 73... engineered to integrate with all architectural systems.



Carpeting is no longer a simple matter of beautiful floors. The challenge today is to integrate carpet with the total architectural environment.

CCC has this very complex problem down to a precise system—the unique Acrylic 73 Carpet System. We analyze every element involved—right from the blueprints. Recommendations are based on design, function and maintenance factors.

The result of this planning: a carpet system that lets you move partitions, gives you easy access to sub-floor systems and includes built-in static control to end the annoyance of shock.

Acrylic 73 is a total performance carpet. CCC's exclusive blend of 70% long-staple Creslan® acrylic and 30% long-staple commercial nylon combines unequalled stamina with design versatility and appearance retention.

CCC is the world's largest manufacturer of commercial and institutional carpet systems. We would like to tell you more about what we can do for you. Why not send in the coupon today.

CYANAMID Creslan® LUXURY ACRYLIC FIBER

Creslan is a product of American Cyanamid Company, Wayne, N.J.

CCC

Commercial Carpet Corporation
Dept. AR-9
10 West 33rd Street
New York, New York 10001

Attention: Mr. Walter Brooks
Please send me a copy of the booklet, "Office Carpet Systems, with Acrylic 73". ☐ Please have a CCC consultant contact me. ☐

Name_____

Company_____

Address_____

City_____ State_____ Zip_____

For more data, circle 129 on inquiry card

Incline High School, Washoe County School District, Washoe County, Nevada Architect: Edward S. Parsons, A.I.A., Reno, Nevada

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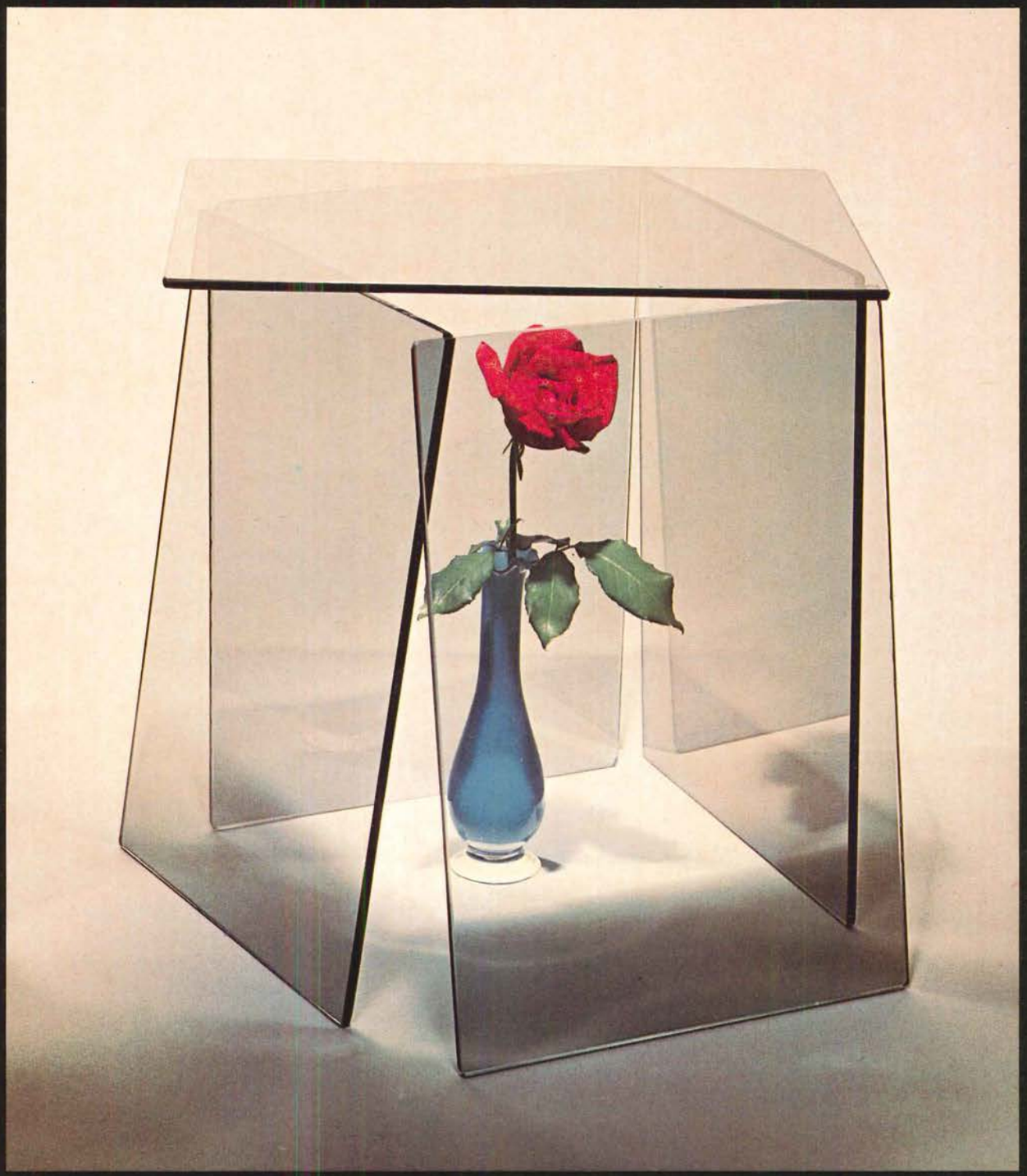

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continued from page 250

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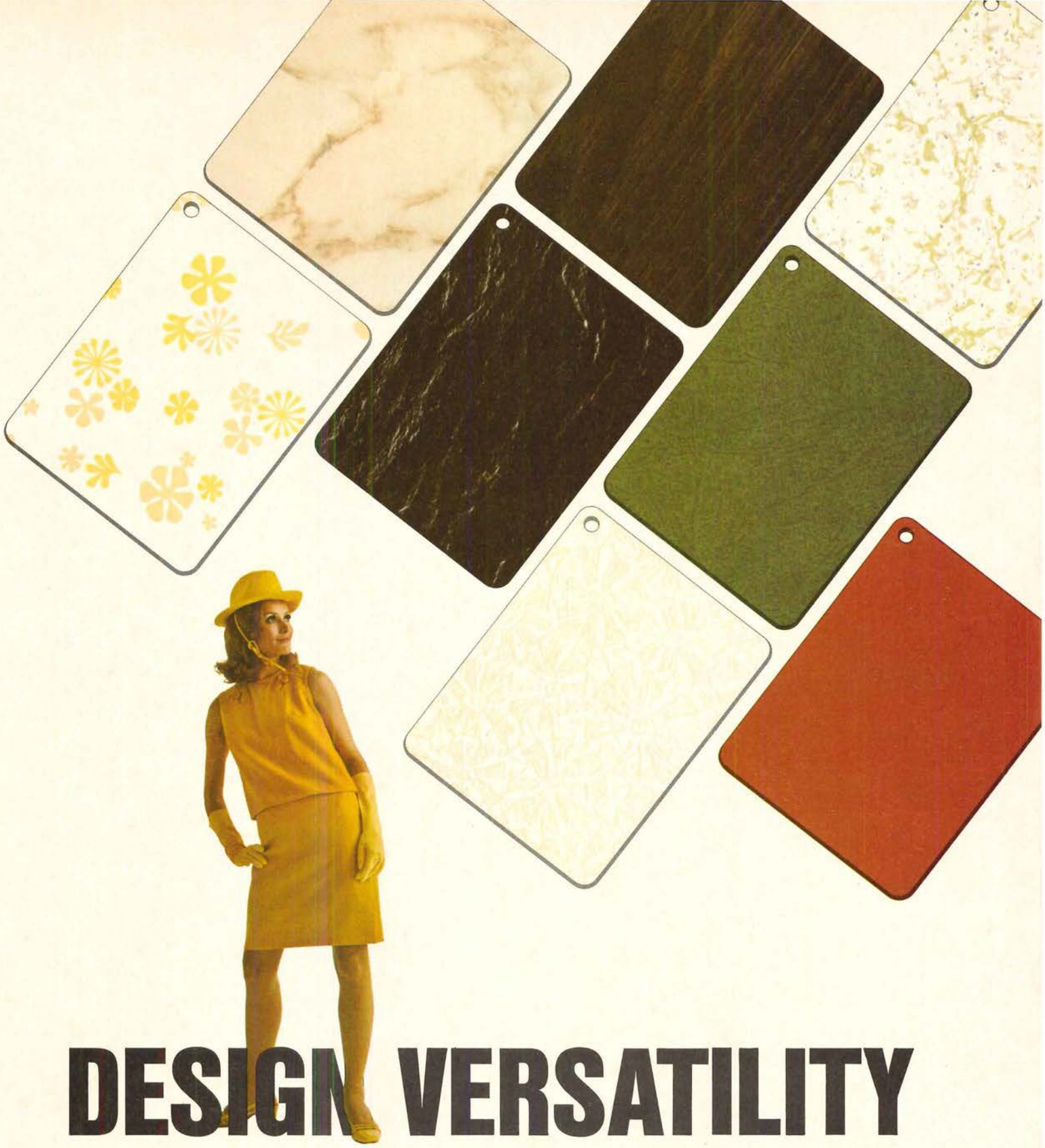

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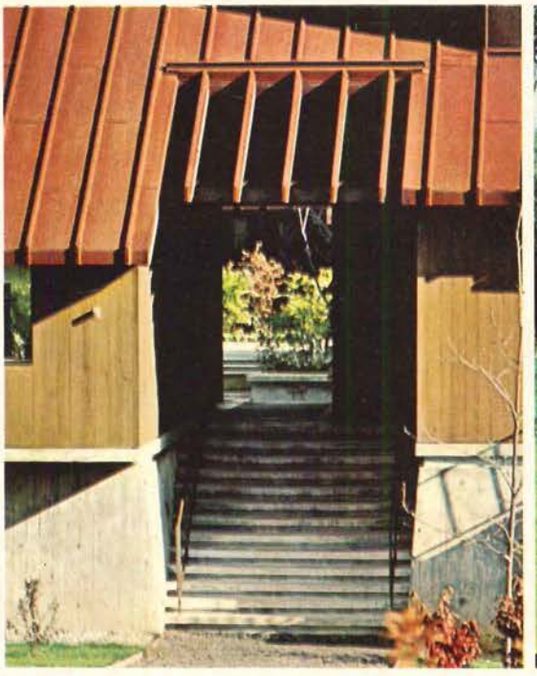

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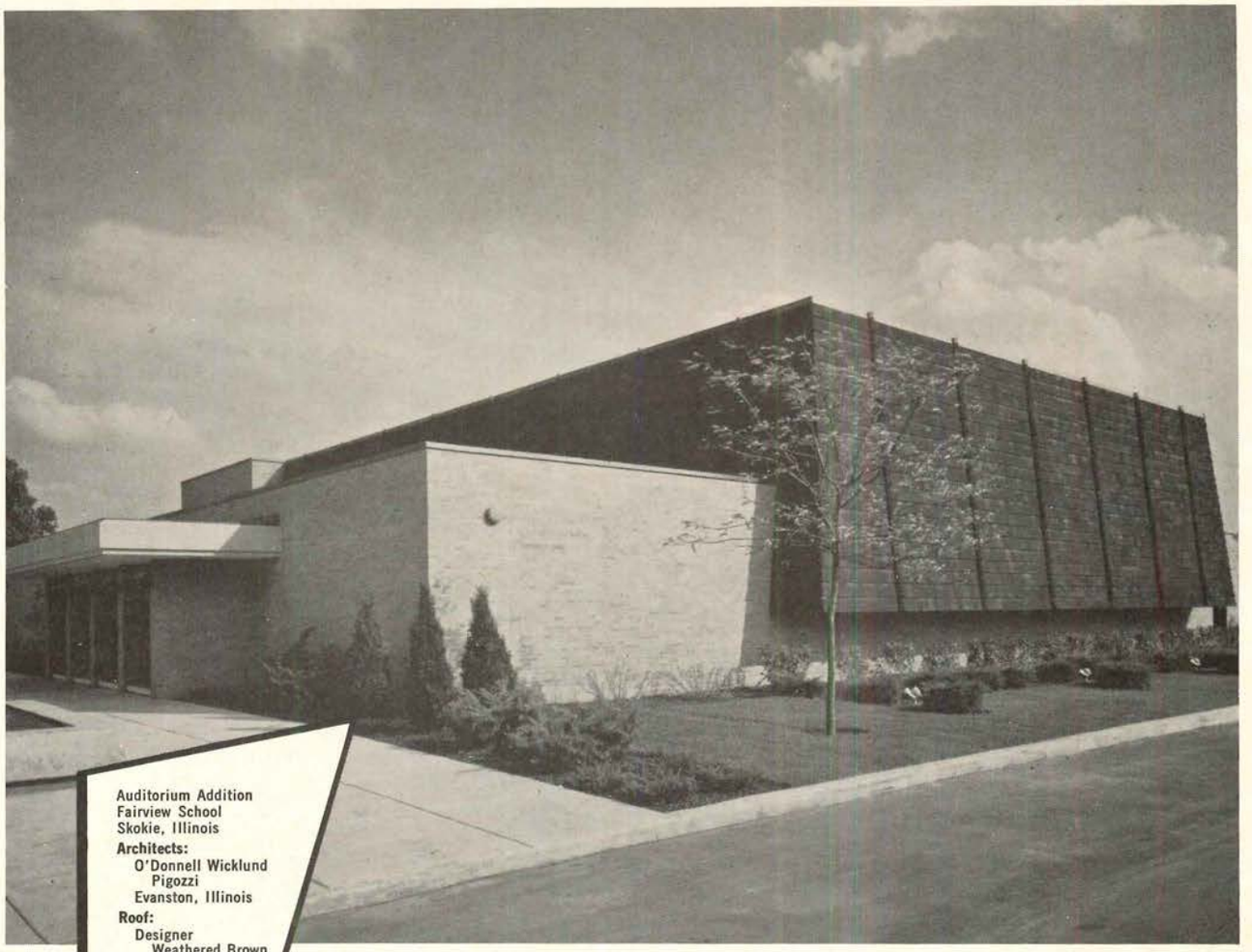

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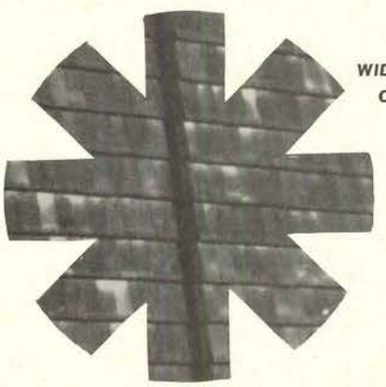

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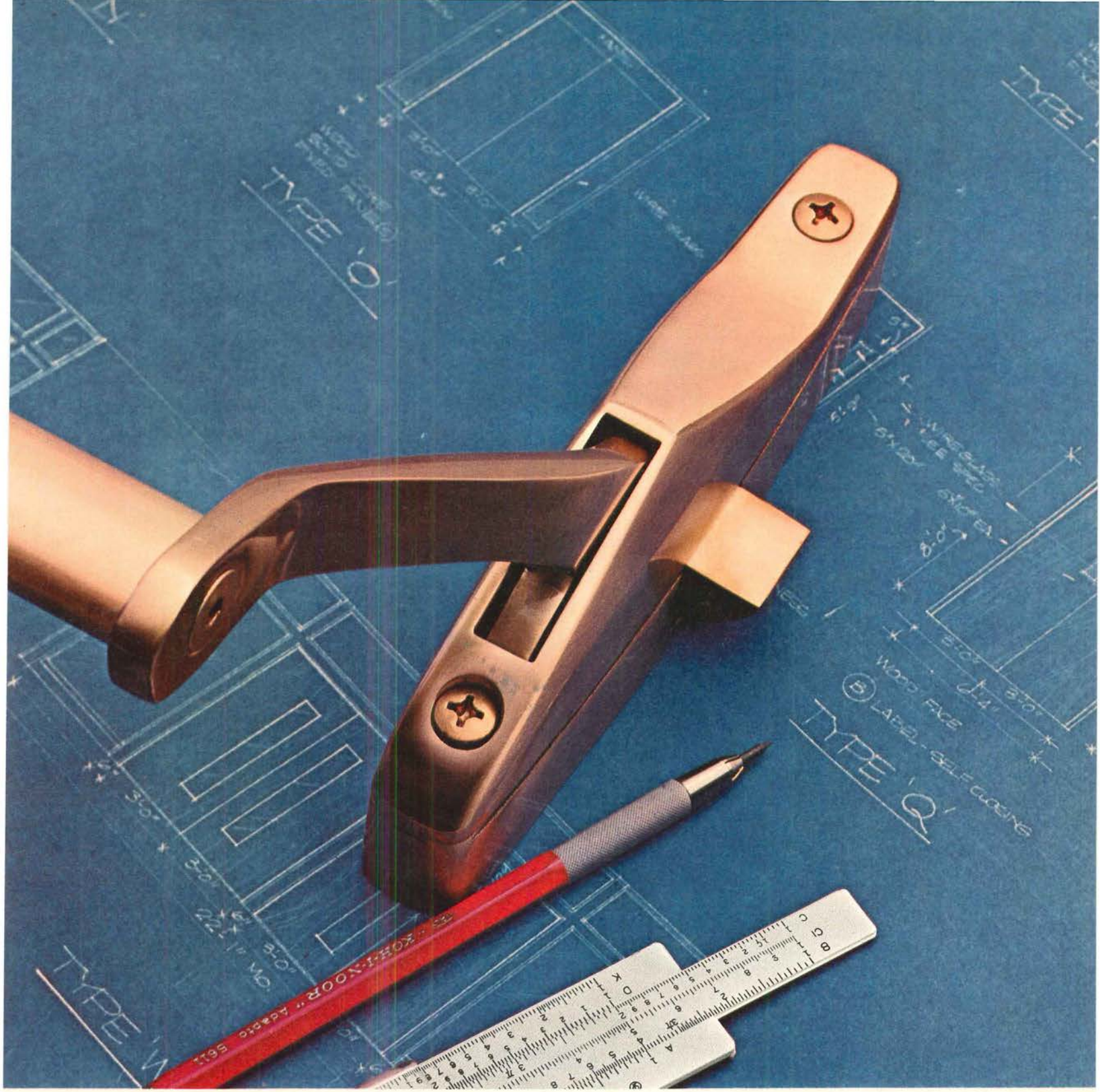

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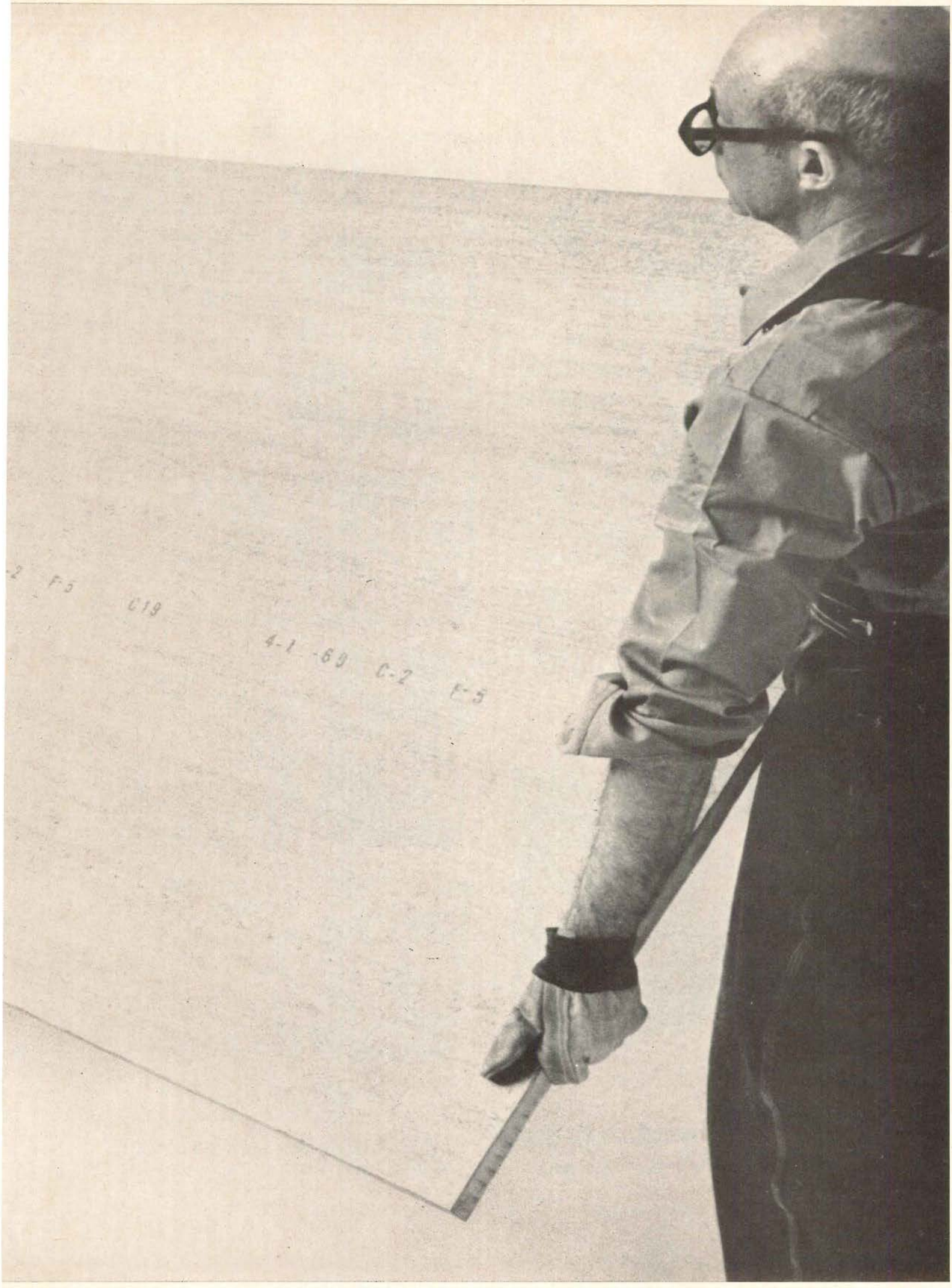
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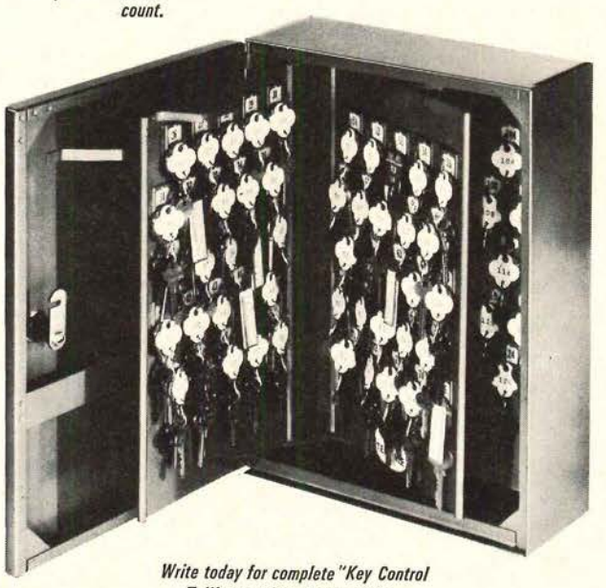

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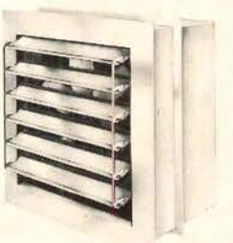

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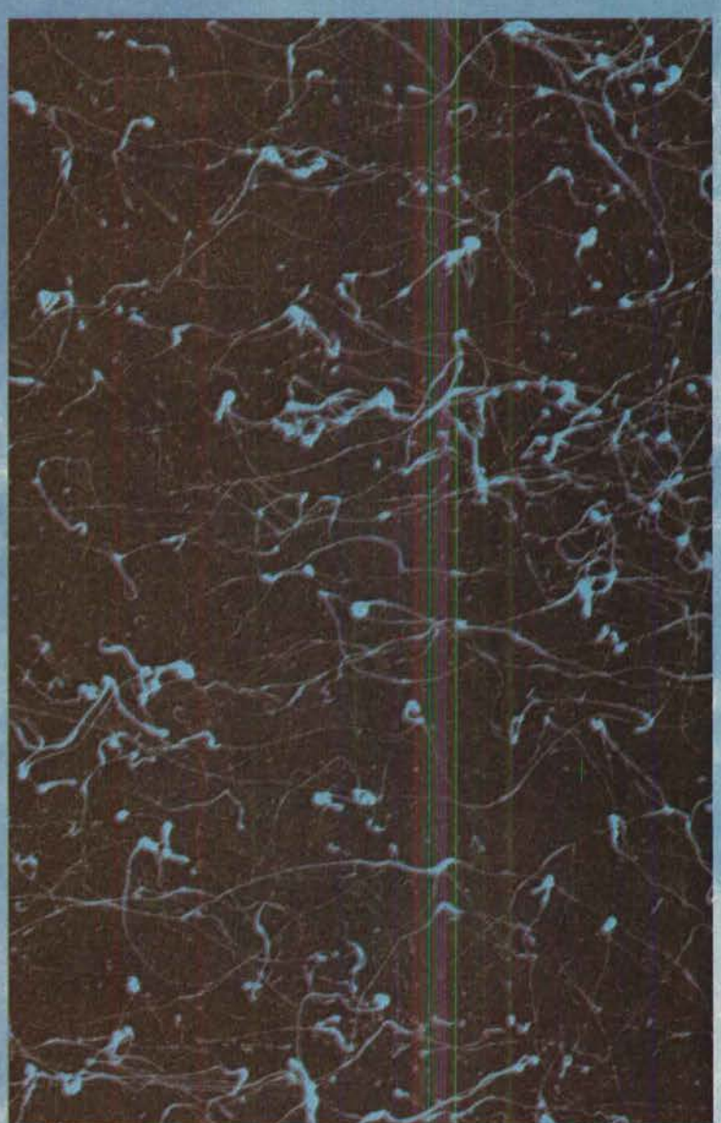

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continued from page 128

will find ourselves doing many new things. But in doing so, we had better not lose these two most precious heritages of our profession.

Robert L. Durham, F.A.I.A.
Durham, Anderson, Freed
Seattle, Washington

For your editorial in the July RECORD—Bravo! and again—Bravo! Please continue in this vein—How much we need it!

Angus McCallum, F.A.I.A.
Kansas City, Missouri

Questioning Bacon's Urban Process

I must, in all humility, concede that I cannot match the experience and background which Edmund N. Bacon reflects in his article on the Urban Process in the May issue. I do trust, however, that he and you are tolerant enough to accept the reactions of one who feels that grass-roots experience, seasoned with education, justifies his right to question some of the conclusions. I would like to bring up the following:

1. Is the author literal when he suggests that social programs should be restructured "so that each person and each family group are seen and treated as individual identities"? That would mean ten million separate solutions in New York City alone. The thinking is somewhat contradicted in a later attack on "fragment demonstration projects." It must be emphasized that no program will satisfy everybody; that we can hope only to create something which will provide the greatest good for the greatest number of people. Individuality to the contrary, there is a common denominator in the likes and dislikes of people, a factor which is emphatically proven by the historical acceptance of style and customs.

2. Private enterprise will not be tempted to concern itself with any problem unless it can be done profitably. Unfortunately, even in those instances where the profit is ethical and reasonable, the entrepreneur exposes himself to demagogic politicians more interested in votes than justice. The businessman is thus unwilling to risk the stigma attached to profit. We have, moreover, numerous examples where the recipients of benefits have heaped abuse on the donor. In addition, private enterprise could reduce the cost of many projects but is retrained by archaic specifications imposed by bureaucrats.

3. Community participation is good in theory but fraught with dangers in practice. Representative government has been credited with the virtue of reducing the number of participants in a discussion, and, thus, expediting a conclusion. Also, the elected representative is usually more knowledgeable than the bulk of his constituents. Community groups are vulnerable to power-hungry individuals and composed, on the whole, of persons unable, or un-

more letters on page 299

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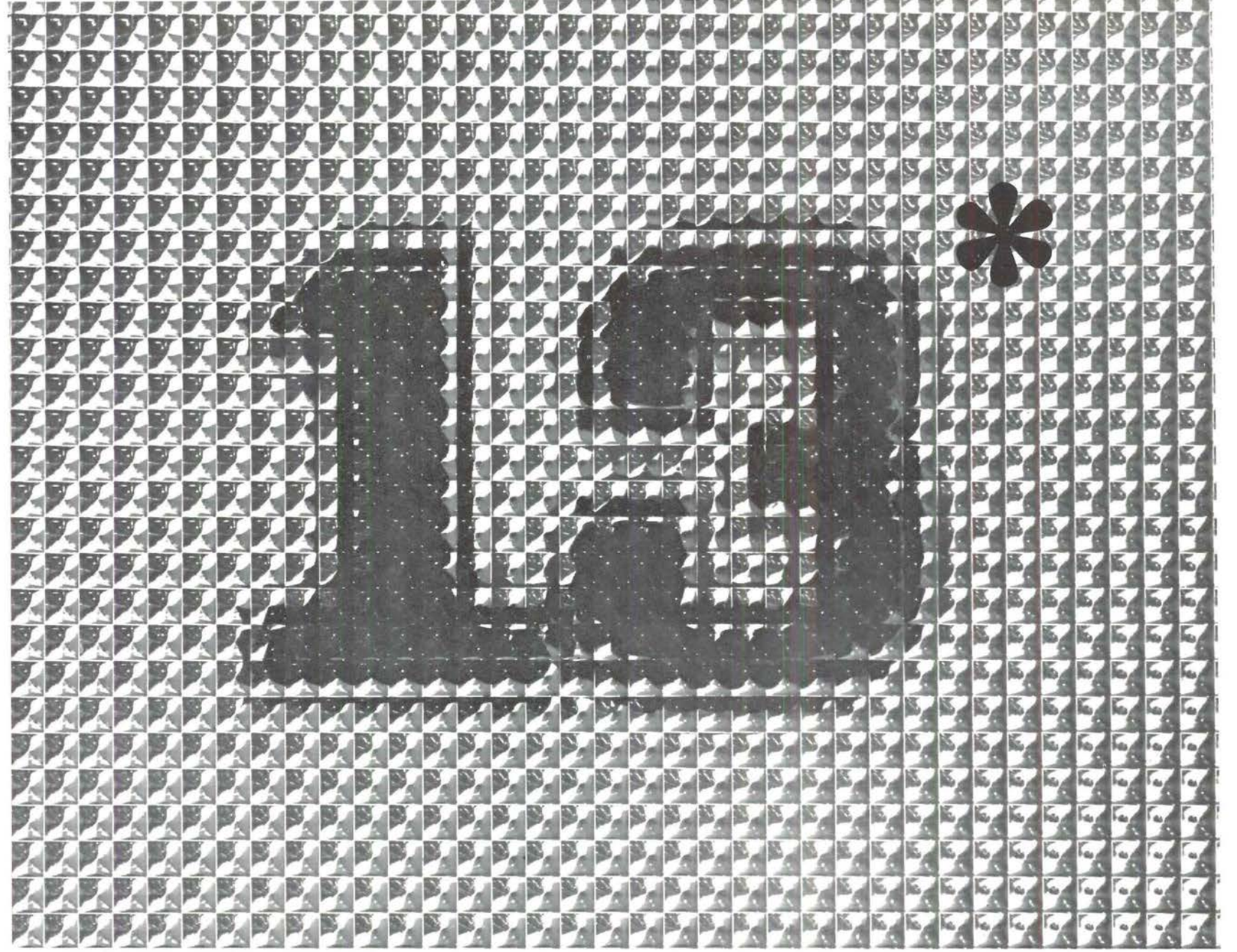

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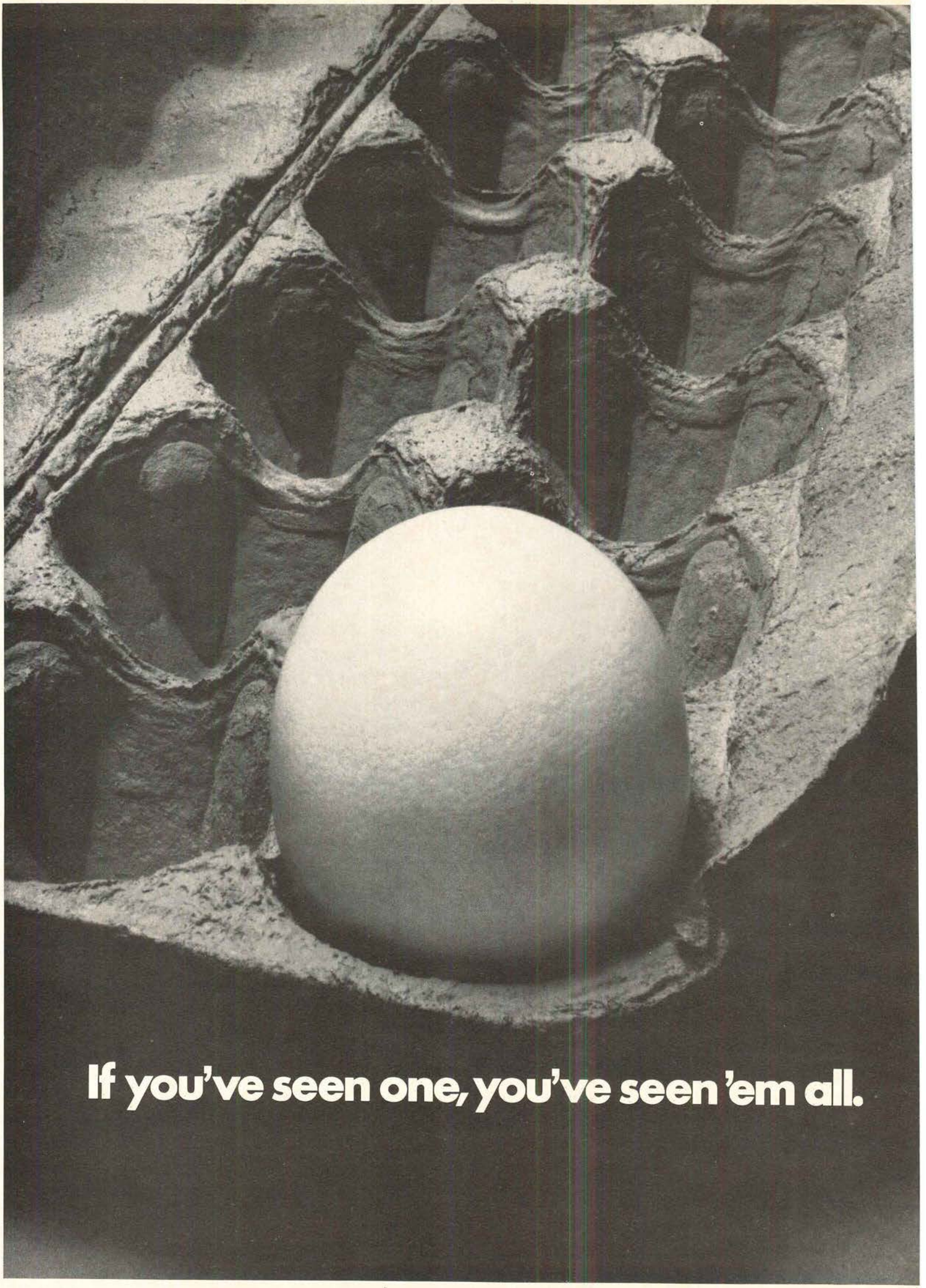
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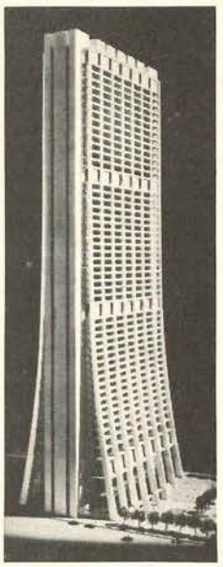
But take heart. There's something new afoot in the cities of America. The boxy, boring buildings are on their way out. They're being replaced by a new kind of building with a new kind of flair. A new kind of freedom. A new kind of excitement.

It's happening everywhere, but nowhere is it happening better than in the heart of Chicago's famed Loop. It's there that the new First National Bank Building is nearing completion. A magnificent sight! Soaring 60 stories into the air with a majesty and grace that's nothing short of incredible for such a massive structure.



Constructing something as grand as this involves some pretty complex problems. Take steel floor beams, for example. When the First National's plans were drawn, rolled beams 21 inches deep were planned. But then, the structural engineers in concert with the architects decided that a "stiffer" floor would be more desirable, in order to minimize even the slightest chance of noticeable floor vibration. To get the degree of "stiffness" they wanted, 30-inch rolled beams were selected. And there was the rub—30-inch beams would weigh almost twice as much as 21-inch beams.

Solving one problem had created another. But with help from Inland Steel, that problem, too, was solved. Inland's recommendation? 30-inch *welded* beams. It was the way to get a whopping 50% more strength than the 21-inch rolled beams, at just over half the weight of the 30-inch rolled beams. All at an impressive savings running into many thousands of dollars.

At Inland Steel we produce all sorts of welded shapes; beams with webs thinner than rolled shapes, beams with off-center webs, tapered beams, asymmetrical beams, hybrid beams. With or without camber. We also produce practical solutions to sticky problems.

How about you—got a problem? Give us a call. We may come up with something that'll give you the same kind of pleasant surprise you get when you open an egg and find two yolks inside.

Inland Steel Company, 30 West Monroe Street, Chicago, Illinois 60603. AC 312 FInancial 6-0300.

Inland Welded Structural Shapes

For more data, circle 152 on inquiry card

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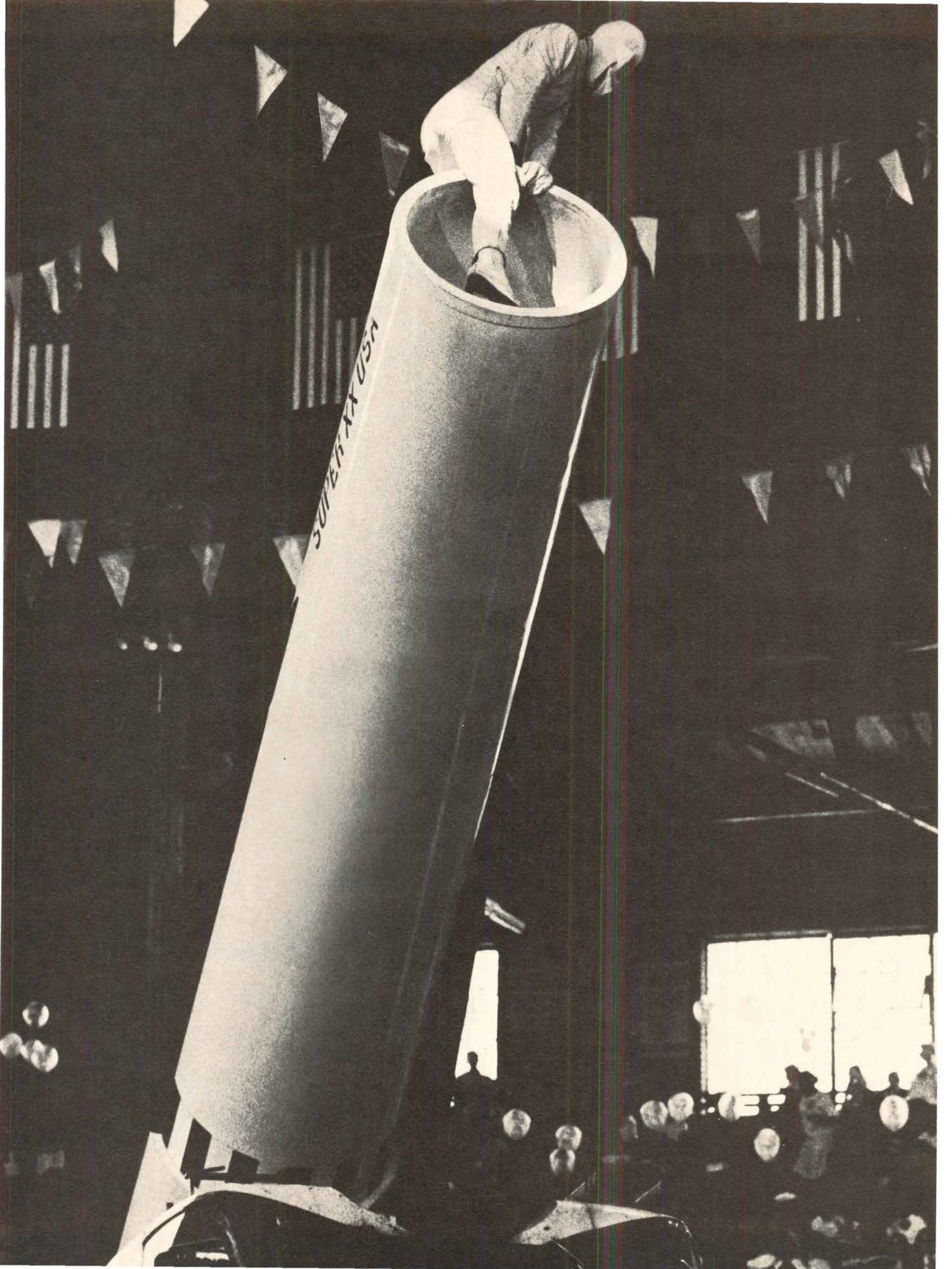
Aston Vo.-Tch. School, Aston, Pa./H. A. Kuljian & Company, Engineers and Architects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Innovators in paper
and plastics.®

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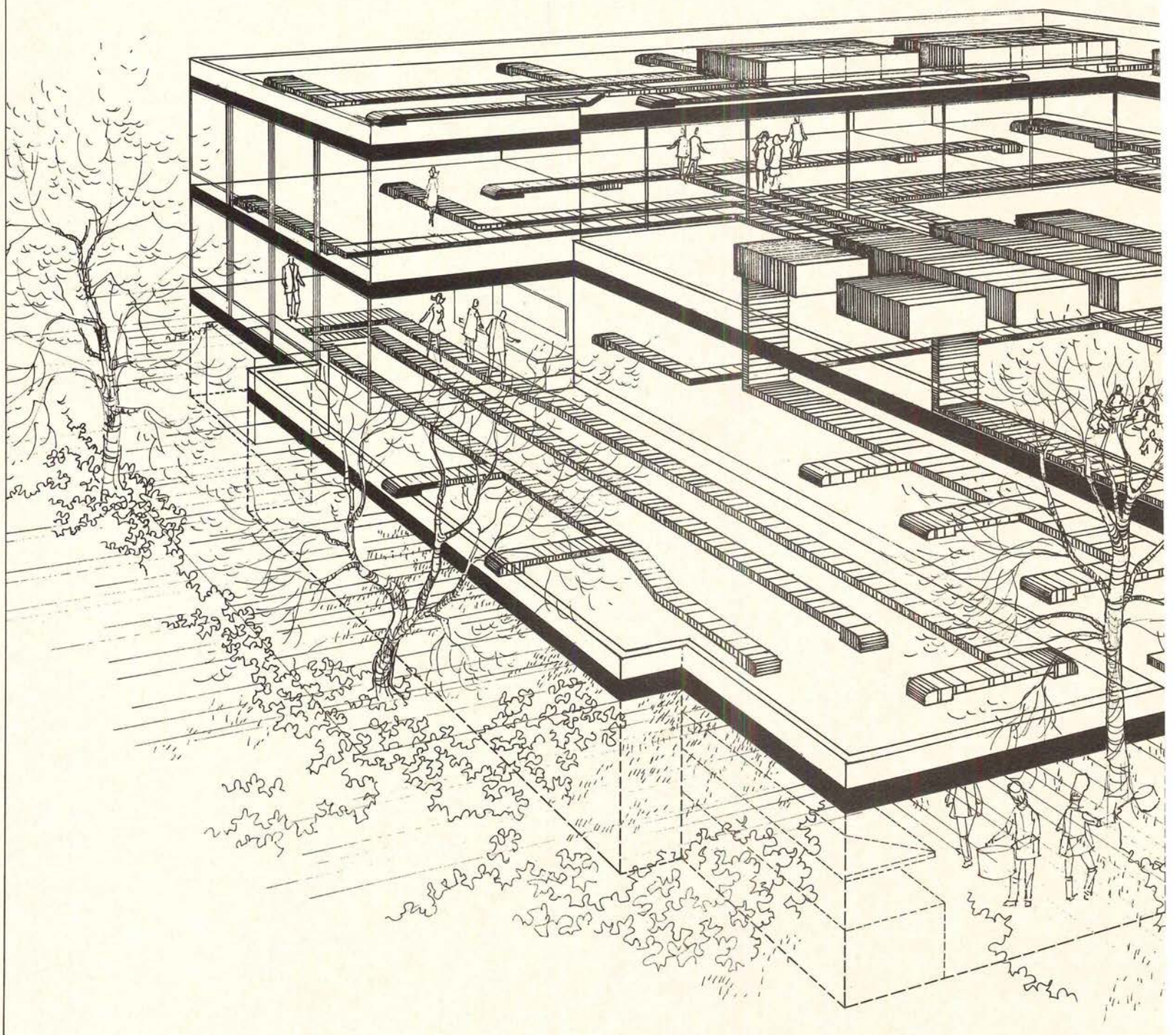
How Nesbitt helped Missouri Valley College

Missouri Valley College wanted to build the most useful and modern student activity center possible. They called in architects Radotinsky Deardoff and Associates of Kansas City, Kansas to design a building that would match the varied activities of such a facility.

There were bowling alleys, game rooms and offices—spaces for meetings, conferences, receptions and private dinners—facilities for the college news staff, the student council—even a suite of guest rooms. Finally, the design included a multipurpose room that could be subdivided for small meetings. With space flexibility as the keynote, a flexible air-conditioning system was needed.

Consulting engineers, Massaglia-Neustrom-Middleton, Kansas City, Missouri specified six Nesbitt Rooftop Multizone units to provide year-round comfort in this flexible new facility. One was used to service the ground floor spaces, two for the first floor and three for the second floor. Installed on the roof, the Nesbitt Rooftop Multizone units provided extra interior space.

Because it is virtually self-contained (direct fired heating; direct expansion cooling), on-site labor is reduced and with it, the cost of the system. For instance, at Missouri



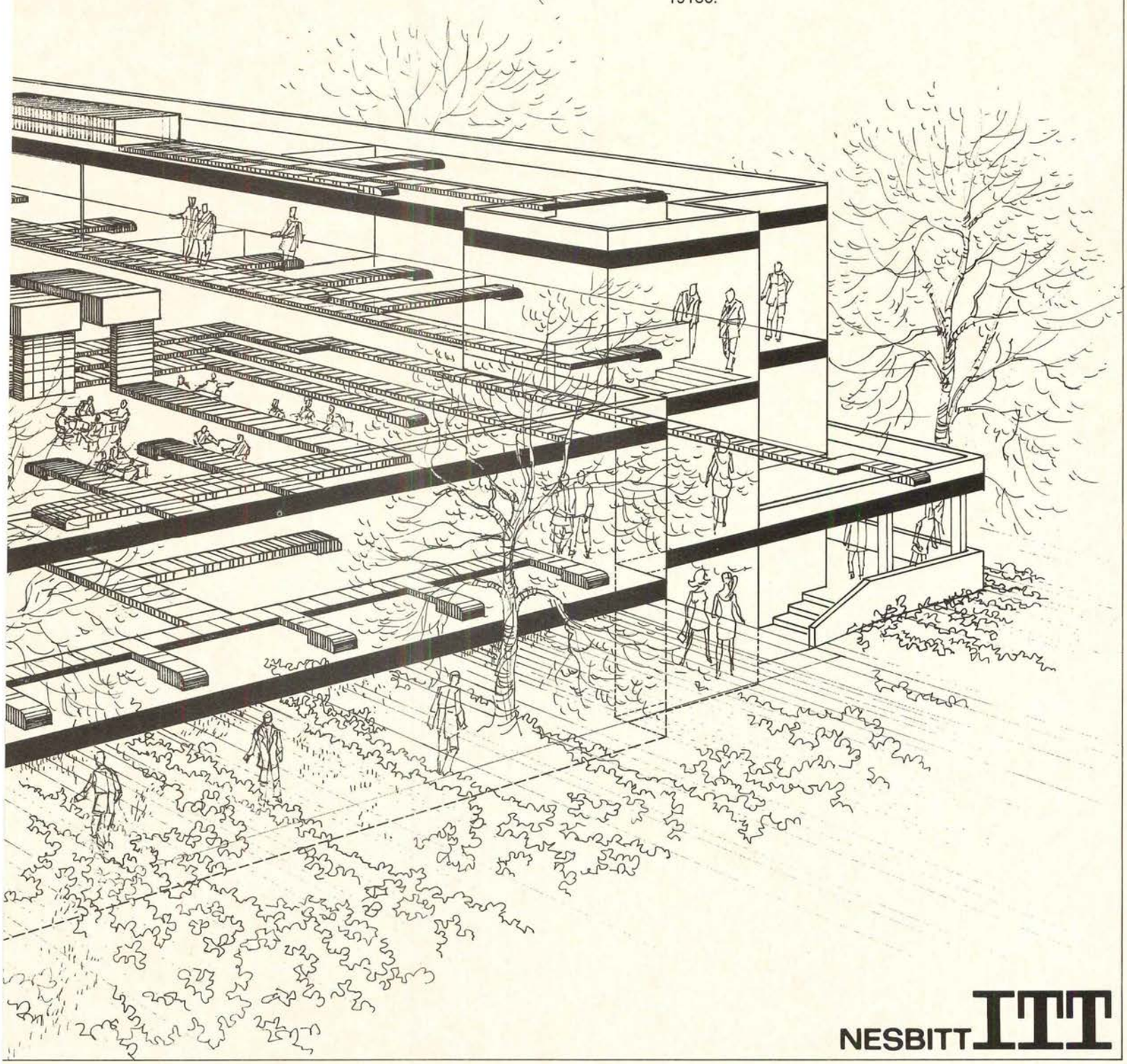
air-condition a new student center.

Valley College, the cost of the air-conditioning, heating and ventilating system including plumbing was only $4.50 per square foot of building. Each Nesbitt Rooftop Multizone unit is a complete air-conditioning, heating and ventilating system serving up to 12 separate zones, each under the control of the thermostat serving that space.

Maintaining a balanced environment in each and every area was a problem because of the varied activities and the constantly changing space arrangement and number of people occupying these spaces. The Rooftop Multizone, through its ability to provide simultaneous heating and cooling, assures complete comfort for each individual space. In addition, the unique reheat capability of the Nesbitt Rooftop Multizone is important for humidity control.

Result: A thoroughly modern building in which the "Now" Generation can feel perfectly at home, with the thermal environment to work or play in absolute, individual comfort.

For details on how Nesbitt Rooftop Multizone units can be an aid to planning—flexibility as well as economy—write to Nesbitt Operation, ITT Environmental Products Division, International Telephone and Telegraph Corporation, Philadelphia, Pa 19136.



NESBITT ITT

For more data, circle 156 on inquiry card

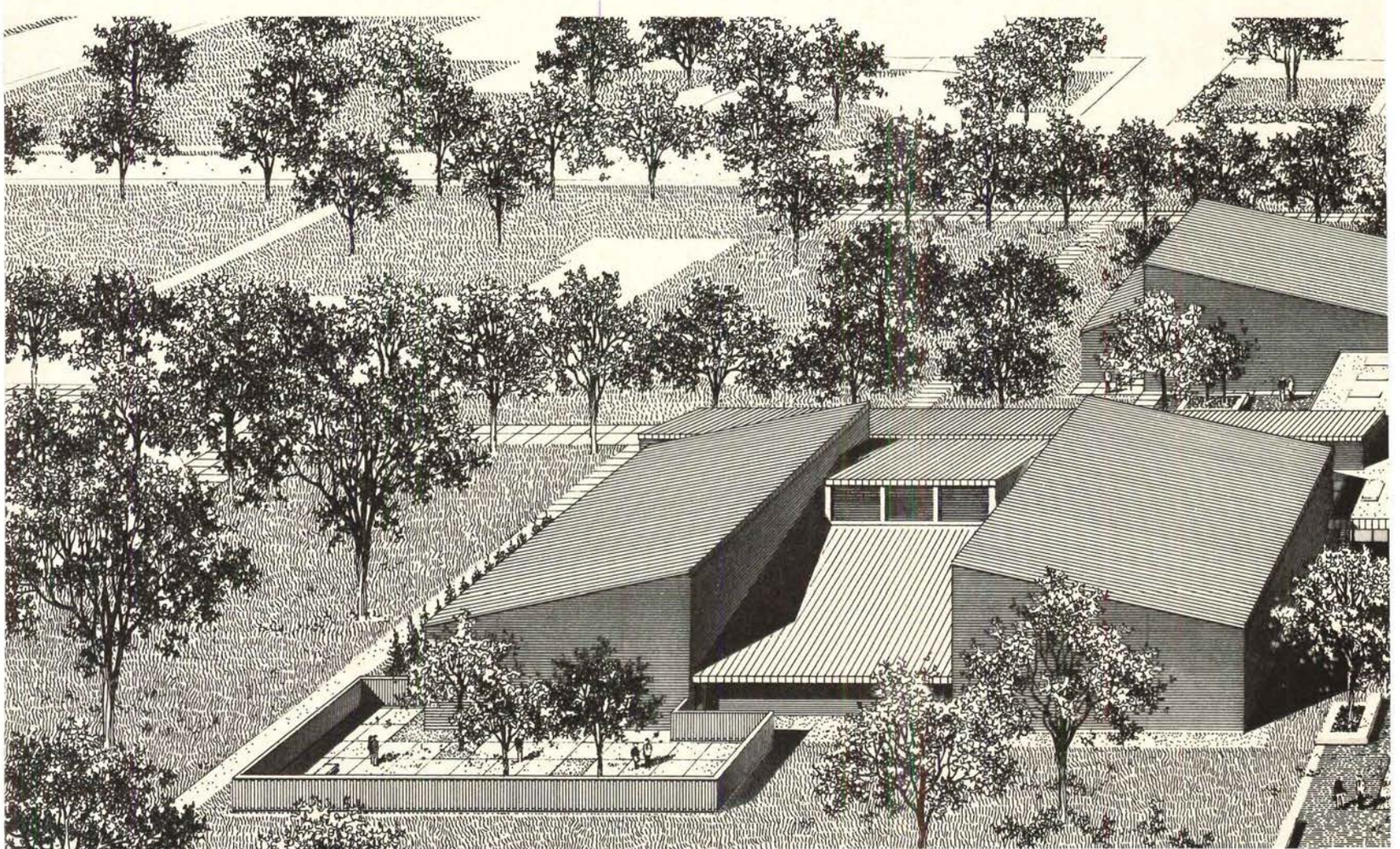
TCS:

Rehabilitation Center
Buffalo State Hospital
Buffalo, New York

Rendering by Brian Burr

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



THE LOGIC OF ITS USE.

The reasons for specifying TCS (Terne-Coated 304 Stainless Steel) can be even more various than the many advantages which are inherent in this superbly functional material.

In the case of the Buffalo State Hospital Rehabilitation Center, the architects were primarily motivated by the fact that TCS weathers naturally to a uniform dark gray, and that it is resistant to corrosive attack under even the most severe atmospheric exposure.

Your own problems may well be different, but TCS provides equally cogent solutions in virtually every situation involving either roofing or weathersealing.

May we send you the substantiating evidence?

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FOLLANSBEE STEEL CORPORATION • FOLLANSBEE, WEST VIRGINIA

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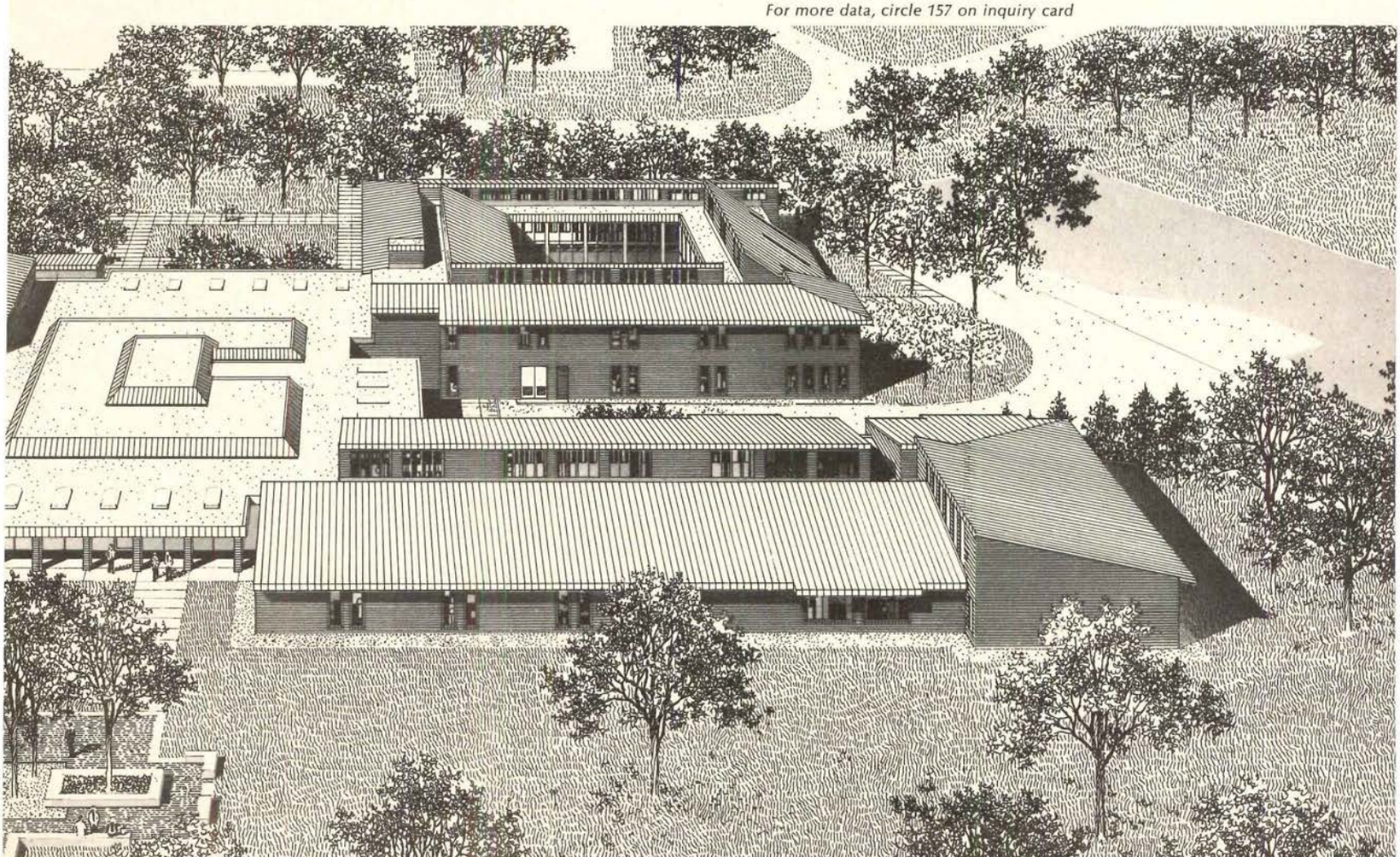
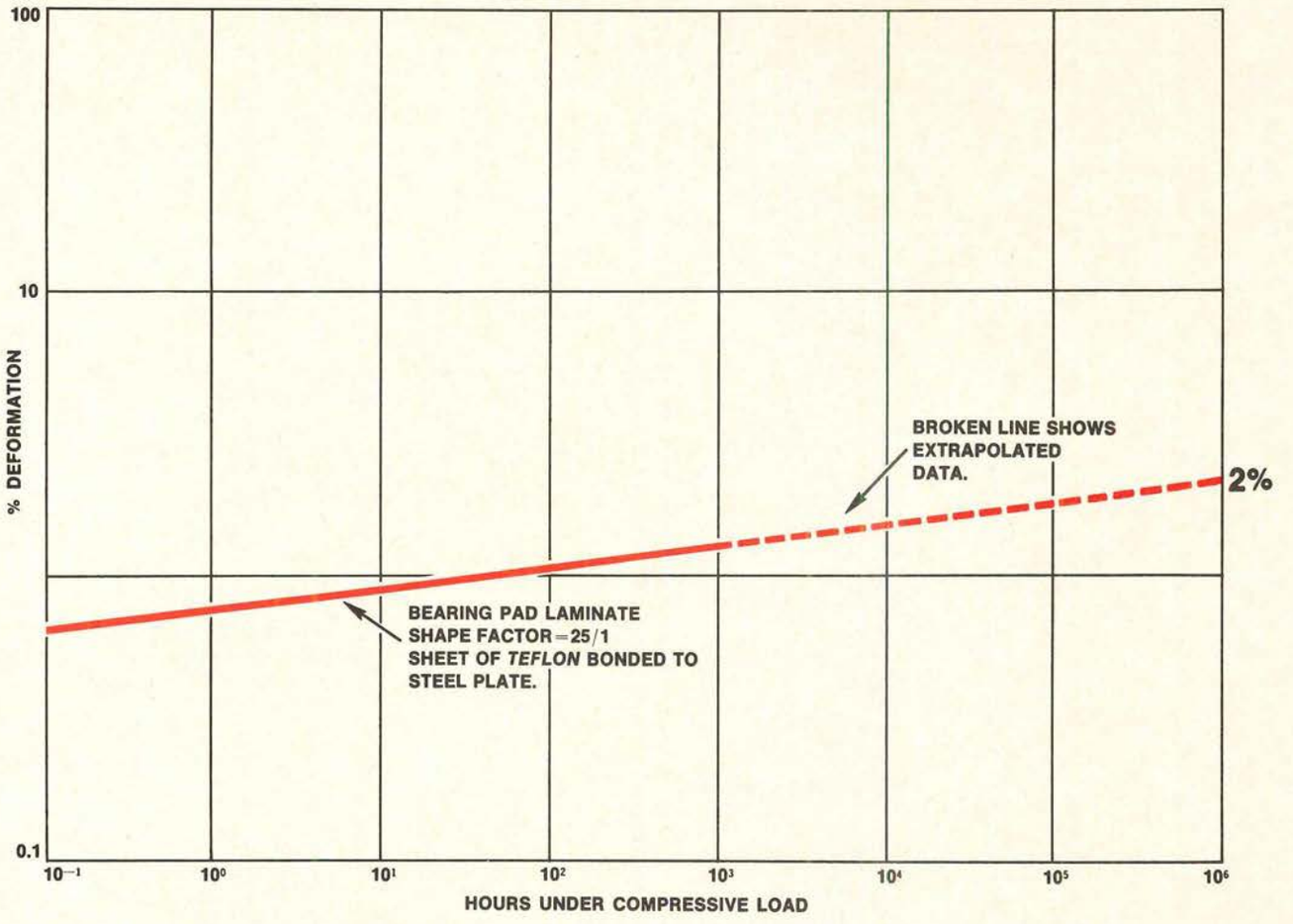
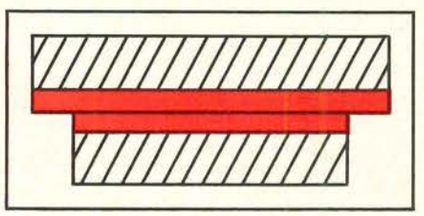


After 114 years under 2,000 psi compressive load, bearing pads made with TEFLON may show 2% creep:



If that's not good enough, go to filled TEFLON.

The simplest standard construction of bearing pads made with Du Pont TEFLON fluorocarbon resin is illustrated below: It consists of sheets of TEFLON bonded by adhesive to steel plates. With this construction, as



with other specialized constructions offered by experienced bearing-pad manufacturers, the problem of long-term creep is—to put it bluntly—negligible.

This conclusion is backed up by compressive creep tests in Du Pont laboratories, by theoretical stress analysis and by actual field experience with bearing-pad installations going back to 1963.

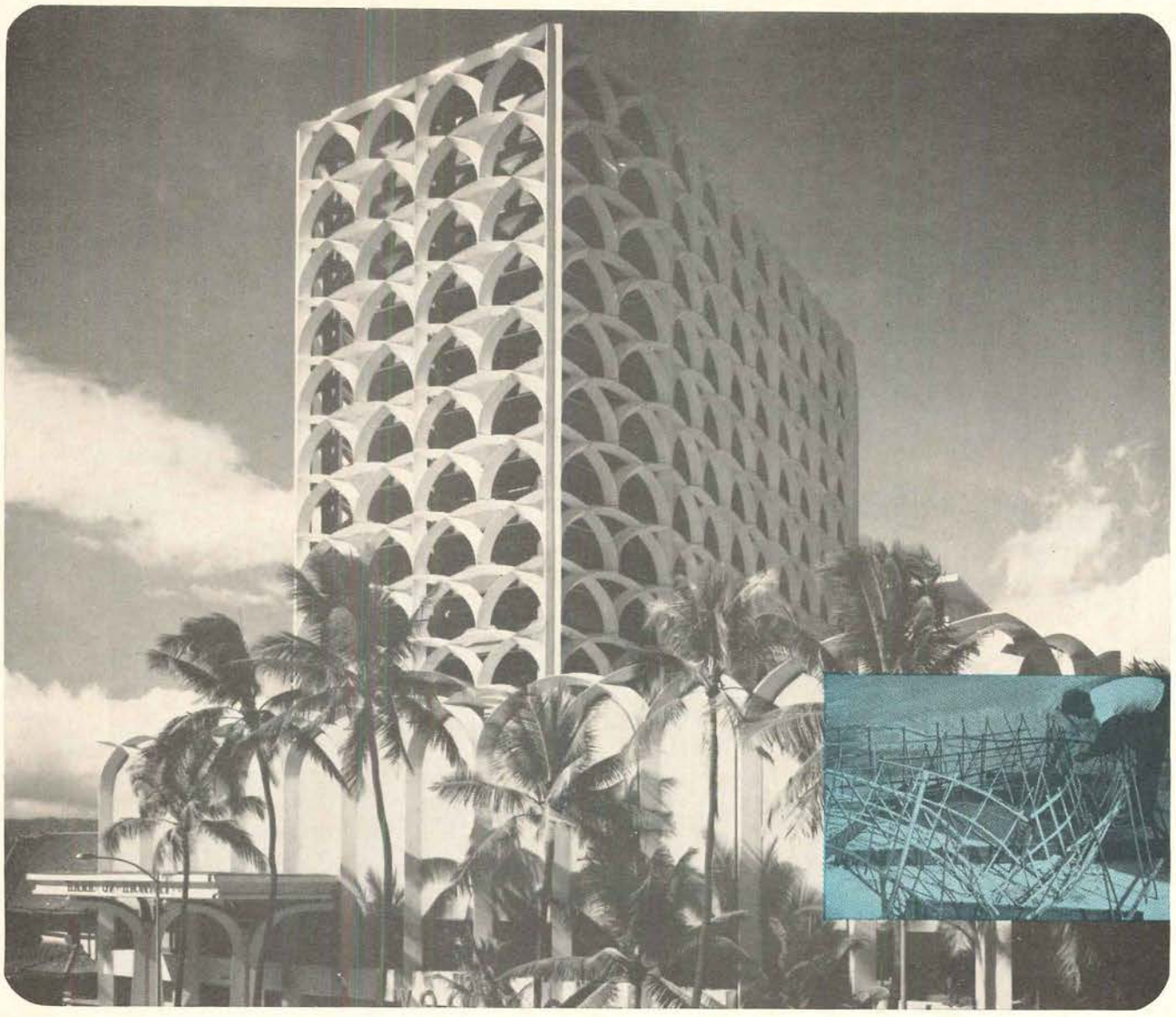
You will note that by extrapolation of creep tests under 2,000 psi load (see chart above) the deformation to be expected after 10^6 hours amounts to only 2%. This actually amounts to 2.5 mils for TEFLON 1/16 inch thick or 5 mils for a 1/8" thickness. Bearing pads made with filled compositions of TEFLON can exhibit an even higher degree of creep resistance.

Thus, you can take advantage of the unsurpassed low-friction properties offered by TEFLON to solve sliding and expansion bearing problems, with complete assurance of long-term satisfactory performance under load. Sheets of TEFLON in well-designed bearing pads provide exceptional resistance not only to creep, but to wear, to weather and to virtually all chemicals.

Economical bearing pads surfaced with TEFLON are being used in a variety of architectural applications, including bridges and roads, and in tank supports and pipe slides. If you are faced with any design problem involving accommodation to thermal expansion or contraction, or to movement caused by wind and weather, get in touch with an experienced fabricator of bearing pads made with TEFLON. For complete information—including a recently delivered technical paper on creep resistance—write: Du Pont Company, Room 7643C, Wilmington, Delaware 19898.

DU PONT REG. U.S. PAT. OFF. TEFLON® fluorocarbon resins

For more data, circle 158 on inquiry card



A deposit of Zinc saves this bank's beauty

The deposit is on galvanized reinforcing rod used in the precast concrete grillework of the new Bank of Hawaii branch in Waikiki. The zinc coating prevents "undercover" rusting which could eventually "bleed" through and discolor the surface. It also eliminates surface cracking or spalling from internal pressures caused by rust build-up. And the zinc coating on the rods actually provides a better bond with the concrete than is possible with uncoated steel. ☐ About 50 tons of hot dip galvanized rebar were used for the 15 story, 5 million dollar bank building, designed by Wimberly, Whisenand, Allison & Tong, Architects Ltd. As shown in the inset photo, rebar cages for grille sections were preformed of #3 size hot dip galvanized steel at the casting yard. ☐ When you specify materials, remember that no other material gives you the proven combination of strength, corrosion resistance and economy found in galvanized steel.

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Burdine's Dadeland Store, Greater Miami, Florida; Architect: Herbert H. Johnson Associates, Miami; Structural Engineer: H. J. Ross Associates, Inc., Miami; General Contractor: Frank J. Rooney, Inc., Miami.

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Construction costs: rising. Land costs: rising.
Real estate taxes: rising. The inevitable answer: roof deck parking.

The logic of this simple concept is overpowering.
Less land is needed. Therefore land costs are cut.
The need to build large parking areas is eliminated. Therefore total construction costs are cut.
There is less improved land. Therefore taxes are cut.
There are other advantages as well.
Greater employee and customer convenience. Lower fire insurance rates. A stronger, sturdier building in which concrete is the basic material.
You see, concrete *is* good for you.
For complete information on the roof parking concept, write us. Portland Cement Association, Dept. A9-8 Old Orchard Road, Skokie, Ill. 60076.

PCA—IMPROVING AND EXTENDING THE USES OF CONCRETE

PORTLAND CEMENT pca ASSOCIATION

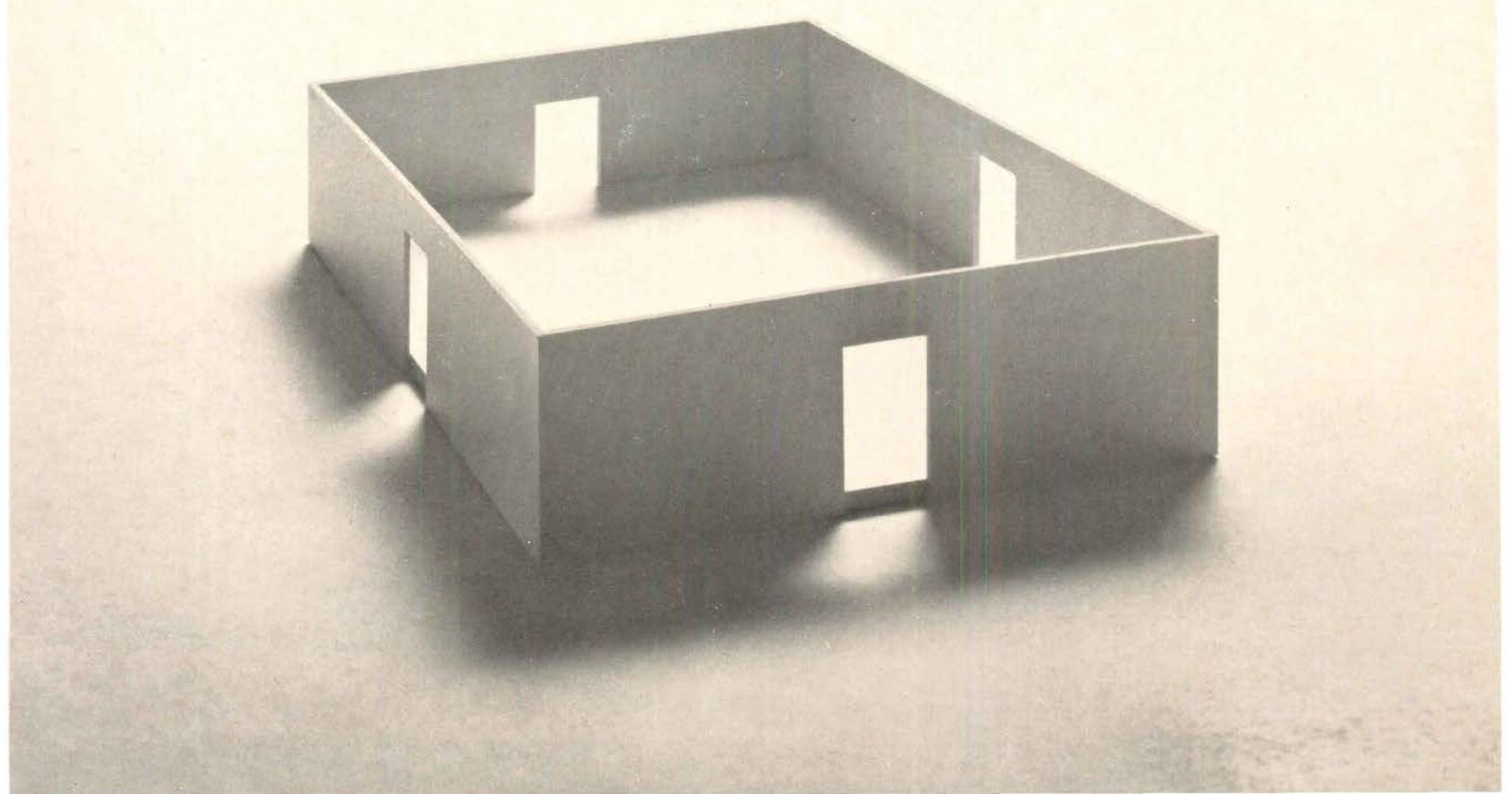
For more data, circle 159 on inquiry card

With sprinklers, you can increase your exit distance.

The permission to extend the distance between exits—if sprinklers are installed throughout—is granted by almost all codes. This can result in less wasted interior space and reduce the size and/or number of stairwells, exitways and doorways.

And more. By designing-in an "Automatic" Sprinkler system you can get:

1. Increased building area.
2. Increased building height.
3. Increase your range of interior finishing materials.
4. Savings with light roof framing.
5. Savings with metal roof decking.
6. Savings with fewer fire walls.
7. Increased fire wall openings.
8. Decreased exit widths.



Take a few minutes to scan your local building codes for the many specific advantages you can gain when you design-in an "Automatic" Sprinkler system. To help, we have compiled some of the permissive clauses from the four major building codes, and put them into a booklet called, "The Code Book."

For a copy, simply mail your request to Mr. R. L. Pardee, Manager of Marketing Services, "Automatic" Sprinkler Division, Dept. 1068, Box 180, Cleveland, Ohio 44141.

"Automatic" Sprinkler
CORPORATION OF AMERICA

Here are quotations from the four major building codes regarding increased exit distance:

The Uniform Building Code: (SEC. 3302) "No point in an unsprinklered building shall be more than one hundred and fifty feet (150') from an exterior door, a horizontal exit, exit passageway or an enclosed stairway, measured along the line of travel. In a building equipped with a complete automatic fire-extinguishing system the distance from exits may be increased to two hundred feet (200')."

The National Building Code: (SEC. 603) "Exit doorways shall be located that the maximum from any point in a floor area, room or space to an exit doorway does not exceed:

75 feet for high hazard occupancies;

100 feet for educational, industrial, institutional, mercantile, residential and storage occupancies;

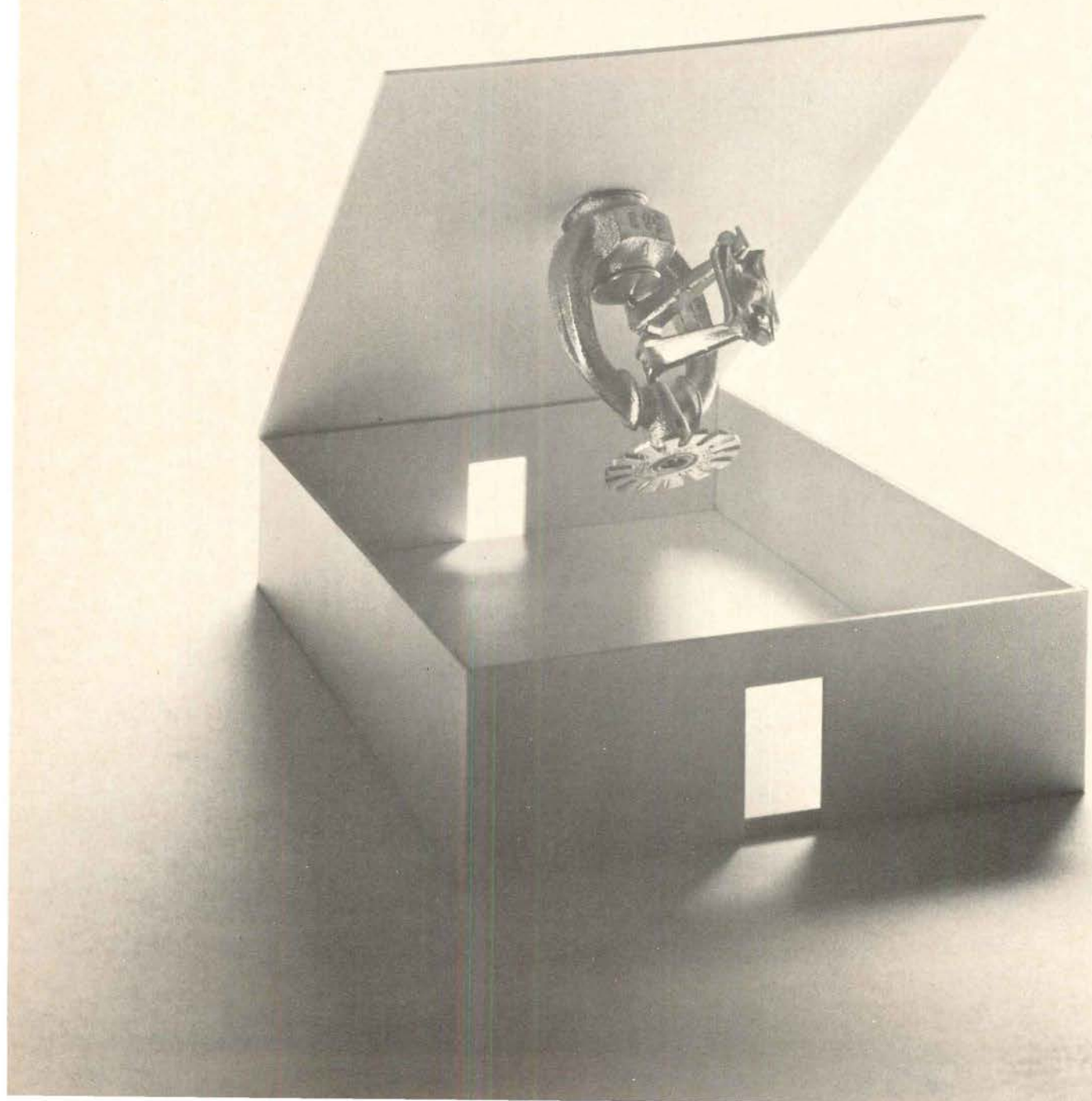
150 feet for assembly and business occupancies.

Where the building is sprinklered . . . the above distances to an exit doorway may be increased 50 per cent."

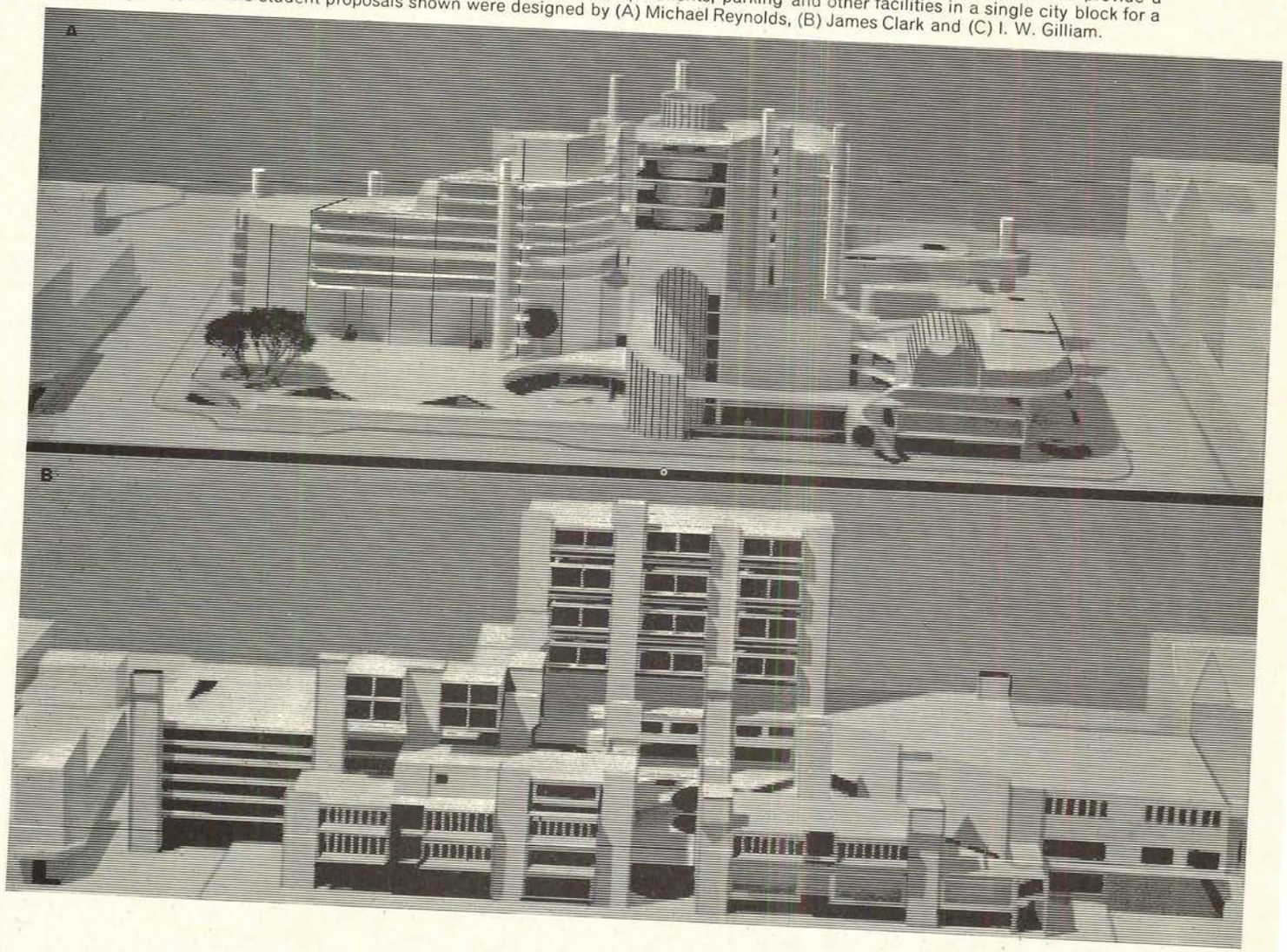
The Southern Standard Building Code: (SEC. 1103.1) "Exits shall be so located that the distance from the most remote point in the floor area, room or space served by them to the nearest exit, measured along the line of travel, shall be no more than specified below, except that where sprinklers are installed throughout a building, maximum distance of travel to an exit may be fifty (50) per cent greater than these tabular values:" (Check code for actual distances).

The Basic Building Code: (SEC. 609.5) "In storage, mercantile and industrial buildings equipped with an approved two-source automatic sprinkler system, the permissible length of travel to the exit may be increased by fifty (50) per cent."

For more data, circle 160 on inquiry card



A study for a small urban space of many varied functional requirements, by fifth-year students of Professors Donald Stevens, R.A., and William Widdowson, R.A., University of Cincinnati College of Design, Architecture and Art. The scope of the project is to provide a homogeneous urban environment consisting of stores, shops, offices, apartments, parking and other facilities in a single city block for a community of 75,000. The student proposals shown were designed by (A) Michael Reynolds, (B) James Clark and (C) I. W. Gilliam.



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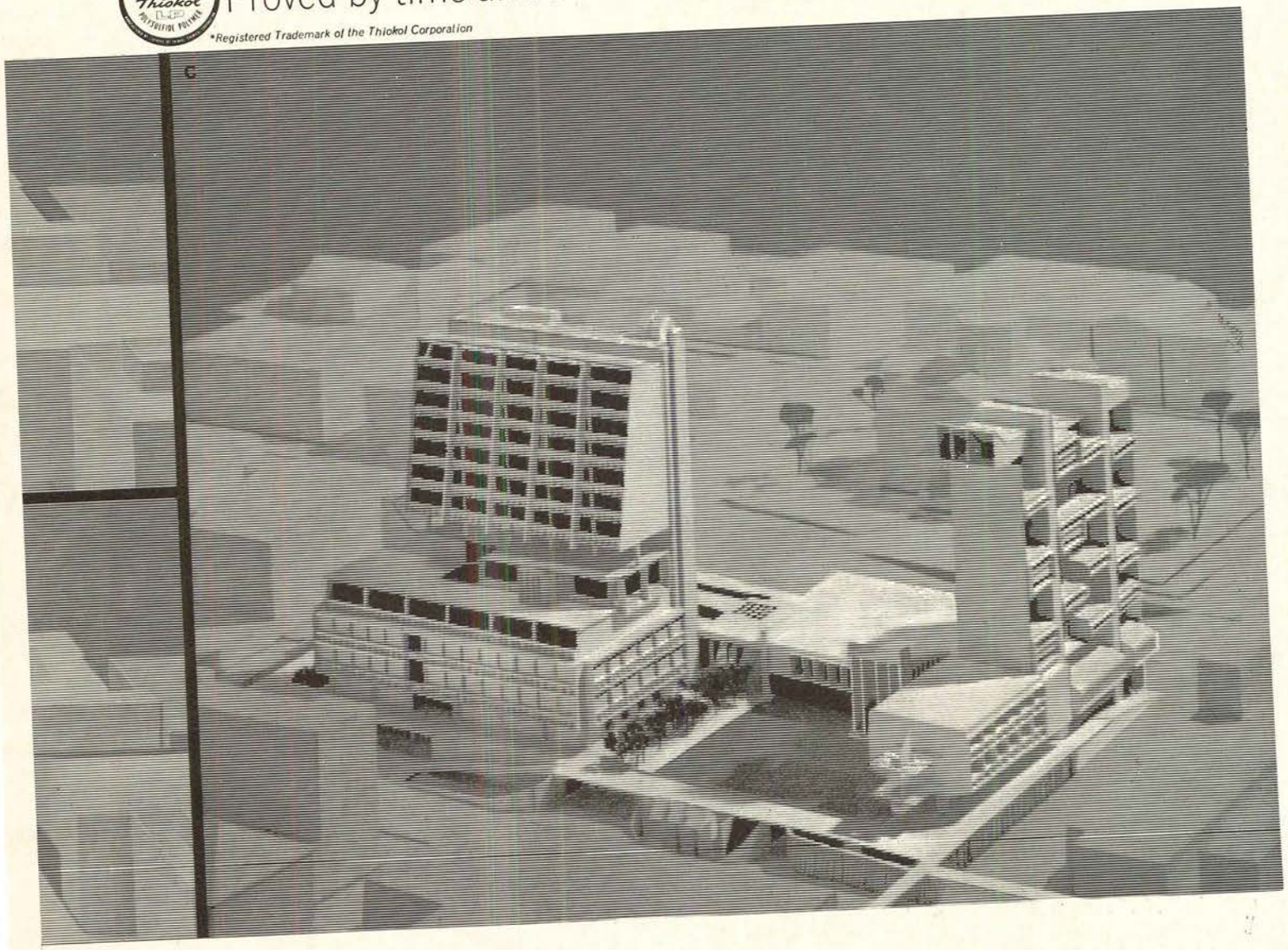

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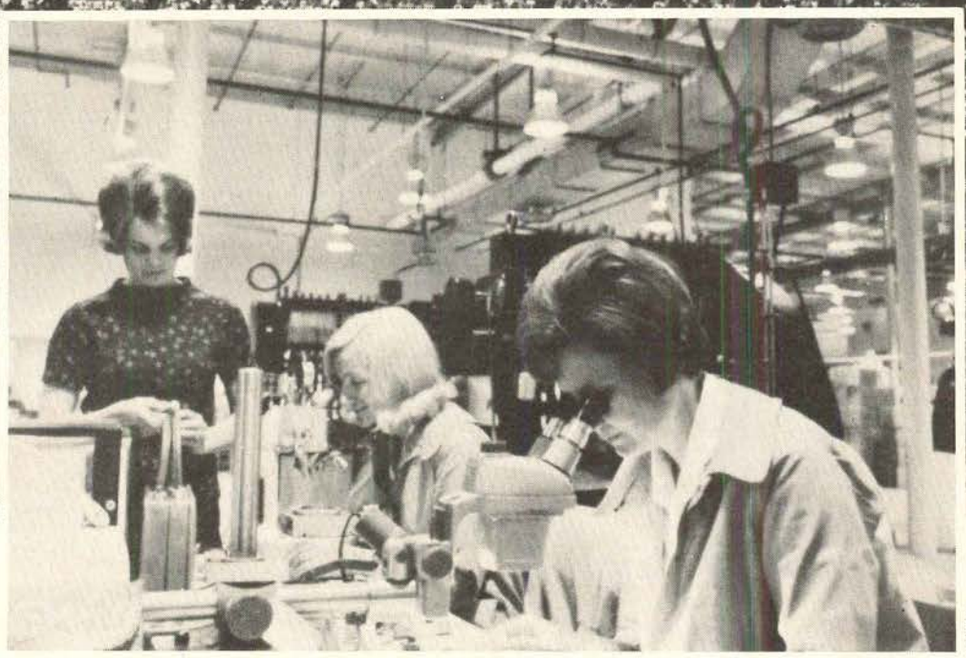
General Electric luminaires hold down playing errors in Busch Stadium...

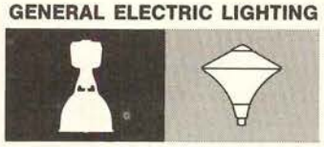
Civic Center Busch Memorial Stadium, St. Louis



Kentucky Electronics, Inc., Owensboro, Kentucky.

...and manufacturing errors in plants.

GENERAL ELECTRIC LIGHTING



inside-out outside-in

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GENERAL ELECTRIC

For more data, circle 162 on inquiry card

continued from page 272

willing, to see the problems of others and subject to emotional responses. Four or five trips around the cycle, moreover, will not be credited with getting things done quickly and the underprivileged want everything now.

4. The author then continues to suggest that, after much public discussion, "it is the task of the planner to pick up those aspects that survive the community value review" and add those elements he deems necessary. By what means those particular elements will be selected is not stated, but we can only assume it will be the decision of the planner. We are now brought back to the beginning wherein the planner makes the decisions and the dissenters squawk. This is what we have now.

5. There is a tendency to accept forecasting as sacrosanct, but estimates of future populations have been frequently wrong, due, it has been rationalized, to unforeseen factors. Unless we can see what is written in the Good Book, no one can be sure of the future. Economists, like psychiatrists, disagree, and expressing a proposed approach in ephemeral language will not alter this situation. There is an implication that planning is done without proper research. In these days of specialization, it is the function of the sociologist to marshal the data for the planner (architect or other) unless he is qualified and equipped to do it himself. The "feed-back" should come from him.

6. No one can quarrel with the hypothesis that the student and teacher should have practical experience. To expose a student to six months or a year with a Municipal Planning Commission may be very beneficial the following year, but, if he goes in for teaching, how valid will it be five or ten years hence?

7. As long as we have progress and as long as we have change, there will be no such thing as the perfect plan. To achieve it, we would have to control the thinking processes of all persons and live in Huxley's "Brave New World." Those who think they can neatly categorize all problems and file them in their proper places, are deceiving themselves. Could the planner of the thirties have forecast the repercussions of World War II? Who foresaw Korea or Viet Nam? What prophet anticipated the Puerto Rican influx into New York or Martin Luther King and the respectability of civil disobedience? Who knew of the impact of the computer? These factors would make a shambles of any plan. What we need is flexibility. Training must equip us to recognize problems as they arise and react to them quickly. A planned society can only be tantamount to a controlled society.

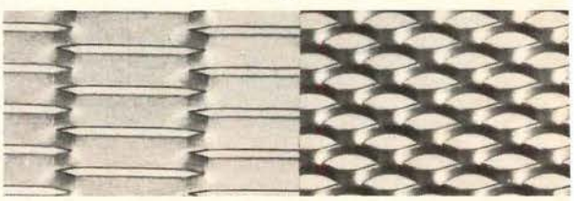
Leon Rosenthal, A.I.A.
Babylon, New York

Imagination and Wheeling's expanded steel facade can modernize almost anything for almost nothing.

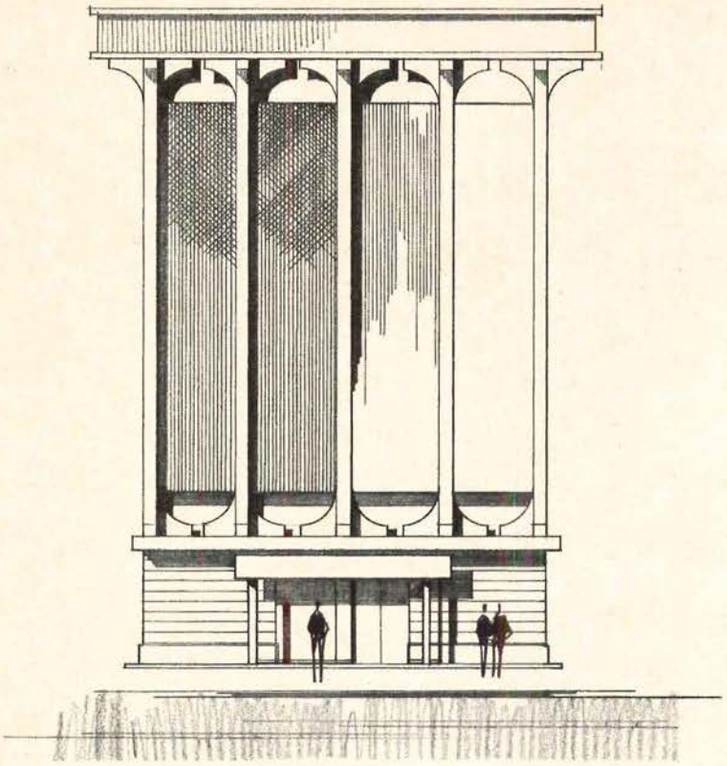
Of all the ways an out-of-date building can look ahead of its time, one of the best, most versatile, and most economical is expanded steel facade.

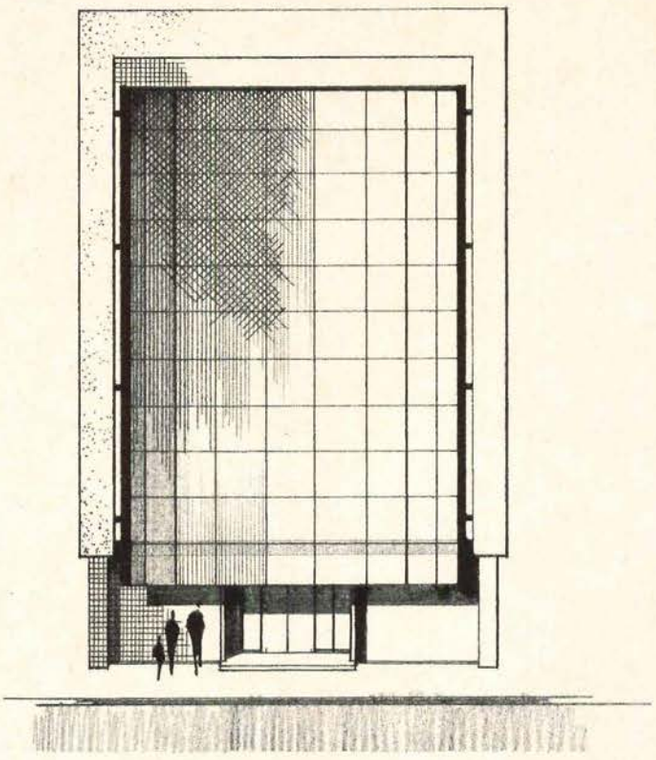
It's adaptable, combines beautifully with just about any other building material you choose, and it can be painted, lacquered, bronzed or galvanized.

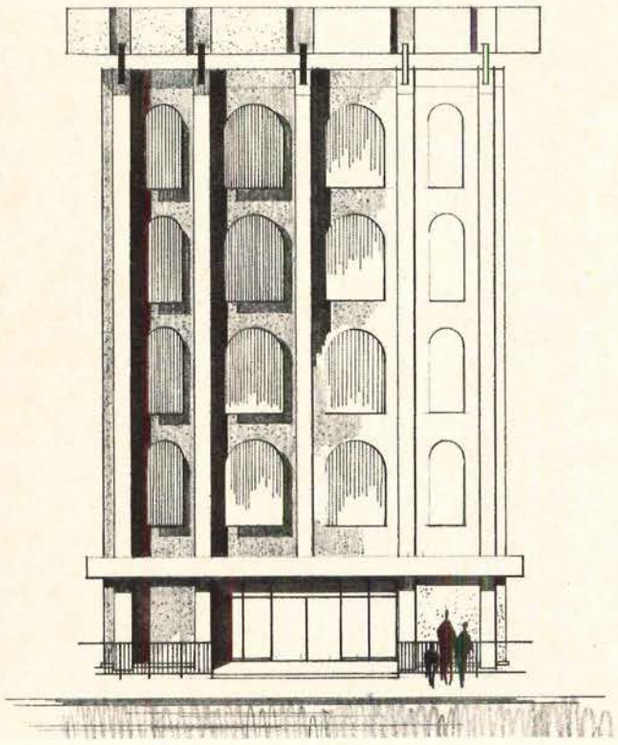
It's stronger per foot and lighter per pound than the sheet of steel it's made from. And its the

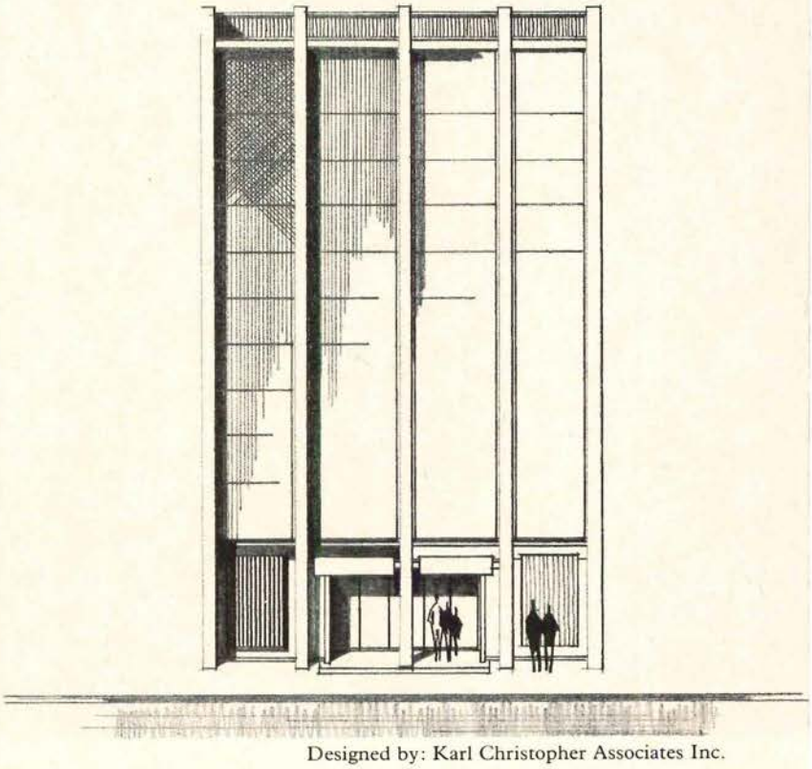


Louver mesh ½" facade





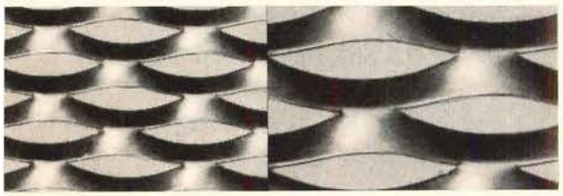




Designed by: Karl Christopher Associates Inc.

only material that can so easily and economically alter the appearance of an old building and still let in light and air.

Wheeling's expanded steel facade comes in four configurations, in the sizes and modules you specify. For more information, see your nearest steel service center or write us for free brochures.



1½" facade No. 4 facade

Wheeling Expanded Metal.

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

For more data, circle 164 on inquiry card

The boy, about eight,
and his big sister,
about twenty,
walked along the Sunday streets.
They looked for an open store
to sell them a bottle of milk,
and they enjoyed
the early fall morning.
They walked almost silently.

Each enjoyed the quiet streets,
and once she took his hand
across a street where
a car was moving.
They continued
hand in hand.

A few blocks away
two boys appeared,
tossing a ball between them
as they walked.
One was black, one white.

As they passed, the boy,
with one hand still in his sister's,
said a little stiffly,
"Hi fellas. See you tomorrow."
He knew they would be teasing him
for holding her hand.

She waited until the two—
the black boy and the blond one—
had disappeared around the corner.
She asked, "Are they in your class?"

"One is," her brother answered.

"Which one?"

"The tall one," he said.

Someday adults will see each other that way. You could help bring that time closer in your contacts with people around you. Or, on a larger scale, by joining McGraw-Hill Ideapeople (editors, journalists and educational sales consultants) in working* for this goal: when you turn your head, you see, neither white nor black, but a person who is skinny, or fat, or wearing glasses, or short or tall, or smiling, or walking, or reading or hoping.
You turn your head
and see a person.

*Want to know how? Send for our six-page report "What Is McGraw-Hill Doing About the Urban Crisis?" Write Roger Y. Barney.

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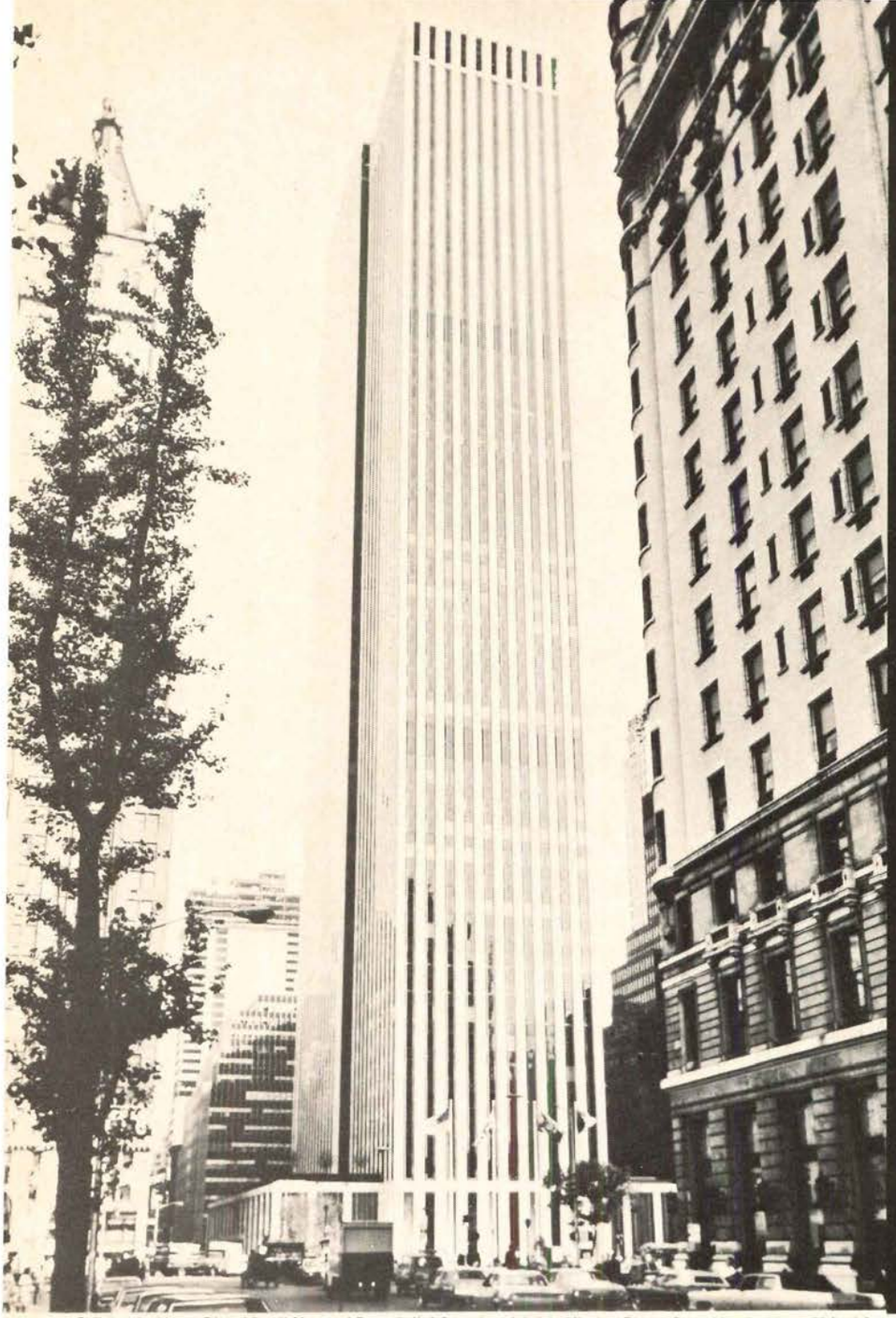

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Insulation against potential sound transmission between offices on the forty-fourth and forty-fifth floor of New York's most spectacular new office building was provided by 10,300 square feet of one-pound sheet lead as plenum barriers.

The J. B. Williams Company, Inc., internationally-known manufacturers of toiletries and pharmaceuticals are the occupants of these two floors of the fifty-story General Motors Building, the latest addition to New York's Fifth Avenue. Architects and sub-contractors for the Williams' space in the building selected thin gage sheet lead as the most effective means of assuring quiet office efficiency.

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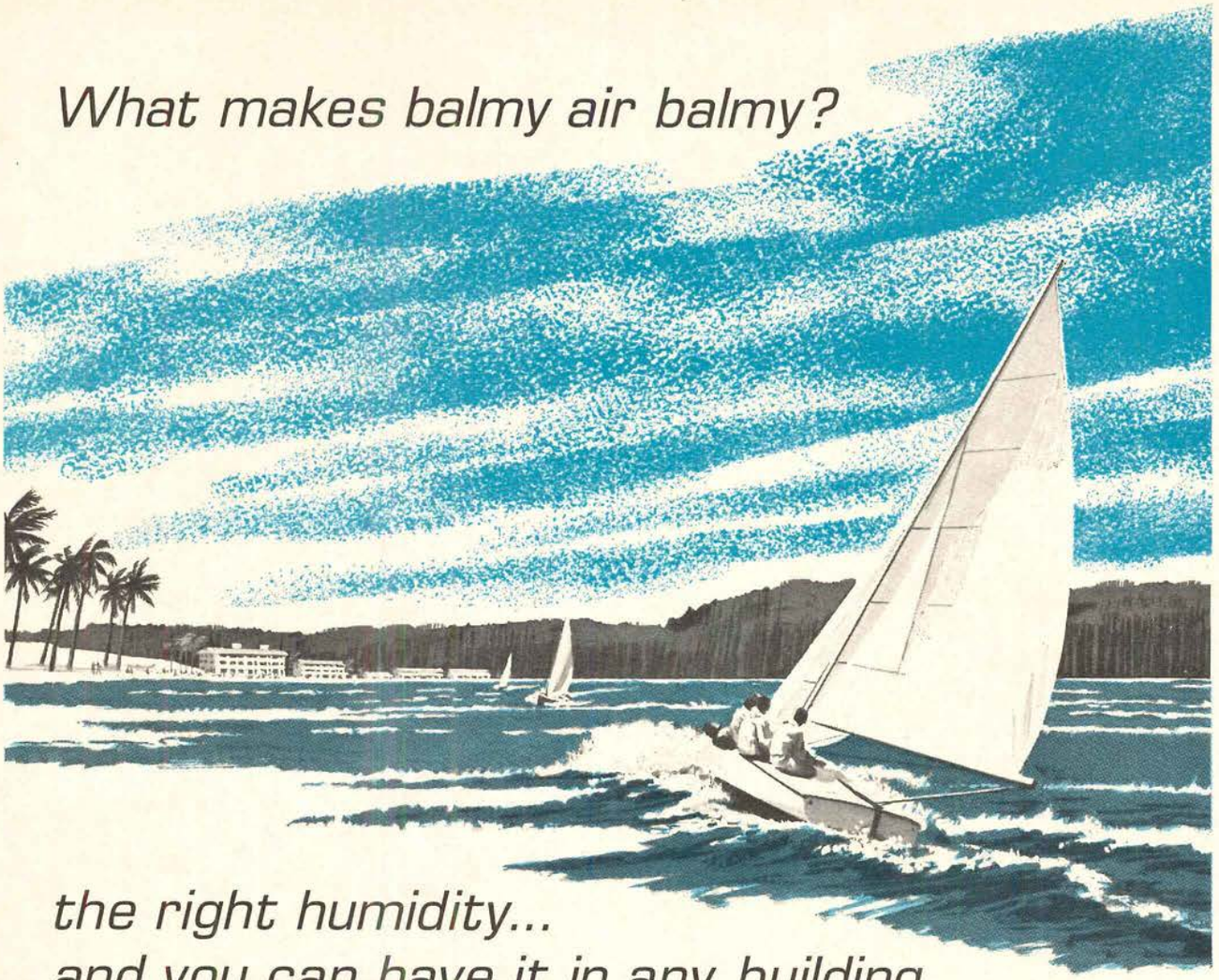

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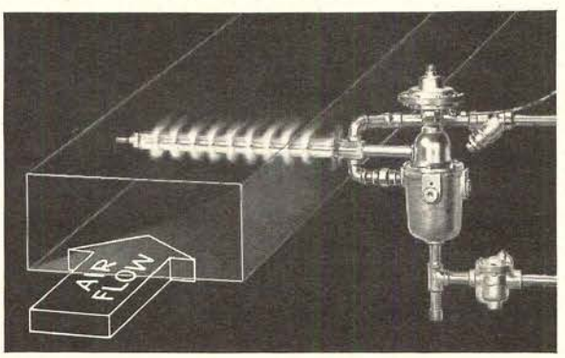

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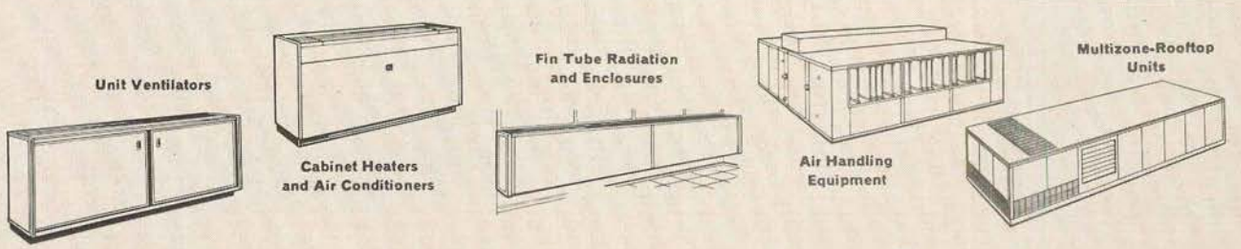

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