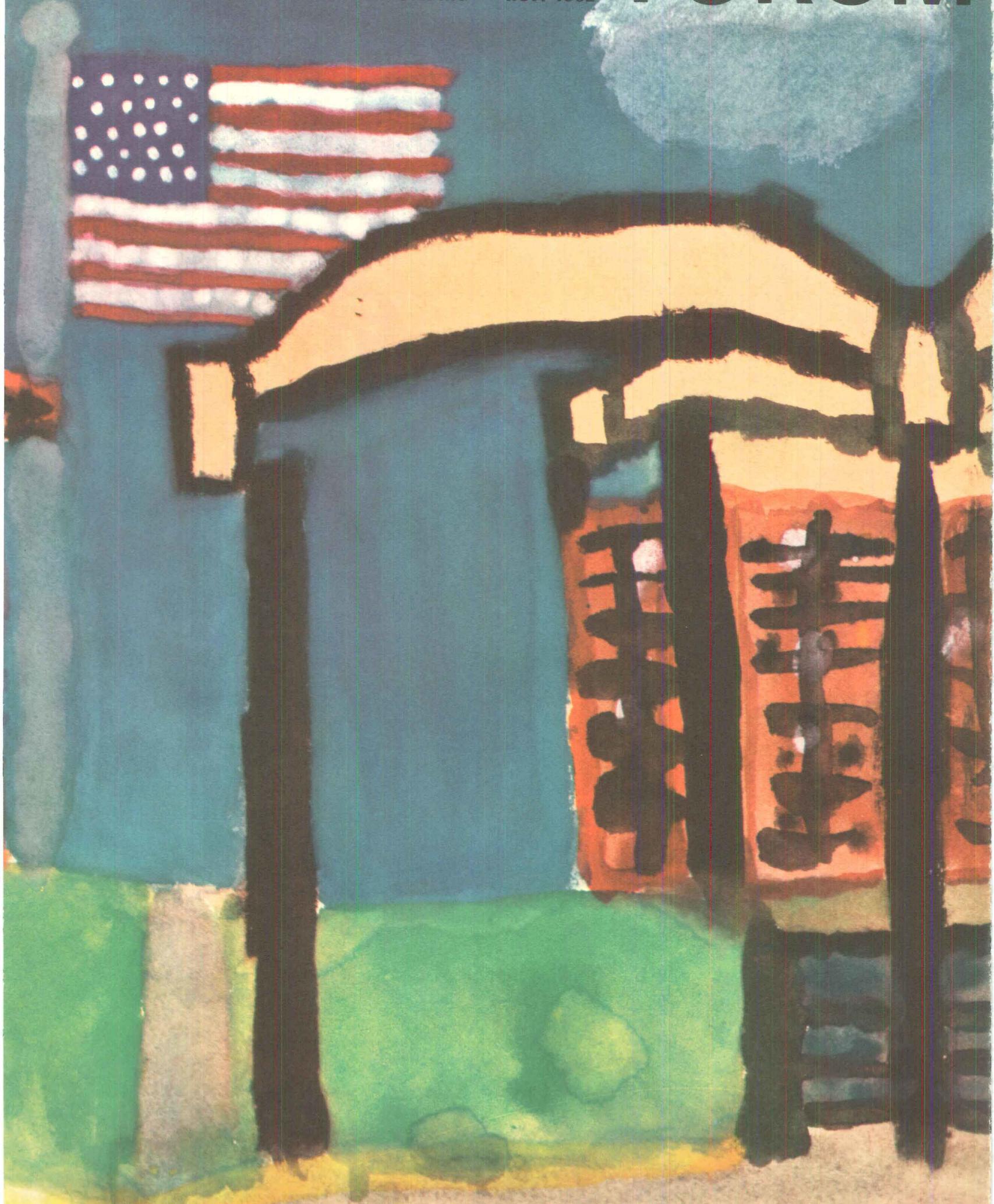


ARCHITECTURAL FORUM THE MAGAZINE OF BUILDING NOV. 1962

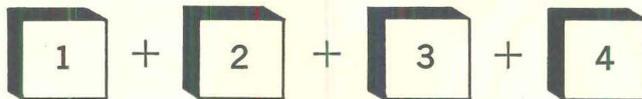
FORUM



BREAKTHROUGH IN OFFICE COMFORT CONTROL

New Inland Integrated Air Floor System provides COMPLETE CONTROL of indoor climate and at LOWER COST than conventional systems.

A new concept in the control of indoor comfort has been developed by Inland engineers. It is a practical, economical system which controls environment *completely*, at costs considerably less than those of conventional heating and air conditioning systems.



The new Inland Integrated Air Floor System combines the functions of four time-tested components to provide simultaneous control of: (1) temperature of air and room surfaces, (2) relative humidity, (3) air motion, (4) bacteria content. What this means to employers and employees alike is clear: better working conditions, increased effectiveness, less absenteeism.

Because it is designed as part of the building, the Inland IAF System delivers all of its benefits at significant savings, both in first and operating costs. Furthermore, it offers the designer new freedom in the creation of healthful, efficient, comfortable interior spaces.

How is this possible? Three years of Inland re-

search have combined (1) a Burgess-Manning radiant ceiling system*, (2) a Kathabar chemical air conditioner†, (3) a standard refrigeration plant and (4) Inland Hi-Bond Celluflor, into an integrated system. The functions of all four harmonize to increase the efficiency of each and to reduce total costs considerably.

Use of radiant ceiling panels and a chemical air conditioner cuts the need for outside air to a fraction of that required by ordinary systems. As a result, all of the circulated air can easily be carried in the cells of Inland Celluflor, with ample room left over for power and signal lines. Building design can be more compact — less space wasted between floors and smaller areas devoted to mechanical equipment. Savings in construction and building materials are significant.

Space is too limited here to explain how the Inland IAF System works, but a sound-slide program has been prepared which tells the story quickly and meaningfully. If you would like your organization to see this program, please write the Milwaukee address listed below or call your local Inland office.

*Burgess-Manning Company, Libertyville, Illinois.
†Surface Combustion Div., Midland-Ross Corp., Toledo, Ohio.

EP-25

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PUBLISHER'S NOTE

Those who have been worrying about where their next building dollar is coming from have had nothing on Economist Miles L. Colean. Each year at this time the editors ask him to worry about where *everybody's* building dollars are coming from. The result appears on page 112 — FORUM's 1963 forecast of building construction activity.

Never an easy chore, predicting building trends is made particularly difficult by today's many "iffy" situations — political, economic, and international. But, if past experience is any guide, Mike Colean's forecast of a 3.4 per cent increase in building construction to \$26.6 billion will be very close to next year's actual expenditures when all the bills are finally in. (In the past three years his forecasts have never been more than a scant 1.9 per cent wide of reality.)

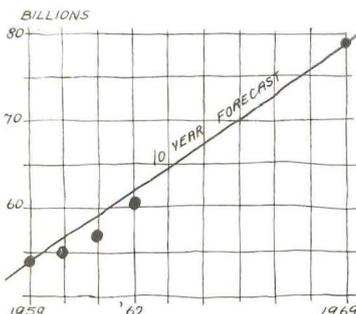
Colean's enviable record of accuracy is less a reflection on the high polish of his crystal ball than on his broad understanding of architecture and construction and his long experience as an analyst of industry economics. A consultant and contributor to FORUM for 28 years, Colean practiced architecture in New York and Chicago for 12 years before he was called to Washington in 1934 to help establish the Federal Housing Administration and be-

WALTER DARAN



came its first assistant administrator and technical director. Although he is a fellow of the American Institute of Architects, and was once vice president of a large general contracting firm, since 1944 he has had little to do with actual design or construction. Instead he has been a full-time, independent consultant on building finance and economics to a host of blue-chip clients, including the Federal Reserve System, the Bureau of the Budget, the Housing and Home Finance Agency, the Mortgage Bankers Association, and several major banks and insurance companies. He has also authored a number of important books of primary interest to the building industry.

As the industry's leading economic consultant, Mike Colean, in a sense, is perpetually out on a limb. But never has he climbed further out than he did at the turn of the decade, when the editors asked him to make a 10-year forecast of construction activity to help FORUM readers with their own long-range planning. He then predicted that total annual expenditures for buildings, houses, and other new construction would reach \$79 billion by 1969—a whopping increase of 46 per cent over the 1959 level. Today the industry stands almost on his ten-year trend line (see graph). This speaks well for the strength of the industry's economy—and for the strength of Colean's limb.—J.C.H. JR.



DESIGN FOR CHILDREN

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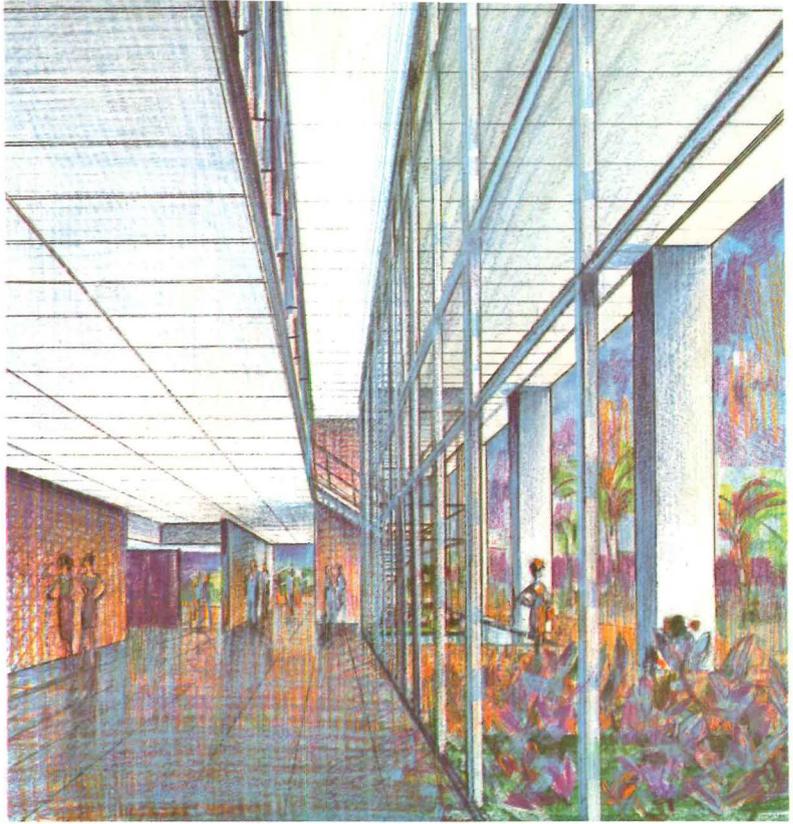
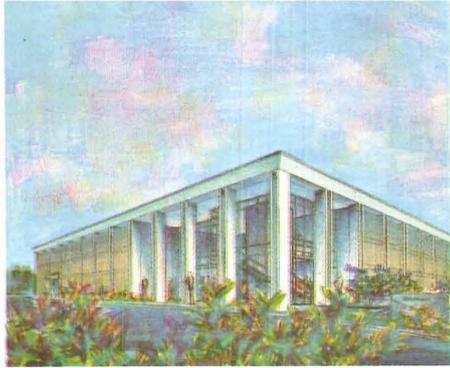
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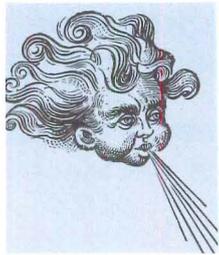
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RENDERINGS BY ARA DERDERIAN

Armstrong ventilating ceilings help air condition these "Sunshine State" offices comfortably, completely, and quietly



Comfortable air distribution and a clean, uncluttered appearance: these are the qualities which Armstrong Ventilating Ceilings bring to this new office building in Jacksonville, Florida.

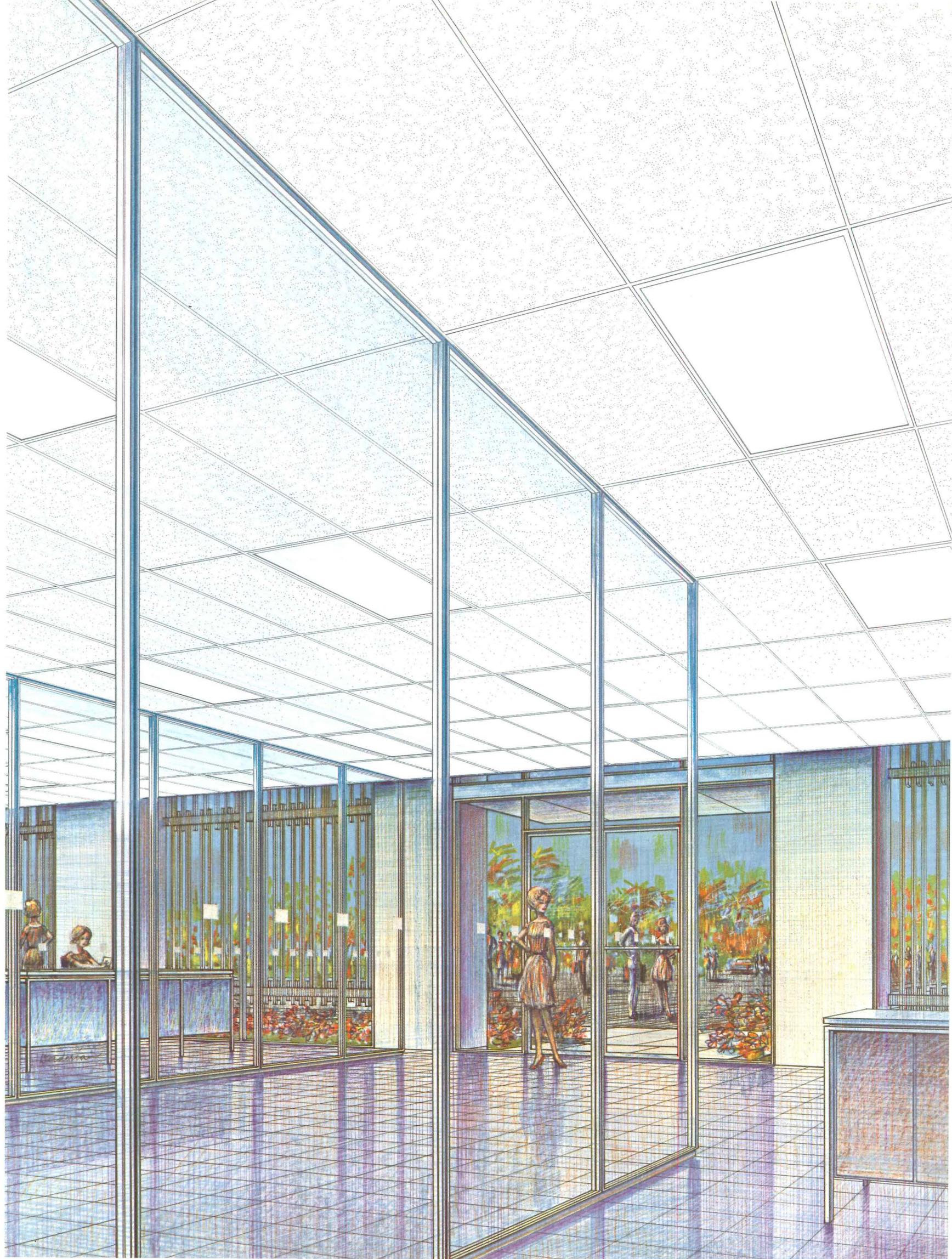
In character with its bold design, they present a smooth and monolithic surface. This handsome ceiling treatment offers another important advantage, too: lighting fixtures and partitions can easily be rearranged under the ceiling without affecting the ventilating function and without the delay and cost of moving ducts and diffusers. And the Armstrong Ventilating Ceiling system (in which the sealed plenum acts as room duct and the perforated ceiling as diffuser) insures that conditioned air circulates everywhere—evenly, thoroughly and efficiently—without drafts or stagnant spots.

DATA: Armstrong Ventilating Ceilings have been thoroughly lab- and job-tested to assure proper performance; are available in five materials (both tile and

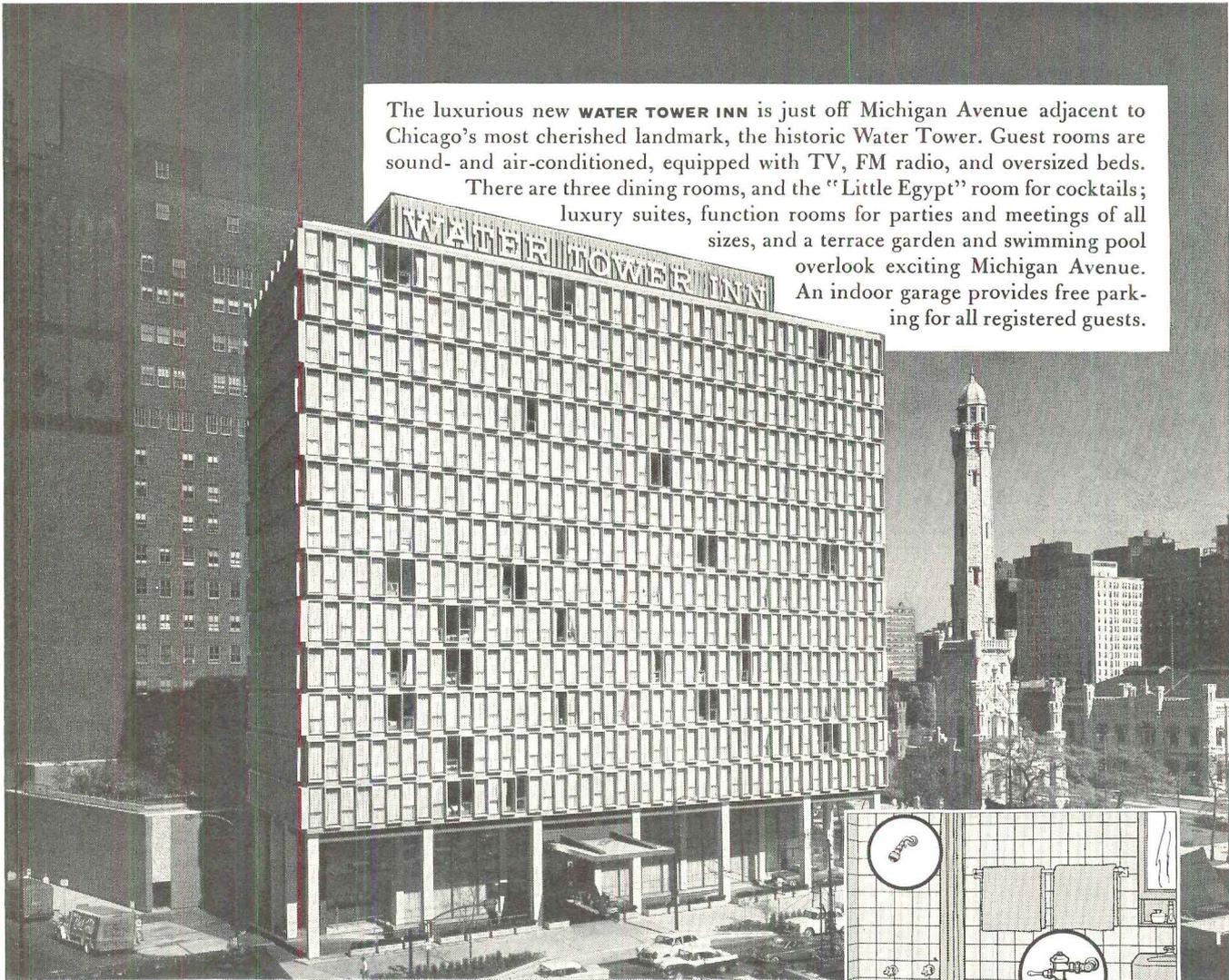
lay-in units), including Fire Guard, with three different patterns; and are compatible with all conventional supply-air systems. This ceiling system saves up to 30¢ per square foot by cutting supply ductwork and eliminating conventional diffusers. Ventilating Fire Guard offers one- to four-hour-rated fire protection for structural members; saves up to 30¢ per sq. ft. by eliminating intermediate fire protection, up to two months' construction time through dry installation; often earns lower insurance rates. Special plenum-engineering data is available, giving all factors and formulae for the correct design of this ventilating system, ensuring that it delivers the required cfm of conditioned air in the manner and quantity designated by the ventilating engineer. Contact your Armstrong Acoustical Contractor or Armstrong District Office. For general information about these ventilating ceilings, write Armstrong, 4211 Rooney Street, Lancaster, Pa.

Koger Building, Boulevard Center, Jacksonville, Florida. Architects: Reynolds, Smith, and Hills, Jacksonville, Florida. General Contractor: O. P. Woodcock Co., Jacksonville, Florida. Mechanical Contractor: Thermodyne Corp., Jacksonville, Florida. Acoustical Contractor: Noise Reduction Corp., Jacksonville, Florida.

Armstrong
CEILINGS / *acoustical
fire-retardant
ventilating*



The luxurious new **WATER TOWER INN** is just off Michigan Avenue adjacent to Chicago's most cherished landmark, the historic Water Tower. Guest rooms are sound- and air-conditioned, equipped with TV, FM radio, and oversized beds. There are three dining rooms, and the "Little Egypt" room for cocktails; luxury suites, function rooms for parties and meetings of all sizes, and a terrace garden and swimming pool overlook exciting Michigan Avenue. An indoor garage provides free parking for all registered guests.



What makes **THE WATER TOWER INN** a **LUXURY** hotel?..

As in any new hotel, motel or inn, luxury in The Water Tower Inn began with specifications made in the early planning stages. Decisions made at that time are as important to guest comfort and convenience as the choosing of general decor and colors which follows.

Selection of Sloan *Quiet-Acting* Flush Valves and Sloan *Act-O-Matic* Shower Heads represents two early decisions made for The Water Tower Inn. Inherent in each of these Sloan products are benefits for guests and owner-operator alike.

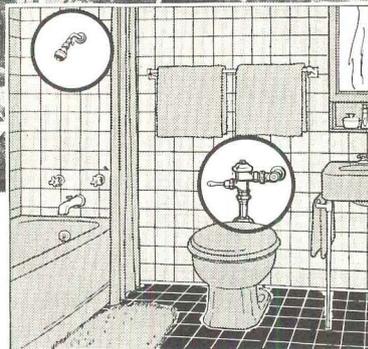
Take Sloan Flush Valves for example. Guests appreciate not only their ease of operation, but their quiet-

ness as well. Owner-operators, on the other hand, are quick to discover that Sloan Flush Valves are the unchallenged leader for dependable operation and low maintenance costs.

As for *Act-O-Matic* Shower Heads, users delight in the refreshing, efficient pattern of water they deliver without clogging. And owners like the unique spray disc movement which keeps the *Act-O-Matic* in service longer, minimizes maintenance.

Plan now to make the superiority of Sloan quality a permanent part of your building by specifying and insisting upon performance-proven Sloan *Quiet-Acting*

Flush Valves and Sloan *Act-O-Matic* Shower Heads.



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Lafayette Square preserved (below)

Federal Pavilion redesigned for New York Fair (page 7)

Reporters meet architecture (page 8)

Mortgage bankers predict another good year (page 11)

A NEW FUTURE FOR LAFAYETTE SQUARE

Few things could have pleased Washington residents more last month than Architect John Carl Warnecke's plans for Lafayette Square. The new square, in effect, will be very similar to the old one, and that alone was cause enough to rejoice. Threatened on and off over the past 50 years, Lafayette Square as recently as six months ago appeared to be doomed. In the place of the fine old homes which line three sides of the park, there were to be two official federal structures. And then, quite suddenly, the President and Mrs. Kennedy took personal interest in the "front yard of the White House."

A fresh approach to design by sponsors and architects

Whether the Kennedys were particularly fond of the intimate, residential scale of the park, or whether they did not like the idea of two huge federal buildings looming across Pennsylvania Avenue, has not been disclosed. But last July the two Boston architectural firms which had presented plans for the square were dismissed abruptly. John Carl Warnecke & Associates were called in to redesign the new federal office space and to draw up a master plan for the square. Soon after, it became apparent that many of the existing houses would be preserved, and that the new buildings would be kept unobtrusively in the background.

On Oct. 17, Warnecke's plans

were officially unveiled in the presence of the First Lady. The architect had improved the Square—at least from a pedestrian's eye level. On the west side (Jackson Place), three discordantly high buildings will be torn down and replaced with lower houses which will blend in with the other buildings facing the park. Some of these new "houses" may provide remodeled office space; one will serve as an entrance to the \$23 million Federal Office Building No. 7, which will be built in the courtyard behind the Jackson Place homes (see photo). On the east side (Madison Place), the top floor of the often-refurbished Dolly Madison House and the old Belasco Theater will be demolished. A new low building will provide an en-

trance to the \$6 million Court of Claims and Court of Custom and Patent Appeals Building behind the Square. Throughout, the materials used will harmonize with those of the existing homes—brick or a dark stone such as granite.

The total cost of the project will be within the \$29 million already approved and appropriated by Congress. According to GSA Administrator Bernard Boutin, work will start next spring and be completed in 1966. While the Treasury Annex, a building designed in the stripped neoclassical manner and located on the cor-

ner of Pennsylvania Avenue and Madison Place, was not included in Warnecke's demolition and renovation plans, he expressed the hope that it too might be replaced in the future.

Thus, Lafayette Square seemed "saved." The pleasant leisurely park, with its unusual flora (ancient boxwood, Chinese paulowia, etc.) and its overfamiliar small fauna, will remain, as the Washington Post put it: "a charming enclave of greenery and good taste at the heart of the city, and . . . a precedent for intelligent preservation throughout Washington."

ALL ABOUT THIN SHELL STRUCTURES

Last month's World Conference on Shell Structures attracted some 700 architects, engineers, and builders to San Francisco. While not all the great names advertised could attend in person, some sent in their papers, and in one way or another, most of the leading experimenters with shell structures were represented. By the time they left for their homes in England, Poland, Japan, India, New York, and points in between, participants had gleaned much of the best thought concerning their specialty—how to span the greatest space with the least material.

The engineers and architects present saw slides of such structures as Lopez Palanco's dog-racing stadium in Madrid, the TWA building at Idlewild airport (designed by Eero Saarinen), J. A. Torroja's water tanks in Morocco, Architect Paul Kirk's Church of the Good Shepherd in Washington State, and others. They also heard technical papers on subjects like "An Iteration Method for Folded Plate Analysis," or "Analysis of Shells Using Framework Analogy." And, most of the

participants could discuss common problems such as:

▶ *The position of the structural engineer in relation to the architect.* Mexico's Felix Candela came the closest to expressing the growing feeling of self confidence among engineers. Shell structures are unique in that the engineer is of primary importance—even in determining the esthetics of the structure. Candela pointed out that before an architect designs a feasible shell, he should know how to build it.

▶ *Some future trends for shells.* Dr. Frei Otto of Berlin excited the imagination of the engineers by showing illustrations of how nature uses shell forms—membrane structures in leaf and wing, highly magnified truss forms in organisms. The implication was that man could imitate nature, and that here was one line along which shells might develop. Candela discussed another approach. He predicted that the form will be selected first, and then the program fitted into the form. And New York Architect Seymour Rutkin intrigued his audience

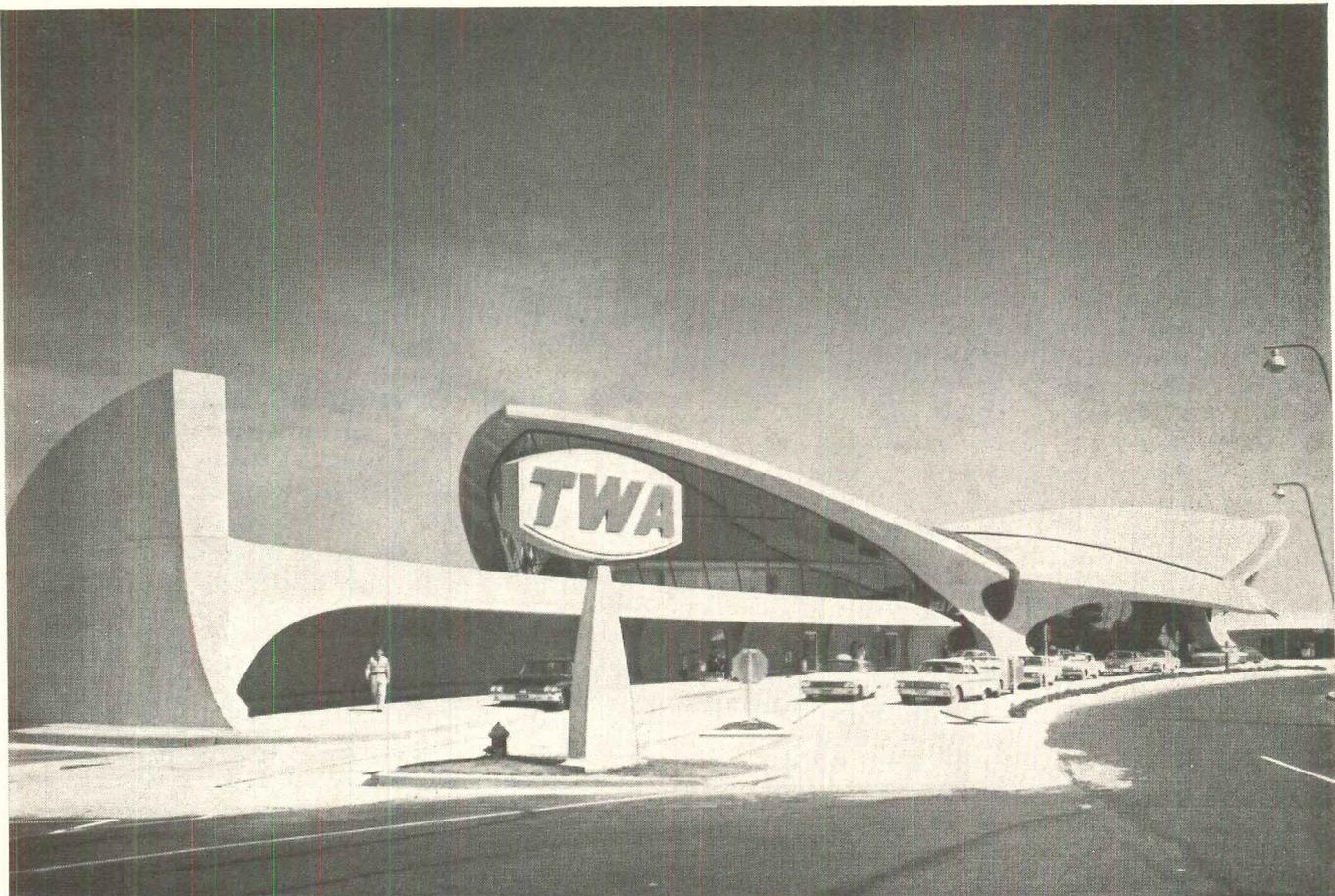
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Mrs. Kennedy, Architect Warnecke, and model of Lafayette Square



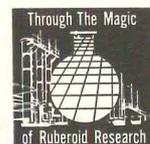
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Ruberoid/Matico Vinyl Asbestos Floor Tile



The TWA Trans World Flight Center at New York International Airport.

Beautiful—and functional! This superb new airline terminal at Idlewild dynamically expresses the drama and efficiency of air travel. For the many work areas in the terminal where the style and performance characteristics of vinyl asbestos floor tile were required, Ruberoid/Matico was selected ■ The new improved Ruberoid/Matico line in vinyl asbestos is the most complete available. All the popular colors and styles, a total of 57, are included. We urge you to review this unexcelled line for all your vinyl asbestos requirements. Our architectural representative will be glad to serve you.

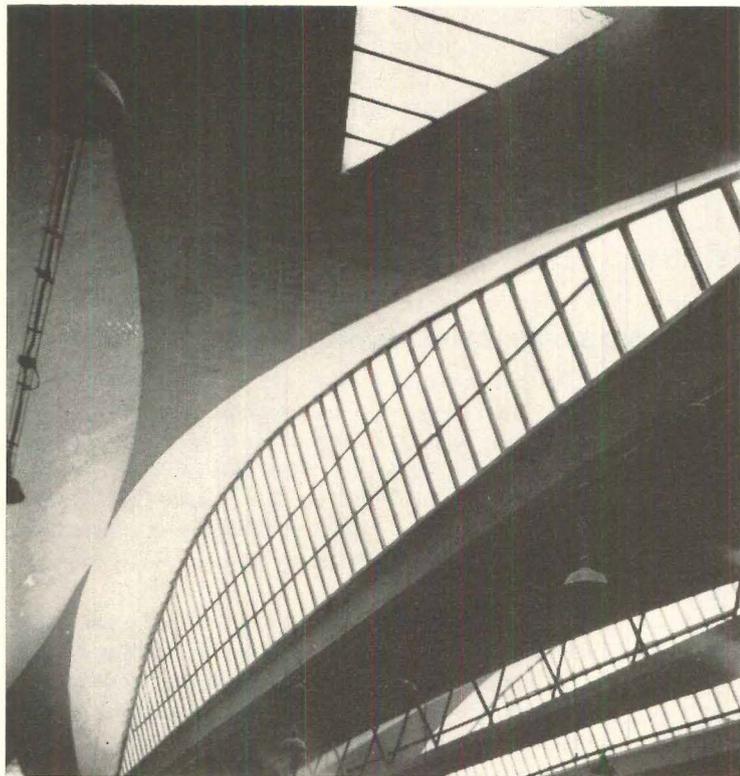


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Vinyl Asbestos Floor Tile

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continued from page 5



Engineer Zalewski's factory roof in Warsaw uses powerful forms

with an exposition of what will perhaps become another significant trend: using a computer to determine the structural analysis of shells with irregular curvatures and variable thicknesses. He has already used his method in analyzing models.

► *The application of shells.* Polish Engineer Waclaw Zalewski showed slides of some of his factory roofs. Here, the engineer was striving to enclose space economically; the results, as the photo above shows, are impressive. By using repeated precast forms in a curving zigzag roof, Zalewski has cut labor and construction costs. Among other significant shells presented were a school in New York by Architect William Caudill, a church in Mexico by Porfirio Ballesteros, and a sports hall in Spain by Sanchez del Rio.

► *The costs of shell structures.* Felix Candela held, to the disagreement of many, that the practical limit for a shell today is a 100 foot diameter. Beyond that figure, shapes became awkward, he believed, and unique shapes push costs up to the point where they must be paid for "by advertising or taxes." He advocated that standard, tried shell forms

be repeated over and over. Engineer Milo Ketchum discussed the need for his profession to give correct cost estimates based on experience. He also added that in the U.S. mechanical and electrical costs in shell construction can be very high when mechanical engineers are not familiar with these special problems. Binoy Chatterjee of India explained how, in his country, shell construction was more economical because shells use less costly materials than other structures.

► *Other problems.* Several speakers discussed the use of materials other than concrete in shell construction, including plywood, steel, and plastic. Nembhard Culin of New York gave a paper on the difficult problems of waterproofing thin shell roofs. One method, he suggested, was in effect a two-layer shell with ventilated air space in-between. He also called for greater basic research by manufacturers. In another overly neglected field, Robert Newman discussed acoustics in shells, stressing the tricks that sound can play under a curved roof.

At the end of the four-day conference, the conferees agreed that shells will be used more and

more because of their versatility, strength, grace, and economy. They represent new challenges to the architect and engineer. No one

spoke of how the architect and engineer should work together—but shells, everybody agreed, are here to stay.

LATEST WORD ON THE FEDERAL PAVILION

Nobody in Washington, D.C., was willing to talk for attribution, but many were willing to talk "off the record" about the startling impact of FORUM's editorial (Sept. '62) criticizing the then approved (but never released) design for the official pavilion intended to represent the U.S. at the 1964 World's Fair—a design described by one of its critics as "three flying saucers plus an engineer's prayer." Last month, after FORUM's editorial reached the White House, the prayer proved somewhat inadequate. Here is what happened.

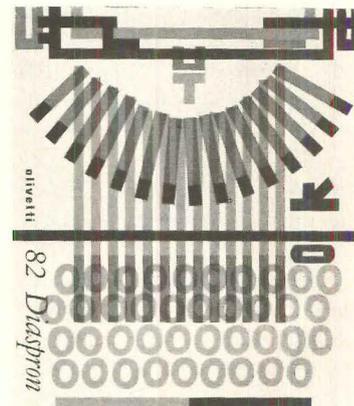
First, at the Department of Commerce, a Fair Committee met to hear Architect Charles Luckman eloquently defend his design, eloquently question FORUM's critical position on this and other issues in the past (see "Letters," page 19). Result: Committee again backs saucers.

Next, the President, concerned about FORUM's criticism, calls in several experts, is told by the GSA that it is "now too late to redesign the building," is told by oth-

ers that "a simpler building would takes less time to build." Result: Mr. Kennedy orders GSA, Commerce to stop all work on saucers.

Finally, an *ad hoc* "jury" of experts, at the President's request, reviews a flock of earlier—and previously rejected—design proposals by Architect Luckman. Result: Experts select a simple monumental structure, and Architect Luckman is asked to go ahead with that.

The newly selected design is a 330-foot square "doughnut" building supported on a few massive columns that raise it well off the ground. A central court, 150 feet square, will have at ground level a stepped-up pyramid design for outdoor displays and pageants. The sides of the raised building will be deep, parallel trusses. No details could be obtained on finishes, colors, materials, or exhibits to be housed in the square "doughnut." However, it seemed from the general descriptions of the design that it would be a great improvement over earlier plans.



OLIVETTI CO. WINS KAUFMANN AWARD FOR OUTSTANDING DESIGN

To the surprise of few, the Italian company, Ing. C. Olivetti, won, over other business enterprises, the \$20,000 1962 Kaufmann International Award. The jury cited Olivetti's long record of excellence in all types of design (see above for

examples of architecture, graphics). Volkswagen of Germany was given a Special Commendation for "the best rounded expression of a new order of esthetic relationship between man and machine," which pervades all VW's activities.

continued on page 8

WILL NEWSMEN CRITICIZE ARCHITECTURE?

At a working conference entitled "The Press and the Building of Cities" last month, a great many pertinent and important things were said. Only a few of them, however, were discussed. Wrote one participant: "This was a trial run, an ice breaker which . . . exposed many things of benefit."

Sponsored with a \$12,000 grant from the AIA and organized by the Columbia University schools of architecture and journalism, the New York conference was attended by 30 reporters from large city newspapers representing a combined circulation of 13 million readers. Its purpose was to

newal commentators—but the whole mosaic was not. Throughout the conference, a note of experience was struck by Grady Clay, real estate editor of the Louisville (Ky.) *Courier-Journal*. He called his colleagues' attention to the "moment in which the future is frozen"—that time when the effect of a projected building on its urban environment becomes evident. In the evening, URA Commissioner William Slayton asked for perspective—and originality—in local reportage.

The second day stressed experience. Groups of reporters toured New York City with qualified



Panelists Wright, Pickens, Winnick, Anshen, Kling, and reporter

improve reporters' skills in writing about urban architecture.

Dean Edward W. Barrett of the school of journalism defined the problem this way: "We think that it is imperative that American newspapers take a leading role in seeing that the [vast future] building job is done right." Speaking for the school of architecture, Dean Charles R. Colbert said that his profession would like the press to act as 1) spokesmen for the people, therefore, 2) watchdogs of the commonweal, and 3) constructive moulders of public opinion.

On the first day of the conference, authorities in economics, political science, and sociology, as well as architecture, engineering, and planning (photo above), presented a panorama of the complex information needed to see urban building in its proper perspective. To most of the reporters, a part of what was said was familiar—for they ranged from city hall and real estate specialists to editorial writers and urban re-

guides to inspect urban transportation systems, the city center, suburban housing, urban housing, or various focal points of the community. The next morning, each group presented a summary of its trip and impressions. After a luncheon speech by Chicago's Mayor Richard Daley, in which he stressed the reporter's need for interlocking information when writing about urban architecture, the afternoon session was devoted to round-table discussion. One subject: the absence of contacts between the press and architects. The fault, argued the newsmen, did not lie entirely with the press: architects, they said, are close mouthed, and usually do not cooperate until the "moment in which the future is frozen" has passed. Another subject: how to accomplish better architectural coverage by newspapers. One proposed solution called for a reporter to become a specialist in cityscape. A second suggestion emphasized the need for a collaborative effort by newsmen to

cover the social, economic, and esthetic complexities of urban architecture.

In all, the conference was an enlightened step by its sponsors, but its success will have to be measured in the future. Two recommendations were put forth by the reporters: first, that the press

be invited to the AIA's national convention each year; and second, that the local chapters of the AIA hold occasional press conferences. Said one participant: "Everybody went away from this conference with a deeper commitment to architectural reportage than he might realize."

NO FUNDS, NO GOVERNMENT PROJECTS

Appropriations for architectural subjects have always been hard to pry out of Congress, but perhaps never so hard as last month. The State Department Office of Foreign Buildings ran out of authorized funds last summer, and requested renewal of the authorization legislation. The House and the Senate Committee on Foreign Relations—noting perhaps such credits to the U.S. as Saarinen's embassy in London, Stone's in New Delhi, and Weese's in Accra—approved an appropriation of \$58.9 million to be used over a two-year period. But, in the Senate committee, two riders were tacked on. One referred to equal pay for women employees; the other created an additional Assistant Secretary of State. Last month, the House considered the amended bill—and Rep. Frank T.

Bow (R., Ohio) objected on parliamentary grounds to the amendment creating the new officer. Thus, the bill was consigned to the next session of Congress, leaving FBO for the time being without any funds to build or plan.

Last month, the Pennsylvania Avenue Committee, formed to aid in redeveloping Washington's main thoroughfare, also found itself at least temporarily bereft of funds. Though the House had earmarked \$110,000 in the Supplemental Appropriations Bill for staff, design study expenses, etc., the Senate Appropriations Committee recommended that the Pennsylvania Avenue group finance its work through the usual National Capital Planning Commission appropriations. Result: no work possible until next January.

MORTGAGE BANKERS SEE GOOD YEAR AHEAD

The outlook for mortgage interest rates, availability of funds, and the building market as a whole were scrutinized last month by some 3,000 members of the Mortgage Bankers Association at their annual convention in Chicago.

To MBA President Carton S. Stallard, "1962 has been a good year for the mortgage business." There has been, he said, an improvement in the availability of funds, which was a factor in the

12 per cent increase in the number of home mortgages recorded, and the 14 per cent increase in housing starts. Stallard predicted that "the influences making for an ample supply of mortgage funds . . . outweigh those that suggest a more stringent condition." Stallard foresaw that the general mortgage market situation would probably not change much. This is based on his assumption that corporate demand for money



1963 MBA officers: Green, Thompson (Pres.), Winston, and Cameron

PHOTO CHICAGO

continued on page 11

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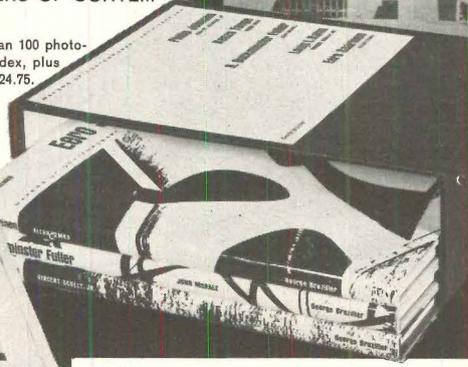
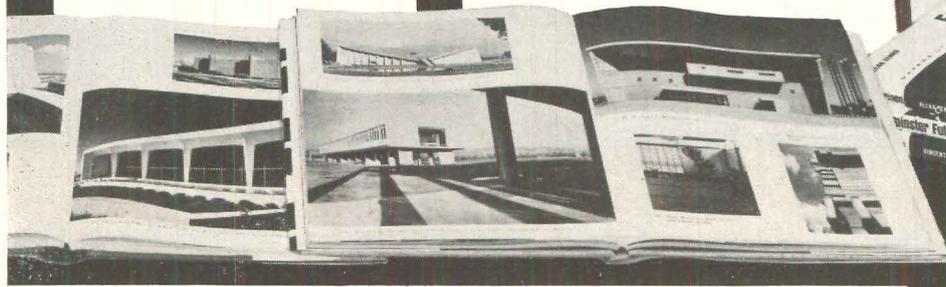
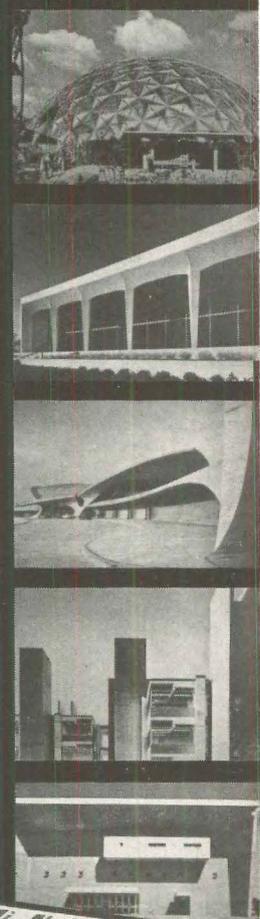
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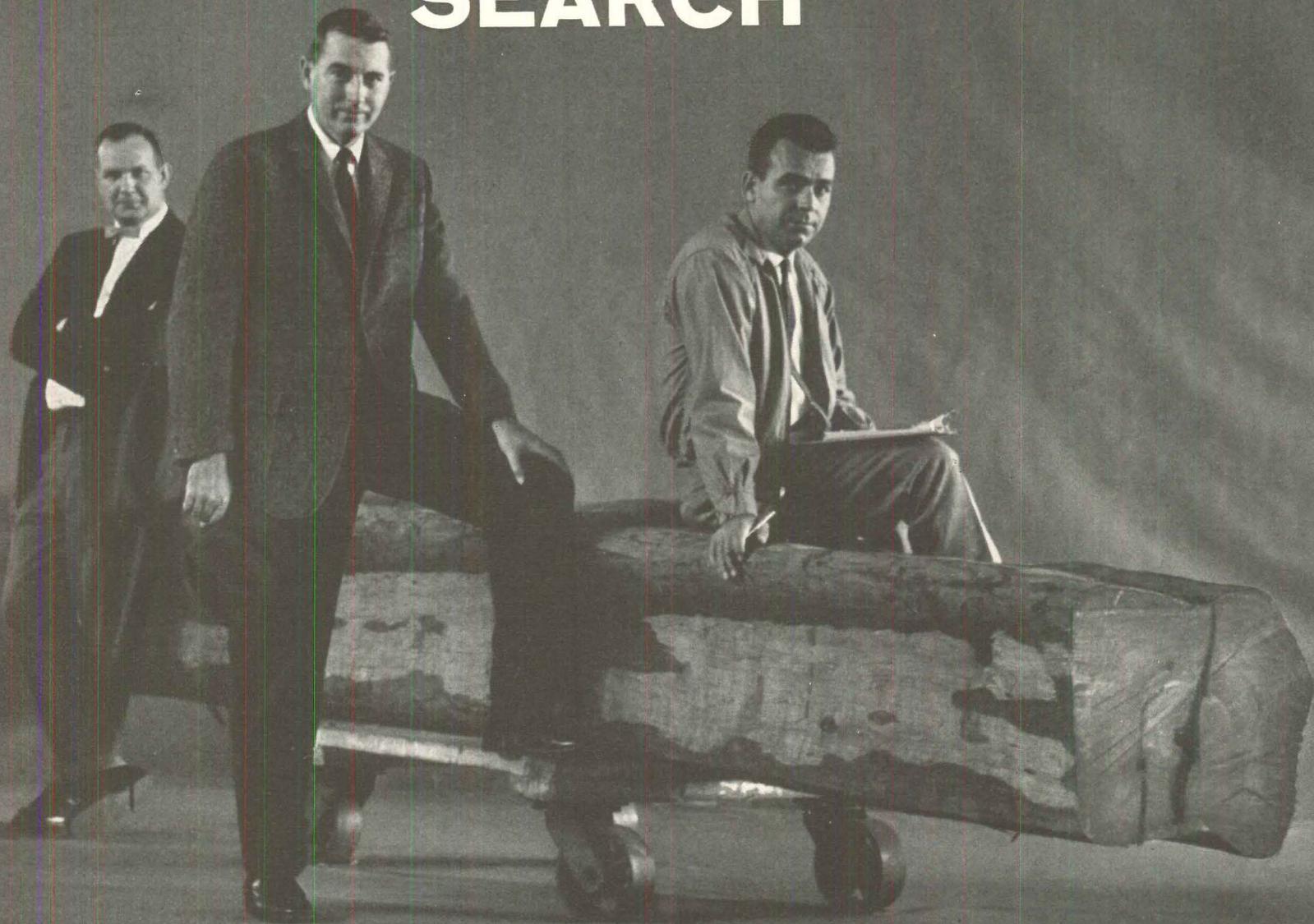
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Wormy Chestnut	42-127	3,244 ft.	14'2"
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Figured English White Harewood	53-20	8,902 ft.	10'6"
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Quartered American Walnut	8-9523	3,209 ft.	12'10", 14'8"
Jeweltree	33-39	8,372 ft.	15'4"
French Walnut	61-74	19,138 ft.	8'2", 8'4"
Amazoue	79-1	3,699 ft.	10'4", 11'2"
Yewtree	49-67	7,261 ft.	9'3"

continued from page 8

will be no heavier than it has been this year, and that the nation's money managers would not be likely to tighten money in 1963. The prospect for 1963, according to him, is "as good a mortgage lending year as in 1962," when mortgage recordings reached a record level.

Walter W. Heller, chairman of the Council of Economic Advisers, also depicted a generally expansionist outlook for the economy as a whole. His forecast, however, included the probable effects of the temporary tax cut recommended by President Kennedy for next year.

FHA Commissioner Neal Hardy, speaking at a special session on federal housing programs, noted that because the volume of mortgages written on existing homes has lately exceeded that for new homes, his agency is setting up a special procedure for dealing with existing home mortgage insurance. Hardy also played down the recent rise in foreclosure rates, assuring his audience that it only represents a situation where supply of housing has finally caught up with demand.

Of the future trends discussed, URA Commissioner William Slayton said that "private investors are now finding mortgages on urban renewal projects desirable additions to their portfolios." Assistant Commissioner for Multifamily Housing Operations C.

Franklin Daniels of the FHA predicted that the most important FHA program of the next decade would be that of condominium insurance.

One area of growing concern for financing, however, is downtown retail stores. Basing his remarks on the recent changes in most downtown areas, one banker said, "You can't assume that because a tenant has been there for 20 years, that he will renew his lease." Another warning was sounded that new apartment construction may have reached its saturation point. The value of these buildings, according to Insurance man Edwin C. Rose, "is based on use—not on replacement value or cost. Rose also warned that office buildings may be in oversupply. Another MBA member, Ray W. Wilson, stated that discount stores and motels will have to be judged with increasing discrimination in the future.

MBA officers for 1963 were elected. They are: Dale M. Thompson of Kansas City, President; Carey Winston of Washington, D.C., Vice President; C. C. Cameron of Raleigh, 2nd Vice President; and Howard E. Green of Chicago as Treasurer. The Distinguished Service Award was presented to Hirschel Greer of Nashville, for his outstanding contribution to the mortgage industry while chairman of MBA's FHA committee.

PLACE VILLE MARIE OPENS—AND MONTREAL HAS A NEW SKY LINE

For New York Realtor William Zeckendorf the formal opening of Place Ville Marie in Montreal had special meaning. The \$80 million development on a choice 7-acre site in mid-city had taxed even Zeckendorf's resources of money and perseverance—at least three times rumors spread that the project would be abandoned. Its completion has given Montreal a new sky line (Ville Marie prompted construction of three other major buildings nearby), and a new hold on the title of Canada's commercial capital. The complex (to be treated more fully in a future issue of FORUM) consists of a 42-story cruciform tower, a second, smaller office building, a great paved plaza, a 25,000-square-foot shopping promenade, and two levels of parking. Architects: I. M. Pei & Associates; Harry N. Cobb, partner in charge.



NEW YORK'S FAIR: GAS IN—RUSSIA OUT?

Out at Flushing Meadows, site of the New York World's Fair, things last month were much as they usually are at fairs in the making—chaotic. Some samples:

The Soviets announced that they were canceling their proposed \$20 million pavilion, causing Fair President Robert Moses no end of grief. No one was quite sure what was behind the startling decision. Some Washington sources speculated that Russia simply did not want to sink all that money into a temporary exhibit. Others maintained that the U.S. State Department was responsible: it was said to have insisted upon receiving reciprocal rights to stage a comparable exhibit in Russia in the future. State denied that reciprocity was a condition of Soviet participation.

Moses nonetheless placed his faith in the World's Fair Corporation's contract with the All-Union Chamber of Commerce in Moscow to bring back the Reds. After bravely announcing that "We are confident . . . there will be a Soviet Pavilion in 1964-65," Moses cabled the Russians urging "that you proceed with sending your architects and engineers to the Fair as you previously agreed." From Moscow came nary a "Nyet."

New York State, however, unveiled ambitious plans for a Philip Johnson-designed Pavilion to consist of—among other, rather unusual effects—a huge oval "Tent of Tomorrow," a theater, and three tall observation towers. Two of these are considerably higher than the 80-foot limit recommended by the Fair Corporation, but Governor Rockefeller's wish was the Fair's command and thousands of visitors will be able to gaze over the entire metropolitan area. The "Tent" (rendering above) boasts the world's largest suspension roof—made of translucent, multihued plastic—as well as what is probably the world's largest map of New York State on its floor.

Meanwhile, on only a small segment of state land, New York highway engineers watched their



Johnson's pavilion

fantastic ribbons of steel and concrete swirl nearer to the Fair's site, temporarily creating some of the most sensational traffic mix-ups in the city's history.

A few of the minor actors in the show also were making themselves heard. The Pavilion of American Interiors, a \$2.3 million exhibit, announced that its builders had broken ground. And as if to sum up the general situation at Flushing Meadows, the Gas Incorporated Exhibit changed its name to "The Festival of Gas."

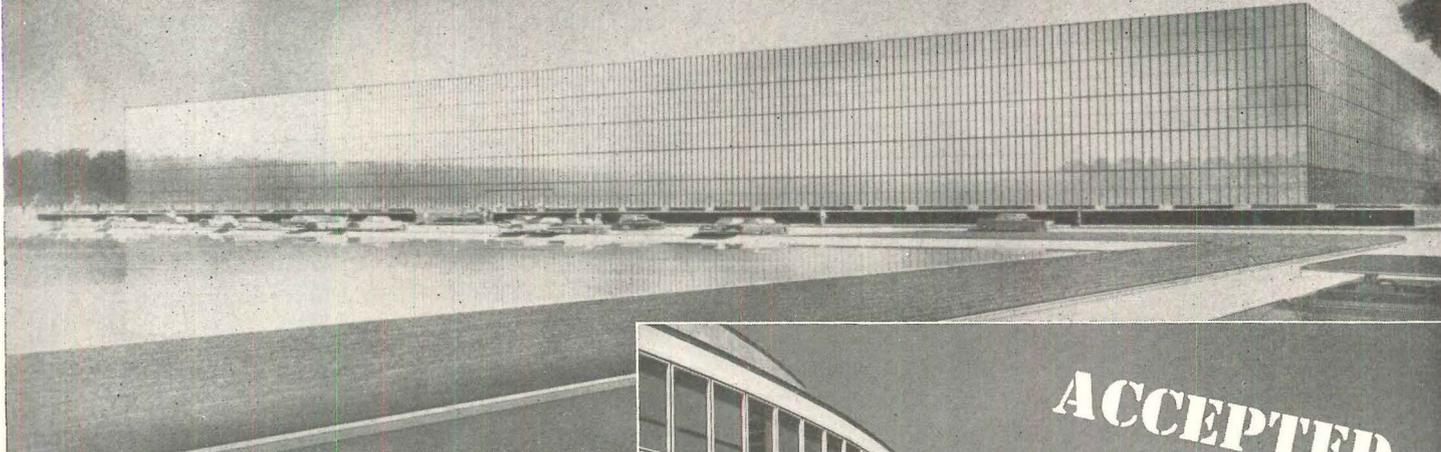
FDR MEMORIAL NEWS

In late September, the House of Representatives agreed to devote two hours of debate to the proposed FDR Memorial. Those two hours took place on October 2. Congressmen heard testimony by Frank Thompson (D., N.J.) and Katherine St. George (R., N.Y.) for the design and James Roosevelt (D., Calif.) speak hesitantly against it. Rep. Eugene J. Keogh (D., N.Y.) summed it all up this way: "There are people in this chamber who may conscientiously want the best design but will never come to a definite conclusion on what that great design should be."

The outcome, predictably, was a rejection, and a bill to ask the FDR Memorial Commission to come up with a less controversial design, which must gain the approval of the Fine Arts Commission. The bill, however, has still to pass the Senate.

continued on page 13

ACCEPTED



Bell Telephone Laboratories, Holmdel, New Jersey. Supervision by Western Electric Company, Inc. Architects: Eero Saarinen & Associates, Birmingham, Michigan.

American Cyanamid Company Executive and Administrative Center, Wayne Township, New Jersey. Architect: Vincent G. Kling, FAIA, Philadelphia, Pa.



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People in the News

QUOTE . . . UNQUOTE

"The way they build and tear down buildings in New York City, we've decided it's not too early to start a SAVE LINCOLN CENTER Committee."—*Columnist Art Buchwald.*

"The government should get out of all housing construction except low-rent subsidized housing and stop trying to take over from free enterprise."—*Apartment Builder Samuel J. Lefrak.*

"It's the curve that counts."—*Ford Motor Co. Director of Styling Eugene Bordinat, Jr.*

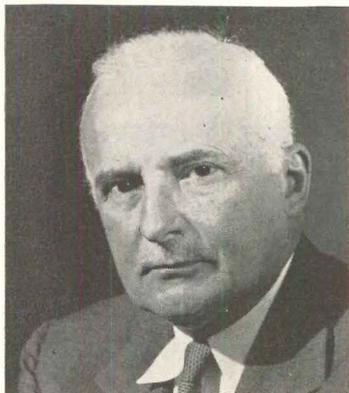
"No longer will milady have to cling to hubby's arm as she wends her way over a brick terrace to enjoy concerts in the Museum Peristyle. . . . With the coming of high-heeled shoes of the 'spike' variety, concert-going ladies have had a wobbly walk across the Museum's brick terraces. . . . To reduce distaff discomfort, as well as to simplify weed control. . . . The Toledo Museum [removed or replaced] some 60,000 of the 90,970 [paving] bricks."—*Bulletin from the Toledo Museum of Art in Toledo, Ohio.*

"By the year 2012 . . . New York City will be the core of a great tristate city with a population of 25 to 50 millions."—*New York Mayor Robert F. Wagner.*

"At first thought, it would appear that any mathematical genius could find his way through Washington, D.C., without much trouble. Theoretically this is true, but a good street map helps."—*Advice from KLM Royal Dutch Airlines.*

"It is all too facile a solution to imagine that we can muddle through the automobile era with a few well-shaped civic and shopping centers, or what have you: pedestrian islands surrounded by parking lots and highway intersections. It is more complicated than that and on a larger scale."—*Architect Serge Chermayeff.*

KATHERINE YOUNG



LOUIS SKIDMORE DIES

Architect LOUIS SKIDMORE, FAIA, died in late September in Winter Haven, Fla., after long ill health which forced his retirement from practice in 1955. A cofounder of the concept of "group design," he started his architectural work as director of design for the Chicago World's Fair 1933-34 after postgraduate work at MIT and study in Europe. In 1936, Skidmore joined forces with his brother-in-law, NATHANIEL OWINGS, and soon after left Chicago to set up the New York Office of S & O. By 1939, both partners agreed that the firm needed specialists in a variety of fields, and the firm grew to include Architect JOHN O. MERRILL. Under the impetus of some World War II projects (among which was a new town for 75,000 people at Oak Ridge, Tenn.), SOM blossomed. The postwar period saw the beginning of the elegance and perfection for which SOM is now known.

In these postwar years, Skidmore and his partners began to attract some of the best young designers in the U.S., and managed to build up one of the strongest architectural groups in the world. To Louis Skidmore himself, the highest honor came after he had retired from active practice: In 1957, he was awarded the AIA's Gold Medal for creating an organization in which are united "the manifold skills, imagination, and judgment, fitted to serve with marked distinction a wider and more diverse clientele than had been thought possible."

YAMASAKI IN MANHATTAN

Last month the Port of New York Authority announced it had selected two architectural firms to

design a \$270 million World Trade Center on Manhattan's lower West Side: MINORU YAMASAKI & ASSOCIATES, with EMERY ROTH & SONS as associated architects. It was the second time that the center had been planned. In 1961, a project for the lower East Side of the island was drawn up by Architect RICHARD M. ADLER under the guidance of a Board of Architects (composed of GORDON BUNSHAFT, WALLACE K. HARRISON, and EDWARD DURELL STONE). This first design included a 72-story World Trade Mart built over a five-level enclosed concourse and plaza (FORUM, May '61). Yamasaki has no definite plans yet for the Center. Said he: "The basic problem . . . is to find a beautiful solution of form and



Minoru Yamasaki

silhouette which fits well into lower Manhattan and gives the World Trade Center the importance it deserves." He will reportedly devote a year to the design. Some basic facts he will have to consider: the Center will be located on a 15-block site; and its purpose will be to bring together all the specialized activities and information needed for the operation of the Port of New York.

ARCHITECT'S LICENSE RESTORED

When Architect CHARLES H. BURCHARD moved to Cincinnati in 1953 his troubles began. Before that, he had taught at Harvard's School of Design, worked with MARCEL BREUER, and practiced at Cambridge, Mass. Then he went to Ohio to join the architectural partnership of A. M. Kinney Associates which was closely related to the engineering corporation, A. M. Kinney, Inc. His first problem was to get a license to practice in the state. That took

two years and lengthy hearings. Then, in May 1960, a long-standing feud between Ohio architects and engineers erupted. The state's Board of Examiners of Architects began hearings on its own charges that Burchard, "by fraud and deceit," allowed an engineering corporation (A. M. Kinney, Inc.) to practice architecture illegally under the guise of a "fictitious, nonexistent" complementary architectural partnership (A. M. Kinney Associates). The basis for the charges is an Ohio law that prohibits practice of architecture by a corporation. Despite testimony in Burchard's favor by a member of the State Office Building Architect Selection Commission, the Board of Examiners, in November 1960, ordered that Burchard's license be revoked but the order was suspended pending trial on the board's right to take this action. It was, however, an unprecedented move which sharply exposed the legal ambiguity of the statutes governing the practice of architecture and engineering in Ohio.

The case then went to the courts, and a few weeks ago, the Common Pleas Court reversed



Charles Burchard

the decision. Said Judge Bell: "the appellant was clearly not awarded [in 1960] the impartial trial to which he was entitled." He also noted that "no court or administrative agency may undertake to act as accuser, prosecutor, and judge in the same case." Bell added that he was unable to find any law or ruling to support the state board's action.

NEW THINKER AT URA

"The problem is to make metropolitan areas not only possible to

continued on page 15

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continued from page 13

live in but worth living in," commented GEORGE M. BELKNAP last month. He was speaking of his new job as Advisor on Metropolitan and Intergovernmental Problems for the Urban Renewal Administration. A former professor of political science and government, Belknap will be looking for ways to get cooperation between local, and sometimes competing, governments on city problems. His field will cover not only urban area programs administered by URA, but also such intergovernmental projects as mass transportation, open-space planning, and city-wide approaches to urban renewal. In his new post Belknap will not develop a staff; rather he will find and assess new ideas from various areas, and channel them back to Washington headquarters. One idea that he has already rejected is that of widespread acceptance of the metro form of government. It is, he thinks, unacceptable to the maze of political jurisdictions surrounding cities. But he does believe that new solutions have to be found before the cities strangle themselves with cars and people. One possible approach is the Metropolitan Washington (D.C.) Council of Governments, composed of public officials from all of the metropolitan area. This, says Belknap, is "an exciting development."

MORE LIGHT THAN HEAT

Measured by the number of Americans who play musical instruments, the number of theaters and cultural centers, or the number of drama groups, the nation is undergoing a cultural explosion. Not surprisingly, then, several members of Congress have turned their attention to the arts. Among recent proposals from Capitol Hill:

Senator HARRISON A. WILLIAMS (D., N.J.) introduced legislation to establish a National Council on Architecture and Urban Design. As planned, the bill will both encourage a positive architectural and design responsibility on the part of the federal government and promote greater understanding among other officials and



DON UHRBROCK

Harrison Williams

private citizens. The council would be composed of 25 members.

Senator HUBERT H. HUMPHREY (D., Minn.) has called for the creation of an eight-man, bipartisan Joint Congressional Committee. Its task: to recognize "significant contributions to the arts and humanities" through the annual award of a Congressional Medal of Merit.

In the House, JOHN V. LINDSAY (R., N.Y.) urged that a previously recommended Federal Advisory Council on the Arts be established. The bill to form this 21-man body has languished in House committee since it passed the Senate in 1956. A council, said Lindsay, would raise the status of the artist, and give the Administration a source to turn to for advice.

Of all these proposals, none have been acted upon. But, said one Washington observer "that is just a matter of time."

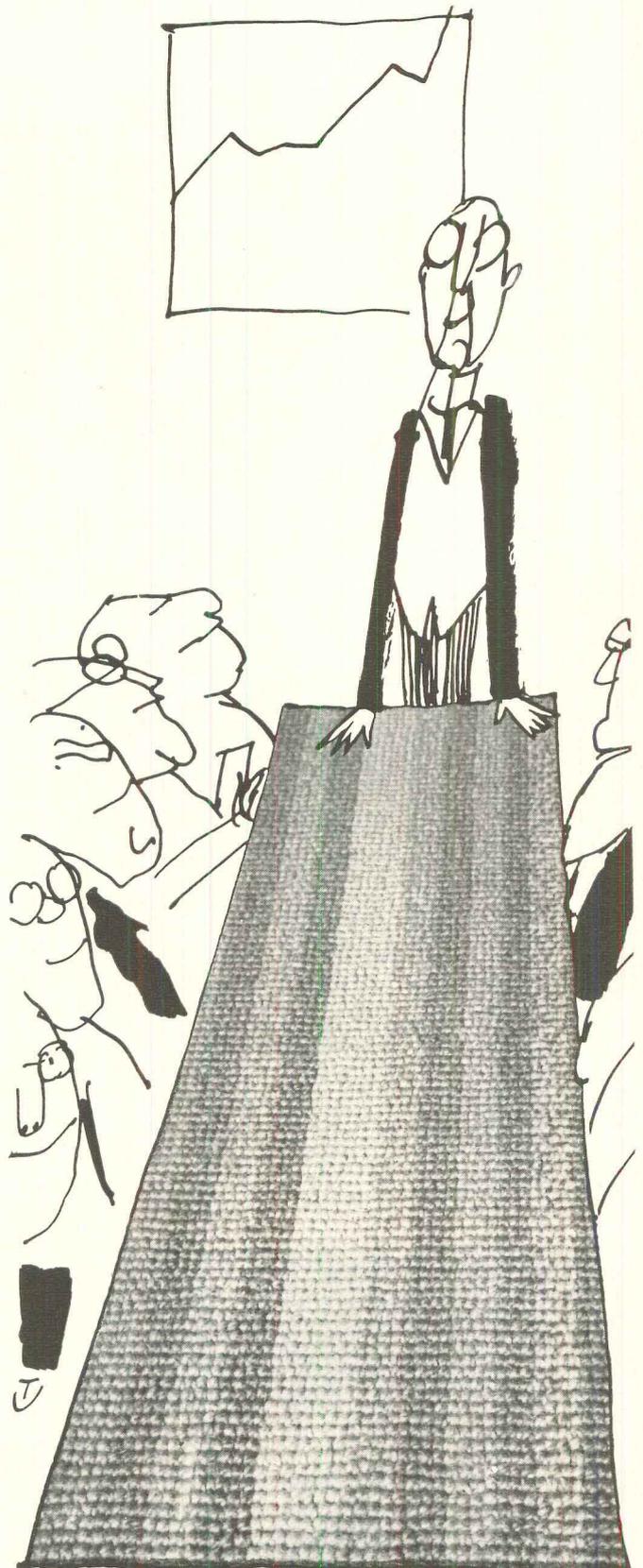


John Ducey

DUCEY HEADS NEW INSTITUTE

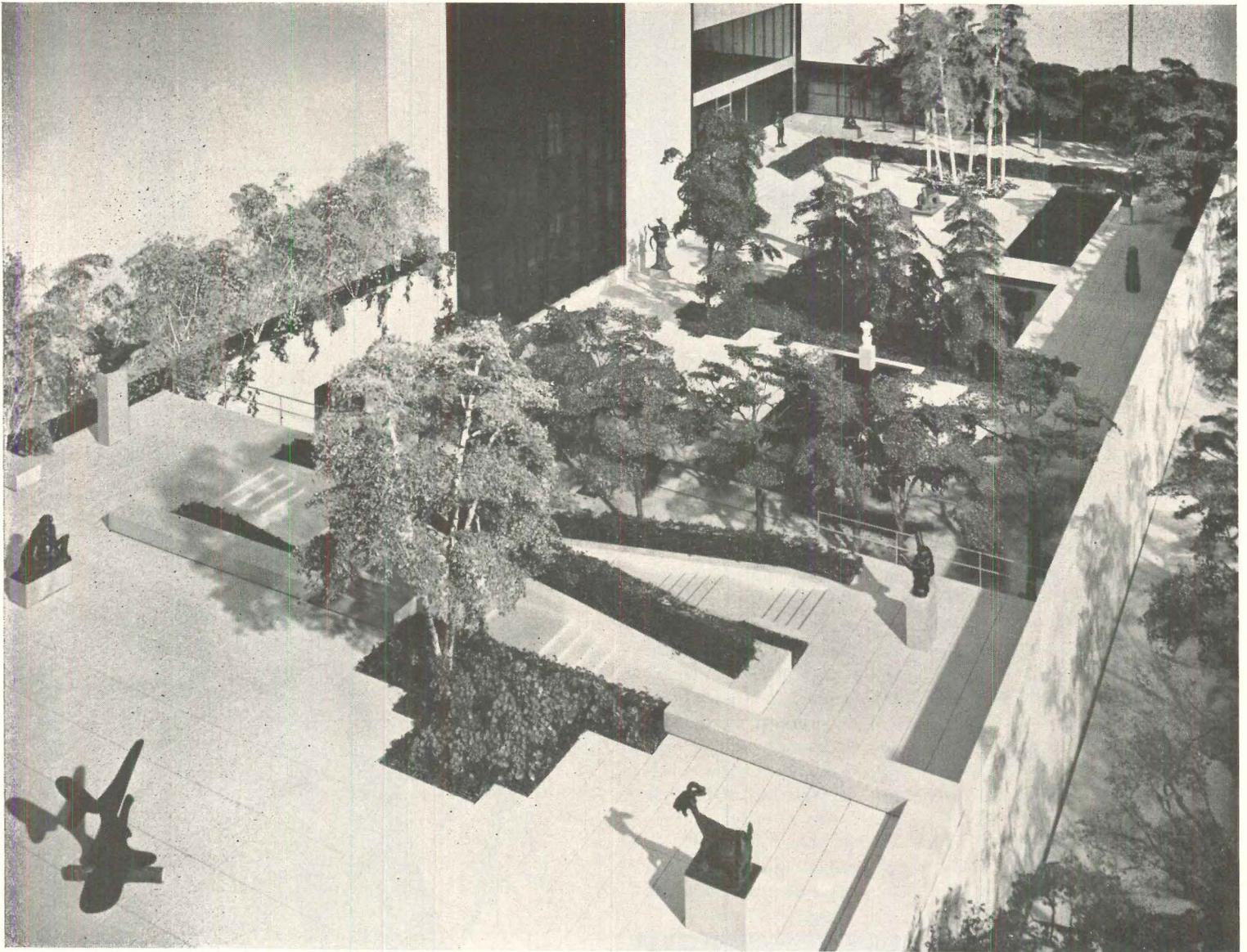
Planner JOHN M. DUCEY, a former director of the National Association of Housing Officials, has been appointed president of the Institute of Urban Life. A new nonprofit organization, the Institute will specialize in nationwide research studies of social and political problems related to urban areas. Ducey has directed previous studies on urban subjects.

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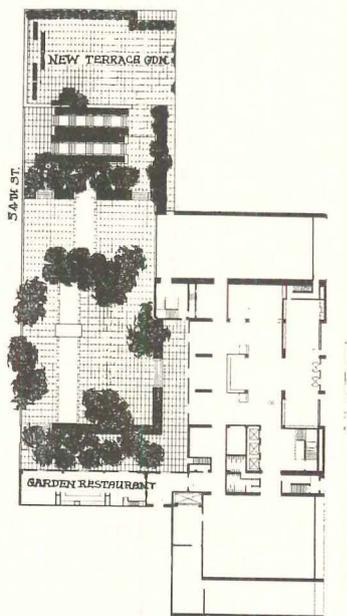


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Building in the News



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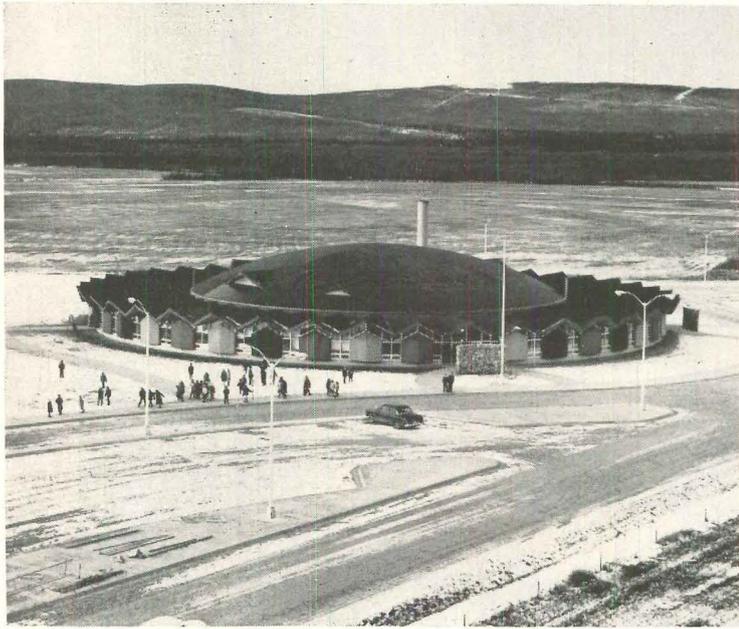


MODERN MUSEUM BUILDS. The new plans by Philip Johnson Associates for expanding Manhattan's Museum of Modern Art have one great virtue over the architect's earlier proposals: instead of encroaching on the existing sculpture garden with an eight-story tower, they will actually enlarge it with a new terrace level to the east (photos, above and left). The terrace, raised 16 feet above the present garden and connected to it by broad ramps, is simply the roof of a new two-story exhibit building, one floor of which will be underground.

The \$7 million project also calls for remodeling several floors of the existing Museum, providing a new central entrance, and flanking the main structure with two new wings on 53rd Street.

ALASKAN SCHOOL. The L. F. Joy Elementary School in Fairbanks looks something like a giant igloo in a ruffled collar. Its structure consists of two concentric rings of steel columns, with wood stressed-skin, folded plates spanning between them to roof 14 classrooms. The dome, sheltering a large multipurpose room, is framed by

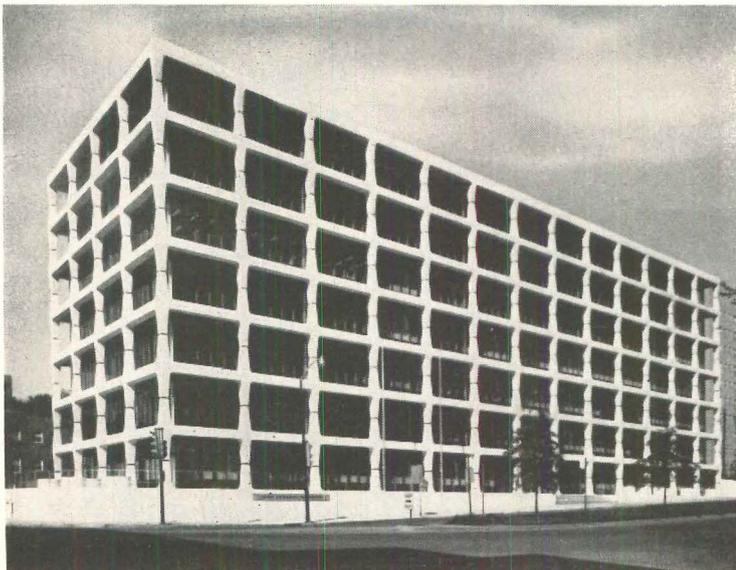
glued laminated ribs, with thrusts taken in a steel tension ring connecting the inner columns. Construction cost was \$1.2 million (\$29.40 per square foot, \$2,717 per pupil). Architects and engineers: Alaska Architectural and Engineering Co. Contractors: Burgess Construction Co., Reed & Martin, Inc.



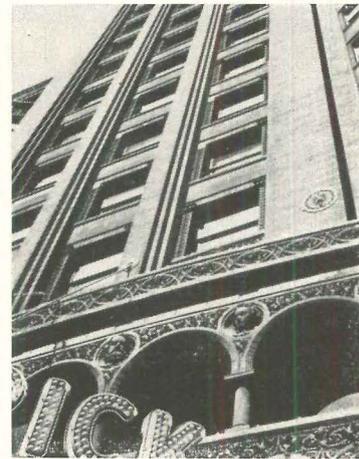
J. Y. STUDIO

INSURANCE IN KANSAS CITY. For those who can't get to Brussels, the seven-story office building for the John Hancock Mutual Life Insurance Co., by Architects Skidmore, Owings & Merrill, offers a look at the structural system used in that firm's noted Banque Lambert. Both buildings have a free-standing exterior framework of

precast concrete crosses. Here the crosses are about the same height (12 feet) but almost four times the length (18 feet) of those at Banque Lambert. A glass and aluminum curtain wall is recessed 4½ feet behind them. Associate architects: Tanner, Linscott, Inc. General contractor: W. E. Brown Associates, Inc.



RICHARD NICKEL



GARRICK'S SUCCESSOR. Designed to "pay graceful tribute to Louis Sullivan," the Civic Center Parking Garage now stands on the site of the architect's grand old Garrick Theater in Chicago. The façade is composed of six precast concrete grilles 50 feet high, described as "a handsome contemporary version" of Sullivan's ornamentation. A single terra cotta segment of the original is sadly imprisoned in one of these large unlovely teeth. Architects: Rosen & Horowitz. Contractor: Missner Construction Co.

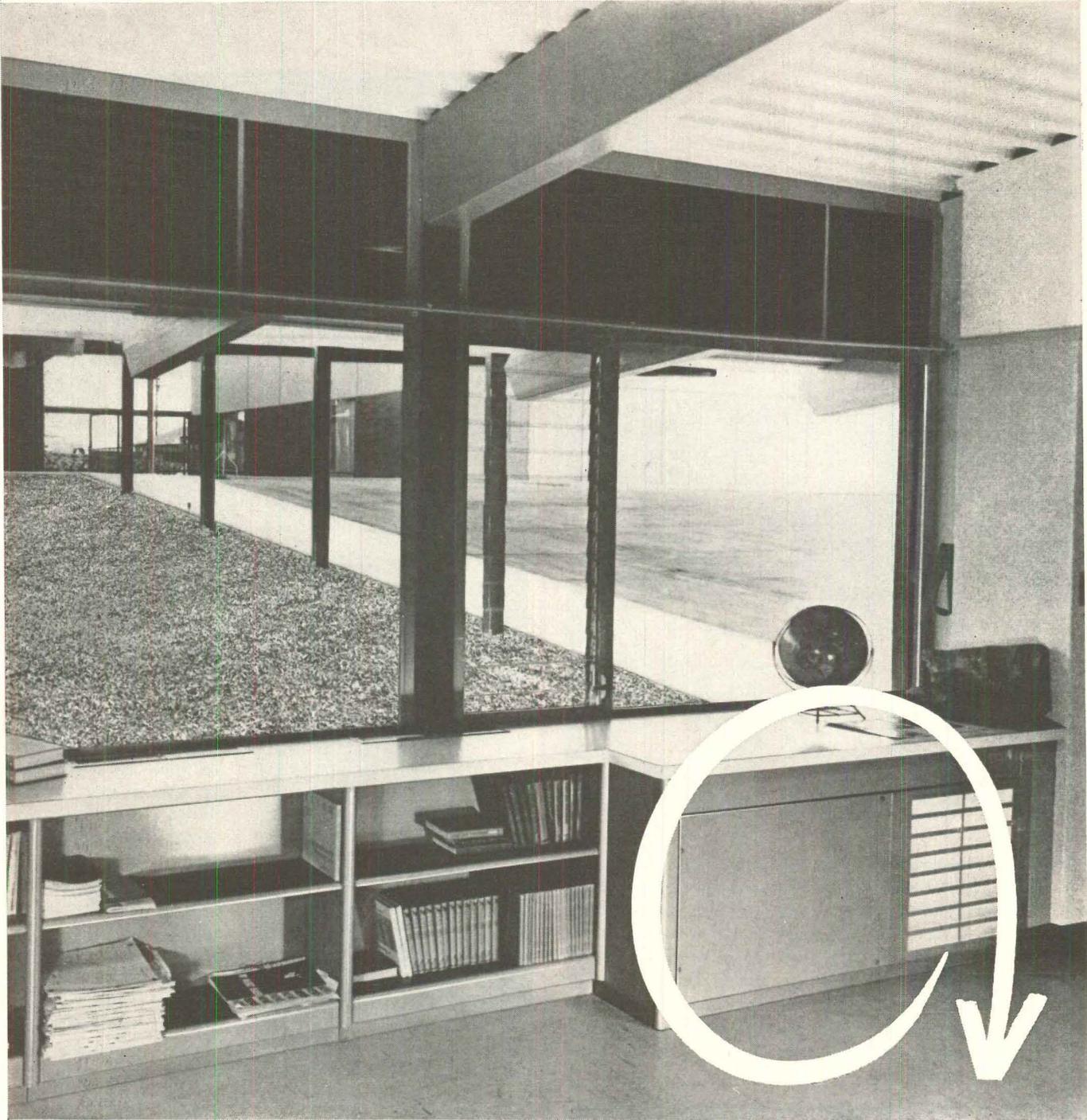


GEORGE GERSIN

CONNECTICUT STORE. A sweeping awning and big globe lamps make the Peers Store a gay addition to suburban Hamden's new shopping center. The awning is composed of hardboard sandwich panels 12 by 20 feet, painted in two

alternating tones of blue, which slant down over the display windows to form a pedestrian colonnade. Cost of the panels: under \$2 per square foot. Designer: Robert P. Gersin Associates. Contractor: Fusco-Amatruda Co. **END**

Architects: Cox · Liske Associates. Mechanical Engineer: Lester A. O'Meara, Sacramento, Calif.



Gas heats classroom for \$40 a year

Gas-fired Norman heating and ventilating systems save money on installation and operation. Case in point: the Warren A. Allison School, Rio Linda Union School District, North Highlands, California. Installation costs were less than one dollar per square foot. Classrooms cost a rockbottom \$40 a year to heat. Other pluses: Teachers have complete control of classroom heat and ventilation with this independent, decentralized system. And Norman systems give all the extras of modern gas heat. Fast, clean, safe, dependable! How can you save with Norman gas-fired systems? Call your local Gas Company, or write Norman, Division of John J. Nesbitt, Inc., 1149 Chesapeake Ave., Columbus 12, Ohio. American Gas Association. **For heating... Gas is good business** 

U.S. ARCHITECTURE AT THE FAIR

Forum: I have read your astonishing editorial, "U.S. Architecture and the 1964 Fair," in the September issue. It appears there are two major points that worry FORUM: First, that the selection of Charles Luckman Associates to be architects for the U.S. Pavilion was carried out in some nefarious manner, and second, that you have grave doubts about our ability to execute this commission.

With respect to the first item, I trust that the U.S. Commissioner has now informed you that the method of selection followed was the same as that employed for the selection of architects for the U.S. building at the Brussels Fair and for the U.S. Science Pavilion at the Seattle Fair.

Concerning the second point, it is amazing that FORUM should step outside its legitimate province of architectural criticism to set itself up as a judge of the capabilities of practicing professionals to handle specific projects. We do not bruise easily and are fully aware that there will be as much divergence of opinion concerning our design concept as there has been with some of the projects designed by the other architects mentioned in your editorial. Nevertheless, we are sensitive to the unwarranted assumption, which you have broadcast to the architectural profession, that because of the success and "bigness" of our firm, it is impossible that there should be "greatness." This is a point of view to which we are vigorously opposed, and in any event it is a judgment which must be left to the future.

CHARLES LUCKMAN
Architect

New York City

■ FORUM and Mr. Luckman evidently disagree about the exact borders of the "legitimate provinces of architectural criticism," and we should perhaps leave it at that. If and when we receive a communication from the U.S. Commissioner for the Fair, we will consider it for publication in our Letters column—ED.

Forum: I must express my admiration for your editorial. It is a clear, courageous, and unequivocal statement.

EDMUND N. BACON
Executive Director
Philadelphia City Planning Commission

Forum: It is a great tribute to FORUM that it dares step outside the philistine gentility of professional ethics as practiced.

Your bold statement questioning the method of selecting an architect for the symbolically important federal structure—and castigating the design as a "rather poor joke"—represents the feelings of every member of our profession dedicated to architecture as a living force in our society.

If others support what FORUM has said, write me and I will aid in organizing a group to present the case for architectural

quality in the 1964 U.S. Government Pavilion.

New York City

PERCIVAL GOODMAN
Associate Professor
School of Architecture
Columbia University

Forum: The New York World's Fair has become a far more significant symbol of American life than its promoters ever meant it to be. FORUM deserves congratulations for stating publicly, and politely, what we have all regretted in private.

ARTHUR DREXLER
Director
Dept. of Architecture & Design
The Museum of Modern Art

Forum: Coming after the Administration's encouraging pronouncement on Pennsylvania Avenue, it was a discouraging surprise to learn who it has named as architect for the U.S. Pavilion at the fair.

I had hoped for the selection of someone who is notable for quality rather than for quantity.

Surely you speak for the profession in this. I hope others will add their voices.

FRED BASSETTI
Architect
Seattle

Forum: We couldn't concur more heartily.

Our society has already bent a lance or two with Fair Director Robert Moses in suggesting fullest use of our country's creative talents in planning the fair. We hoped the U.S. Pavilion might help overcome the fair's other shortcomings.

America's creative greatness is a powerful national resource. Our government (which is all of us) has not only the opportunity, but the duty to draw on it.

LEON GORDON MILLER
President
Industrial Designers Institute
New York City

COVENTRY AND TWA

FORUM: In recent issues, Coventry's cathedral was justly criticized; TWA received glowing praise. The cathedral is essentially insignificant. The trouble with TWA (July, '62) is that it attempts to be significant, so loudly that it is impossible to ignore.

Saareinen has said he wanted his building to "soar." The curved, tinted glass wall, however, makes a solid mass out of what started out as a group of "floating" shells. With all its forms and shapes as though they were pulled and molded out of the earth, the terminal sits low, flat, and heavy on the ground. But why should a building try to fly at all?

Concrete can only be as free as its formwork. In the patched form-board pattern on TWA's four main columns one can see how inappropriate these shapes are for this type of formwork. Sprayed concrete on lath, or molded forms, would seem more suitable.

TWA's terminal is significant only in that it has worsened the form-mad chaos of contemporary architecture.

REMMERT W. HUYGENS
Architectural Associate
Wayland, Mass.



THEN, AND NOW

Forum: I greatly enjoyed the picture-postcard article about the plush hotels of another era ("Come On Down," July '62).

I thought you might be interested in this photo I took of the Highland House on Block Island one gloomy day this past spring, as a contrast to your postcard picture of the hotel in its turn-of-the-century heyday.

ROSE T. MALLAN
New York City

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A 3-MINUTE QUIZ ABOUT TERRAZZO

(check yourself...how much do you really know about flooring?)

A wise investment, Terrazzo is inexpensive to install

TRUE FALSE

True. Modern equipment and newer work methods have greatly reduced costs of Terrazzo installations. For example, check the versatility of Terrazzo (brochure and specifications on request*)—methods of installation range from sand cushion Terrazzo and bonded to concrete Terrazzo to the more economical type monolithic Terrazzo. An ageless flooring that provides durability and minimum maintenance at a low initial cost, Terrazzo is known for the superb quality and beauty that have made it a luxury flooring throughout history.

Terrazzo is competitive with vinyl and asphalt

TRUE FALSE

True. Studies prove that initial costs amount to only 1% to 4% of total cost of floor finishes. Maintenance costs are the major factor in the actual expense of a floor. Over a period of ten years, for example, Terrazzo cuts the average costs for office building maintenance from 52.6¢ a square foot of rentable space to 32.0¢ a square foot. And in school buildings, over a period of 50 years, Terrazzo cuts the 56.5¢ cost of maintaining asphalt tile to 35.3¢. Documented studies (available upon request*) prove Terrazzo maintenance economies actually save enough to pay the entire construction costs of the floor in 10 years—sometimes in as little as 5 years.

Terrazzo increases noise in heavily trafficked interiors

TRUE FALSE

False. Naturally, good, basic acoustical practices should always be followed. With proper ceiling construction, not only the Terrazzo floors, but the total volume of clatter, voices, and office equipment will be cut to a restful level of sound. Right now, classrooms, airport ticketing buildings, lobbies, offices, even banks and libraries are floored with quiet Terrazzo. Ask to see our "Blue-chip List" of diversified fine quality installations.

Other floors are "softer" to the foot than Terrazzo

TRUE FALSE

False. The National Bureau of Standards (report BMS 14-10c) states that there is no practical or actual difference in the resiliency between Terrazzo, wood or asphalt tile when installed over a concrete slab. Terrazzo is no "harder" to the foot than any other floor. And *all* floors are hard. (Even so-called "soft" tiles are installed over concrete.) Most of the feeling of hardness from Terrazzo or any other floor is purely psychological—a Terrazzo installation is as easy on the feet as it is on the eye.

Terrazzo patterns fade out over long periods of time

TRUE FALSE

False. Neither sun nor long use can fade Terrazzo patterns. Composed of marble chips and white or gray Portland Cement with color pigment added in some cases, Terrazzo will hold its color and pattern. So permanent are the Terrazzo patterns, that they can be seen on floors that are centuries old throughout Italy where Terrazzo floors originated. To create effective vistas and exciting new effects and permanence of color, marble chips are available in several small, medium and large sizes.

Terrazzo is designed for luxury buildings only

TRUE FALSE

False. Terrazzo is beautiful. *And* luxurious. *But* the various types of Terrazzo are adaptable to any building regardless of budget. One of its primary appeals to architects is Terrazzo's extreme durability under the toughest usage. In fact, Terrazzo floors last the life of a building! This durability, coupled with Terrazzo's remarkably low maintenance cost (a neutral cleaner and water is all it needs—no waxing or buffing necessary) makes Terrazzo an extremely efficient, economical, and practical floor.

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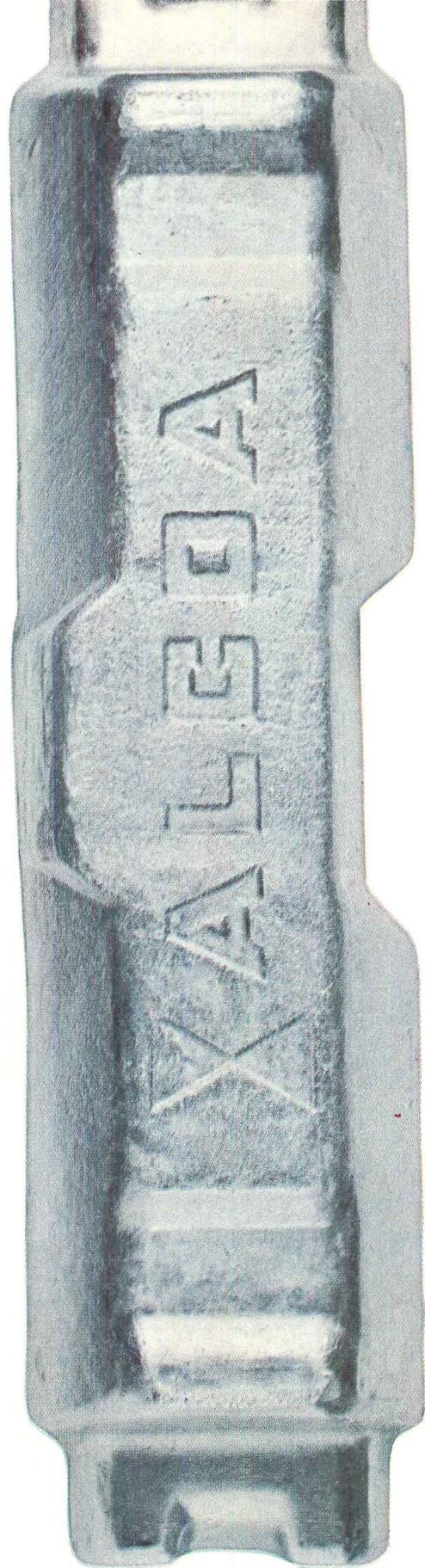
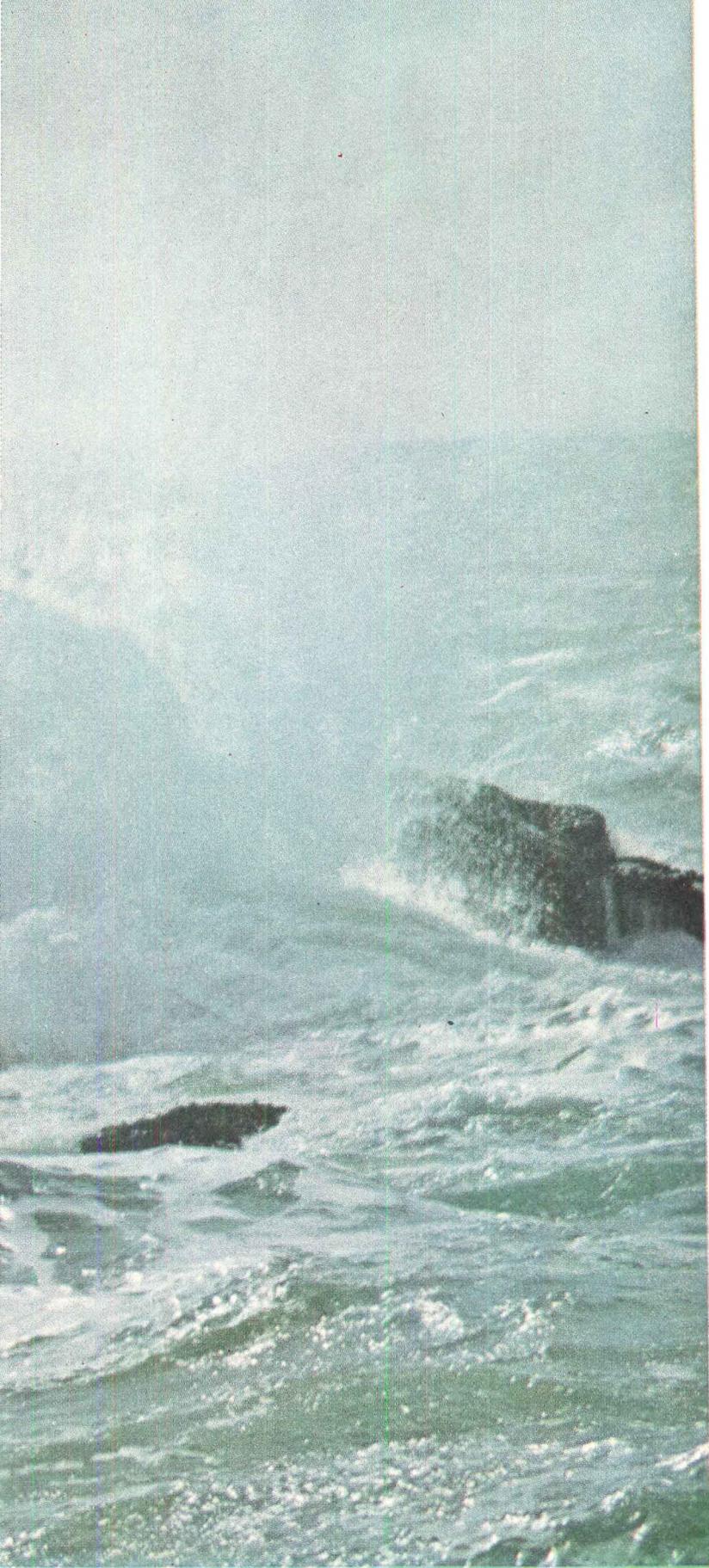
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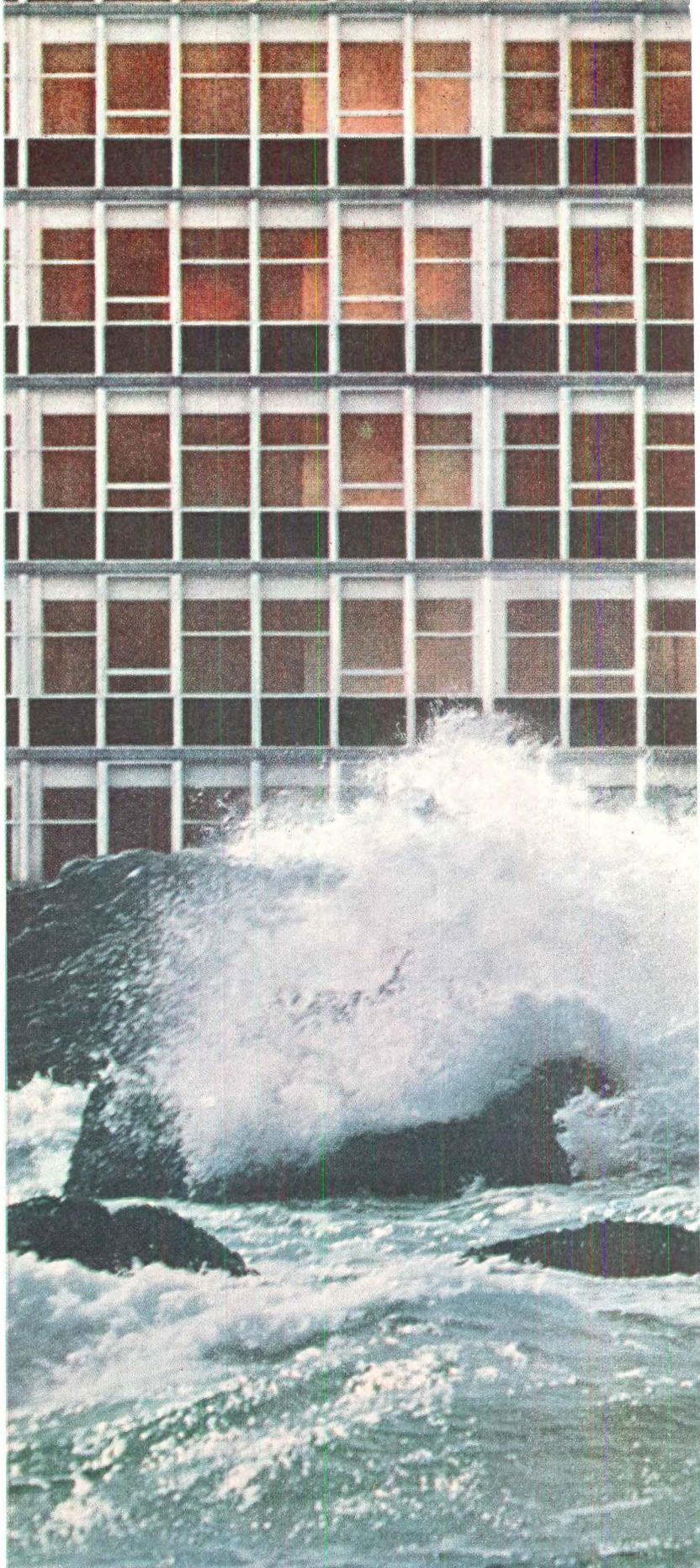
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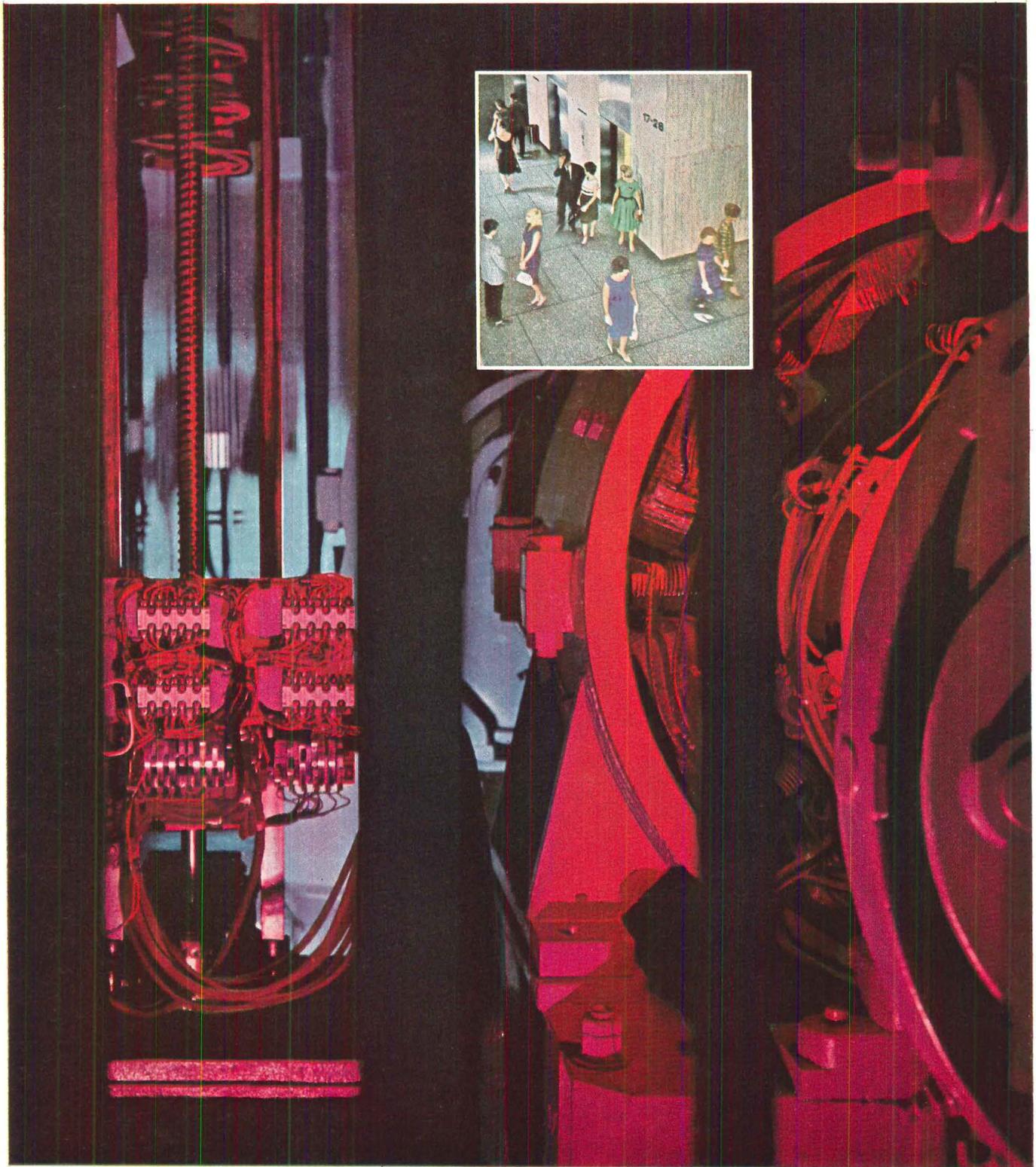
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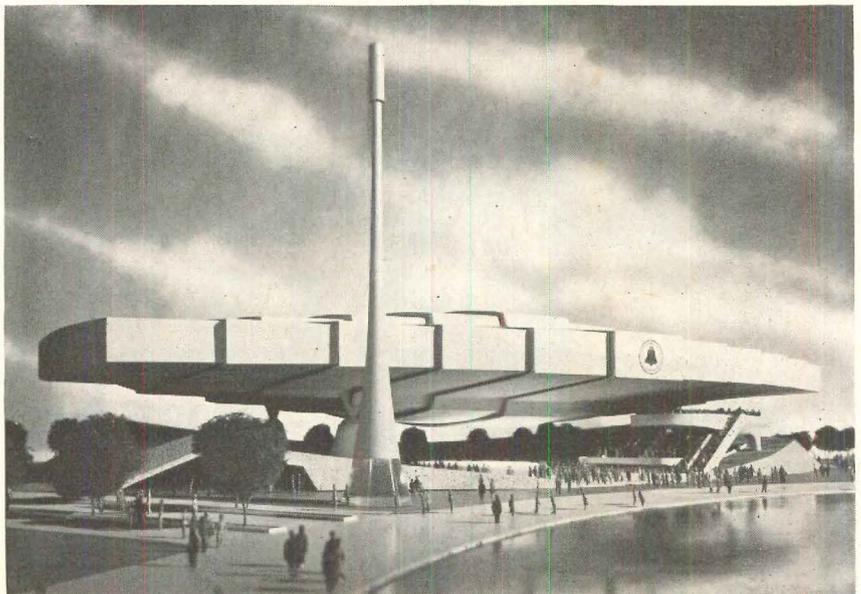
Five new World's Fair designs (below)

River-front project in St. Louis (page 53)

High rents in Cambridge and more rooms in Manhattan (page 55)



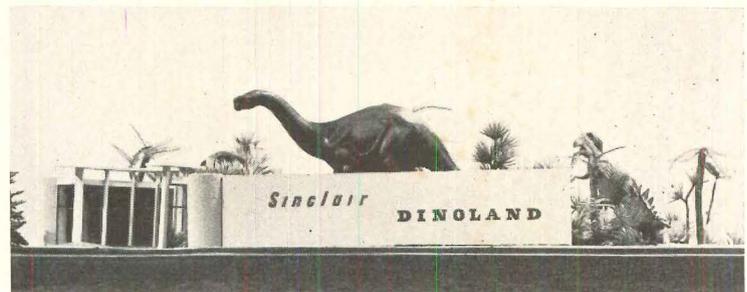
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5

1. DU PONT'S CIRCLE. Du Pont's architects at the New York World's Fair will be Voorhees, Walker, Smith, Smith & Haines. They specified a number of their client's products in the construction of their exhibit hall, which is going up now. It will be a glassy circle with a radius of 90 feet. The small bulge at the left is a round exterior elevator to ferry visitors from the first-floor exhibit hall to the promenade and theaters on the second.

2. BELL SYSTEM'S FLOAT. Four big pylons will lift Bell Tele-

phone's long, tapered exhibit hall 24 feet above a concrete saucer. Entrance stairs will lead visitors up to banks of chairs that will move through several theaters presenting the "story of communications." The narrator's voice will come through binaural speakers in the chairs. Harrison & Abramovitz designed the pavilion, with Henry Dreyfuss as a consultant. Stage Designer Jo Mielziner will produce the shows.

3. GROUP EXHIBIT'S HATS. Seven concrete pillboxes, for rent to seven corporations who can't

afford individual buildings but can spend \$3 million each to participate in the Fair, circle a raised platform in Project '64, designed by Hoberman & Wasserman. Each corporation will share the facilities inside the platform but exhibit separately in the pillboxes.

4. SINCLAIR'S DINOSAURS. Life-size (but inanimate) dinosaurs will parade over the roof and stalk through the garden of Sinclair's Dinoland by J. Gordon Carr & Associates.

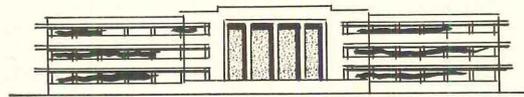
5. NCR'S SPACE FRAME. In place of the giant cash register ringing

up each day's attendance which was its exhibit at the 1939 World's Fair, the National Cash Register Co. this time will preview the computer world of tomorrow and display office automation systems. Such systems more accurately represent current company products than the old cash register, which now accounts for only one third of NCR's annual sales. Deeter & Ritchey of Pittsburgh designed the space-frame structure, which is supported by three concrete pylons. The main exhibit area will overhang the first floor.

continued on page 53



ONE STORY



MULTI-STORY

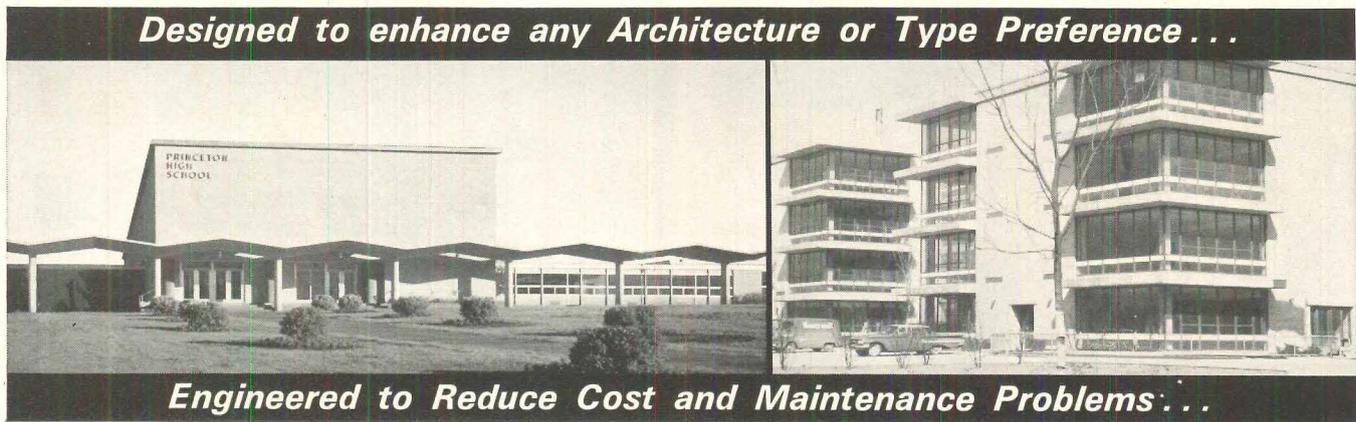
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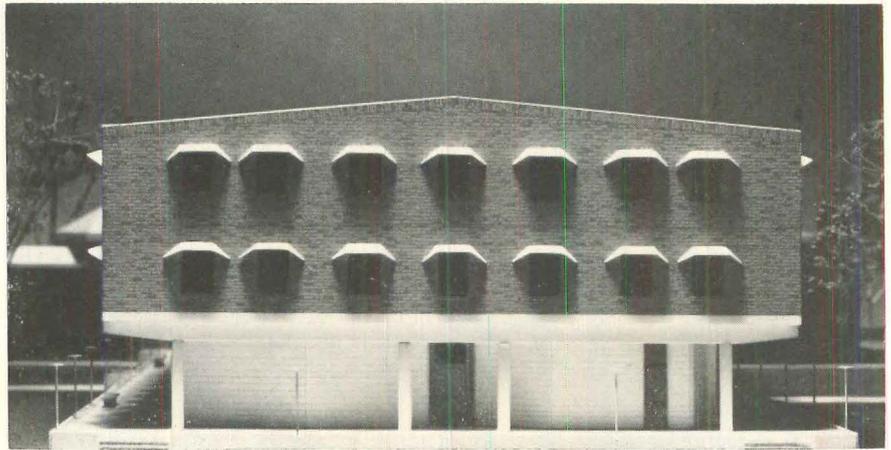
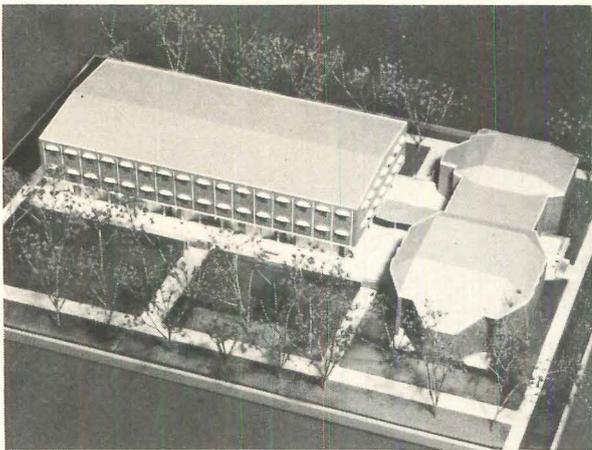
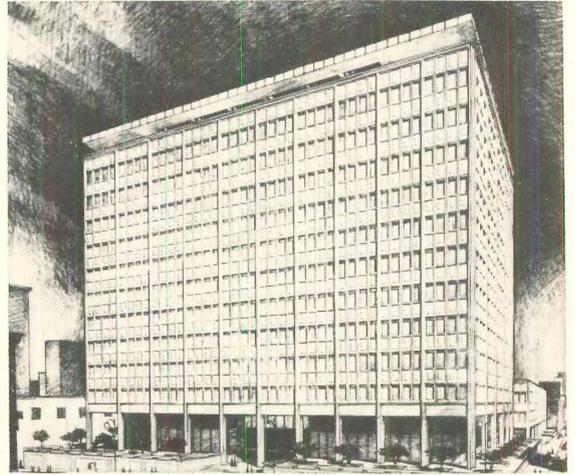
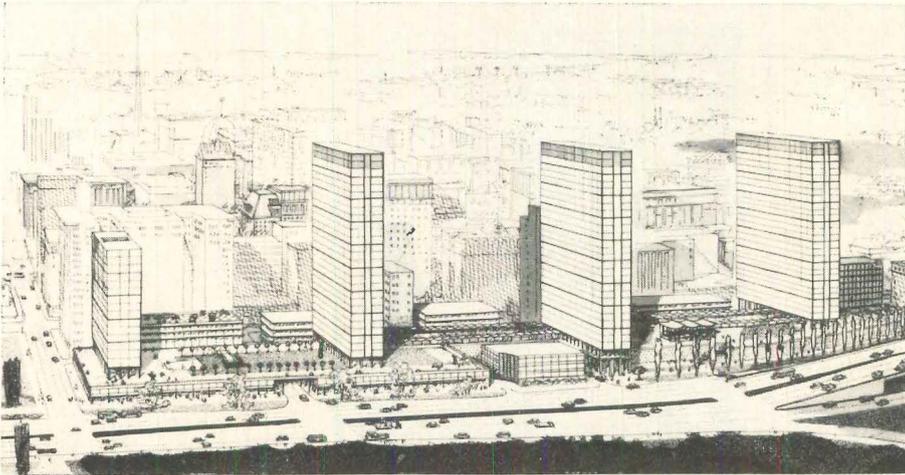
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continued from page 51



6. ST. LOUIS RIVER FRONT. By the time the Saarinen arch and the Jefferson National Expansion Memorial Park are ready for St. Louis's bicentennial in 1964, the Mansion House Center Redevelopment Corp. expects to have its nearby \$45 million complex finished, too. For Developers Lewis Kitchen and Paul Lashly, Schwarz & Van Hoefen designed three 28-story apartments of glass and aluminum, three office buildings, and a 1,700-car garage.

7. PACIFIC TELEPHONE OFFICES. The Pacific Telephone & Tele-

graph Co. starts work next month on its Bay Area headquarters, the first major project in San Francisco's South of Market Redevelopment Area. For this site, John Carl Warnecke & Associates have designed a 12-story building, to cost about \$15 million, built on a welded steel frame.

8. WASHINGTON CLASSROOMS. Two views of a classroom and office building for Western Washington State College at Bellingham show a model of the whole building (left) and the end wall (right), with precast concrete

eyebrows adding expression, as well as sun control. Attached to the main building are two auditoriums seating 200 and 400, respectively. The design is the work of Bassetti & Morse; Fred Bassetti, partner in charge.

9. BOSTON'S MEDICAL LIBRARY. Hugh Stubbins & Associates' design for the Countway Library of Medicine in Boston is formal and monumental: formal because the classical Harvard Medical School surrounds it, monumental because it is a memorial to Francis A. Countway, who was president of

Lever Brothers. The new building will include the private Boston Medical Library, as well as the Harvard medical library.

10. SEATTLE OFFICES. Starting out with four floors—three for offices, the ground floor for customer services, an appliance showroom, and an auditorium—the Washington Natural Gas Co. in Seattle anticipates a prosperous future: foundation and core were designed to take three more floors. John Graham & Co. are architects and engineers for the building, faced in exposed aggregate.

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IT'S NEW RECESSED

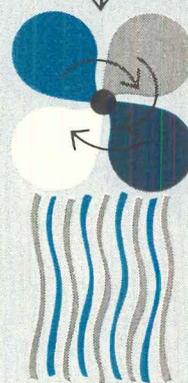


AIR COOLED

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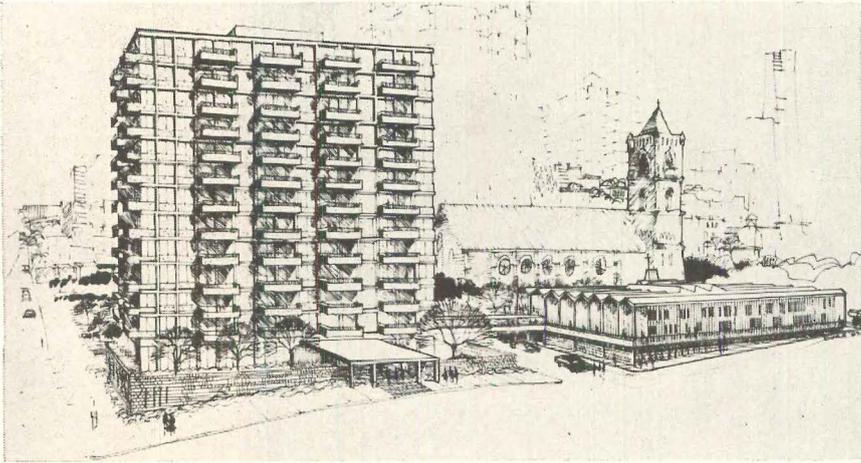


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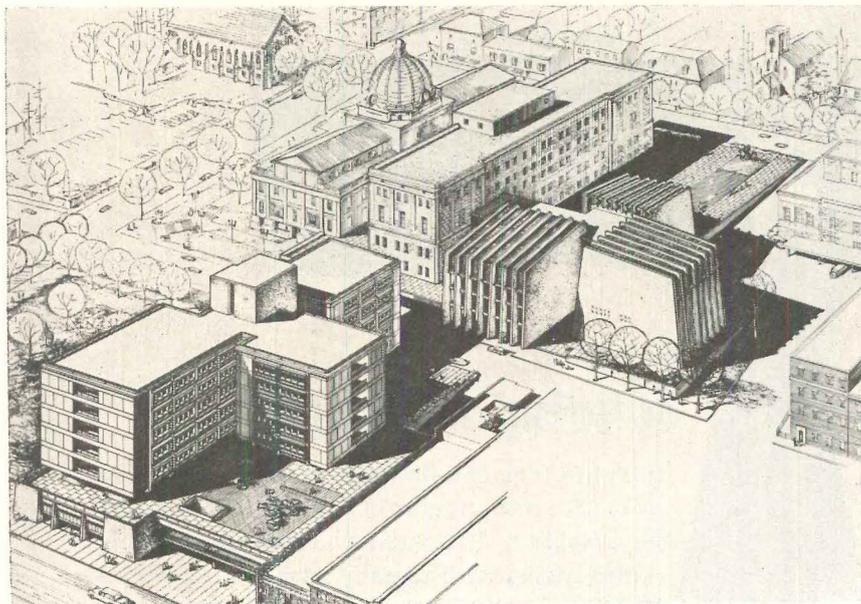
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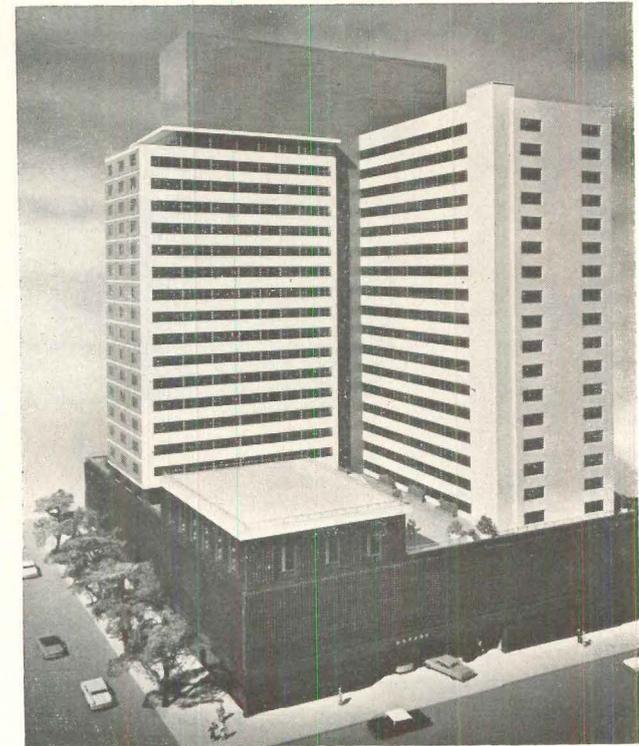
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11. WEST COAST APARTMENTS. St. Mark's Lutheran Church in San Francisco is the sponsor of Martin Luther Tower in the Western Addition. Specifically designed to provide comfortable apartments for elderly people, the tower of 12 stories will have 51 studios, 72 one-bedroom apartments, and a courtyard; a separate recreation building (right) will be next to the church. Architect: Donald Powers Smith.

12. CALIFORNIA HOTEL. Temporary headquarters for families relocating in southern California

will be the Valley Fountain Inn, an apartment-hotel in Reseda. Prospective employees of the large industries in the surrounding area could stay a few days in the hotel, then rent apartments in the adjoining building while looking for permanent homes. Charles Luckman Associates designed the round hotel and Y-shaped apartments for Cal-West Realty, Inc.

13. BOSTON APARTMENTS. The thought that "everybody wants a view these days" encouraged the sponsors of this apartment building in Cambridge to scale rents

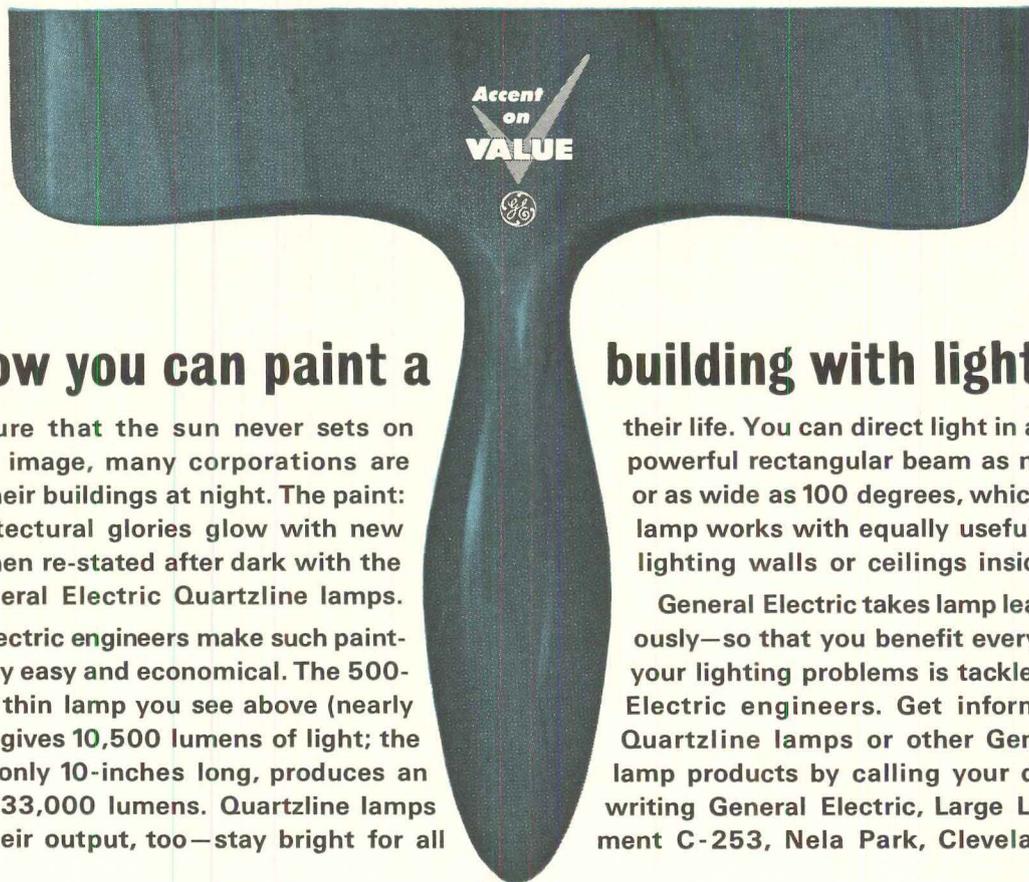
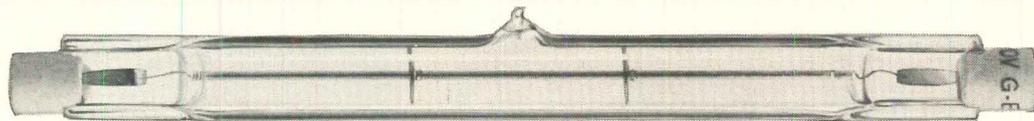
accordingly, for each apartment will have a balcony view of the Charles River and the Boston sky line. Rents start at \$280 for one-bedroom apartments and \$440 for two bedrooms. Architects: Cohen, Haft & Associates of Washington, D.C.; owners, Frederick & Thomas Dupree.

14. PENNSYLVANIA CENTER. Norristown, Pa. Architects Harkins & Alvaré have planned new courthouse and administration buildings for their city, which is also the Montgomery County seat. The three-part administration building

(foreground), where all county business will be transacted, will be assembled from large precast concrete units. The accordion shapes behind it are three new courtrooms built of concrete ribs.

15. NEW YORK HOTEL. Yet another New York City hotel will be going up shortly, this one across the street from the Americana, which opened in September. The new hotel, also to be owned by Loew's Hotels, will be 21 stories tall, with 16 bedroom and five garage floors. Architects: Kahn & Jacobs.

END



Now you can paint a

To make sure that the sun never sets on their public image, many corporations are "painting" their buildings at night. The paint: light. Architectural glories glow with new splendor when re-stated after dark with the help of General Electric Quartzline lamps.

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building with light

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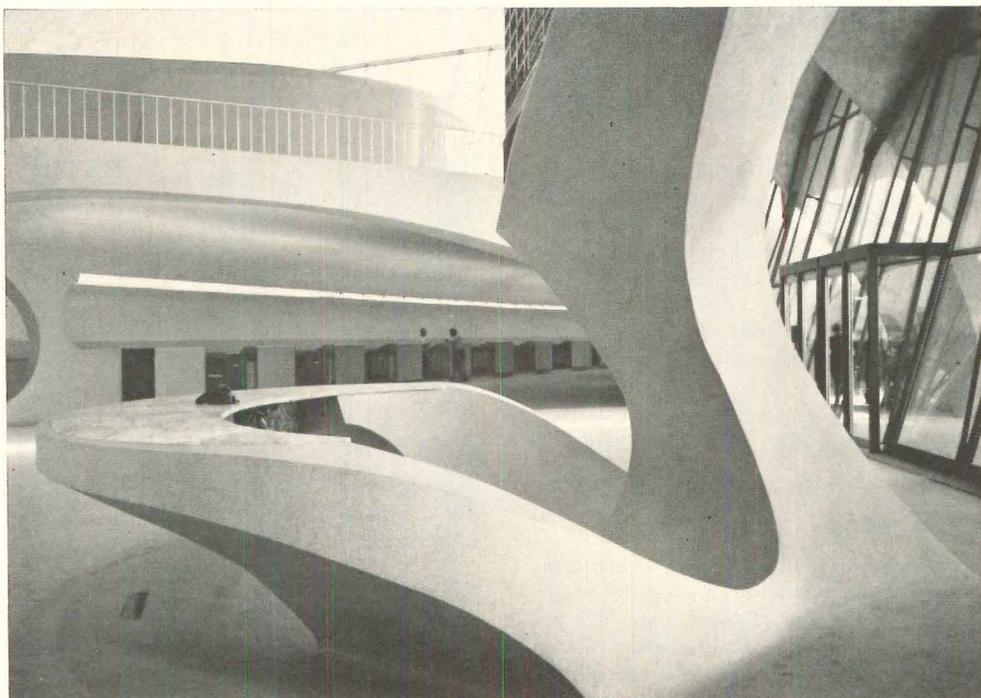
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TWA's dime-size tiles (below)

An automatic blind to shut out sun (page 58)

Corning's bendable glass (page 59)



TWA'S TINY TILES

The now-familiar contours of Eero Saarinen's Trans World Airlines terminal at Idlewild posed an interior surfacing problem the complexity of which can perhaps best be grasped by a look at the information counter (above). After considerable searching the Saarinen office found a small, round Japanese tile which could be used throughout the terminal for floors, stairs (below), special beams, and a good many wall surfaces, since the tile's design is essentially nondirectional. The color is a very pale gray, almost oyster-white, in a matte finish that is nonskid even when wet; the setting is a nonstaining, waterproof cement.

The tiles are made by the Ina Seito Manufacturing Co. of Tokoname, Japan, and im-



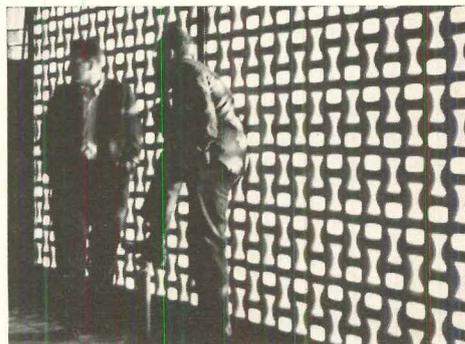
ported by the Port Morris Tile & Terrazzo Corp. They are unglazed ceramic tile measuring a little less than 1/2 inch in diameter, mounted on sheets 2 feet by 1 foot. The tiles alone (not installed) cost about 60 cents per square foot.

Importer: Port Morris Tile & Terrazzo Corp., 1285 Oak Point Ave., New York 59.

PATTERNED BLOCK

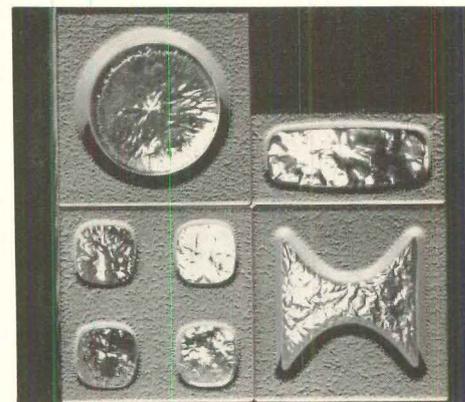
In a further move to get away from the standard look of glass block, Pittsburgh Corning is following up its sculptured, colored block of two years ago (FORUM, Feb. '60) with four *Intaglio Glass Wall Units* (right). Assembled into a wall, two of the designs—the "hourglass" and the "oval"—demonstrate that they can look very much like a masonry sun screen and hardly at all like glass block. Each of the new units has a rough-textured glass chunk pressed into the faces; the surrounding surface of smooth glass is masked by an opaque ceramic frit matching the light gray color of the mortar between units.

The four designs are the work of Peter Muller-Munk Associates, all of them 8-inch squares except for a half-size block, which is 4 by 8 inches. The two not used in the wall photograph are "circle" and "nugget."



All light comes through the center glass, which is pebbled to prevent a focusing effect; the light transmission factor is 20 to 40 per cent. Each unit has an average sound reduction loss of 38 decibels, mainly due to the insulating effect of the air trapped between halves of the block. Cost of the squares is \$1.65 each; the rectangular one is 93 cents (both less in quantity). A wall of the units averages \$4.75 to \$5 per square foot, installed.

Manufacturer: Pittsburgh Corning Corp., 1 Gateway Center, Pittsburgh 22.



STAINLESS SLIDING DOOR

Carmel Steel Products, a California manufacturer of sliding doors and window walls, is fabricating and marketing a mass-produced sliding door of stainless steel. It is the first stainless-steel door, according to Carmel, that competes with the cost of painted carbon steel or the best quality aluminum. Development of the new door was a joint venture in which Carmel, Western Mouldings Inc., and Jones & Laughlin's Stainless and Strip Division collaborated to find the right alloy, gauge, and dies for cold roll forming

continued on page 58

STATEMENT REQUIRED BY THE ACT OF AUGUST 24, 1912, AS AMENDED BY THE ACTS OF MARCH 3, 1933, JULY 2, 1946 AND JUNE 11, 1960 (74 STAT. 208) SHOWING THE OWNERSHIP, MANAGEMENT, AND CIRCULATION OF ARCHITECTURAL FORUM PUBLISHED MONTHLY AT NEW YORK, N. Y. FOR OCTOBER 1, 1962.

1. The names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, Ralph D. Paine Jr., Rockefeller Center, New York 20, N. Y.; Editor-in-Chief, Henry R. Luce, Rockefeller Center, New York 20, N. Y.; Editor, Douglas Haskell, Rockefeller Center, New York 20, N. Y.; Managing Editor, Peter Blake, Rockefeller Center, New York 20, N. Y.; Business Manager, Lawrence W. Mester, Rockefeller Center, New York 20, N. Y.

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* Believed to be held for account of one of more stockholders.

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5. The average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the 12 months preceding the date shown above was: 62,838.
[signed] LAWRENCE W. MESTER,
Business Manager.

Sworn to and subscribed before me this 25th day of September, 1962.

MARY JANE GILMORE,
Notary Public, State of New York
No. 31-1437965

(Qualified in New York County. Commission expires March 30, 1963)
[SEAL.]



the stainless sections.

The frame and panel sections are nickel-finished stainless, an alloy particularly resistant to corrosion from salt air and industrial fumes. Mohair weather stripping seals out the elements, and the sliding panels roll on nylon wheels in the sill. Heights to a maximum of 10 feet and widths from 6 to 24 feet are standard; other sizes may be specially ordered.

Manufacturer: Carmel Steel Products, 9738 E. Firestone Blvd., Downey, Calif.

TEDLAR TAPE

An important part of the new roofing and wall systems finished with Du Pont's Tedlar polyvinyl fluoride film (FORUM, June '61) is Minnesota Mining & Manufacturing Co.'s tape for sealing end and side laps and panel joints. This pressure-sensitive tape is backed with Tedlar to form a waterproof membrane over the joints. It also adheres readily to metal, cement-asbestos board, overlaid plywood, and other hard surfaces.

Tedlar tape's life expectancy outdoors is 15 to 20 years, during which time it is said to remain tough and flexible despite wide temperature variations (-60 to 300 degrees F.). Such flexibility maintains the seal between butted joints that flex with temperature changes.

The new "Scotch" brand tape, No. Y-9057, is 3.5 mils thick, has an adhesion strength of 47 ounces per inch, and a tensile strength of 22 pounds per inch. Sold in white and gray, in a number of widths from 1/4 inch up, the tape costs from \$2.83 to \$5.62 for a 72-yard roll in the 1/4-inch size, the difference in price determined by the quantity bought.

Manufacturer: Minnesota Mining & Manufacturing Co., 2501 Hudson Rd., St. Paul, Minn.

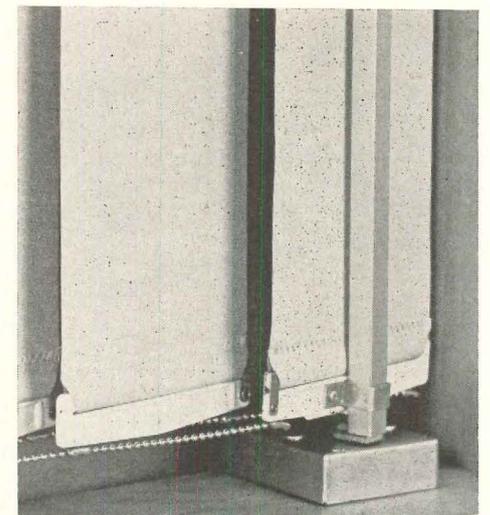
AUTOMATIC BLIND

Mounted at the bottom edge of a vertical window blind, this device closes the louvers to keep out afternoon sun. Aptly named *Sun Shield*, it is an electrically activated spring in a box the size of a sardine can. When the

button of a master switch is pressed, tiny solenoids in the box release the springs and close the blinds, which remain closed until they are rotated manually and recocked. During the day, the blinds may be adjusted like any other vertical blind.

For an initial investment of about \$10 per window (one unit for each blind), the Sun Shield cuts the excessive load imposed on air-conditioning systems by late afternoon sun, or blinds left open over a week end or holiday. Savings vary with the location, type of building, and use.

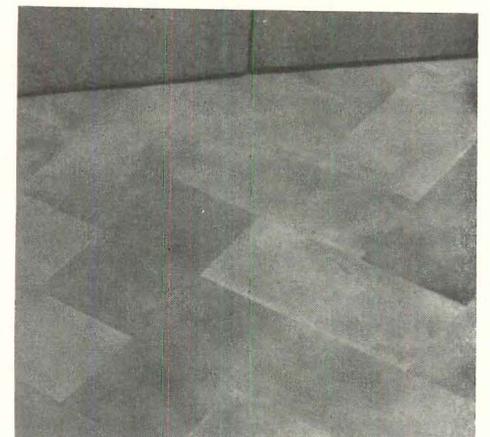
Manufacturer: Thru-Vu Vertical Blind Corp., 805 Mamaroneck Ave., Mamaroneck, N.Y.



LEATHER TILES

Corium, the Latin word for leather, is the name of a new floor and wall covering that is actually made of top-grain cowhide. Sliced from the kneecap, one of the toughest parts of the hide, the tiles are left in their natural state except for a dressing to make them more durable. The variations of grain and color in natural leather (see photo) create a surface said to gain in richness as it ages, in the same way that a fine handbag or briefcase acquires a patina with use.

This is a new venture for the manufacturer, whose major product until a few



months ago was inner soles for army boots. A trial floor in his own office convinced him that leather tiles were practical, if luxurious. The tiles darkened, showed some dents from spike heels, but wore extremely well.

For applications where a darker color is wanted initially, the manufacturer will dye the tiles a deep brown. This costs more than the natural color: \$4.25 per square foot installed, compared with \$3.25. Tile sizes are 9 by 4½, 8 by 4, and 4½ by 4½ inches in a standard thickness of 0.08 inch for floors, slightly thinner for walls. A special adhesive is included in the cost.

Manufacturer: L. Farber Co., Worcester, Mass.

Distributor: William Gold, Inc., 1270 Avenue of the Americas, New York 20.

BROWN-GRAY GLASS

Without abandoning the cool gray and green tones it has been producing for several years, Pittsburgh Plate has added *Solarbronze*, a warm brownish-gray with a slight rose cast, to its line of heat-absorbing polished and rough plate glass. The new color transmits slightly more visible light than PPG's gray plate, but a little less solar ultraviolet.

In the New York area, *Solarbronze* sells for about 95 cents per square foot in a ¼-inch thickness, not including installation.

Manufacturer: Pittsburgh Plate Glass Co., 632 Fort Duquesne Blvd., Pittsburgh 22.

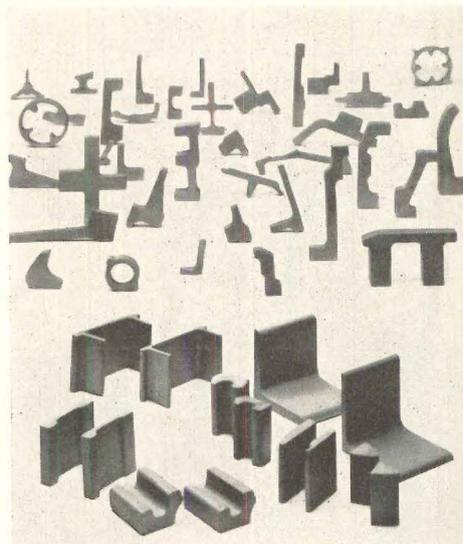
PREVIEWS

Glass up to five times stronger than ever before—and more flexible (see photo)—was unveiled recently by Corning Glass Works. It is tempered chemically by a new process to withstand pressures as great as 100,000 pounds per square inch, compared with 20,000 pounds for glass physically tempered. *Chemcor* is Corning's name for several different strengthening techniques and special compositions which make it possible to tailor glass to specific strengths. It is still in laboratory development, with a line of dinnerware



the only actual product on the market, but Corning hopes that Chemcor will open some new markets: e.g., doors one-third as thick but just as strong as those of physically tempered glass; school windows in districts where vandalism is heavy; skylights, spandrels, and even "structural uses." Chemcor will probably cost two or three times as much as ordinary glass but since thinner pieces could be used, the actual material cost might be less.

Combining two shaping processes—hot extrusion and cold drawing—Babcock & Wilcox' Tubular Products Division is turning out structural shapes of such close tolerances and fine detail that they need no further finishing. In the photograph, the shapes in the background are ordinary extrusions; those in the foreground have been extruded, then



cold drawn to more precise shapes. In some cases, the added step may not cost more than the extrusion alone, since the process saves some metal. There may be savings, too, in machining and in-plant handling costs.

Three-dimensional fabrics, woven in one piece—skins, fluted core, and all—may have possibilities as lightweight structural panels. Raymond Development Industries, Inc. calls these fabrics, which may be of many materials, *Raypan*. Impregnated with resin, opened with mandrels, and allowed to cure, they become stiff panels. Webs between skins may be left hollow or filled with polyurethane film for greater rigidity.

Tubular glass fibers added to reinforced plastics may increase their strength from 50 to 100 per cent, without increasing their weight. The Fiber Glass Division of Pittsburgh Plate Glass developed the hollow filaments, now in an advanced laboratory stage and nearly ready for pilot plant production. A continuous drawing process appears to be commercially practical. The single filaments are finer than a human hair. END

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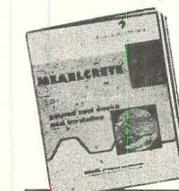
Pumped into place as an insulating, leveling or drainage fill over galvanized corrugated steel deck, prestressed, precast or cast-in-place concrete or as a lightweight insulating structural deck on a formboard and bulb tee system, Mearlcrete offers many advantages. Here are a few:

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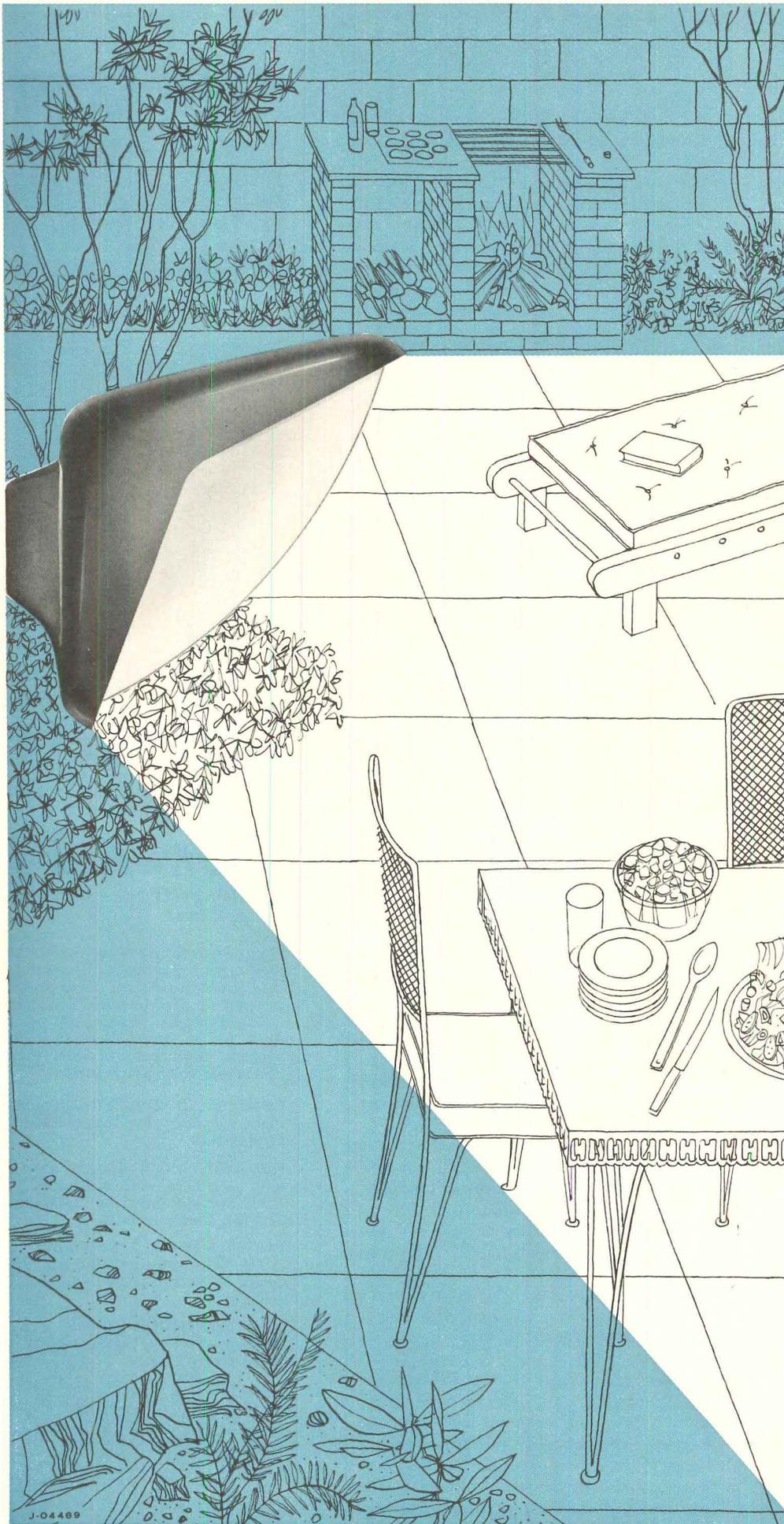
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TWI-LITE LUMINAIRE

controlled lighting with a standard lamp—for walkways, patios, driveways, lawns, gardens, pools.

Mount the Twi-lite on a post-top, wall, or pipe . . . use it with any ordinary incandescent lamp up to 150 watts. It can be positioned to give direct light exactly where it's wanted. "Spill" light is controlled, wasted light eliminated. ■ The translucent acrylic diffuser gives better than 60% light transmission (with no hot spots or streaks). It can't melt or sag from heat, or crack from rain even when unit is lighted. Gasket seal keeps out moisture, dirt and bugs. ■ The Twi-lite luminaire has a die-cast aluminum housing and stainless steel hardware that won't rust or corrode. Exterior finish is weather-resistant baked-on enamel in a choice of four colors. For complete details on this low-cost outdoor fixture, contact your Westinghouse representative, or write Westinghouse Electric Corporation, Lighting Division, Edgewater Park, Cleveland, Ohio. ■ You can be sure . . . if it's

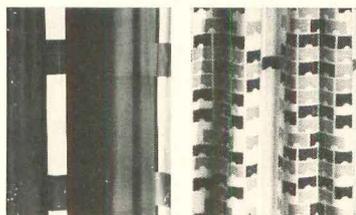
Westinghouse



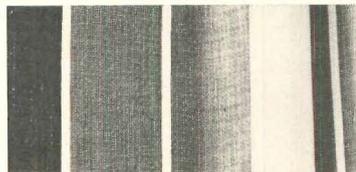
Fall fabrics, shallow files, balancing chairs



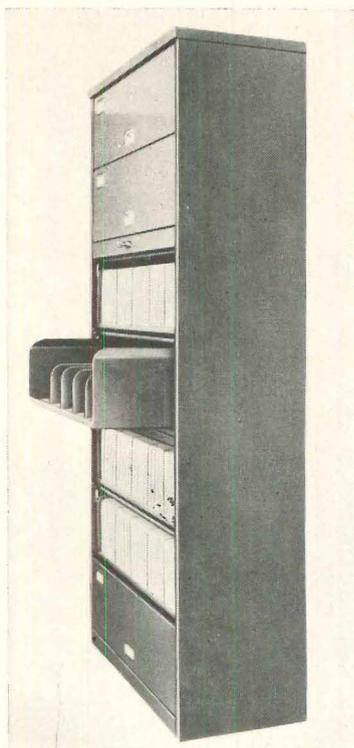
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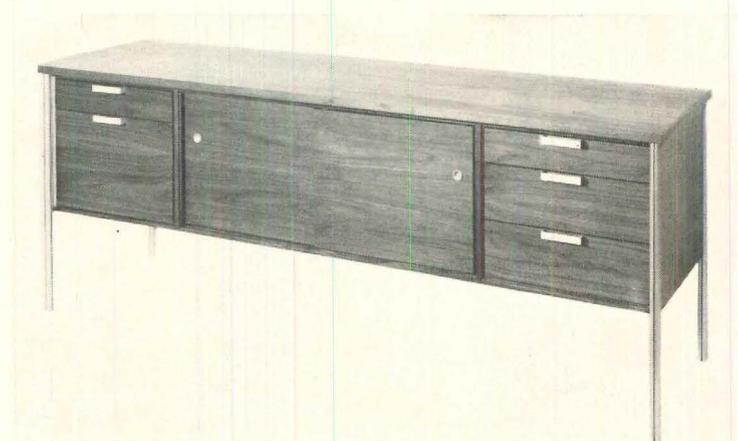
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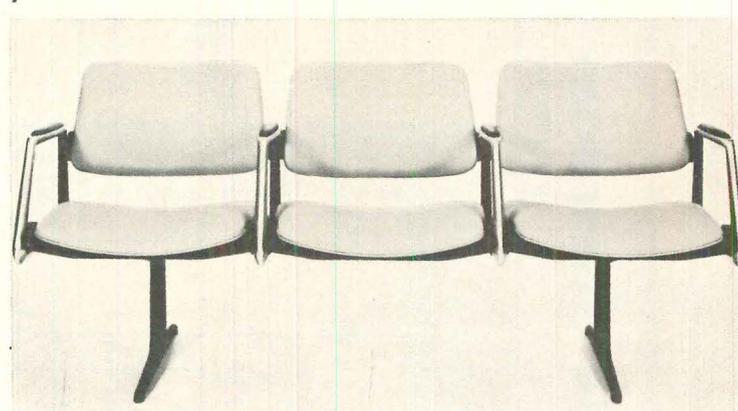
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1. EXPANDING EGG. Arne Jacobsen's famous "egg" chair for Fritz Hansen, Inc. now has a companion—a footstool on the half-shell, formed, like the chair, of baked plastic and upholstered in fabric, leather, or plastic. Cost of the chair runs from \$310 to \$498; the footstool, from \$79 to \$101.

2. BRITISH FABRICS. Two of the new Heal fabrics stocked in the U.S. by Arthur H. Lee & Sons, Inc. are "Alternation" by Doreen Dyall and "Pont Neuf" by Françoise Lelong, both printed on 48-inch cotton.

3. KNOLL STRIPES. New fabrics from Knoll's fall collection by Suzanne Huguenin: top, "Linea," heavy Belgian linen in three colors on a white background; bottom, "Bangkok," nylon upholstery in the colors and textures of Siamese silk; and "Nylon Homespun," a fabric that looks handwoven.

4. SPACE-SAVING FILES. Combining open-shelf and drawer filing in shallow "Conserv-A-File" units can, conceivably, halve the floor space needed for storage. Supreme Steel Equipment Co. makes them in six sizes.

5. CIRCULAR LIGHTS. Two ceiling fixtures from Globe Lighting Products come in diameters of 10½, 14, and 18 inches, and in different rims. The top one has a walnut-vinyl edge, black trim, and a gold aluminum waffled louver. The other is of white enamel, with black trim and an opal glass diffuser. Costs in the 10½-inch size: \$29 and \$17, respectively.

6. WOODEN ARMCHAIR. New from Lehigh is this armchair by Allan Gould. The sloping back and square seat are thickly padded with foam rubber, and the arms

and legs come in walnut, lacquer, and oil finishes. Cost in muslin: \$175 to \$205.

7. EXECUTIVE STORAGE. Oil-finished walnut, teak, and rosewood go into this storage cabinet from Canada, part of the Alumna line. The manufacturer is Art Woodwork Ltd., whose U.S. representative is Cranbrook Inc.

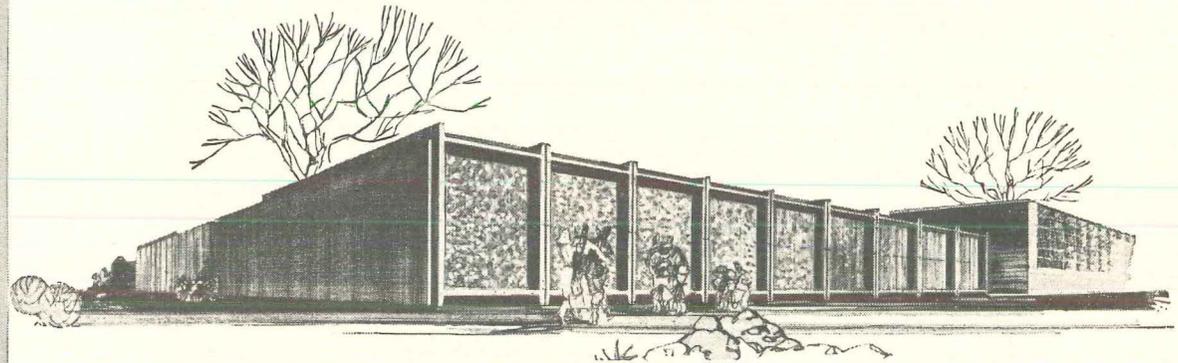
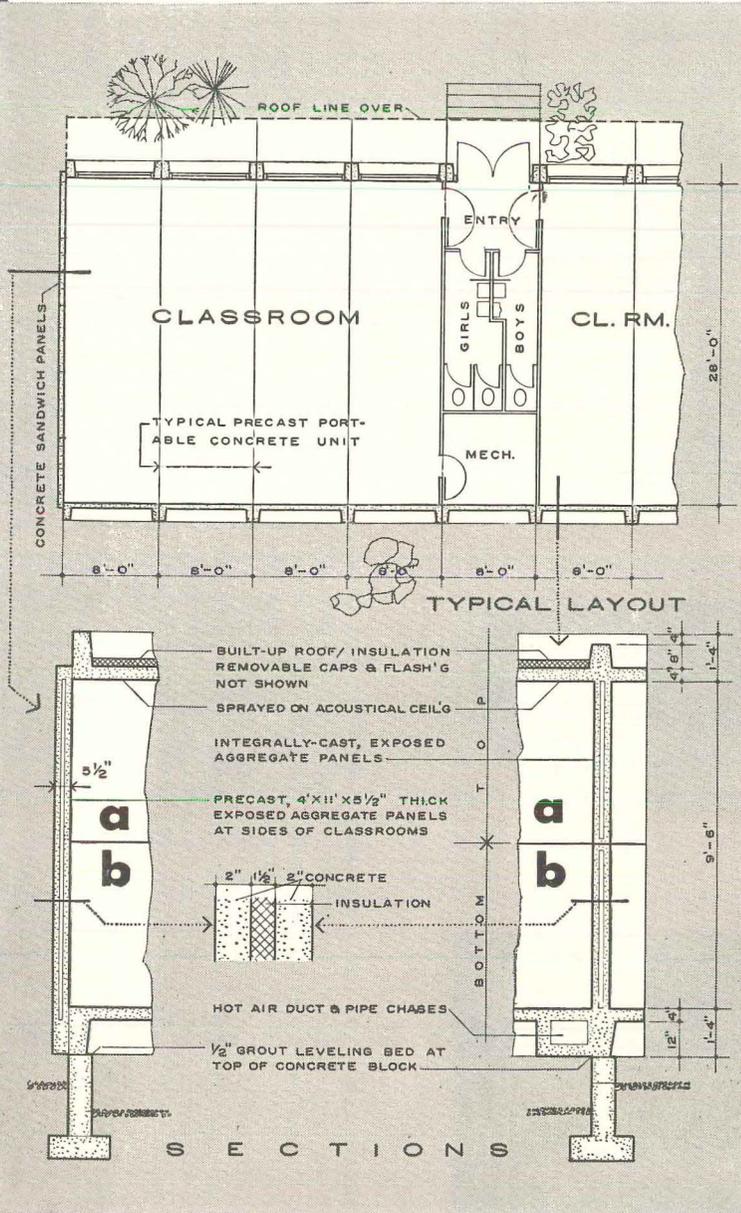
8. MULTIPLE SEATS. Two legs balance three seats in one of Crucible Products' new seating units. The frame is cast aluminum, the arm rests, walnut. Cost of a three-seater, without fabric, is \$336.

demountable classroom

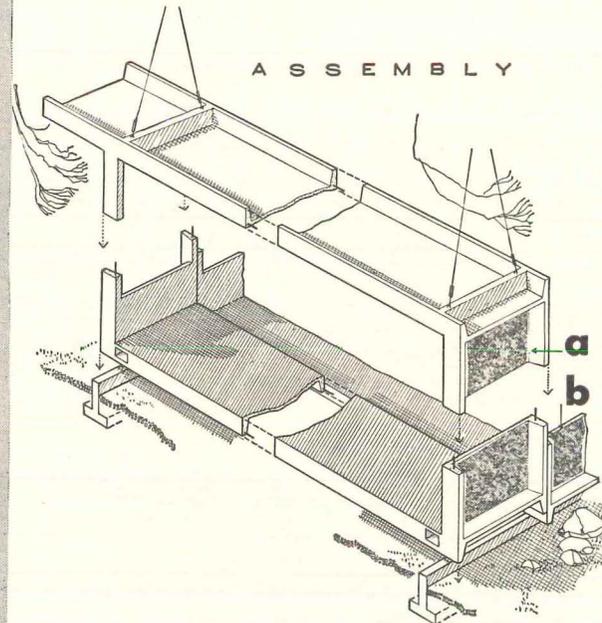
a.i.a. file: 4-a

Prepared as a service to architects by Portland Cement Association

Clip along dotted line



Pittsburgh Architects: John Pekruhn, A.I.A., Deeter and Ritchey, A.I.A., and Lawrence & Anthony Wolfe, A.I.A.
Consulting Structural Engineer: R. A. Zern, Pittsburgh



Entire classrooms precast in concrete make up the new addition to the Homewood Elementary School, Pittsburgh, Pa. The design brings beauty, extra utility and easy upkeep to what is usually a "temporary" type of construction. Moreover, a degree of portability is achieved which allows future transportation to another site at very nominal cost.

The concrete segments—each 8' wide by 28' long—include a roof or floor section combined with half of each side wall. The precast units were designed for mass production and contain all the essentials of classroom planning. Air ducts, concealed conduits and pipe chases provide a finished room without unsightly exposed utilities.

Oriented to enclosed, planted playgrounds, the structure is completed by a street facade of integrally cast exposed aggregate panels that enhance aesthetic values... keep out dust and noise... discourage vandalism.

PORTLAND CEMENT ASSOCIATION

33 West Grand Ave., Chicago 10, Illinois

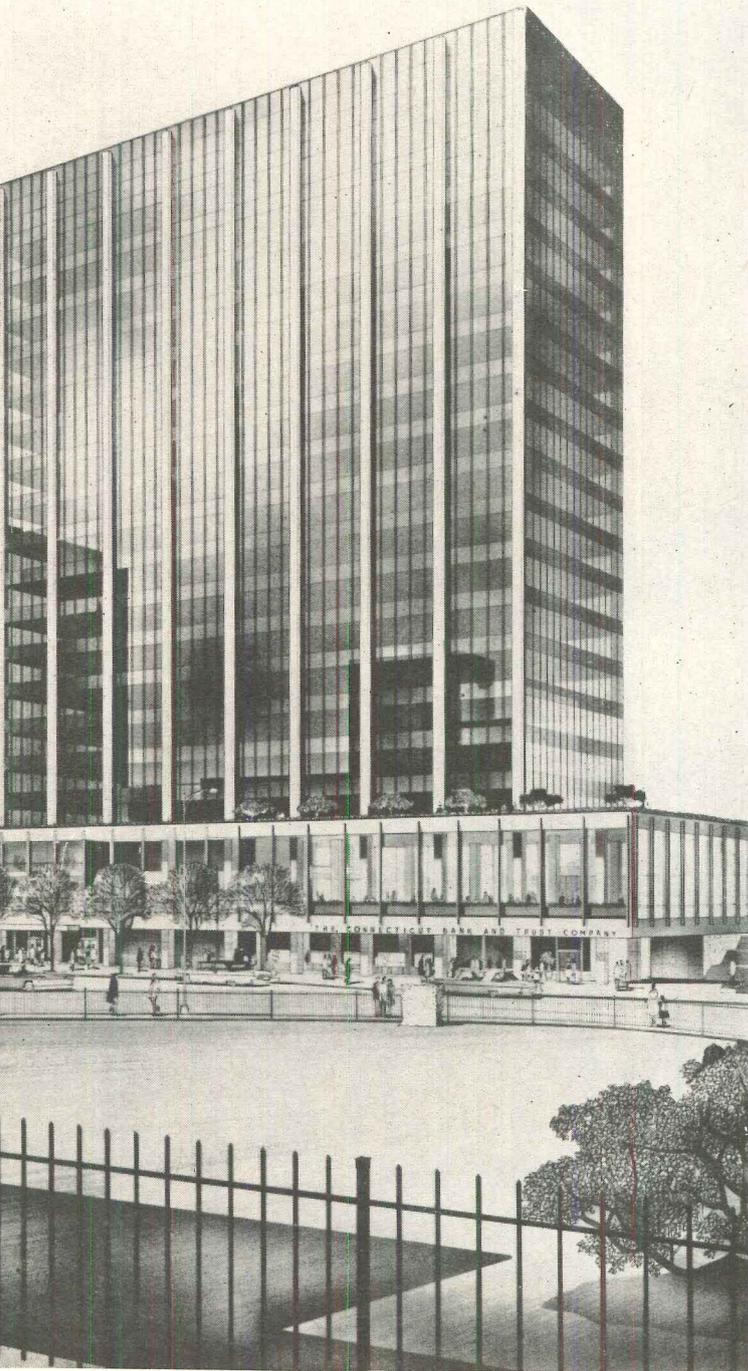
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The Connecticut Bank & Trust Company, Hartford, Conn.
Architects: Robert Allan Jacobs—Carson, Lundin & Shaw
General Contractor: F. H. McGraw & Company

General Bronze was awarded single responsibility for engineering, fabricating, glazing and erecting this distinctive curtain wall.

Alumilite-finished natural aluminum is used for mullions, fascia and copings . . . dark gray aluminum for mullion inserts, louvers and most horizontal members. Spandrels are gray porcelainized insulated panels, faced with gray plate glass.

The design and fabrication of the window system were especially critical—because of the weight and wind loading of the large-area glazing . . . the advanced gasketing . . . the inclusion of such features as window cleaning guides . . . and the importance of the mullion detailing to the over-all aesthetic effect.

Close coordination between General Bronze and the architects was essential to the success of this installation. Sample sections of the curtain wall, for both the base and tower systems, were subjected by GB to rigorous wind and weather tests.

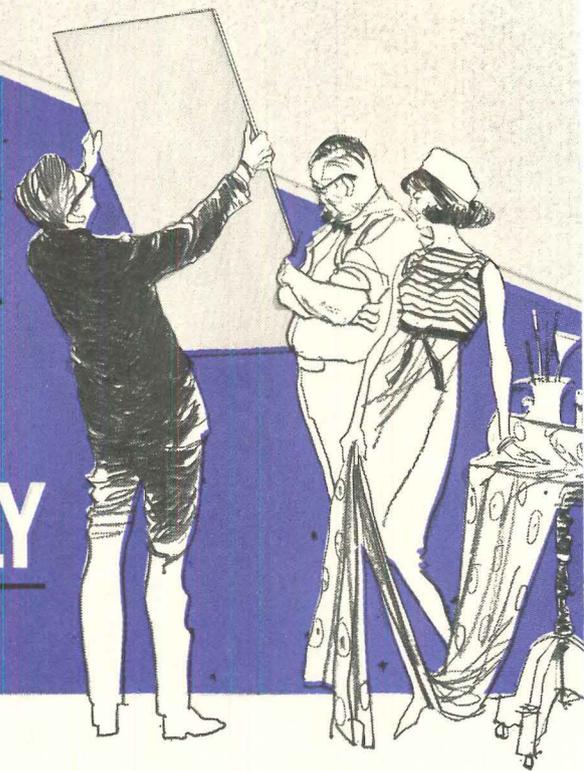
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		*12" x 12" x 3/4" to 24" x 24" x 3/4"	2 Hour	Concrete deck over steel bar joists
Natural Fissured	Tongue & grooved and kerfed for concealed suspension system	*12" x 12" x 3/4"	4 Hour	Concrete slab over cellular steel deck, steel beams
Embassy‡ (formerly Tiffany) Random Perforated	Beveled, kerfed for concealed suspension system	12" x 12" x 5/8"	1 Hour	Wood deck over wood joists
		*12" x 12" x 5/8" to 24" x 24" x 5/8"	2 Hour	Concrete deck over steel bar joists
Random Perforated	Tongue & grooved and kerfed for concealed suspension system	*12" x 12" x 5/8"	4 Hour	Concrete slab over cellular steel deck, steel beams
Embassy Panels (formerly Tiffany) Fashion-Fissured Panels	Trimmed edge for exposed suspension system	*24" x 24" x 5/8" and *24" x 48" x 5/8"	2 Hour	Concrete deck over steel bar joists
Acoustiform Panels	Trimmed edge for exposed suspension system	*24" x 24" x 1" and *24" x 48" x 1"	2 Hour	Concrete deck over steel bar joists

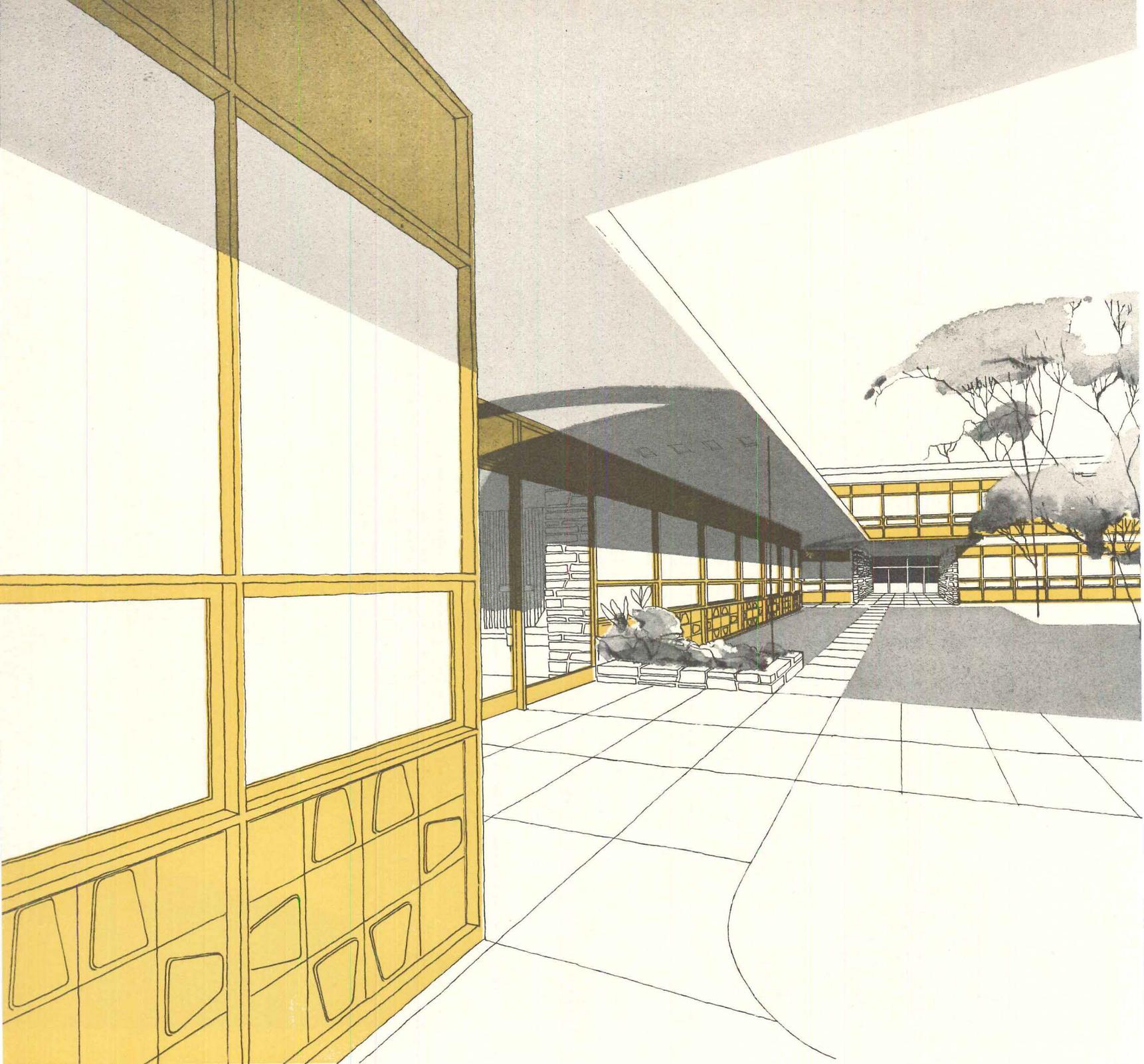
*Includes penetrations (recessed light fixtures and air diffusers)
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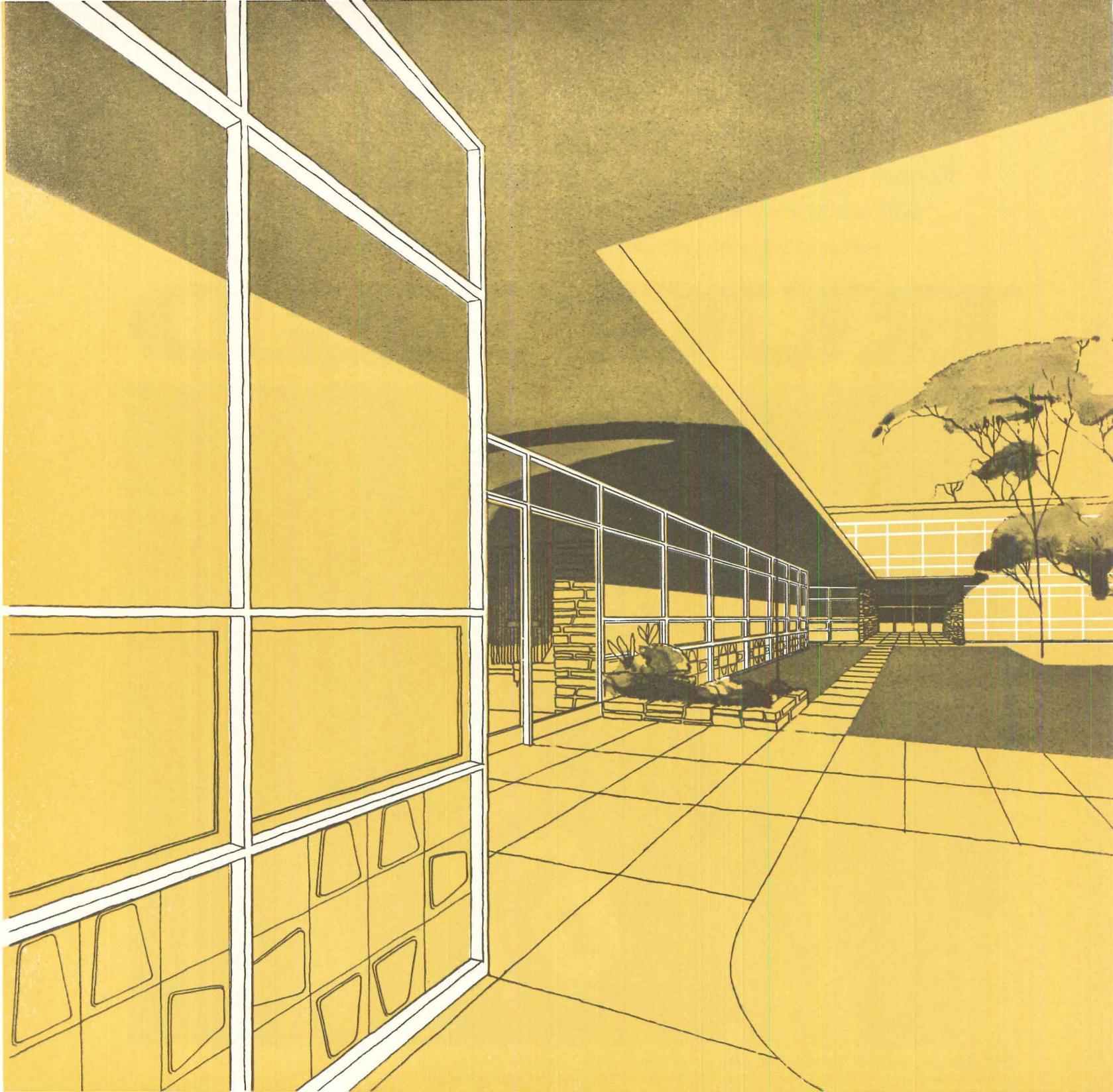


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with proven, leakproof Fenestra steel curtainwall

Just add capping! It's that easy. You combine the structural strength of Fenestra steel curtainwall with the lustrous finish of aluminum or stainless steel. ¶ **Curtainwall.** The subframes are steel. Advantages? *Watertightness.* There has never been a reported case of a Fenmark steel curtainwall system leaking. *Strength.* Taller, wider modules are possible while retaining a narrow subframe sight line. *Versatility.* Dimensions of vertical and horizontal members in

the grid system can be varied almost infinitely. *Variety.* Infill panels are available in a variety of materials, colors and textures to complement capping sections. Effects are limited only by your imagination. Further, sections are shop-fabricated. They arrive at the site tight and right—ready for erection. ¶ **Capping** It just snaps on, covering the exposed steel grids completely. The effect? *Elegance.* It's as though you were designing in costly, customized



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stainless steel, aluminum, or porcelainized aluminum. But because Fenestra's system is preengineered, you work with time-proven curtainwall. ¶ **Cost?** Very modest. With Fenmark steel curtainwall you get a package of unequalled strength, versatility, variety, and watertightness. To find out more, call your Fenestra representative (he's in the Yellow Pages), see Sweets File 3b/Fe., or write, Fenestra Incorporated, 220 Delaware Ave., Buffalo 2, N.Y.

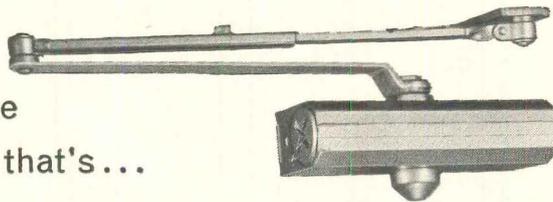


Fenestra

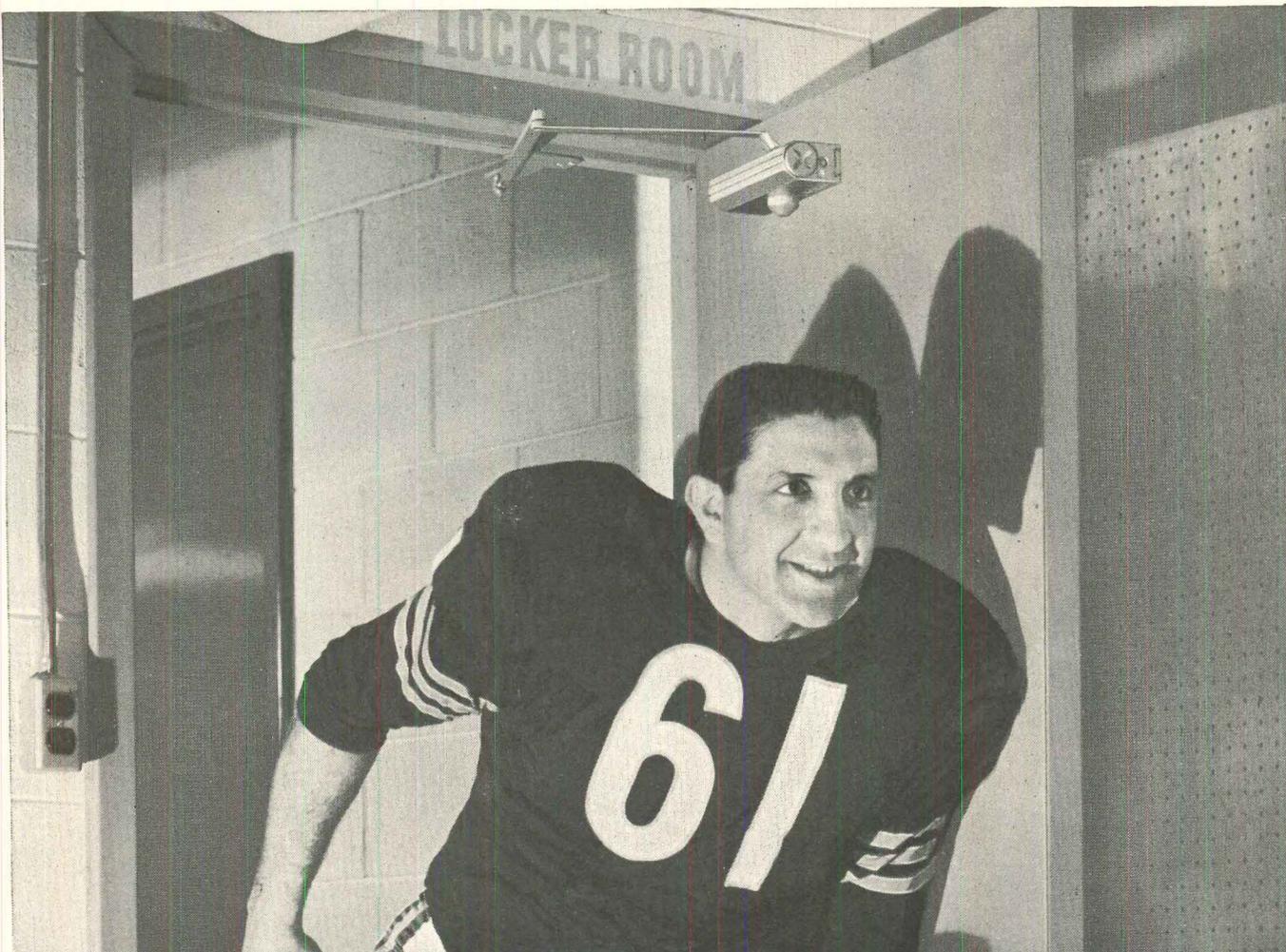
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 with exclusive Perma-Hold plate
 features invisible mounting that's...



RUGGED



Bill George, All-pro line-backer and co-captain of the Chicago Bears, provides the impact to illustrate the holding ability of the Tri-Style Perma-Hold plate.

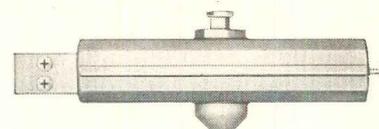
Tri-Style Closers with the Perma-Hold mounting plate are another result of Norton Door Closer development. The Perma-Hold plate is simple and fool-proof. The plate is mounted to the door or frame with flathead screws. The Tri-Style Closer is then secured to the plate by means of a tapering locking anvil.

Norton Tri-Style Closers with invisible mounting stay where you put them. The Perma-Hold plate and closer are locked together by the taper action between them, the strongest mechanical binding force. Both impact tests and continuous life tests have proven the holding ability of the Perma-Hold mounting plate.

1036

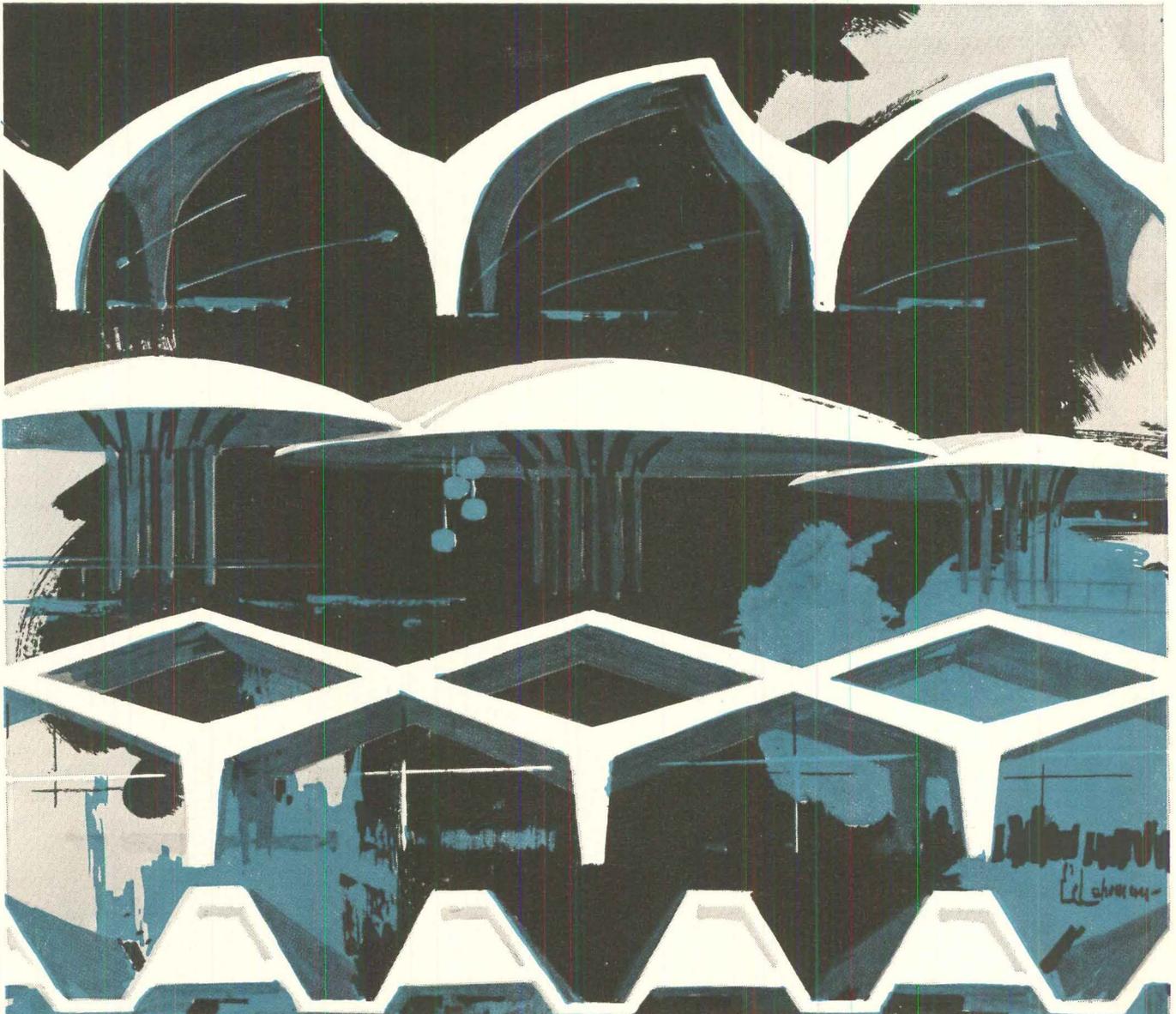


Perma-Hold plate is mounted with four flathead screws.



Closer slips on Perma-Hold plate and locks into place.

NORTON® DOOR CLOSERS
for Complete Architectural Compatibility 372 Meyer Road, Bensenville, Illinois



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For descriptive brochure and a list of experienced suppliers, write E. I. du Pont de Nemours & Co. (Inc.), Elastomer Chemicals Department AF-11-CB, Wilmington 98, Del. In Canada, Du Pont of Canada Ltd., 85 Eglinton Ave., E., Toronto 12, Ont.

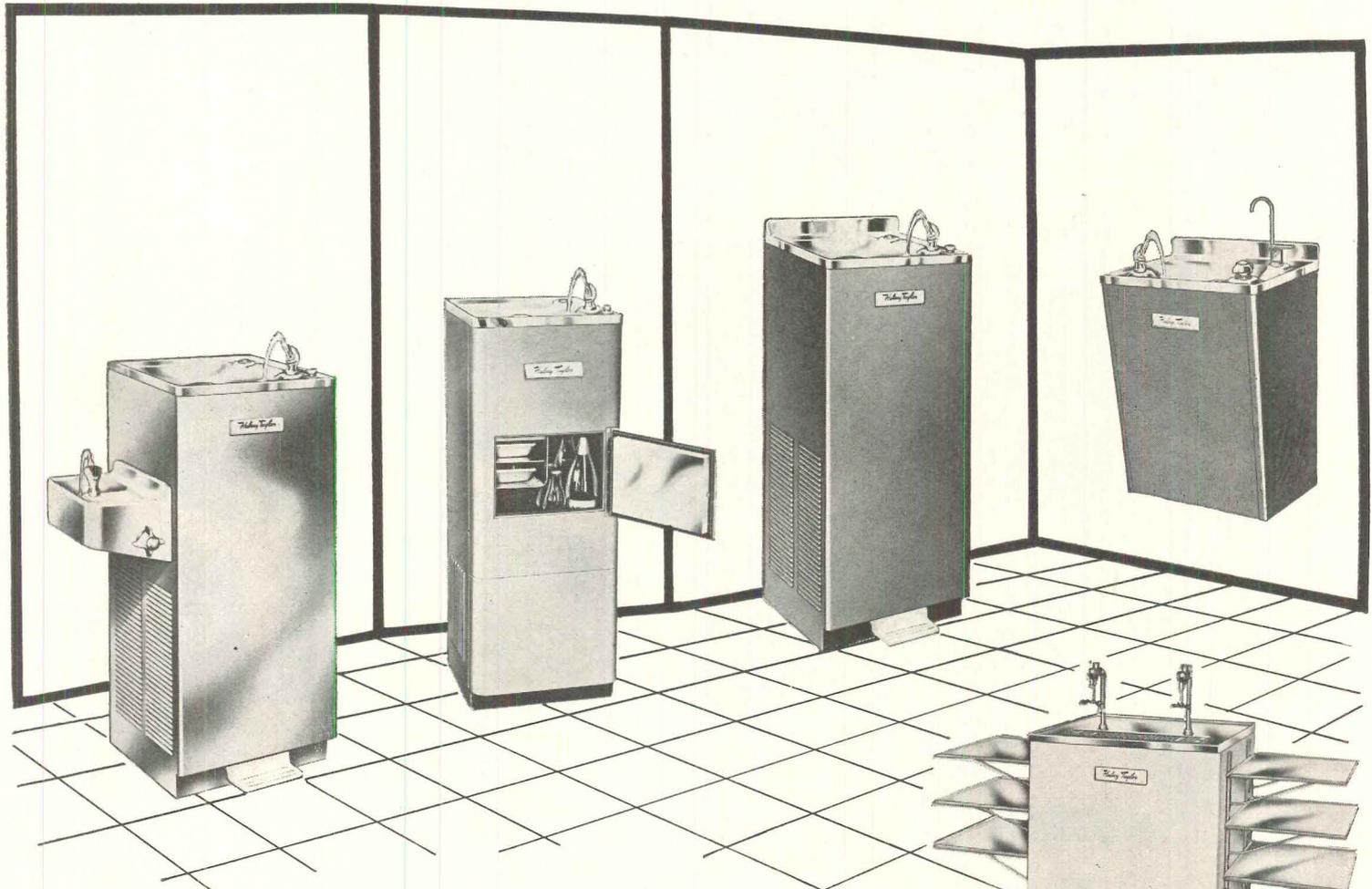
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Choose the cooler that's best for you from the complete, new 1962 line of Halsey Taylor coolers. From left to right, you are looking at

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(2) a smartly styled compartment beverage cooler, for office use.

(3) the Wall-Tite, a free-standing cooler that fits snugly against the wall, with no exposed plumbing connections and no dirt-gathering spaces.

(4) the pioneer Wall-Mount, on the wall, off the floor, shown here as a coffee-bar, but available as a regular water cooler.

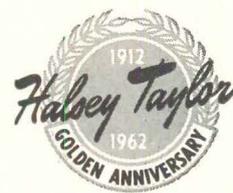
(5) the popular cafeteria type, this one in stainless steel.

The popular Coffee Bar is available on all Halsey Taylor pressure-type coolers. All of these and many other coolers in varying capacities and models are shown in our latest catalog. Send for your copy today.

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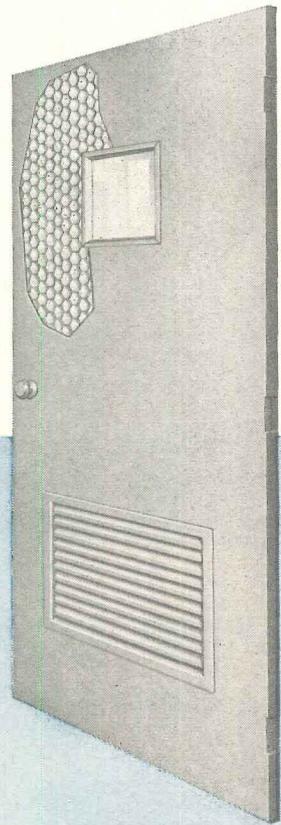


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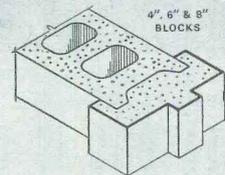
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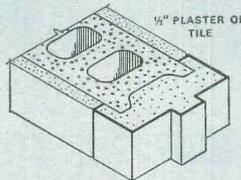
METAL DOORS and FRAMES



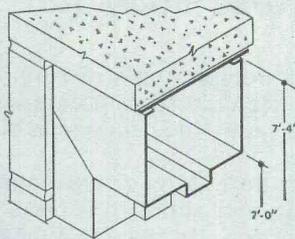
Another suggestion from the Steelcraft Architectural Detail File.



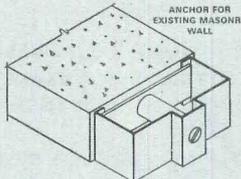
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Steelcraft's Indianapolis distributor, William Hanley, Central Indiana Hardware Co., discussing frame details and versatility with Werner Leiser, Chief Engineer, The Steelcraft Manufacturing Co.

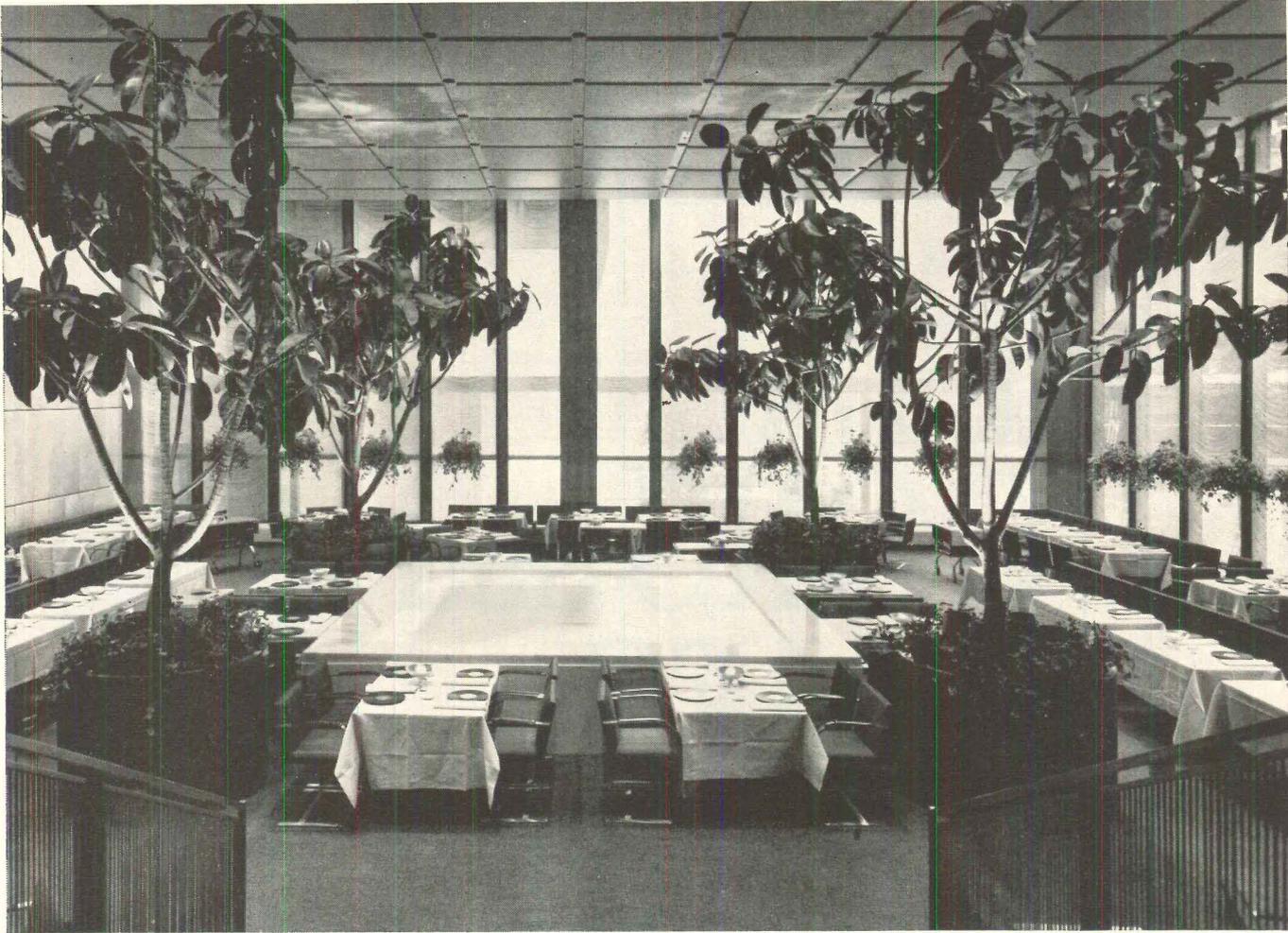
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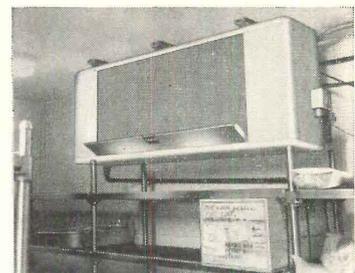


"As the name 'Four Seasons' implies, the whole impressive character of this magnificent restaurant embraces and reflects the year's seasons as they change in New York City.

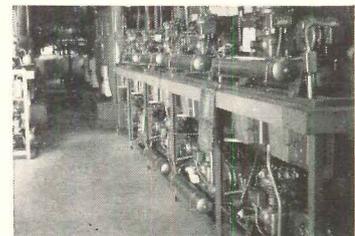
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"Dunham-Bush refrigeration is serving similar needs the year 'round, the world 'round, efficiently and economically. Write for the portfolio that describes our complete line of refrigeration, air conditioning, heating, and heat transfer products."



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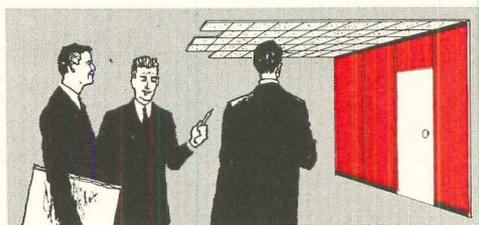
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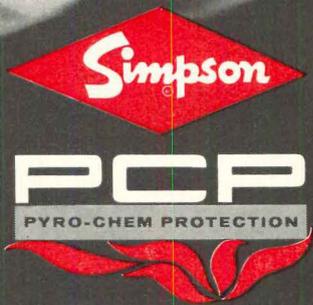
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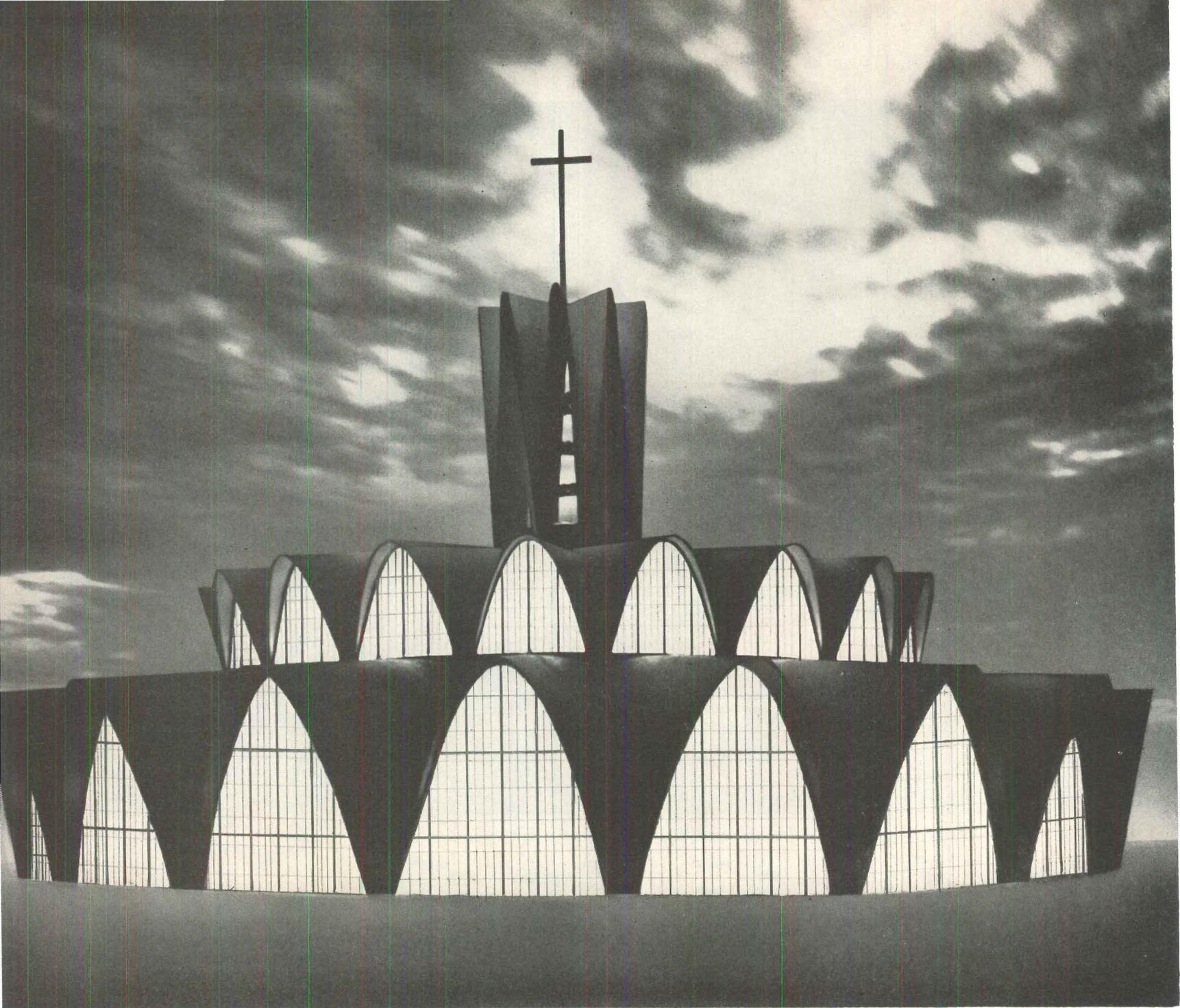
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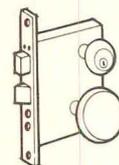
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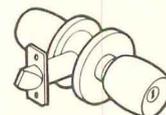
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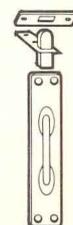
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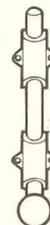
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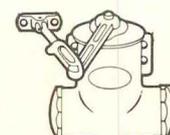
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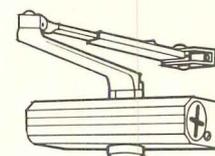
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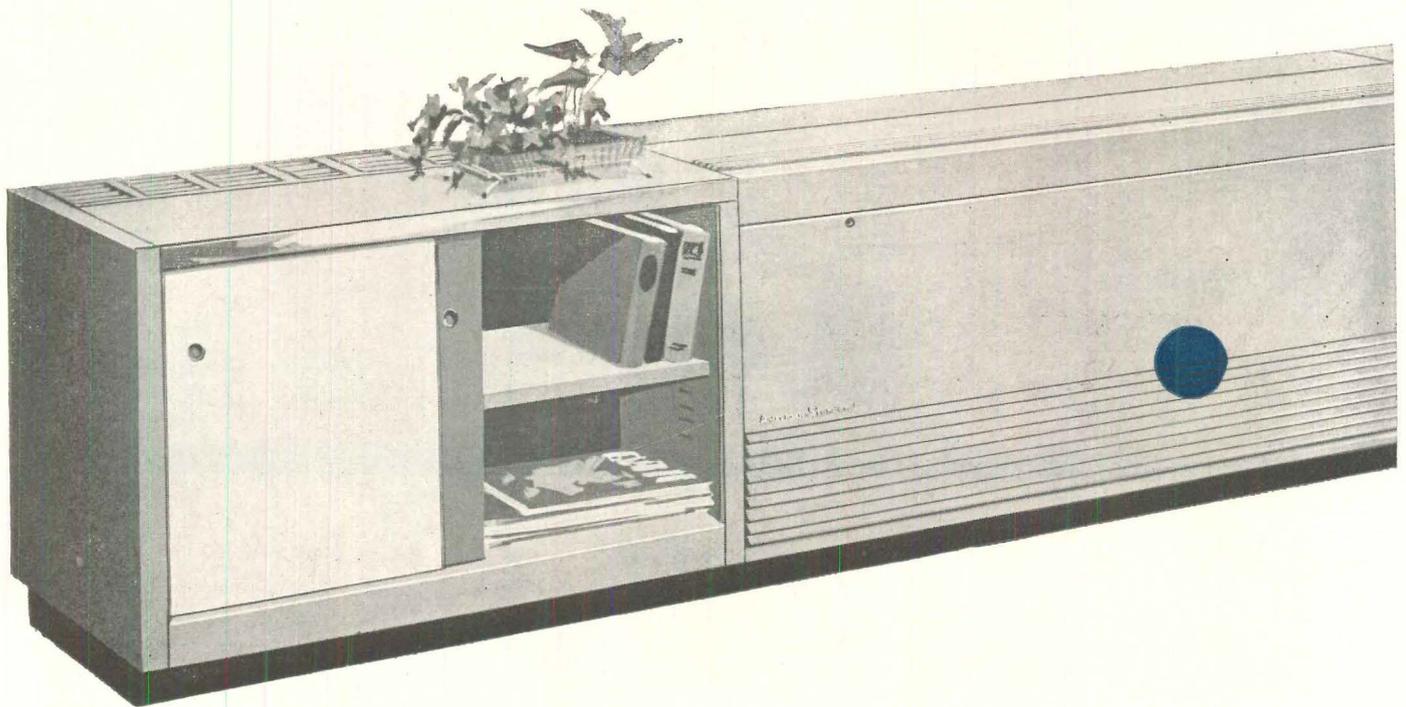
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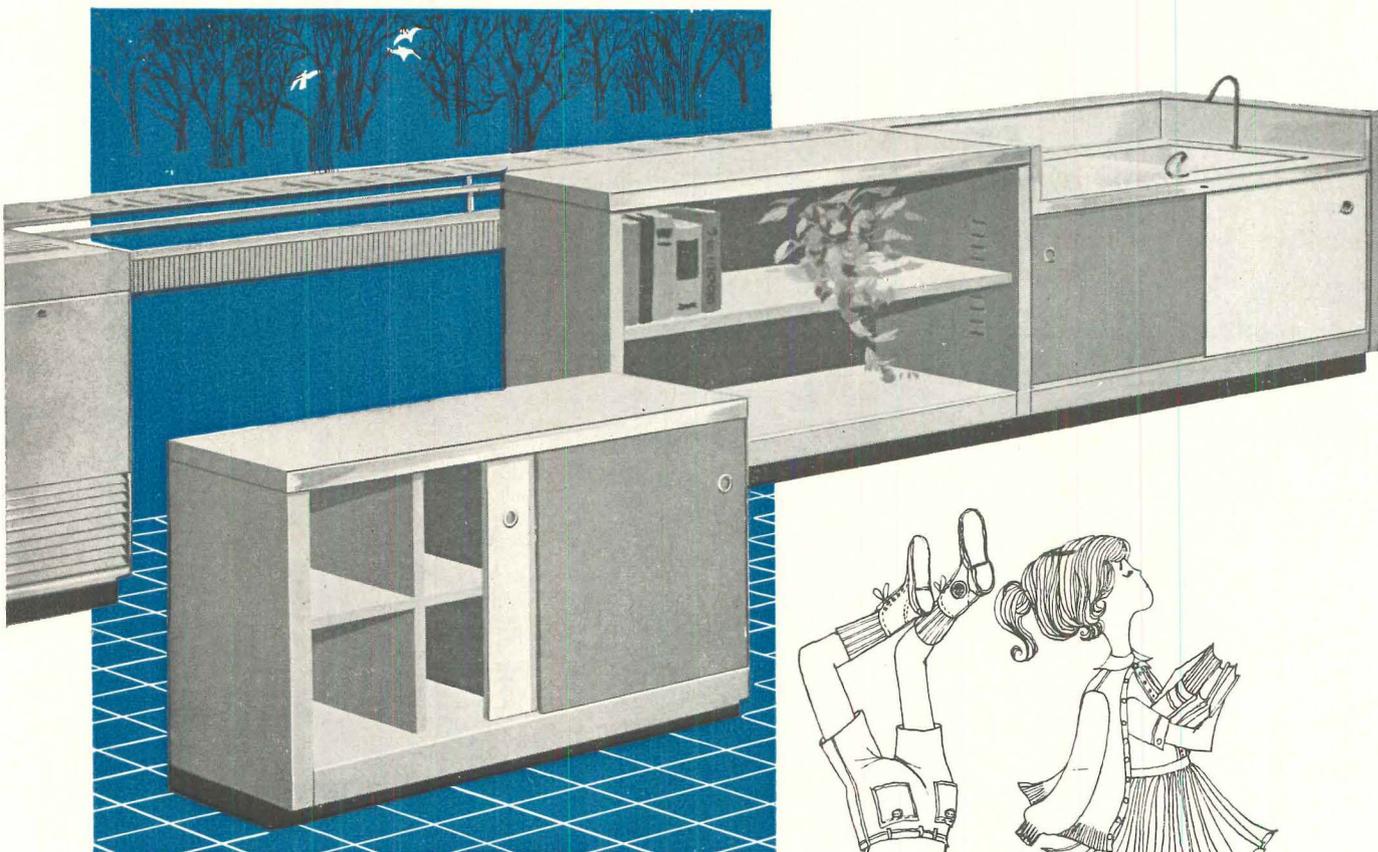
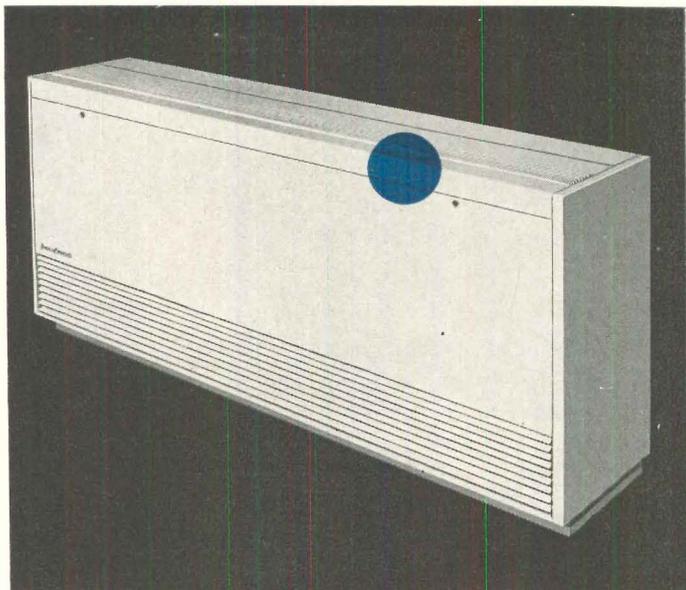
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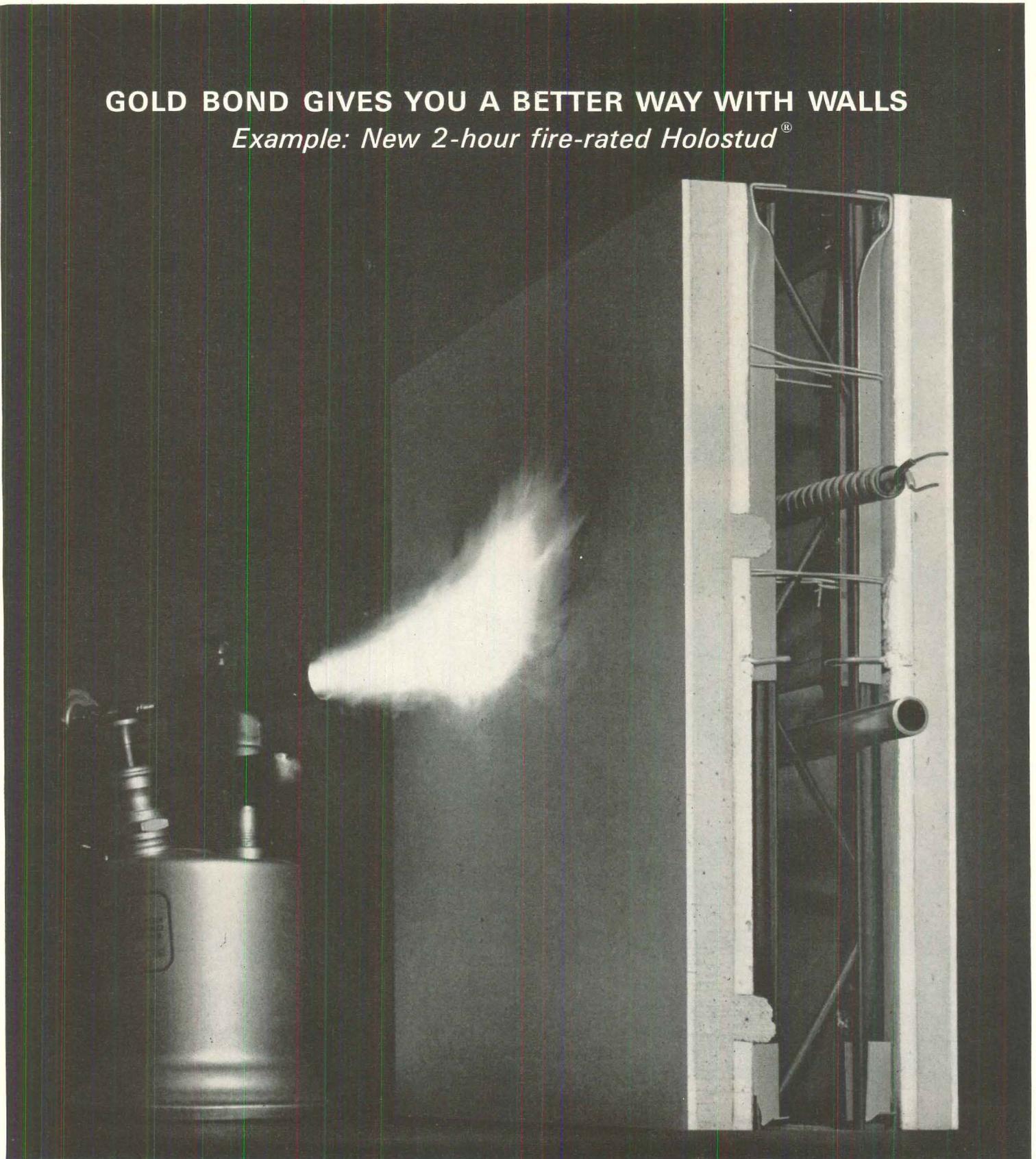
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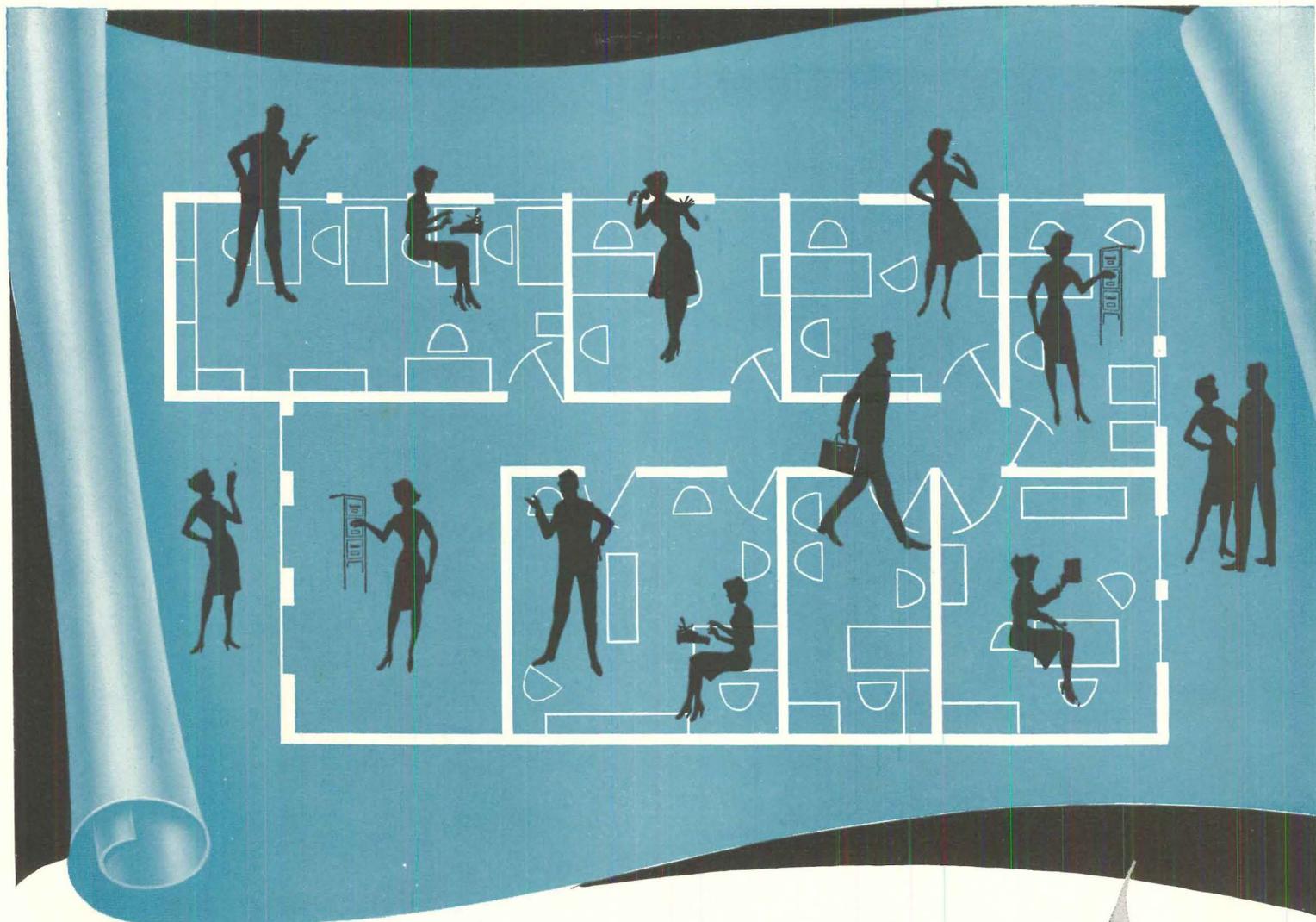


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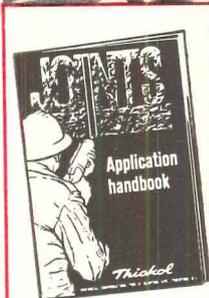
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California, there you go! Some time this month, the computers in the Census Bureau in Washington, D. C., are likely to reveal to a tense nation that the state of California has, at long last, surpassed the state of New York as the most populous in the Union. We wish California luck.

But, first, a word or two about being "Top Dog." This shift in the center of gravity in the U.S. was not entirely unexpected: for several years now, Californians have been exercising national leadership in a number of important fields, including architecture and building. California architects have long taken more than their share of design awards. John Carl Warnecke, of San Francisco, is President Kennedy's choice to redesign Lafayette Square in back of the White House; Nathaniel Owings of Carmel and Charles Eames of Venice are members of Mr. Kennedy's Pennsylvania Avenue Committee (and two architects from the Northwest, Paul Thiry and Minoru Yamasaki of Washington, are on the ten-man committee also); in urban renewal, San Francisco's Justin Herman has proved himself one of the two or three most imaginative administrators in the country; and nowhere, not even in Texas, have developers surpassed the size and scope of such newly projected towns as that on the 93,000-acre Irvine Ranch being master planned by William Pereira.

All this is highly impressive. It is also a great relief to those of us in New York and elsewhere in the East who have long been blamed for all the things that "Top Dogs" are blamed for. For one thing, nobody will be able to call us "parochial" any more: now that we are part of the hinterland, we can happily report on events in New York without appearing to be snobbish about the rest of the country. Good, old, homespun Museum of Modern Art! Good, old, homespun Philip Johnson, in his rocking chair, rocking away on the front porch of the Seagram Building! Good, old, homespun 57th Street, with all those galleries that people once damned as too "*avant*"—that "New York School" is straight Americana now! At long last we shall be able to talk about things back home, where the Urises roam, without appearing to be snooty about the rest of the provinces.

As for our friends in California, they'd better look out. To start with, boys, you are going to be blamed for the 1964 World's Fair back here in little old New York—it's straight Disneyland, and you know where *that* came from! You are going to be blamed for all the highway spaghetti, because highways are what you are especially good at. They're going to blame you for spread cities (L.A., of of course), slurbs (you invented the word, brothers!), drive-in banks, drive-in restaurants, drive-in laundries, drive-in nightclubs, and drive-in casinos. You are going to be blamed for your parochialism (all that *Pacifica*) and for your skin-deep culture (we, in the provinces, *know* that your universities award Ph.D.s in tap dancing, don't try to fool us)! In short, you might as well face it: you are in for a lot of trouble.

Meanwhile we, the small-town folks of America, are going to be watching you pretty carefully, starting just about now. Everything's going to be O.K., just so long as you don't try to pull any fast ones. After all, you've got to realize that California isn't America. . .



**Architecture for the young is an entertaining—
if exacting—specialty. Here are lessons from a
playground, a junkyard, and some unusual schools.**

DESIGN FOR CHILDREN

Effective architecture for the young can be created using exciting color in visceral patterns, as in the playground floor, left; or it can be made a calm, orderly frame for children's own supercharged energy, as in the schoolhouse, right. But however approached, what this specialty cries for is an attempt to understand the client.

It used to be that artists considered children merely as shrunken adults. It was difficult to ignore the obvious facts that children's features have different proportions, that their noses, mid-sections, and feet, for example, are conspicuous exceptions to Leonardo's human proportions. Nevertheless this was overlooked by entire generations of artists, even including Leonardo.

And by architects too. There are too many schoolhouses and other adult-designed harbors for children that are equally unrealistic: grim, monotonous schoolrooms (some of them brand new) and brutal, barren, concrete meadows called playgrounds—"practical" ones.

But are these really practical? They may wear well, but how do the children wear? As objects, these guarded designs can be criticized as lacking heart. But, emotional judgments aside, what they probably really lack more tellingly is evidence of sufficient interest on the part of designers as to what goes on inside the large heads of their young clients.

Children, of course, can't tell a designer, or won't. They don't have the vocabulary. Some designers who have tried asking child psychologists report that these experts have almost too much vocabulary. So where does that leave the designer of schools, playgrounds, zoos, and other places for the young?

It leaves him with the basic tool of observation. Children can be watched, and there are enough existing backgrounds that are successful designs for children so that some shared characteristics do become clear. The better designs cut through the coy whimsy of pipe columns striped like candy sticks and simply offer the children chances to discover and develop such basic qualities as curiosity, imagination, and a certain wistful urge to emulate their elders.

This still does not tell a designer *how* to design for children. When Artist Neil Welliver, using road enamel, painted the new playground floor for Paul Rudolph's married students' housing at Yale (left, and FORUM, March '62), he evidently decided that the same bold, instinctive patterning and basic colors that appealed to him would carry through to the children. (By report, he was correct. To the children, the arrows point somewhere.) Architect John Warnecke's Mabel McDowell school in Columbus, Ind. (right, and FORUM, Aug. '62), is very different—less commanding, more of a framework. But it is ambitious architecture—and this may be the most significant element of all in designing for children: the absence of condescension.

COLOR PHOTO BY DAN PAGE

BALTARZAR KONAB





The prime attraction of Krusi Park playground in Alameda, Calif., is a scaled-down replica of an increasingly assertive element of the adult world: the freeway. Pedal cars—either brought by the playground's users or checked out of its teepee-like garages—can be propelled up and down a miniature highway system, complete with overpasses, underpasses, and hairpin turns. There is even a small filling station where the children can go through the ritual of servicing their vehicles.

Krusi playground thus differs from the Copenhagen junkyard (opposite) in two significant ways: It deals in reflections of the "real" world, and it was the product of careful and conscious adult design (by Landscape Architects Royston, Hanamoto & Mayes of San Francisco). In addition to the highways, it contains a circular sand pit in which rise shapeless concrete mounds, a spiral concrete slide, and a small wading pool. One big soft-surfaced area is filled with climbing equipment—perforated concrete slabs, a cluster of thick tree trunks, a multicolored play sculpture of metal pipes by Artist Raymond Rice.

This sophisticated visual composition probably reflects the fact that Krusi playground is for small

children; it is a pleasing place for accompanying parents. But it is also a busy, exciting place for the children—the kind of playground



where they constantly dart from one thing to another. And it offers evidence that there need be no essential conflict between spontaneity and design.



PHOTOS: ERNEST BRAUDY

Childhood imagination is stimulated by a playground with a miniature gas station, but is released entirely in a famous Danish junkyard.

Children, if not pushed too hard, do desire to belong to the human race. A few props can help them. But what may be the single most famous playground in the world, Copenhagen's "*Skrammellegeplada*," is furnished with outworn items discarded by the adult world. It is an area walled off from the adult world by a parapet of earth surmounted by rose bushes. Inside are old cars, stoves, boats, beds—the items one could find in most Western junkyards, minus the garbage. Under minimal supervision (and with a minimal budget) the children, ranging from six to 14 years, are encouraged to make things. Or they can break things if they prefer. but few do; after all, most of the



things at *Skrammellegeplada* are already adequately broken.

The favorite play is building. Old construction materials are issued as available and villages of little hut-houses rise, periodically to be razed, to rise again. The children also make furniture.

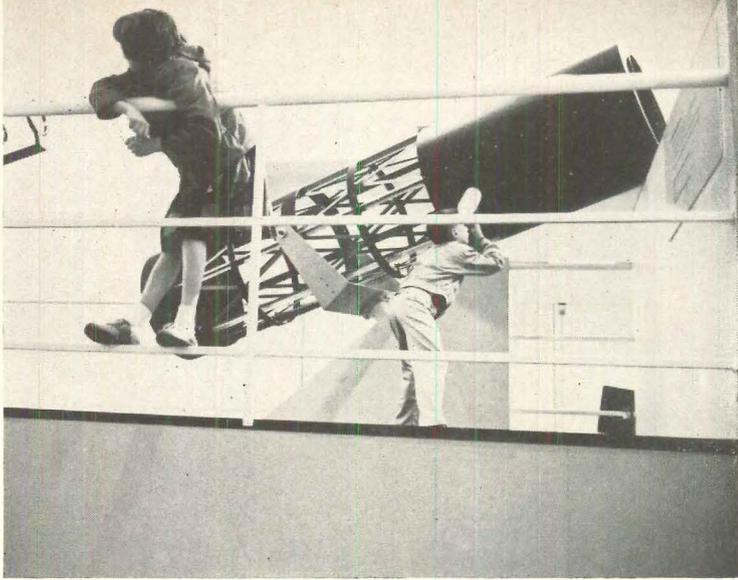
Landscape Architect C. T. Sorenson first got the idea for *Skrammellegeplada* in 1931 after he had completed a civic playground full of the latest play equipment, only to find attendance languishing owing to the competition of an empty lot nearby filled with junk. "The children knew what they wanted," he says.



PHOTOS: PERSEUS/IST



HIGGE BO. X



In the U.S. Science show at the Seattle World's Fair, the key word in the children's section was *rediscover*. Devices were designed so that an interested child could manipulate them and follow in the steps of the inventor—Oerstad, for example, working out the correlation of electricity and a magnetic field. This hall of educa-

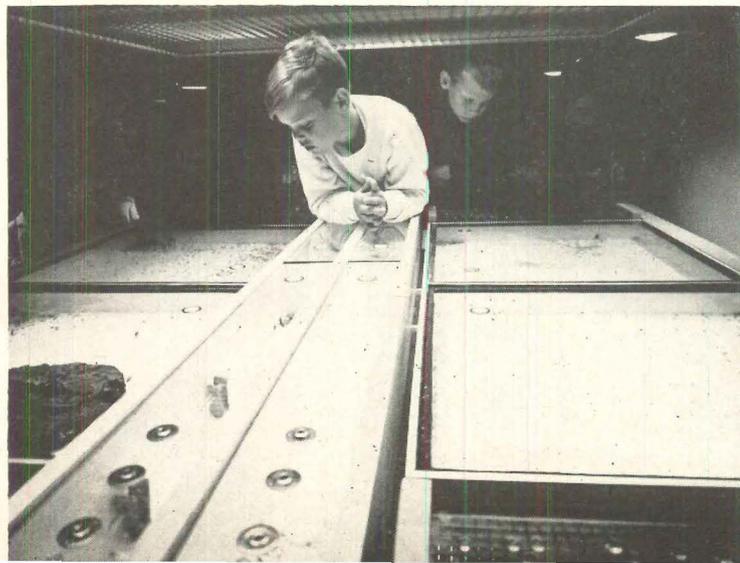
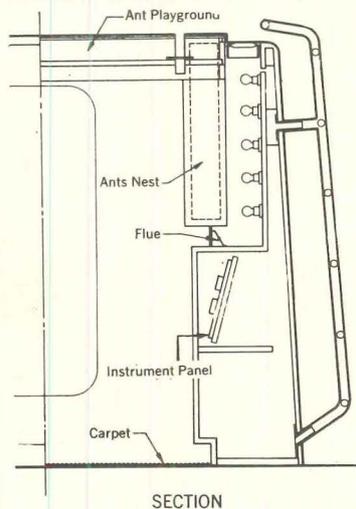


tional pinball machines thoroughly fascinated thousands of children—and their parents.

Curiosity was, of course, the engine power. Included were devices concerning such subjects as astronomy, photosynthesis, probabilities (photo above), atom smashing, outer space (without the usual avuncular Captain Vi-



deo), crystal growth, and microorganisms, not to overlook one of the most handsomely designed and capacious (four cities) ant houses on record (photo below). Designers of the children's exhibit were Frederick Usher and John Follis Associates, with Architect Elisha Dubin as consultant.



Children like to find things out for themselves, but sometimes adults can successfully focus—and exploit—their great curiosity.

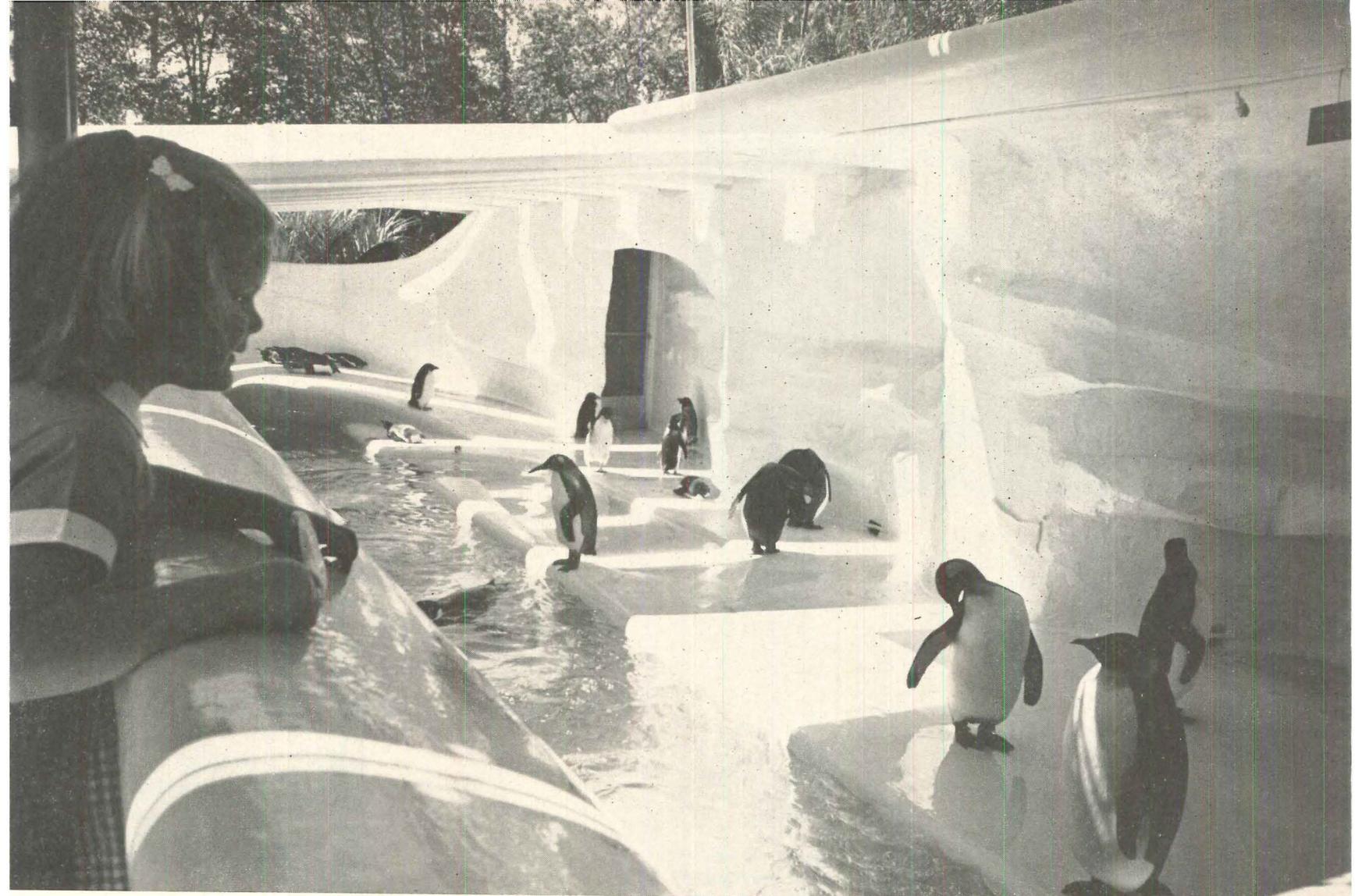
The curiosity of children can be overwhelming. They are greedy for knowledge about the world and their place in it, but they prefer facts gained by direct experience. When this curiosity is focused on animals, the children want to poke them, pet them, if possible ride on them, and not just see them. On this premise, the San Diego Children's Zoo puts as many animals as prudence permits within easy reach. In one big penned area, the children and animals (including a huge, rideable tortoise) roam freely together. The compact zoo was designed by a group of San Diego artists under the leadership of Architect Lloyd Ruocco, with the help of his partner, Homer Delawi, and professional zoo designer Charles Faust. The only ele-

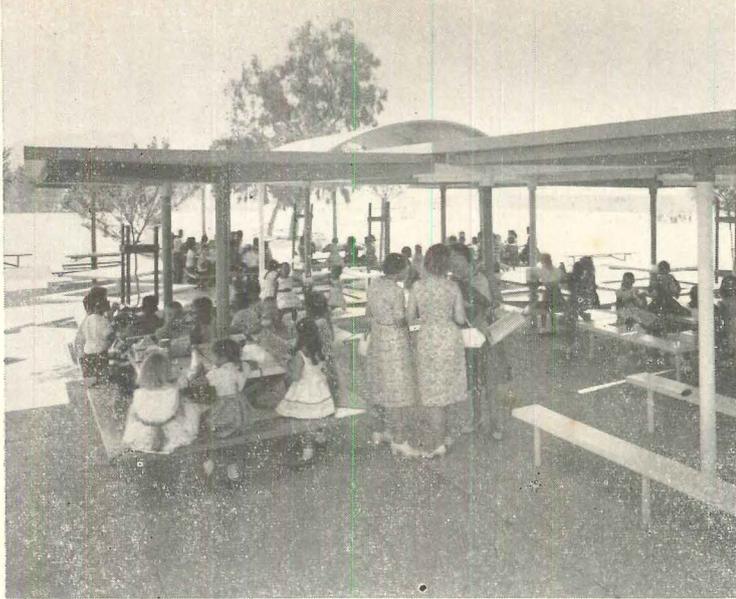


ments which might be said to resemble buildings are a light, rectilinear refreshment stand-office building and a gleaming aluminum-domed theater (right). Otherwise, the animals inhabit vividly colored, gayly nonrepresentational concrete shapes which are playful without being cloying.



PHOTOS: ERNEST BRAUN

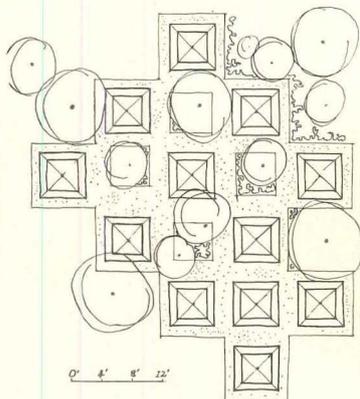




It took an obliging climate to bring this pleasant school-lunch pavilion into being—plus an obliging architect, one out to give the children a picnic. The climate is southern California's; the architect, Robert Trask Cox Associates (Carl B. Johnson, structural engineer).

The shelters, which the Cox firm has now used in two Los Angeles elementary schools, are steel-framed umbrella units. Cantilevered from each central pole is a plastic-topped, eight-place legless table and bench. The units can be combined to form various thickets, with bright colors retaining a pleasant, variegated playground atmosphere. Even the janitors like them; the floor slabs can be hosed down easily, without stacking chairs or snaking the hose through a welter of bench legs.

One of the qualities appealing to the school board was the port-



ability of these shelters, in whole or part. They can be demounted and moved from school to school as pupil populations shift—a common problem. Initial investment was higher than Los Angeles' conventional rectangular school-lunch shelters, but not excessively: each umbrella, including a 10-foot square of concrete deck, bench, and table, came to \$900; but only the concrete (\$50) is not movable at a day's notice.



PHOTOS: LARRY FROST

School can smother or stimulate the special qualities of children, depending on how much skill and sympathy is brought to its design.

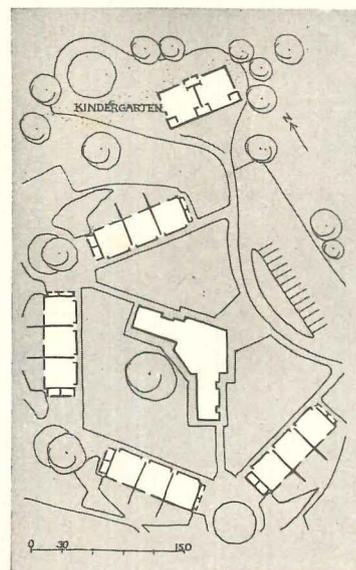
The first day of school can be an occasion of classic terror. The child is in a strange room, subject perhaps for the first time to the direct authority of adults other than his parents, placed perhaps for the first time in a formal society of others his age. It takes a skillful if tacit conspiracy between architect and teacher to keep the schoolroom from becoming a place of fear, inhibiting those seedling qualities which make the child an individual.

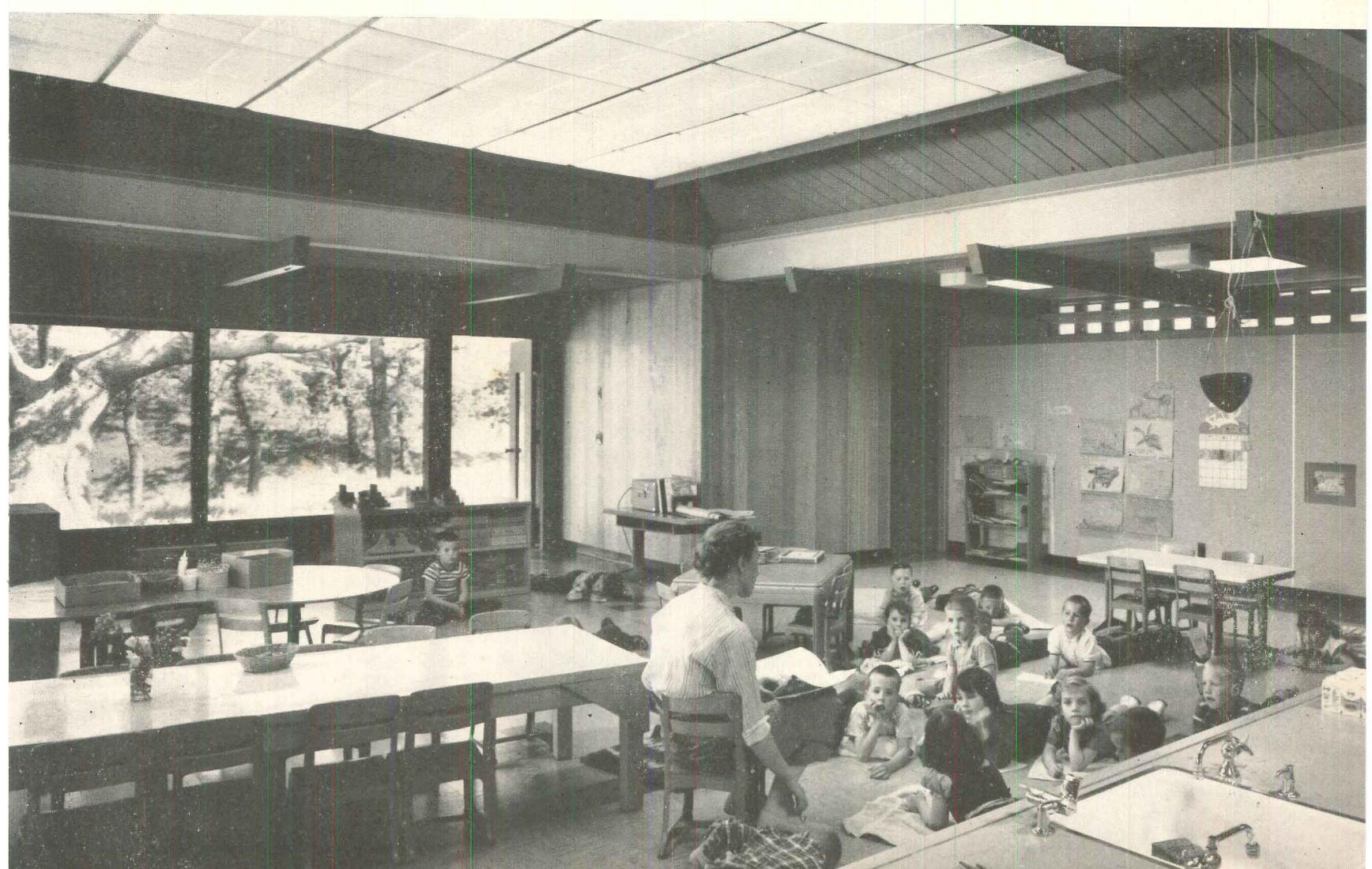
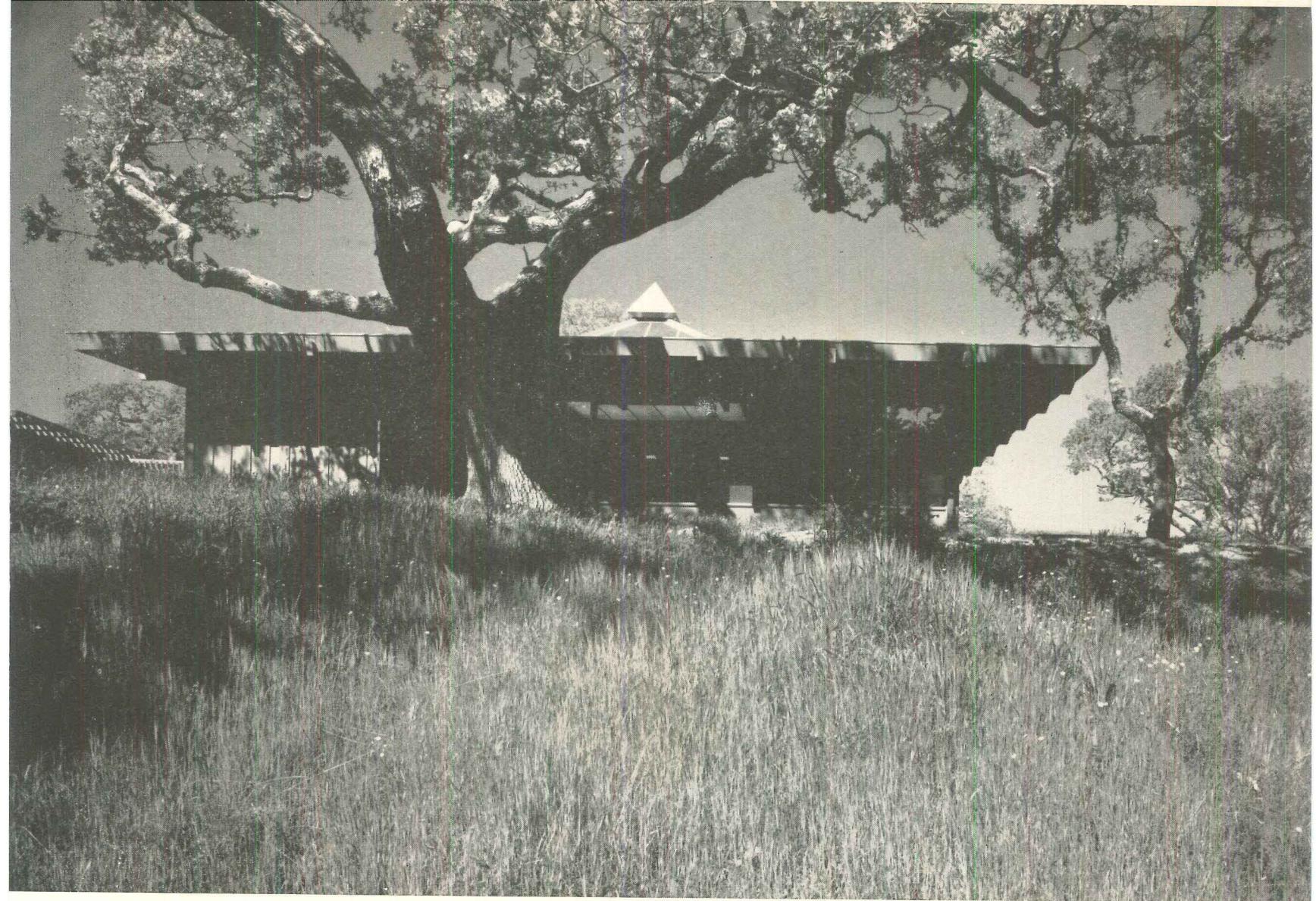
The kindergarten of Corte Madera School in Portola Valley, Calif., was designed with a sym-

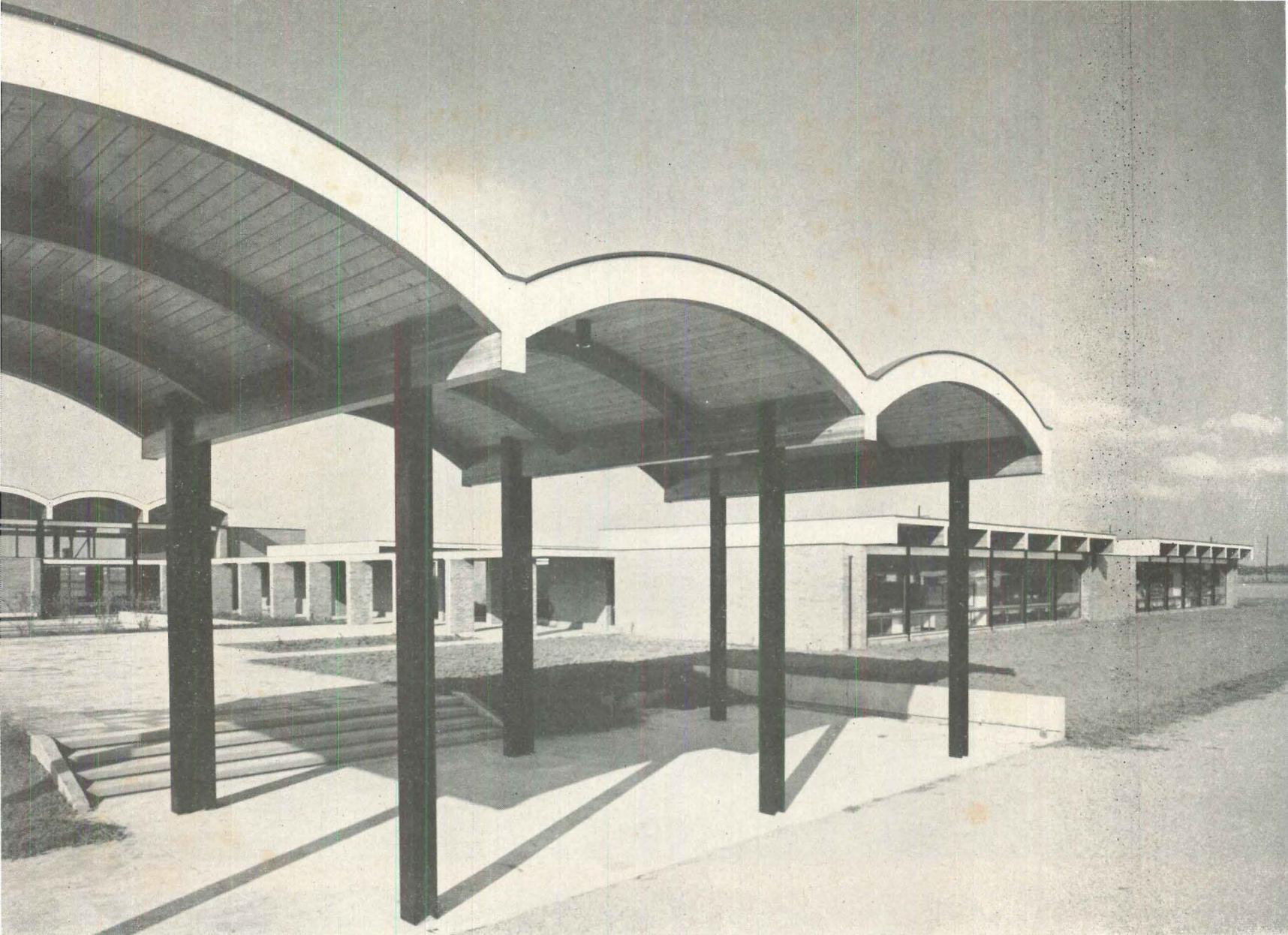


PHOTOS: GEORGE KNIGHT

pathetic understanding of the crucial nature of this transition from home to school. Architects Callister and Rosse made it a completely separate two-room building on a shelf of land below the elementary school proper. The wide roof bears pyramidal skylights which, while fanciful in form, impart just the right degree of dignity. Inside, the kindergarten is a warm and friendly house for children, a series of unregimented spaces filled with softly diffused natural light, at once protective and stimulating.







RONDAL PARTRIDGE!

PATIO SCHOOL IN INDIANA—AS SEEN BY ITS USERS

When The Architects Collaborative was invited to design an elementary school in Columbus, Ind., the subject was familiar if the terrain was not.

This is TAC's thirty-fourth completed public school—and it may well be the best one. It is one of those rare schools which has convincing, completely stated architecture as well as capable teaching space. And it is pleasant, as well as evidently impressive to the children who use it. Beginning on the facing page are some drawings and paintings by pupils of the school, showing how their new building looks to them. These delightful sketches are proof that TAC's several architectural devices, although used with adult sophistication, register with the young as well:

Change in level. In the flat Midwest terrain, this school was set upon a created podium of earth, 2 feet high. This platform preserves the identity of the school, which is set on the edge of largely treeless parkland so that the buildings do not seem to slide off into the meadow.

Splitting the classrooms into two wings—one for the

younger pupils (including kindergarten), and the other for older elementary grades, each with its own interior court—was another device used by TAC. The classrooms are carefully divided in massing, and in active play space, but the groups are equally carefully mixed in slightly more passive pursuits—outdoor reading, eating, etc.

Identification by roof line. The classroom wings are visibly borne on deep laminated wood beams, extending out in glare-shielding roof overhangs 4 feet beyond the glass walls. But to further identify the school in the community and in the minds of its pupils, TAC used a device brought into play in so many recent U.S. embassies abroad: an umbrella made of repeated barrel vaults. The most prominent umbrella is the bus shelter out front (above), but the central multi-purpose room behind it has the same silhouette. The effectiveness of this image is indicated by the drawing on the facing page by Christy Lambert, age 9, and Billy Knowles, age 11, of the student body. The photograph on this page is by Rondal Partridge, age 45.

And here are the artists at work. Their school stands on its platform, calmly ordered, but the children operate on many different levels.

Once the two-foot-high platform of earth had been shaped to support the three wings of the school building—upper grades, lower grades, multipurpose wing—Architect Norman Fletcher and his fellow TACTicians began to carve into it. For example, a panel of sod is set down several steps before the high multipurpose wing (photo, right). Another example: a rectangular classroom courtyard which occupies the open core of the lower class wing, and the circular pit within it (below, right). Directly below, a close-up of young man as artist.



FACTS AND FIGURES

Parkside Elementary School, Columbus, Ind.

Architects: The Architects Collaborative (partner in charge: Norman Fletcher; job captain: Herbert Vise). Associate architect-engineers: SIECO. Engineers: Souza & True (structural), Buerkel & Co. (mechanical), Maguire Engineering (electrical). General contractor: Repp & Mundt.

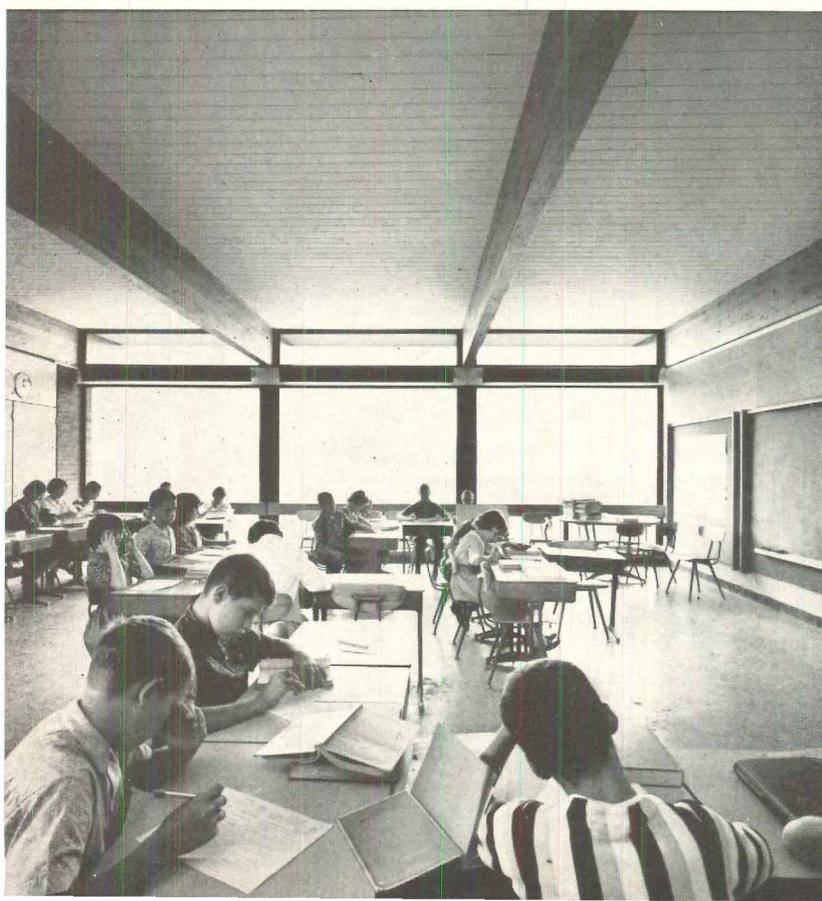
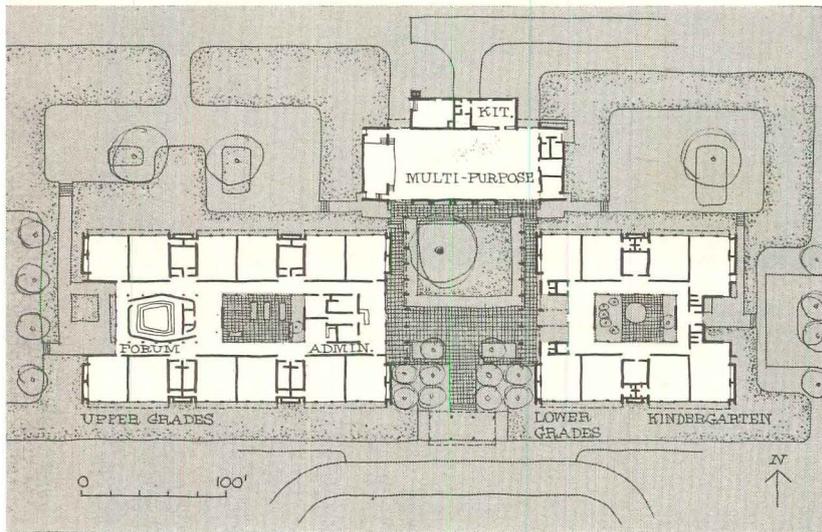
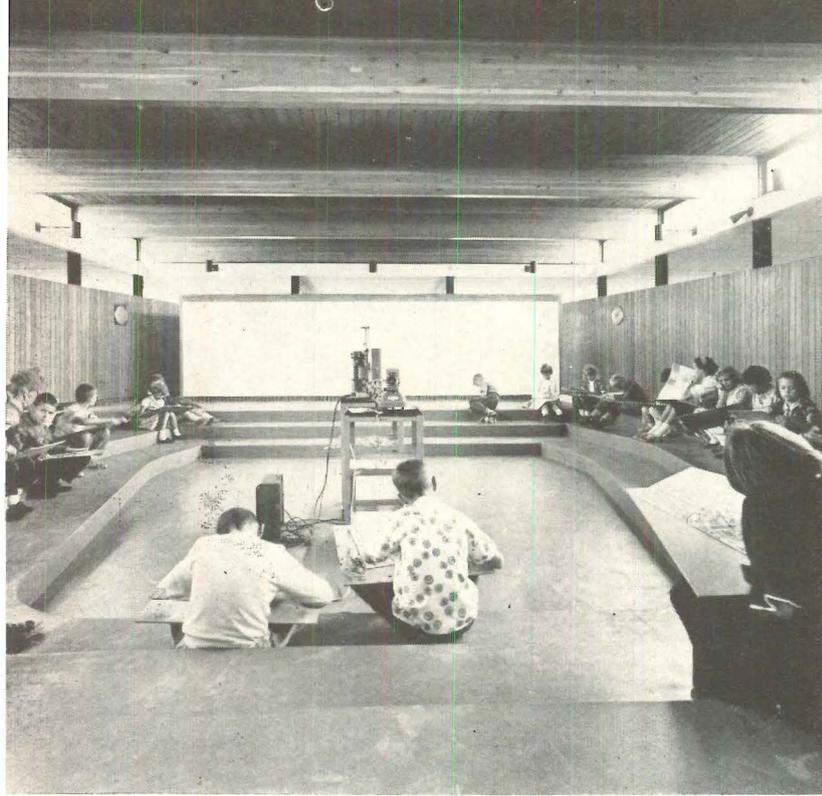
Size: 20 classrooms (including kindergarten), plus multipurpose room, "children's forum," and administrative office.

Structure: Laminated wood beams on steel columns and load-bearing walls. Exterior walls: brick and glass; sills of crab-apple stone. Interior walls: load-bearing, brick; nonload-bearing, painted concrete block; in washrooms, vinyl fabric on skim coat; in "children's forum," administrative offices, and multipurpose room, red oak. Floors: asphalt tile in classrooms, corridors, and multipurpose room; vinyl asbestos in kitchen; ceramic tile in washrooms; concrete in "children's forum."

Costs: land and site development, \$54,000; construction, \$720,000 (not including furnishing and equipment); fees (for building) \$45,750. Cost per square foot, \$15.70—approximately \$1,200 per student. Source of financing: public bond issue, with architectural fee paid by Cummins Engine Foundation.



TAC adds a new term to the school designer's book: "student forum." It is smaller than an assembly, more adaptable than a classroom.



PHOTOS: RONDAL PARTIDGE

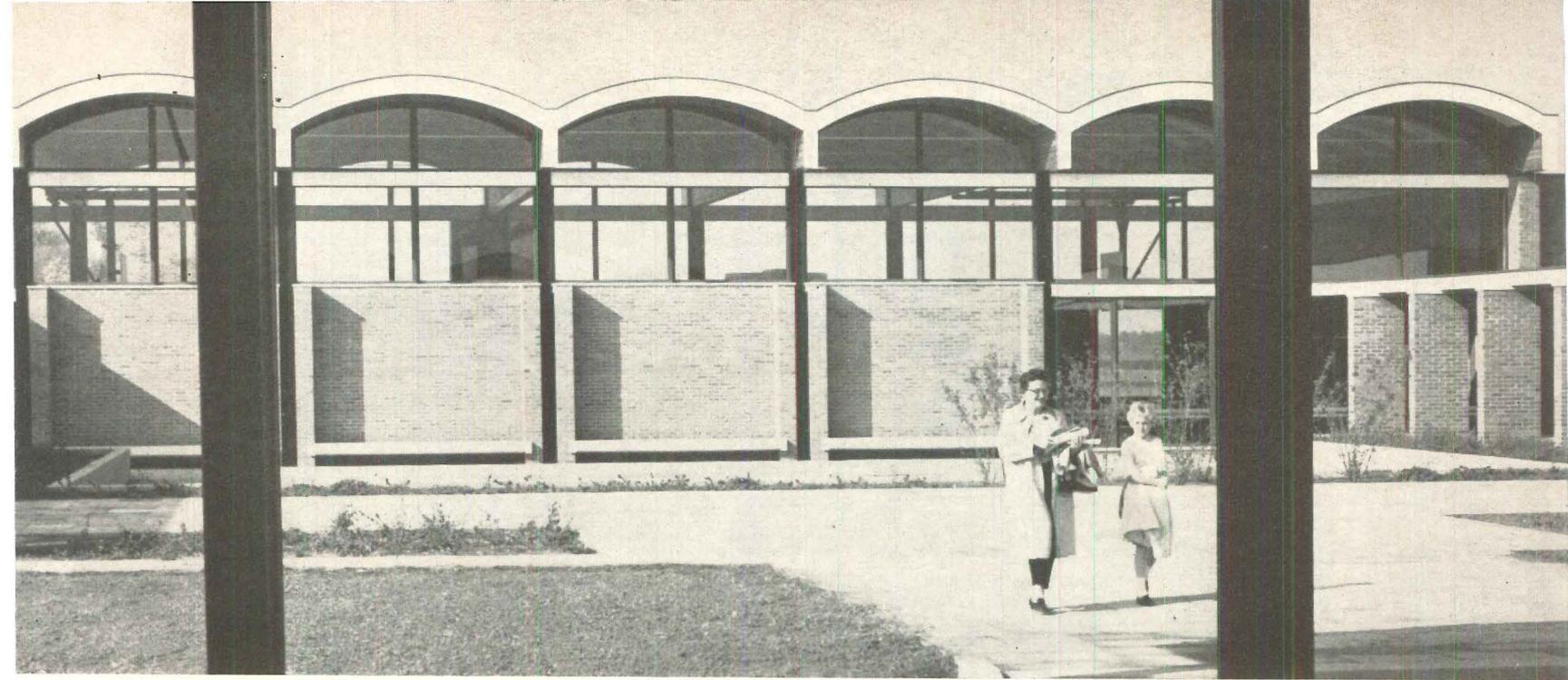
Indoors is a calm continuation of the well-ordered exterior, including an echo of the changing of floor levels: within the upper elementary wing is a room whose floor steps down at the center and up at one end (photo left). In its way this "student forum" is a nonbinding subscription to new team-teaching practices being evolved in lower education. It has no permanent furniture, so it is spacious; two or three classes of pupils can be assembled to share a lecture or demonstration here. Yet, owing to the several-level floor, a bare handful of students do not rattle around in the space; they can be consolidated on the lowest floor level for easy direction.

The photo at lower left indicates that the broad windows of classrooms can sometimes create a slight glare problem, although the roof is continued over them in a generous overhang. Electric lighting is beamed on the white ceiling from fixtures on the framing of the glass wall, and helps alleviate the contrasts (see overleaf for more detail).

The repeated barrel vault of the lofty multipurpose wing (photographed, inside and out, on facing page) is made of wood planking carried on steel columns. The deliberate purpose of the vaulted roof (and the serrated roofs of the classrooms) is architectural: to provide a variegated roof profile against the flat terrain typical of the region. The large room, shown at lunchtime (right), is also equipped with basketball hoops and other gymnasium equipment, and has a stage at one end.

Throughout the school's interiors natural finishes were used as often as was practical. Ceilings are all painted white, doors and louvers mustard, and columns black—an ordered but lively background.

This school is another of the series commissioned by the Columbus school system at the invitation of a fund set up by a local industry, the Cummins Engine Foundation, which underwrites the architectural fee if the school board chooses from a selected list of architects.



PHOTOS: RONALD PARTRIDGE



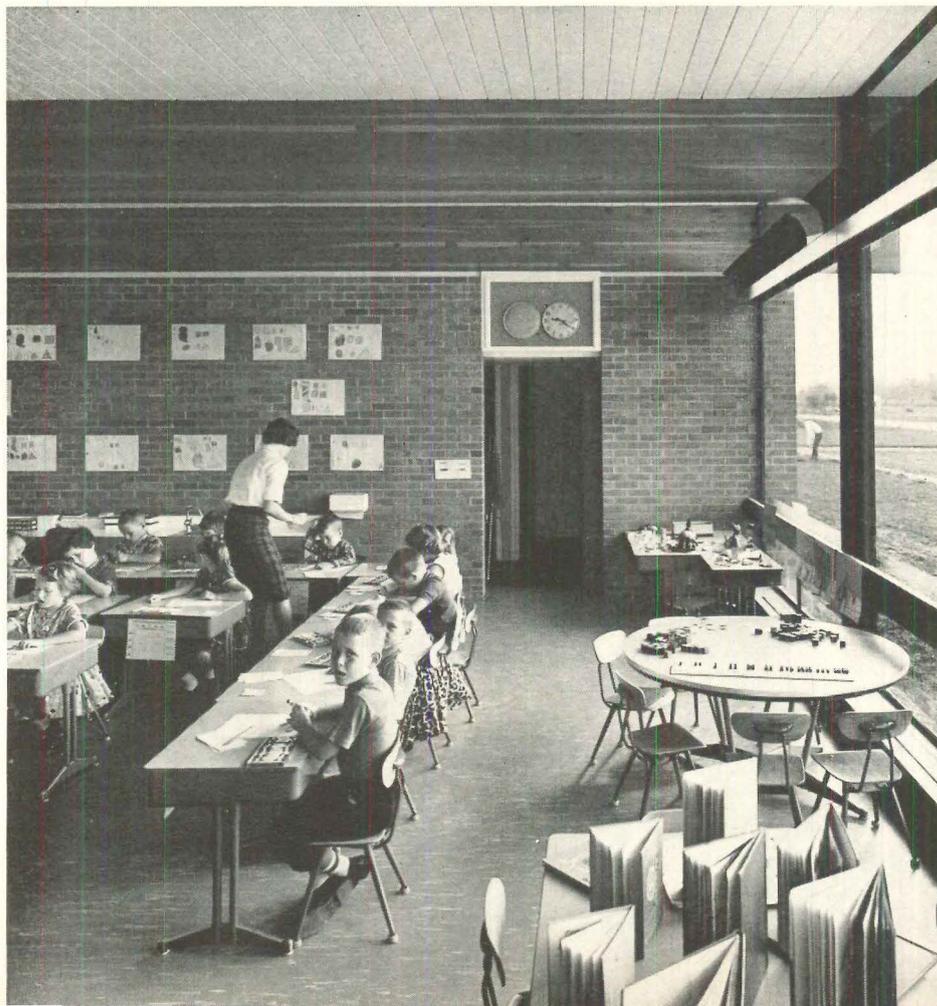
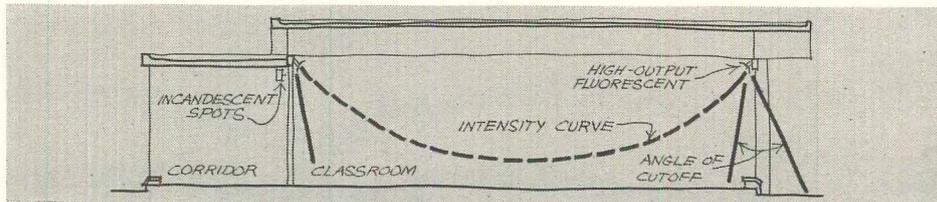
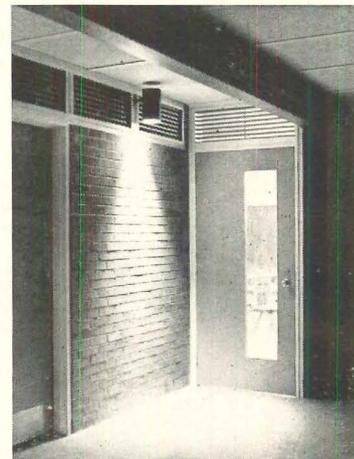
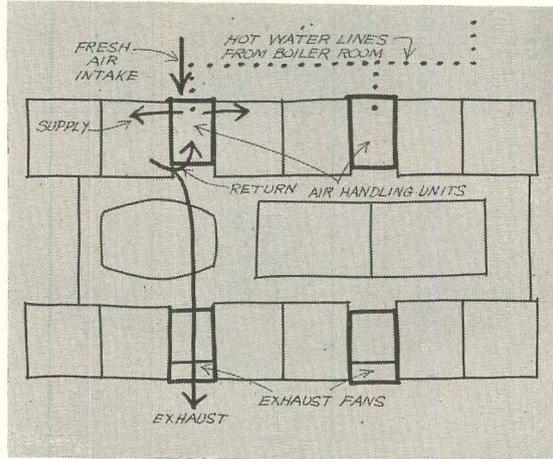
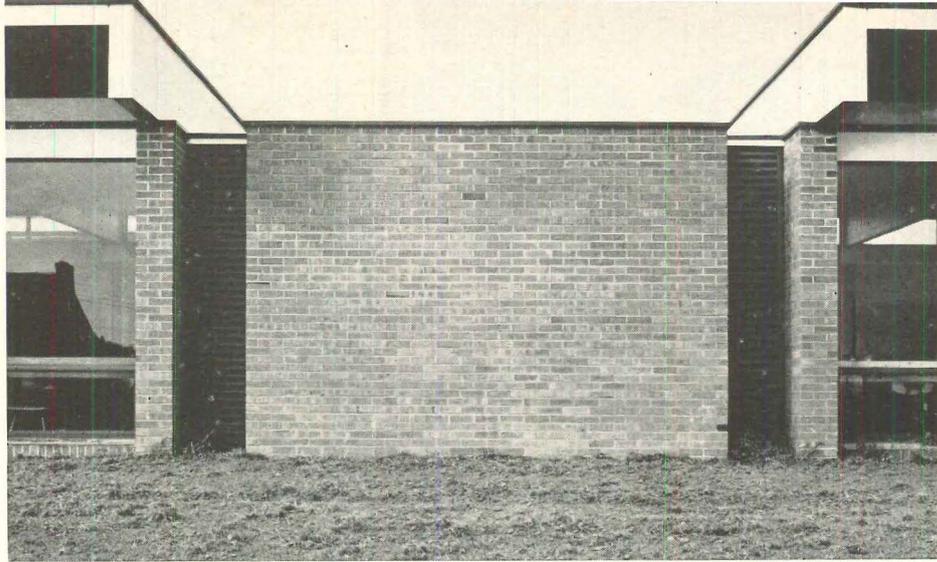
Indiana school: novel air handling and lighting systems show how mechanical equipment can be used to enrich architectural design.

Only a few buildings today reflect one of the most important developments in design theory since the 1930s: the incorporation of costly and vital mechanical systems (usually carefully buried out of sight) as basic visual elements of design. The picture at the right shows that TAC's new school is one of them. The blank-walled, louvered mechanical cores are clearly expressed as punctuation marks in the rhythm of classroom units.

The lighting design, too, is handled in a novel, conscientiously expressive manner that is a long way removed from the all-too-familiar appliqué of fixtures on the classroom ceiling. As in the case of the warm-air heating system, the elements of the lighting design are carefully kept away from the simple plank-deck overhead, which affords no hiding for ducts, pipes, or wires.

The air-handling scheme, seen in the diagram at right, was designed to mesh not only with the structure but also with the floor-to-ceiling glass in the classrooms, which the architects wanted to be unencumbered by waist-high heating units. A duct which runs under the slab delivers air to the trim, slotted diffusing plates in the low stool beneath the glass. The air is then exhausted to the corridor through a grille above the classroom door seen in the center photo, right. The corridor acts as a plenum chamber for the return air, 20 per cent of which is pulled through the washrooms and ejected from the building through the louvers in the south wall.

Classroom lighting is provided entirely by means of the shielded, indirect cornice fixtures developed by William Lam. Their light intensity curve (see section) follows a pattern similar to that of the bilateral natural lighting, and drops to a minimum of about 30 foot-candles at the center of the room. In contrast to the even wash of light from the high-output, grooved fluorescent lamps in the classrooms, the projecting spotlights in the corridors throw concentrated pools of warm incandescent light on the brick walls and dark brown floor.



PHOTOS: RONALD PARTRIDGE



NICHOLAS HOLT

COLORFUL SCHOOL SCALED FOR CHILDREN—AND COST

For years the children of Ellsworth, Maine, attended the kind of school that delights antiquitarians and gives administrators goose flesh: a no-nonsense, two-story white frame structure with tiny windows and a single wooden stairway outside for use in case of fire. Its successor, the Charles F. Knowlton School by Architects Krumbhaar & Holt, was built more to the children's size, opened wide to the outdoors, and given a sufficiently light-hearted character to make its occupants feel that it is very much their own. It was built, moreover, at an exceedingly low cost for a school that must stand up to such a rigorous winter climate.

Knowlton School, in fact, is best seen in the bright sun following a winter's snow, when its touches of color and gaiety stand out most vividly. Chief among these are the multihued skylights which pop up, steeply pitched and sprightly, from the classrooms. The skylights' colored panels, opaque with flat-white back sides, alternate with transparent panels; the sun comes through the clear panels and bounces off the opaque panels opposite. The result of this cross fire is a wide

and even distribution of indirect natural light. The skylight colors—red, orange, white, and two shades of blue—are also used for both interior and exterior classroom doors. The younger children (Knowlton serves kindergarten through fourth grade) use the door colors rather than teachers' names to identify their rooms.

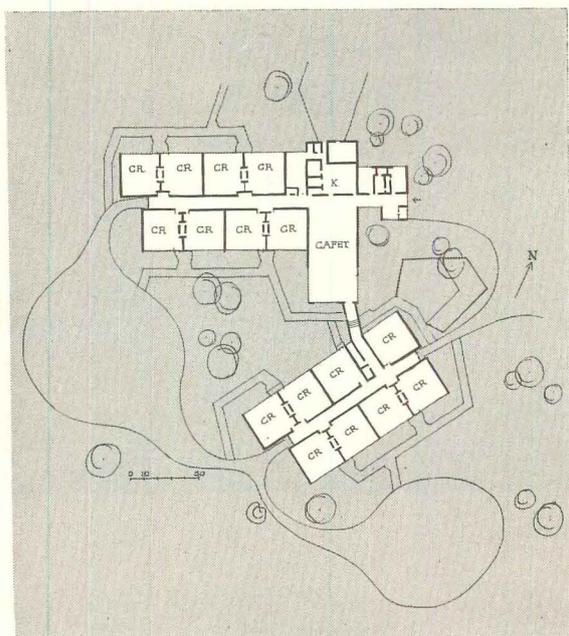
The 16 square classrooms are in two low buildings joined at the taller multipurpose room, which also bears a skylight. The state of Maine recommends that classrooms be lined up along either side of a double-loaded corridor under a single pitched roof, and that their depth be kept to twice the height of the corridor. Knowlton's architects flattened out the state's suggested section, and gave each row of rooms its own moderately pitched roof, thus reducing the volume per square foot of teaching space by some 40 per cent. The buildings are thoroughly equipped and substantially constructed, with a steel and wood frame, brick end walls, and liberally glazed curtain walls along the sides. Yet construction cost was kept to \$12.84 per square foot, or \$680 per pupil.

Classrooms are flexible and self contained, with all structural elements exposed to show the children just how their school is put together.

The plan of Knowlton School is as informal as the buildings. One classroom wing sprouts from the multipurpose room, and the other is set at an angle below it. Within each, the rows of classrooms are staggered so that no interior door looks directly into another and the skylights are offset. Given access both indoors and out, the classrooms (center, right) are unusually self contained, each with its own toilet and sink. The rooms' square shape and central skylights allow considerable flexibility in class arrangement.

The multipurpose room (below, right) was made a corridor between the two wings, but it is seldom used as such: with toilets in the rooms and play areas separated by grade, pupils walk through the multipurpose room only on those unhappy occasions when they are called to the principal's office. It is primarily a cafeteria, but the tables and benches can be put up or folded away by one man in 10 minutes, freeing the otherwise unencumbered space for assemblies, band practice, or indoor sports.

Structural elements are exposed throughout the buildings. Steel I beams run just behind the glass, their tips protruding oddly through the brick end walls. Wood rafters crest beneath the skylights, and between each pair are steel tie rods which allowed use of the small wood members familiar to local carpenters to span the classrooms' 30-foot width. Apart from reasons of economy, the architects left all this open to view with the hope that the children would enjoy seeing how their school was put together.



FACTS AND FIGURES

Dr. Charles C. Knowlton School, Ellsworth, Me. Owner: City of Ellsworth. Architects: Krumbhaar & Holt. Engineers: George Wadlin (structural), Maine Engineering Service Co. (mechanical, electrical). General contractor: Emmons L. Shea. Building area: 24,631 square feet. Construction cost: \$316,351 (including 10 folding tables and benches, dishwasher, walk-in refrigerator, and other built-in equipment); \$12.84 per square foot.



THE CITY SCHOOL: OLD PROBLEMS, NEW SOLUTIONS

"The hope of our country" is too often housed in school buildings like the one shown above. Although this one is in a small city (Columbus, Indiana), it nevertheless illustrates many of the things that are very wrong with schoolhouses in most large cities: they are bulky, bleak, and present a generally unfriendly countenance inside and out.

The look of the schoolhouse is not the only thing wrong with education in our biggest cities. Problems of outdated and unrealistic curricula, poorly paid and trained staff, and work unoriented to any possible future career for thousands of children in decaying urban areas, add up to what Dr. James Bryant Conant has called the "social dynamite accumulating in our large cities."

The form the schoolhouse takes is only one factor in neutralizing the forces that threaten to ignite this social dynamite, but it is increasingly recognized as a key factor. As a report of a special blue-ribbon panel investigating school construction in New York has said, "Certainly one could never claim that good schoolhouses alone are the whole answer to the country's or to the city's educational problems. But the spiritless school-

house can make all the problems more difficult."

In the biggest cities, spiritlessness is a fearsome problem, particularly as it evidences itself in obsolescence—New York has about 275 school buildings over 50 years old (i.e., nearly one third of all schools in the city); and in Chicago, despite the most feverish school building program of any big city (*FORUM*, Nov. '60), there are still many buildings 50 years old or older. But obsolescence itself might be overtaken if the pressure for new classrooms resulting from sheer growth alone could be met. Chicago has 510,000 pupils now and enrollment is increasing at the rate of 15,000 per year; while New York, with over one million pupils, has been experiencing an annual rise of over 20,000 children.

The effort to build classrooms just to keep up with these pressures has put considerable strain on municipal budgets and made cities acutely cost conscious. Even though budgetary strictures frequently curtail all-out efforts to solve the urban school crisis, many of the biggest cities are today facing their school site and construction problems with greater courage—and ingenuity—than ever before.

Urban renewal, joint-occupancy designs are giving big-city schools chances to solve an array of problems.

"The century-old concept that city school buildings must be crowded onto high-cost sites should be discarded. The schoolhouse under these conditions soon becomes a paralyzed mass of brick and mortar, in the midst of our ever growing and changing metropolitan centers." So said Michael Radoslovich, chief of the New York Board of Education's Department of Architecture, in a speech to be delivered this month to the Building Research Institute. Radoslovich has probably had as much experience with the physical problems of the city school as any architect, and firmly believes that new forms for the urban school must be found, for social as well as economic reasons.

For one thing, securing adequate city school sites has become a severe problem, and it seems particularly intense in those areas which most need new facilities. In Chicago, the school board has made intelligent use of parklands, in conjunction with Park Department policies (FORUM, Nov. '60). But school sites are often too small, too far from the center of the area to be served, and too costly. As Radoslovich says, "The typical city elementary school for 1,000 pupils is a three- or four-story structure costing approximately \$2.5 million. It is built on a one-and-a-half acre encumbered site, acquired at a cost which at times exceeds \$1 million and forces the dislocation of hundreds of families and of business . . ."

Schools and renewal

Urban renewal has proved of considerable aid to some cities, both in terms of finding large sites for schools and in terms of lowering the cost of new facilities. Because cities can obtain credit for any municipal facilities provided in redevelopment areas, they are encouraged to get schools into renewal sites. The cost savings involved can be considerable. For instance, in Philadelphia, two existing elementary schools had inadequate sites enlarged and a new junior high school was built in one project area. The land involved would have cost the school board \$1.7 million if

bought outright, but, by buying from the city under the Title I slum-clearance laws, the board obtained the land for only \$321,000. Besides this saving on land alone, the \$2.2 million it cost to build the new junior high school also became part of the city's noncash contribution toward its one-third portion of total project cost. (The federal government pays two-thirds of project costs.)

Philadelphia's School board thus saved nearly \$1.4 million, cut down the city's cash grant for a large renewal project, and, perhaps most important, obtained a junior high school that would have been impossible without Title I.

City vs. suburbs

Most of the new schools that have been built on urban renewal sites in large cities have strongly resembled suburban schools (see picture of Detroit's Chrysler Elementary School, opposite page). Most new neighborhoods planned around urban renewal areas are believed to want that type of school: the suburban model, low to the ground, with large glass areas and plenty of space in and around it, has become the modern symbol of the fine American school.

But urban renewal is far too slow moving to answer completely the cities' needs for sites, given the sort of growth in school population—and the problems of obsolescence—faced by Chicago and New York. And the suburban schoolhouse, which might fit nicely in a spacious cleared area, is quite uncomfortable on most crowded city sites. Where efforts are made to push suburban-type schools into crowded sites, there has been much criticism, particularly on economic grounds (i.e., why build low schools on expensive land?) And there is also a sharper awareness that what is right for the suburb might not be right for the city. As Jonathan King, Secretary-Treasurer of the Ford Foundation's Educational Facilities Labs has said, "increasing the density of a city area is not necessarily a bad thing for the neighborhood and may even contribute to the

safety of the area for both the school children and others."

A new kind of schoolhouse

King believes that "a new kind of schoolhouse is being developed which may lead to planning and building changes which will return some architectural excitement to the school in the city, contribute to new urban planning solutions, and help solve some of the pressing social and economic problems of the city."

This new kind of schoolhouse represents a combination of functions, with the school no longer standing alone. Schools have already been built into apartment buildings, and studies have been made of many other combinations. Perhaps the most provocative of these is Architect Radoslovich's idea for a business high school-office building combination. The New York City Board of Education actually planned to build such a structure, but lost its site before construction could start. School facilities would have taken up a subcellar, cellar, and the first six floors of a 38-story tower. (School-board planning was based upon floor areas of no less than 15,000 square feet per floor.) The school would have had separate entrances, moving stairs, and elevators, and a total net area of 73,000 square feet, including a gymnasium and auditorium-cafeteria.

Studies by the board indicate that the cost of the school portion of the building would have been completely paid for in 40 years, with a surplus of over \$1 million besides.

Schools and housing

It is easy to see where great economies accrue in this sort of joint occupancy, but some school experts take a dim view of high-school pupils spending four years in a high-rise structure in a busy, commercial area—and then, in effect, moving their typewriters upstairs after graduation day. Still, this is the very job-oriented education many leading educators say is so badly needed today.

One combined-function schoolhouse that has been in operation for several years is also in New

York, in a public housing project just across the East River. There P.S. 9 operates from the first-floor areas of three of the project's 21 buildings. Although the school was originally established as a temporary measure because of overcrowding, it has become a permanent school with ten classrooms and an enrollment of 364 in kindergarten and first grade. The fact that all but six of these students come from the project itself, and therefore have no city streets to cross, is a distinct advantage, but the school space itself is hardly adequate by modern standards. Columns clutter up classrooms, and there is too little window space.

Based partially on the experience with P.S. 9, a school is being built as an integral part of a union cooperative project in New York, with the union paying the total cost of building the school and the board paying for operations and maintenance.

Whether joint-occupancy schools can prove the whole answer to the many problems of the urban schoolhouse remains to be seen. But there seems little doubt that architectural concepts of the past no longer work in the city, and that suburban schools, except where cheap land can be found, simply do not fit. There is also a conviction that the urban schoolhouse can and must perform a key role in the total strategy of redeveloping cities, whether through Title I or not. A special state panel investigating New York City school-building practices several years ago has perhaps stated this conviction best: "There are those who expect the schoolhouse to . . . strengthen the whole fabric of city life by serving its whole community; its architecture should lead the neighborhood on to its own renewal; and it must help to anchor those families who are needed to keep a city in balance culturally and economically, and who are encouraged to desert to the suburbs if the city's schools are dreary and cheerless." Three recent urban schools that go far toward achieving these ends are shown on the opposite page. DAVID B. CARLSON

TIGHT-SITE SCHOOL

New York's P.S. 7, designed by Perkins & Will, packs facilities for 1,306 pupils into about 1½ acres in East Harlem. Despite the small site, P&W has tried to include many of the same features which characterize its best suburban schools: bilateral lighting, cross-ventilation, and clustering of age groups. Classrooms and facilities are stacked in three four-story clusters, connected by glass-enclosed bridges. Each classroom thus has full daylighting on two adjacent walls. Contractor: Laurence J. Rice, Inc.



GEORGE CERENA

URBAN RENEWAL SCHOOL

In Detroit's Lafayette Park renewal area, the tiny Chrysler Elementary School perches on the edge of the site, in the shadow of Mies van der Rohe's glass-walled apartments. The school, designed by Gould, Moss & Joseph, Inc. (contractor: Charles Fromm Co.), now has seven classrooms and other facilities for 235 children. The school is designed for expansion as further portions of the project are completed. As with most urban renewal areas, the toughest thing in getting Chrysler built was the timing: school boards are traditionally loath to build new schools where there seems little immediate need, but at the same time, families will not move into redeveloped areas where there are no schools.



TWO-FUNCTION SCHOOL

New York's first school incorporating a branch of the public library was designed by Kelly & Gruzen for a lower West Side area of Manhattan. The junior high has an enrollment of 2,200—on a 2½-acre site. Despite the small site, the architects attempted to keep as many students as possible on two floors of the concrete structure to minimize vertical circulation. Cafeteria, gymnasium, and library occupy the ground floor, and students go directly to first-floor classrooms via two concrete ramps running upward from the building's central court. The architects estimate that a school of this size on a single floor would ordinarily require a 15-acre site. On-site open space was kept to a minimum since there was a park next to the school. The library (foreground) projects from the rest of the structure at street level to provide some special identity. Contractor: Lazere Construction Co.



H. BEINSTEIN



Rinnest shopping center under one roof, Randhurst sprawls in a 10,000-car lot (above), offers an environment (below) unmatched downtown





RANDHURST CENTER: BIG PINWHEEL ON THE PRAIRIE

One hundred and fifty years ago, the edge of the great prairie near Chicago's Des Plaines River was prime territory for white men swapping booze and baubles to Indians for beaver pelts. The nature of commerce has changed considerably since then—beaver skins are dearer, for one thing—but merchants are still bringing their wares out to the prairie.

The latest and most ambitious effort in that direction is the \$22 million Randhurst shopping center near Mount Prospect, Ill., about 22 miles from Chicago's Loop.

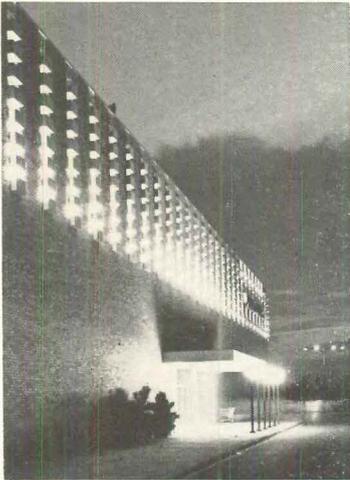
The concept of the Randhurst center is a triangle, the corners of which represent three department stores: Carson, Pirie, Scott & Co., Montgomery Ward (The Fair), and Wieboldt's.

But from the air, the center looks more like a giant pinwheel sprawling in the prairie. One of the largest centers in the U.S. (and the largest under one roof), Randhurst, with 1.2 million square feet of rental space in 90 stores, is expected to generate \$60 million in sales during its first year, placing it among the three busiest centers in the nation. And its de-

velopers, led by Carson, Pirie, Scott's Harold Spurway, foresee sales of \$98 million by 1970.

The Randhurst pinwheel "spins" about a great, domed, central area, which Architect Victor Gruen calls the "Galleria." Under the 160-foot-diameter dome (a steel frame with concrete sprayed over corrugated steel sheets) are three shopping levels, lined with specialty shops and other small stores. All levels are dotted with sculpture, benches, and the sort of "mall furniture" that has become a trade-mark of a Gruen mall. The intensive use of the galleria space evolved directly from the problem of tying together three large stores of about equal size. Gruen at first conceived a simple triangular pattern, but this left too much space in the central court. On the other hand, had the central area been too greatly reduced, the passages reaching from the core to the large stores would have become too long, narrow, and generally unattractive. Also, a straight triangle would not have drawn shoppers between the three major stores so effectively as does the pinwheel.

Gracious shopping, with visual excitement, is Randhurst's lure for Chicago's fastest-growing suburban area.



1



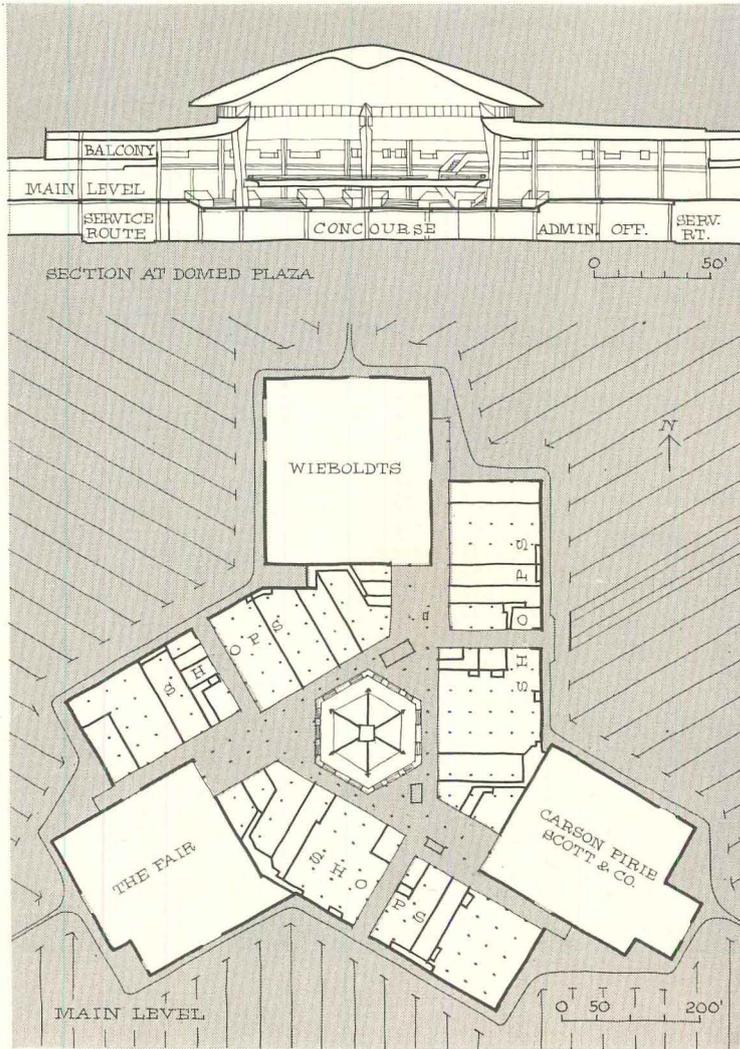
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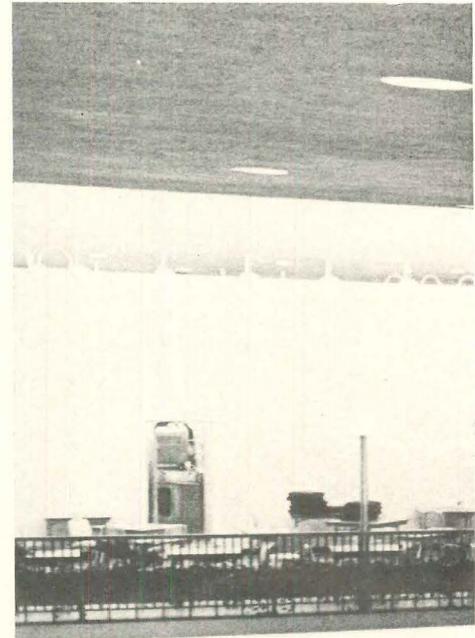
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Under Randhurst's 160-foot dome, shoppers can stroll through three levels of plant-studded shops, laced between the three large department stores. The three-level scheme is shown schematically above (5) and in the picture on the opposite page. By widening the malls between the large stores (6) Gruen has attained a spacious interior. Randhurst's exterior posed more problems: Gruen had to break up what is basically one large, rather massive, and shapeless structure, to make it attractive to a pedestrian or motorist. At night, this problem is solved by lighting away from the building, rather than spotlighting the structure. Individual lighting treatment, moreover, was developed for the façade of each of the major stores (1). Entrances, which are limited to the three department stores and six arcades, have been given differing treatments to assure easy identification

(2, 3). All shops have their entrances off the mall. Randhurst has its truck entrances submerged at a basement level (4). The mall areas contain restaurants, cafeteria, and some \$100,000 worth of sculpture.

FACTS AND FIGURES

Randhurst Center, Mt. Prospect, Ill. Owner: Randhurst Corp. (Jointly owned by Carson, Pirie, Scott & Co., Wieboldt's, and The Fair). Architects & engineers: Victor Gruen Associates (partner in charge); Karl O. Van Leuven, Jr. Consultants: Dr. Verne Knudsen (acoustical); Larry Smith & Co. (economic); Barton-Aschman Associates (traffic). Landscape architects: Franz Lipp & Associates. Mechanical and electrical engineers: Robert E. Hattis Engineers, Inc. General contractors: George A. Fuller Co., Turner Construction Co. Total project cost: approximately \$22 million. Building area: 1.2 million square feet.



PHOTOS: BALTAZAR KORAB



Slugging it out in the suburbs: Randhurst's market strategy, and what it means for Chicago's future growth.

Randhurst represents a striking new departure in the strategy of modern marketing. For the first time, not one but three large retailers have in effect exported a huge chunk of downtown into the suburbs. Obviously, the only structure that can handle such a concentration of new retail facilities is a "regional"-sized shopping center; and, given Randhurst's scale and climate, the only type of shopping center that makes any sense is the enclosed-mall center.

Randhurst, for all its size and unique clustering of three large stores, is really little more than a megalopolitan extension of the postwar phenomenon of retailing following its customers from the city. Chicago has had some 90 shopping centers of all sizes built in the past dozen years, and another 25 or so are either being completed or are underway. The upshot of this activity, among other things, is that the city's share of Cook County retail sales has dropped from almost 90 per cent to about 75 per cent. (This is still not so serious as for the nation as a whole, however. A recent study by the Urban Land Institute showed that for 94 metropolitan areas, retail sales were actually 19 per cent greater outside downtown than inside.)

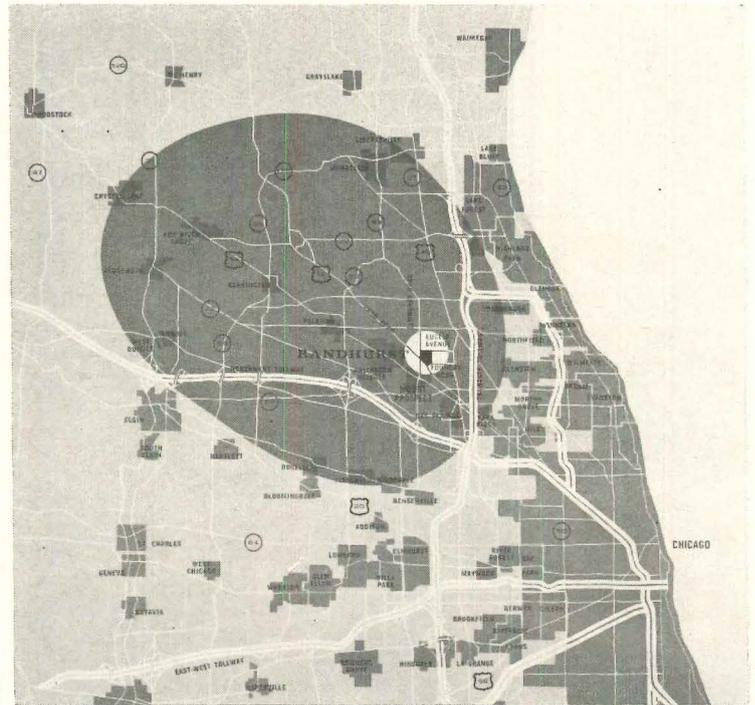
Randhurst developed primarily from the realization of Carson, Pirie, Scott & Co. that Chicago's burgeoning northwestern suburbs represented the best untapped potential market in the whole area. CPS then enlisted Montgomery Ward (The Fair) and Wieboldt's, two other large retailers, both of which were eying the same area. The three stores realized that they could no longer attempt to lure the mass of suburban shoppers downtown, and had already built several suburban stores in smaller shopping centers, to the west and north of the city. They also realized that it would be unwise for each of them to pursue a separate course of action

in the same general market area. A newspaper survey, indicating that 40 per cent of all persons in the metropolitan area never come downtown, reinforced this conviction. Says Harold Spurway, a CPS vice-president and head of the Randhurst Corporation: "If they never come to town, there's no chance to serve them unless we go close to their homes—and if we don't go close to their homes, somebody else will."

That somebody else of course is CPS's arch rival, Marshall Field, still the reigning retail power in Chicago. Marshall Field has migrated to the prairie, too, and is countering Randhurst with its own huge (1.2 million square feet) shopping center, called Oakbrook Terrace, at Hinsdale, near the intersection of the East-West Tollway and the Tri-State Tollway. Field's is thus betting that the prime potential market for a large center is due west, while CPS is looking to the northwest, nearer O'Hare Field—and some of the richest of the new suburbs. CPS already has a store due west, farther out than Oakbrook, and another at Edens Plaza in the far-north area. "In Randhurst," says Spurway, "we felt we could put something together with three stores that would have considerable market impact—enough to slug it out toe-to-toe with Field's."



Flavorful signs mark parking lots.



Randhurst's trade area (black) encompasses over 300,000 persons.

There seems little doubt that Randhurst's potential market is there. Studies by Larry Smith & Co. indicate a present "trade area" population of 300,000 within a 25-minute drive, with another 100,000 due by 1965. More important, family incomes are considerably higher in the Randhurst trade area than in most other suburbs—in the immediate vicinity of the center, family incomes average \$10,000.

Economists and planners in Chicago generally feel that Randhurst will be successful, both because of its size and because it offers a broad variety of merchandise in a sparkling setting. Chicago City Planning Commissioner Ira Bach, for one, believes Randhurst's mall plan promises a broad appeal in a wide area well-served by super (and near-super) highways. Randhurst's first six weeks of operations support Bach's opinion, and indicate that Randhurst's backers picked the right spot. Most important for Carson, Pirie, Scott & Co., analysis of the first weeks of operation shows shopper volume to be mostly new business, with almost no coincident decline in business at other CPS stores.

But, of course, if a large number of shoppers in an area patron-

ize a new shopping center, they must be absenting themselves from other stores, and here is where Randhurst poses a problem. As Economist Anthony Downs of Real Estate Research Corp. says, "Somebody will suffer because of Randhurst, and it will probably be the smaller local retailers who haven't kept up with the times."

The Northeastern Illinois Metropolitan Planning Commission is just beginning to do some retail function studies of the Chicago suburbs, but it is already obvious that new centers like Randhurst, Oakbrook, and even earlier ones like Skokie's Old Orchard become themselves foci of new suburban development. Oakbrook is planned as a whole new satellite city, with new industry, hotels, and some 1,350 acres planned for residential development, some of which is already finished. Randhurst has not developed plans to "build in" its own customers in this manner, but figures that the projected growth of the northwestern quadrant of Chicago will serve the same purpose. Whether such growth lives up to expectations or not, it appears that Randhurst, the biggest chunk of downtown yet suburbanized at a single stroke, is very much a force to be reckoned with. DAVID B. CARLSON



1963 FORECAST: \$26.6 BILLION FOR NEW BUILDINGS

BY MILES L. COLEMAN

CONSTRUCTION REVIEW AND FORECAST (expenditures in millions)

Type of construction

Type of construction	1962 estimate			1963 forecast			INCREASE 1962-63
	Private	Public	Total	Private	Public	Total	
BUILDING CONSTRUCTION¹							
Industrial	\$ 2,700	\$ 370	\$ 3,070	\$ 2,900	\$ 350	\$ 3,250	5.9%
Offices and warehouses	2,400	...	2,400	2,500	...	2,500	4.2
Stores, restaurants, and garages	2,500	...	2,500	2,600	...	2,600	4.0
Religious	970	...	970	1,000	...	1,000	3.1
Educational	620	2,950	3,570	625	3,000	3,625	1.5
Hospital and institutional	940	400	1,340	975	425	1,400	4.5
Social and recreational	740	145	885	725	140	865	-2.2
Public administrative and service ²	...	675	675	...	700	700	3.7
Apartments ³	5,800	630	6,430	5,975	700	6,675	3.8
Hotels, motels, and dormitories	1,520	95	1,615	1,575	100	1,675	3.7
All other ⁴	810	1,400	2,210	800	1,460	2,260	2.3
TOTAL BUILDING CONSTRUCTION	\$19,000	\$6,665	\$25,665	\$19,675	\$6,875	\$26,550	3.4%
TOTAL HOUSE CONSTRUCTION ^{4, 5}	17,830	200	18,030	17,950	200	18,150	0.7
TOTAL OTHER CONSTRUCTION ⁶	6,470	10,535	17,005	6,575	10,925	17,500	2.9
TOTAL CONSTRUCTION⁷	\$43,300	\$17,400	\$60,700	\$44,200	\$18,000	\$62,200	2.5%

1. Excludes all farm construction.

2. Mainly public office buildings but also post offices, courthouses, prisons, etc.

3. Buildings containing three or more dwelling units.

4. Includes fire stations, zoos, veterinary hospitals, animal havens, bathhouses, greenhouses, transpor-

tation terminals, crematoriums, heating plants, grain elevators, etc., plus FORUM's estimate of the amount of building construction (such as power plants, terminals, barracks, maintenance shops, pumping stations, etc.) usually reported in the Census Bureau's predominantly nonbuilding categories—see

footnote 6.

5. One- and two-family nonfarm dwellings.

6. Includes farm construction of all kinds amounting to \$1.4 million in 1962; and public utility, military, highway, sewer, water, and public service construction, exclusive of the amount of this kind of con-

struction estimated to be for buildings of various kinds—see footnote 4.

7. All categories include major alterations and additions.

Source: Estimates by Miles L. Coleman based on figures collected by the Census Bureau.

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For the third year in a row, total expenditures for all types of construction in the U.S. will set a record. Building construction (exclusive of one- and two-family residences) will amount to \$26.6 billion — 3 per cent over this year's probable figure. Home building will account for \$18.2 billion, and nonbuilding construction (highways, utilities, sewer and water installations, etc.) for another \$17.5 billion in 1963. The total dollar volume of construction next year, then, should reach \$62.2 billion—a gain of about 2.5 per cent over the 1962 total.

This advance seems slight compared to the increase of 5.8 per cent from 1961 to 1962. In this respect, however, construction is likely to be in line with the business situation generally; next year's gains everywhere will probably be of a pallid sort. Gross national product is expected to rise even less than the average 3.5 per cent annual increase of the past eight years.

Taking a long-term view, however, the future should be brighter. This outlook is based upon a rising rate of family formation, of the level of disposable income, and of consumer spending. These factors should lead to a new source of expansion in the economy over the coming years.

Nonetheless, in the short run, 1963 will show slower rates of growth in individual categories of building—even apartments, hotels, and houses—than in 1962. Here are the prospects in each category:

Industrial building, after a major advance during 1960, slumped in 1961 and about held its own in 1962. Next year will see an upturn in spending, estimated at nearly 6 per cent, but the outlay for private industrial building will

be below the 1960 level. Because equipment is favored over structures in federal depreciation schedules, the tendency in 1963 will be to use existing structures with new equipment wherever possible.

Office and warehouse building has dropped off from the boom rate of 1961 but has made a modest gain this year (up 2.1 per cent). Although the peak has been passed in New York City (which carries a heavy weight in the total), prospects for a continued high rate of office building construction are generally good; an increase of 4.2 per cent is forecast.

Store, restaurant, and garage building made another healthy gain of 8 per cent in 1962, reaching a dollar volume of \$2.5 billion. Maintenance of the present high level can be expected next year, and an increase to \$2.6 billion is possible.

Religious building is now only slightly below last year's figures, and a minor increase (3.1 per cent) is foreseen for 1963.

Public school construction has sagged in 1962, but should revive in 1963, rising 1.7 per cent above this year. The increase will be stimulated by rising high-school requirements and the favorable terms at which financing has been obtainable. Spending for private educational buildings will also continue to expand.

Hospital and institutional building, both private and government sponsored, has done well. Private building registered a 19 per cent gain, and government construction grew by about 8 per cent. Further, if somewhat reduced, gains of 3.7 per cent in privately built facilities and 6.3 per cent in the public sector will be made in 1963.

Social and recreational building (theaters, bowling alleys, com-

munity halls, etc.) will have registered a fair gain in 1962, though the rate of increase has recently tended to ease. In 1963 such building will probably decline somewhat (2.2 per cent).

Public administrative and service building (government office buildings, post offices, prisons, court houses, etc.) made only a minor advance in 1962 but will do better in 1963 (up 3.7 per cent). Since this is a category that will receive some of the discretionary public-works funds passed this year by Congress, the increase may be even larger.

Apartment building has not yet reached the end of its boom period, but the pace is slowing. The projected advance of 3.8 per cent in 1963 will be much more cautious than in 1962, but the proportion (about 28 per cent) of apartment dwellings to all dwelling units will not change materially. While market saturation is said to be approaching in metropolitan New York (almost 20 per cent of the 1962 total) and a few other cities, apartment vacancies for the country as a whole are lower than they were a year ago, and rents are still rising. At least one more year of a large amount of privately built apartments is assured. The probable number of units, estimated at 390,000, will be lower than the figure for 1962, now placed at 400,000. Apartment building financed and owned by the government is likely to exceed this year's level of about 35,000 family units by at least 5,000.

Hotel, motel, and dormitory construction reached the highest mark this year since the 1920s. Although no evidence of a decline of activity is yet seen, evidence of overbuilding is reported in many localities. A slowdown in contracts is therefore likely, but

commitments already made assure another high-level building year (up 3.7 per cent). Also, the continued flow of federal funds for college dormitories and accommodations for elderly persons promise to maintain activity in this area.

Other building exclusive of one- and two-family houses (see note 4 on table) should rise 2.3 per cent.

House construction (one- and two-family) made a fair recovery this year after a two-year slump. With the probable continuance of favorable credit conditions, a rising level of income, and a small increase in the number of families, a further gain of 0.7 per cent is expected for 1963. Any substantial increase, however, is still two or three years away; and in the present period of low-pressure demand, house building is particularly vulnerable to adverse shifts in the credit picture.

Total other construction will show increased activity in 1963. This broad grouping of utilities, highways, airports, farm structures, bridges, dams, and military facilities may get an added boost from the public-works fund.

Rehabilitation expenditures have been distributed among the various categories of building and construction shown in the table at left. About \$5.4 billion will be spent on major improvements of all types of housing alone in the current year, with a 2 per cent increase expected in 1963. Beyond this, about \$6 billion will be spent simply on the repair and maintenance of buildings and houses during 1962. Here again, both the aging and the expansion of present supply will assure some increases in 1963. For major improvements and for maintenance, the volume of activity tends to move with the trend in family income—which has been rising.

continued on page 182



A FOUNTAINLIKE CHAPEL

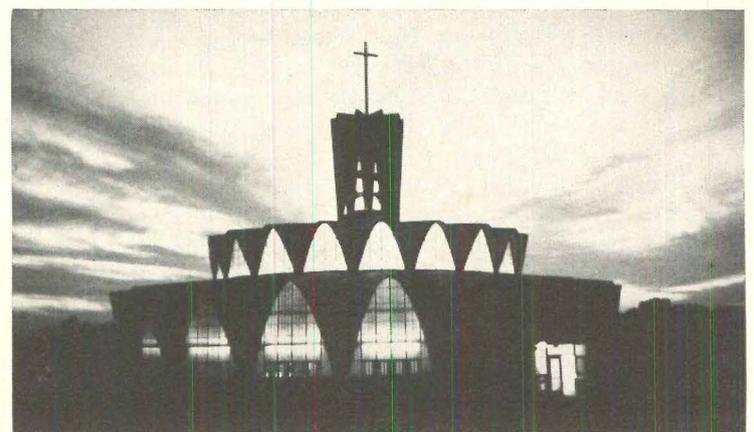
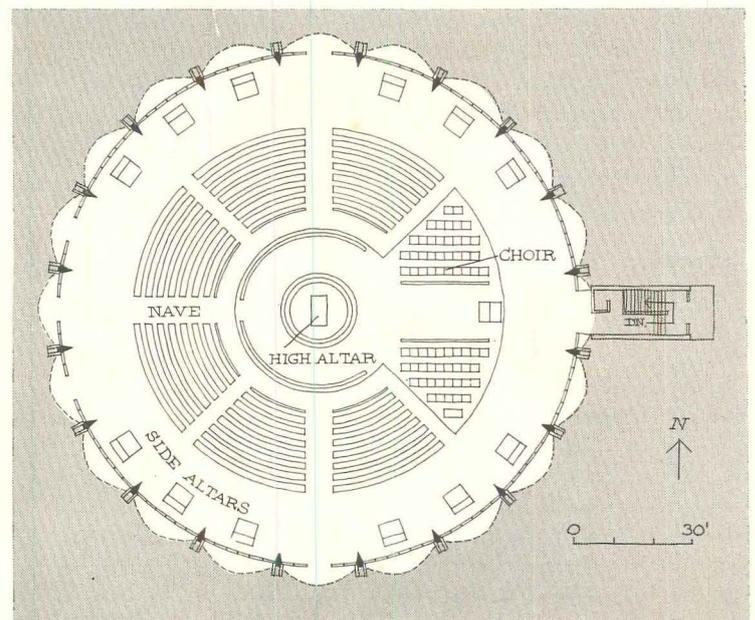
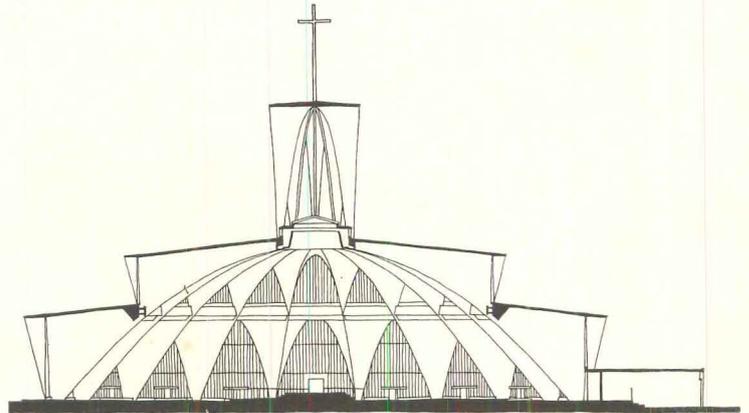
Black and white, white and black, arches upon arches upon arches, in circles. As seen on the opposite page, in a photo taken at dedication, the Priory Chapel outside St. Louis is the most elaborate example yet, on the North American continent, of a circular building in convoluted "shell" form. Its three circling, pyramided tiers of arches, which front the radiating vaults and a belfry, look like some artfully folded and stacked-up white napkin. It was designed by Gyo Obata of Hellmuth, Obata & Kassabaum, architects.

On its hilltop acropolis surrounded by lovely green rolling landscape (photo, lowest right), the church's exuberant form is kept devout by the forceful scheme of modest black-and-white color: by day the shell, which is covered all over with a creamy-white epoxy plastic, contrasts with black arch faces which are infilled not with glass but with dark-gray sheets of glass-fiber plastic laminate, opaque as seen in position, and set in black aluminum frames. (The entire structure is therefore plastic enveloped.) A surprising color reversal occurs at night (photo, right center) when the arched windows send forth bright white light, under a building silhouette that is changed from white to night-black. This severe color effect may be relieved later by planting flower beds around it.

The suitability of round churches for the Catholic ritual has long since been established, and in this case the façade of two circling tiers of 20 arches (under a third, taller belfry tier) is especially appropriate, because 12 of the 20 segmental vaults serve as open but well-marked chapel alcoves with altars at which monks celebrate mass. These alcoves necessitate no change in the foundation circle (see plan; also photos, page 117). The chapel is part of the Priory School for 160 boys being built by Benedictines.

Architect Obata's wavy scheme puts him with those architects who shape their fancy shell forms to fit engineering diagrams for greater ease and economy of building, rather than with those architects who draw personal, exciting forms that demand special ingenuity and cost of engineering. What this decision loses for Priory in excitement it regains in serenity. For inside Priory's great space fountain (top photo, page 117), the very multiplication of ribs, and of exactly identical arched windows both at ground story and at clerestory height, spreads the interest evenly around the simple hemispheric form and sets the lively interior at rest.

The unity of the interior which is effected by this graceful subdual of repetitive structural elements is reinforced by an evenly spread, high-key interior light that floats through

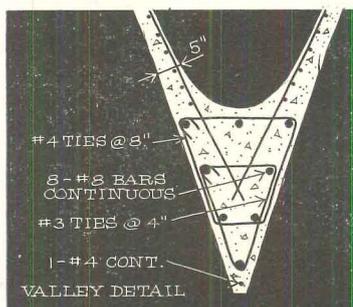


the entire enclosure. Amazingly, the arched windows, black outside, are a soft glowing white inside, creating a glareless ambience of light that is rare in modern churches. The physical cause is that the outer black window sheet is but one of three translucent layers, and it diminishes but does not discolor the light passing through an intervening insulation layer and the interior sheet of white glass-fiber.

Structure, lighting, heating, and acoustics are integrated

The interior of Priory explains even to laymen how the floating arches of the exterior are held together. From the compression ring at the top of the main structure (photo, opposite page) ribs go all the way down to the floor between contiguous arches. As shown in the diagram below, the *outer* surface of these ribs is nothing but the hollow "valley" between arches; but in the interior the cross section comes to a point, marking the rib edges. The thickening that occurs between the two different profiles, inner and outer, holds the reinforcing.

In the interior a great ring shows between the lower window range and the clerestory windows; this is, however, not a beam at all, but a light trough, carrying fluorescent lights, above, for indirect illumination, and spot lights below. It also has attachments for chains on which hang lighting braziers (photo right). Still another row of down lights is inserted in the bottom of the skylight and shielded by a diffusion ring. As a nighttime photo shows (top of right-hand column), the



same kind of reversal occurs at night inside as outside, walls becoming brighter than windows.

Acoustically the domed shape gives reverberation enough for Gregorian chants while the ridges and bumps prevent excessive echoes.

Heating and ventilating are also deftly handled. Finned convector tubes at the bottom of windows supply radiation; the enclosures are inconspicuous. For ventilation, there are hinged window panels above the floor (to be seen behind altar in photo) and a suction fan in the skylight; in summer, doors can be left ajar at three of the four compass directions. Lack of air conditioning is partly offset by a layer of insulation atop the shell structure under the white plastic coat. On a summer day of 105 degrees F. temperature, the empty room was found nicely cool.

The availability of basement space has helped in the remarkable concealment of utilities. In equipment and finishes, Priory is sensuously rich though an economy job. The ceiling is white plaster, the floor is special brownish-gray ceramic tile shaped and laid like brick (photo); the handsome, specially made furniture is natural oak and the simple, sumptuous altars are Georgia marble.

Feminine—and masculine

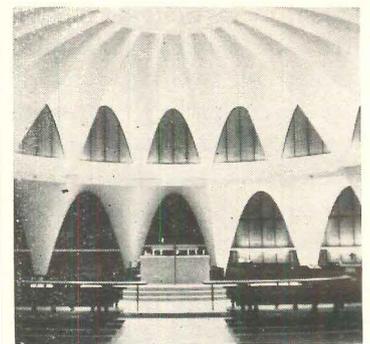
All in all, Priory is an unlikely but effective kind of church, persuasive by virtue of its verve and

individual personality rather than by logic. The play of range upon range of arches has a somewhat feminine connotation, which is held back by the black opaqueness and sense of enclosure, reticent and masculine, quite different in effect from the great glass-faced open-looking restaurants in Mexico and Cuba of similar form.

Sensuously the plastic surfaces tend to be a bit waxen; yet once again, having chosen consistent surfaces of the kind most likely to stand up in the weather, the architect seems to have been wise in resisting use of painted doors, etc., in livelier colors and different textures: too commercial.

In the interior the chapel has already been enhanced by a good

many tasteful modern pieces of art work, and it is hard to believe that an art center like St. Louis will be content to leave those



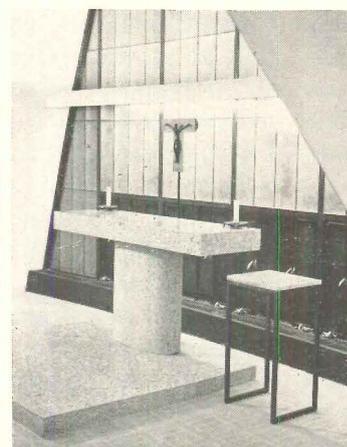
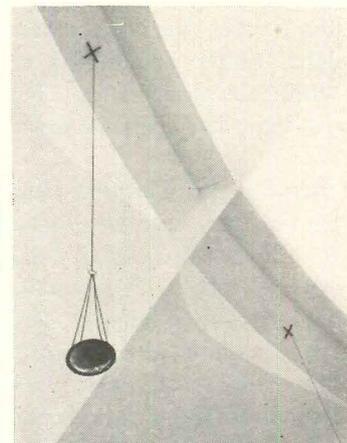
multiple windows bare for many seasons. They virtually cry for the kind of translucent, calligraphic painting that Matisse gave Venice some years ago.

With time, too, the architect will have to make conjunctions between his free-form chapel and his all-square, work-a-day buildings. May he solve such conjunctions with care, for especially the link elements must avoid fuss and collision. He has a fine building to start from.

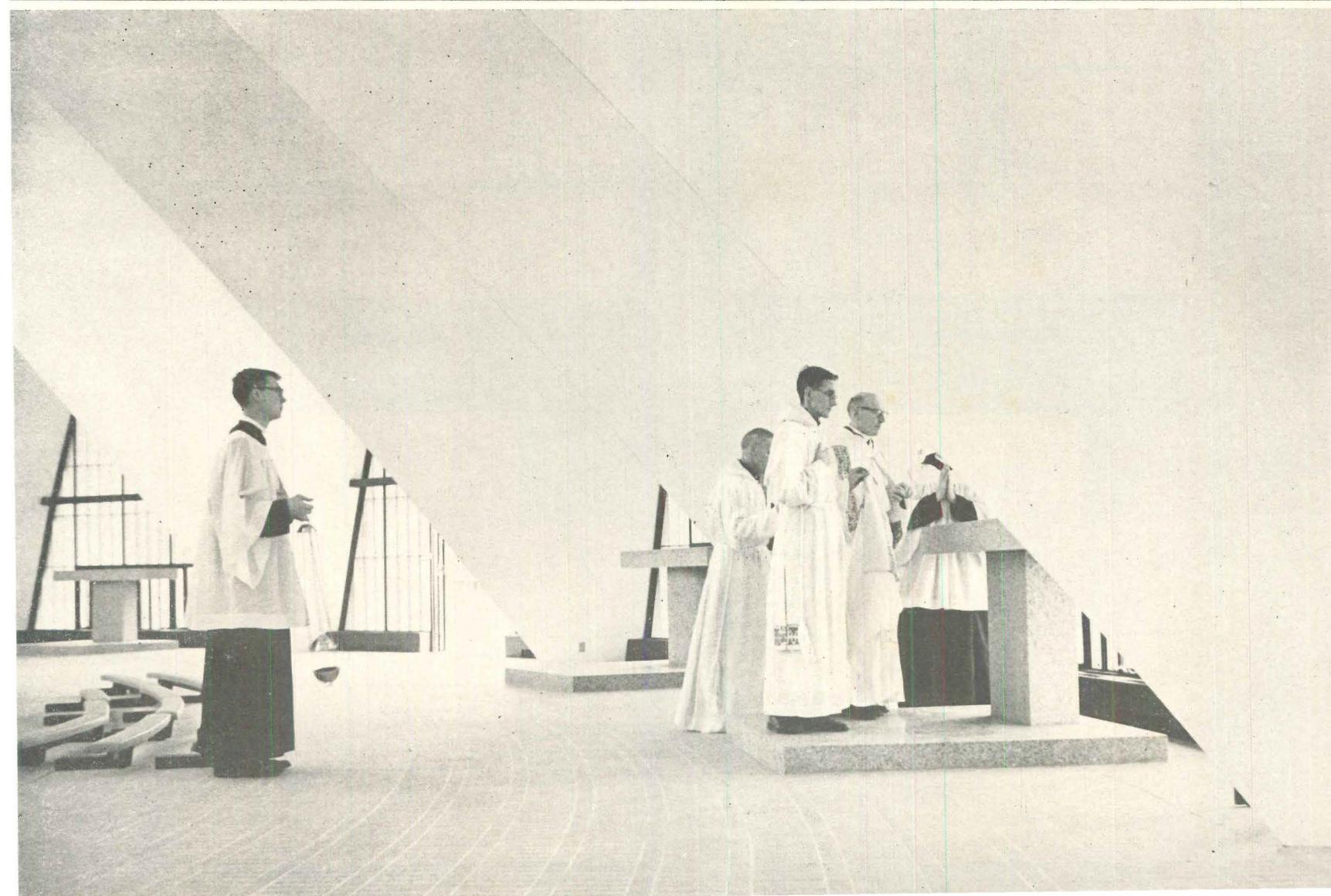
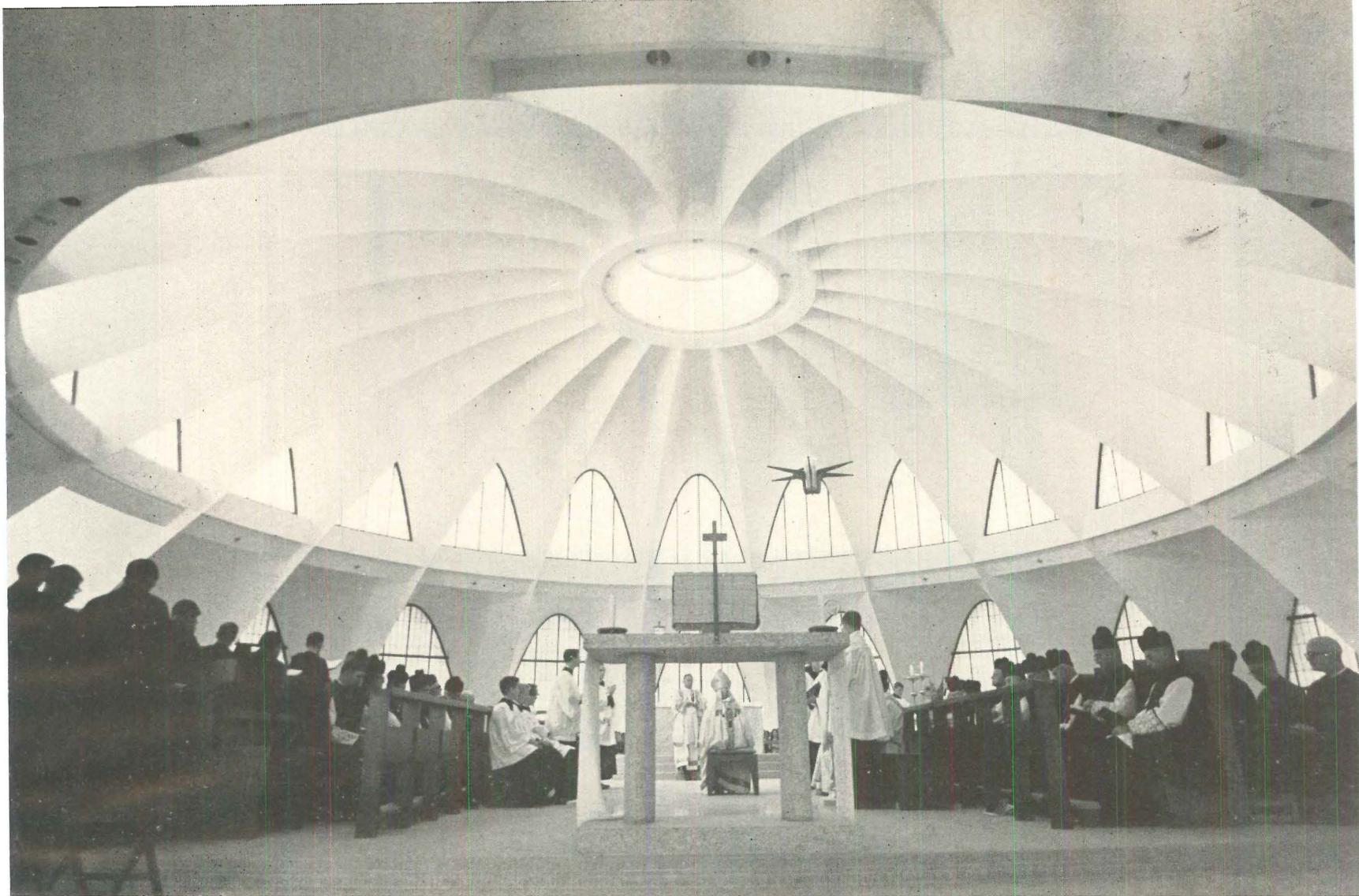
FACTS AND FIGURES

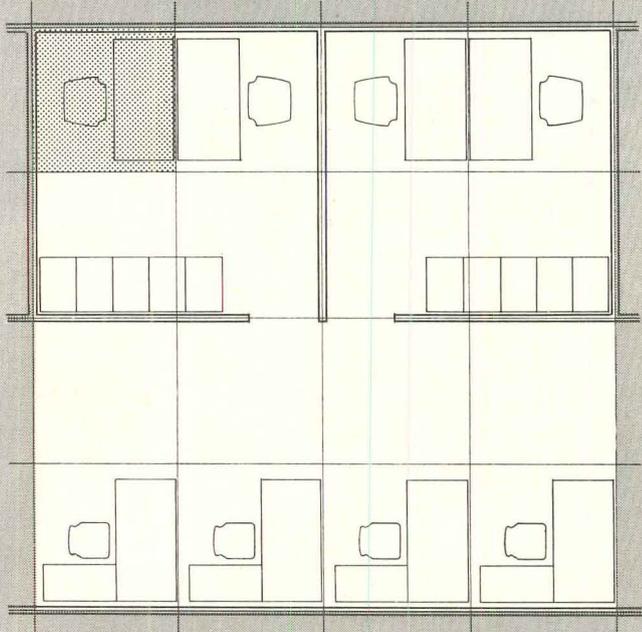
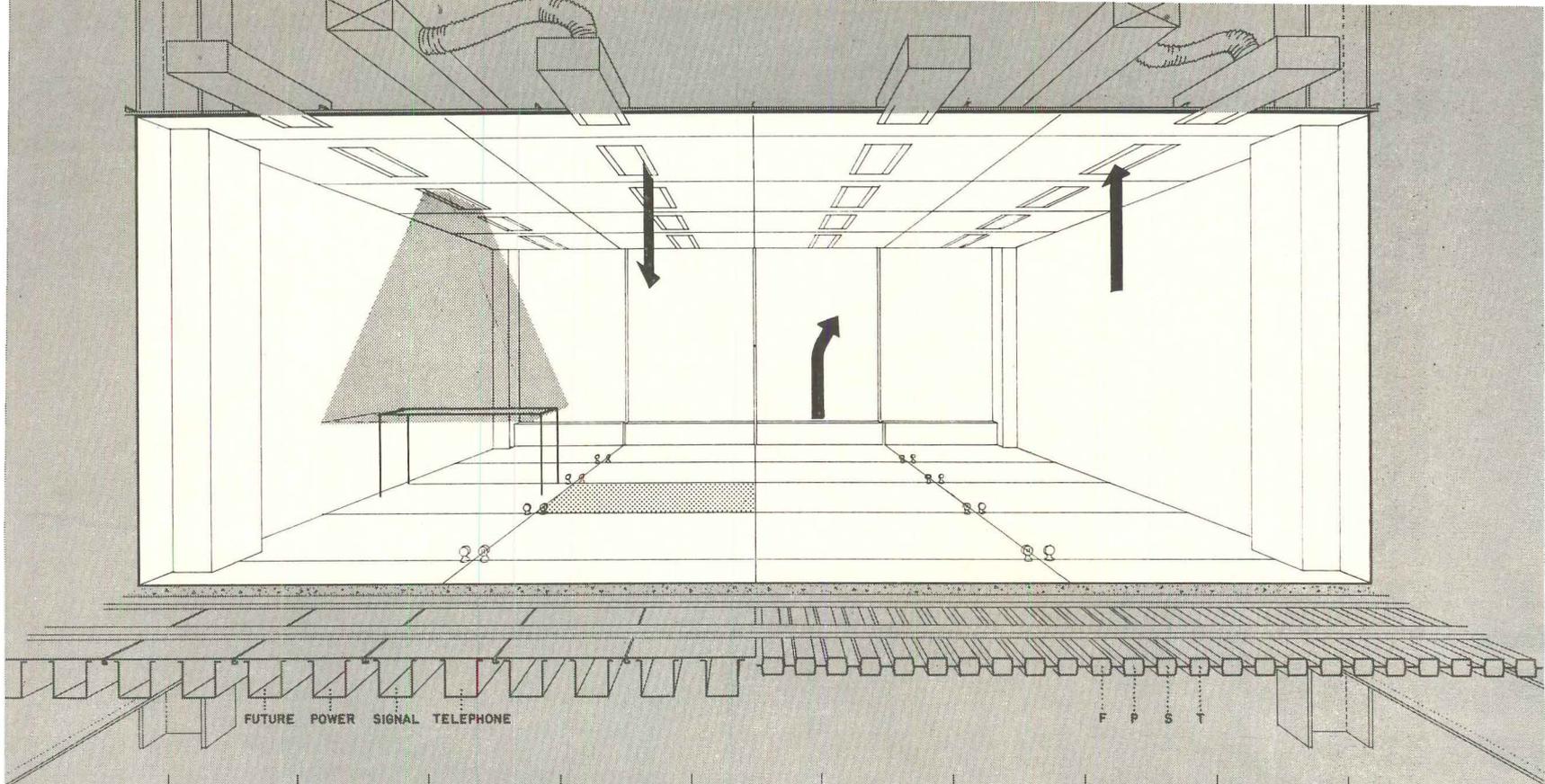
St. Louis Priory Chapel for Benedictine day school and monastery, Creve Coeur, Mo. Owner: The Priory of St. Mary and St. Louis; The Very Rev. Columba Cary-Elwes, prior.

Architects: Hellmuth, Obata & Kassabaum. Principal in charge of design: Gyo Obata. (Job captain: James Ham.) Engineers: Paul Weidinger (structural), John P. Nix (supervising structural), Harold P. Brehm (mechanical, electrical). Art consultant: Emil Frei. Landscape architect: Hideo Sasaki. Interior designer: Hellmuth, Obata & Kassabaum. General contractors: McCarthy Bros. Construction Co. Building area: 16,500 square feet. Construction cost (including land and site development cost): \$536,235. Furnishing and equipment cost: \$36,055. Fees: \$37,700. Cost per square foot: \$32.50.

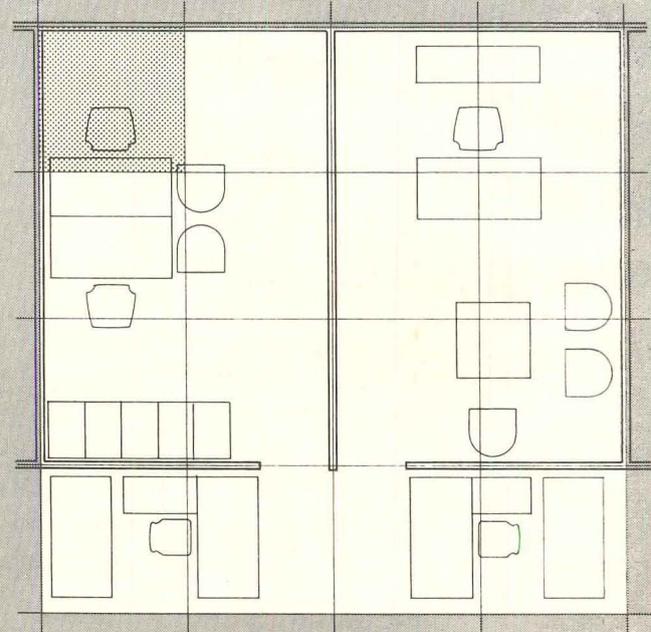


PHOTOS ABOVE & OPP.: ART FILLMORE

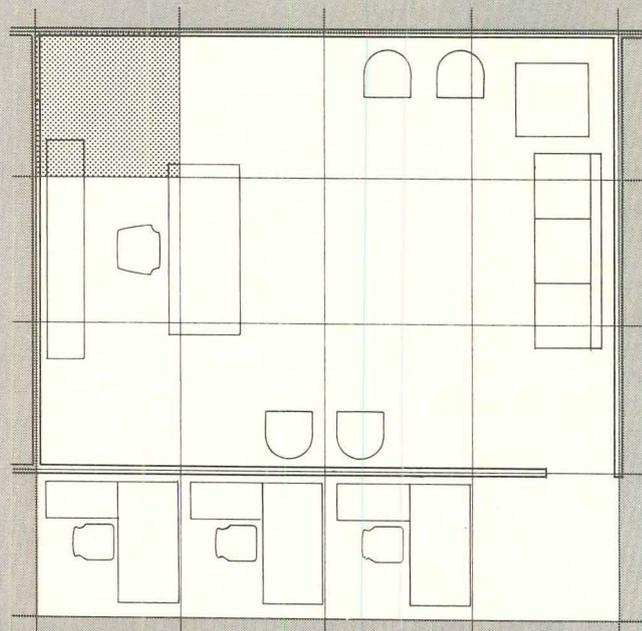




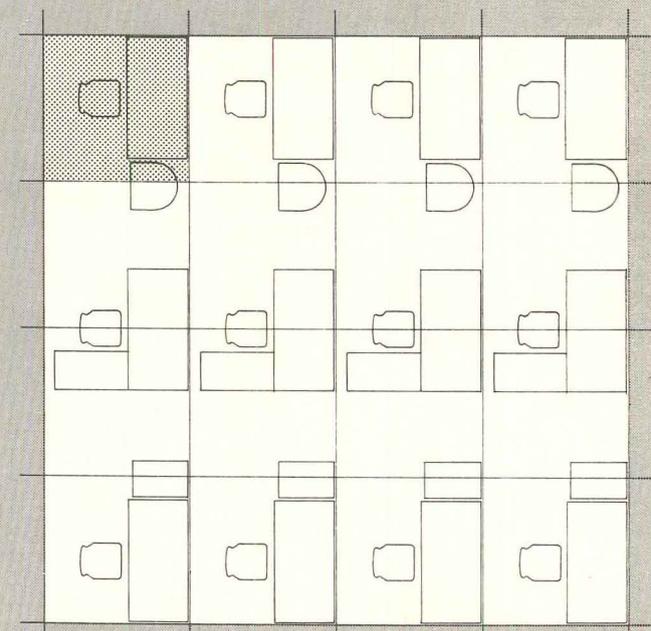
ADMINISTRATIVE



PUBLIC CONTACT



EXECUTIVE



POOL SPACE

SIDE CHAIRS

FILES

IN OFFICE DESIGNS, WHAT DECIDES THE MODULE?

Few architects or planners today would dream of designing office space without taking at least some advantage of the obvious benefits of modular planning. These benefits—shared by architect, contractor, and client alike—are flexibility, order, and economy.

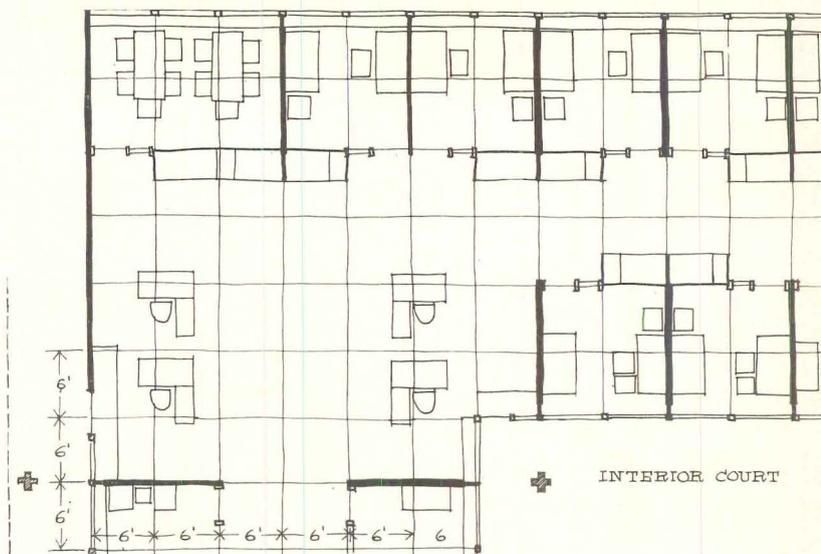
Given these benefits, it is surprising that so few U.S. office designs have been fully and consistently modular. It is even more surprising, in the light of the vast experience gained in the postwar building boom, that no “ideal” modules for office design have yet emerged.

The diagrams on the facing page (part of a large chart prepared by Architects Skidmore, Owings & Merrill to explain modules to their clients) suggest at least a partial answer. A module, in order to work, must accommodate a bewildering variety of elements, from structure to lighting and air conditioning, from ceiling and floor tiles to partitions and furniture. These considerations alone would be enough to tax the most tenacious designer, and they go far to explain why so few U.S. designs have carried consistent, integrated modular planning through to success.

But there is one other consideration, the most important of all: who is to use the office space, and how? What are the client's needs, where is he located (in the city or in the country)? Does he require pool space, large private offices with windows, or small interior cubicles? The fact that no two clients have identical needs explains why no “ideal” modules have yet emerged—and why they may never emerge. Here are case histories of three office-planning jobs, each using a different module—for good and sufficient reasons.

A six-foot module integrating all systems

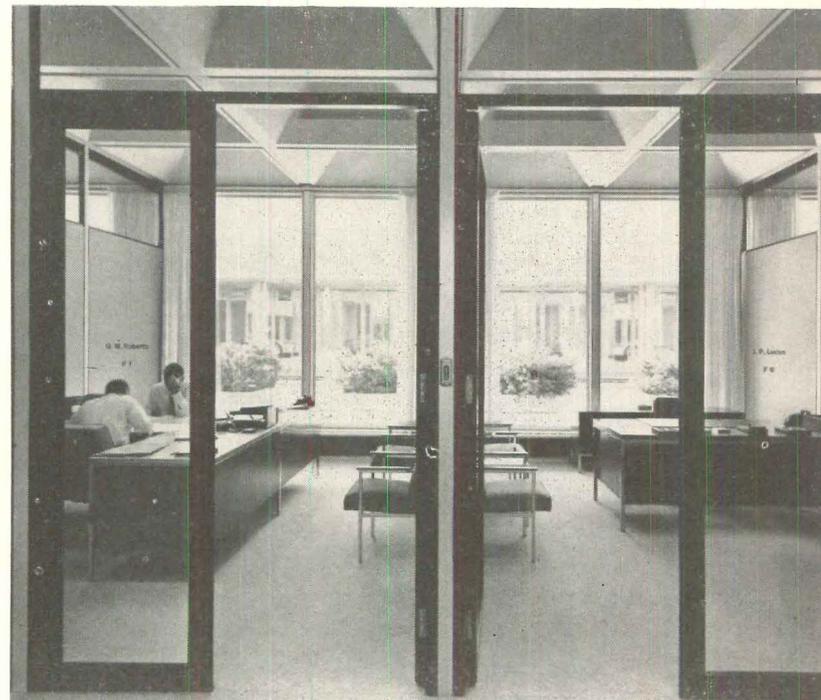
Almost all the conditions necessary for a completely modular office design were present when Skidmore, Owings & Merrill produced the new administration building for the Upjohn Co. in Kalamazoo, Mich. (plan and photos, right). SOM, pioneers and leading practitioners of modular design, were to carry the job through from start to finish; the client was building exclusively for his own occupancy and his own needs were known ahead of time (frequent rearrangement of partitions, generous offices, all with windows); finally, the building was to be in the country where lower land costs permit a more generous module than is normally used in the city. Out of these circumstances emerged what may be the most fully integrated office space yet produced in this country



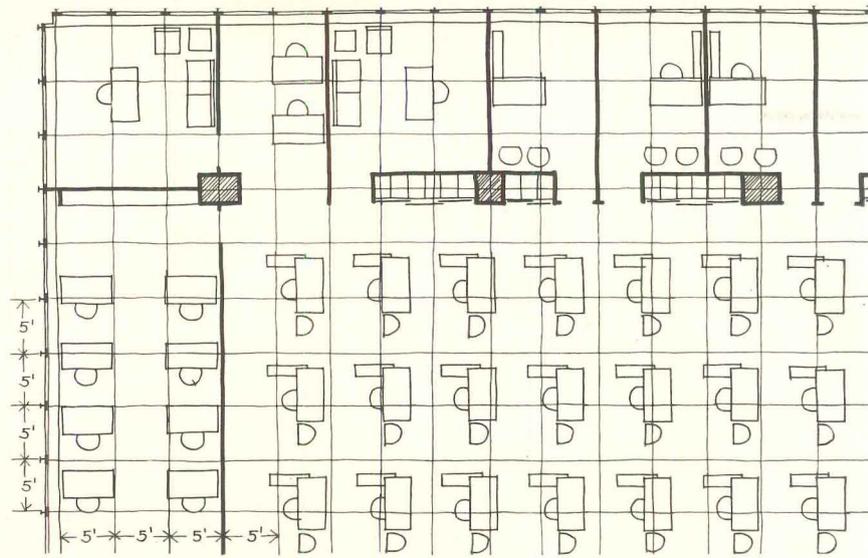
PHOTOS: © EZRA STOLLER



Upjohn's 6-foot module is reflected in ceilings, 12-foot-wide halls



Even Upjohn's narrowest private offices have 12 feet of window wall



—including furniture designed by SOM.

A desire to express the structure, which is a pyramidal space frame, together with an intent to conceal lights, which are located at the apex of the pyramids, suggested a module of 5 to 6 feet. Studies, comparing 5- and 6-foot modules, revealed that the 6-foot module would produce a better shaped, more easily furnished basic office (12 by 12 feet instead of 10 by 15 feet) and, in the process, actually save space (144 square feet instead of 150).

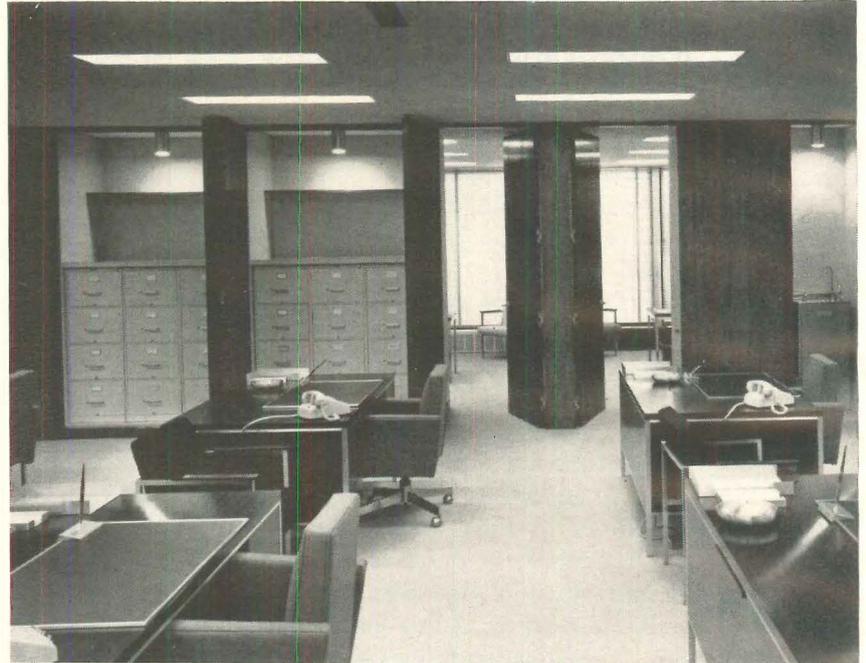
All offices in the two-story, pavilion-type headquarters have window walls, either on the perimeter, facing out over the surrounding countryside, or within, looking into eight landscaped interior courts of varying size. In the smallest offices, the glass walls are 12 feet wide. Except for the highest executive offices, work areas are divided by movable partitions which, so far, have been relocated about once a year.

A five-foot module to fit a modular building

Most speculative office buildings are designed without any true module, the intent simply being to pack the site with as much bulk space as it can hold. One new speculative building which does have a module is Place Ville Marie in Montreal, designed by I.M. Pei & Associates for Webb & Knapp (Canada) Ltd. The module in this case is 5 feet 1/5 inches (the fraction resulting from tracks running under the entire site which produced column spacing of 25 feet 1 inch). A smaller module was considered at first but it was soon concluded that while an 8-foot-wide office might be acceptable in New York, market conditions in Montreal required a 10-foot office, which could best be achieved with a 5-foot module. As tenants leased space, the client and his architect presented them with a remarkably thorough booklet of building standards, designed to permit the tenant and his space planner to take the fullest advantage of the building's modular plan.

Architects J. Gordon Carr & Associates, who designed the space for The Montreal Trust Co. (plan and photos, right), found these standards helpful rather than restricting. The one problem they encountered had to do with the module itself: due to its relatively generous size, there was not enough perimeter to accommodate all officers in outside offices. The problem was solved by placing many minor officers, who in other buildings might have had windows, in large open spaces in the interior.

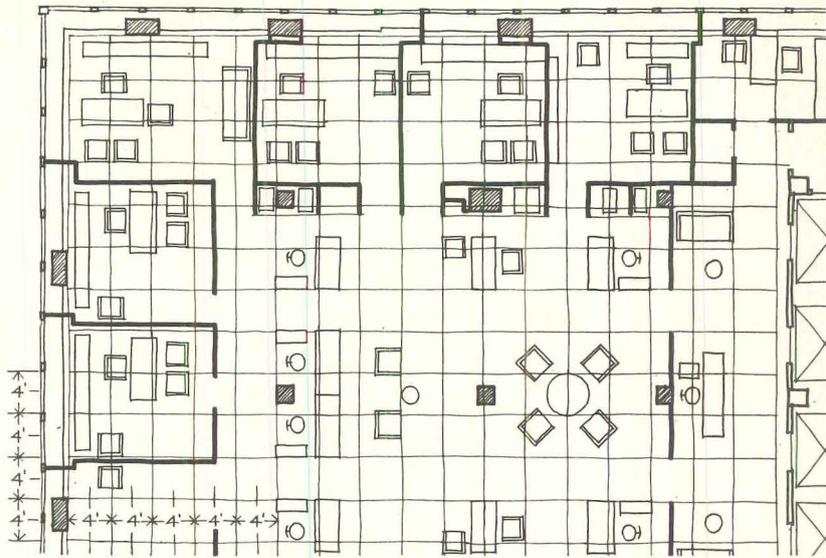
Carr, who followed the module scrupulously at the perimeter, did depart from it slightly as he worked his way toward the inside, particularly in lighting. This, however, was anticipated in the building standards. To encourage modular



Montreal Trust, on 5-foot module, has private offices on perimeter



Shortage of outside wall places minor officers in open interior pool



PHOTOS: BEN SCHNALL

planning and yet to avoid imposing the rigidity of an institutional building, the architects allowed for departures in the interior by fixing the lighting and air conditioning in one direction while leaving it flexible in the other.

A two-foot module for a non-modular building

Not all offices find themselves in such thoughtfully modular buildings as Upjohn or Place Ville Marie. The headquarters of Martin Marietta Co. (plan and photos, right), by Designs for Business, Inc., are in a typical speculative building, in this case New York's Hanover Bank tower designed by Emery Roth & Sons for the Uris Buildings Corp. It is a building with no discernible module. On the top executive floor shown here there are no less than ten different mullion spacings covering a range of from 4 feet to 5 feet 3 inches. Column spacing is also uneven.

These irregularities are caused by what is politely called "dimensional confinement." What this means is that the architect, in filling the zoning envelope, is restricted by setback regulations (under New York's old zoning resolution) and must compromise his module with a structure which will get him the greatest number of square feet.

The harder question to answer is: what do the tenant and his space planner do when they are confronted with such modular anarchy? One answer, used frequently and with success by Designs for Business, Inc., is to step just inside the perimeter of the building and set up a completely autonomous planning module. Gerald Luss, DFB's chief designer, usually prefers to work with a 4- or 5-foot module because he has found these allow the easiest integration of standard elements. In this case, however, he went to a 2-foot module because its increments would provide the 14- and 16-foot offices which the client desired.

Imposing modular order on a non-modular building creates a problem at the perimeter, here solved by joggling partitions to meet the irregular mullions. Such jogs cost money, since they usually require special fitting. But they are necessary if the designer is to achieve efficient use of space for his client.

In short, modular office planning is obviously here to stay. Unhappily, it is also likely to produce a certain amount of monotony—especially if it is reflected in the façades of our buildings, as it generally is. To avoid such monotony, some architects have recently employed "half-modules" of 2 feet, approximately, and multiples of such half-modules—both to enlarge the range of interior office dimensions, and to achieve a variety of patterns in one façade. If and when planning modules are used more creatively in this fashion, both design and planning efficiency will benefit.



In Martin Marietta office, curtains conceal irregular mullion spacing



Away from the exterior, a two-foot module results in orderly offices



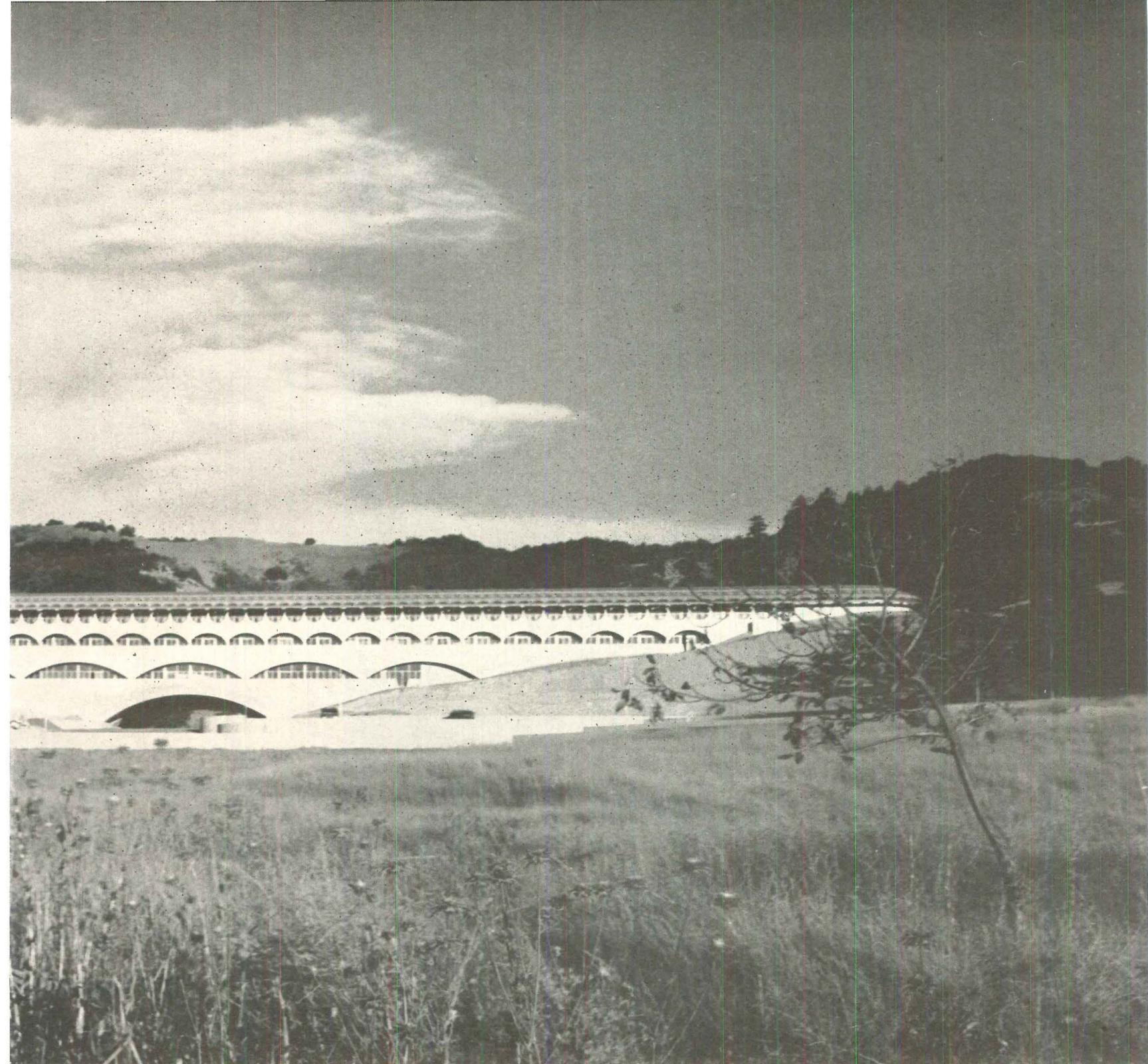
“THE GOOD BUILDING IS ONE THAT MAKES THE LAND—

The Marin County administration building, just completed in the suburbs north of San Francisco, grows from the landscape, emerging from one low hill and bridging across to another 700 feet away. Its rounded roofs and flat arches seem to reach down for the earth. The arches emphasize the building's great horizontality, but at the same time help turn it from the hardness of the straight line. Like the higher hills that form the building's backdrop, they roll quietly across the small valley of the site.

As one of his final monuments, Frank Lloyd Wright thus left a statement of respect for nature (he addressed the phrase above to the people of Marin County in 1957, when

the design was first unveiled). But the building speaks also of his mastery of architectural space. It is split lengthwise into two separate office wings which meet only at the shallow dome to the north, their curved roofs joined by a continuous skylight. Beneath the skylight, Wright has made the central corridors on each floor into bright, landscaped malls, penetrated by oblong wells which grow progressively wider with each ascending level. By bringing the light and color of nature deep inside the building, these slots of space bring unity and drama as well.

A year ago, with the shell completed, the building stood strong and dignified. The colors and ornamentation applied



DANDELET

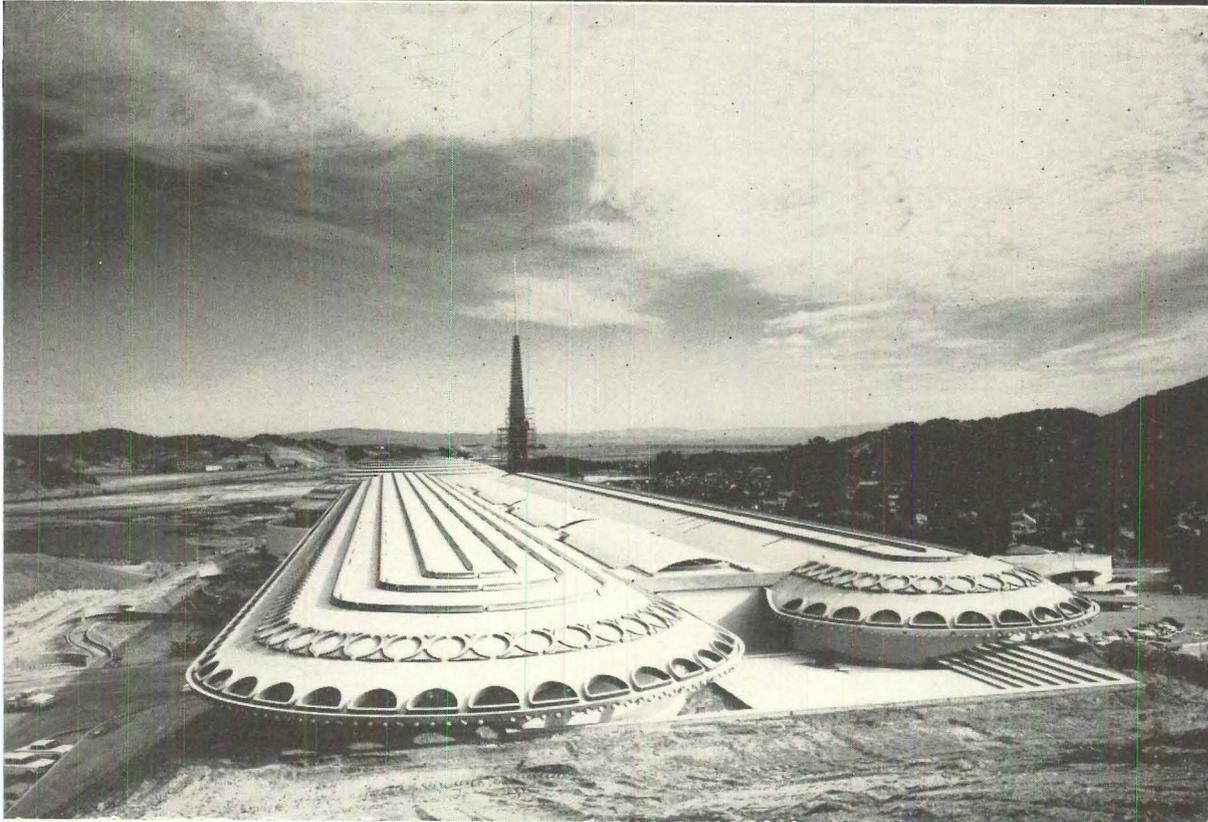
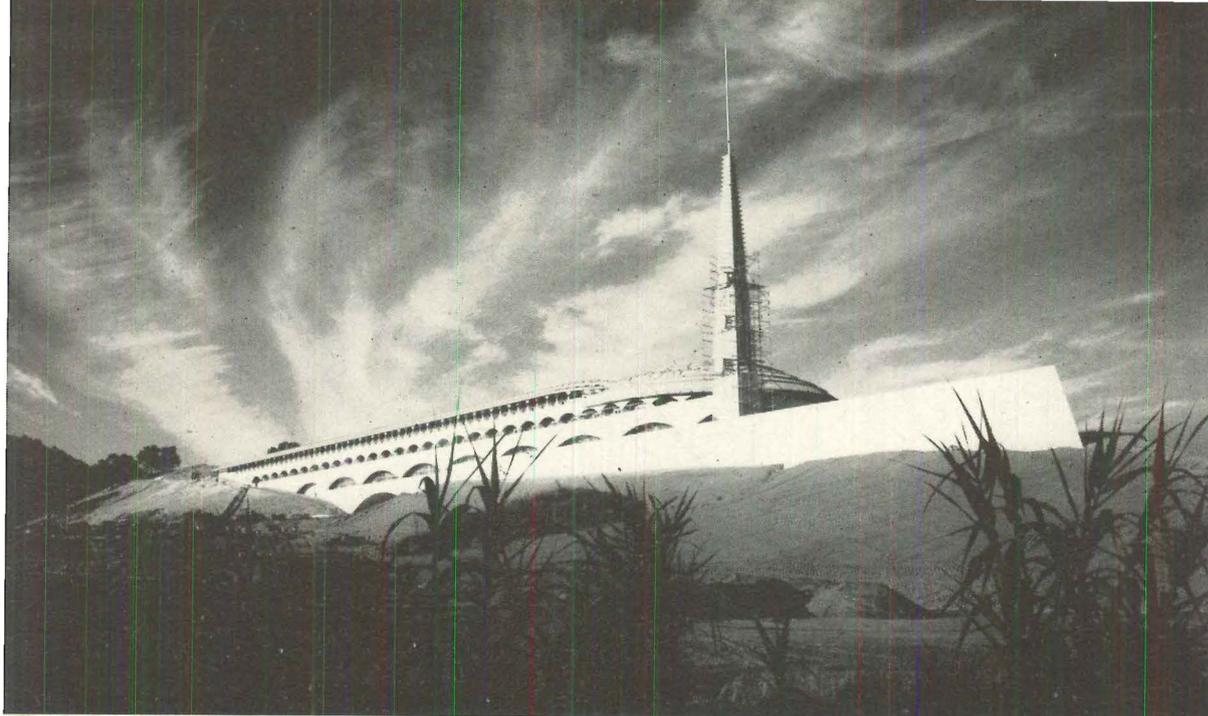
SCAPE MORE BEAUTIFUL THAN IT WAS BEFORE"—FLLW

since then have moved it perilously close to the realm of fantasy. Concrete surfaces are pinkish tan; the roofs have blue sprayed-plastic membranes; the bubble-festooned fascias, railings of the upper balconies, and most of the angular pylon are gold anodized aluminum; window walls bear bright red panels in a gold frame. Hopefully, this arresting combination of colors will be softened by the passage of time. But even now, if this is fantasy it is fantasy of a fascinating sort, behind which remains architecture of a high order.

It was this building which was halted midway through construction by an economy bloc of the county board of supervisors, despite the fact that its contract price of \$3.6

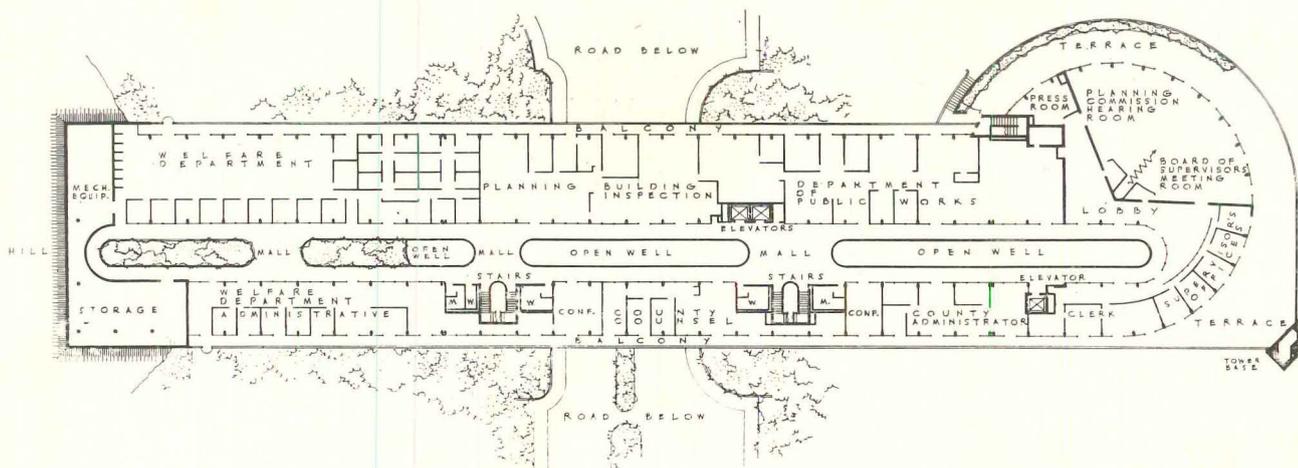
million was a moderate \$22.87 per square foot. Public outcry forced resumption of the project, and since then it has become Marin's proudest man-made landmark. So enthusiastic has been the public's reaction, in fact, that there is now real hope that the entire multibuilding government center designed by Wright may one day be completed.

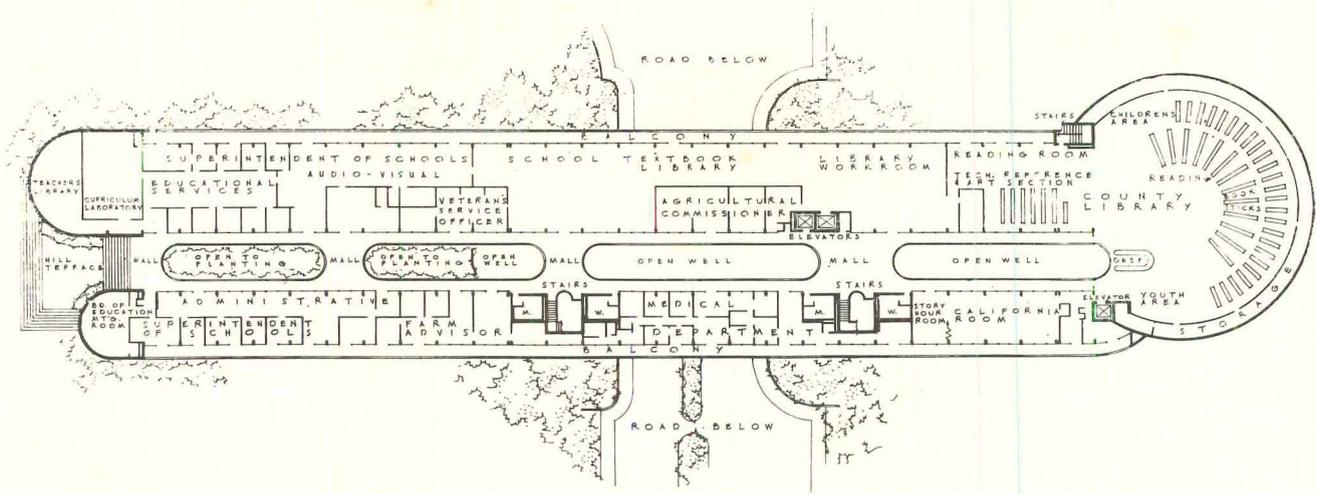
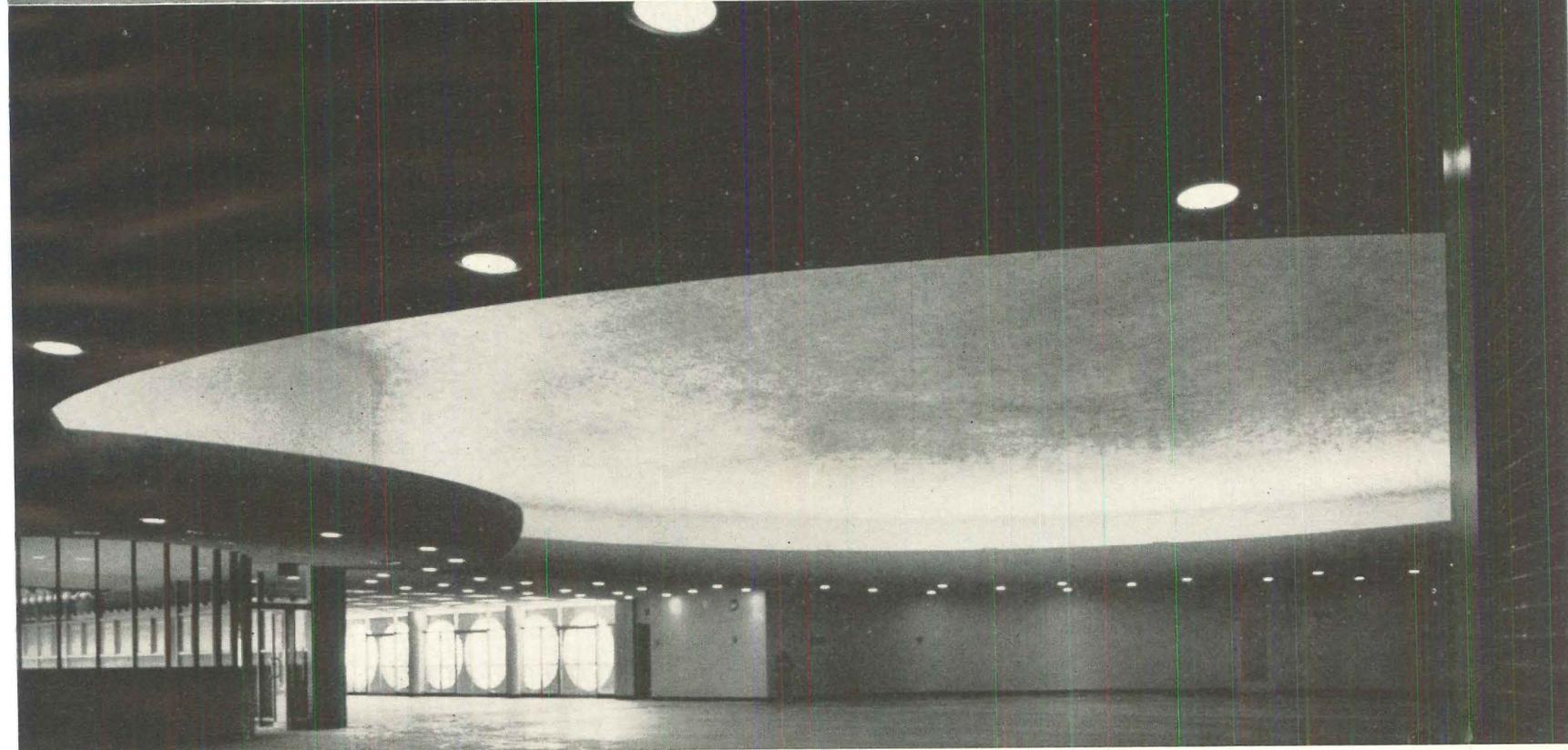
Marin County has reason to be proud, for it is the first client to actually bring to realization one of the many government buildings which Wright designed. Madison, Wisconsin, in Wright's home territory, has all but killed his spectacular civic-center project. It would seem that Madison could use some of Marin County's courage.

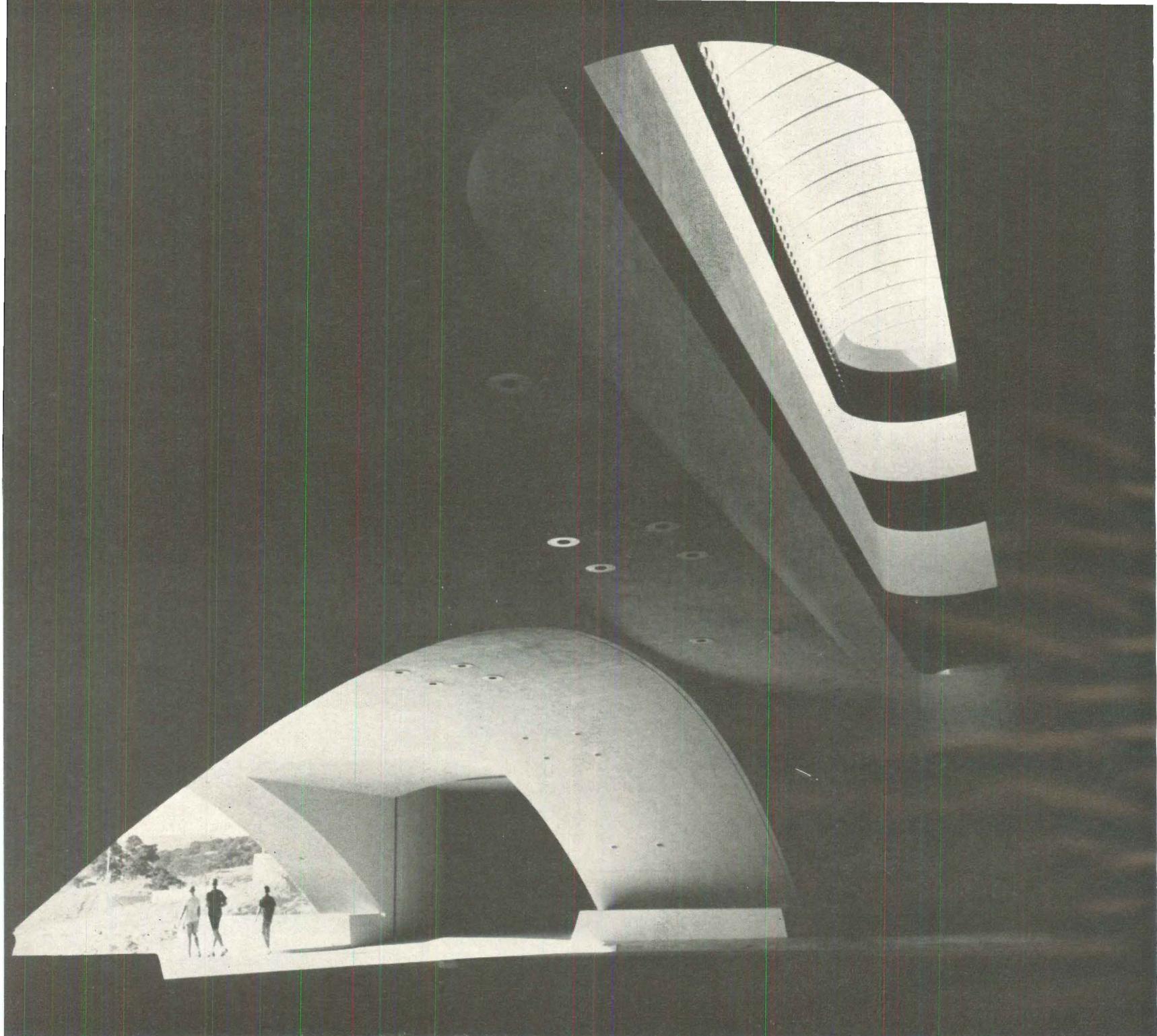


PHOTOS: DANDELET

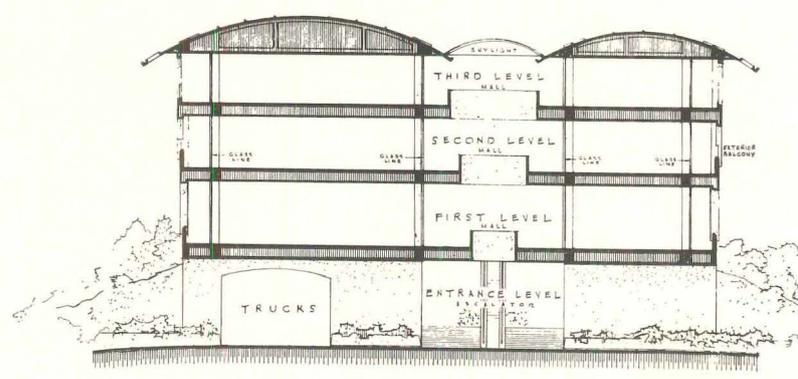
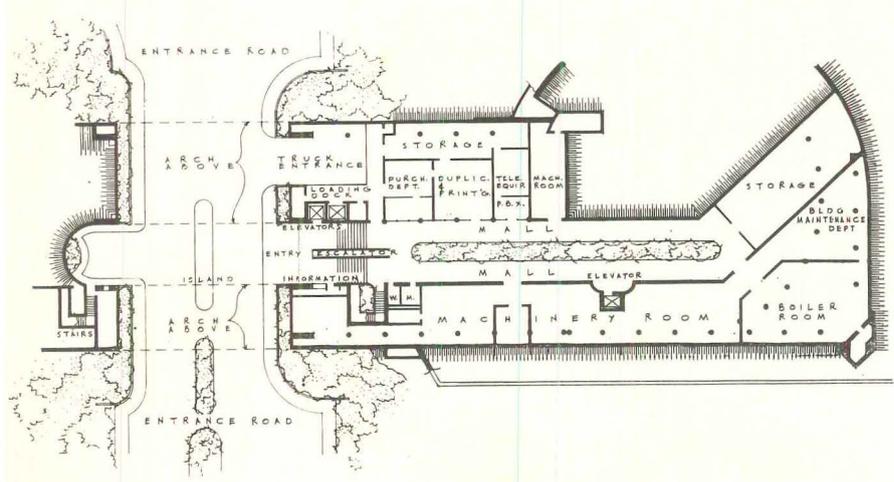
A prowlike wall projects sharply outward beyond the climactic, 217-foot pylon (which serves mainly to conceal the boiler stacks). At the opposite end, the two office wings end in filigreed half-domes that are almost flush with the hillside. The great dome (across page) has a windowless reading room at its top level; beneath is a semi-circular meeting room which seats 204, or divides into two chambers by means of a folding wall.

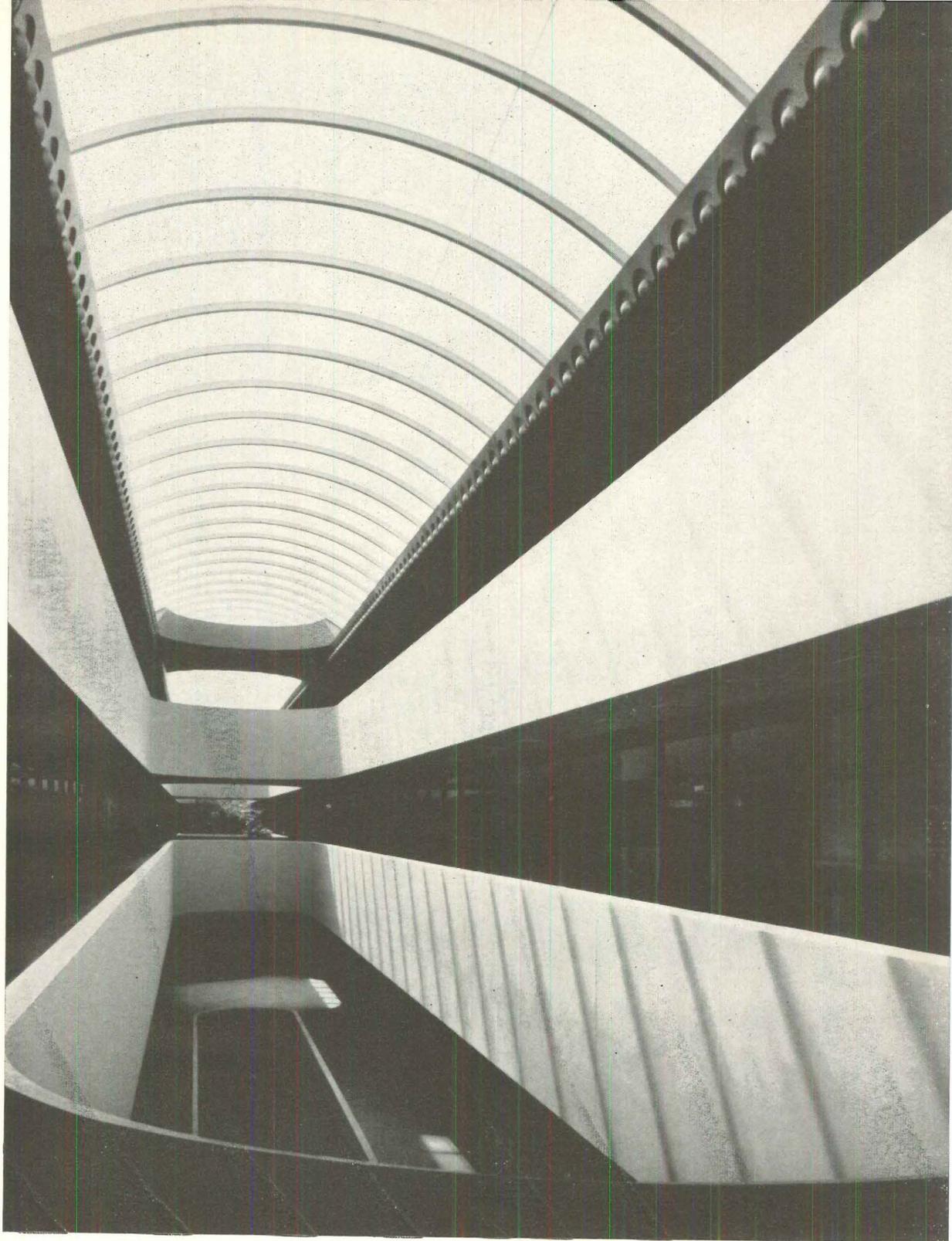






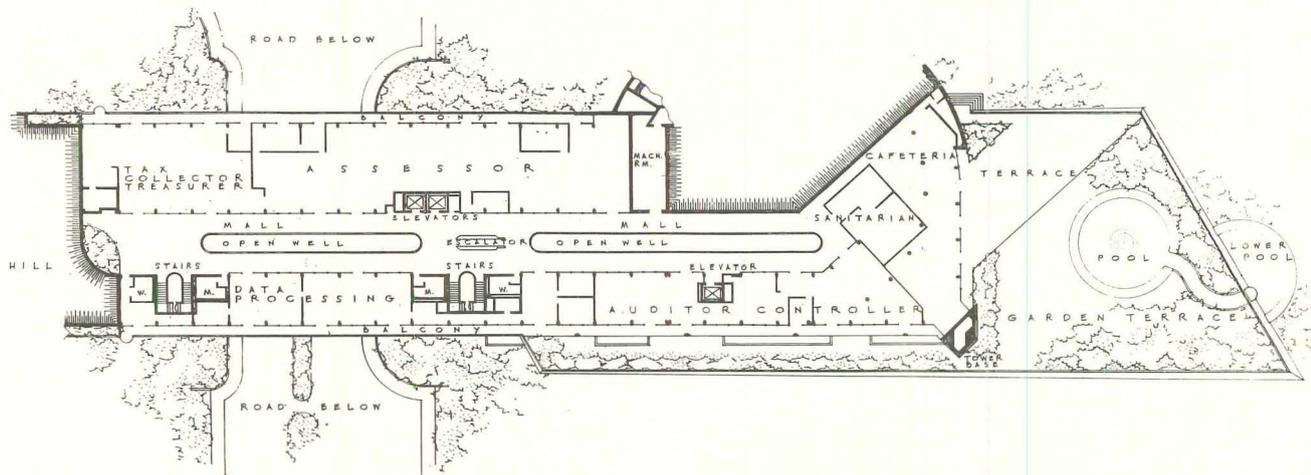
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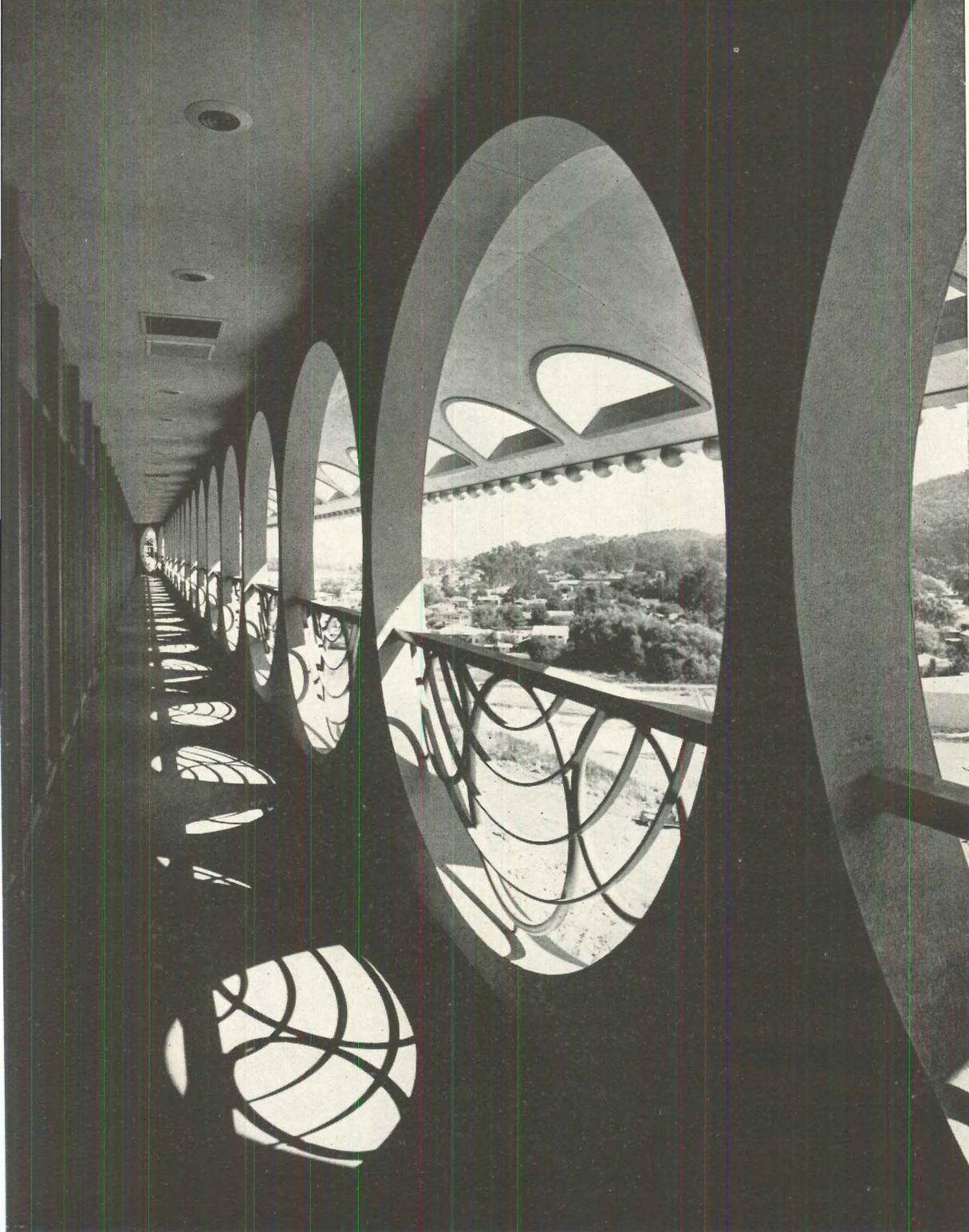




A driveway to the parking lots runs through the massive foundation arches at the lowest point of the site. Just inside is the first of the magnificent sculptural wells of space which soar through the interiors. There are few drearier places than the corridors of most city and county buildings. In Marin, Wright has made his corridors architectural experiences of great excitement, and keys to the building's flexible plan.

DANDELET





PHOTOS: KARL H. RIEK

Narrow balconies—like the one behind the gold-railed, third-floor portholes at left—run the full length of the building, providing a measure of sun control and a secondary means of circulation between departments. Window walls line both the balconies and the interior malls: no office is totally without natural light. Doors in the wall units can be shifted as space needs change, and all interior partitions are movable gypsum panels.

PHOTO OPF.: DANDELET



Initial construction also included what surely must be America's most intriguing post office (left). Next will come the administration building's second wing, extending from the dome to another hillside (left in photo across page), later an amphitheater and pavilion. The project is being carried on by Taliesin Associated Architects, with William Wesley Peters as chief architect and Aaron G. Green as associate architect. For the first unit, mechanical and electrical engineers were G. L. Gendler & Associates; consulting civil engineer, George S. Nolte; contractors, Rothchild, Raffin & Weirick.



FRENCH ARCHITECTS RENEW AN OLD ACQUAINTANCE

By George Nelson

Except for Le Corbusier, French architects have produced little that is new in recent years. That, at least, is the way it seems—until you take a closer look at the design of French building products.

For anyone who takes pleasure in the sight of a well-designed modern building, France has less to offer than almost any country I can think of. The truth of the statement, I realize, is likely to be questioned, for our noble profession contains more than a seasoning of ardent and articulate Francophiles. I therefore hasten to state that this expression of opinion, true or false, is not offered in criticism, but as a recommendation.

France is one of the few truly civilized countries where the har-

assed U.S. architect, worn out by sales-promotion efforts and the daily race to concoct something new, can relax. There is nothing there, in the way of recent building, to remind him that he may be falling behind the competition.

It was part of my mission to explore what the French had come up with in the field of new building products. The problem was a baffling one from the outset, for ordinarily one does not associate the creation of distinguished products with the designing of bad buildings. A series of

looks around Paris and its outlying districts tended to support this suspicion, and the problem was then carried to the architects. This phase of the research produced a series of delightful lunches, but little in the way of useful information..

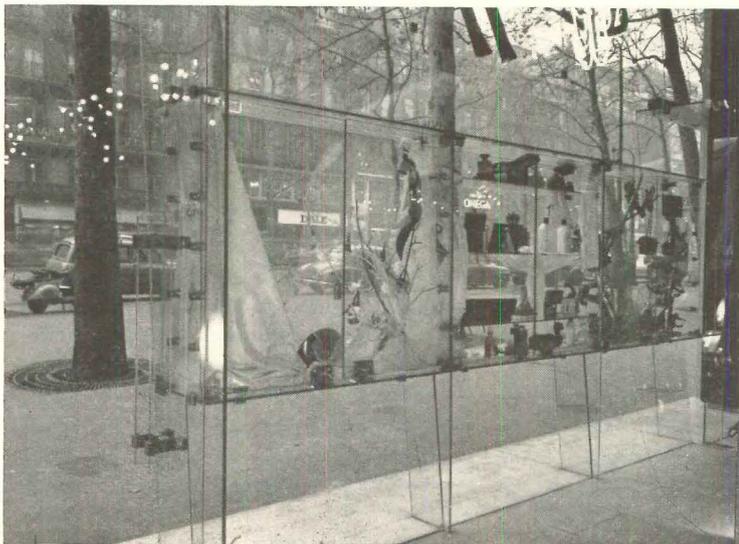
I concluded that whatever France might be interested in today, it did not include architecture. There was nothing to be done but to leave Paris, and I went to the office of Air France for a ticket to more promising regions. The airline staff was

PHOTO: LINGCK-TOULON



Frameless glass walls and store fronts in Paris are shown here braced with fins of tempered glass. Even showcases (below) are often frameless.

A. PAPILLON



frozen in the contemplation of timetables and rate schedules, and I waited, staring through the glass wall at the crowded street. At some point my eyes shifted from the street to the wall, and after a few minutes of contemplation I left, minus ticket.

The missing product had been discovered. It was glass. It had been there all the time, of course, but being glass no one had seen it.

Modern architecture, they have been saying for a long time, is an affair of steel and glass. Or concrete and glass. Or more recently, grilles and glass. But always glass, whatever the accompanying materials. What had caught my bored gaze in the Air France office was that there were no accompanying materials. It was just glass, all by itself, and once the scales had dropped from my eyes it became apparent that Paris was full of it and that it was being used in most interesting ways. Apparently the architects with whom I had talked were so convinced there was nothing to show that they never bothered to mention it.

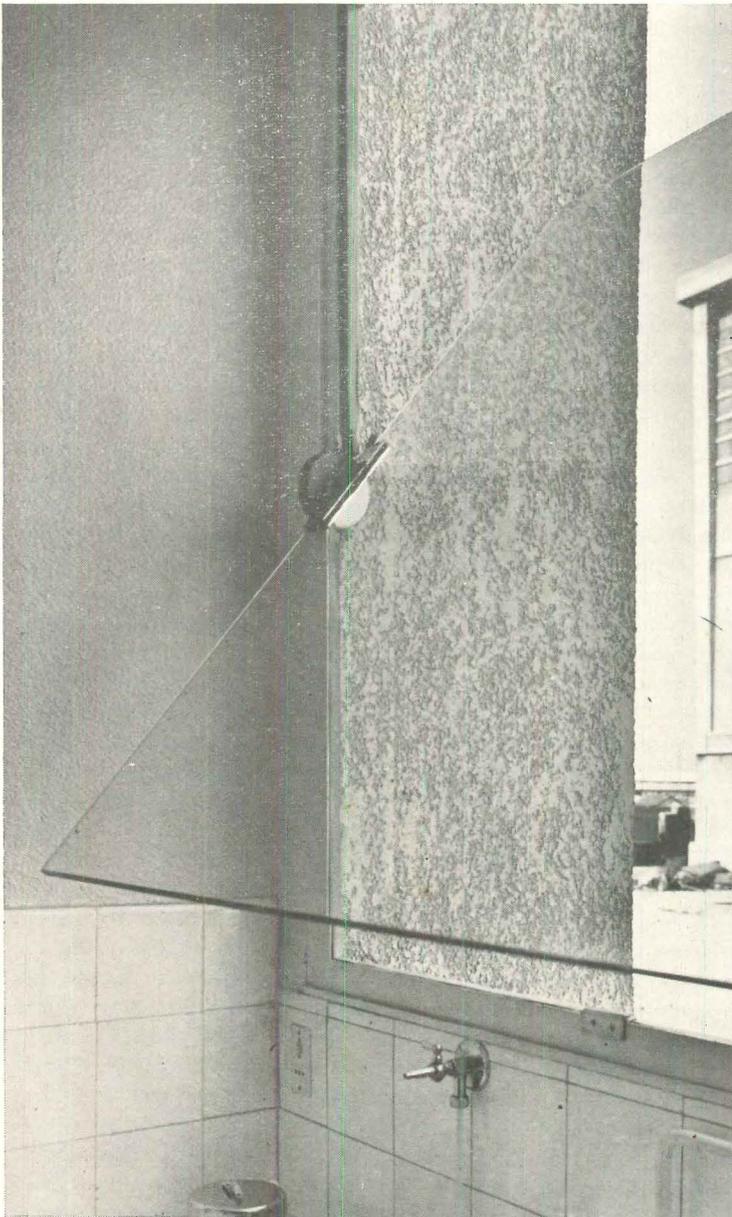
Relations between the French and glass were established a long time ago, and despite the many revolutions in architecture and technology, they have never been completely broken off. The glory of the cathedrals would not have been quite so glorious without glass, and during the Renaissance, French craftsmen were repeatedly honored for their skill, not only in working the material, but in its production as well. Even in the more industrialized 1800s a fantastic quantity of glass architecture (the Grand Palais comes immediately to mind) was hidden behind the extravagant stone façades of the Beaux Arts architects. The country is full of glass awnings, marquees, ceilings, roofs, and the rest, most of them so varied and lively that present-day pride in our glass façades seems a bit naïve.

Architecture, in the days when buildings aspired to greatness rather than to rapid amortization, used to be the creation of architects. Today, like other products, it tends more and more to reflect the strategies of the promoters

and merchandisers. Our own glass façades are a case in point. It has become fairly standard national practice to surround the glass areas with metal frames, a perfectly good procedure as far as one can make out. In France, the glass companies were more aggressive and intelligent than the metal companies, which preferred to get their profits by overcharging, and the result has been a quite astonishing series of shop fronts and other enclosures in which glass is the only important material.

One gets the story quite clearly from the two giants which dominate the glass industry: Saint-Gobain and Boussois. Both companies have invested the large sums needed to produce first-class plate and tempered glass, and they appear to have a comfortable working agreement to divide their markets on a 60-40 basis. With production and marketing problems out of the way, they then proceeded on the assumption that *any* material mixed with theirs was an adulteration, a dilution of sales, a reduction of profits, and therefore undesirable. To prevent this admixture they created the 99.99 per cent glass façade, designing all the details needed to make it workable. European architects rely more heavily on subcontractors than we do, and they consequently do much less detailing. For the glass companies to achieve their desired ends was therefore a relatively simple problem—all they had to do was get the details for glazing and hardware into the hands of their local representatives. The architect merely draws the opening to be filled, and in most cases it is up to the supplier to decide how to fill it. Medieval churches got their stained-glass in the same way.

If a good glass front tends to escape notice, this is as it should be, for it is designed not to be seen, but to be seen *through*. The manufacturers appear to be quite content with the relative invisibility of their product, and in fact encourage it, stressing in their advertising that the smart shopkeeper will "suppress all visual obstacles" when he puts in a properly designed front.



Pivoting window (above) is a sheet of tempered glass, plus hardware

Typical storefront is completely transparent, has very few metal clips



PHOTOS: A. FAPILLON

Such "obstacles" include the life blood of a number of sizable industries—the aluminum and steel window makers, door manufacturers, extruding and rolling mills—which provide the conventional components of glass façades. If the big French producers have their way, these deterrents to fast selling will presently be obsolete. In the huge new office building (glass) of Saint-Gobain and the dazzling showroom (glass) of Boussois, both in Paris, the executives speak pityingly and almost despairingly of their English colleagues, who through insular backwardness and imperial conservatism are still building shop fronts and building façades with metal framing.

Like all good salesmen, they exaggerate a little. Pilkington Bros. Ltd. in London, for instance, is quite well equipped to meet the desires of any British architect interested in frameless glass fronts. Saint-Gobain, through its New York and San Francisco offices, is also doing what it can to arouse similar cravings in the architectural profession in America.

The way in which the 99.99 per cent glass front came into existence is clear in a general way. With polished plate available in big sheets it was inevitable that monster façades should be attempted from time to time, and there were a few spectacular examples in Paris 25 years ago. Even earlier, there were entire building fronts in glass to be seen in Germany, Czechoslovakia, and Scandinavia. There were also some remarkable, scattered examples, such as Willis Polk's Hallidie Building (1915) in San Francisco. All these came still later than the fantastic glass structures of the middle and late 1800s, of which the greatest was the Crystal Palace in London.

The big change in the manner in which glass was used resulted not from a sharpening of architectural vision, which was bolder a century ago than it is now, but through the invention of tempered glass. Attempts to toughen the material go back to the Middle Ages, but the invention of the first successful process dates from

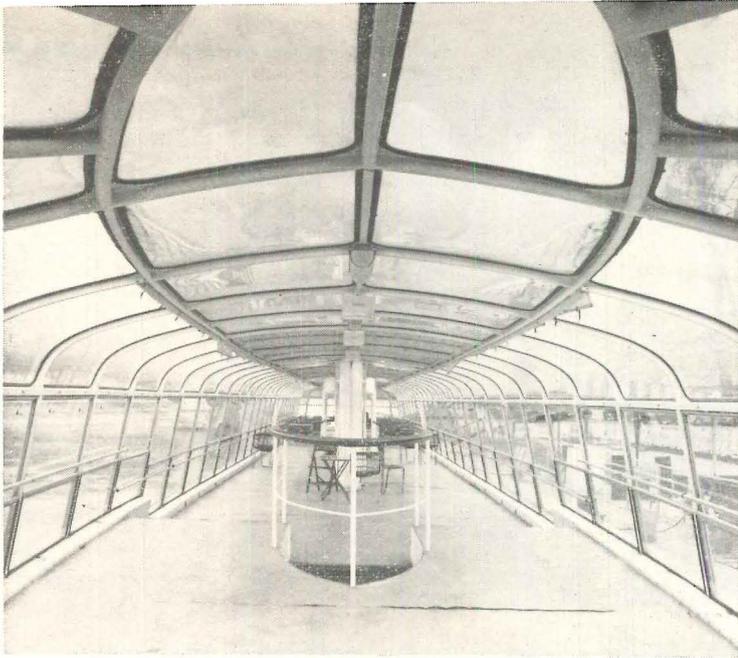
about 1870. The commercial production of large sheets began in 1928 (both inventions were French). The earliest fronts of the general type illustrated here were made in the late 1940s.

For us, tempered glass was a safer kind of plate, especially useful for doors. For the French (and the Italians and the Germans), it was a brand-new breed of cat, with a whole series of new characteristics to be exploited. The current design vocabulary, comprehensively illustrated here, includes frameless windows as well as doors, accordion-type walls and show windows, and most significantly, the use of glass instead of metal as windbracing and general structural reinforcing for large areas. This reinforcing, always created by setting narrow sheets perpendicular to the main front, is connected with metal hardware by the French, but the Germans, in their own drive to eliminate the last of the metal components, have been using glue.

The results are to be seen in a rapidly growing number of installations of all sorts, and Paris alone can provide almost any imaginable size and type of example. It is hard to quarrel with the thesis that if a lot of glass is good, all glass is better, or with the detailing, which is successful in a practical, economic sense and thoroughly sophisticated from the design point of view.

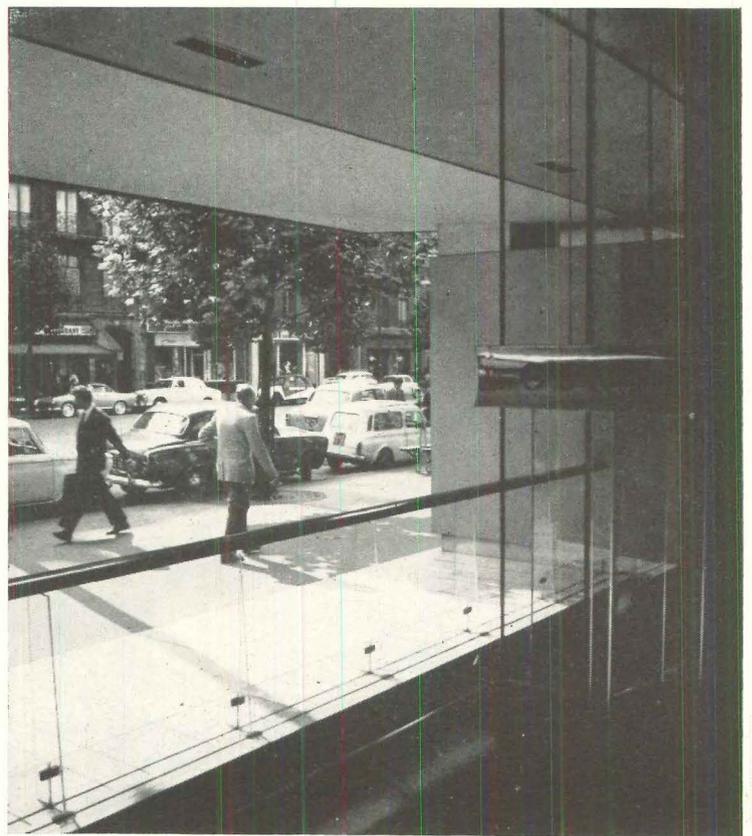
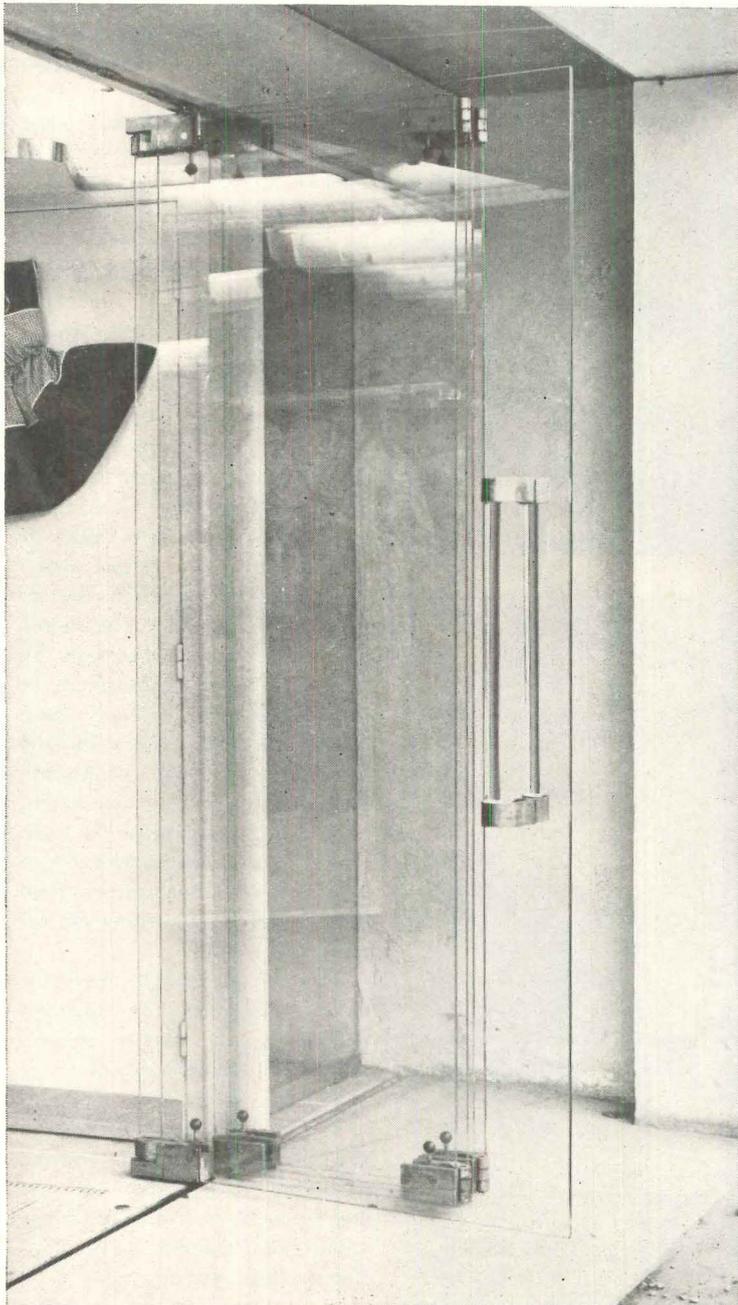
How this came about in a country which has shown so little interest in or understanding of modern architecture is one of those mysteries with which the evolution of the arts is loaded. Perhaps for the French the answer is that they just like glass.

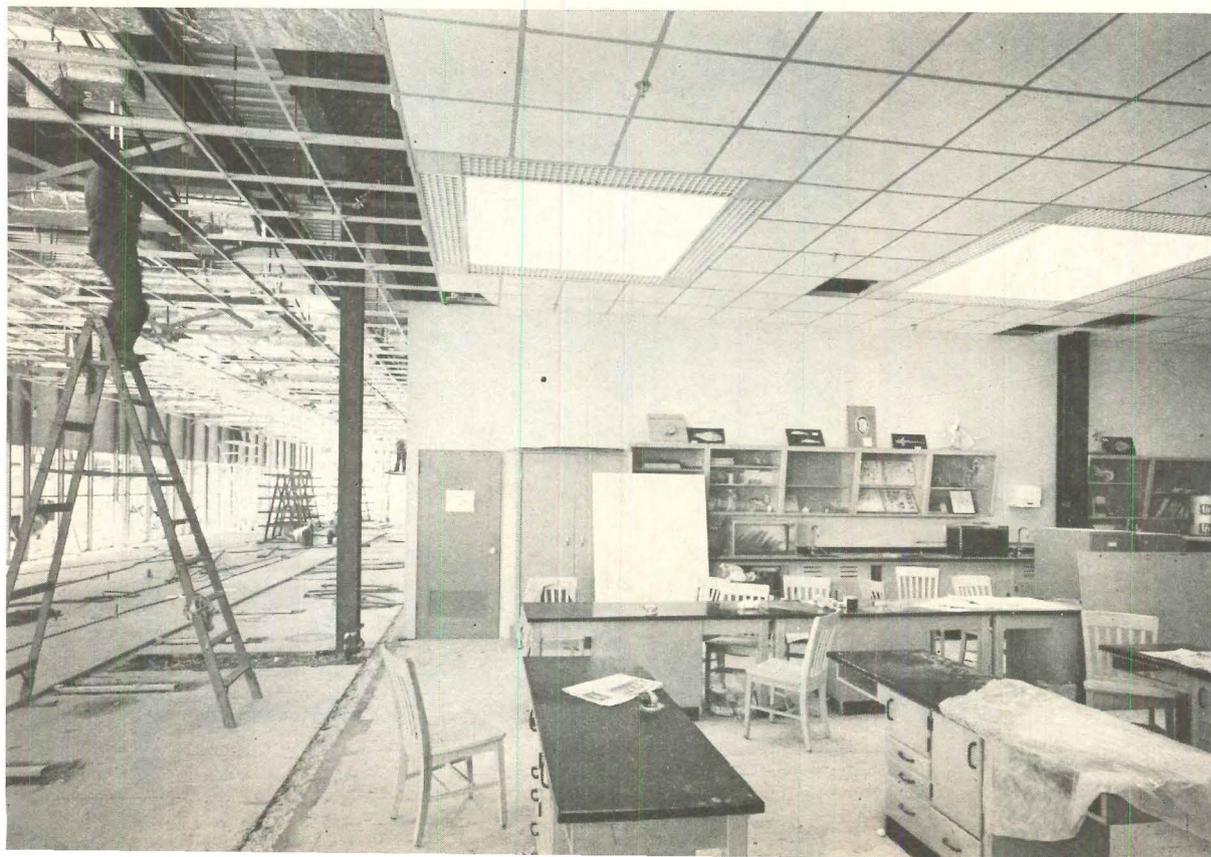
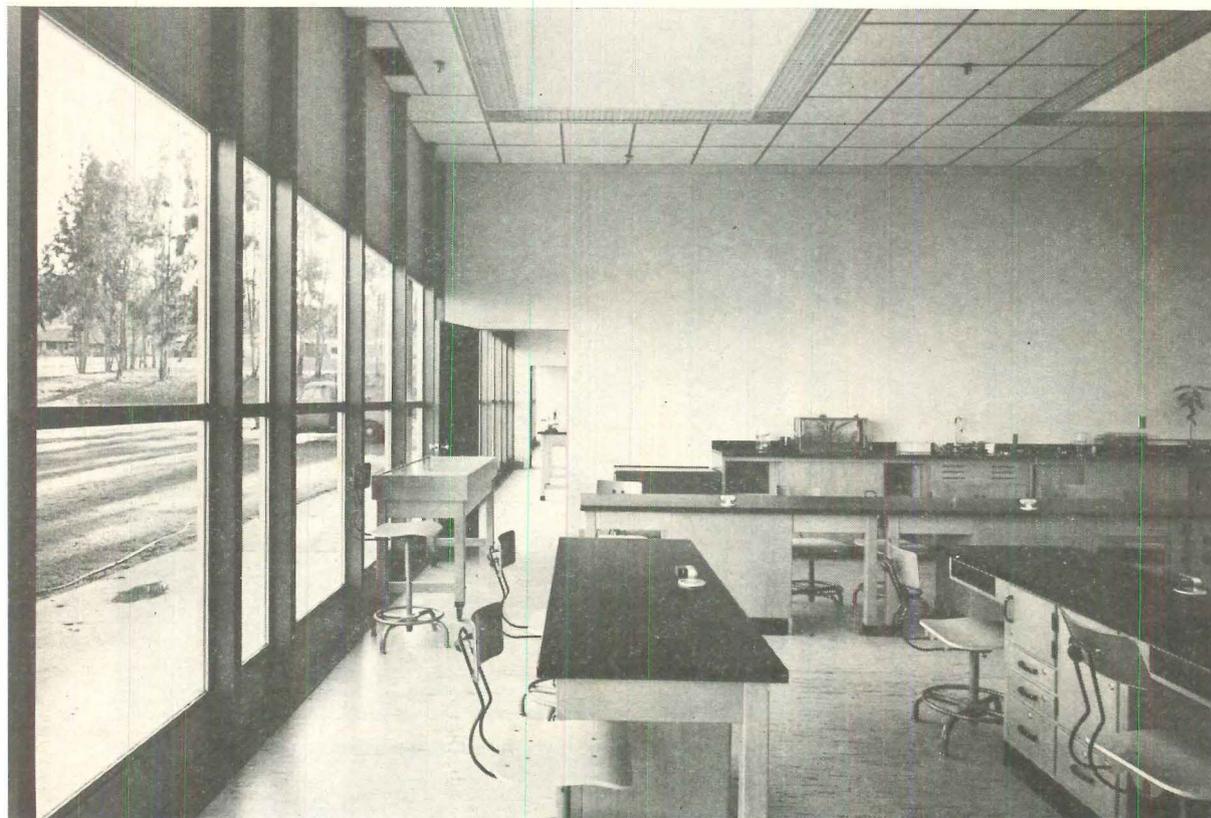
George Nelson is a well-known architect and industrial designer, and a former managing editor of FORUM. His pleasure and his work have frequently taken him to Europe these past months, where he has observed some intriguing new developments in the design of building products. This is the first of several reports by Mr. Nelson on European product design, written especially for FORUM.



Imaginative use of glass in France and elsewhere in Western Europe is shown in these pictures. Above: an almost all-glass observation deck on an excursion boat on the Seine. Right: a glass-enclosed elevator in a Paris office building. (There seem

to be no code problems here . . .) Below: an all-glass accordion door serves to open up an entire store to the sidewalk. Bottom, right: another glass-braced storefront, using deep fins of tempered glass to carry a horizontal railing as well.





FLEXIBILITY PAYS IN A PIONEER SCHOOL

At Hillsdale High School in San Mateo, Calif. (FORUM, Oct. '52, Jan. '56, Aug. '56), Architect John Lyon Reid gained a new kind of educational flexibility by providing a great, industrial-type loft space and then subdividing it into classrooms with movable partitions (top and middle photos, left).

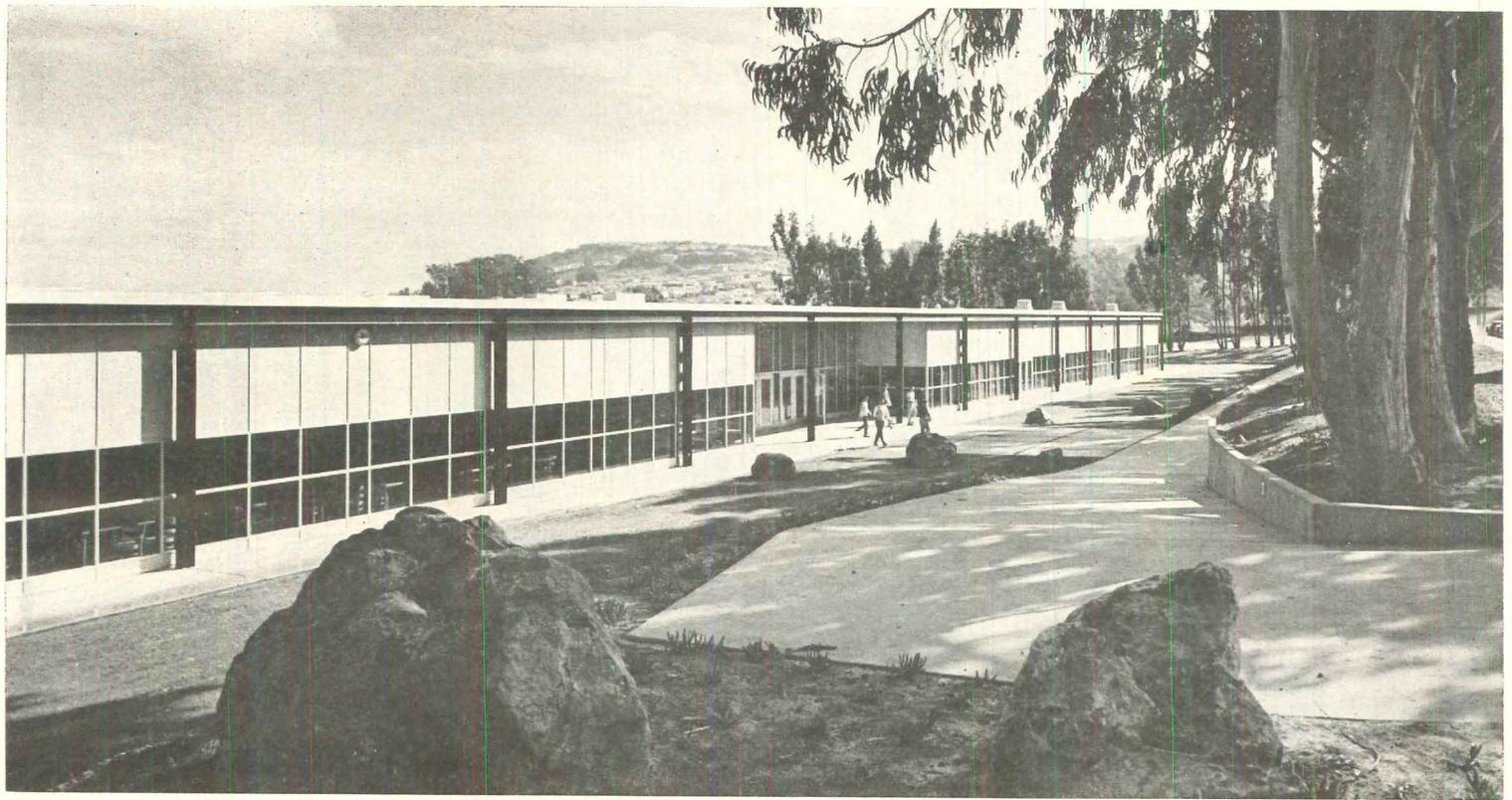
This summer, Hillsdale began the first major rearrangement and expansion since it was completed six years ago. One bay was added at each end (bottom photo), and partitions were relocated, providing a larger library and study hall, and an extra classroom.

San Mateo has obviously taken to the Hillsdale idea: the new Crestmoor High School, completed this fall, is the district's fourth school in which Reid has pursued the concept. Critics have objected to the severe lines, the massing of many people under one roof, and especially the interior, skylighted classrooms, which offer no view outside. To this Reid, himself dubious at the start, has a persuasive reply: most Hillsdale teachers were initially skeptical about the windowless rooms; but today, he maintains, 65 per cent actually prefer them (fewer outside distractions, four walls to work on rather than three). Result: a waiting list for the inside rooms.

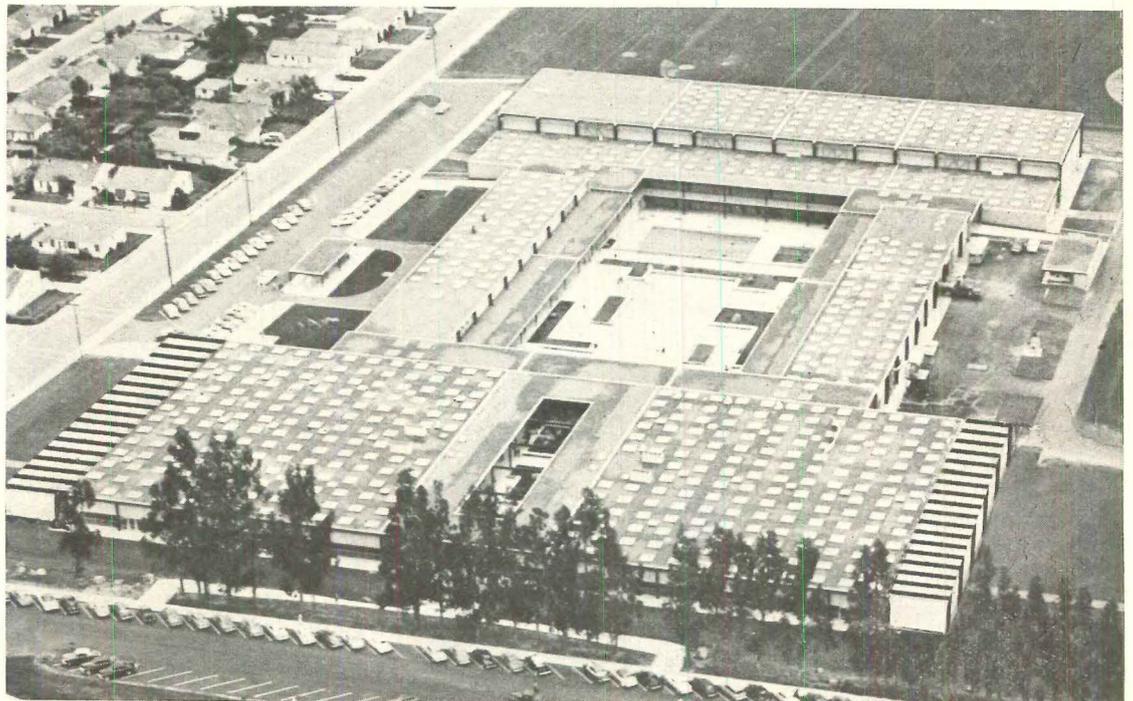
Though the simple need for more space prompted this first remodeling, the results indicate the school can also adjust easily to changes in teaching methods.

Total rebuilding cost came to \$308,113; but the cost of moving partitions alone, over the net area affected, was only \$1.04 per square foot. General contractor: Ralph Larsen & Son, Inc.

PHOTOS OPF. & RIGHT: ROGER STURTEVANT



Bays were added to both classroom wings (above, aerial below); in one wing, partitions and corridors were extensively rearranged (see plans).



DISCOUNT HOUSE ON OLD FIFTH AVENUE

When Manhattan's enormously successful discount house, E. J. Korvette, Inc., took over the eight-story home of W & J Sloane, old-line furniture dealers, on Fifth Avenue at 47th Street (below), many New Yorkers feared the worst for their dignified thoroughfare. They worried in vain, for Korvette, in moving onto the Avenue, was after a new image and had no desire to look garish.



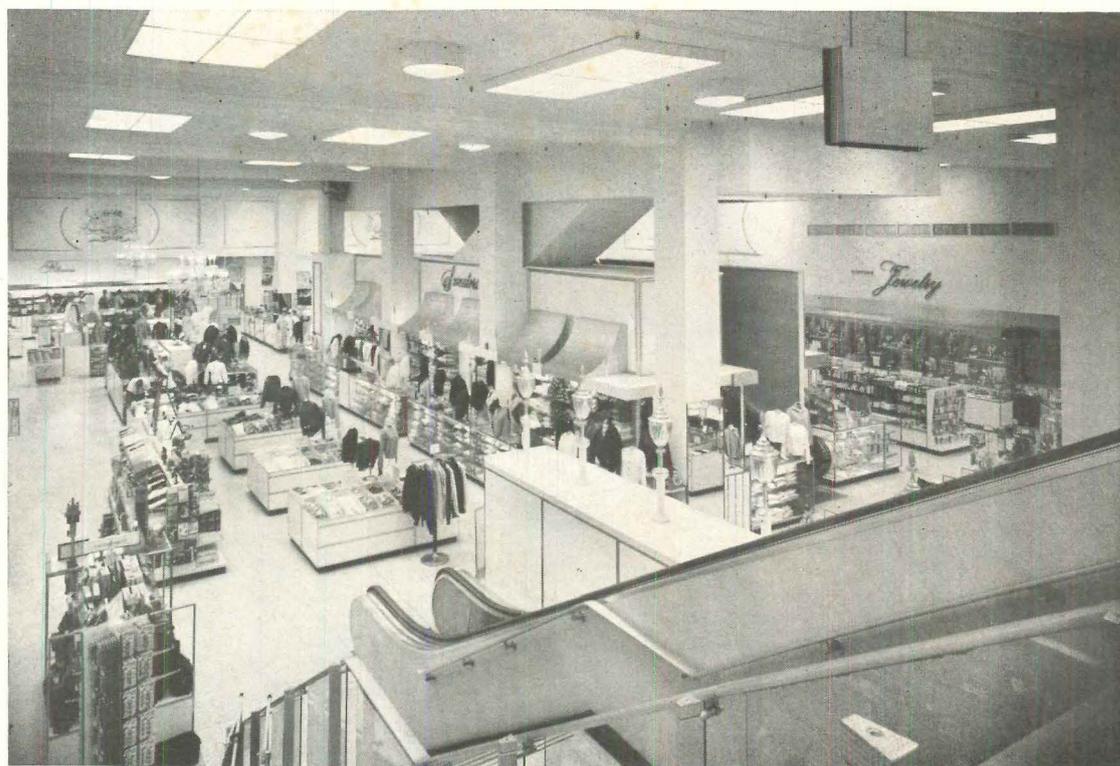
BEN SCHWALL

Main floor (seen from new mezzanine, below) features modern high-intensity lighting and resilient flooring

Outside, the old two-story display windows were reduced to one-story height and brought out closer to passing shoppers. Above them, a pierced wall of cast aluminum grilles, 32 feet high, puts the columns in relief, emphasizing their height (above, right).

Inside, 13 escalators (largest single installation at one time in any New York department store) convey customers between the first and seventh floors and to a mezzanine above the ground floor. The top floor is reserved for stock. The building, which was converted from d.c. to a.c. and completely air conditioned, now has in-building truck docks to eliminate tie-ups on the street.

Remodeling cost was \$1,043,000 (\$560,000 for escalators) for 163,000 square feet. Architects: Neumann & Taylor. Engineers: Eugene Ho (structural), Jack Stone (mechanical). General contractor: William J. H. Law Co.



BEN SCHWALL

MANSION REBUILT FOR CHILD GUIDANCE

Houston's new Child Guidance Center, by Architect Howard Barnstone, unites a gently remodeled, neoclassical mansion (shown below during rebuilding) with a new one-story wing attached at the rear (photo, right).

The original plan of the two-story house was kept remarkably intact: with a minimum of re-partitioning, parlors now serve as waiting rooms, bedrooms and kit-



FRANK LOTZ MILLER

chens as therapy and activity rooms, the dining room as an accounting and secretarial area. The main hall (right) now contains the reception desk, with a combination library-conference-group-therapy room in the old living room to the right.

Plaster walls were covered with gypsum board to eliminate cracks; floors were resurfaced with vinyl tile for low maintenance and ceilings with acoustic material to absorb noise from play therapy. Outside, brick replaced the original wood siding for reasons of maintenance and fireproofing.

Rebuilding cost, including new central air conditioning, was \$65,000 (\$10 per square foot). The new 2,000-square-foot wing cost an additional \$40,000.

Engineers: R. George Cunningham (structural), Bernard Johnson & Associates (mechanical). General contractor: James B. Dent, Inc.



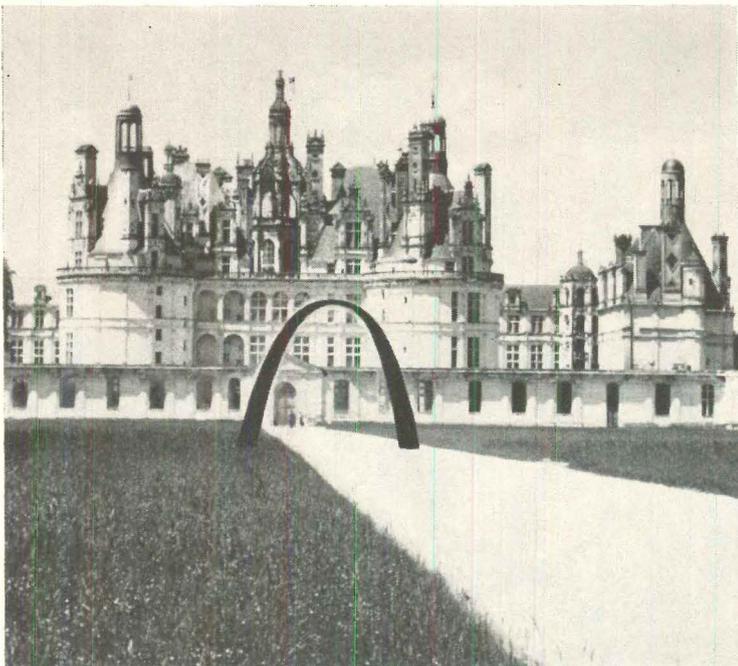
MAURICE MILLER

New wing arched in brick and glass (above) contains offices, therapy rooms. Below: remodeled reception area.



MAURICE MILLER

DOUGLAS HASKELL



BRIGHT GOOD SENSE IN CITIES?

One of the pleasures of looking at Chambord, the gayest pleasure palace of those dangerous characters, the French kings, is to see how a riot of fantasy is held in order by basics of design.

There might be a lesson in it, especially for America's practitioners in designing cities. For at Chambord it is the sky line that so resembles an American big-city sky line in miniature, with its cone-topped turrets, its tall chimneys, its gay penthouses, and all the rest of that "roof-top asparagus" reaching wildly into the sky. But the approach *allée* to this riotous chateau is straight and well marked; and it comes to a low, quiet, level courtyard wall. This scheme not only tells the

visitor at once where he is and where he can go, but, being so quiet, stays out of competition with that ecstatic, climactic sky line back behind.

Just for fun, a copy of the St. Louis "Gateway Arch" by the late Eero Saarinen has been drawn into the foreground of the Chambord view; and it looks like a real gateway there. Not so will it look in St. Louis itself, when finished; because *there* the city fathers are tossing every possible other building idea into disorderly competition with their arch. Tower-punctuated apartment buildings are to stand skew-gee to rear right of it, a powerful stadium forms skew-gee to rear left, and three blocks of buildings old and new directly behind the arch, where the open "way" of the Gateway ought to start. No gate, no way.

At the fine St. Louis Round Table of which FORUM published the findings last month, the architect members struggled with less than full success to get across to the other city leaders what the function of urban design is that lifts it above making pretty individual buildings.

First, three-dimensional design really tests the two-dimensional ideas of planning, for it is in three dimensions that they will be built. Then, it helps the city to arrange its key elements not only for efficiency but for declarative effect,

so that the nature, purpose, and arrangement of the city as a whole, and of districts, are signalled effectively to the citizen and guest through his eyes. And, finally, it seeks to make this visual statement by the city not only clear but eloquent.

A full-time, powerful architectural talent is required for this job. Lacking such talents, a city can keep stepping on its own face, the way even so frivolous a composition as Chambord never does.

A BRIGHT LESSON IN ART

Another pleasure in looking at Chambord, not the greatest architecture in France but the gayest chateau of the French kings, is to find how startlingly it prefigures one of modern architecture's more joyous games. Le Corbusier in particular has been good at dancing on the roof. Chambord did it earlier; for, sober up to the cornice line, above that it starts to dance and jump: there is actually a whole little village on that vast roof platform, of penthouse apartments set in an enchanted forest of decorative chimneys and tower caps (photo left, below).

Early in his career Corbu started letting his roofs, too, sprout recreation and entertain-



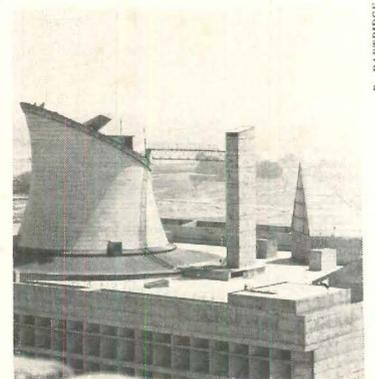
ment, but the stage properties were different. They were spiral steel stairs, miniature ship's bridges, ramps, much pipework, great curved shields: in short, "machine art" themes. Then later Corbu shifted his roof game to large sculptural forms, often pushing up through from within the building, and a powerful architecture came out of it (right, and FORUM's September issue).

Historians may know of more, but we have discerned three historical uses of the one roof game: the first, at Chambord, occurring

when the Italian Renaissance hit Gothic France; the next, with Corbu, when the "machine art" idea hit our century; and the latest when Corbu discovered the powerful plastic capacities of concrete, as a medium for modern-primitive art.

There's a wry twist in it, for critics addicted to "humanist" theories were convinced that the early Corbu was selling out man to "the machine"; yet if ever sorcerer tamed *that* monster, transmuting him into birds and ballet, it was the roof-dancing Corbu.

Joy of life, I think, was the subject all three times, not machinery or other devices; and art is forever confounding the framers of cosmic guidelines by pulling joy out of the fiercest manifestations. Joy in art took some of the curse



R. PARTRIDGE

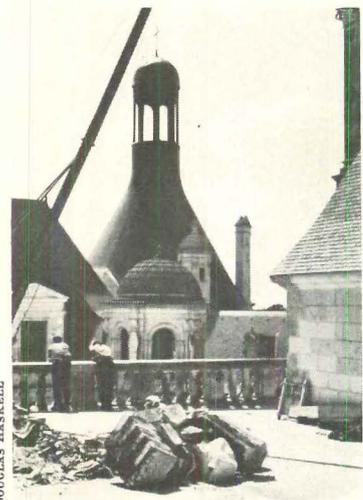
out of the cruelty of French kings; later out of the cruelty of machines; might it not now do this for the atom age?

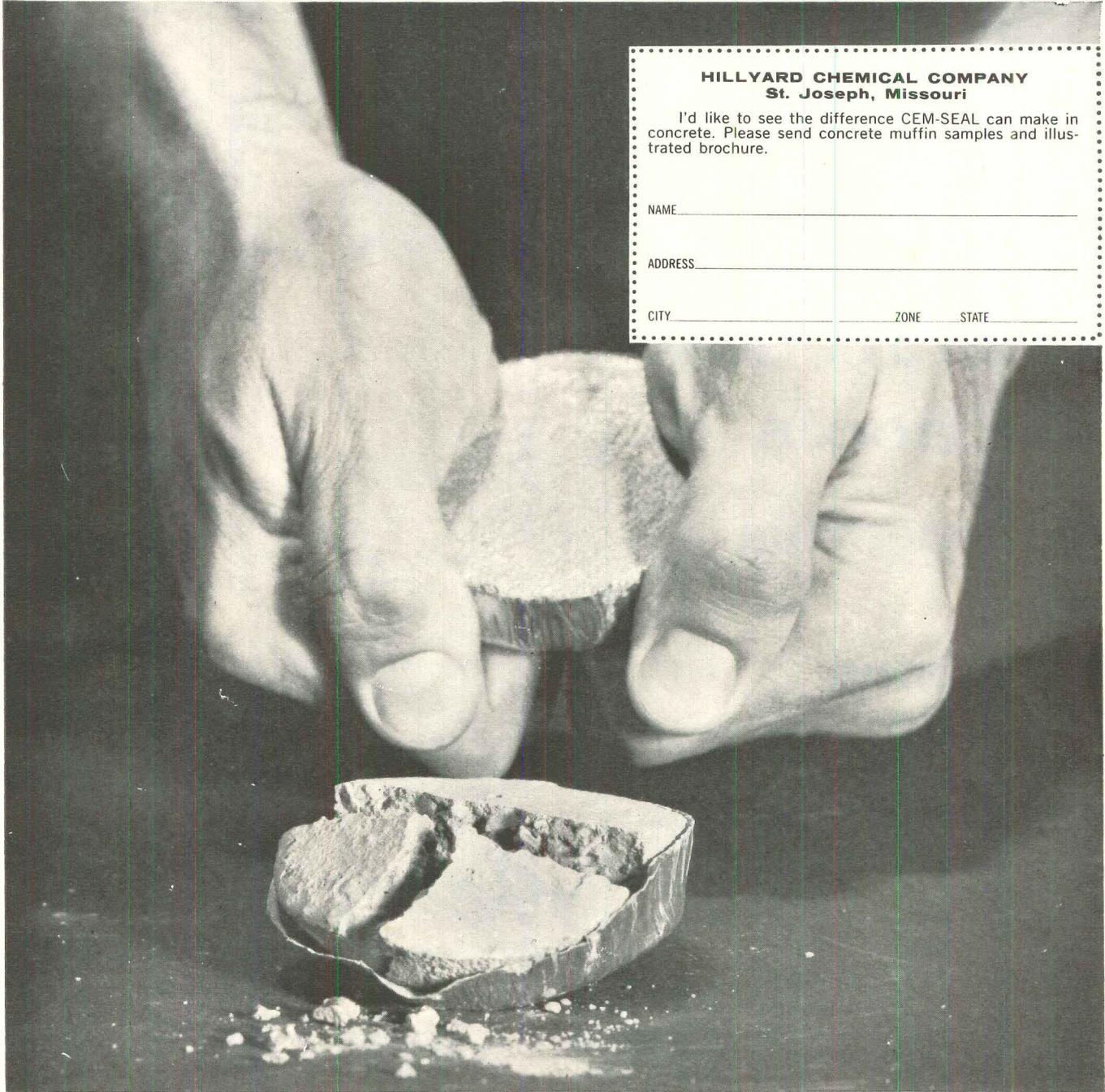
SAVE GRAND CENTRAL, SAVE ROBIE!

It's not being opposed to saving Penn Station—if the time is not too late: but on the Grand Central concourse in New York and Wright's Robie House in Chicago, preservation efforts started early enough, contained a solution that could appeal to owners, made progress, and could now win more than propaganda victories if not simply forgotten. Especially the Robie House committee is in crisis, needs funds and help. Address: Department of City Planning, Chicago 2, Ill.

Douglas Haskell

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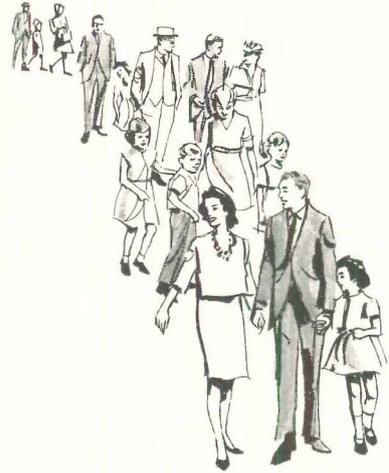


St. Jane Frances de Chantal Church,
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Architect: Edward Q. Rogers

Consulting Engineer:
James K. Wollford

Mechanical Contractor:
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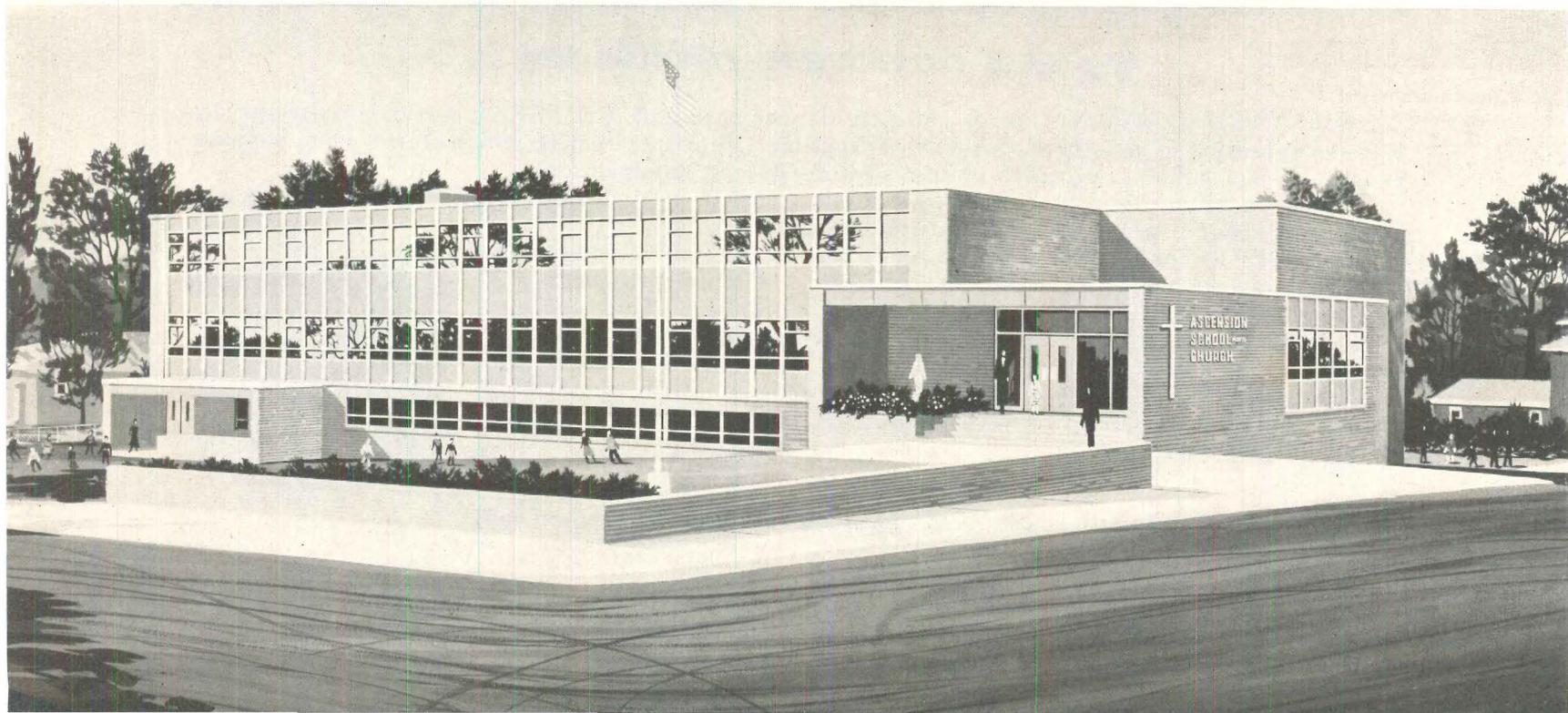
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Only shell concrete, with its fluid look, could bring such easy grace and modern simplicity to this circular plan which is basically one of the most ancient used for churches.

The best ideas are more exciting in concrete

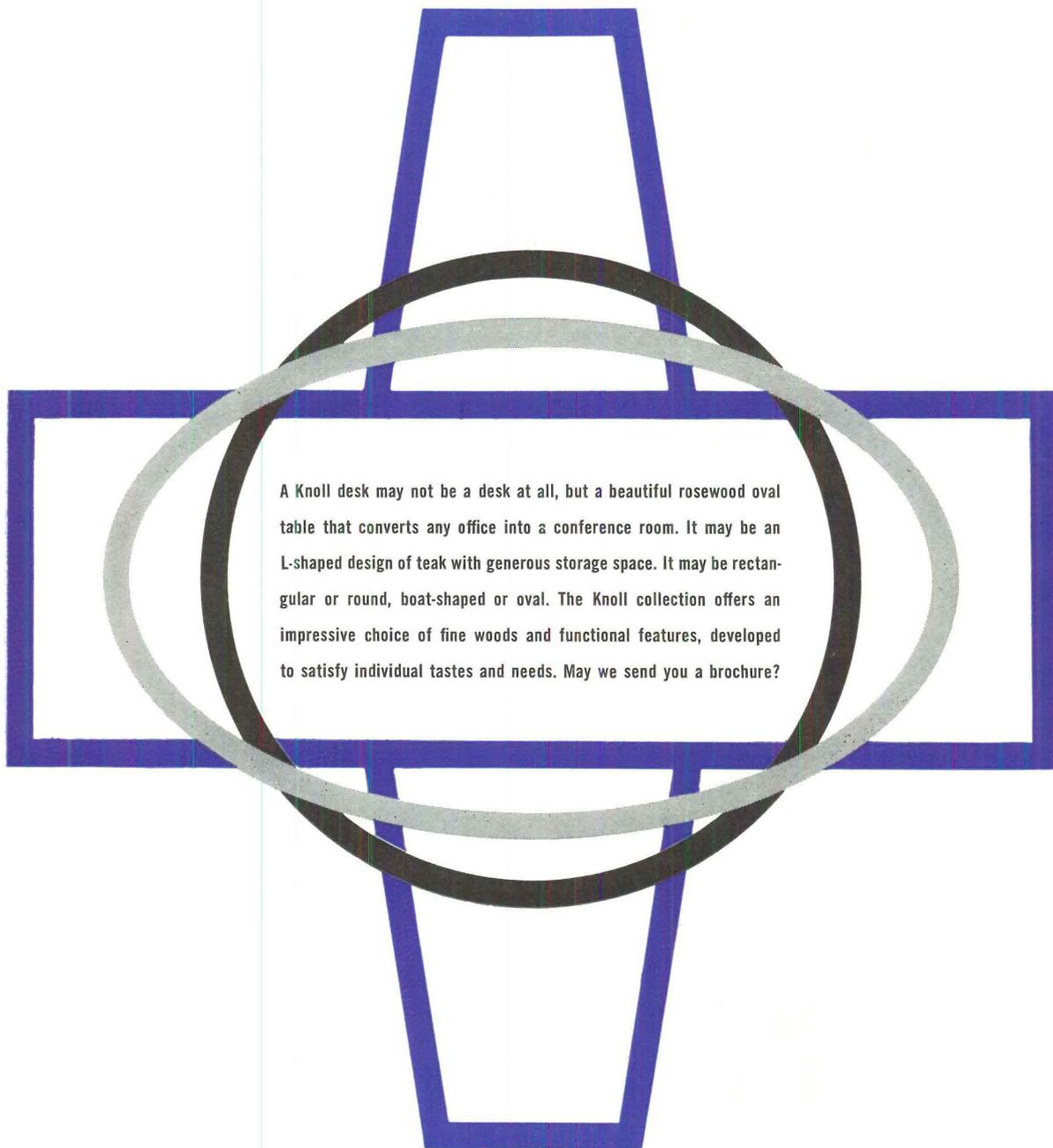
Architects: Hellmuth, Obata & Kassabaum, St. Louis.
Structural Engineer: John P. Nix, St. Louis. Structural
Consultant: Paul Weidlinger, New York. Contractor:
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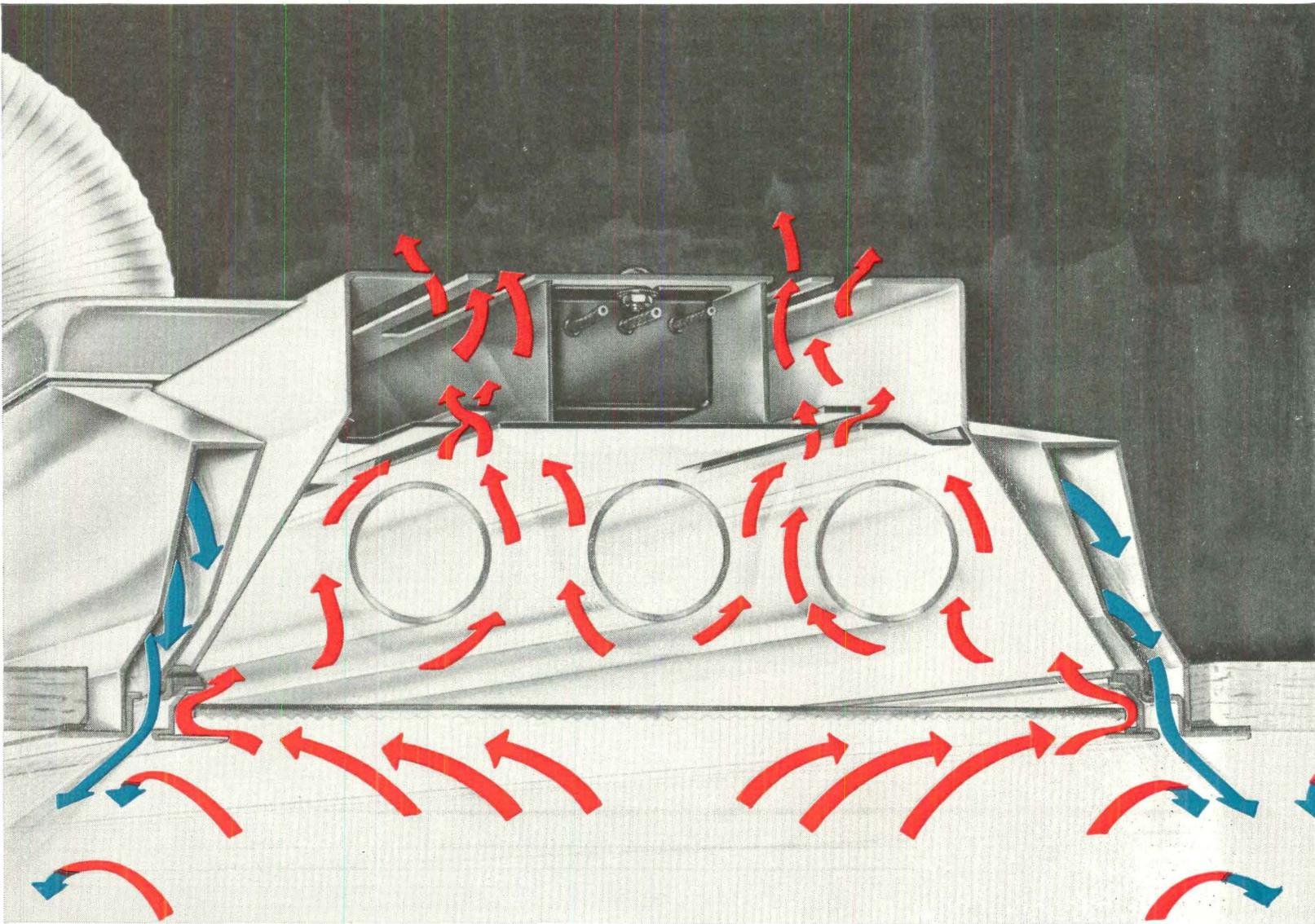


Fig. 1. Benjamin Lumi-Flo Troffer with Heat Removal Feature.

EERO SAARINEN ON HIS WORK. With statements by the architect; edited by Aline B. Saarinen. Yale University Press, New Haven. 107 pp. 10½" x 14¼". Illus. \$12.50.

Among the numerous photographs of architecture in this memorial volume are two candid photographs of the late Eero Saarinen. One catches him in a moment of quiet weariness, staring at a large floodlit work-model of the interior of the TWA terminal for Idlewild. His collar is unbuttoned and his bow tie dangles. His shirt sleeves are pushed rudely up his arms above the elbows. It is not much of a shirt ad; he looks rumpled, cogitative, a little tired and very determined.



The other candid photograph is more amusing. It shows Saarinen trudging thoughtfully down the full-scale section of the stairway for the Jefferson National Memorial, which he had built outside his drafting room in Bloomfield Hills, feeling it with his feet. This photograph is not at close-enough range to reveal the expression on his face, but his stocky posture as he descends, hands clasped behind back, is very reminiscent of this pleasantly stubborn decision forcer.

This is a handsome book, edited almost invisibly by his widow, Aline Saarinen, designed with plain dignity by Alvin Eisenman of the Yale Fine Arts School, and produced with great care by Yale University Press. Along with the photographs of the buildings are printed a good many of the architect's words, both formal addresses and quotes from letters, etc. These vary in effect just about as did his designs. He could be an original talker, probing, turning up unusual architectural insights. He could bring equal attention to the careful turning over of old generalities and axioms. But always in what he said and designed there was a feeling of force, deliberacy, and craft. The stairways were always just

about right for walking. Perhaps the most poignant of the Saarinen quotes is buried in the appendix in which the editor explains why she undertook the book: "We must have an emotional reason as well as a logical end for everything we do," Eero once said." In this volume Mrs. Saarinen and Yale take good care of the memory of one of their own.—W.M.C.Q.

FROM CASTLE TO TEAHOUSE: Japanese Architecture of the Momoyama Period. By John B. Kirby Jr. Published by Charles E. Tuttle Co., Rutland, Vt. 222 pp. 7¾" x 10½". Illus. \$12.50.

For students of Japanese architecture and its remarkable influence throughout the world, this book is an illuminating account of one of the most formative periods, between 1573 and 1615. This was a time of conquest and unification of the Japanese Empire. All forms of art flourished also and architecture was at its most elegant and exuberant form. The noted castle-fortresses, *Sukiya* teahouses, and *Shoin* style of aristocratic residential architecture built during the Momoyama Period are direct antecedents of Japan's present-day architecture.

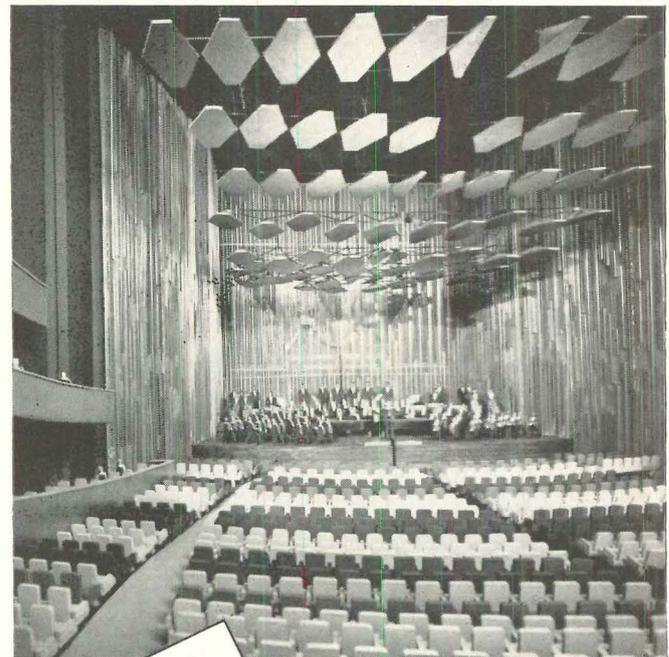
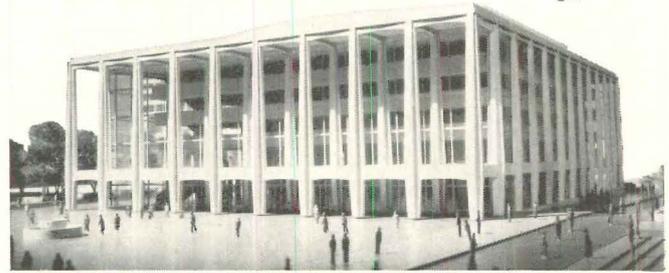
Excellent photographs, plans, and elevations of these buildings are accompanied by the author's lively commentary, with anecdotes and historical background explaining the forces which influenced the era's elegant style. He has included examples from the largest and most imposing castles to the smallest teahouses, not forgetting the paintings, gardens, and gates which were such an important part of each building.—A.P.

THE NEW ENGLAND IMAGE. By Samuel Chamberlain. Published by Hastings House Publishers, Inc., 151 East 50th St., New York 22, N.Y. 192 pp. 8¾" x 11¼". Illus. \$12.50.

From his home in Marblehead, Mass., Architect, Photographer, and Author Samuel Chamberlain has ranged over the six New England states, photographing typical and famous landmarks from Connecticut to Maine. A nostalgic introduction and a wealth of photographs covering every imaginable New England scene and architectural type are evidence of the author's own fondness for this region. It is too bad that his excellent photographs are not better reproduced and are often crowded

continued on page 164

Lighting News AT **PHILHARMONIC HALL**
IN NEW YORK'S LINCOLN CENTER
FOR THE PERFORMING ARTS



Max Abramovitz, Architect

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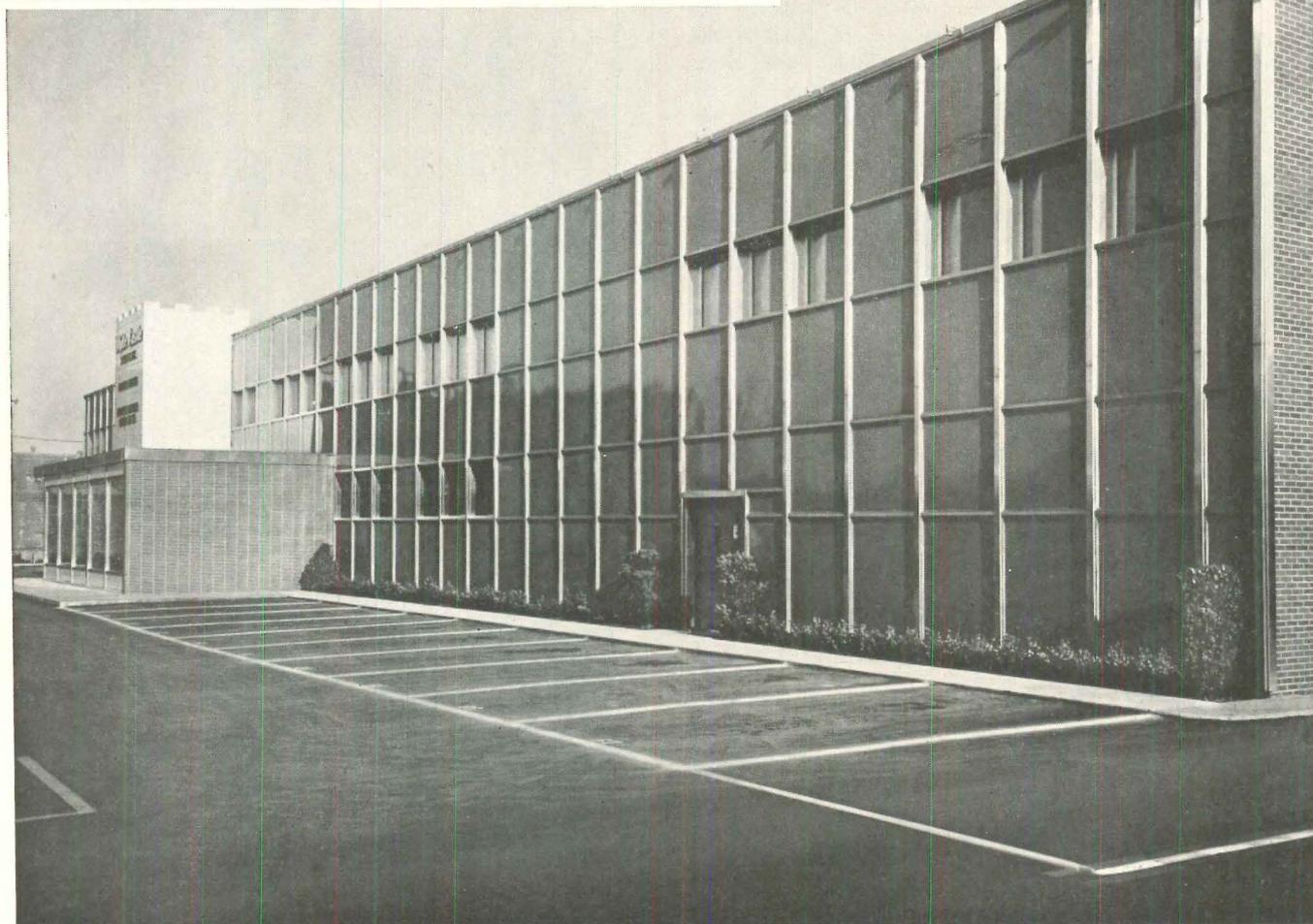
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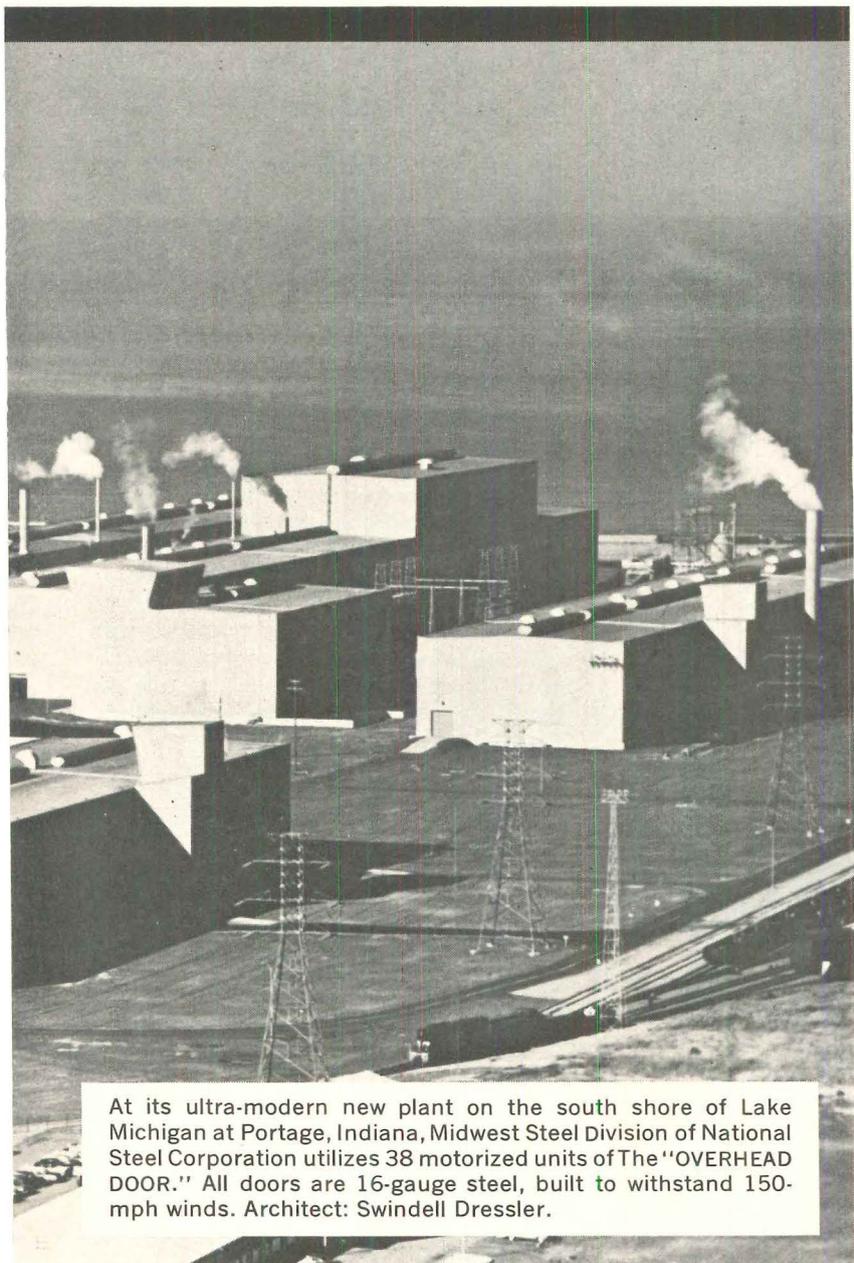
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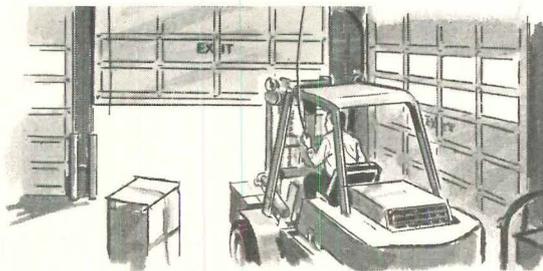
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CONTEMPORARY ARCHITECTURE IN GERMANY. By Werner Marschall. Published by Frederick A. Praeger, 64 University Place, New York 3. 231 pp. 9" x 10¼". Illus. \$16.50.

One of the standard, and not very funny suggestions frequently made by architects in the 1930s was to tear down everything old and start from scratch. That was supposed to be the only way to attain an ideal city.

Well, it happened in Germany: after 1945,

most German cities were in ruins, and German architects were given an unprecedented opportunity to show what they could do.

This book gives several answers: first, it demonstrates that, in the free portions of Germany, architects did, indeed, produce some extraordinarily handsome buildings. (This is all the more remarkable since most of these architects were trained in Nazi schools, where heavy-handed neoclassicism

was the only permissible form of expression.) Second, the book demonstrates that relatively little urban design on a grand scale has been accomplished in Free Germany to date. The chief reason for this seems to be that the Germans, like some of the rest of us, have so far failed to find a way of combining truly large-scale planning with free enterprise and with private land ownership. And, third, the book demonstrates that "starting from scratch" is, in reality, no advantage at all: somehow the larger groups of buildings, all in more or less the same modern idiom, look diagrammatic and impoverished; whereas new buildings that are related to neighboring structures from the past (very few such examples appear in this book) tend to be enriched by such contrast.

In short, the past, which modern architects were so quick to reject a few years back, turns out to be an indispensable element in successful urban design. Unfortunately, there isn't very much the postwar German architects can do about that.

The most striking characteristic of the new German architecture is the tremendous influence of Mies van der Rohe's American work. While much of the Miesian building in Germany is not as elegantly handled as Mies would have handled it, the workmanship is often superior to ours. Moreover, some of the Miesian architects are decidedly worth watching: Friedrich Wilhelm Kraemer, Egon Eiermann, and one or two others.

A second characteristic is the absence, by and large, of what Sibyl Moholy-Nagy calls the "better smart than art" school. Compared with what is happening in the U.S. and elsewhere, there is a refreshing lack of architectural acrobatics; or if the acrobatics do turn up, they make structural sense. The one exception is the work of that grand old man, Hans Scharoun—but, then, his very "humanist" idiom is so personal and so consistent that it cannot be judged conventionally.

Finally, there are the new German churches—by and large a pretty sad lot. The country that produced Rudolf Schwarz (distinguished in his prewar work, anyway) is now busily engaged, it seems, in doing penance for the sins of the past in houses of worship that are straight Disneyland. There are some exceptions, of course; but it really seems as if some of the new German architects have an awful guilt complex about God.—P.B.

WORLD AND DWELLING. By Richard Neutra. Edited by Alexander Koch. Published by Universe Books, 381 Park Avenue South, New York 16, N.Y. 160 pp. 8¼" by 11¾". Illus. \$15.

Mr. Neutra's only verbal contributions to this handsome volume are two brief introductory essays. The headline above the first reads, "No picture book, but a counterweight for blind figures and abstractions." The phrase is true to the tone of the text, but is not an accurate description of the contents: the pages which follow bear 355 pictures of Mr.

continued on page 172



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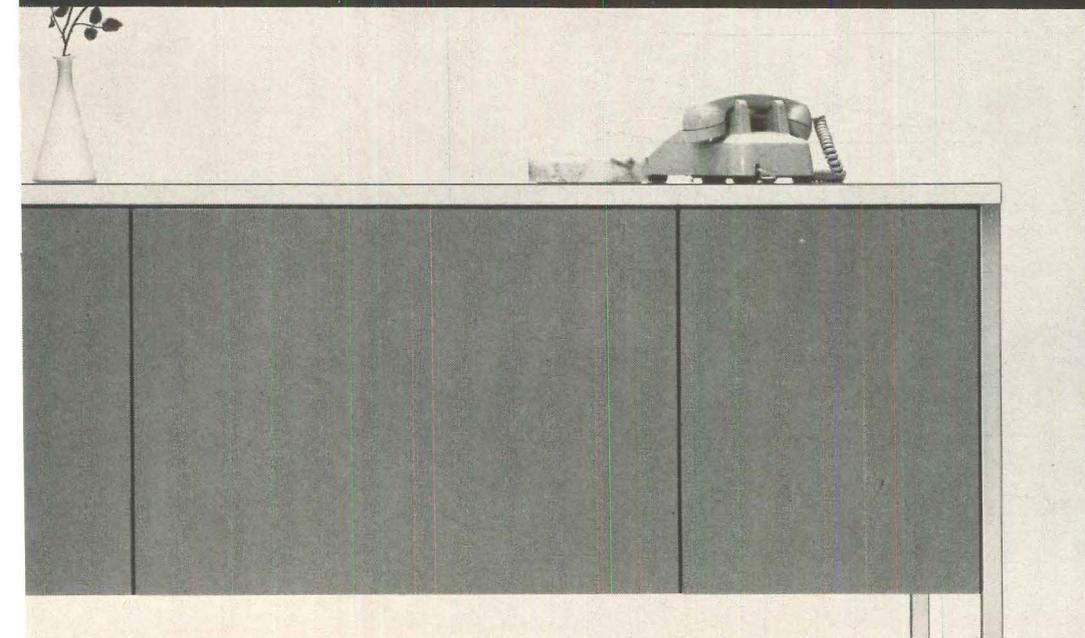
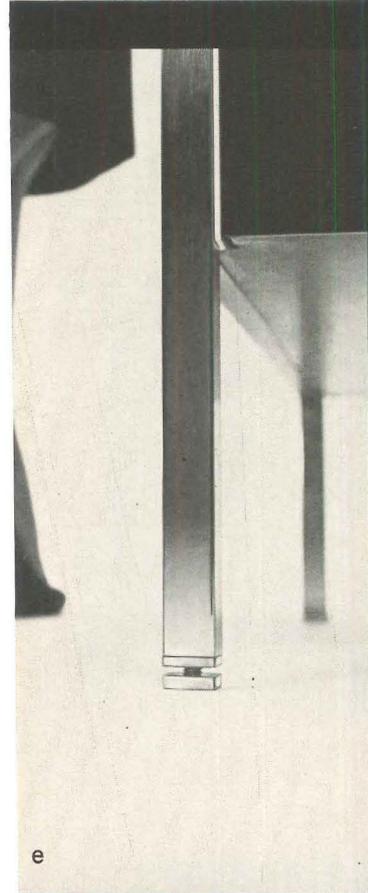
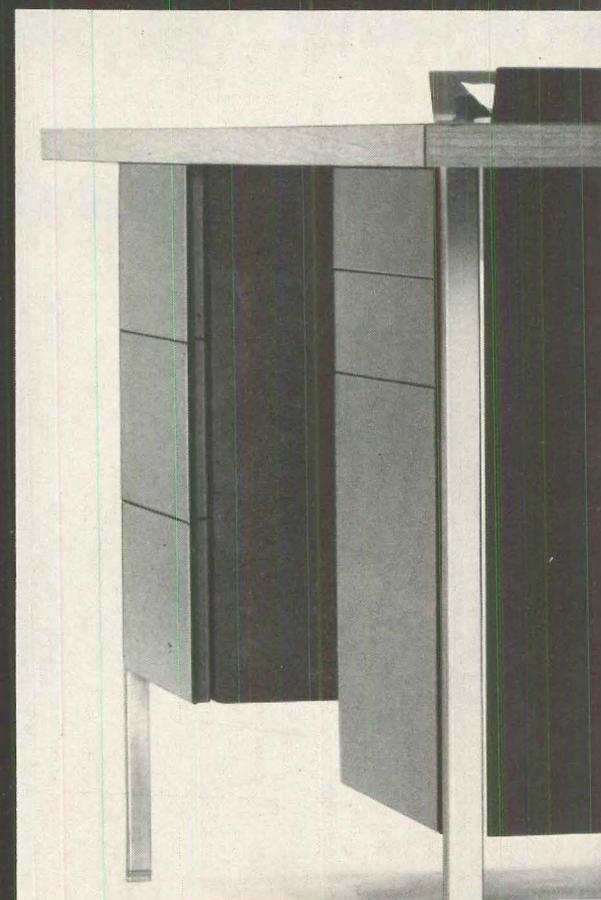
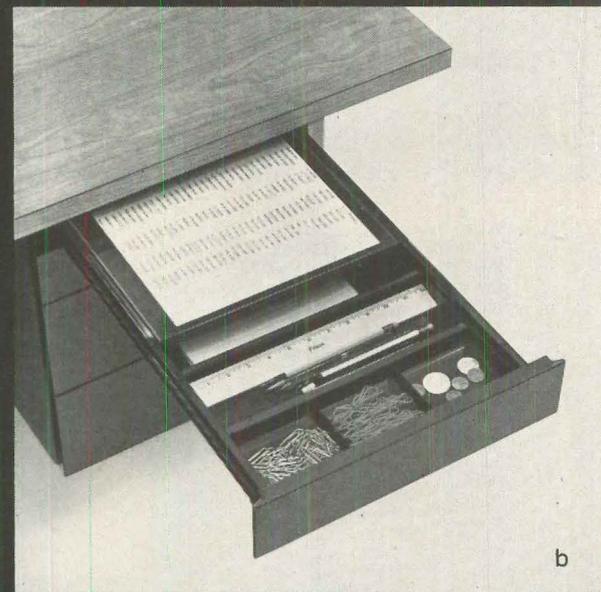


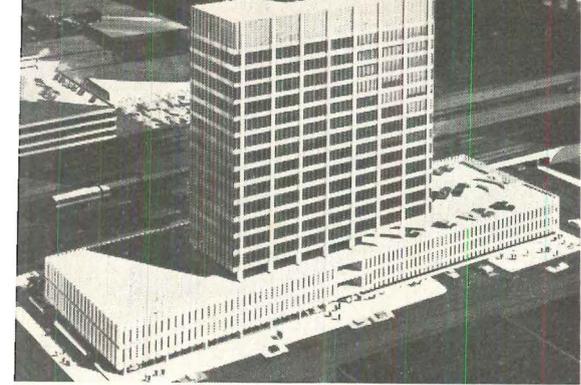
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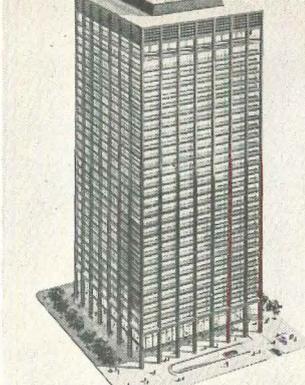
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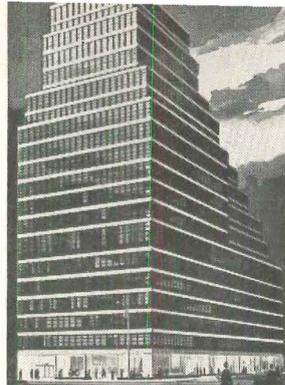




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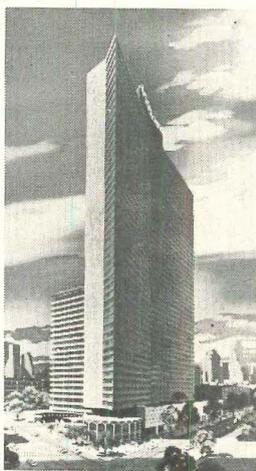
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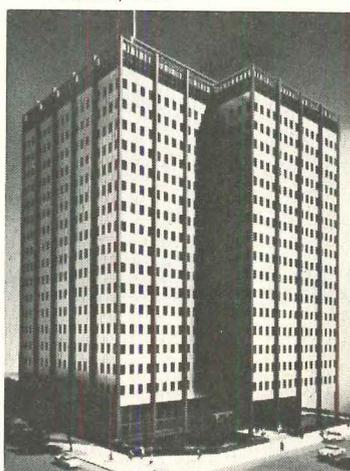
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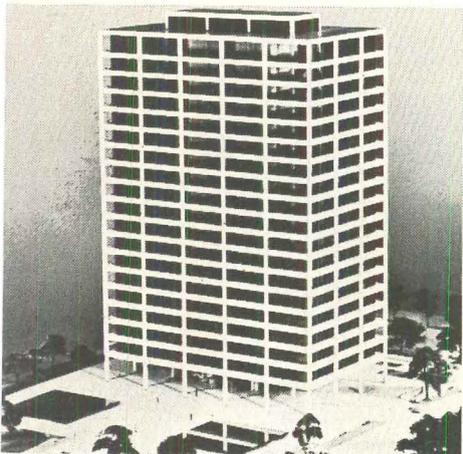
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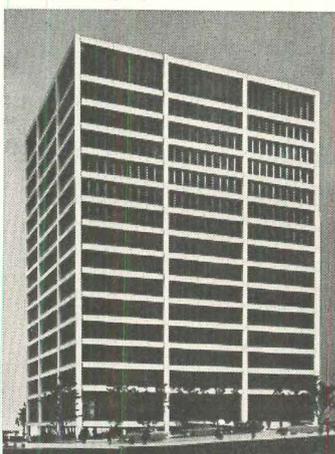
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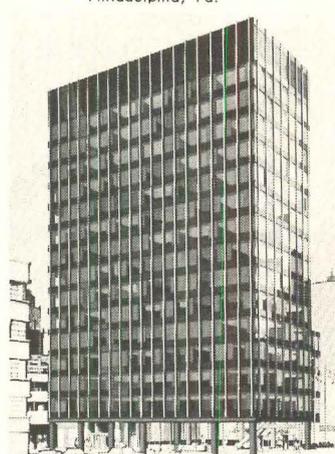
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BMA Tower, Business Men's Assurance Co.
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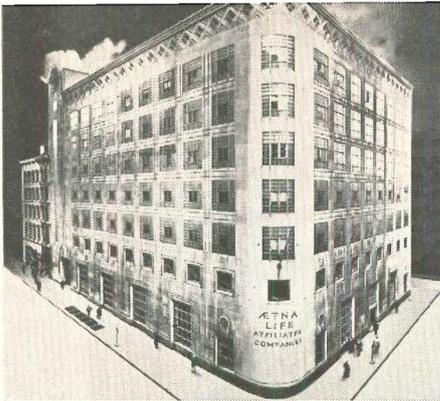


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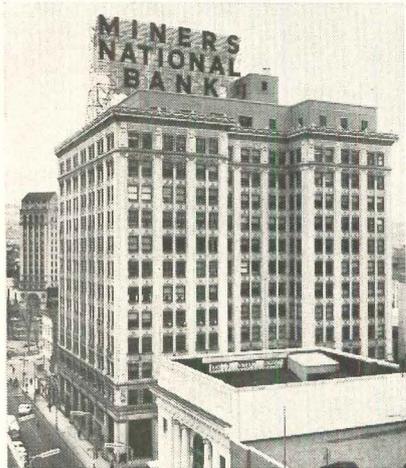
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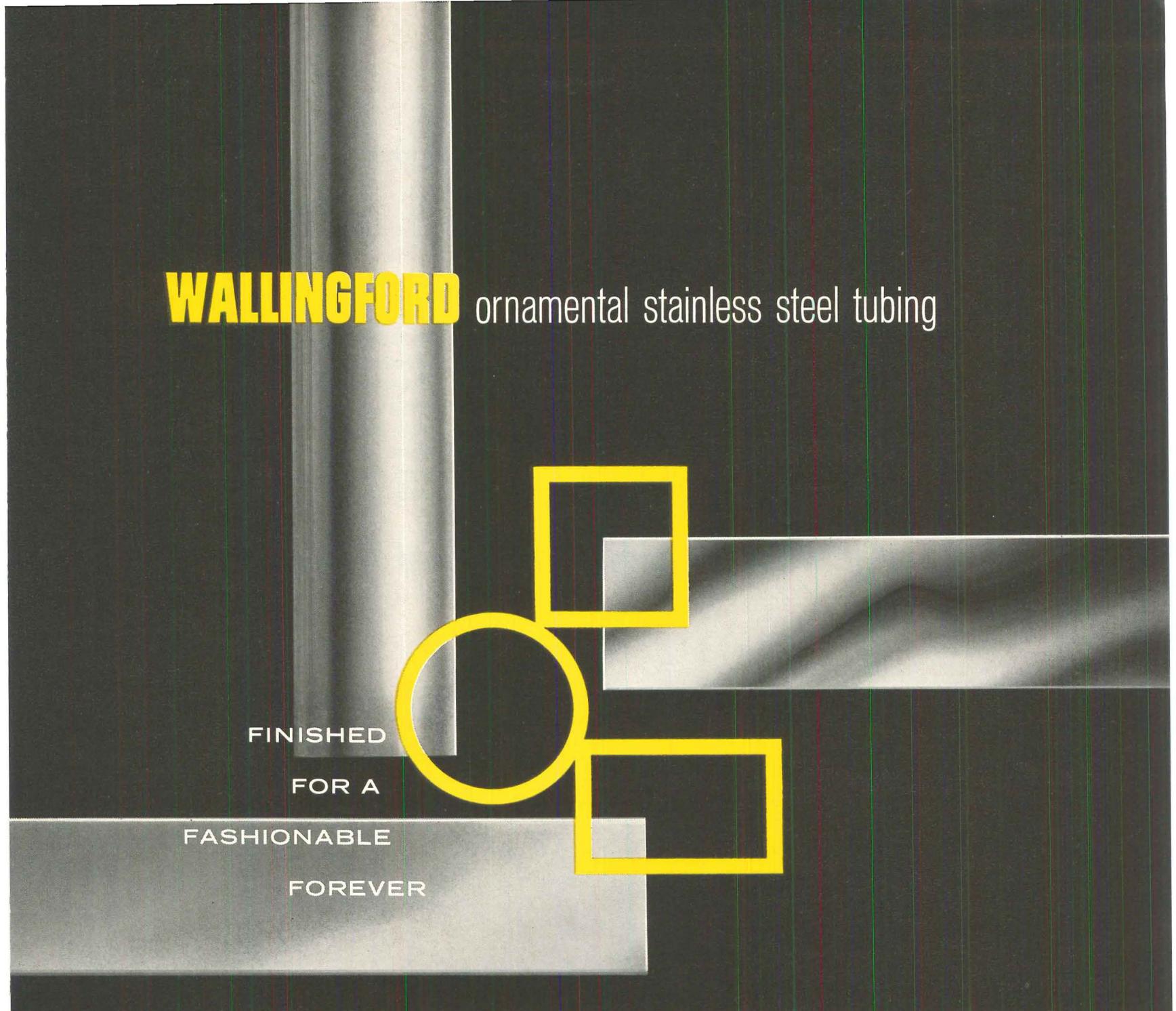


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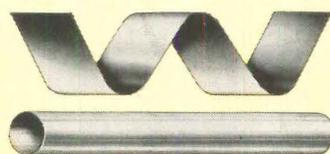


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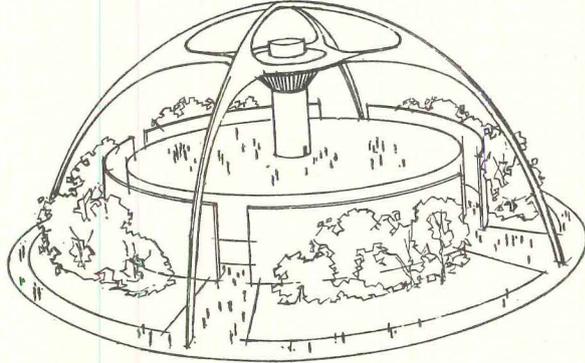
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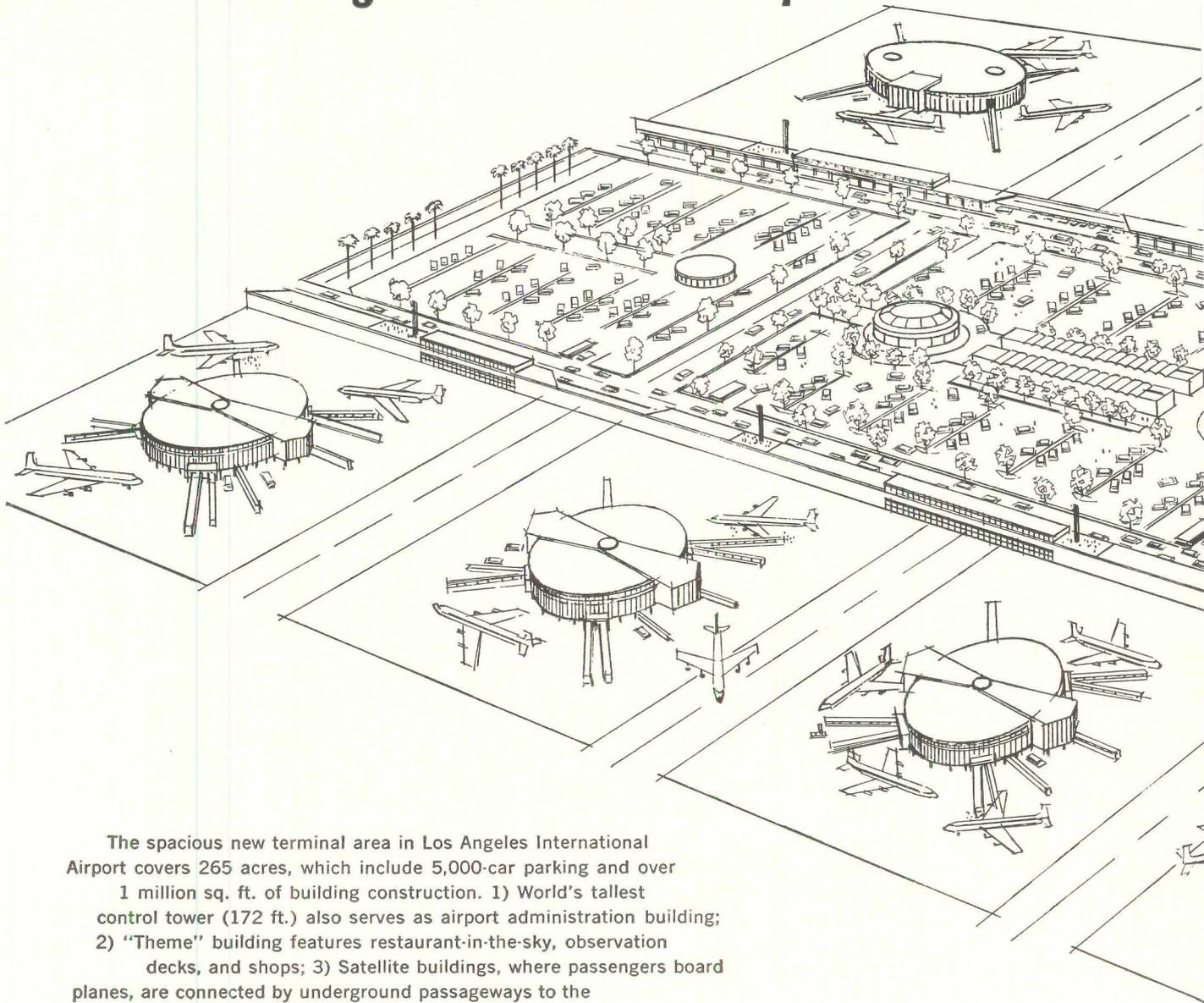


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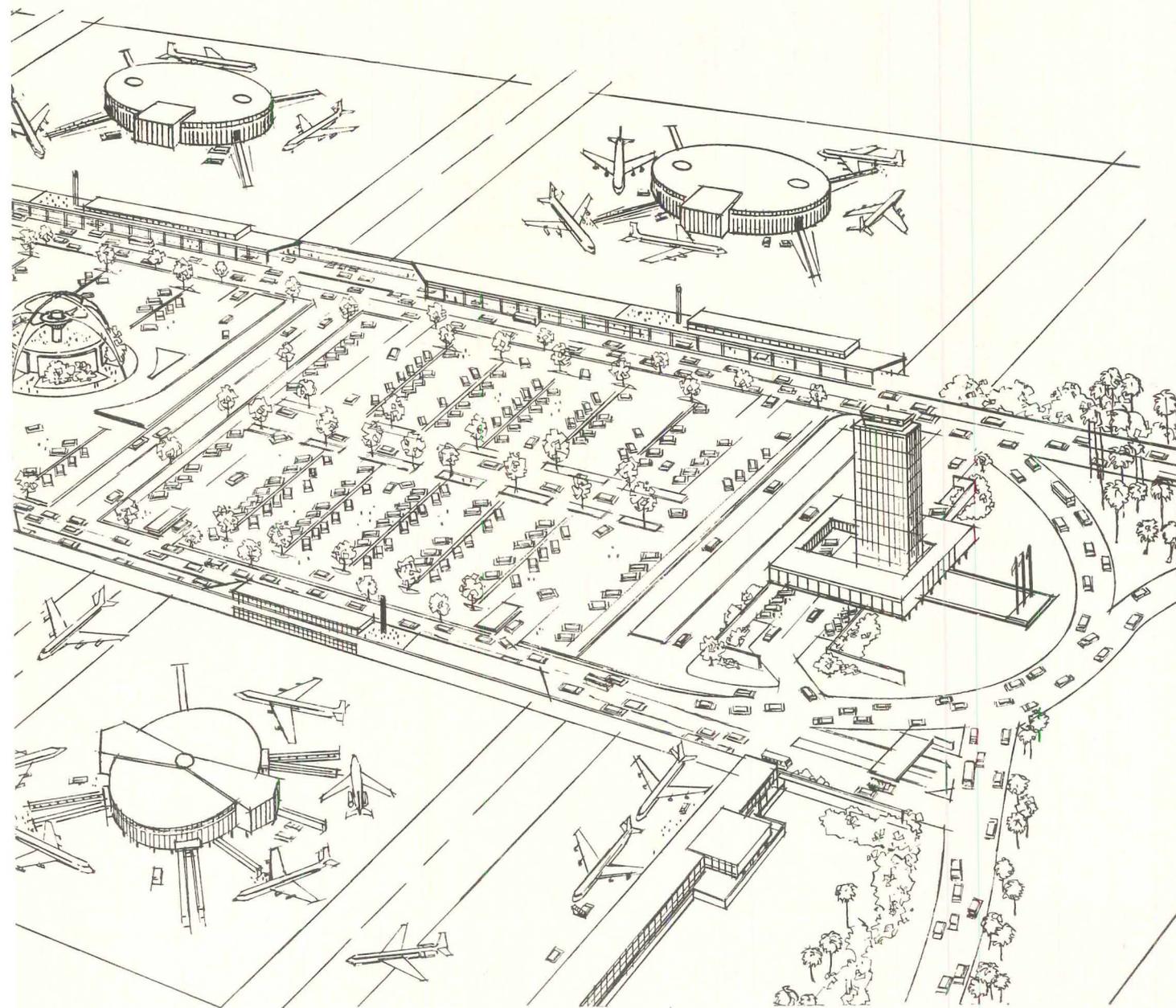
intricate complex of buildings, ramps and passageways was a mammoth undertaking. Outstanding features include: automatic pre-recorded flight announcements, complete with central and local control selectors; local paging systems that operate independently of the airport public address system; background music systems; outdoor speaker trumpets for selective paging; intercom systems; automatic foreign language translations that follow English announcements of overseas flights.

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Neutra's work (little pictures of a smattering of his larger projects, then more comprehensive coverage of 21 houses) with commentary by Editor Alexander Koch.

Mr. Neutra's first essay is a restatement of his plea for deeper investigation of man's environmental needs, to the end of producing an architecture which is "psychosomatically just." Time for such study may be short, he warns; as the earth becomes more crowded, the single house may become obsolete.

The second essay defines the book's title. Each man's world is peculiarly his own, Mr. Neutra notes, and in it the home is the "soul's anchorage." But the concept of home "spills out" over the entire range of the individual's everyday experiences. The single dwelling is nonetheless worthy of concern; it is "a minority report to be heard, and shows biological individuality in action." Hence, presumably, this volume.

Mr. Neutra writes in a series of determinedly philosophical epigrams. One has the feeling that there are insights here worth further exploration, but few are taken to the point of comprehensibility. Thus expressed, Mr. Neutra's philosophy emerges as a verbal iceberg—the bulk hidden, the top camouflaged by a dense thicket.

The houses are in Mr. Neutra's characteristic architecture of the plane. ("I was patient and rather steady for four faithful decades," he remarks at one point.) Mr. Koch describes them with unrelieved enthusiasm. It is somewhat unfair: so lavish is his praise that it gives rise to a vague negative prejudice in the reader. The virtues of Mr. Neutra are real, if by now familiar. They are best left to speak for themselves, without encomium or epigram.—D. C.

INTRODUCTION TO DESIGN. By Morris Asimow. Published by Prentice-Hall, Inc., Englewood Cliffs, N.J. 135 pp. 6" x 9". Paperbound. \$3.95.

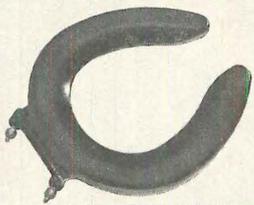
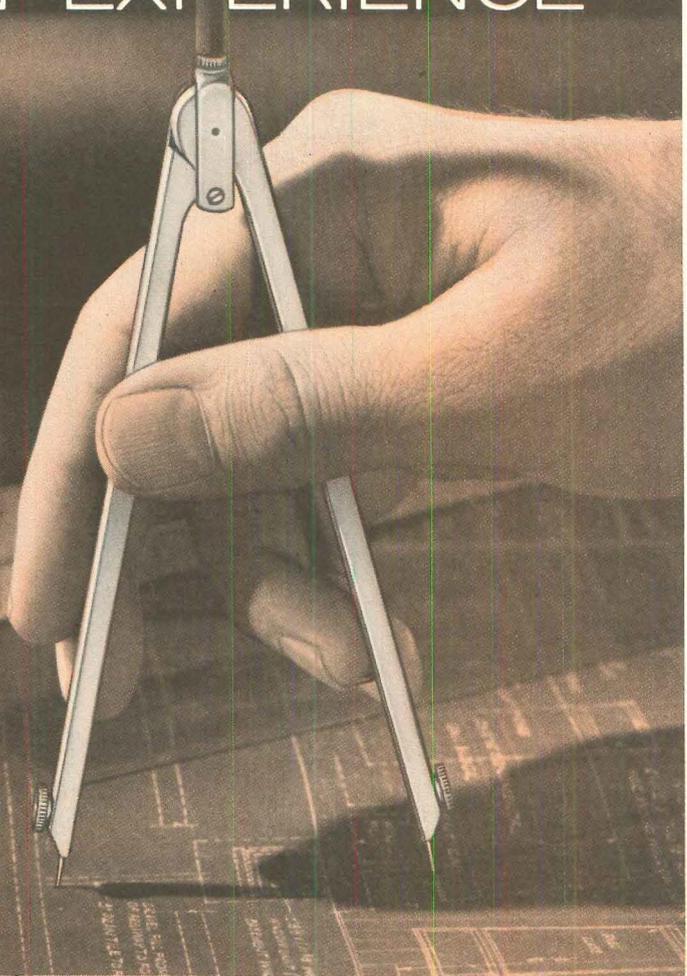
If used properly, books such as Professor Asimow's (he heads the Interdisciplinary Division in engineering at UCLA) should be a healthy influence on the education of future engineers, for he forces the reader to make a most exacting analysis of the basic nature of the design process. But the book requires patience and a good grasp of mathematics.

The reader may at first be skeptical about the entirely new and seemingly pompous language used to describe some familiar aspects of making a design decision. Toward the end of the book it becomes clear that a new, more precise language is required if the design process is to cope with an ever-increasing number of interrelated elements.

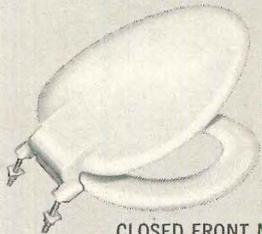
There are undoubtedly great dangers in using mathematical tools to help make design decisions. Lifeless "organization design" can easily be the result. But a sensitive designer who can use the mathematics knowingly gains an increased power to consider the fine grain of reality.—B.P.S.

END

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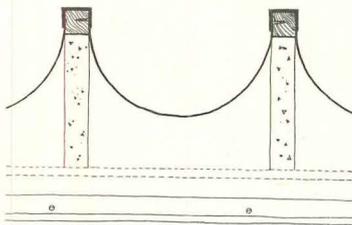
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NORDIC PAVILION IN ITALY

When the art world's *cognoscenti* arrived in Venice last summer for the 31st international *Biennale*, they found a graceful new pavilion in the city's tree-lined Castello Gardens, the 9-acre site set aside by Venice for this oldest and most prestigious of all art shows. A joint exhibit center for Norway, Sweden, and Finland, the pavilion was designed by Norwegian Architect Sverre Fehn and joins 26 other permanent national pavilions built expressly for the *Biennale* event.

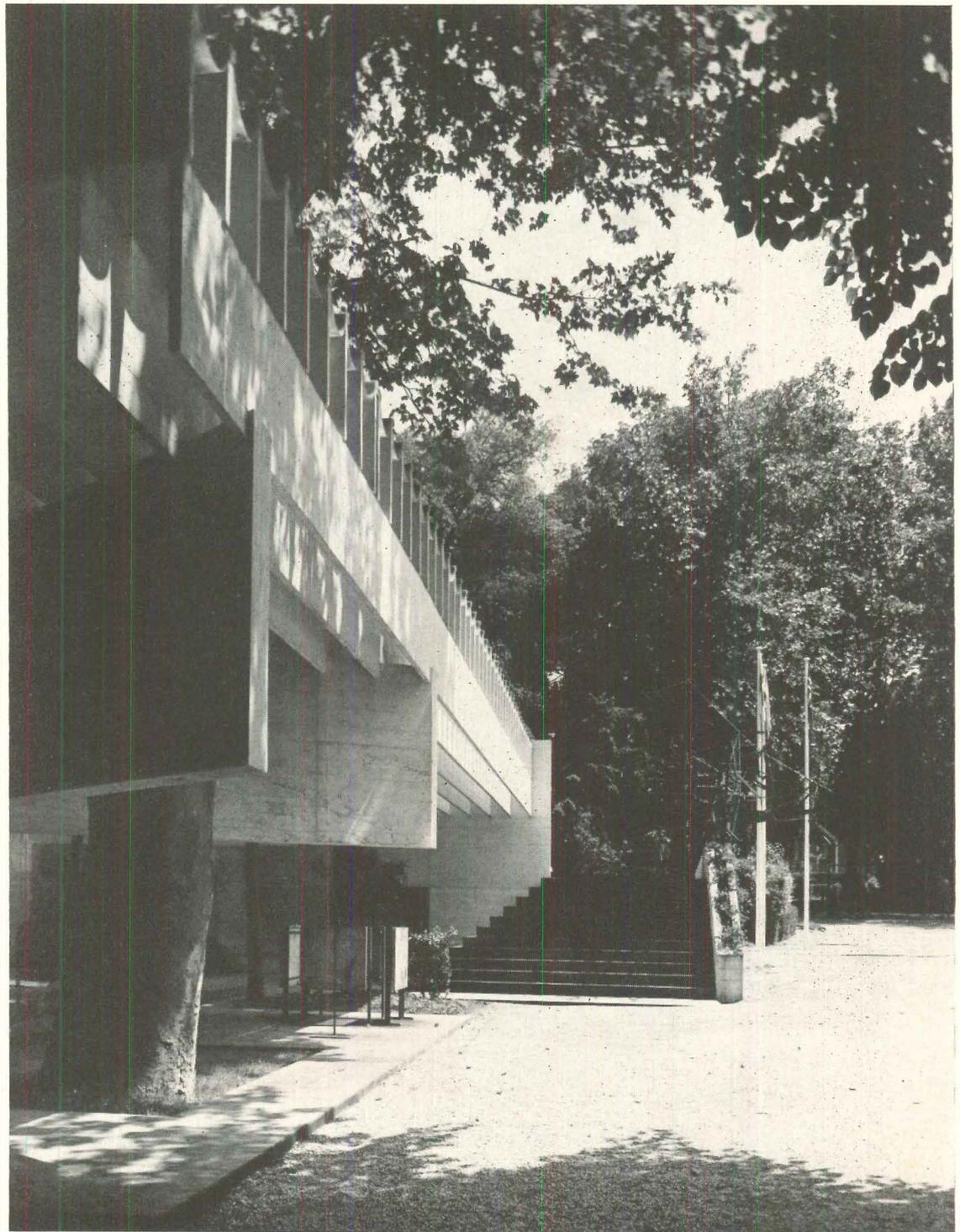
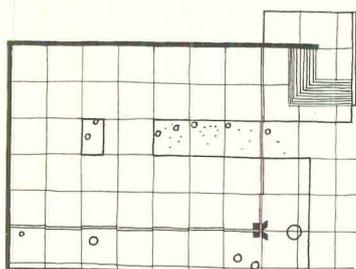
Amid the Baroque flamboyance of Venice, and the colorful cast of art enthusiasts, patrons, and critics which convenes there every two years for what has been called the "world's flashiest art show," the Nordic pavilion speaks with a quiet and impressive restraint. (Designers for some of the ludicrous New York 1964 World's Fair pavilions might learn a lesson or two before it's too late.)

The building's quality of crystalline transparency comes from diffused light which filters down through a reinforced plastic roof and slender supporting beams of concrete in longitudinal and transverse layers (section, below). The architect has saved some of the site's luxuriant trees, enclosing them within the pavilion. Bright shafts of light fall wherever tree-

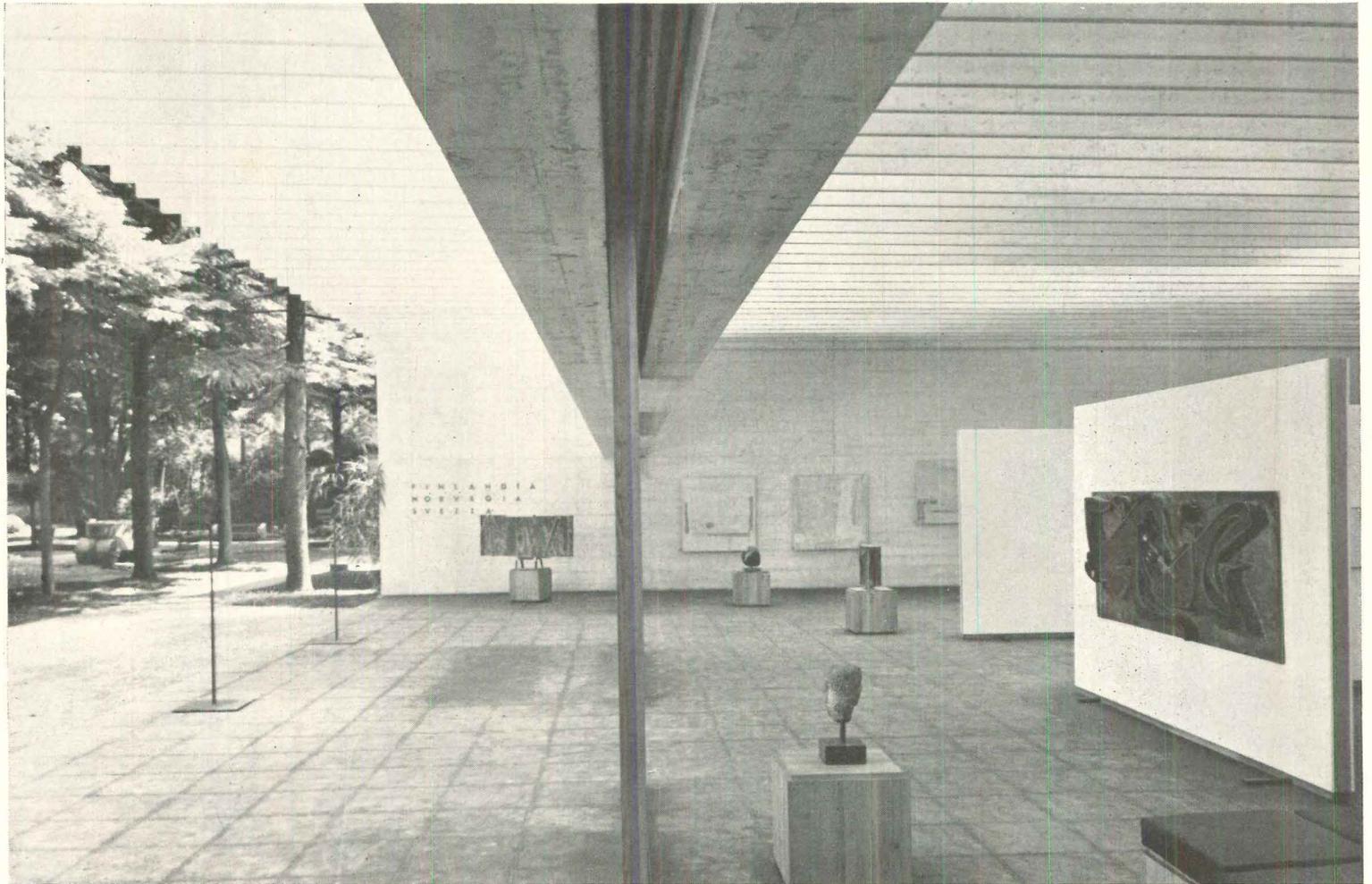


tops pierce the roof, breaking the even illumination into decorative patterns.

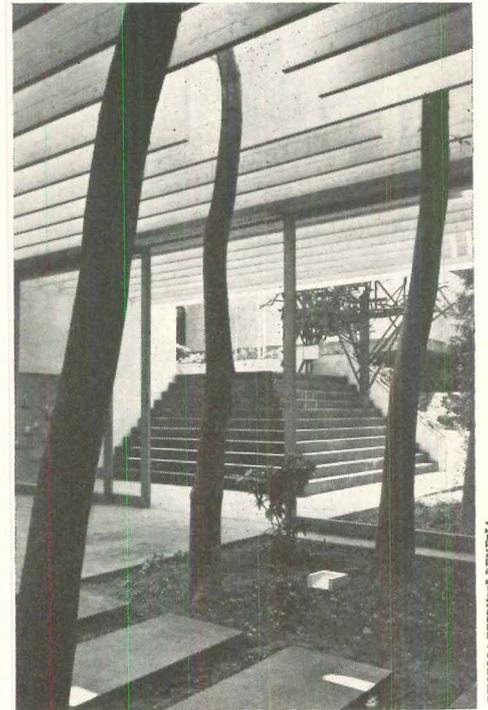
On two sides of the pavilion are sliding glass walls framed in wood. Overhanging eaves shield the glass so that glare does not spoil the sweeping view from outside for passers-by.



PHOTOS: FERRUZZI VENEZIA



Solid concrete walls frame the pavilion on the northeast and southwest façades (above). On the other sides, grooves are indented in the flagstone floor so that solid and glass sliding partitions can be interchanged, for versatility in arranging exhibits. Trees planted inside in beds of foliage (below, right) reach up through the roof and form a living relationship between the building and its wooded site. Exterior stairs in the background lead to a platform where outdoor sculpture and other exhibits can be displayed.



PHOTOS: FERRUZZI VENEZIA



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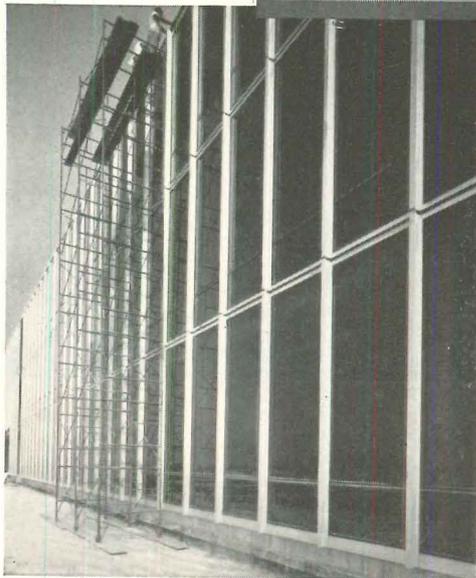
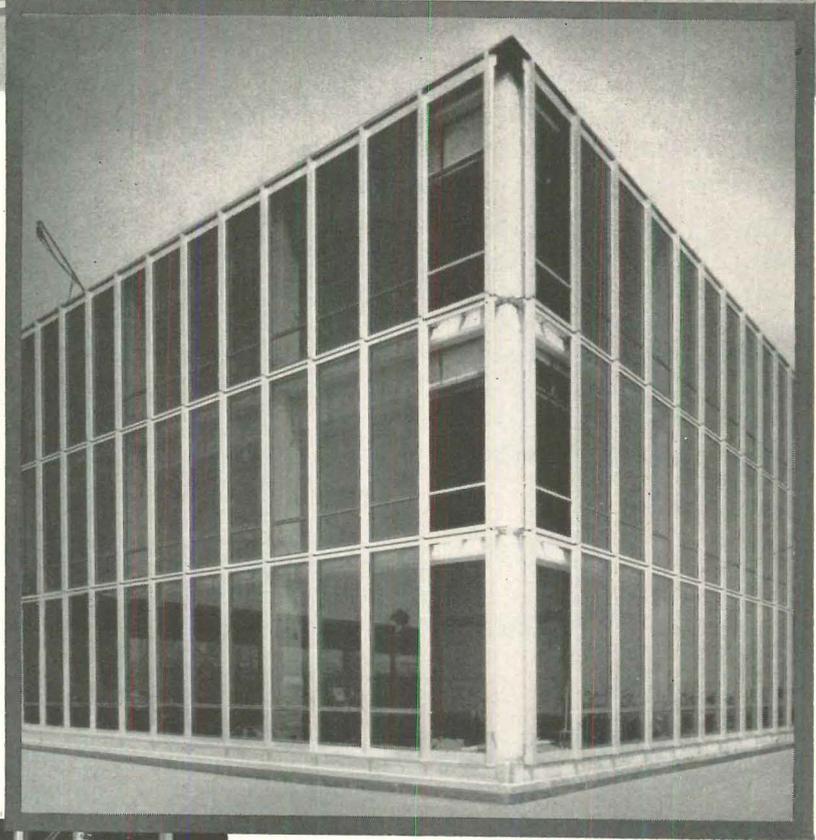
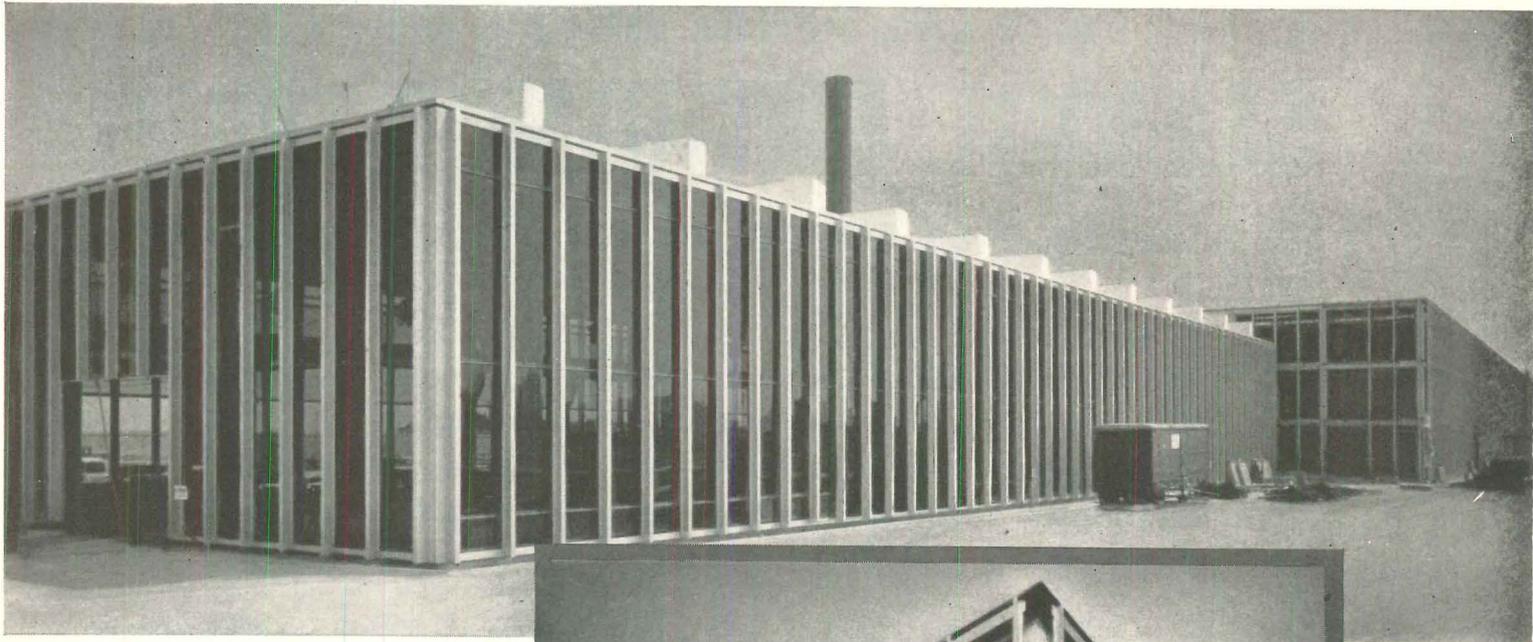
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curtain wall
by Reynolds...*

*another
example of*

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460 feet long by 140 feet wide, or 1200 feet all around... that makes the Chemical and Administration Building of Chicago's Central District Filtration Plant one of the largest of its kind in the world. Three stories high, too... with an exterior practically maintenance-free in glass and Reynolds Aluminum.

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Where New Ideas Take Shape in Aluminum -

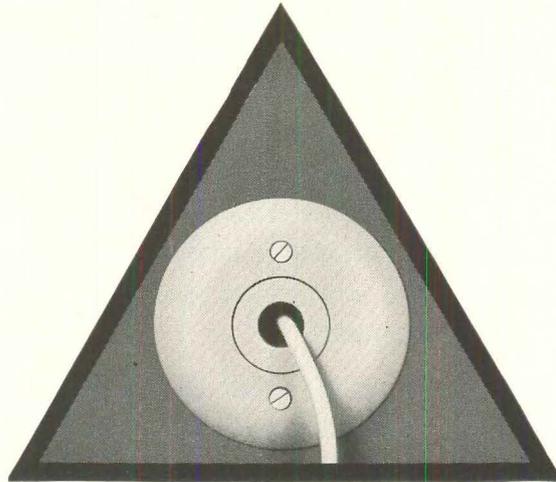
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▲ The Princess phone takes only a few inches of desk space but gives unlimited convenience in the den. For help in telephone-planning your homes, call your local Bell Telephone Business Office. See Sweet's Light Construction File, 11c/Be, for other telephone installation ideas.



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No lock cylinders to change! Simply turn a key to introduce permanent key system

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*Pat. appl'd. for



Construction costs present about the same picture now as they did a year ago. Building materials prices continue to remain stable, while there has been an unremitting upward push in construction wages. Labor-saving devices have not, especially in the residential area, counterbalanced the year-to-year cost rise. Present projections assume an increase of around 1.5 per cent during

1963. (Hence, to arrive at an estimate of physical volume, the figures should be discounted by roughly this amount.)

This construction prospect for 1963 takes into consideration the many uncertainties that plague the economy. In all probability, no combination of adverse elements will pull the total outlay below the amount stated. And, given good breaks all along, the

projected rate of gain over 1962 may be doubled. Even with the best of circumstances, however, the range of growth rates would still be narrow and unspectacular.

The major uncertainties which have been considered in this forecast include the following:

▶ The extent to which businesses will respond to incentive tax changes. Next year's tax measure, if enacted, should stimulate construction more than 1962's changes in depreciation schedules and the investment credit scheme. At present, business has projected appropriations and expenditures that do not presage any strong advance in 1963.

▶ The continuance of international tensions. Current worldwide disturbances are not likely to stir investors or consumers from their cautious spending mood.

▶ The availability and cost of financing. Unless there is a worsening in the gold situation, funds for real estate investment on both the equity and the mortgage side should remain in plentiful supply. An enlarged drain on the nation's gold supply could lead, however, to some degree of credit tightening.

▶ The effect of a possible Presidential anti-bias edict on the volume of residential construction. Such an executive order would have repercussions on housing volume although the timing and coverage of the order, the character of the penalties, and the reaction of the market could minimize disruptive effects.

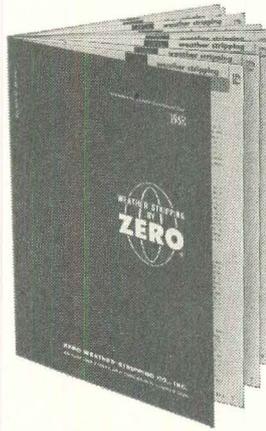
▶ The stimulus to be gained from the discretionary public-works authorization granted by the present Congress. As the total amount of \$900 million (about 5 per cent of the government's total expenditure on construction) could not be put to work in 1963, the extent as well as the distribution of this source of spending must remain matters of speculation.

▶ The effect of cost changes. A net result of the upward movement of wages (while materials prices continue stable) has been to push building costs out of line with costs generally. The outlook is for more, but probably more moderate, wage increases in 1963 than those given this year.

With these factors considered, the forecast has to show a relatively weak advance in 1963. A new high record will be set, but the end of a postwar expansion may be at hand. Unlike the similar moment in the late 1920s (following the ten-year construction boom after World War I), the 1960s are certain to bring expanding markets for all types of building. Only the sorriest sort of political and economic mismanagement could prevent the beginning of a new source of expansion closely coincident with the disappearance of an old one.

END

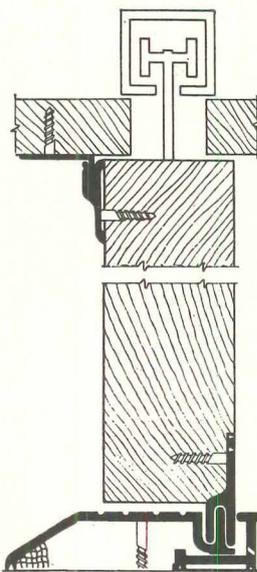
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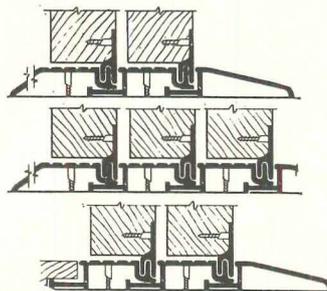
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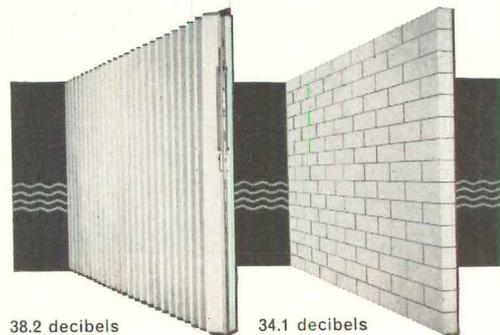
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...each with better sound privacy* than you'd get from walls of 4" cinder block

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*Geiger and Hamme Laboratory Tests (full scale) show that in a 14' x 9' opening under simulated field conditions, the average sound reduction of a Soundmaster 240 operable wall is 38.2 decibels, compared with 34.1 decibels for a 4" cinder block wall painted on both sides.

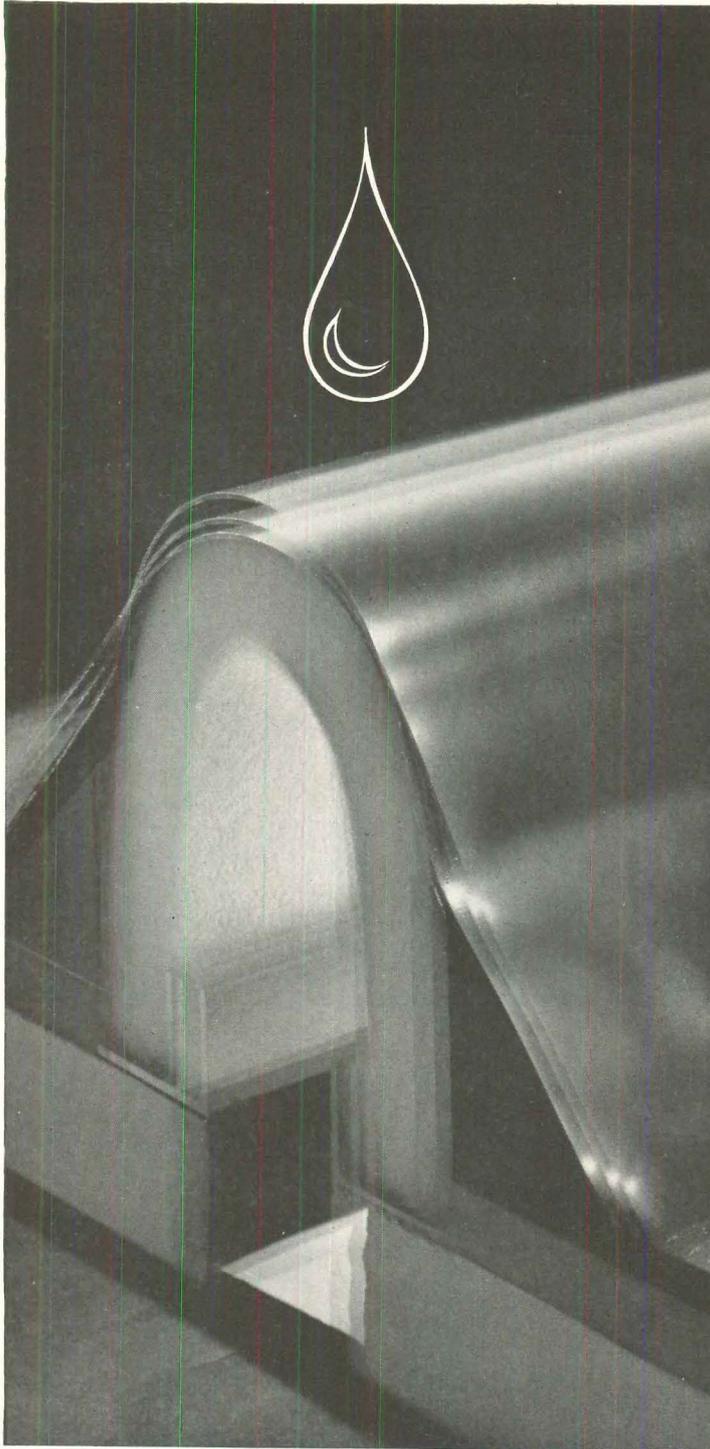


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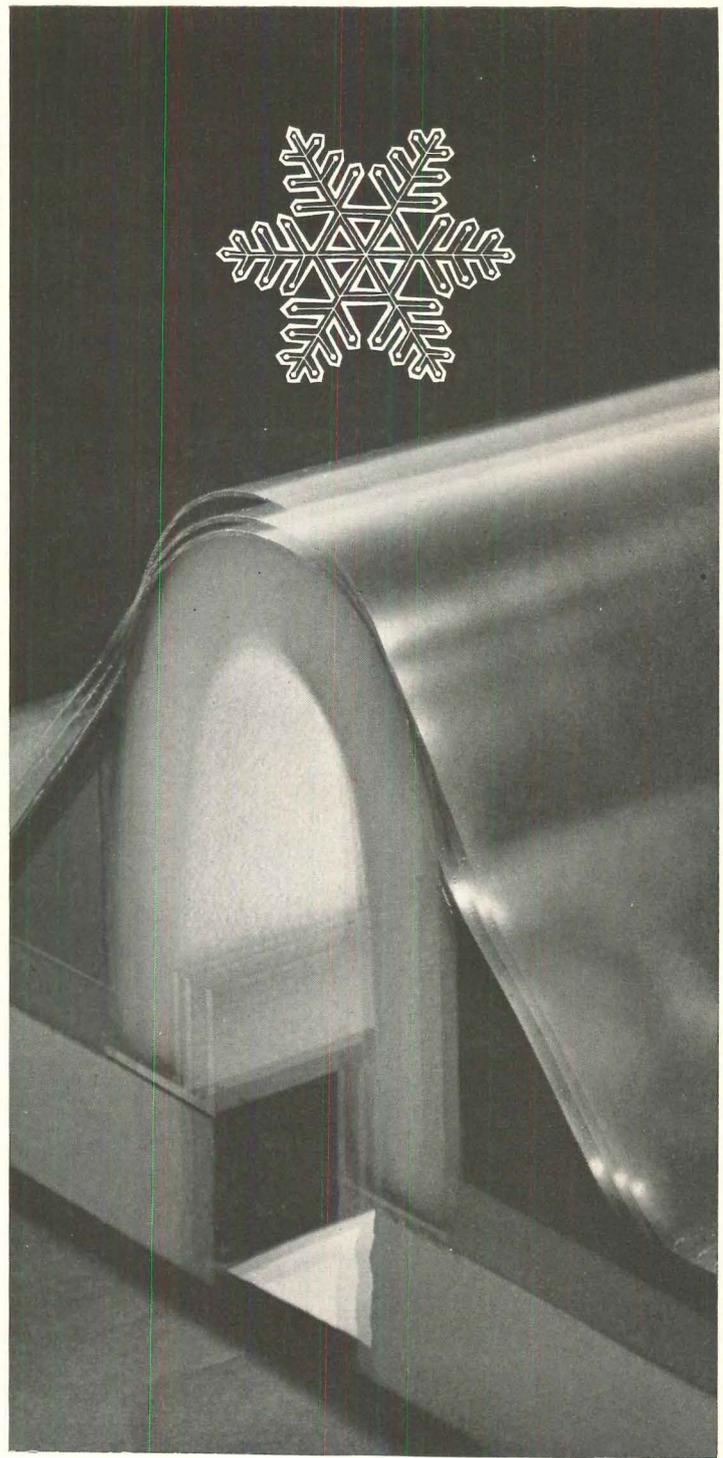
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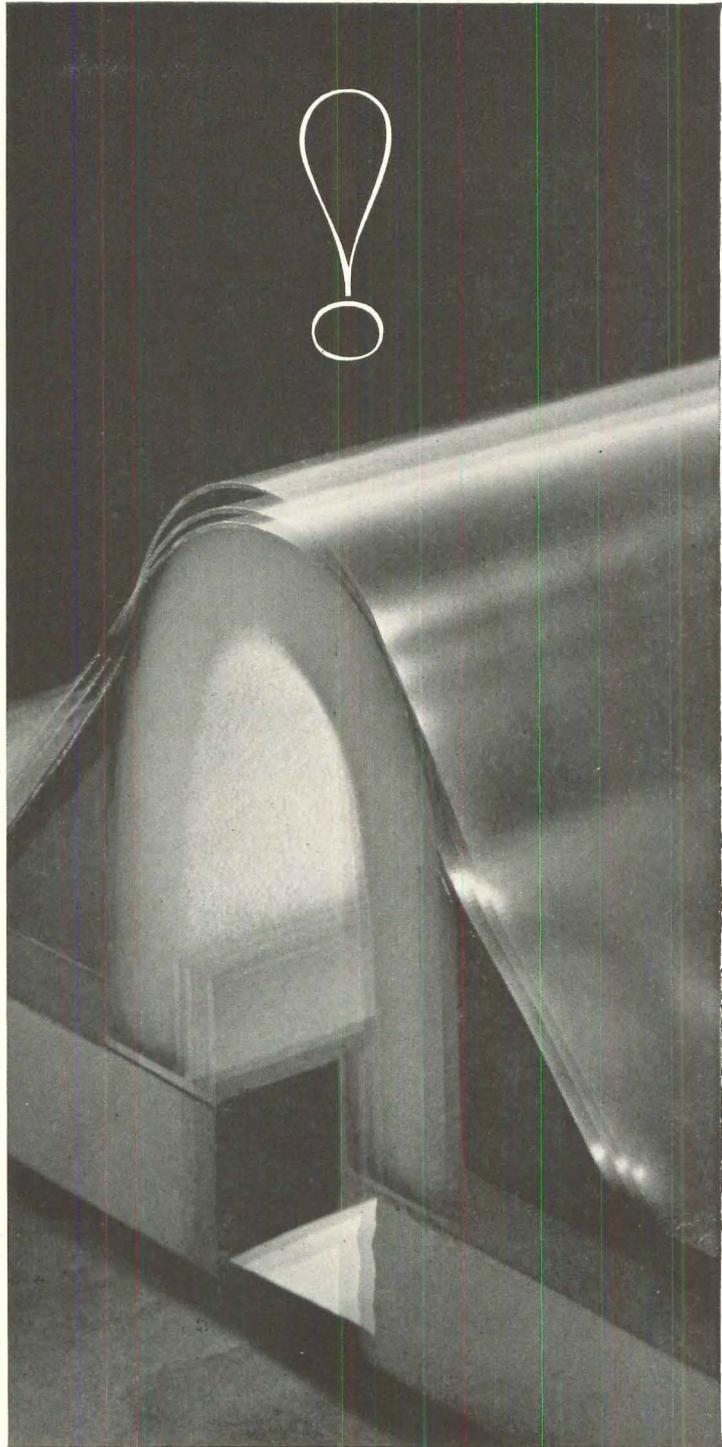
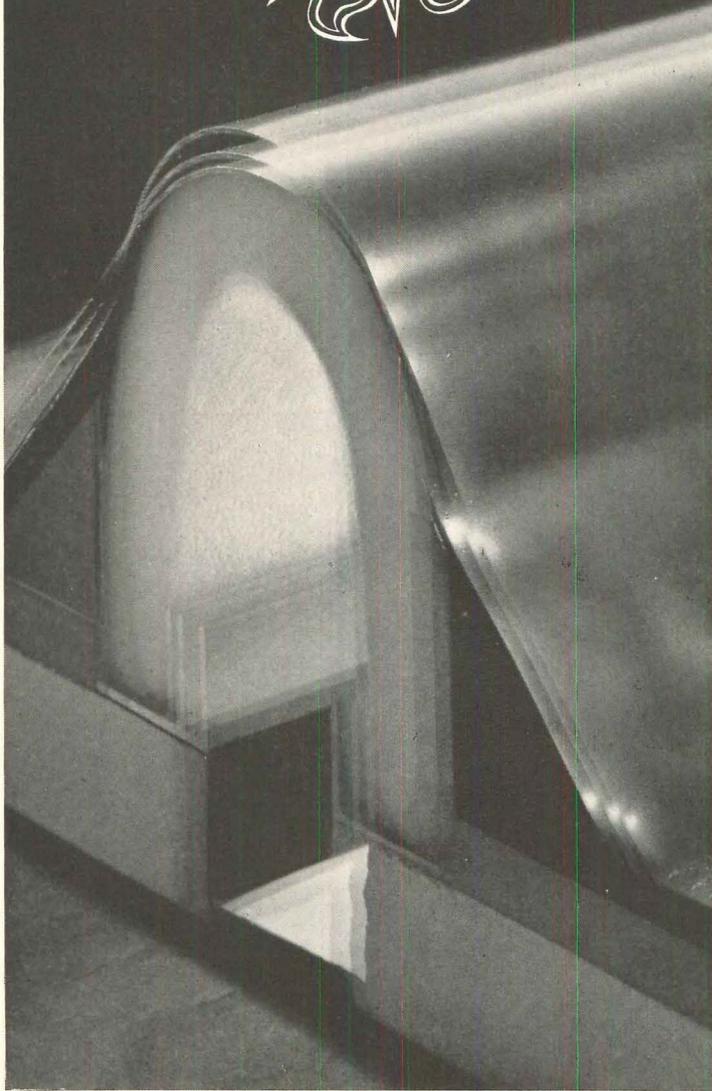
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Flex!



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It's Saraloy 400 and Ethafoam!

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Midland, Michigan

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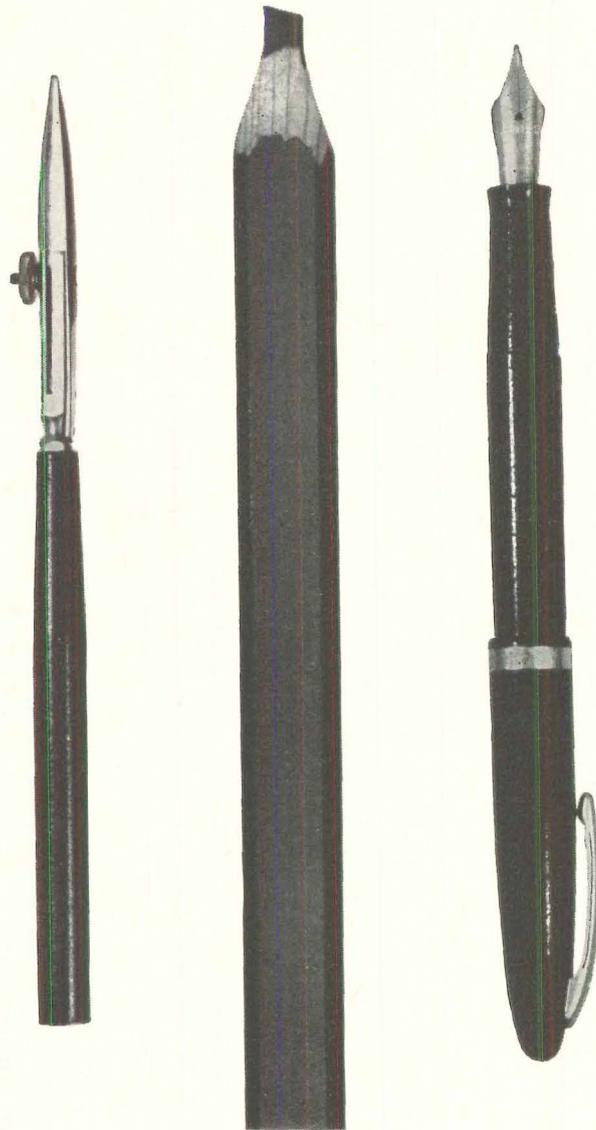
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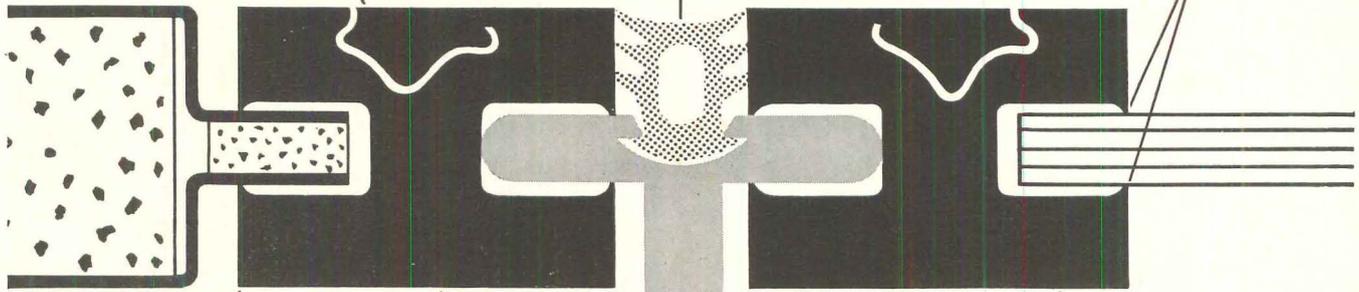
DeLuxe True Vinyl is available in a range of handsome, new, multiple marbled colors. In $\frac{1}{8}$ " gauge for commercial and heavy traffic use and in $\frac{1}{16}$ " for light traffic areas. Now recommended for on-grade as well as above-grade. For specifications, see your nearest Goodyear Floors Distributor, or write: Goodyear, Flooring Dept. W-8110, Akron 16, Ohio.

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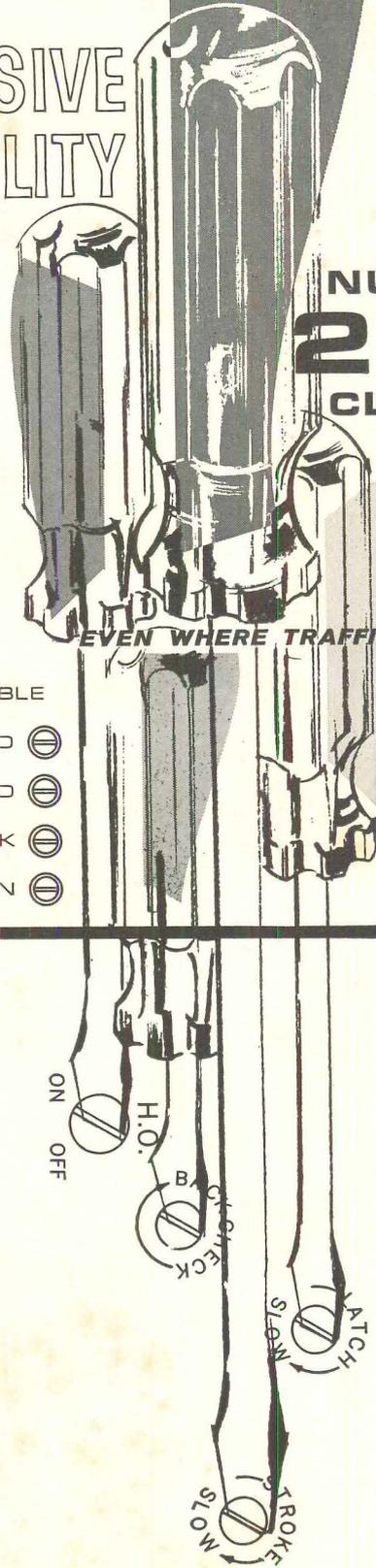
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